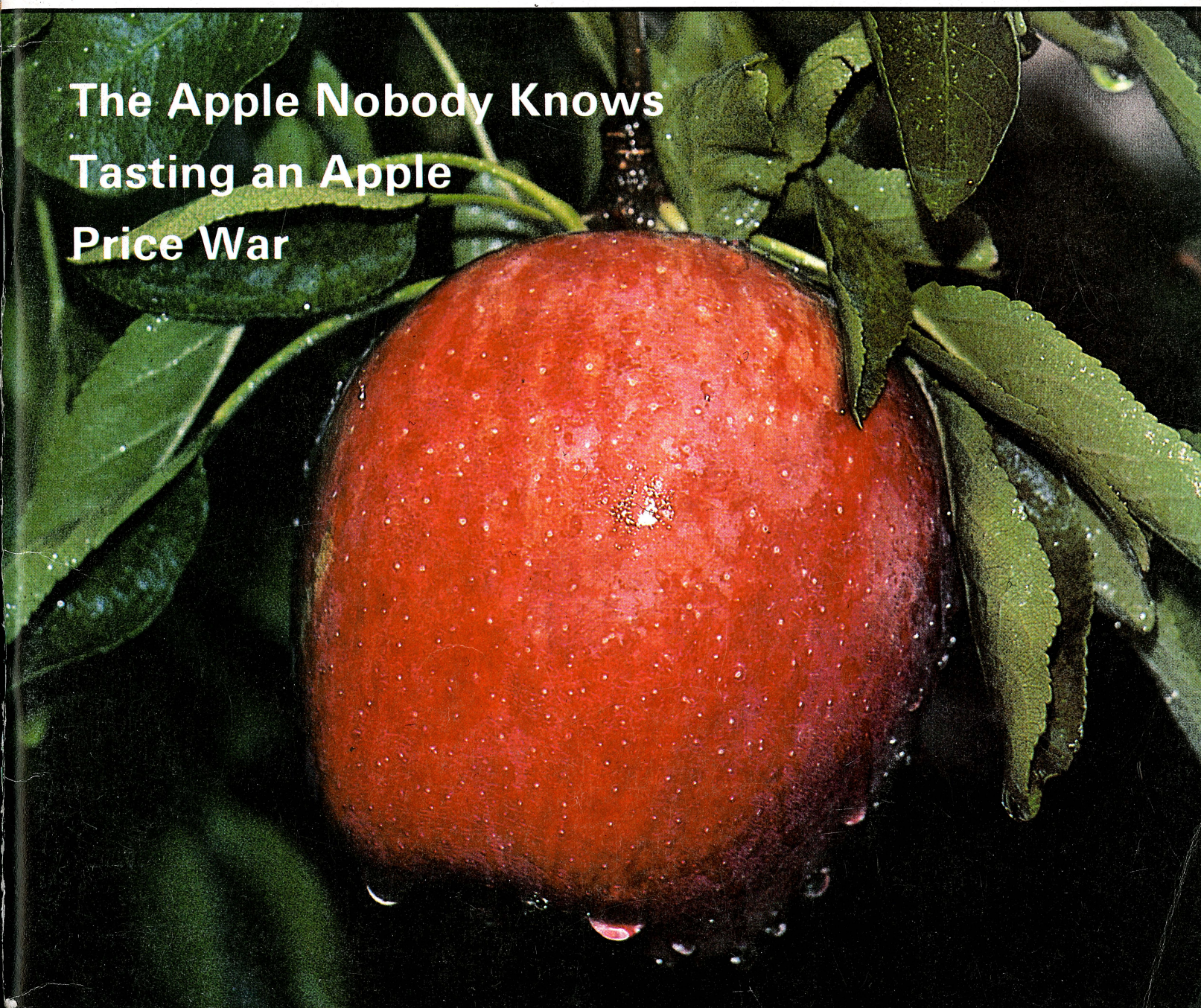
INTERNATIONAL APPLE CORE™
presents

Apple Orchard™

VOLUME 2 NUMBER 3 FALL 1981 $3.50



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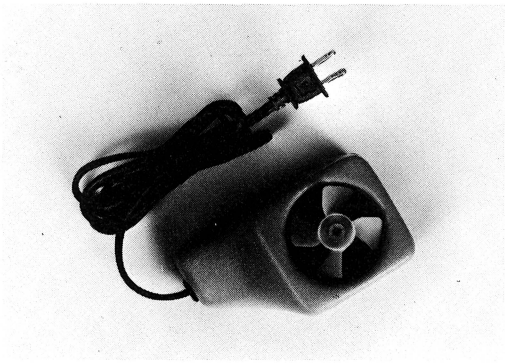

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- Overvoltage protection
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- Output voltage current
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  +12V @ 1A -5V @ 1A
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- Mounts on left side of Apple II
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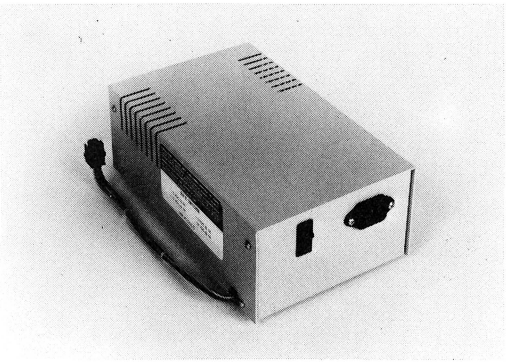

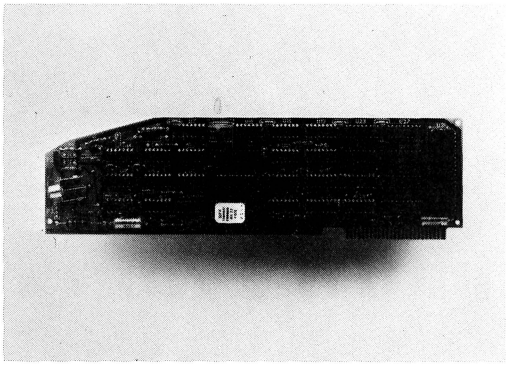

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- 80 Columns by 24 lines, upper and lower case; all 128 ASCII characters
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- Shift Lock feature
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- Pascal 1.1 Keypress and type ahead in firmware*
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- The only board with an adjustable scrolling window
- The only 80 column board that is synchronous with the APPLE II
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*Version 2.5

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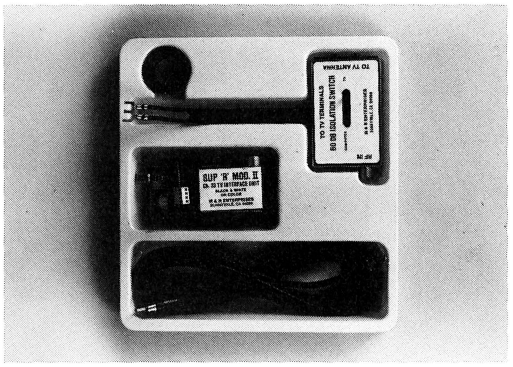

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SYMBOL	DESCRIPTION	TYPICAL	UNIT
F_c	Vision Carrier	591.5	MHz ± 0.5
I_{cc}	Supply Current	2.0	Ma
VO (Hi)	RF Output, $V_{mod} = 0$	1.5	Mv
VO (Low)	RF Output, $V_{mod} = 1.5$	-20.0	dB
R_{in}(mod)	Modulation input resistance	700.0	Ohm
V_{osc}(Min)	Oscillator stop voltage	2.0	Volt
V_c	Voltage	+5 to +12	Volts DC

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The SoftCard™ Solution. SoftCard turns your Apple into two computers. A Z-80 and a 6502. By adding a Z-80 microprocessor and CP/M to your Apple, SoftCard turns your Apple into a CP/M based machine. That means you can access the single largest body of microcomputer software in existence. Two computers in one. And, the advantages of both.

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Our A40 system features 40 tracks, whereas our A70 provides 70 tracks and exactly twice the byte capacity of Disk II.

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COMPATIBILITY TO SPARE

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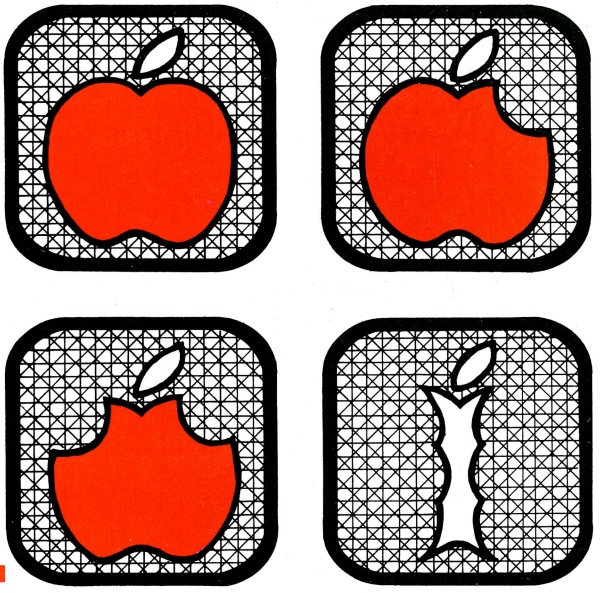

Take a bite...

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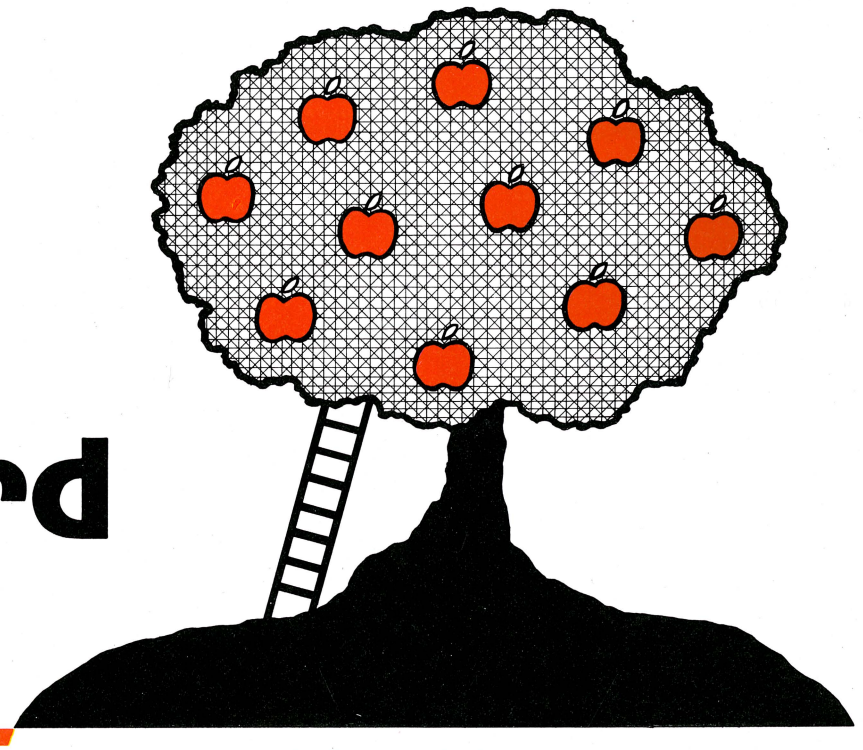
Apple Orchard



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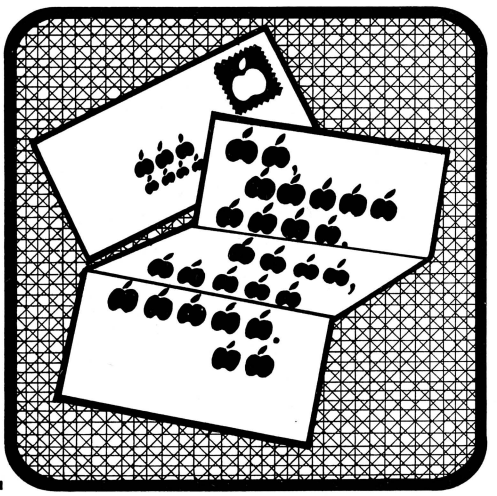
Letters to the Editor



Sir:

Enclosed is my check for a one-year subscription. I found the article "Comparing Applesoft Programs for Differences" in the Spring 1981 **Orchard** to be very helpful, and well-written. It's a pleasure to see a program that not only does the job, but does it with style.

In the same issue, the article "Screen Formatting of Text" (which, in general, is very good), the program for printing more than two columns does not work. The only time a "1" should be added is when the number of columns does not evenly divide the number of items. Perhaps the author meant to use the INTeger function. Also, the program should stop after item RN has been printed.

Francis A. Greene
Hedgesville, WV

(The INT function was intended, and was lost somewhere.
—Ed.)

Sir:

On Page 87 of the summer **Apple Orchard** is a question about weird numbers with the Applesoft Renumber. Because this kind of thing had been happening to me, I breathlessly turned the page for the rest of the answer. . . and no answer. Is there a "fix"? Or were you just kidding?

R. E. Johnson
Houston

There is a fix, no kidding. Here it is (I hope. . .)—PCW

AFTER USING THE RENUMBER PROGRAM, I GET SOME WEIRD CALCULATIONS. WHY?

Renumber is a very powerful tool for developing programs, but after you use it you may find some strange calculations in your program. What happens is that the number after an asterisk ("*"), as for multiplication, is sometimes mistaken as a line number, and Renumber renumbers it. So if you had a line:

```
10  A=B*10
```

it might renumber as

```
20  A=B*20
```

The fix is:

For RAM Applesoft

```
] LOAD RENUMBER
] POKE 14342,172
] POKE 14343,171
1 SAVE RENUMBER
```

For ROM Applesoft

```
] LOAD RENUMBER
] POKE 4815,172
] POKE 4816,171
] SAVE RENUMBER
```

(Do this on Renumber after copying it onto your work disk.)

Sir:

I read "Low Resolution Graphics in Pascal" by Bill Shepard in the Spring **Apple Orchard** with great interest. (I am trying to learn programming with Pascal instead of BASIC.) Unfortunately, I could not compile my input. I believe there is an error somewhere on Pages 82, 83, or 84. Can you help?

Thomas Kwai
Wappinger's Falls,
New York

Yes. The VAR declaration at the top of Page 82 should have been at the top of Page 84. On Pages 62 and 63 of this issue you will find the pages from his original listing, showing the "contexts" I have described. It was not Mr. Shepard's error. Note: for the full listing, we remind you that back issues are available. Maybe an answer is to publish disks containing the programs used in the Apple Orchard. What do you think?—PCW

Send your comments to:

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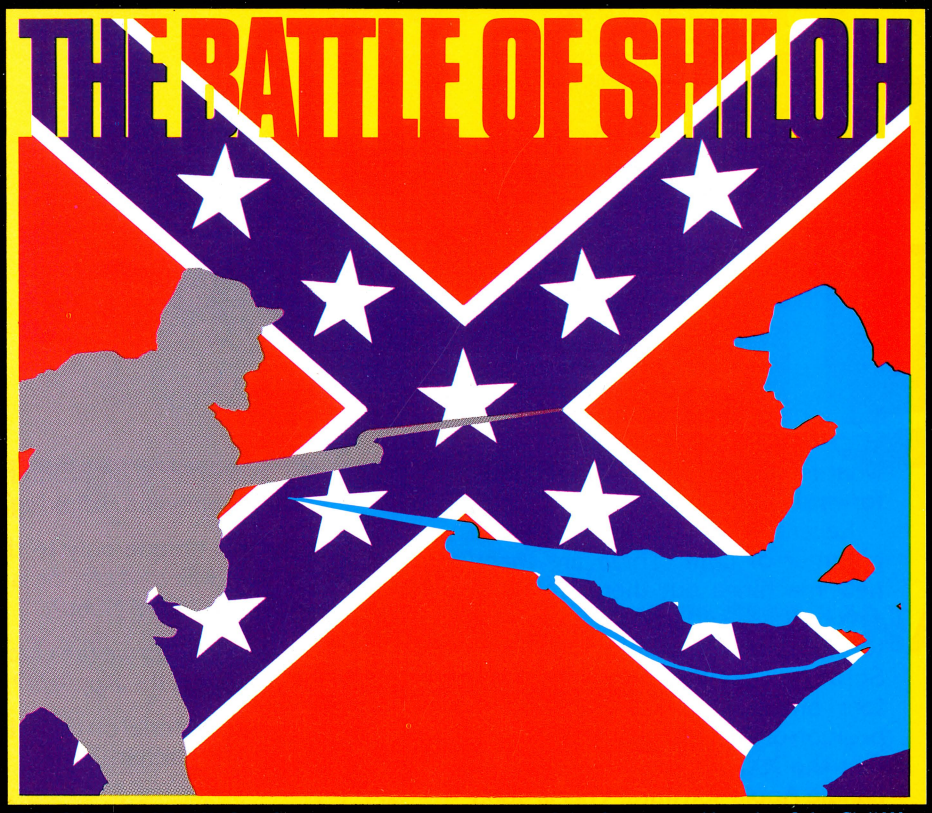

THE BATTLE OF SHILOH: A brigade-level simulation of the first grand battle of the Civil War, pitting the Confederate Army against Grant's troops and Union gunboats.

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Finally, we threw in features you wouldn't expect. For example, TIGERS IN THE SNOW has artillery and airpower allocations along with fuel and supply limitations. THE BATTLE OF SHILOH allows you to fine-tune combat strengths for each side, providing for the ultimate in play balance. It even lets you select risk levels and ferocity of attack (or defense).

For $39.95 each, these are extraordinary games at quite an ordinary price. So head on down to your local store and check them out today!

VISA and M/C holders can order by calling **800-227-1617, ext. 335 (toll free).** In California, call 800-772-3545, ext. 335.

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PRINT FRE(ed)

by Val J. Golding
Editorial Associate

Ain't Apple grand! This is the thought that crosses our mind as we sit down to have a blank sheet of paper and a cranky typewriter stare us in the face. (Word processing—what's that?)

In a lot of ways, we are old-fashioned; we don't always accept change readily. But accept or not, it occurs and we must live with it. Growing up with the Apple from its earliest stages adds a dimension not shared by newer owners. Who ever heard of a printer interface card (there was always the game I/O) or a disk drive (**sure** tape worked just dandy). Now we have the Apple ///; we have an Apple II so loaded with cards there is room for no more, and what is to come; what can we look forward to.

Recent computer shows shed a glimmer of light. There are many new machines out there, some of which, on the surface at least, appear to offer stiff competition to Apple. Some will survive, become predators; others will not. What will the position of the IAC be? Some rumors that the XXXX computer will even handle Apple software! This is good cause for the IAC clubs to do some serious thinking. Here are some thoughts we would like to nominate:

What percentage of our membership is interested in the Apple from a utilitarian standpoint, i.e., applications only.

Is the percentage of programmers and hobbyists shrinking?

If so, is this unique only to the Apple world as a whole, or is it also true within the clubs?

To what extent do we (as clubs) want to support the Apple ///?

Do we want material on the /// included in the Orchard?

This is but a shadow of the possibilities that come to mind, but the time is ripe. Members can contact their regional directors, or they may address the Orchard directly. What is important is that the IAC needs your thinking. IAC does not set policy, the members do.

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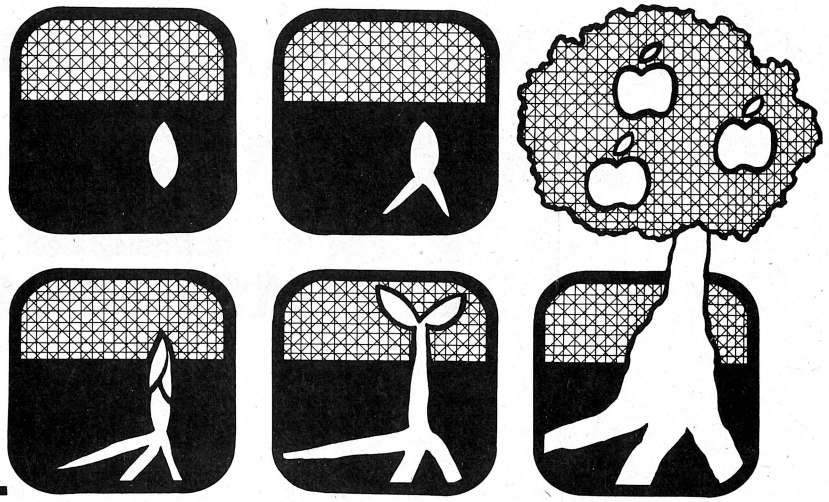


THE NON-DISCRIMINATOR

The Apple neither knows nor cares what color the fingers of its operators are, or which religious Book those fingers hold, if any. It cares not how old those fingers are, what kind of bodies those fingers may caress, nor whether the operator's chair has legs, casters. . . or wheels. It doesn't even matter whether fingers are used, or a stick held between teeth.

Which makes the Apple the ultimate non-discriminator. Well, that's obvious; it's a machine. (Strange how we have to remind ourselves of that occasionally.) Humans discriminate on grounds of personal characteristics, machines don't. No great intellectual or moral revelation here.

Apples have become the means to more effective communication for an increasing number of handicapped people, and the means to acceptance and income for a number of people who might have been discriminated against. Example: what other industry so readily accepts the work of a 15-year old as a viable commercial reality, treating it no differently than the work of a 30 or 40-year old if it's as good, which it frequently is.

Look around your user groups too, and the diverse cross-section of personalities (not to mention physical varieties!) present there. And if you are a male with a hang-up about females who are competent in professional and intellectual pursuits, stay away; some of the Apple's best friends are women—women who are using the Apple to help express themselves as **people**.

Come to think of it, we're **all** using the Apple to help express ourselves, aren't we? And we don't even think about the personal characteristics of the person who wrote a program, or designed a piece of hardware, or wrote about it. The question is, did the product of that intellect work well or didn't it? The "Beautiful People" have as much trouble learning Pascal as the rest of us, while a person that society might otherwise overlook, for stupid but human reasons, may wind up revolutionizing something.

Because success comes only from intense individual effort, everybody starts on an equal footing. Some wind up in a business activity growing out of Apple involvement. Many, if not all, of the businesses serving the microcomputer industry started as ideas, and were first worked on part-time, the classic story being two guys named Steve who hocked a VW van and started building a funny-looking printed circuit board.

One only has to look around the San Francisco Bay Area to realize that, particularly in today's economy, there is no hobby, industry or business that has a greater disregard for personal characteristics, while at the same time providing a wide range of opportunities for self-advancement and self-fulfillment.

The main point of this discourse is this: in this microcomputer field, personal characteristics don't matter. Nobody gives a reject chip about majority or minority status, physical characteristics, lifestyles, etc. The individual effort put into a program, hardware item, or accessory, can be put in by anyone.

What does matter is the effort and the result. There are, of course, no guarantees of success. The marketplace rewards those who find one or more needs and desires, and fills those needs and desires. In one sense, it's a shame that a large segment of America has forgotten that fact. But there is this benefit: that forgetfulness leaves more opportunity open for you.

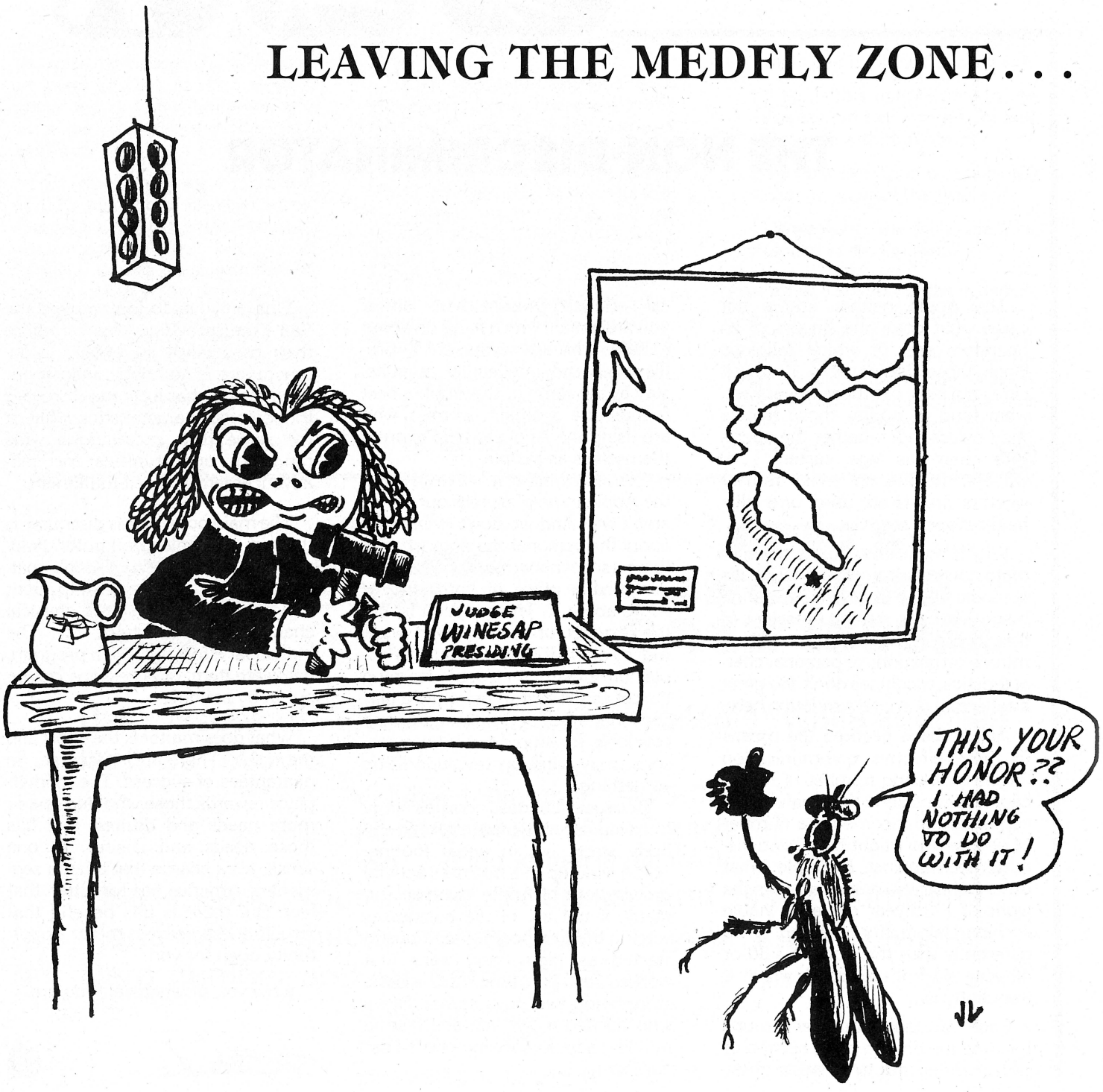
Whoever, or whatever, you are.

RCWeigl

GREETINGS FROM CALIFORNIA. . .

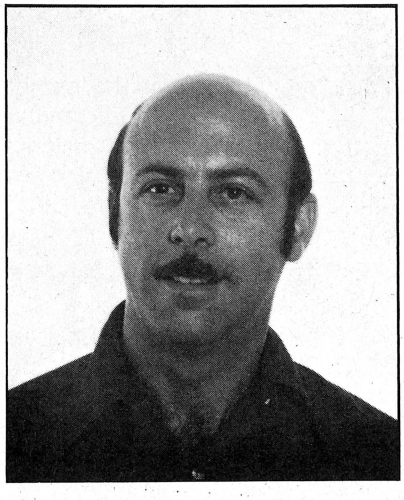
. . . AT LEAST SOME APPLES ARE

LEAVING THE MEDFLY ZONE. . .



President's Message

Ken Silverman
President, International Apple Core



Are you looking for help in the areas of programming, special uses for the Apple, hardware, or some special interest? The best place to find help—answers to these and other questions—is an Apple User Group, which is a place to share information.

The International Apple Core receives many calls asking, "Where is the closest User Group in the area of ----------?" In most cases, an existing Club is close by and the caller can join. You'll find a current listing of the IAC member Clubs in this issue of the **Apple Orchard.**

Once in a while, there are no groups close to the caller's location. When this happens, the IAC suggests that the caller start just such a group. The response is, "HOW?"

The IAC has just completed production of a manual to help in starting up a user group. The name is "INIT USER GROUP" (Initialize/Start Up/How to Do it). The manual includes basic information on formation, organization, publicity, putting together a newsletter, starting a software library (disks to do this are included with the manual), and some sample by-laws.

The manual isn't designed to cover all possibilities; your user group will be different from all other user groups. If you have been operational for a while, this manual will be of less use to you than if you were not yet started.

The IAC's **INIT USER GROUP** manual costs $50.00. If you do start a User Group, however, and join the IAC, there is a coupon in the manual which will allow your first year's dues to be reduced from $50 to $25. This makes the manual's cost $25.00. If you require more information before purchasing, please write or call the IAC.

On another subject, the IAC Board of Directors is now in the planning stages of obtaining a full-time staff and opening an IAC office. The growth of the IAC has been fantastic, and with that growth comes a great deal of work. Up to this time, that work has been done by volunteers. While volunteer efforts will remain the backbone of the IAC's activities, certain administrative and clerical tasks have reached the point where an effective response to your—the member Club's—needs requires this "system reconfiguration". The manner in which you input, vote, and obtain information will stay the same. Your Board of Directors will still be responsible to the member Clubs in their respective areas; the Board will set policies and goals for the operating staff. More information will be forthcoming on this as it develops.

BUILD A BETTER ERROR TRAP

by Peter C. Weiglin
Cider Press

So you set up a program which requires that data be INPUTed from time to time; a simple idea . . . just tell the Apple what it wants to know. That may be a number "YOUR CHOICE? (1 to 5)", or a string, like "WANT TO GO ON? (YES OR NO)", or "NAME OF STATE CAPITAL:?"

The request is placed there as part of an INPUT statement, which requires a [RETURN] after the date, or a GET statement, which does not requires a [RETURN]. The information is then processed by program statements which follow the request.

In most cases, the range of potential answers desired by the program is limited; numbers above or below a valid range (as with a menu) could cause undesirable results. Further, if the request is for a "Yes or No" response, or for the capital of North Carolina, and you input JOE BUDGE, the poor machine is likely to be confused, unless you have taken precautions.

Hence the error trap, a routine for filtering out inappropriate responses before they scramble the program's correct execution (read "CRASH"). It is not news that this process involves the use of IF statements. The idea is to anticipate every potential response, and cause the program to reject any response which does not fit the situation. The rejection may be communicated with as much tact or venom as you desire.

NUMBERS

Take the case of a menu with five choices; the program might look like this:

```
250 INPUT "YOUR CHOICE: ";A
260 IF A< 1 GOTO 250
270 IF A> 5 GOTO 250
    (etc.)
```

Despite the repeated "YOUR CHOICE" printing until a correct input, there is no real explanation of the problem. One solution is:

```
230 GOTO 250
240 PRINT "NUMBER
    BETWEEN 1 AND 5
    PLEASE, DUMMY.": PRINT
250 INPUT "YOUR CHOICE: ";A
260 IF A< 1 GOTO 240
270 IF A> 5 GOTO 240
    (etc.)
```

But, that's cumbersome. There's a 'GOTO' on every cycle even if there's no error (most of the time, we hope), and two 'IF' statements where one could do the job. Like this:

```
250 INPUT "YOUR CHOICE: ";A
260 IF A< OR A> THEN PRINT:
    PRINT "NUMBER
    BETWEEN 1 AND 5,
    PLEASE.":PRINT:GOTO
    250
    (etc.)
```

The result is a more streamlined execution. Still more streamlining could result if the ABS function is used, this way:

```
260 IF ABS(3 – A)> 2 THEN . . .
    (etc.)
```

range were from 1 to 6, then the program line would read:

```
260 IF ABS(3.5 – A)> 2
    THEN . . .
    (etc.)
```

This brings up another wrinkle. In Applesoft, a number like '4.2' could be input. This will truncate to the lower integer. But if the expected answer is an integer (which takes up less memory space than an FP number), you might as well use 'A%', the integer variable.

STRINGS

The other type of information input is a string, viz.

```
350 INPUT "YOUR NAME: ";A$
```

or

```
450 INPUT "WANT TO GO ON
    (Y OR N)";A$
```

in the 'name' case, or any other item of information, your first concern is that the length of the string not foul up your overall format. Try this:

```
360 IF LEN(A$)> 8 THEN A$ =
    LEFT$(A$,8)
```

For the Y/N or 'yes/no' condition, you want the program to branch one way or the other. The idea here would seem to be to branch on the less likely answer, and to cause a default condition to the least "damaging" outcome; e.g.:

```
460 IF A$ = "Y" GOTO 700:
    REM BRANCH
470 IF A$< > "N" THEN PRINT
    "ONE MORE TIME, FAT-
    HEAD!":GOTO 450: REM
    TRY AGAIN
```

Note that line 460 gets the "Y" off on its way. If the answer isn't "N" in line 470, something's wrong, and you need a new answer.

Now, you may say that, "this stuff is great if lots of people will use the program, but I'm the only one who'll use it, and I designed the program, so I don't need all this error trapping.

Chances are you believe in the Easter Bunny too. Your memory (human) isn't as good as you think it is. A year or more later, as you enter data, you just might make a mistake as the keyboard shifts underneath your flying fingers (at least that's what happens to me). The best solution is to protect you from youself, or anyone else entering data.

Build a better error trap . . . and valid data will beat a path to your Apple.

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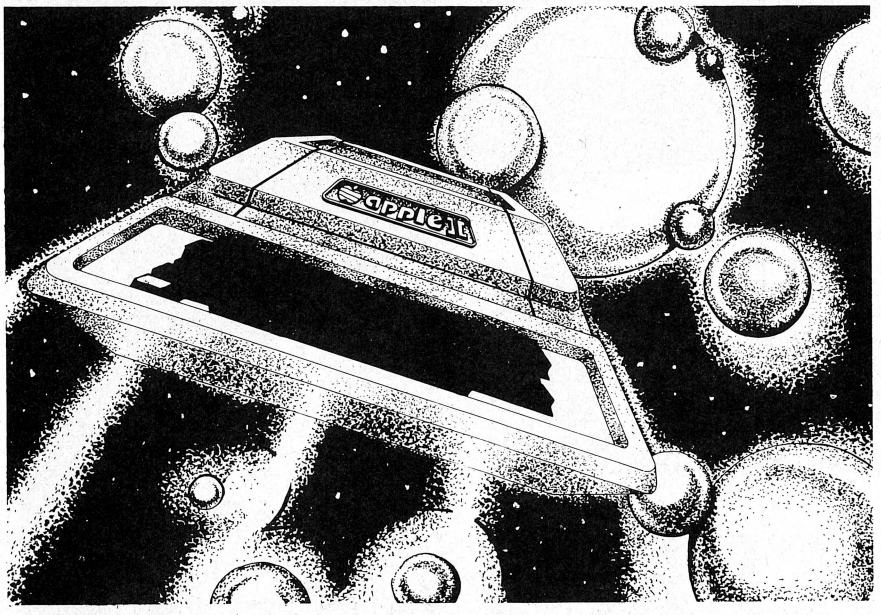

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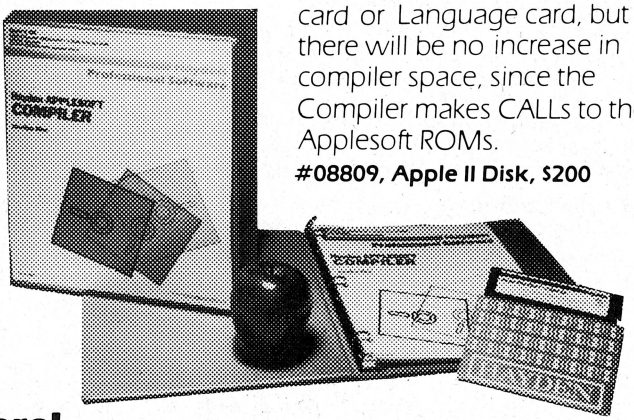

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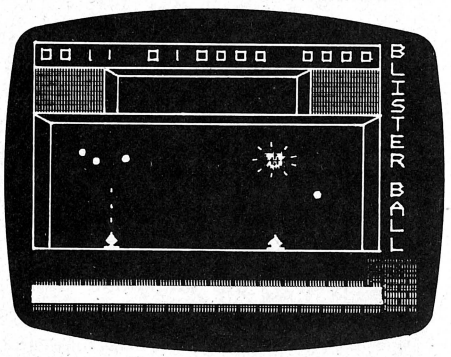
The BEST games are from Creative Computing Software

1978: Adventure
1979: Air Traffic Controller
1980: Super Invader
1981: Blister Ball and Mad Bomber

Blister Ball

Blister Ball is the first completely original arcade-type game for a computer. Not a copy, not an adaptation, not a spinoff. **Blister Ball** is new—it's a new idea—better than Invaders, better than Circus, better than Asteroids, better than Galaxian. If you've played other games for hours, you'll play **Blister Ball** for days.



How does it work? Well, some mean but fun-loving aliens have produced some bouncing bombs. First they drop one and you've got to position yourself under it and zap it with your laser. If you miss, that's OK. It will bounce around, although each bounce is lower, and you have several chances to zap it. Got the hang of it? OK, here come two bouncing bombs. You zap them. Then you're faced with three, then four and five.

As they bounce longer and longer the walls begin to close in so you're faced with either zapping the bombs or being hit. Each hit knocks you a little further toward the gutter. But you can survive two hits which is usually enough to zap all the bombs.

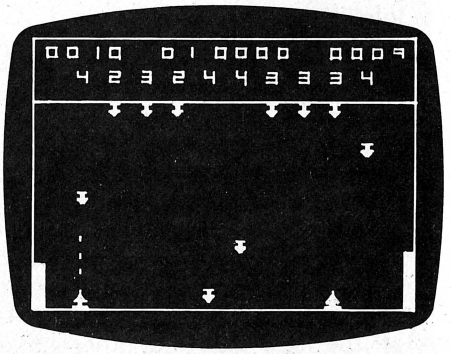
Feeling confident? Don't. Because after 5 bombs the murderous little devils drop 5 bonus bombs, worth ten times as much. These don't bounce, so you get only one shot. You need nerves of steel and the reflexes of a tail gunner.

After you complete one round,the game starts again with bombs that bounce faster and lower (and are worth more) than the previous ones.

Blister Ball is a fantastic solo game. But there are two-player options as well in which players can play as a team or as opponents. Each player can move the entire width of the screen and zap any of the bombs. Here, you're not only trying to survive, but trying to outscore your opponent. The game has two skill levels.

Mad Bomber

In **Mad Bomber** you are faced with aliens in a huge ship hovering overhead. They have bomb racks which they constantly fill with bombs. Your object is to move from side to side on the ground and zap the bombs in the bomb racks or as they fall.



As the game progresses, the aliens fill up their bomb racks more quickly and the bombs fall faster. You lose after ten bombs have hit the area which you are defending.

Mad Bomber can be played by one player solo or by two players as a team or as opponents. Two skill levels.

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Blister Ball and **Mad Bomber** are available together for $29.95 on disk (DOS 3.2) only and require a 48K Apple with paddle controls. (We recommend using the Super Paddles from Peripherals Plus).

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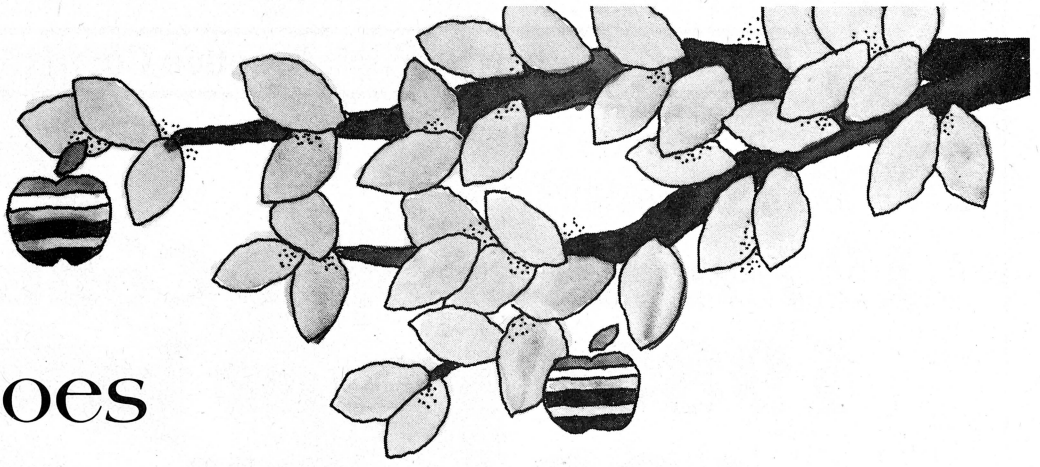

What Does an Apple Taste Like, Eve?

by Marion D. Jett

I drew the Apple pendant across my palm, thinking how it symbolized the love of friends—an early birthday gift from fellow Apple owners far away. The word "symbol" turned a switch inside my brain and I began to look at the dangling metal apple closely, seeking its meaning, its symbolism.

"Why an apple?", I asked aloud. Why not a plum or pear or berry, I wondered.

And why a **rainbow-hued** apple? Why not a red or yellow or green one? What **did** I hold in my hand? What did it mean?

I let my consciousness stream on until, after a few moments, I had reached a few conclusions. I'd like to share them with you—one woman's fanciful attempt to explain, "Why an Apple?"

I asked myself, "What was the apple's genesis?" Ah, **Genesis!** I thought, and pure fantasy overtook me.

There's a great deal of Biblical symbolism in this little apple. (Bear with me, agnostics and atheists; look at this as the literary legacy of an ancient people trying to explain their origins.* In Genesis, the first book of the Bible, is recorded the story of the famous apple in Eden's garden. That apple hung on the tree of the knowledge of good and evil and Man could not resist its temptation (Gen. 2:15-25; 3:1-24,RSV).

Eve bit and so did Adam. So, now I was left with an apple (no color recorded) with a bite out of it. It was probably Adam's apple which was left; Eve must have eaten all of hers.

The phrase, "tree of the knowledge of good and evil," kept echoing in my head. Good and evil . . . plus and minus . . . truth and non-truth . . . aha! **1** and **0**! That's the way an Apple sorts data. It fit . . . knowledge like that of the Gods . . . infallible.

But why was the apple multi-colored? What was the genesis of that? Back to the Book.

Genesis 6:5 begins the Noah story that ends after the flood with a covenant between God and Man; its sign was the **rainbow** (Gen. 9:17). Rainbows become God's memory hooks. They always reminded Him to turn off the rains before another world-wide flood began.

Great, I thought; rainbows are for remembering. Of course! ROM, RAM, disks, tapes . . . all parts of a well-known system for **remembering.**

But I still wasn't satisfied. None of my speculations had pierced the core of the symbolism I sought. I fell back to Man's most elementary method of seeking knowledge of a strange new object. I examined the apple lying in my hand with my five senses.

Quickly, the checklist: 1) Hearing— silent; 2) Sight—as described above; 3) Touch—not applicable for symbols; 4) Smell-nothing. But 5) Taste, gave me pause.

No, I didn't bite the metal necklace. I just looked again at the missing bite of the design and asked, "What did that Old Testament apple taste like when man and woman first knew it?"

Well, after eating the forbidden fruit, Adam and Eve traded eternal days of joy in Eden for the uncertain tomorrows of the world-at-large.

"THAT'S IT!" I yelled. That's what it tasted like. It was a **taste of tomorrow**!

Sighing with contentment, I hung the necklace on its hook in my jewel box. I walked downstairs, sat at the Apple keyboard and looked around the family room where it was set up. Across the room stood a television set with interactive cable. Tomorrow, not too long after today, technology will join the TV set and the Apple to the world and I'll be doing my shopping and banking in this room. I glanced at all the "peripherals" my husband had assembled to operate our security system, the kitchen appliances, and all of the toys and gadgets we own. What marvels lay within our reach! Already our finance and correspondence were stored on disks. Maybe tomorrow would bring a robot to clean the house. After all, our Apple II Plus was but an **hors d'oeuvre** of the banquet ahead.

As I turned back to the Apple, the bright logos on the keyboard and disk drives stood out boldly against their neutral backgrounds, symbols of the machines waiting to serve me. Yes, now I know what I'll think each time I see those symbols. The Apple has given us, its users, a look at what is coming. It has given us a taste of tomorrow!

©1981 by Marion D. Jett.

Marion D. ("Rusty") Jett and her doctor husband Roy succumbed to temptation and purchased an Apple II Plus in late 1980. Mrs. Jett is a "housewife" who writes, who is business manager of a medical practice, who enjoys travelling with her husband (they're both licensed pilots), and who is active in politics and government service. Until recently, she was President of the Transit Authority serving the Cincinnati, Ohio area. Roy and Rusty have also become active in the Cincinnati Apple-Siders.

*The author understands that none of the preceding ideas may have been in the thoughts of those who chose a bitten, rainbow-colored apple for the Apple Computer logotype. She also understands the difference between exegesis and proof-texting when seeking inspiration or confirmation from the Bible. She trusts God forgives her her whimsical ways and begs all readers to to likewise.

THE APPLE NOBODY KNOWS

by Alan Anderson

The story of the Apple /// is a fascinating one. Although this computer has only been public knowledge for about a year, its existence has had a profound effect on Apple Computer, Inc. and those of us who use their products. If you own or use an Apple II, you know about the Apple ///. You may have seen it lurking in a corner of your local computer store, with full color horses parading across the screen; you may have read about it in various magazines that have detailed its problems; but you probably have not discovered the real inner workings of this system. If you are a business user, you may be surprised to hear of some of its potential applications; if you a computer hobbyist, you will be interested in the amazing power hidden inside that curved chassis. Now let's explore together the past, present, and future of the still-mysterious Apple ///.

What Happened

The fact that an Apple /// would someday appear was never a secret. For at least a year before the Apple /// was introduced at the National Computer Conference in May 1980, the rumors flew fast and hard. But when Apple introduced the new system, the predictors were caught off guard. **Apple Magazine** proclaimed "A New Star is Born", but there were mutterings of "birth defects"; many were not impressed. Sure, it was pretty, but where was the hard-disk drive? No built-in color monitor? No Pascal in ROM? No 68000 microprocessor?

Of course, the Apple /// was missing these and other things that some folks had decided were essential. If the new computer had had a normal chance to show itself off, these design decisions would have been adequately explained at your local dealer. But a "normal" introduction period for the /// was hardly what occurred.

Of Clocks and Sockets

At NCC, Apple said that the first shipments of Apple ///'s would be dealer demos, one per store, and that they would start shipping in June. That schedule was quite optimistic, and it soon began slipping by several weeks. Then, it got worse: Apple began shipping demos, but they rarely worked. Apple's reputation for quality, won with thousands of trouble-free II's, began to deteriorate as the Apple /// saga unfolded.

Example: Apple discovered that their chip sockets were doing a lousy job of holding the integrated circuits in place, and that the slightest vibration in your friendly freight truck was enough to unseat the chips, placing the /// out of commission. This was a rude surprise for the unsuspecting Apple dealers. Ruder surprises awaited those who bought the first working computers; they frequently went dead after being installed in home or office, adding to the hassle. One solution was to allow the /// to fall vertically for 6-9 inches to a surface capable of providing a sudden stop, jarring the chips into place. The apparent brutality of this celebrated "drop fix" for sophisticated equipment gave rise to the suggestion that the "drop fix" might well be applied to a few engineers and marketeers.

So, new sockets were used, with a tighter grip, but Apple ///'s were still failing. Eventually, Apple discovered that the new sockets were tighter all right, but were jamming the chip pins back around, missing the socket. Again, they fixed the problem. Still, there were other hardware problems. The built-in disk drive sometimes didn't work if a plastic-enclosed monitor was placed on top of the unit. There were rumors of a nasty solder bridge on the motherboard, and of inadequate heat dissipation. Finally, after much work, Apple declared its reliability problems solved.

It should be noted that until June 1981, Apple's repair policy on ///'s was a model of simplicity: you send yours back and they send you a new one, fast. Having been through this procedure, I must say that even the most skeptical user comes out with his feelings soothed. Apple didn't even wait until the sick one got there before shipping the new one. More recently, Apple has started selling Apple /// service kits to its Level I service centers.

Then, there's the clock. When Apple announced the ///, one of its proudest features was a built-in clock/calendar chip that linked it to the operating system and stamped time and date on all your files. Well, bizarre things started occurring with the clock. The month began showing us as "???", and the hour would climb whimsically into the 30's and 40's before realizing that a new day was dawning. Since any boot diskette automatically displayed time and date, this particular black eye got great exposure.

Eventually, Apple announced that it was unable to find a reliable large-volume source for the clock chips, and stopped putting them in. The retail price was lowered $50, and Apple /// owners were offered a $50 rebate. Someday, when good chips can be obtained, the clock will go back. Someday . . .

But What Will it Do?

The Apple ///'s hardships have not been limited to hardware. The Sophisticated Operating System

(SOS) had some problems, quickly resolved, but became known as a memory-eater. Business BASIC still contains bugs, but the /// does a good job of emulating a single-language Apple II. There was virtually no software, except for the 80-column VisiCalc ///; people were hearing things like, "I spent $4000+, and got VisiCalc and a paperweight!"

Schedules and release dates slipped further and further from initial estimates. Pascal was scheduled for August 1981 release. . . see if it's out with this issue of the Apple Orchard. Other languages and software, like COBOL and Fortran, have also been subject to delays. The biggest blot in the software area has been Word Painter, Apple's high-quality word processor. This product is now more than a year behind schedule and is forecast to appear late this year. These delays, it seems, will have been worth it; the products are undergoing extensive testing, and will be of higher quality than if Apple had rushed them to judgment in the rumor-ridden marketplace.

The Past is Behind Us

At last, it look like Apple /// the Product is coming together. Local service is becoming available, as is the Extended Warranty. Reliability is up, says Apple, to a level comparable with the Apple II. And there are fewer gripes, growls, and whines coming from Apple /// owners within my earshot. (Not "none", just "fewer".)

So what's holding it back now? Two things. The first is the acute shortage of software. There are virtually no application programs available, and programming tools are likewise non-existent. There is as yet no assembler which provides the proper interfaces with the Apple /// operating system. The appearance of abundant software would greatly help the Apple ///.

But that's one of the things being retarded by the second problem, which is the image of the Apple /// as a stiff! Until dealers and consumers see the system running reliably, it will not be accepted as the Apple II has been. The tragedy is that public perception lags behind the actual improvements by three to six months; programmers who could solve the software shortage are reluctant to invest time in a machine which they hear has problems. Only time can cure this one, depending on the rate of improvement of the Apple ///'s public image.

The Goodies

Now that I've spent your time telling you about the checkered history of the Apple ///, why should you be interested in hearing more about the thing? Because the Apple /// is a uniquely well-designed personal computer system, remarkably powerful, and it has been plagued by stupid things like bent pins, solder bridges, corporate PR games ("what clock?") and negative attitudes. The Apple /// itself deserves a closer look.

The most obvious factor in the Apple ///'s design is the legacy of the Apple II. The /// reflects many of the things that were done right on the II, such as expansion capabilities; and corrects some of the hassles of the II, such as combining all languages under one operating system. With the Apple II as a sound base, the Apple ///'s design begins to take form. The standard memory configuration is 128K RAM. The microprocessor starts out as a 6502 A, a faster version of the Apple II's brain, and then has its capabilities enlarged by some additional circuitry. The built-in disk drive is basically the same as the ones we get for Apple IIs, with the same 140K bytes of data per diskette. Up to three more drives can be plugged into the back with no additional controller needed.

The Apple ///'s keyboard is a more complete version of the II's. All 128 ASCII characters are typeable, including full upper/lower case and alpha lock key. **All** keys have auto-repeat just by holding them down. A numeric keypad sits adjacent to the main keyboard. There are arrow keys for all four main points to the compass, and each of these keys has auto-repeat with **two** speeds, depending on how hard the key is pressed.

The Apple /// provides three different forms of text screen output, starting with the 40-character wide by 24-line high screen we see on the standard Apple II (40×24). The second mode is 80 characters wide by 24 lines high (80×24). The third mode is 40×24, but with the capability to make each letter, and each letter's background, any of 16 colors! But the real topper is that for all three text modes, the character set is defined in Random Access Memory (RAM), not frozen in Read-only Memory (ROM). This means that you can redefine the way characters look; so you can print different fonts, Japanese characters, even characters that look like horses. (Uh huh. . . that 16-color horse demo you see isn't graphics at all; it's text mode, with the characters redefined.) Those of you who have seen the Hi-Res Character Generator in Apple's DOS Tool Kit are familiar

with the technique of redefining the character set. However, there's a big difference: on the II, this has to be done in graphics mode, and it's slow. On the ///, it's done in text mode, so it's just as fast to print horses, frogs, and Greek as it is to print the English alphabet.

One of the Apple ///'s more interesting concepts is its lack of ROM; the only ROM code in the machine is a 4K byte program which simply runs a quick test on the unit's hardware and then boots the disk. Once that disk is done, this ROM is replaced in memory by RAM—no space wasted.

If you're familiar with the Apple II's insides, you know that the memory from $C000 to $CFFF is used for input/output by built-in and peripheral devices. Well, in the Apple ///, that's how it's used too... sometimes. There's another neat little trick in the /// that causes this area to be RAM too. Those of you in the audience who are quick-witted will notice that, with the switches set properly, the ///'s memory looks an awful lot like an Apple II; at other times, the whole memory space becomes RAM. (See Figure 1).

Why have all this RAM? It makes the Apple /// very "open-minded". With no language in ROM, the /// doesn't lock itself to the present selection of languages. If the Apple II had been made with all RAM, we wouldn't need a Language Card to run Pascal. Of course, we would have had to load BASIC by cassette, since the disk drives didn't exist when the II first appeared. But with the ///, everybody has a disk drive, so loading the language—any language—is fast and easy. By the way, not only does the /// load the language from disk, but also all the operating software, the character set, even the keyboard layout which designates how the keys correspond to the character set.

Speak to Me

The Apple /// has interfacing capabilities too. Even the standard I/O is kinda fancy. For example, there are three different video signals available: NTSC (standard) black and white; NTSC color, and RGB (studio quality) color. The black-and-white plug causes the colors to appear as sixteen shades of gray. There are also three different audio generators. One makes a beep, another makes various one-bit sounds (just like the Apple II), and the third is a 6-bit digital-to-analog converter that gives greater resolution to sounds.

The Apple /// has a serial interface built in, suitable for hooking up printers and modems. There is also a built-in interface for Apple's Silentype printer. The Silentype connector and one other port are also joystick hookups, and it's quite simple to modify many of the existing joysticks for use with the ///.

Inside the Apple are four 50-pin slots very much like the ones in the Apple II. In fact, the FCC may not like it, but you can plug in many Apple II peripheral cards and they will work fine.

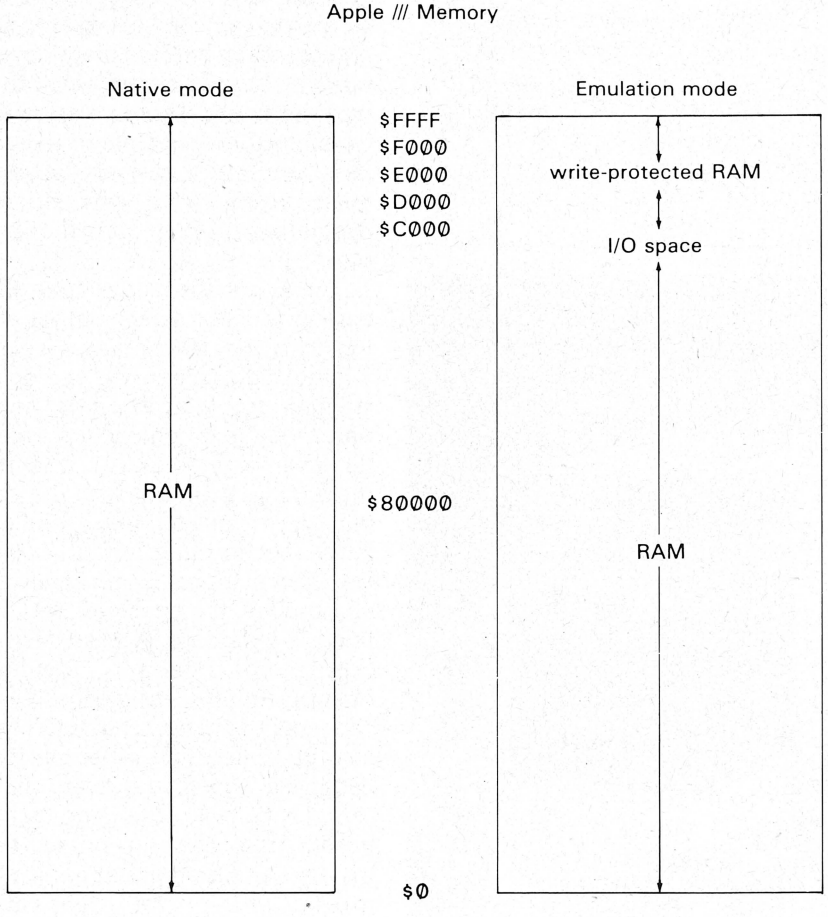

Figure 1

And Now, the Rest of the Story

This part is for the hobbyist, the experimenters, and the curious hackers among you. If you've had your Apple II long enough to remember the discovery of (POKE 33,33) in editing, the advent of the S. H. Lam Monitor routine, or the first CHR$ function for Integer BASIC, then you know what the early days were like. Well friends, come join me as we explore the secrets of the Apple ///. Most of these things are not yet documented, but already they are starting to become known. One day, Apple Computer Inc. will document them, and then we'll all know these things work to a very high degree. Until then, we present for your interest, Untold Stores of the Apple ///!

1. The Monitor Lurks Within

Inside that 4K diagnostic/boot ROM mentioned earlier is the first real development tool available for the ///: the Monitor. The Monitor is based on the Apple II Monitor. Several commands are the same as the II; specifically: the ones for dumping, moving, and verifying memory, and the G command are the same. The existence of this Monitor, though undocumented publicly, is now fairly well known. **(But, people at Apple have said that the Monitor may not be included in Apple ///s after some point.—PCW)**

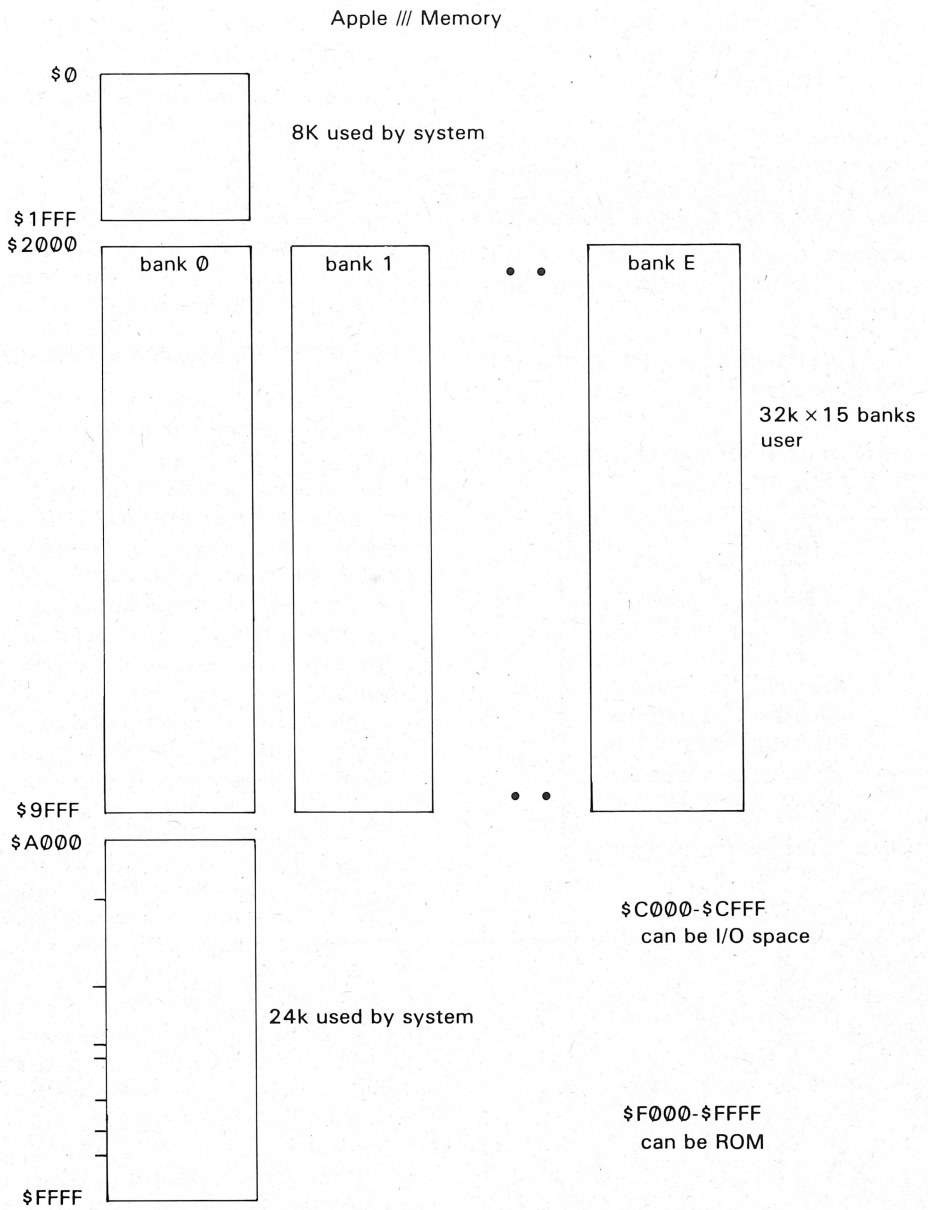

Figure 2

Here are the other commands:

A. (byte)<(addrs) . S
—searches the range of addresses (addrs) for the given byte.
Example: B5<3000.3FFFS

B. (blocknum)<(addrs) R
(blocknum)<(addrs) . (addrs) R
—reads the disk from the given block number into the given addresses. Blocks are 512 ($200) byte chunks, as with Pascal. One diskette contains 280 ($118) blocks. If you use the second form, enough consecutive blocks to fill the address space given will be read.
Examples: 4A<1000R (reads $4A into $1000-$11FF) 107<2500.28FFR (reads blocks $107-108 into $2500-28FF)

C. (blocknum)<(addrs) W
(blocknum)<(addrs) . (addrs) W
—writes to the disk. Analogous to the READ command above.

D. (addrs) J
—performs a jump (JMP) to the address given.

The Monitor comes up in 40-character mode. To switch to 80-column mode, press (ESC)-8. Pressing (ESC)-4 puts you back in 40-mode. To put more than one command on a line, put a slash between each pair. To stop and start video output, press the space bar. Press (TAB) to abort a listing. To enter the Monitor, press and hold (CTRL) and (OPEN APPLE) down; press and release (RESET). Keep holding the others until the Apple beeps. Have fun!

2. Banks for the Memories

One of the most oft-asked questions about the Apple /// is, of course, "How does the 6502 address all that memory?" There are lots of cute answers to that one: "Very carefully...", "With mirrors...", "Slowly...", and others. Actually, the masses of memory in the /// are handled through the time honored tradition of bank switching. Figure 2 gives you an idea of how it works.

First, you'll note that the 32K chunk from $2000 to $9FFF is replicated a number of times. This is called the User Area, and in the 512K Apple /// (theoretical for now) there are 15 of these, numbered from $0 to $E. Each of these 32K areas is called a bank. The one currently being addressed is determined by a memory-mapped register called the bank register (pretty tricky, eh?). This register is located at $FFEF, and you can change it in the Monitor. Normally, SOS handles all the necessary switches between banks from high-level languages. Oh... the present 128K Apple /// contains three User Areas, numbered $0 to $2. Some owners have added a fourth area ($3)...they hope...by upgrading memory to 160K.

In addition to this switching of RAM areas, the /// has two other bank switches. One controls the area from $C000 to $CFFF, selecting whether this space is RAM or I/O ROM. The other controls $F000 through $FFFF, which can be ROM or RAM, as mentioned earlier. These switches are kept in the environment register, described next (read on!).

3. Environmental Impact

Some of the Apple ///'s magic tricks are controlled by another memory-mapped register, the environment register. This register is mapped in at $FFDF and is shown in Figure 3.

Explanation:

Bit 7: When in the Emulator mode, this switch is set for 1 MHz to emulate the Apple II's clock.

Bit 6: This switch chooses what goes in $C000-$CFFF (see bank discussion above.)

Bit 5: This switch allows the video generator to go off, thus speeding up processing.

Bit 4: Turns off (RESET).

Bit 3: Used to write-protect $C000-$CFFF in emulation mode.

Bit 2: Maps the 6502 stack to a different location or normal ($100-$1FF) location.

Bit 1: Selects between two ROMs which may be mapped into the $F000-$FFFF space.

Bit 0: This switch chooses whether RAM or ROM goes into $F000-$FFFF.

Of course, this register may also be manipulated in the Monitor. Warning: it's easy to lose control and be forced to power off-and-on. However, you can't hurt the hardware, so your investment is protected.

In future articles, we'll cover some of these items:

—How to write Invokable Modules for Fun and Profit;

—How to communicate with the omnipresent SOS;

—Low-level secrets of the Mysterious Keyboard;

—and even more!

Stay tuned to the **Apple Orchard** for future developments, and perhaps the Apple /// will no longer be "the Apple Nobody Knows".

BIT	USE	if off	if on
7	Microprocessor speed	2 MHz	1 MHz
6	$C000-$CFFF switch	RAM	I/O ROM
5	Video Output	off	on
4	RESET key	disabled	enabled
3	Write-lock $C000-$CFFF	unprotected	protected
2	Stack	alternate	$100-$1FF
1	$F000-$FFFF	chip A	chip B
0	$F000-$FFFF switch	RAM	ROM

Figure 3

Alan Anderson is a writer and computer programmer who has a number of products and product improvements to his credit. His articles have appeared in virtually every popular journal of the Apple /// world, admittedly a limited circulation so far. He is also an advocate of chemical spraying to prevent software bugs.

Mr. Anderson purchased an Apple /// during the Dark Days, and has stayed with it through thin and thin. We hope to chronicle his and everyone's progress toward the brave new Apple /// world.

1st issue out late Sept., 1981

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THE HERO, THE SWORD, AND THE APPLE

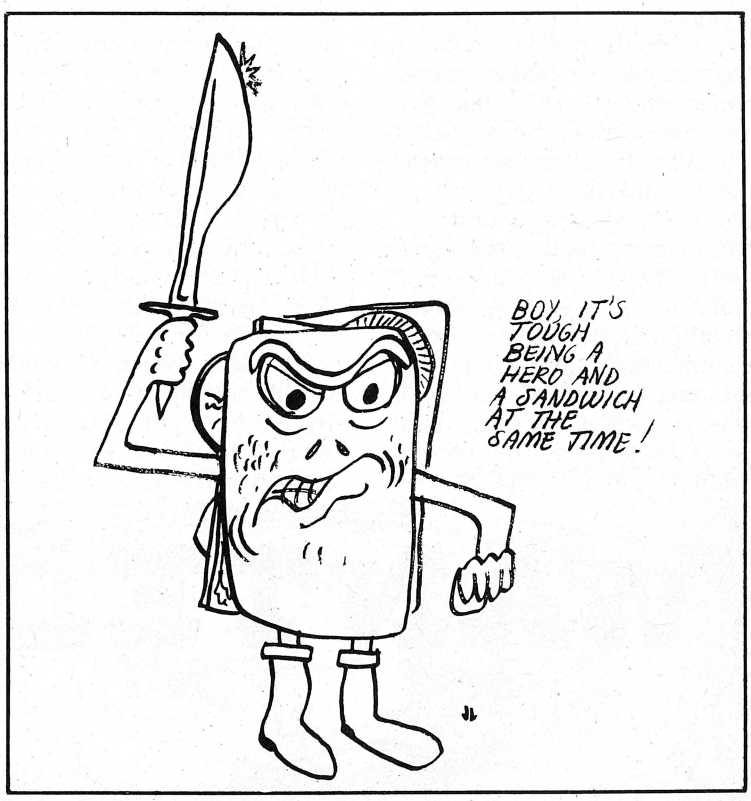
by Donald Brown

A new type of game has swept the world's computers. No longer are gamers sweeping away foolish Klingons (or Klarnons or Klopklops). No more little bricks are being knocked out. No invaders are being wiped out with beeps and buzzes. Instead, the gamers are wandering through underground tunnels and old houses, trying to defeat the puzzles and monsters that abound.

These new games are called "role-playing" games, although that isn't quite accurate because almost all computer games put you in a different role. (You don't **really** clear asteroid fields for a living, do you?) The difference is that these games have you directing the action of an individual, not the ship or whatever vehicle around him/her. These games are the foster child (I might use another parental description, but not in a family magazine!) of a non-computerized game called "Dungeons and Dragons".

So this article will try to shed some light on these games—how they came to be, what's there now, and what they might become. I'll be mentioning a new game called SwordThrust, which in my unbiased opinion is the absolute best Computerized Fantasy Role Playing (CFRP) game available today. **(Mr. Brown's opinion of SwordThrust is understandable, inasmuch as he wrote it.—Ed.)**

The slew of CFRP games can trace their inspiration back to the first fantasy role playing game of Dungeons and Dragons by Dave Arneson and Gary Gygax. Although many other FRP games (non-computerized) have come along, D&D is still the prototype for fantasy role-playing.



In D&D and the like, roughly six people get together to play the game. All but one of the people assume the roles of characters that exist in a weird, magical world. Numbers are randomly generated to define how strong, agile, intelligent, and attractive these characters are. The players also buy armor, weaponry, and other supplies for their characters to use.

The remaining player is called the Dungeon Master, and he represents the rest of the universe. Before the other people come, the Dungeon Master designs a tunnel complex (or a building, or whatever) that the characters will be exploring. Then, when everybody gets together, the Dungeon Master runs the game by telling the other players what their characters see, and interpreting the results of the characters' actions.

For example, the Dungeon Master might tell the party that they are in a long corridor with a door at the north end. One of the players says that his character, Sidney the elf, tries to open the door. Chuckling evilly, the Dungeon Master tells the group that the door was booby-trapped; when it was opened, a trap-door opened in the floor, and the entire party fell in. They now find themselves facing a dragon, one flight down.

Eventually, the characters will have killed all of the monsters, and will have taken the treasure from the place (or, will have been so badly scared that they leave, vowing never to return). These characters then re-

turn to a town where they can purchase new and better gear to be used in the next set of crises to be devised by the Dungeon Master.

No two ways about it, after a hard day's work at the office there's nothing that beats relaxing by slaughtering an orc patrol. Unfortunately, not only do you need a fairly large number of people around to play the game, but you also need a person with a creative mind and a capacity for work (read "sucker") to act as Dungeon Master. Not only does Dungeon Mastering require a lot of work, but a poorly run game is worse than watching "My Mother the Car" reruns on the boob tube. Since the major problem in fantasy games is the quality of the Dungeon Master, there must be a better way. . . and for one or two people too, not only a larger group. Hmmm. . . maybe a computer. . .

Enter Woods and Crowthers, from MIT. They developed the first game of Adventure. In it, you talked to the computer, giving one- or two-word commands as it led you through the Colossal Caves. Your goal was to pick up as much treasure as possible by getting around inanimate blockades. (Some of these blockades were disguised as monsters, but they merely sat there, blocking your way. Speaking of which, how do you get past the green snake?)

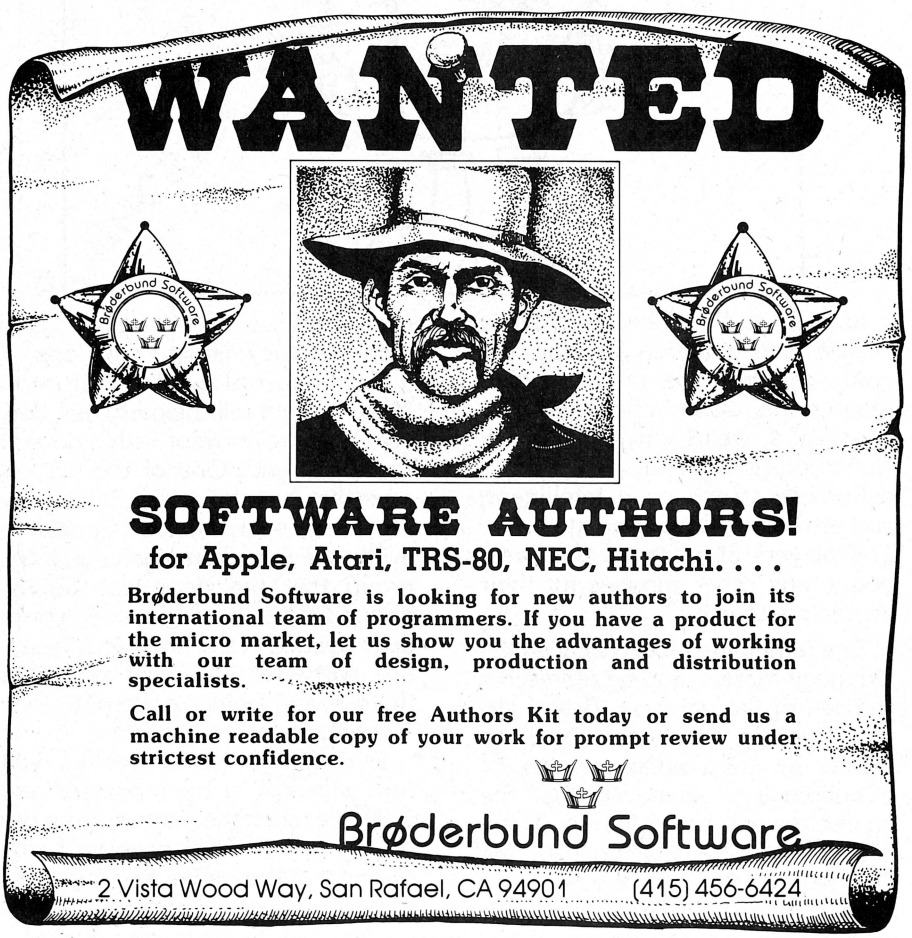
Many other Adventure games have been written. Although most games use the same format as the original Adventure, some games have added graphics, trying to represent what you see on the screen. This isn't necessarily a step forward, as the computer display images are far less detailed than what the mind might conjure up unaided. Put another way, nobody can scare you as thoroughly as you can. However, the pictures on many adventures—particularly the superlative "Wizard and the Princess" by On-Line Systems—are quite good. Automated Simulations has tried to satisfy both sides by drawing a picture on the computer's screen, and also having descriptions in a booklet to which you can refer. Trying to look up these descriptions can be distracting, but they're there.

Probably the consistently highest quality adventures have been written by Scott Adams, but many other authors have entered the act. A few I'd personally recommend are "The Wizard and the Princess" by On-Line Systems, "Lords of Karma" by Avalon Hill, and "The Prisoner" by Edu-Ware (be prepared for hours of utter frustration with this one).

What's wrong with today's crop of games? Well, starting with a minor gripe, I have grown very tired of "Guess the Word I Want". This is a sub-game which the computer plays with you; you know what you want to do, but what syntax will enable the machine to understand? The very worst case I found was in one game. I was standing in front of an open door to the north of me. I want to go through the door. I try "NORTH", "ENTER", "ENTER DOOR", "ENTER BUILDING", all with no luck. Believe it or not, it wants and will accept **only** "GO DOOR", which may come naturally to the Incredible Hulk, but not to us semi-normal types. The problem is confounded by the fact that there is (usually) no way to get a list of acceptable commands. Even a list of the acceptable action verbs would be a great help.

This is part of the overall problem that any computer program is not going to be as intelligent as a human running the dungeon would be. A far more serious result is that the computer program will permit the player to be no more creative than the programmer was. Example: a locked door in the dungeon. Elsewhere, a chopped-down tree. Aha. We'll get the tree and use it as a battering ram to knock down the door. But if the programmer didn't tell the computer what to do when a player tries this, the computer can only give a small "I DON'T UNDERSTAND" or "NOTHING HAPPENS" (which is patently ridiculous). Unfortunately, this problem is not likely to be solved; a good human Dungeon Master will outperform the machine. **(Whew!!—Ed.)**

Another major area in which most adventure games fall short in comparison to fantasy role-playing games is in combat. Most Adventure games simply do not have satisfying combat rules. Combat is either predetermined (if you attack the first beastie you kill it, if you attack the second beastie it kills you, etc.); or governed by one random number regardless of conditions (you will kill the dwarf 50 percent of the time, the dwarf will kill you 25 percent of the time, etc.). The non-computerized games have a much richer combat system, with your chance of hitting



(and how much damage you do) based on a variety of factors such as your dexterity, the weapon you use, and your experience.

For the dedicated game-player, the greatest shortcoming of the computer games has been the survival and growth of characters after each episode. The non-computerized D&D process involves such growth in wealth and skills for the characters. The party leaving a dungeon has new knowledge that will help them in the future, they have gold to buy more supplies, and possibly a powerful new weapon or two. In many computer games, once your character has killed the vile beastie, has stripped the rooms of all their treasure, or has escaped from the island alive, that's it. You could play another game, or even play that game again (if there is enough randomness to make it interesting), but all that effort you put into the dungeon and all of the wealth you took out is irrelevant.

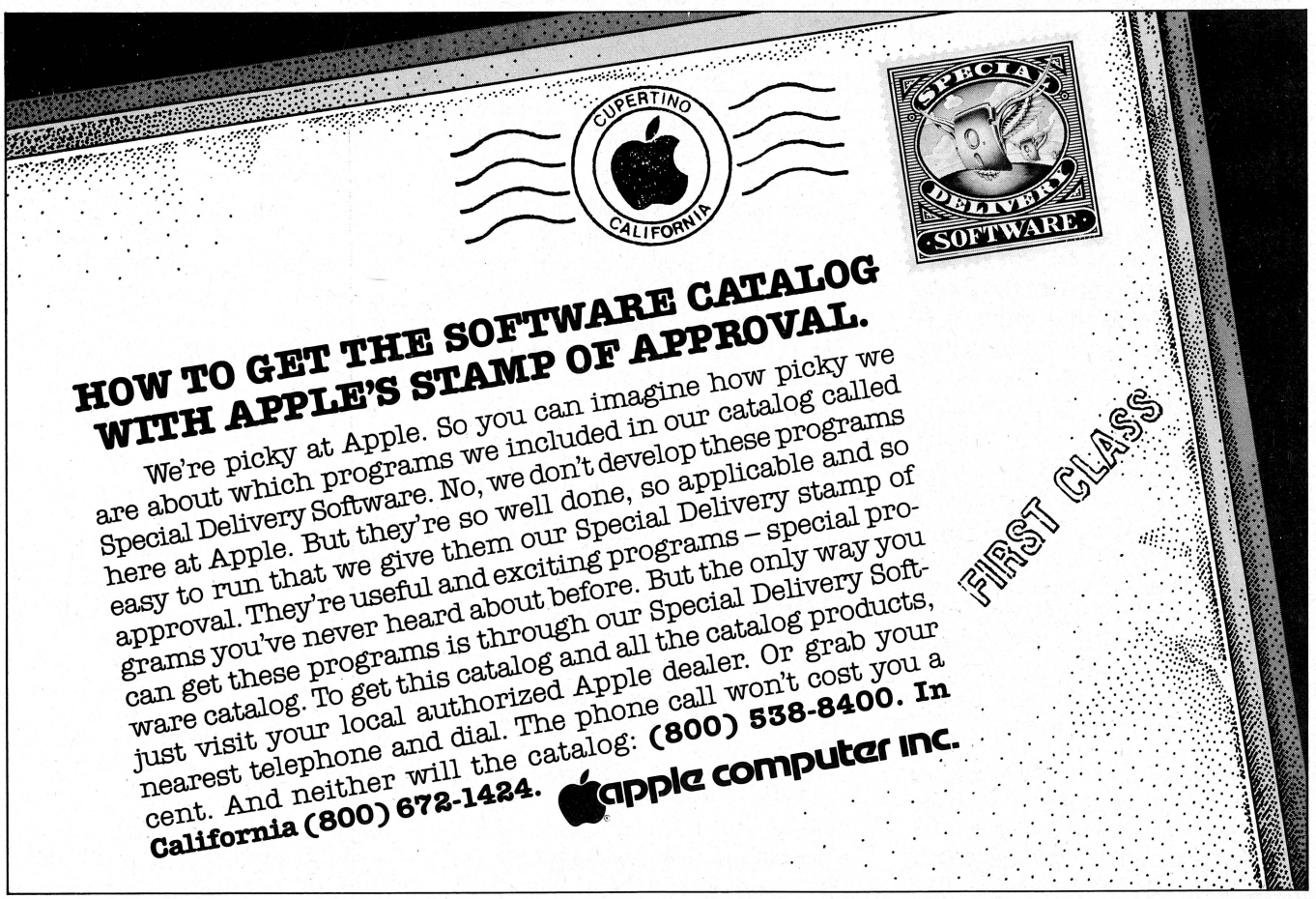
This concept of character growth was important to me in writing SwordThrust. The first or master diskette has programs that control the creation and equipping of your new characters, and there is a cavern provided as a scene for their exploration and looting activity. Further adventures are and will be on separate diskettes, but the characters' personal histories and accumulations will be stored. I have also tried to make the combat situations more realistic. The type of weapon you choose has a great effect on how effective you'll be with it; and the longer you use a weapon, the better you'll become with it.

The "richness" of a game is proportional to the amount of detail and the number of alternative courses and effects. These in turn are limited by the computer's available memory and the disk's capacity for storing data. HiRes displays in particular are large memory consumers. The two-disk system is one solution to the problem of memory capacity. And with hard disk storage using the contents of many diskettes on line . . . oh boy!

What's to come in CFRP games? In a word, more. In addition to new, exciting, and even more clever text adventures, HiRes graphics adventures are possible. Even animation. Competitive games between two players are in the planning stage. This could even be two or more players with separate computers, connected by 'phone line and Modem. How about games using speech synthesizers and speech recognizers? Games using bio-feedback units? As with magic, with computers, all things are possible.

But lo! Hear the muttering of monsters from your RAM chips! See the shine of gold glowing from your keyboard! Smell the mildewed walls rising from your disk drive! The dungeons are waiting. Put aside your word processor, your CalcCalc program, your checkbook . . . and come!

Donald Brown is a recent graduate of Drake University. He became involved in microcomputing when his father bought an Apple II with a serial number of 124. Many popular programs by him can be found in various computer clubs' program libraries, including AUTOMATIC MENU, STAR WARS ADVENTURE, FIZZBIN, and THE WONDERFUL WORLD OF EAMON. He is currently working for CE Software, a new software firm from Des Moines, IA.



APPLE II DISK SOFT SECTORING

by Gary Morris

DISKETTE NIBBLIZING

Data stored on a diskette is encoded into nibbles. There are 128 possible nibbles (because bit 7 must always be a 1), however some are reserved for markers and sync. When encoding data, the 256-8 bit bytes are split up into 342-6 bit nibbles.

When writing nibbles it takes 32 microseconds to shift out the 8 bits, plus one extra shift produces the trailing zero.

A nibble is read from the shift register by waiting until the byte in the shift register is negative (bit 7 is 1). This signals that the nibble is fully shifted in. The shift register is zeroed before the shift is started, and all nibbles have a 1 in bit 7 so it is easy to tell when the shift is complete. A bit is shifted in every 4 microseconds, it takes 32 microseconds to fill the shift register plus an extra 4 for the 0 after the nibble, for a total time of 36 microseconds.

SELF SYNC

The self sync feature allows the software to search the data coming from the disk entering at any point. The program looks until it finds the sync field. Then it locks on and steps into the true data and address information. The bit pattern is then read in the proper sequence. Zeroes act as frame for 8 bit sync byte. See the diagram at the end of this article.

The following dump is of actual nibbles that were stored on a diskette. It is from a 16 sector disk. The actual data contents of the sector was 256 bytes of 0's.

```
*
*1328.14AF

1328-  FF FF FF FF FF FF FF FF
1330-  FF FF FF D5 AA 96 AA AB
1338-  AB BA AA AB AB BA DE AA
1340-  E9 83 FE FF FC FF FF FF
1348-  FF D5 AA AD 96 96 96 96
1350-  96 96 96 96 96 96 96 96
1358-  96 96 96 96 96 96 96 96
1360-  96 96 96 96 96 96 96 96
1368-  96 96 96 96 96 96 96 96
1370-  96 96 96 96 96 96 96 96
1378-  96 96 96 96 96 96 96 96
1380-  96 96 96 96 96 96 96 96
1488-  96 96 96 96 96 96 96 96
1490-  96 96 96 96 96 96 96 96
1498-  96 96 96 96 96 96 96 96
14A0-  96 96 96 DE AA EB EE FF
14A8-  FF FF FF FF FF FF FF FF
```

SOFT SECTOR FORMAT

SYNC	all $FF's
ADDRESS MARKERS	$D5,$AA,$96
ADDRESS FIELD	4 pairs of nibbles, vol, track, sector, checksum
TRAIL MARK	$DE,$AA,$EB
	inter-record gap, contains sync nibbles.
SYNC	all $FF's
DATA MARK	$D5,$AA,$AD
DATA FIELD	actual data nibbles
342 NIBBLES 256 BYTES	
CHECKSUM	checksum of data, EOR of all data nibbles
TRAIL MARK	$DE,$AA,$EB
	inter-record gap leading to next sector

SELF-SYNC DIAGRAM

bit stream—> 011111111011

FB

Λ

Note: (1)

111111011111111011111111

FD FE , FF

(2)

011111111011111111011111111 0

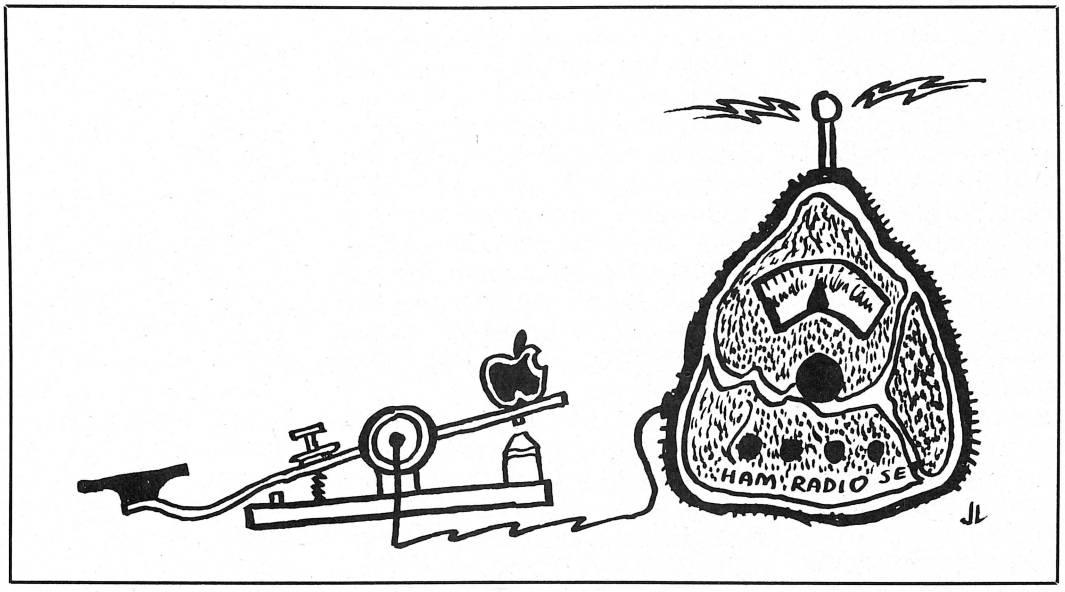
FF FF FF

(1) Co-incidental entry point with state-machine reading data.

(2) Found sync, 8 bit bytes all ones tells software that data is properly framed to sync into data field.

HAM 'N APPLES

by Jim Hassler
WB7TRQ



Our Apple computers are like common aspirins; every day, a new use for them is found. Take for example, my "other" hobby, Amateur Radio. Another term for amateur radio is "Ham" radio, and the Apple and ham radio go together like ham and eggs.

How would you like to have a friend in Europe who has a great program he has just finished and in five minutes have it; even though you live several thousand miles away? It's now possible.

Or, say you are having a problem writing a program and it has you stumped. You mention it to a friend in Asia and right away he gives you an answer for your problem.

You're probably thinking that you're not the type of person to become an amateur radio operator. Let me mention the names of a couple of people who have been hams: Steve Wozniak (who also flies an airplane). Ken Silverman, your International Apple Core President. And quite a few other Apple owners, as you'll see shortly. Can you still say you're not the type?

Some of you just don't have the time required to study for the test; more on this later. But that shouldn't stop you from enjoying part of ham radio, because no license is required to **listen.** (Now, tell me what your excuse is. . .)

When a group of hams get together, it's not called a "club", it's called a "net". There are currently four Apple computer nets on ham radio. One meets EVERY Sunday night, two meet EVERY Saturday morning, and the fourth meets on Wednesday night. A great many people just listen; the mail I get indicates that we have a lot more receivers than transmitters out there.

Let's look at what goes on during a typical Sunday night "AppleNet". The net starts at 0100 GMT. That's 6 PM in the Pacific time zone, 7 PM here in Wyoming (Mountain time), and 9 PM in The Eastern time zone. Remember, this is EVERY Sunday. You'll find the Net at 14.329 MHz. I'm "Net Control", another word for President. My amateur call sign is WB7TRQ. **(TRQ?? Lucky that Jim wasn't two applications lower in the stack, or we'd really have confusion.—PCW.)**

The net starts with my giving out all the information I have scrounged during the past week. It may be the latest on graphics for the MX80 printer, the latest on new stuff from Apple and others, a report on a new program that I have just received and like or dislike. This is one of the purposes of the Net; to evaluate new software and hardware, and possibly to help you make a better-informed decision on whether an item is what you're looking for. We then go to

AF6W and WA6SZC, Alex and Micky in California, to see what they have gleaned in the past week concerning the Apple and anything related to it. And so it goes. . . news and more news about our favorite computer.

We then ask if anyone has an Apple in need of repair and, if so, would they please tell us what the problem is. The Net is queried for someone who may have the answer. (Two Steves can be proud, because not much time is spent on this part of the Net). Next, we ask if there are any check-ins outside North America. If memory serves me correctly, Africa, England, Germany, Iceland, Sweden, South America, islands in the Caribbean and many other countries and continents have checked into "The Apple Computer Net". After talking to these far-away countries, answering their questions and receiving their comments, we start taking "local" North American check-ins. When someone asks a question, the whole net of transmitters is available to answer it. Each question may not be answered that week, but next week you can be sure someone will have the answer. The Net will last about three hours, so you can imagine all the information exchange that goes on.

Well, have I raised any interest in ham radio? For those of you who have a short wave radio, remember 14.329 MHz Sunday nights at 0100 GMT. The other Apple nets are more or less local nets; you'll probably need to be within 700 miles of their net control to receive them. They are:

- West Coast Apple Net, Net Control WA6SZC, Mickey Hicks, 4301 Garnsey Lane, Bakersfield, CA 93309. Meets EVERY Saturday morning at 9 AM Pacific time on 7.230 MHz.
- East Coast Apple Computer Net, Net Control WA1UKZ, Dave Allen, 19 Damon Road, Scituate, MA 02066. Meets EVERY Saturday morning at 9 AM Eastern time on 7.260 MHz.
- The fourth Apple Net is just getting started. Net control is WDOGRC up in the Dakotas, which meets EVERY Wednesday night at 7 PM his local time on 7.260 MHz.

Anyone wishing to start another Apple Computer net at a different time, day, or location is sure welcome to do so. Many of our members have regular times set up to meet their Apple friends on ham radio. It takes a very good radio to receive the ham radio frequencies; one with the required selectivity to separate all of the signals heard. If you don't have a radio, please don't buy one without first contacting one of us or another ham. You could make a very expensive mistake and purchase what you think is a good radio, but which is not suited for ham radio.

Any Hams reading this who would like to set up a meeting with me to just rag chew about the Apple, drop me a line or 'phone me (see the masthead page in this issue) and we can switch over from Ma Bell to Ham Radio. One sidelight to the Apple Computer Net is our public domain exchange library, Apple Avocation Alliance, 721 Pike Street, Cheyenne, WY 82001. It has more than 2,000 programs so far.

Let's leave our Apples for a while and explain in some detail about obtaining an Amateur Radio License from the Federal Communications Commission. As I said earlier, you need the license only if you wish to **transmit.** Anyone can **receive** with no license at all.

There are five different classes of Amateur Radio licenses; Novice, Technician, General, Advanced, and Extra. The higher you do in your license, the more privileges you are given by the FCC. Did you know you can send and receive a form of TV with your Apple? (Oops. . . I said let's leave the Apples for a while, didn't I?)

The license most people start with is Novice. The requirements for the novice license are: To be able to send "CW" (Continuous Wave, or Morse Code) at five words per minute; and to know very basic radio theory. You don't have to go to the FCC office to obtain a Novice license; any ham with a General or higher license may administer the Novice exam. If you don't know a ham in your area, contact me and I'll try my best to put you in contact with someone in your area.

And how would you learn the Morse Code? Well, we're back to the Apple. Send me a disk with a return envelope and I'll be glad to send you a group of public domain programs that teach you the Code with sight and sound, on your Apple. How long will it take to learn code at five WPM? One week (7 days), 90 minutes a day will more than do it. Break those 90 minutes down into 4 different periods each day. Don't try to do it all at once, and don't skip a day.

One week from when you start, you should be ready to take your code test. By the way, if you give the code program I send you to the Ham who is going to give you the test, he may give you the code test using the Apple to generate the code. The Ham will send in the FCC form you have filled out, and in a few weeks he will receive your written test. Use those few weeks to study basic radio theory. There are several good books on basic theory; your local Ham or I can help you find them.

I did have hopes of being able to supply basic Ham theory on a disk, but that disk isn't done. (Actually, it's not even started.) If any person or group does have Novice theory on a disk, please send it to me and I'll make sure it gets on the same disk that the code is on.

There is a Question and Answer book that gives samples of what you'll find on the FCC Amateur Novice exam. It's available from the American Radio Relay League, 225 Main Street, Newington, CT 06111. Ask for the "Novice Q & A Book". Include $2 U.S., $2.50 elsewhere. The ARRL also publishes a magazine called **QST,** devoted entirely to Amateur Radio. Cost is $25 for 12 issues, same address. **QST** has articles directed at all levels of Hams, from Novice to Extra, and plenty of advertising, for new and used ham equipment.

After the Ham examiner sends in your written test, you may receive a notice in about two weeks that you failed. If nothing comes in about three weeks, you can start to breathe more easily, because if you have passed, it takes about 6 weeks for you to get your license. If you follow my instructions, 95 percent of you will pass and receive your licenses. To those other 5 percent, who know

it all, well, join me. It took me three tries to get my Novice license. Y'see, I'd study code for 30 minutes one day and then skip two or three days, study for another 20 minutes and skip a day. Then I'd wonder why I couldn't pass the durn code test. To those of you who are going to say you're too old, too young, too busy, too lazy, too anything to get your ham license, I say that this is why Ham Radio is so great: only those who are willing to put out some effort will get the license. Did you ever receive something for nothing that was worth anything?

There is no cost for the Novice license. It's good for 5 years and may be renewed. With your Novice license, you may contact just about the whole world. You will be learning about Ham radio procedures and increasing your code speed. You'll also be having a great deal of fun.

The next step up the Ham ladder is Technician. For this one, you must take a tougher written test on ham radio theory, but the code speed requirement remains 5 WPM. If you know radio and 5 WPM code, you could go directly to Technician, skipping Novice. Tests for Technician and up are only given at FCC offices.

After Technician comes the General class. This one has the same level of difficulty as the Technician in the theory test, but the code requirement is higher; it's 13 WPM.

Next is the Advanced class license. Now the written test starts to get hard; ask me, I've failed it four times. But that's because I'm using Jim's "I don't need to study" way; instead of studying, I just wish. **(Well, maybe the time Jim consumes with his Apple and IAC responsibilities has something to do with having little time to study. . . —PCW)** As I said before, nothing comes for nothing; someday I'll wise up. The code requirement for Advanced is the same as for General.

At the top is the Extra class. The written test must have been created by an engineering Ph. D., and the code requirements are 20 WPM. Whew!

Each time you upgrade your license the FCC gives you a larger range of frequencies to use, and permits you to use some of the more exotic ways of communication. Of course, there is some snob appeal in being able to say that you have an Extra Class License. (I should have that problem!)

But you don't need that extra class license to get started using ham radio to increase the enjoyment of your Apple, so it's not as difficult as you may have thought, is it? With a General license, you can make contacts around the world with other hams; exchange programs and information via ham radio, and send and receive slow scan TV using your Apple and ham transceiver.

So we complete the circle; Apple owners using ham radio to help them enjoy ham radio. Check it out, and you'll agree that Ham 'n' Apples is a great combination. With luck, we'll meet soon, on the air.

Until then, "73".

APPLE DISK & MEMORY UTILITY

- Repairs Blown Disks
- Reads Nibbles
- Maps Disk Space
- Searches Disks
- Searches Memory
- Edits Disk Sectors
- Outputs Screen to Printer
- Displays Memory In HEX/ASCII

THE INSPECTOR

These utilities enable the user to examine data both in the Apple's memory and on disks. Simple commands allow scanning through RAM and ROM memory as well as reading, displaying and changing data on disk.

Read and rewrite sections of Random Access files. Reconstruct a blown VTOC. Weed out unwanted control characters in CATALOG listings. UnDELETE deleted files or programs. Repair files that have erroneous data. All without being under program control. and more.....

You may transfer sectors between disks. This allows you to transfer DOS from one disk to another thereby saving a blown disk when all that's blown is DOS itself; or to restore a portion of a blown disk from its backup disk.

Its unique NIBBLE read routine provides a Hi-Res graphical representation of the data on any track allowing you to immediately ascertain whether your disk is 13 sector or 16 sector. Get an I/O error...is it because you have the wrong DOS up? is it because of a bad address field? or a bad data field? or because a track was erased? This will allow you to tell in an instant without blowing away any program in memory.

The **INSPECTOR** even lets you search through an entire disk or through on-board memory for the appearance of a string. Now you can easily add lower case to your programs (with LCA).

Do you want to add so-called illegal line numbers into your program? or have several of the same line numbers in a program (like the professional programmers do)? or input unavailable commands (like HIMEM to Integer Basic)? or put quotation marks into PRINT statements? Here's the easy way to do them all!

AND MORE

The **INSPECTOR** provides a USER exit that will interface your own subroutines with those of the **INSPECTOR** itself. For example, just put a screen dump routine (sample included in documentation) at HEX 0300 and press CTRL-Z. The contents of the screen page will print to your printer.

ROM RESIDENT ROUTINES

The **INSPECTOR** utilities come on an easily installed EPROM. This makes them always available for instant use. No need to load a disk and run a program.

FULLY DOCUMENTED

Unlike other software of its kind, The **INSPECTOR** comes with an EASY to understand manual and reference card. Examples and graphics help even the uninitiated use the power of these utilities. And furthermore, we offer the kind of personal service which you have never experienced from a software vendor before.

See your LOCAL DEALER OR . . . Mastercard or Visa users call TOLL FREE 1-800-835-2246. Kansas residents call 1-800-362-2421. Or send $49.95. Illinois residents add $3 sales tax.

SYSTEM REQUIREMENTS

All Apple II configurations that have access to Integer Basic (either in ROM or RAM) will support The **INSPECTOR**. Just place the chip in empty socket D8 either on the mother board or in an Integer firmware card. Apple II+ systems with RAM expansion boards or language systems will receive the **INSPECTOR** on disk to merge and load with INTBASIC.

And...if you have an Apple II+, without either RAM or ROM access to Integer Basic, you will still be able to use The **INSPECTOR** because we are making available 16k RAM expansion boards at a very affordable price. Not only will you be able to use The **INSPECTOR**, but you will also have access to Integer Basic and other languages. Our price for BOTH the **INSPECTOR and our 16k RAM board is $169.95**, less than most RAM boards alone. Call our office for details.

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APPLE TELECOMMUNICATIONS

An Inexpensive and Efficient Approach

by Louis H. Milrad

The problem was simple enough, but the solution appeared costly. The result which I was endeavouring to achieve was the ability to implement my Apple, which was to remain resident at my home, into my legal practice without the expense of acquiring a second computer. The initial application which I had in mind consisted primarily of maintaining a diary and appointment calendar as well as recording time charges for my clients by way of some form of data base management. It was also my intention eventually to incorporate part of my bookkeeping and accounting functions on the computer.

My system configuration was fairly simple: a 48K Apple II Plus, Integer Card, two disk drives, and a D. C. Hayes Micromodem. Up until a couple of months ago, my appointment calendar, consisting of day-to-day appointments, reminders, etc., was maintained manually in my office, and entered into the Apple each evening after arriving home. This was followed by hard copy printouts on an almost daily basis, which were kept at my office for access by either my secretary or myself. Needless to say, the system was cumbersome and less than suitable, for it only provided my schedule for the immediate future (probably no more than two or three weeks in advance at any one time), and there was always the element that it was not completely up to date. Any changes or additions were entered manually, and of course, due to my schedule changing two or three times a week with new appointments and cancellations, there was the continual problem of keeping my calendar current. It became quite evident that more immediate accessibility was required than what was available at the time.

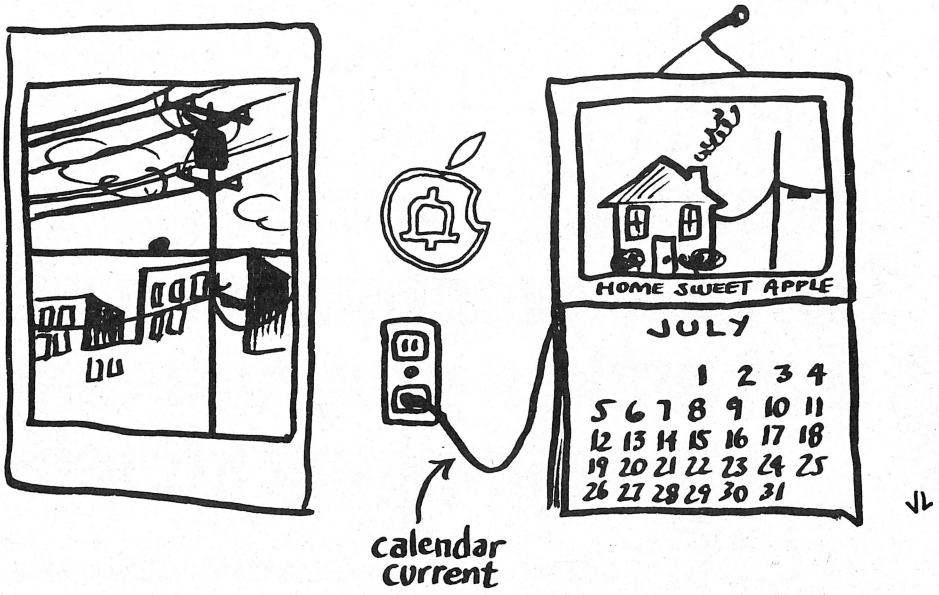
The problem might very well have been overcome by removing the entire system to my office. Of course, this had many drawbacks, the main one of which was the inability to work on or play around with (probably the latter more so than the former) my system in the evening or on weekends when I had available time at home. There was also the practical difficulty of disrupting my family life, turning my wife into a computer widow and my children into computer orphans.

In assessing the elements of a practical solution to this problem, two courses of action became apparent to me. The first would have been to acquire a second Apple, thereby duplicating the expense already incurred in my system configuration. There were certain advantages to this approach in that I would be able to run virtually any program on either unit, and would not be restricted with graphics transmission and other telecommunication difficulties. The cost, however, was a major factor in persuading me that this would not be the preferable route to follow. A second solution then came to mind which would cost me virtually nothing to try out; and if in fact it worked, would be a reasonably economical approach to accomplishing my goal.

I was using a DEC LA34 as my printer. Although the speed is somewhat limited to 300 baud maximum, the quality of the unit as a printer in that price range was more than attractive; the price was in fact quite instrumental in my determination to acquire it. There was also an added advantage which I had not bargained for: not only was the DEC-writer able to serve as a printer, but its design capability included the fact that it was an RS 232 hardcopy terminal. The unit is quite transportable, being really not much larger (and certainly lighter) than an IBM Selectric.

Rather delighted with my reasoning, I transported the unit down to my office in anticipation of being able to control my Apple remotely; I envisaged drawing upon the multitude of programs that I had available which were quite useful to my practice and, more importantly, having available an immediate hard copy printout. Just imagine how a client would be impressed if, after discussing a proposed financing deal, I could provide him almost immediately with a printout comparing the advantages and disadvantages of leasing as opposed to outright purchase; or even to furnish a complete amortization schedule! If I could draw upon this information immediately, there it would be in black and white for the client and myself to assess.

Similarly, my calendar was readily accessible. This gave me greater flexibility than the normal



diary that one keeps in an office, for it would extend beyond the calendar year. In theory, I could diarize years ahead and therefore advise a client of the date and time of our meeting and give him a hardcopy reminder; or notify him through a reminder system of the date of maturity of his mortgage or likewise perhaps notify him of a court date. At the same time, I would be able to incorporate periodic reminders and follow-up items for myself. When I started thinking about it, the applications were virtually limitless.

All of my time and charges could be recorded over the telephone lines, and when it came time to bill a client I could call up the file, get a printout of the dates, time spent, charges, disbursements and the like; and to have all this information immediately accessible so that in theory all I would have to do is hand it over to my secretary so she could type it out in final form. As well, we could concurrently start running the bookkeeping function on the computer.

I had already invested in the cost of the terminal, so there would only be one further expense, namely the cost of a modem. With dollars in hand, I immediately rushed to my local supplier, purchased a Cat modem, took it back to the office and connected the RS 232 cable to the terminal. I plugged it into the wall, turned it on, dialed my home number, put the receiver in the cradle and waited. . . and waited. . . and waited.

Nothing happened! I had forgotten to incorporate an auto-answer routine onto disk. I frantically called home and (verbally) instructed my wife to key in the auto-answer program for the D. C. Hayes. Upon calling back, I was delighted to see my DEC print out the usual "Hello" program with some additional garbage. This was quickly remedied by playing around with the DIP switches so that the duplex, parity, etc. were all properly set; the whole process took approximately ten minutes. I then took the Apple through a series of routines starting with the old favorite of CATALOG, re-booting, running, listing, stopping list, etc. It worked beautifully!

In order to have the system function properly, it was necessary for me to incorporate the auto-answer program as my Hello program on Disk 1; it was also necessary to remove all graphics applications from my programs so that, for example, INVERSE and FLASH became NORMAL video. The system functions exceptionally well, but for the occasional "hang", which occurs primarily in any program having a graphic application not yet removed. Fortunately, there is someone home at all times, so this merely necessitates having to re-boot the system; the frequency, however, is greatly diminished and most of the glitches have now been eliminated.

Now for a seemingly happy ending. For merely the cost of a modem, I am able to use it in my practice on an almost hourly basis while at the same time I have its full capability available to me in the evening and on weekends. I am currently toying with the idea of converting my programs to Pascal; it will be interesting to see what effect, if any, the Language Card will have on the system or what effect expanding the number of drives might have. With two drives, there has not yet been a problem of accessibility. With the availability of DOS 3.3 and increased storage on disk, no further disk drives have been necessary, in the short run at least.

It is interesting to note that in order to exit the system in a hurry, I merely hang up the receiver at my office. Subsequently, when re-entering the system, because of the auto-answer mode, the system will answer at the same point as when exited. (The auto-answer program is furnished in hard copy by D. C. Hayes as part of its manual.)

There is one difficulty, that of being without a printer at home. I propose overcoming this particular setback by acquiring a used hardcopy terminal such as a Texas Instrument Silent 700, or a Teletype, having a minimum of 300 baud. Maybe in the short term, I'll just rent a terminal from one of the many suppliers in the marketplace.

From a strictly business point of view, I find this particular configuration to work, and work rather well. For me it fulfills the two most important criteria, efficiency and economy, which is what it's all about.

Louis H. Milrad is a Toronto Barrister and Solicitor, whose practice has been evolving to include more clients with computer interests since he purchased an Apple II some four years ago. The computer has become a family affair; his wife, Elaine, is enrolled in the Computer Science program at York University for her own professional advancement. Mr. Milrad is also President of Apple-Can, the 350-member Apple user group based in Toronto, but having a nationwide membership and affiliations. His interest was and is in developing special interest groups within Apple-Can. The **Apple Orchard** masthead discloses his latest appointment, that of Special Interest Group Co-ordinator for the IAC.

NEW! Q-CARDS™

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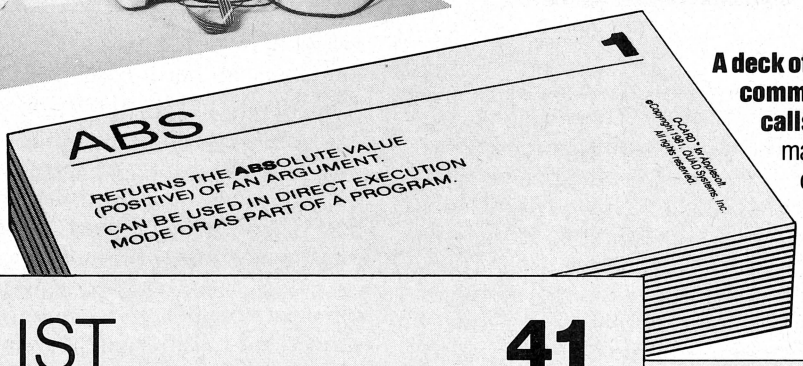

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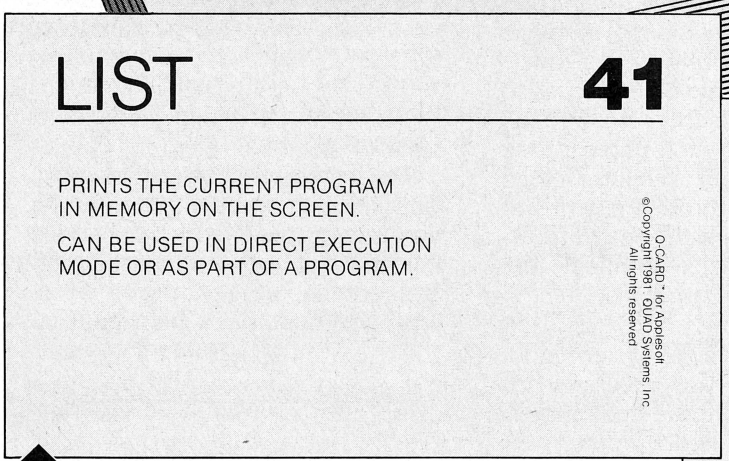

LIST
PRINTS THE ENTIRE PROGRAM.

LIST 15Ø
PRINTS LINE 15Ø

LIST–15Ø
PRINTS FROM THE BEGINNING OF THE PROGRAM UP TO LINE 15Ø

LIST 15Ø**–**
PRINTS FROM LINE 15Ø TO THE END OF THE PROGRAM.

NOTE: TO STOP A **LIST**ING PRESS *CTRL S*
TO RESTART PRESS *S*

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DATA COMMUNICATION

by Rob Stewart
from **The Harvest**

Data Communication! It sounds interesting, but what kind of data, why would I want it, what can it do for me, where can I get it, and most importantly, what does it cost?

By "data communication", I mean the transfer of information between one location and another. It need not be two computers, but it is generally at least one. (Obviously, there are several different and more precise definitions, but this one will serve us quite well.) The transfer of data is conducted with the aid of Ma Bell, over existing dial-up telephone lines. To perform this transfer, your computer must be given a voice; one that it and any other computer can understand, provided they speak the same language, the same dialect, and don't have an accent problem.

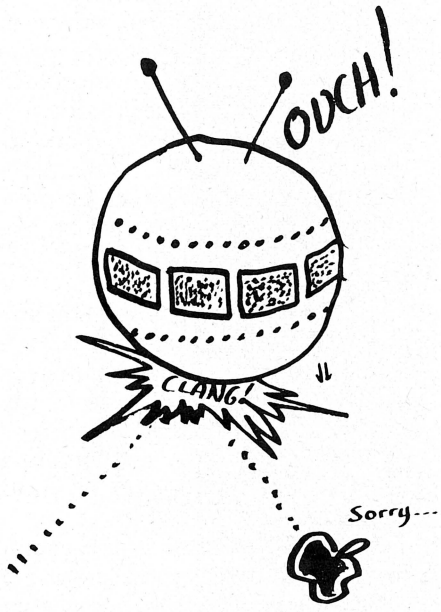
The "voice" is called a MODEM, for MOdulator/DEModulator. This unit translates computer information, 1's and 0's, into little spurts of certain frequencies; and conveys these chirps and squeaks into the 'phone line. You can hear a version of this kind of data transfer if you have a cassette recorder hooked up to your Apple. The speed with which the modem can send and receive this noise is called its BAUD RATE. Now, you want to know what a "baud" is. A simple explanation is that it's a measure of transmission speed; 300 Baud is at least 300 bits per second, which is a little more than 30 characters per second. (A full explanation is more complicated, and neither you nor I need that here.)

The link between modems isn't that difficult; being basically stupid, modems need to know constantly if there is another modem on the line. To fulfill this need to know, the originating modem sends out a certain CARRIER tone, telling the other modem that somebody's here, and will be transmitting. The responding modem returns with its own carrier. If either carrier is ever missing from the line, then the communication link has been lost and must be re-established.

Once you have a communications link established, you have to worry about the language and the dialect. The standard 'language' for data communication is the American Standard Code for Information Interchange (ASCII), although some companies use other standard or custom-made languages. (The 'language' is just an agreement that an "A" is an "A" and not a "B".) Each letter, number, and symbol has its own code.

The "accent" has to do with the frequencies that the modem uses. Modems are set up both to transmit and receive data. If the modem can receive and transmit at the same time, it's called FULL DUPLEX. When using full duplex, you do not see what you type as you type it. Rather, you wait for the other system to receive and send back the character that **it** received, for your inspection and verification.

If the modem can only transmit or receive at one time, it's called HALF DUPLEX. In half duplex, your system prints the outgoing character, without verification; you have no turnaround of characters from the other end. Why would you want to use the half duplex mode? Half duplex is useful when sending large blocks of data, because the data transfer rate is much faster if the verification is eliminated. However, if you are sending large amounts of data, more than one character at a time (half duplex), then you need to know such things as "I got your first record", or "got your second record, but wait before sending another"; "are you there?"; "goodbye", etc. This is called PROTOCOL. Protocol is used mainly on larger computer systems when transmitting vast amounts of data. There are now few uses (but the number is growing) for protocols in the mini-computer field. The most notable current example is transmission of programs from one system to another.



When using half duplex mode, the modems manage the 'phone line in such a way that only one modem is transmitting at a time. This is done by looking for a CARRIER signal. When your computer wishes to send some data, it informs the modem by a signal called Request to Send (RTS). The modem then checks to see if carrier is present on the 'phone line. If there is carrier present, that means another modem is preparing to transmit. If no carrier is present, your modem turns on its carrier to get control of the 'phone line. It then

returns a signal to the computer called Clear to Send (CTS). Then and only then will your computer ship out its data. One of the advantages of half duplex is that any number of modems may be connected to the same 'phone line, because only one modem is sending at a time.

In general, full duplex is used for human interface where transmission of one character at a time is desired. Half duplex is used when blocks of data are being sent between computer and computer.

In full duplex mode, if the transmit and receive frequencies were the same, then the modem would be talking to itself. Not very effective, but sometimes useful for testing the modem. Modems communicate using pairs of frequencies. Modem 1 will transmit on Frequency A and receive on Frequency B. To have communication, Modem 1 must transmit on Frequency B and receive on Frequency A. This is called ORIGINATE MODE and ANSWER MODE.

If all you are doing is sending one character at a time (full duplex), then dialect won't be a problem. If there is a problem with a block of data, the protocol mechanism is designed to test and recover or re-send the bad block of data until it is received properly.

What kind of data? In the beginning there were only programs available for transferring from one system to another. This has gradually changed. Now there are appearing around the country systems which will download a program to you either for free or at some reasonable (or perhaps unreasonable) price. These programs, the ones you pay for, are usually less expensive than similar programs in the local stores, because of the lack of documentation, packaging, and overhead costs that are included in the standard distribution network. The lack of documentation means that these programs must be "self-documenting". If there is no charge, then you get what you pay for, but most people don't intentionally program in a confusing manner.

We are now beginning to see the first glimmer of the uses of home data base communication. There are now several large and varied data bases available to individuals who a 300 Baud modem. Some of the things which are available are current stock prices and stock histories, airline flights and reservations, wire service news bulletins, sports info, gold and money prices, personal banking. . . the list could go on and on, and it's growing constantly. So if you want something that isn't around yet, just wait a few months. . . or get together with a couple of people and develop it. Most of these data bases aren't sold; rather, access to the information is rented. **The Source** and **Micronet** are two examples of the large timesharing companies which feature large on-line data bases. For access to these "computer utility" services, you pay some type of subscription fee, and then a connect charge or time charge each time you use the service.

A "do it yourself" kind of home data communication is the computer Bulletin Board System (BBS). This is a system with the necessary software and hardware, that will answer the telephone and allow you to access the files of the system. These files are messages that have been posted by other people, in much the same way as messages are posted on a regular bulletin board. Subjects cover a wide variety of interests. You won't generally see any that are lewd, crude, or abusive, because the system operators remove those if they appear. You can learn a number of very interesting things from reading the messages on these systems, and your local computer store will be happy to show you what the BBS systems are like.

What does it cost? There are two basic ways to accomplish data communication. The first is with a full feature modem such as the D. C. Hayes Micromodem. You can plug it into the Apple, and directly into a 'phone line jack after you have notified Ma Bell that you are doing so. The unit is direct-wire connected, and does its own dialing and telephone answering. See the directions that come with the hardware.

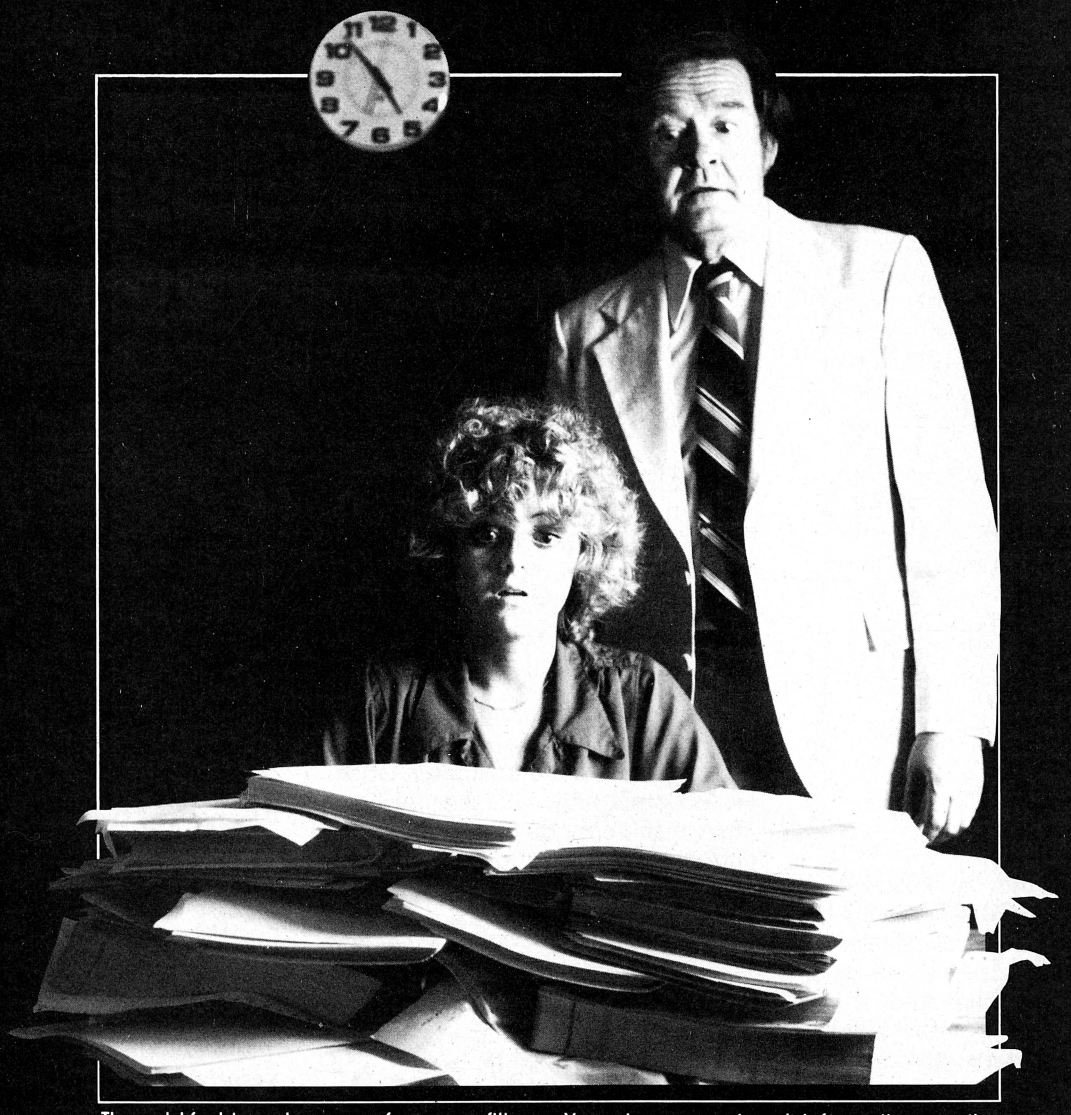
The second way is with an acoustic coupler-type modem driven by the Apple through its Serial Interface card. The acoustic coupler is the one where you dial the number yourself, and then place the telephone receiver in a rubber cradle to put the Apple on the line.

Both methods will wind up costing about $450. I went the Micromodem route because it's more convenient. As yet, I know of no full-feature modem for the Apple which will communicate at 1200 Baud. 300 Baud is fine for people, but it is very slow for massive data transfer.

Consider joining the home data communications revolution; it IS happening right now, with or without you.

CAN I SPEAK TO YOU.... ALONE?

The Evan's Report Is In There—Somewhere!



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DATADEX The Information Organization System. **IUS**

Product Reviews

UNITEXT

Text display module—with lower case

Reviewer: Steve Lloyd

From: Dockside Computing, P.O. Box 5030, Westlake Village, CA 91362

Like many other Apple users, I have always been disappointed by the Apple's inability to display lower case letters. Sure, there have been lots of ways to get around this shortcoming, but up until now there hasn't been anything that met my few, simple, requirements.

I was looking for something that is very simple to operate. I like the idea of making some simple changes to DOS and possibly some of the larger application programs; and I don't want to have to do something special every time I want to use lower case.

I was also looking for a character set that is easy to read. True lower case descenders without crowding any of the characters is a must. For my own use, the looks of a character set don't make all that much difference; however, like many other Apple owners, I'm not the only one who uses the Apple. Wife, children, mother-in-law, cats, dogs, and the occasional frog all have access to it. It's tiring to explain to all of them that that funny-looking squiggle is suppose to be a "g". (Try telling that to a frog sometime; they just don't listen.)

Finally, I was looking for something that is easy to install, not things like "just cut this trace, run these jumpers, solder here, and change these few integrated circuits . . ." I have more respect for my Apple than that.

All of my expectations seem to have been met by a product called "UniText". The manufacturer, Dockside Computing, calls it a universal text display module for the Apple, and it comes very close to being exactly that. The device consists of a small printed circuit board with several chip extenders. Installation requires a #1 Phillips screwdriver (and a small soldering iron if you want to make the optional shift key modification described below). The changes required are very easy to make and can be accomplished in less than a half hour.

The UniText package includes the lower case adapter, documentation, and a disk of Pascal and BASIC demonstration programs. The documentation is very well done, 26 pages of extremely detailed information on the installation, operation, and software interfacing of UniText. Much of this is repeated in the tutorial demo program on the disk which allows you to see UniText in action after it is installed.

The character font is excellent, requiring no squinting and no explanation (not even to the frog), and as good as any 7 × 8 dot matrix character can be. It contains all of the ASCII characters including true lowercase descenders and all of the special characters. Since UniText is EPROM-based, a whole new set of characters could be designed by using a reprogrammed EPROM.

With a shift key modification, the Apple will recognize the shift key for all of the alphabetic (A..Z) characters of the keyboard. It requires one solder connection to the underside of the keyboard; the longest part of the job is heating up the iron. UniText also supports a Ctrl-Q shift lock feature in case you don't want to modify your Apple and void your warranty.

The cost of UniText (about $80) is a bit high when compared to similar devices on the market, but the real test is the cost/benefit ratio. That is something everyone will have to calculate for himself/herself.

I tested UniText with several text editors (Apple Writer, The Correspondent, Language system) and found excellent results with all of them. It performs well in BASIC as well as Pascall II.1 (it doesn't work with Pascal I.1, but that's coming soon). Use of UniText with the language system gives a whole new dimension to word processing with the built-in editor. Frankly, I'm impressed.

In summary, UniText provides lower case display on the Apple 40-column screen. Installation is very easy; less than a half-hour. It has a crisp, clear font with true descenders. Use with a variety of software products is very easy and produces excellent results.

Tic, Tic, Tic,—Turn On Light
Tic, Tic, Tic,—Start Coffee—
Tic, Tic, Tic,—Turn On Radio—
Tic, Tic, Tic,—Turn Off Sprinklers

Reviewer: Ken Silverman

From Thunderware, Inc., P.O. Box 13322, Oakland, CA 94661

Here, without the need for any additional plug-in peripherals, is a clock which also can control a BSR/X-10 controller. Thunderclock Plus (tm) by Thunderware is a two-peripheral system on one card.

The clock portion keeps track of the time with an accuracy of .001%, and can be accesed by your programs very easily. The month, day (and day of the week), hour (AM/PM), minute and second can be obtained. The only drawback I found was the lack of the year. Other features include 24 hour format if needed, and an on board battery to keep the clock running when the Apple's power is off. Typical battery life, according to the spec sheet, is 3 to 4 **years.**

The Plus portion allows the control of a BSR/X-10 via an ultronsonic transducer connected to the clock board. You can, with the **"scheduler"** software, available thru Thunderware, completely control the BSR. It can schedule events daily, weekly, or monthly, even at specific dates and times. It allows you to DIM/BRIGHT your lights at 128 levels and for any duration. This can all be done in the "background" while you are using your Apple for other work. You have use of good interrupt rates with a resolution of $\frac{1}{2048}$th of a second, for those who might wish to write a multitasking program.

One of the newer items of interest dealing with this clock is that it will work in and with the Apple /// computer as well as the Apple II. Since there is no longer (or, more correctly, since there never really was) a clock chip included with the Apple ///, here is one of the first peripherals for that larger computer.

Thunderware also makes available a Pascal disk to interface the clock and BSR with your Pascal programs. I can't give any direct feedback on how well it works with Pascal because I have no experience with that language. The cost of the package, including clock board, X-10 interface option, and Scheduler software, is $189.00.

ABM (ANTI-BALLISTIC MISSILE)

Defend the East Coast from otherwise certain destruction!

Reviewer: John Dyscedeye

From the Muse Company, 330 N. Charles St., Baltimore, MD 21201

ABM, in Defense jargon, means Anti-Ballistic Missle, and you are commanding the Coastal Defense forces as they respond to enemy attack. Your sector runs from Boston to Richmond, and all of these cities come under nuclear missle attack by an unnamed enemy. Your mission is to position the incoming missiles in the target crosshairs and fire your ABM's to blow the invaders out of the sky.

(Whoops—there goes Philadelphia!)

Using a joystick, there's nothing to it, almost. Using the paddles, you find that with one controlling vertical and the other controlling horizontal motion, it gets a bit cumbersome.

(Hmmm . . . just lost Richmond.)

The enemy attack intensifies as the game proceeds, and then there's the dreaded MIRV missile which splits into multiple warheads. The trick is to destroy the missiles before the MIRV might split.

(Oh darn, not Boston too!)

As long as one city remains intact, you're still in the game. And when the last city is destroyed, your score is based on the number of missiles you were able to destroy before that unhappy event.

(Well, Baltimore went . . . no more Muse.)

This is a good Hi-res representation, with fireballs and explosions, and it does have a good "feel" about it. The best review actually came from the young members of the San Francisco Apple Core. When we demonstrated this program, among others, at a recent meeting, it was ABM that the folks requested we leave up "just a little longer".

I'm sure it was the program's quality rather than West Coast smugness that caused the favorable reception. This one is worth having, as an example of a "state-of-the-art" Hi-res computer game.

WHAT'S THE DIFFERENCE BETWEEN AN APPLE II AND AN APPLE II PLUS?

The only difference between the Apple II and the Apple II Plus is that the Apple II has Integer BASIC and the "old" Monitor ROM while the Apple II Plus has Applesoft BASIC and the Autostart monitor ROM. Most of the game programs available today are written in Integer BASIC, while most of the business, scientific, and industrial programs require Applesoft. The selection depends on your application. Apple offers firmware cards that will supply whichever BASIC your machine does not have. Another approach involves use of the Language Card; the DOS 3.3 System Master and BASICS diskettes will load the "other" BASIC as part of the system boot process.

★ ★ ★

I'M HAVING TROUBLE WITH INTERMITTENT OPERATION OF A PERIPHERAL.

That could be due to a number of reasons, but the problem usually comes about because of some imperfect electrical connection in a cable or a peripheral card slot. Occasionally, peripheral cards in the Apple collect some oxidation on the contact fingers which can cause an intermittent connection. This can result in various system errors.

To clean off contacts, remove the card. (ALWAYS TURN OFF THE POWER BEFORE TOUCHING ANYTHING INSIDE THE APPLE!) Using a soft pencil eraser ("Pink Pearl" or such), gently clean off the contacts. Replace the boards, seat firmly, then reboot the system. If this does not correct the problem, contact your dealer for assistance.

PRICE WAR

by Joe Budge

As microcomputers grow in popularity, their uses wander far afield from the original hobby hackers. Two prevalent applications on Apples today are business management and computer-based education. While these fields would seem to hold little in common, a joining occurs in the realm of business education. Business students these days must learn computing to survive. With one or several Apples installed, a business school soon ponders how the Apples might be used to aid in courses unrelated to computer literacy. This article describes the use of an Apple-based computer simulation in teaching microeconomics. Bear in mind that business students spend whole semesters studying the subject, so what follows is necessarily simplified.

Simply put, microeconomics is the study of market forces acting on a single firm. The most common problem is price setting. What prices should a company set on its products to be most profitable? To answer that question, one must know the relationships between price and sales volume, production volume and cost, volume and profit, and the various interactions with one's competitors. Just to say that fewer people buy at higher prices is not good enough. Price is as quantitative a measure as you'll ever see, for a price is a number. Anything short of numerical derivation is merely hand waving. Hand waving results in what economists enjoy calling "sub-optimal conditions," so we seek numerical ways to solve the pricing problem.

Two equations characterize price and profit behavior: the demand equation and the cost equation. The demand equation relates all relevant variables to the volume of sales. These can be the price itself, market share, other market prices, advertising levels, seasonal cycles, and so forth. Gross revenues equal calculated sales demand times the set price. The cost equation relates production volume and cost. Most commonly a fixed cost per unit is simply multiplied by the sales volume to give total cost. Additional factors to consider include overhead and economies of scale. Total profits are, of course, the difference between revenues and total costs.

A thorough understanding of the equations involved requires diligent study of hundreds of equations, graphs, and examples. After a few months of this, business students tend to lose track of their real objective, learning price behavior. The equations become an end in themselves. At this point, perspective must be restored. The Price War simulation is a tool which helps accomplish this.

The simulation pits teams of students against each other in a price war as they try to maximize team profits. Ever since the oil embargo, schools have had to stop giving their students gas stations to practice price wars with. The easiest alternative, one which doesn't involve real money, is computer simulation. A computer can solve demand and cost equations easily and more quickly than occurs in real life. Thus a useful lesson can be driven home in one class period.

To play Price War, the students are given some basic information about the simulation. They know how many teams will participate, what the demand equation is, and that the manufacturing cost of each unit sold is $5.00. The demand equation appears in line 2520 of the program listing. The demand equation is set so that a team's unit sales increase if the team had high market share in the previous period or had a low price relative to other teams this period. This means the team must constantly trade off sales volume against sales revenue while guessing what the other teams will do.

The simulation begins with the instructor entering the number of teams and the number of periods for the session. Teams disclose their prices in writing before each period. Once the instructor enters these prices, the Apple calculates the results for that period and goes on to the next. At the end of the game the winning team is announced and the printer can list a game summary.

With enough teams playing, prices soon converge to match the $5.00 unit cost. Price cutting gets bad enough that teams attempt to minimize losses instead of maximizing profits. With a known number of periods, teams can also try for market share early and plan on cleaning up with a big price hike at the end. Once these strategies have been demonstrated by one team, all the others follow. Then the simulation becomes as boring as watching sheep graze. To provide education and entertainment, Price War incorporates two features. First, a randomizer changes the actual number of periods to fall within three of the desired number. Thus no one really knows when the game will end. Second, the simulation includes a government which is just as fickle as our own.

The Government and its capabilities are kept a secret until actually invoked by the instructor. This does a good job of showing how laws or other adverse factors can whistle out

of nowhere to strike the unprepared at any time. No indication of the Government is given in the program displays until the Government has already done something. The instructor may invoke Government whenever "press return to continue." appears on the screen. Return will indeed allow the program to continue, but several one-letter commands will bring in the Government. Government laws and their single letter commands are as follows:

A—Antitrust. If one team is gobbling up market share, the Government can slap an antitrust restriction on the entire industry. The antitrust laws will prohibit any one team from selling more than a specified number of units. The instructor supplies that number upon the program's prompt.

I— Inflation. With the money presses rolling, the Government causes cost inflation at a rate set by the instructor. See how fast prices can be adapted if the students are awake and learn what "cost-push" inflation is all about.

P—Price Controls. Under price controls, teams are prohibited from changing their prices by more than a certain amount during any one period. As with other Government actions, the amount is supplied by the instructor. As with real life, price controls can be very nasty when coupled with inflation.

X—Ends the game on the spot for product obsolescence.

Any other keyboard character sent to the Government will elicit a list of the Edicts available for the benefit of the absent-minded.

A sample program run (Figure 1) accompanies this article to illustrate a simple one-period price war. After entering five teams and one period, the instructor had his first chance to play government. Having a poor memory, he hit "?", not an Edict, to get a list of those available. This lets the cat out of the bag as far as the students are concerned, for they have a clue what might happen later. At any rate, the instructor enters an "I" to set inflation at 20 percent before proceeding with the simulation. After setting inflation the instructor could have asked to issue another Edict, but chose to press "Return" instead. Then he obtained and entered the team pricing information.

Once pricing data was entered, the Apple calculated and displayed the results. Note that only invoked Edicts were shown. The cost was shown only because inflation changed at this point to play government again. However, since the simulation was finished the price war ended instead, giving a summary of the profit and market share winners. After the game a summary of results for each period could have been printed out had that option been elected by typing "Y" in response to the question "Summarize game to printer (Y/N)?

A complete listing of Price War accompanies this article. The program was written in Applesoft on an Apple II. A minimum of 32K of memory is required. A printer is needed to summarize the simulation results. The printer interface card is assumed to be in slot 1. The slot number can be changed by substituting the appropriate number in program line 3110. As the program prints in 40-column format, no adjustment is necessary to accomodate parallel interface cards.

I would like to acknowledge Wes Magat of the Fuqua School of Business of Duke University for his assistance and suggestions with the economics of Price War.

While earning an M.A. in Anatomy, Joe Budge worked as a teaching assistant for classes of undergraduate and medical students. His business experience comes from several years as a stockbroker. In 1977 he adopted an Apple II and became a born-again hobby hacker. In addition to serving his second term as Secretary of the IAC, Joe is President of the Carolina Apple Core in Raleigh/Durham, NC. At the moment he is starting his second year of the MBA program at Duke and just finished a summer marketing internship with Apple Computer. Contrary to popular opinion, Bill Budge is not related to him.

```
          PRICE WAR SIMULATOR
ENTER NUMBER OF PRICING TEAMS (1-16).
                                    : 5
ENTER EXPECTED NUMBER OF GENERATIONS
                          (1-20). :1
 PRESS RETURN TO CONTINUE. ?

LIST OF GOVERNMENT EDICTS:

A - ANTITRUST LAW
I - INFLATION RATE
P - PRICE CONTROLS
X - EXIT GAME
ANY OTHER KEY - LIST OF EDICTS

ENTER EDICT: I
THE INFLATION RATE CHANGES!

INFLATION IS CURRENTLY 0% PER
PERIOD.

WHAT IS THE NEW INFLATION RATE? 20
PRESS RETURN TO CONTINUE.


PERIOD 1:

ENTER TEAM PRICE DECISIONS:
PRICE CHARGED BY TEAM 1 ?10
PRICE CHARGED BY TEAM 2 ?7.5
PRICE CHARGED BY TEAM 3 ?12
PRICE CHARGED BY TEAM 4 ?6.75
PRICE CHARGED BY TEAM 5 ?8
RESULTS OF PERIOD 1:
TE PRICE SALES  SHARE  PROF    CUM PR
AM
1  10    2367   .138  11835    11835
2  7.5   4209   .245  10522    10522
3  12    1644   .096  11508    11508
4  6.75  5196   .303  9093     9093
5  8     3699   .216  11097    11097
INFLATION RATE = 20%
UNIT COST = $ 6
GAME OVER! PRESS RETURN TO CONTINUE.

THIS PRICE WAR IS OVER.

MARKET SHARE LEADER IS TEAM 4
WITH .303 SHARE.

PROFIT LEADER IS TEAM 1
WITH $ 11835.

SUMMARIZE GAME TO PRINTER (Y/N)? N

ANOTHER GAME (Y/N)?N

 BYE...
```

```
1000  REM **********************
1010  REM *                    *
1020  REM *     PRICE WAR      *
1030  REM *                    *
1040  REM * COPYRIGHT 1981 BY *
1050  REM *INTERNATIONAL APPLE*
1060  REM *     CORE, INC.     *
1070  REM *                    *
1080  REM * JOE BUDGE-7/11/81 *
1090  REM *       MOD 5        *
1100  REM *                    *
1110  REM **********************
1120  REM
1130  REM WRITTEN IN APPLESOFT
1140  REM BASIC
1150  REM FOR THE APPLE ][
1160  REM
1170  REM PRINTER CONTROLS
1180  REM
1190  REM ON:  LINE 3110
1200  REM OFF: LINE 3190
1210  REM
1220  REM LIMIT VARIABLES:
1230  REM TMMAX-MAX # OF TEAMS
1240  REM N-INPUT NO. OF TEAMS
1250  REM GNMAX-MAX # GENERATION
1260  REM G-INPUT # GENERATIONS
1270  REM R-RANDOMIZED # OF GEN
1280  REM
1290  REM INDEX VARIABLES:
1300  REM GC-GENERATION COUNTER
1310  REM T-TEAM INDEX
1320  REM
1330  REM DATA VARIABLES:
1340  REM A-ANTITRUST LAW
1350  REM C-COST PER UNIT
1360  REM I-INFLATION RATE
1370  REM P-PRICE CONTROLS
1380  REM PAV-AVERAGE PRICE
1390  REM QT-TOTAL UNIT SALES
1400  REM X-SCRATCH VARIABLE
1410  REM Y-SCRATCH VARIABLE
1420  REM X$-SCRATCH STRING
1430  REM
1440  REM DATA ARRAYS:
1450  REM P(T,GC)-PRICE
1460  REM Q(T,GC)-SALES
1470  REM M(T,GC)-MARKET SHARE
1480  REM PI(T,GC)-PROFIT
1490  REM PT(T,GC)-CUM PROFIT
1500  REM A(GC)-ANTITRUST RECORD
1510  REM C(GC)-COST RECORD
1520  REM I(GC)-INFLATION RECORD
1530  REM  PC(GC)-$ CONTROL REC.
1540  REM
1550  REM PROGRAM:
1560  REM ***************
1570  REM
1580  REM SET ARRAY LIMITS:
1590  LET TMAX = 16
1600  LET GNMAX = 20
1610  REM DIMENSION DATA ARRAYS
1620  DIM P(TMAX,GNMAX)
1630  DIM Q(TMAX,GNMAX)
1640  DIM M(TMAX,GNMAX)
1650  DIM PI(TMAX,GNMAX)
1660  DIM PT(TMAX,GNMAX)
1670  DIM A(GNMAX)
1680  DIM C(GNMAX)
1690  DIM I(GNMAX)
1700  DIM PC(GNMAX)
1710  REM TITLE & SET UP
1720  TEXT : HOME : SPEED= 255
1730  VTAB 5: HTAB 10: PRINT "PRI
      CE WAR SIMULATOR"
1740  VTAB 15
1750  PRINT "ENTER NUMBER OF PRIC
      ING TEAMS (1-";TMAX;").   :
      ";: INPUT "";X$
1760  REM NEXT 4 LINES ALLOW FOR
1770  REM MOST INPUT ERRORS:
1780  REM -OUT OF RANGE, OR
1790  REM -BLANK ENTRY.
1800  REM USEFUL FOR ALL NUMERIC
1810  REM INPUTS.
1820  IF  LEN (X$) < 1 THEN 1750
1830  LET N =  VAL (X$)
1840  IF N < 1 THEN  PRINT "THERE
      MUST BE AT LEAST ONE TEAM."
      : GOTO 1750
1850  IF N > TMAX THEN  PRINT "ON
      LY ";TMAX;" TEAMS ARE ALLOWE
      D.": GOTO 1750
1860  PRINT "ENTER EXPECTED NUMBE
      R OF GENERATIONS    (1-";GNM
      AX;"). :";: INPUT "";X$
1870  IF  LEN (X$) < 1 GOTO 1860
1880  LET G =  VAL (X$)
1890  IF G < 1 THEN G = 1
1900  IF G > GNMAX THEN  PRINT "O
      NLY ";GNMAX;" GENERATIONS AL
      LOWED.": GOTO 1860
1910  REM RANDOMIZE NUMBER OF
1920  REM GENERATIONS TO A
1930  REM LINEAR DISTRIBUTION
1940  REM (N +/- 3)
1950  REM TO REDUCE END GAMING
1960  IF G = 1 THEN Y = 0: GOTO 2
      050
1970  LET X =  RND (1)
1980  LET Y =  - 3
1990  IF X > .1428 THEN Y =  - 2
2000  IF X > .2856 THEN Y =  - 1
2010  IF X > .4284 THEN Y = 0
2020  IF X > .5712 THEN Y = 1
2030  IF X > .7140 THEN Y = 2
2040  IF X > .8568 THEN Y = 3
2050  LET R = G + Y
2060  IF R < 1 THEN R = 1
2070  IF R > GNMAX THEN Y = Y - 3
```

NEW...FOR APPLE II[1]

FROM PROMETHEUS

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2. Parallel Output Interface
3. Precision Clock/Calendar
4. BSR Control

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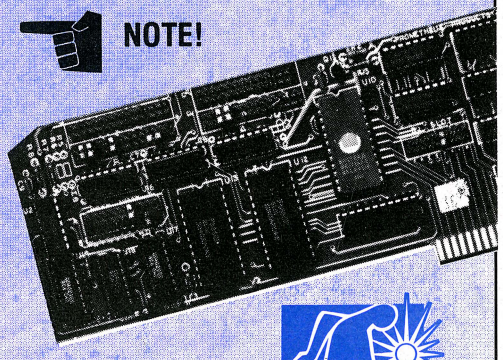
Parallel, Serial and Realtime Clock Interfaces?	YES	YES
BSR Control Interface?	YES	NO
Compatible w/ Apple Pascal?	YES	NO. Special Pascal disk required.
Compatible with CP/M?	YES	NO. Special CP/M disk required.
Cable Included?	YES. One cable of choice free with each order – through 1981.	NO. Must be purchased separately.
Apple Modification?	NO	YES

NOTE!



Dealer inquiries invited.

All Prometheus boards are completely tested and burned-in prior to shipment. A one-year warranty covers parts and labor.

Registered Trade Marks: (1) Apple Computers, Inc. (2) Microsoft Consumer Products

PROMETHEUS

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```
    : GOTO 2050
2080  REM INITIAL GOVERNMENT
2090  LET A = 0
2100  LET C = 5
2110  LET I = 0
2120  LET P = 0
2130  REM EQUAL MARKET SHARES
2140  LET GC = 0
2150  FOR T = 1 TO N
2160  LET M(T,GC) = 1 / N
2170  REM NO PROFITS YET:
2180  LET PI(T,GC) = 0
2190  LET PT(T,GC) = 0
2200  NEXT T
2210  REM CHECK GOVERNMENT
2220  GOSUB 3650
2230  REM STEP THRU GENERATIONS:
2240  FOR GC = 1 TO R
2250  HOME
2260  REM REGISTERS TO ZERO
2270  LET PAV = 0
2280  LET QT = 0
2290  PRINT
2300  PRINT "PERIOD ";GC;":"
2310  PRINT
2320  PRINT "ENTER TEAM PRICE DEC
    ISIONS:"
2330  FOR T = 1 TO N
2340  PRINT "PRICE CHARGED BY TEA
    M ";T;" ";
2350  INPUT X$
2360  IF  LEN (X$) < 1 GOTO 2340
2370  LET P(T,GC) =  VAL (X$)
2380  IF P(T,GC) <  = 0 THEN  PRINT
    "PRICE MUST BE POSITIVE": GOTO
    2340
2390  REM FORCE DOLLARS & CENTS:
2400  LET P(T,GC) =  INT (P(T,GC)
    * 100 + .5) / 100
2410  REM PRICE CONTROLS
2420  IF (P < 1) OR (GC = 1) THEN
    2460
2430  LET X = P(T,GC) - P(T,GC -
    1)
2440  IF  ABS (X) > P THEN P(T,GC
    ) = P(T,GC - 1) +  SGN (X) *
    P
2450  REM FIGURE AVERAGE
2460  LET PAV = PAV + P(T,GC)
2470  NEXT T
2480  LET PAV = PAV / N
2490  REM FIGURE SALES
2500  FOR T = 1 TO N
2510  REM DEMAND EQUATION:
2520  LET Q(T,GC) = 40000 * PAV *
    (M(T,GC - 1) © .25) / P(T,GC
    ) © 2
2530  REM ONLY WHOLE UNITS:
2540  LET Q(T,GC) =  INT (Q(T,GC)
    + .5)
2550  REM CHECK FOR ANTITRUST
2560  IF A < 1 THEN 2590
2570  IF Q(T,GC) > (A) THEN Q(T,G
    C) = A
2580  REM ADD TOTAL MARKET
2590  LET QT = QT + Q(T,GC)
2600  NEXT T
2610  REM FIGURE MARKET SHARES
2620  FOR T = 1 TO N
2630  REM MARKET SHARE =
2640  REM COMPANY SALES/
2650  REM TOTAL SALES
2660  LET M(T,GC) = Q(T,GC) / QT
2670  LET M(T,GC) =  INT (M(T,GC)
    * 1000) / 1000
2680  NEXT T
2690  REM FIGURE INFLATION
2700  LET C = (1 + I / 100) * C
2710  REM FIGURE PROFIT
2720  FOR T = 1 TO N
2730  REM PROFIT =
2740  REM QUANTITY*(PRICE-COST)
2750  LET PI(T,GC) = Q(T,GC) * (P
    (T,GC) - 5)
2760  LET PI(T,GC) =  INT (PI(T,G
    C))
2770  LET PT(T,GC) = PT(T,GC - 1)
    + PI(T,GC)
2780  NEXT T
2790  REM SAVE GOVERNMENT STATUS
2800  LET A(GC) = A
2810  LET C(GC) = C
2820  LET I(GC) = I
2830  LET PC(GC) = P
2840  REM PRINT RESULTS
2850  GOSUB 3360
2860  IF GC = R THEN  PRINT "GAME
    OVER! "; CHR$ (7);
2870  REM CHECK GOVERNMENT
2880  GOSUB 3650
2890  NEXT GC
2900  REM GAME'S ÓVER
2910  HOME
2920  VTAB 5
2930  PRINT "THIS PRICE WAR IS OV
    ER."
2940  PRINT
2950  PRINT "MARKET SHARE LEADER
    IS TEAM ";Y
2960  PRINT "WITH ";M(Y,R);" SHAR
    E."
2970  PRINT
2980  PRINT "PROFIT LEADER IS TEA
    M ";X
2990  PRINT "WITH $ ";PT(X,R);"."

3000  PRINT
3010  INPUT "SUMMARIZE GAME TO PR
    INTER (Y/N)? ";X$
```

```
3020  REM HOW TO HANDLE Y/N:
3030  IF  LEN (X$) = 0 THEN 2910
3040  LET X$ =  LEFT$ (X$,1)
3050  IF X$ = "N" THEN 3200
3060  IF X$ <  > "Y" THEN 2910
3070  REM PRINTER ON:
3080  REM CHR$(4)=CTRL-D
3090  REM REMOVE "CHR$(4);"
3100  REM IF NO DOS.
3110  PRINT  CHR$ (4);"PR#1"
3120  PRINT "PRICE WAR SIMULATION
      SUMMARY"
3130  REM PRINT PERIODS
3140  FOR GC = 1 TO R
3150  GOSUB 3320
3160  PRINT
3170  NEXT GC
3180  REM PRINTER OFF:
3190  PRINT  CHR$ (4);"PR#0"
3200  PRINT : PRINT "ANOTHER GAME
      (Y/N)";
3210  INPUT X$
3220  IF  LEN (X$) = 0 THEN 3260
3230 X$ =  LEFT$ (X$,1)
3240  IF X$ = "Y" GOTO 1720
3250  REM TERMINATE
3260  HOME
3270  PRINT "BYE..."
3280  END
3290  REM SUBROUTINES
3300  REM ***********
3310  REM
3320  REM PRINT RESULTS OF ONE GE
     NERATION
3330  REM
3340  REM INPUT GC
3350  REM X & Y FIND LEADERS
3360  LET X = 0
3370  LET Y = 0
3380  HOME
3390  PRINT "RESULTS OF PERIOD ";
     GC;":"
3400  PRINT "TE PRICE SALES  SHAR
     E  PROF    CUM PROF"
3410  PRINT "AM"
3420  FOR T = 1 TO N
3430  PRINT T;
3440  PRINT  TAB( 4);
3450  PRINT P(T,GC);
3460  PRINT  TAB( 10);
3470  PRINT Q(T,GC);
3480  PRINT  TAB( 17);
3490  PRINT M(T,GC);
3500  PRINT  TAB( 23);
3510  PRINT PI(T,GC);
3520  PRINT  TAB( 32);
3530  PRINT PT(T,GC)
3540  REM CHECK PROFIT RANK:
3550  IF PT(T,GC) > PT(X,GC) THEN
     X = T
```


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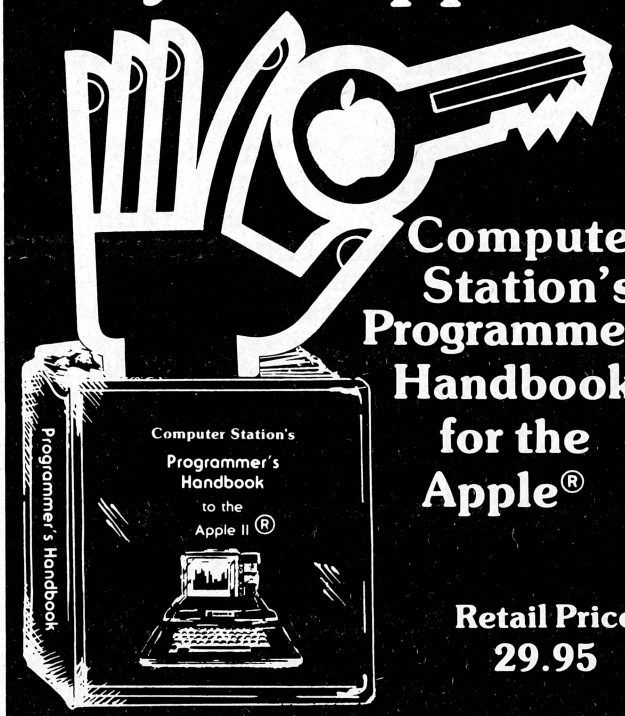

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```
3560  REM CHECK MKT SHARE RANK:
3570  IF M(T,GC) > M(Y,GC) THEN Y
      = T
3580  NEXT T
3590  IF A(GC) >  = 1 THEN  PRINT
      "ANTITRUST LIMIT = ";A(GC)
3600  IF I(GC) <  > 0 THEN  PRINT
      "INFLATION RATE = ";I(GC);"%
      "
3610  IF C(GC) <  > 5 THEN  PRINT
      "UNIT COST = $ ";C(GC)
3620  IF PC(GC) >  = 1 THEN  PRINT
      "PRICE CONTROL LIMIT = $ ";P
      C(GC);" CHANGE"
3630  RETURN
3640  REM
3650  REM THE GOVERNMENT
3660  REM
3670  REM INPUT X$ & CHECK IT
3680  INPUT "PRESS RETURN TO CONT
      INUE. ";X$
3690  IF  LEN (X$) = 0 THEN  RETURN

3700  HOME
3710  VTAB 5
3720  IF X$ = "A" THEN 3790
3730  IF X$ = "I" THEN 3950
3740  IF X$ = "P" THEN 4060
3750  IF X$ = "X" THEN 4210
3760  REM GO FOR HELP IF
3770  REM CHARACTER NOT FOUND
3780  GOTO 4260
3790  REM ANTITRUST LAW
3800  PRINT "GOVERNMENT CHANGES A
      NTITRUST LAW!"
3810  PRINT
3820  IF A < 1 THEN  PRINT "NO CU
      RRENT ANTITRUST LAWS ARE IN
      EFFECT": GOTO 3860
3830  PRINT "CURRENT ANTITRUST LA
      WS PROHIBIT SALES"
3840  PRINT "OF MORE THAN ";A;" U
      NITS BY ANY"
3850  PRINT "COMPANY IN ANY ONE P
      ERIOD."
3860  PRINT
3870  PRINT "THE NEW ANTITRUST LA
      W WILL PROHIBIT ANY"
3880  PRINT "ONE COMPANY FROM SEL
      LING MORE THAN HOW"
3890  PRINT "MANY UNITS IN ANY ON
      E PERIOD? ";
3900  INPUT "";X$
3910  IF  LEN (X$) = 0 THEN A = 0
      : GOTO 3650
3920 A =  INT ( VAL (X$))
3930  IF A < 1 THEN A = 0
3940  GOTO 3650
3950  REM INFLATION
3960  PRINT "THE INFLATION RATE C
      HANGES!"
3970  PRINT
3980  PRINT "INFLATION IS CURRENT
      LY ";I;"% PER"
3990  PRINT "PERIOD."
4000  PRINT
4010  PRINT "WHAT IS THE NEW INFL
      ATION RATE? ";
4020  INPUT "";X$
4030  IF  LEN (X$) = 0 THEN I = 0
      : GOTO 3650
4040 I =  VAL (X$)
4050  GOTO 3650
4060  REM PRICE CONTROLS
4070  PRINT "PRICE CONTROL LAWS C
      HANGE!"
4080  PRINT
4090  IF P < 1 THEN  PRINT "THERE
       ARE NO PRICE CONTROLS NOW":
       PRINT "IN EFFECT.": GOTO 41
      20
4100  PRINT "PRICE CHANGES ARE CU
      RRENTLY LIMITED"
4110  PRINT "TO $ ";P
4120  PRINT
4130  PRINT "WHAT IS THE NEW LIMI
      T FOR"
4140  PRINT "PRICE CHANGES?  $ ";

4150  INPUT X$
4160  IF  LEN (X$) = 0 THEN P = 0
      : GOTO 3650
4170 P =  VAL (X$)
4180 P =  ABS (P)
4190 P =  INT (P * 100 + .5) / 10
      0
4200  GOTO 3650
4210  REM END GAME
4220  LET R = GC - 1
4230  POP
4240  IF R < 0 THEN 3200
4250  GOTO 2910
4260  REM GOVERNMENT MENU
4270  PRINT "LIST OF GOVERNMENT E
      DICTS:"
4280  PRINT
4290  PRINT "A - ANTITRUST LAW"
4300  PRINT "I - INFLATION RATE"
4310  PRINT "P - PRICE CONTROLS"
4320  PRINT "X - EXIT GAME"
4330  PRINT "ANY OTHER KEY - LIST
       OF EDICTS"
4340  PRINT
4350  INPUT "ENTER EDICT: ";X$
4360  GOTO 3690
4370  REM **********************
4380  REM END OF PROGRAM
```

ATTACH-BIOS CONSOLE DRIVER

by Steve Lloyd
San Francisco Apple Core

I. INTRODUCTION TO ATTACH-BIOS

Since the release of Apple II Pascal 1.1, there has been a great amount of interest in the internal workings of the Basic Input Output System (BIOS) and how to modify BIOS to provide software interfaces for non-Apple hardware. Many devices that used to work with the original Pascal do not operate at all under the new system. The problem is that when Apple changed the BIOS to accommodate the new memory use conventions, they used some locations that were previously idle. This lead to competition between the operating system and hardware drivers memory usage. In most of the cases, both sides lost and the system crashed.

In April, Apple released through the International Apple Core for distribution to member clubs, documentation which describes the internal workings of the BIOS and the philosophy which has become the standard for all interaction between the BIOS and other portions of the system. Apple also included a program which will attach user provided drivers to the BIOS when ever the system is booted. This eliminates the annoying requirement of having to run a specific patch program before a device can be used.

The documentation, depending on how it is formatted, is almost 50 pages long. It includes language program listings. Written by Barry Haynes at Apple, it is a reasonably complete compilation of the facts and figures needed to write and attach machine language drivers for version 1.1 of the language system. A word of warning, Barry specifically states that this documentation is not meant to be a tutorial or even a users manual for any part of the language system. It is intended to be used by experienced assembly language system programmers to assist in attaching software drivers for non-Apple I/O devices.

II. SYSTEM CAPABILITIES

When Apple created version 1.1 of the language system, a number of enhancements were made to extend the capabilities of the system. The more significant of these enhancements are listed below.

1) 16 user defineable devices
2) system device drivers can be redefined
3) multiple units can use the same driver
4) multiple drivers can access the same unit
5) any user defined driver can be initialized at system initialization
6) device drivers are loaded without interference to normal operation

The exact configuration of the system drivers is completely up to the implementor. The driver designs are restricted by only a very few rules that govern how the drivers interface with the rest of the system. In general, Apple has restricted the BIOS access to a well defined set of addresses and procedures. Other methods may work, but they will not be supported by Apple either now or in the future. Apple is attempting to make these interfaces constant and still retain the freedom to make other changes necessary for system evolution. This position is well stated in section II.10 of the documentation.

III. CONSOLE: DRIVER

The Apple II has always been lacking in its display screen capabilities. Although the 40 x 24 display is serviceable, it places a great restriction on the word processing capabilities of the language system editor. Several months ago, I attempted to solve this problem by purchasing one of the available 80 column display boards.

Plugging this card into slot #3 of the Apple and turning on the power brought the language system up with the 80 column board hooked into the system as the console device. The first thing I noticed was that the monitor had to be radically misaligned to show a barely usable display. This was caused by a hardware design error which has since been corrected. The problems that remain are in the firmware and are the subject of this section.

The features that are missing from the firmware are listed below.

a. the type-ahead buffer would not function
b. the stop, flush, and break keyboard functions were not implemented
c. the shift key modification was not supported.

Additionally, the shift lock capabilities provided were less than useful. (Capitalizing a letter required 5 key strokes.)

The console driver shown in listing 1 is a first attempt at resolving these problems. Although it still doesn't provide the flush and break keyboard functions, it does correct the other deficiencies in the firmware. This driver also redefines some of the keys to provide left and right curly brackets (useful for Pascal comments) and the underscore. It also produces an audible click whenevery a key is pressed. The exact capabilities are outlined in listing 1.

The console is one of the more difficult device drivers to implement. The console is the default device for all system messages and command lines. This makes using the console for debugging the driver very difficult. For this reason, I have adopted the "one step at a time" approach for developing this system driver. By taking the shell program shown in listing 2 and adding incremental functions to it, the bugs in the driver are easily pin-pointed.

The documentation suggests a 6 step process for implementing a driver.

1. write the machine language driver
2. assemble the driver
3. execute the program ATTACHUD
4. execute the program LIBRARY
5. cold restart the system
6. test the driver.

Although it is not specifically stated in the documentation, as long as the .PROC name in the device driver and the interface requirements of the driver are not changed, the ATTACHUD program need be executed only once. This means that corrections, modifications and extensions to the driver can be made without having to re-explain the driver to the ATTACHUD program.

The process for linking drivers into their library (steps 4 and 5) is rather time consuming. It is very useful to put all of the repetitive, non-error producing portions into an EXEC file for automatic execution. Creation and use of EXEC files are explained in the Addendum to the Apple Pascal Operating System Reference Manual of the version 1.1 system documentation.

Using these techniques reduces the testing cycle to a 4 step process.

1. write the machine language driver
2. assemble the driver
3. EXEC/STEPS4&5
4. test the driver

A close examination of listing 1 reveals some of the options an implementor has. The first point to note is that listing 2 is actually imbedded in listing 1. This is because the shell was used as the starting point and a "one step at a time" technique was used to develop the driver.

The next point is that 3 of the 4 available driver enhancement options have been used. The code for the READ routine completely replaces the normal console read routine. The code of the WRITE and INIT routines is attached to the beginning of the normal console write and init routines. The normal console status routine has not been modified. The fourth driver enhancement option, the one not used in this driver, is to attach additional code to the end of the normal console routine.

The console is unlike any other character oriented device. It has five interfaces to the Run Time Support System, (the RTSP is the higher level pascal system which makes calls to the BIOS.) as opposed to the four interfaces normally associated with these drivers. The additional interface is the ConChk routine used to transfer characters to the type-ahead buffer as they are entered at the keyboard. It is also used to increment the random number seed.

IV. SYSTEM OPERATION WITH THE NEW DRIVER

In order to have the new console driver attached to the BIOS at boot time, the following files must be available on the boot disk.

a. SYSTEM.ATTACH
provided by the IAC to member clubs
b. ATTACH.DRIVERS
created by the LIBRARY program
c. ATTACH.DATA
created by the ATTACHUD program

During the boot process, after SYSTEM.APPLE has been loaded and before SYSTEM.STARTUP is executed, SYSTEM.ATTACH is executed. This program will load the driver from ATTACH.DRIVERS into the appropriate memory space indicated by ATTACH.DATA. The exact details are irrelevant, except to note that the new driver is attached before any user programs are loaded. Very simply this means that you can use either the new driver or the old driver, but you can't use both or even conveniently select which one you will use.

After the first user program has been executed, the system operates almost as is did before. The only exception discovered so far is that the system refuses to respond to initialize commands. This includes a system command line "I" and the initialize caused by some types of I/O errors.

V. CONCLUSION

The new capability to attach user written I/O drivers to the language system BIOS is a welcome addition. The interface specifications and philosophies presented in the Attach- BIOS documentation show a certain amount of creativity and far sightedness in the systems people at Apple. By providing this well defined capability, they have extended both the scope and the useful life of the Apple II and any other product that uses the language system.

LISTING I

```
;  Console driver specification
;
;  0)  designed to operate with a specific 80 column
;      display card
;        a. should work with other 80 column cards
;        b. will not work with 40 column APPLE screen
;  1)  full upper and lower case keyboard
;  2)  requires shift key wired to PB-2 on the game
;      I/O connector
```

```
; 3) provides caps lock
;    a. Ctrl-a enters caps lock mode
;    b. Ctrl-z leaves caps lock mode
; 4) provides {} [] underscore
;    a. special characters available when the
;       keyboard is in the caps lock mode
; 5) provides Ctrl-s stop function
;    a. Ctrl-s stops all processing
;    b. any key restarts processing
; 6) prodeeds key clicks
; 7) provides type-ahead buffer through
; 8) initializes in caps lock mode
;
; This is the new character set
;
; ABCDEFGHIJKLMNOPQRSTUVWXYZ
;  - caps lock without shift key pressed
; A}CDEFG{IJ[L]^O@0RST_VWXYZ
;  - caps lock with shift key pressed
; abcdefghijklmnopqrstuvwxyz
;  - no caps lock without shift key pressed
; ABCDEFGHIJKLMNOPQRSTUVWXYZ
;  - no caps lock with shift key pressed

Routine         .EQU    02
Temp            .EQU    04
Temp1           .EQU    06
Return          .EQU    08
ClickFreq       .EQU    0E
ClickLength     .EQU    0A
SHFTKEY         .EQU    0C063
SYSCOMp         .EQU    0F8
Buffer          .EQU    3B1
BufLen          .EQU    4E
StopOffset      .EQU    85.
BreakOffset     .EQU    84.
FlushOffset     .EQU    83.
RAND            .EQU    0BF13
CONFLGS         .EQU    0BF15
BREAKp          .EQU    0BF16
RPTR            .EQU    0BF18
WPTR            .EQU    0BF19
KYBoard         .EQU    0C000
KYReset         .EQU    0C010
Speaker         .EQU    0C030

        .MACRO GET
; Macro requires two additional parameters
; The first one is a key word which determines
; what part of the macro is expanded during the
; current execution.  The second parameter is
; a label which denotes the storage location to
; be used.
        .IF "%1" = "PROCESSOR"
        ; save the registers on the stack
        PLA
        TAY
        PLA
        TAX
```

```
PLA
PLP
.ELSE
  .IF "%1" = "PARAMETER"
  ; move a full word from the stack
  ; to the memory location specified
  ; by the second parameter
  PLA
  STA     %2
  PLA
  STA     %2+1
  .ELSE
  "GET MACRO EXPANSION ERROR"
  .ENDC
.ENDC
.ENDM

.MACRO PUT
.IF "%1" = "PROCESSOR"
 ; restore registers from the stack
 ; this macro requires the same
 ; parameters required by the macro GET
 ; it performs a complementary function
 ; to the macro GET
PHP
PHA
TXA
PHA
TYA
PHA
.ELSE
  .IF "%1" = "PARAMETER"
   ; move a full word to the stack from
   ; to the memory location specified by
   ; the second parameter
  LDA     %2+1
  PHA
  LDA     %2
  PHA
  .ELSE
  "PUT MACRO EXPANSION ERROR"
  .ENDC
.ENDC
.ENDM

.MACRO Tone
PUT     PROCESSOR
LDY     #%2       ; length = Y / 2
LDA     #%1       ;                983000
SEC               ; freq = -----------------
PHA               ;          8*A*A + 14*A + 26
SBC     #01       ;           A     freq
BNE     -2.       ;          ---    ----
PLA               ;           5     3312
SBC     #01       ;          10     1014
BNE     -8.       ;          20      280
LDA     Speaker   ;          50       47
DEY               ;         100       12
BNE     -17.      ;         200        3
```

```
GET     PROCESSOR
RTS
.ENDM

          .MACRO  Toggle
          PHP
          PHA
          LDA     %1
          EOR     #80
          STA     %1
          PLA
          PLP
          .ENDM

          .PROC   Console

          JMP     ConChk
          STA     Temp1     ; THIS MIGHT BE A WRITE
                            ; CALL, SAVE THE CHARACTER
          STY     Temp1+1   ; THE Y REGISTER CONTAINS
                            ; THE UNIT NUMBER
          TXA               ; THE X REGISTER CONTAINS
                            ; THE TYPE OF CALL
          BEQ     Read
          CMP     #1
          BEQ     WRITE
          CMP     #2
          BEQ     INIT
          CMP     #4
          BEQ     STATUS
          LDX     #03       ; Return code for
                            ; illegal operation
          RTS

WRITE     BIT     FLUSH     ; tested, but never used
          BPL     $1        ; branch always taken
          LDX     #0
          RTS
$1        LDY     #4        ; offset from SYSCOM for
                            ; normal write call
          BNE     CaseYof

INIT      LDA     #0
          STA     WPTR
          STA     RPTR
          GET     PARAMETER, Return
          GET     PARAMETER, SYSCOMp
          GET     PARAMETER, BREAKp
          PUT     PARAMETER, Return
          RTS

STATUS    LDY     #43.

CaseYof   LDA     @0E2,Y
          STA     Routine
          INY
          LDA     @0E2,Y
          STA     Routine+1
          LDY     Temp1+1   ; Restore registers
          LDA     Temp1
          JMP     @Routine
```

```
Read    LDX     RPTR
        CPX     WPTR    ; IF RPTR=WPTR
                        ; (* BUFFER EMPTY *)
        BEQ     ReadKBD ;   THEN CHECK KEYBOARD

GetBuf  LDA     Buffer,X ;     ELSE GET CHARACTER
        INC     RPTR    ; POINT TO NEXT CHARACTER
        LDX     #BufLen ; USING CIRCULAR BUFFER
        CPX     RPTR    ;
        BNE     $1      ;
        LDX     #0      ;
        STX     RPTR    ; SAVE POINTER
$1      LDX     #0      ; NO ERROR RETURN CODE
        RTS

; GET CHARACTER FROM KEYBOARD
ReadKBD LDA     KYBoard ; TEST KEYBOARD
        BPL     ReadKBD ; LOOP UNTIL KEY IS PRESSED
KeyIn   JSR     Click   ; KEY SOUNDS
        BIT     KYReset ; CLEAR KEYBOARD STROBE

; CHECK FOR CAPS LOCK COMMANDS
        CMP     #81     ; control - a   caps lock
        BNE     $1      ;
        LDA     #00     ;
        STA     CapsLok ;
        BEQ     ReadKBD ;
$1      CMP     #09A    ; CONTROL -  Z  UNLOCK
        BNE     $2      ;
        LDA     #80     ;
        STA     CapsLok ;
        BNE     ReadKBD ;

$2      BIT     CapsLok ; test caps lock
        BPL     Special ; uppercase only
        BIT     ShftKey ; TEST SHIFT KEY
        BPL     AtSign  ; JUMP IF PRESSED

; HANDLE LOWER CASE CHARACTERS
UnShift CMP     #0BF    ; ASCII '?' -  HIGH BIT SET
        BMI     AtSign  ; SPECIAL CASEs
        CLC
        ADC     #20     ; CONVERT CASE
        BNE     InDone  ; ALWAYS TAKEN

; CONVERT SPECIAL CHARACTERS TO NORMAL CHARACTERS
AtSign  CMP     #0C0
        BNE     UPAROW
        LDA     #50     ; upper case p
uparow  CMP     #0DE
        BNE     RTBRC
        LDA     #4E     ; upper case n
rtbrc   CMP     #0DD
        BNE     InDone
        LDA     #4D     ; upper case m
InDone  LDX     #0      ; NORMAL RETURN CODE
        AND     #7F     ; KEEP LOWER 7 BITS
$1      RTS             ; FINISHED
```

```
; SPECIAL HANDLING FOR REDEFINED CHARACTERS
Special BIT     shftkey ; not pressed
        BMI     InDone  ; don't convert
        CMP     #0CB    ; ASCII 'K'
        BNE     $1      ;   replaced with
        LDA     #5B     ; LEFT SQUARE BRACKET
        BPL     InDone
$1      CMP     #0C8    ; ASCII 'H'
        BNE     $2      ;   replaced with
        LDA     #7B     ; LEFT CURLY BRACKET
        BPL     InDone
$2      CMP     #0C2    ; ASCII 'B'
        BNE     $3      ;   replaced with
        LDA     #7D     ; RIGHT CURLY BRACKET
        BPL     InDone
$3      CMP     #0D5    ; ASCII 'U'
        BNE     InDone  ;   replaced with
        LDA     #5F     ; UNDER SCORE
        BPL     InDone

Click   Tone    ClickFreq,ClickLength

ConChk  PUT     PROCESSOR
$1      INC     RAND
        BNE     $2
        INC     RAND+1
$2      LDA     KYBoard ; LOAD NEXT CHARACTER
        BPL     ChkQuit ; NO NEXT CHARACTER, RETURN
        AND     #7F     ; SEVEN BIT ASCII CODES

; Check for stop character
        LDY     #StopOffset ; system stop character
        CMP     (SYSCOMp),Y ; from SYSTEM.MISCINFO
        BNE     ChkFull
        Toggle  STOP
        BIT     STOP    ; check for stopped flag
        BMI     $1      ; check keyboard if stopped
        BPL     ChkQuit

; Continue console check
ChkFull LDX     WPTR    ; CHECK BUFFER FULL
        INX             ; ADD ONE TO WPTR
        CPX     #BufLen ; WITH WRAP AROUND
        BNE     $1
        LDX     #0      ; LEAVE UPDATED POINTER IN
                        ;  X REGISTER
$1      CPX     RPTR    ; IF RPTR = WPTR+1
        STX     XREG
        BEQ     ChkQuit ;   THEN BUFFER FULL
        ORA     #80     ;     ELSE RESTORE BIT 7
CnvrtCh JSR     KeyIn   ;     GET NEXT CHARACTER
PutBuf  LDY     WPTR    ;     GET OLD WPTR
        STA     Buffer,Y ;    SAVE CHARACTER IN
        LDX     XREG    ;     BUFFER
        STX     WPTR    ;     SAVE UPDATED WRITE
                        ;     POINTER

ChkQuit GET     PROCESSOR
        RTS
```

```
CapsLok .byte   0
Stop    .byte   0
FLUSH   .BYTE   0
XREG    .BYTE   0
```

LISTING II

```
; This is the starting shell

.PROC  Console

          JMP     ConChk   ; user provided
          STA     Temp1    ; THIS MIGHT BE A WRITE
                           ; CALL, SAVE THE CHARACTER
          STY     Temp1+1  ; THE Y REGISTER CONTAINS
                           ; THE UNIT NUMBER
          TXA              ; THE X REGISTER CONTAINS
                           ; THE TYPE OF CALL
          BEQ     Read     ; user provided
          CMP     #1
          BEQ     WRITE    ; user provided
          CMP     #2
          BEQ     INIT     ; user provided
          CMP     #4
          BEQ     STATUS   ; user provided
          LDX     #03      ; Return code for
                           ; illegal operation
          RTS

CaseYof LDA     @0E2,Y
        STA     Routine
        INY
        LDA     @0E2,Y
        STA     Routine+1
        LDY     Temp1+1  ; Restore registers
        LDA     Temp1
        JMP     @Routine
```


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INTEGER BASIC REGISTER LOADER

by Val. J. Golding

Much has been written of late concerning some rather interesting applications of the ampersand ('&') function in Applesoft. For example, see "Passing Argument Values to Machine Language Subroutines in Applesoft", by C. K. Mesztenyi in the Spring 1981 **Apple Orchard.** Integer BASIC has become sort of a neglected "poor cousin" recently. This is rather unfortunate. While Integer is not as powerful as Applesoft, lacking the latter's floating point and string manipulation capabilities, it is a much faster and easier BASIC for many programming applications.

This article and accompanying programs demonstrate that with just a smidgin of ingenuity, it is just as easy to pass parameters in Integer as in Applesoft. As a bonus, thanks to Don Williams of A.P.P.L.E., we are also able to present a little 15-byte subroutine which enables the Assembly program to determine its own location in memory.

The Integer BASIC program is simplicity itself. It serves as a front end; and, using the S. H. Lam routine, it serves as a method of loading the machine language along with the BASIC. The only hard and fast requirements are that the four variables in Line 100 be defined in the exact order shown, and with single-character names. The Assembly language routine depends on this assumption.

Lines 120 to 150 assign actual values to the four predefined variables, with P representing the address of the routine the user wishes to CALL (in this example PRNTAX); the variables A, X, and Y are assigned the values to be loaded into the 6502's A, X, and Y registers. While they are static examples in the subject program, they could just as easily (and probably more practically) be handled as INPUTs, depending on the application.

The Assembly language portion is fully relocatable. To originate it at an alternate address, just change the (decimal) CALL in Line 200 to agree with whatever (hexadecimal) address you specify at the beginning of HEX$.

The Assembly language program is self-modifying, meaning that certain code in the program will change the code in another part of the program. This practice is sometimes frowned upon as not being good programming technique, but there are cases when it sure is helpful.

The cause of all this consternation is the JSR FIND in Line 67 of the source listing, which on the surface appears to be a JSR TO $0. In fact, this is the bit of code which gets modified, and ultimately will JSR to the routine chosen by the user in the BASIC program. This creates the need for an indirect JSR in the instant program. Unfortunately, while the 6502 microprocessor provides indirect addressing for a JMP, the JSR instruction has only one addressing mode, and that is absolute.

Enter our current finaglement. The JSR to TRICK in Line 32 of the source listing is to $FF58, per Line 20. However, any location which contained a $60 (RTS) would serve the purpose. By doing the JSR, a return address is pushed onto the stack, so when we get back, by transferring the stack pointer to index register X in Line 33, we can now load the accumulator with the return address from the stack, and store it in $00 and $01. Then, loading Y with an offset to the location of the program we wish to modify, we use it as an index to store the data that will be loaded into the accumulator in Lines 42 and 45.

The balance of the program follows more easily; each significant location in the Integer BASIC variable table, in its turn, is loaded into the accumulator and then transferred to the desired registers. When this is done, we do the JSR FIND, which now contains a real address, restore the 6502 registers (we never checked in the first place to see if they **had** to be saved), and go back to BASIC.

```
]LIST
   10 REM
INTEGER BASIC REGISTER LOADER
      BY  VAL J GOLDING
  APPLE ORCHARD  *  FALL 1981
  100 P=A=X=Y=0: REM  SET VBL TBL SEQ
  110 GOTO 300
  120 P=-1727: REM   ADR OF ROUTINE TO
       CALL
  130 A=127: REM LOAD ACCUM WITH A
  140 X=255: REM LOAD X-REG WITH X
  150 Y=80: REM  LOAD Y-REG WITH Y
  160 REM
LINES 120 TO 150 COULD ALSO BE INPUTS
  200 CALL 768: END : REM
  300 DIM HEX$(200):HEX$="300:20 4A FF
       20 58 FF BA BD 0 1 85 1 CA BD 0
       1 85 0 A0 4 B1 4A 48 C8 B1 4A A
      0 2F 91 0 88 68 91 0 "
  310 HEX$( LEN(HEX$)+1)="A0 A B1 4A 4
      8 A0 10 B1 4A AA A0 16 B1 4A A8
      68 20 0 0 20 3F FF 60 NE88AG"
  400 FOR I=1 TO LEN(HEX$): POKE
      511+I, ASC(HEX$(I)): NEXT I:
       POKE 72,0: CALL -144
  410 GOTO 120: REM
CHANGE ADDRESS OF HEX$ IN LINE 300
TO RELOCATE PROGRAM
```

(continued on page 55)

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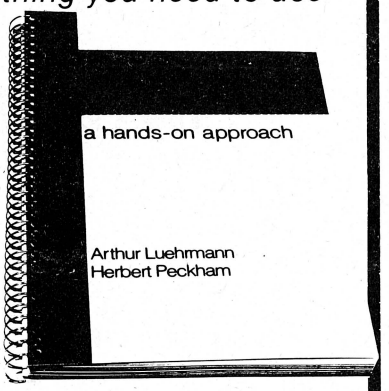

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(continued from page 54)

```
                    ********************************
                    *                              *
                    *  LOADING 6502 REGISTERS AND  *
                    *    PASSING PARAMETERS FROM   *
                    *       INTEGER  BASIC         *
                    *                              *
                    *    BY  VAL J. GOLDING        *
                    *                              *
                    * APPLE ORCHARD  *  FALL 1981  *
                    *                              *
                    ********************************
                    *
                    *
                    FIND      EQU  $0
                    LOMEM     EQU  $4A
                    STACK     EQU  $100
                    RESTORE   EQU  $FF3F
                    SAVE      EQU  $FF4A
                    TRICK     EQU  $FF58
                    *
                    *
                              ORG  $300
                    *
                    *
                    * This code, despite a self-modifying JSR
                    * within itself, is completely relocatable;
                    * thanks to Don Williams for pointing the way
                    *
                    *
0300: 20 4A FF                JSR  SAVE       SAVE REGISTERS JUST IN CASE
0303: 20 58 FF                JSR  TRICK      FIND RTS SOMEWHERE
0306: BA                      TSX             ;STACK POINTER KNOWS WHERE WE ARE
0307: BD 00 01                LDA  STACK,X
030A: 85 01                   STA  FIND+1
030C: CA                      DEX
030D: BD 00 01                LDA  STACK,X
0310: 85 00                   STA  FIND
                    *
                    *
0312: A0 04                   LDY  #$4
0314: B1 4A                   LDA  (LOMEM),Y  LSB OF ADR OF USER JSR
0316: 48                      PHA
0317: C8                      INY
0318: B1 4A                   LDA  (LOMEM),Y  MSB OF USER ROUTINE
031A: A0 2F                   LDY  #$2F
031C: 91 00                   STA  (FIND),Y
031E: 88                      DEY
031F: 68                      PLA
0320: 91 00                   STA  (FIND),Y
                    *
                    *
                    * NOW HANDLE THE 6502 REGISTERS
                    *
                    *
0322: A0 0A                   LDY  #$0A
0324: B1 4A                   LDA  (LOMEM),Y  DATA FOR ACCUMULATOR
0326: 48                      PHA
0327: A0 10                   LDY  #$10
0329: B1 4A                   LDA  (LOMEM),Y  DATA FOR X-REGISTER
032B: AA                      TAX
032C: A0 16                   LDY  #$16
032E: B1 4A                   LDA  (LOMEM),Y  DATA FOR Y-REGISTER
0330: A8                      TAY
0331: 68                      PLA
                    *
0332: 20 00 00                JSR  FIND       (NOT REALLY)
0335: 20 3F FF                JSR  RESTORE    (THE REGISTERS)
0338: 60                      RTS

--END ASSEMBLY--

ERRORS: 0

57 BYTES

SYMBOL TABLE - ALPHABETICAL ORDER:

   FIND     =$00        LOMEM    =$4A        RESTORE =$FF3F      SAVE     =$FF4A
   STACK    =$0100      TRICK    =$FF58

SYMBOL TABLE - NUMERICAL ORDER:

   FIND     =$00        LOMEM    =$4A        STACK   =$0100      RESTORE =$FF3F
   SAVE     =$FF4A      TRICK    =$FF58
```

H.A.A.U.G.
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THE APPLE BARREL

POORBOY WORD PROCESSOR— MX-80 LOWER CASE OUTPUT

by Mike Kramer
from The Apple Barrel
H. A. A. U. G.

The short program LISTed below is a combination of two capabilities which may be of interest to many of you. The first is a technique to print upper and lower case on an Epson MX-80 printer using keyboard input. The [ESC] key is used to indicate that the next character should be printed in upper case. The next character will appear on the screen in inverse video. An [ESC] must be typed for each upper case character. CTRL-E is recognized as an End command.

The "Input Anything" routine uses the GET command for input rather than INPUT. The main implication is that you can enter commas and colons without getting "?EXTRA IGNORED", etc. Provision is made for handling backspaces without backing off the edge of the screen.

REMs have been left out of the program to maximize speed. The following comments should help clarify what's going on.

Line 10—Initialize.

Line 20—Blank out line before reading in characters.

Line 30—GET a character, print to screen, no line feed, normal video.

Line 40—If a [RETURN] then go off to Print.

Line 50—If a CTRL-E then End.

Line 60—If a back space and no characters left, blank out line.

Line 70—If a back space and more than one character, then drop last character.

Line 80—Good character. Add it to the line to be Printed. Beep if < 75 characters.

Line 90—If an [ESC] set inverse video.

Line 100—Get another character.

Line 130—Prints a prompt and saves vertical cursor position. Goes to GET line.

Line 150—Turn on printer.

Line 170—Prepare for lower case letters.

Line 180—Loop through characters in line.

Line 200—If [ESC] then flag for upper case and look at next character.

Line 210—If not a letter do not try to print upper case.

Line 220—Print the character. If a letter and preceded by [ESC] then capitalize.

Line 250—Turn off printer.

Line 270—Go back for another line.

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```
10  GOTO 110
20 LINE$ = ""
30  GET A$: PRINT A$;: NORMAL
40  IF A$ =  CHR$ (13) THEN  RETURN

50  IF A$ =  CHR$ (5) THEN  END
60  IF A$ =  CHR$ (8) AND  LEN (L
    INE$) <  = 1 THEN LINE$ = ""
    : RETURN
70  IF A$ =  CHR$ (8) AND  LEN (L
    INE$) > 1 THEN LINE$ =  LEFT$
    (LINE$, LEN (LINE$) - 1): GOTO
    30
80 LINE$ = LINE$ + A$: IF  LEN (L
    INE$) > 75 THEN  PRINT  CHR$
    (7);
90  IF A$ =  CHR$ (27) THEN  INVERSE
100  GOTO 30
110 D$ =  CHR$ (4)
120  HOME
130  PRINT "^";:CV =  PEEK (37): GOSUB
     20
140  IF  LEN (LINE$) = 0 THEN  POKE
     36,0: POKE 37,CV: GOTO 130
150  PRINT D$"PR#1"
160  PRINT  CHR$ (9)"80N"
170 CAP = 32
180  FOR I = 1 TO  LEN (LINE$)
190 CH$ =  MID$ (LINE$,I,1)
200  IF  ASC (CH$) = 27 THEN CAP =
     0: GOTO 240
210  IF  ASC (CH$) < 65 OR  ASC (
     CH$) > 90 THEN CAP = 0
220  PRINT  CHR$ ( ASC (CH$) + CA
     P);
230 CAP = 32
240  NEXT I
250  PRINT  CHR$ (9)"I"
260  PRINT D$"PR#0"
270  GOTO 130
280  REM
290  REM       "GET" INPUT
300  REM            &
310  REM       EPSON MX-80
320  REM
330  REM  UPPER/LOWER CASE PRINT
340  REM
350  REM        WRITTEN BY
360  REM
370  REM       MIKE KRAMER
```

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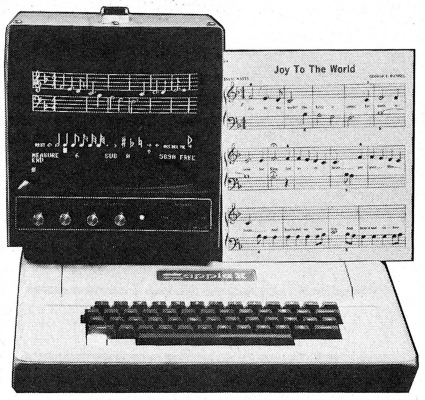

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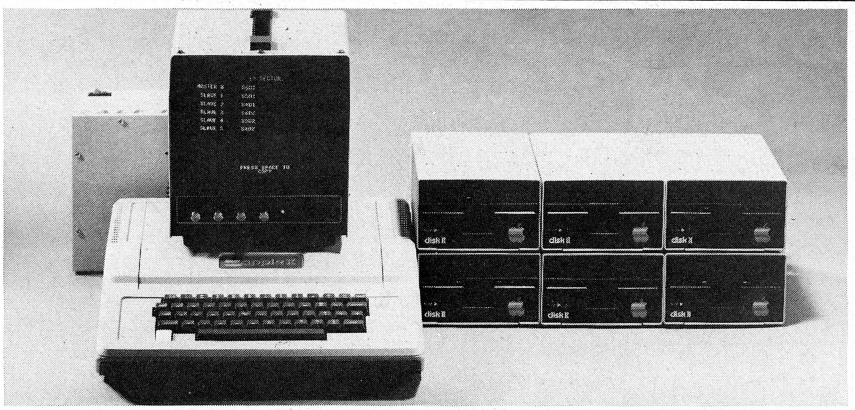

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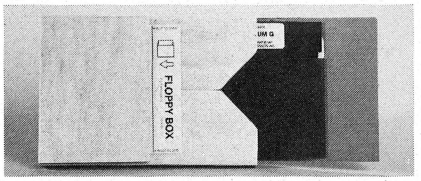

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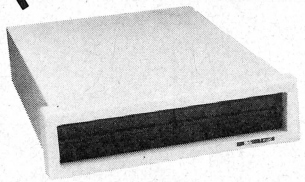
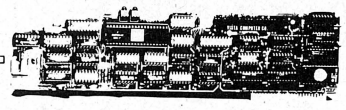


+  = 2.5 MB

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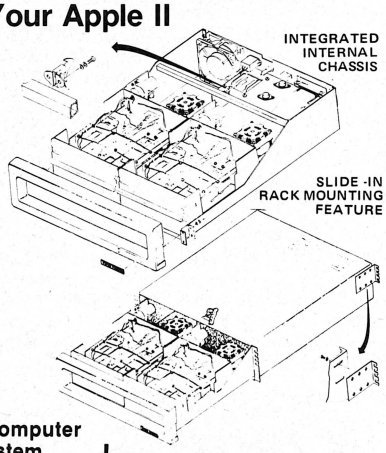

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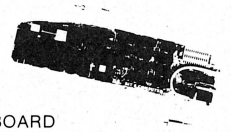

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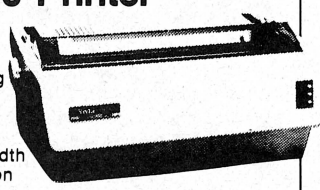

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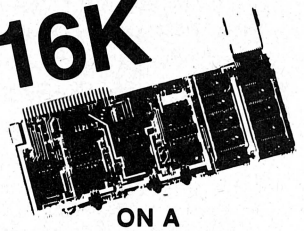

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IAC MEMBERSHIP INFORMATION

The International Apple Core is a non-profit organization composed of Apple computer user groups throughout the world. Membership is available to user groups as Full Members, to companies and individuals as Sponsors, and to educational and charitable institutions as Associates. Details of memberships are described below.

The IAC was formed to disseminate all types of information from Apple clubs and the related computer industry. Our publication, the **Apple Orchard,** provides the latest and best information on a quarterly basis. Membership includes a subscription. Members also receive technical information in the form of Apnotes. These cover Apple Computers, related equipment, and related products from other manufacturers. Timely and fast-breaking news is covered in our monthly Bulletin.

FULL MEMBERSHIP

Apple user clubs are the principle reason for the IAC's existence today. We provide them many services beyond information dissemination. A newsletter exchange coordinator facilitates newsletter swapping between clubs. Our software librarian collects and distributes public domain software. Depending on the software's availability, new diskettes are sent out as frequently as once a month. We support special interest groups which our member clubs cannot: education, handicapped, medical, ham radio, and legal SIG's are examples. The **Orchard** publishes a complete list of our member clubs so that interested users may easily get in touch. There is even a committee just to help new Apple clubs get started.

As a Full Member, your club will be able to participate in the election of IAC Directors. Directors provide an important link between member clubs and the IAC. As your representatives they set the IAC's policies and guide its administration. When schedules permit, the Directors and Officers are available to meet with clubs for personal input and exchange of ideas.

Full Membership is open to all Apple Computer User Groups. The combined initiation fee and annual dues will be $50.00 (U.S.) for 1981. To enroll your club, simply return a completed application form with your first year's dues.

SPONSORS

Manufacturers having business related to Apple Computers need timely access to information that the IAC distributes. In addition many will seek access to the IAC membership for business interests, either to promote a product or to conduct market research. The Sponsoring membership is tailored to meet commercial interests.

In addition to the information sent to all members, Sponsors receive several benefits. Up to date mailing lists of our membership will be sent on request. Sponsors are given preferential placement of their advertising in the **Orchard.** Also, Sponsors are listed in each issue of the **Orchard.** Sponsors are welcome to participate in all the activities of the IAC, and are encouraged to explore marketing potential with the IAC administration.

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The Associate Membership was created to help educational, research, and charitable institutions that have an interest in Apple Computers but cannot join the IAC for financial reasons. Associate members receive only the printed materials sent to all members. If software and other additional IAC services are desired, the institution is encouraged to organize a user group which may apply for Full Membership.

The Associate Membership is open only to non-profit institutions at no cost. Membership applications must be accompanied by evidence that the institution is non-profit. If the membership will be care of an individual, evidence must be provided that the individual represents the entire institution to the IAC. Pease submit whatever you feel is appropriate to demonstrate these requirements. Due to the diversity of institutions and countries, the IAC cannot set any fast rules. Associate Membership applications will be judged on their merit by the IAC President.

For information on becoming a member of IAC please write:

International Apple Core
P.O. Box 976
Daly City, CA 94017

CORRECTED PAGE 82—SPRING ISSUE, 1981

```
      PA                                = Packed Array [0..0] OF Char;

      Memory_Type                       =
        RECORD
          CASE Boolean
            OF
              true:  (pointer           : ^PA);
              false: (location          : Integer);
          END {CASE};


VAR
      plot_buffer                       : Plot_Type;
      text_buffer                       : Text_Type;

      base_text                         : Array [0..23] OF Integer;
      base_graphics                     : Array [0..47] OF Integer;
      mode_table                        : Packed Array [0..255] of Char;

      null,
      blank                             : Char;

      i,
      y,
      top_y,
      cursor_x,
      cursor_y                          : Integer;


PROCEDURE Clear (ch: Char);

  BEGIN
    Fill_Char (text_buffer.pointer^ [  0], 120, ch);
    Fill_Char (text_buffer.pointer^ [128], 120, ch);
    Fill_Char (text_buffer.pointer^ [256], 120, ch);
    Fill_Char (text_buffer.pointer^ [384], 120, ch);
    Fill_Char (text_buffer.pointer^ [512], 120, ch);
    Fill_Char (text_buffer.pointer^ [640], 120, ch);
    Fill_Char (text_buffer.pointer^ [768], 120, ch);
    Fill_Char (text_buffer.pointer^ [896], 120, ch);
    cursor_x := 0;
    cursor_y := 0;
  END {Clear};


PROCEDURE Str_I (I: Integer;  VAR Item: String);

  VAR
       L                                : Integer;

  BEGIN
    L := I;
    Str (L, Item);
  END {Str_I};
```

CORRECTED PAGE 84—SPRING ISSUE, 1981

```
PROCEDURE Mixed;

  VAR
       y                                  : Integer;

    BEGIN
      color := 0;
      Poke (-16298, null);
      Poke (-16300, null);
      Poke (-16301, null);
      Poke (-16304, null);
      Clear (null);
      Fill_Char (text_buffer.pointer^ [592], 40, blank);
      Fill_Char (text_buffer.pointer^ [720], 40, blank);
      Fill_Char (text_buffer.pointer^ [848], 40, blank);
      Fill_Char (text_buffer.pointer^ [976], 40, blank);
      top_y := 20;
      cursor_x := 0;
      cursor_y := top_y;
    END;

 PROCEDURE Plot {(x, y: Integer)};

    BEGIN
      x := x MOD 40;
      y := y MOD 48;
      plot_buffer.pointer^ [base_graphics [y] + x + x + (y MOD 2)] := color;
    END {Plot};

PROCEDURE HLIN {(x1, x2, y: Integer)};

  VAR
       base,
       x                                  : Integer;

    BEGIN
      x1 := x1 MOD 40;
      x2 := x2 MOD 40;
      y  := y  MOD 48;
      base := base_graphics [y] + (y MOD 2);
      x := x1 + x1;
      WHILE x <= (x2 + x2)
        DO
          BEGIN
            plot_buffer.pointer^ [base + x] := color;
            x := x + 2;
          END {WHILE};
    END {HLIN};

PROCEDURE VLIN {(y1, y2, x: Integer)};

  VAR
       base,
       y                                  : Integer;
```

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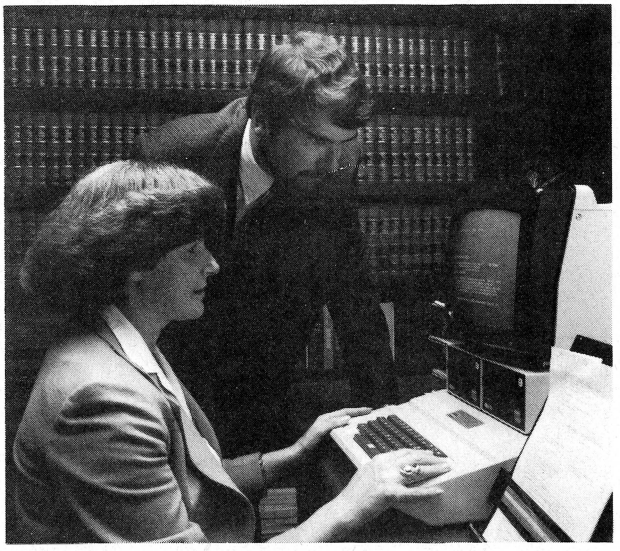

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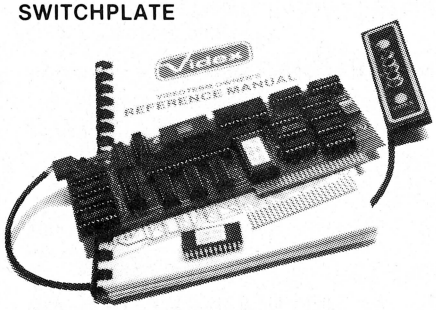

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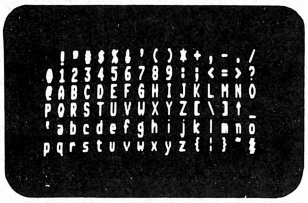

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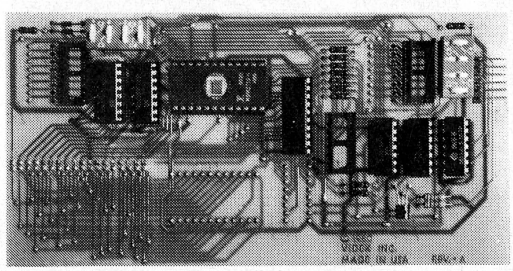

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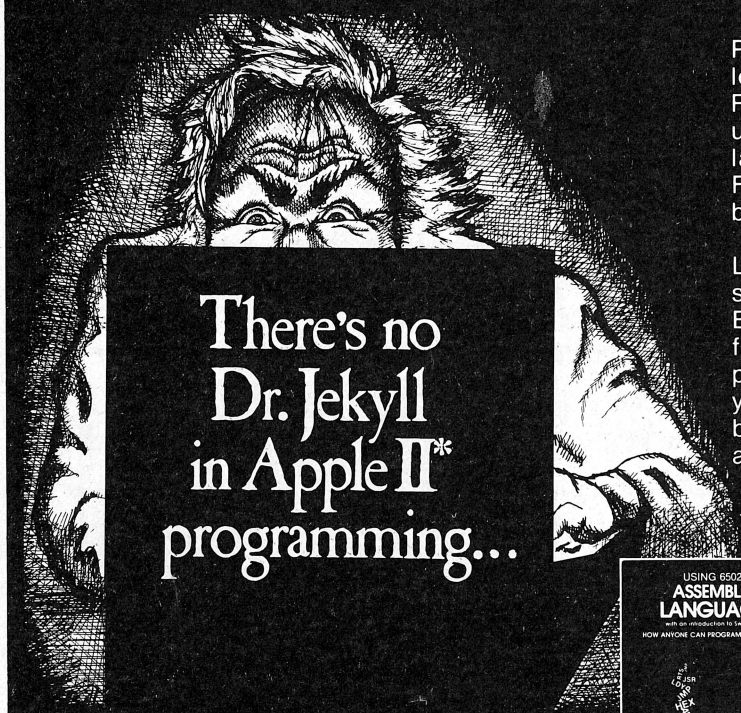

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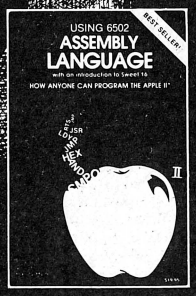

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USER GROUP FORUM

conducted by Randy Fields

NOTE: The International Apple Core (IAC) receives many requests for information about starting and running Apple Users' Groups. I've asked Randy Fields to conduct this column to discuss many facets of Club activities in a practical way. Randy is Past President of the San Francisco Apple Core, and is the IAC's New Club Assistance Chairman. His sometimes painfully-won background in club policies, procedures, and practices is here for all of us; write if you have questions about Club matters.

—PCW

In the Summer issue of **Apple Orchard,** we discussed how an Apple Users Group (Club) is started and outlined many areas which form the foundation for a successful Club. This time, we'll cover one Club's approach to meetings, and some thoughts on governing of Club business.

First, meetings, as practiced by A.P.P.L.E.-Washington, based in Seattle. This Club is best known for its excellent publication, **Call-A.P.P.L.E.,** but their experience with meetings is no less valuable. Here's their report:

A.P.P.L.E. is a dual-purpose club: we are both a medium-sized local club (400 members in a sprawling metropolitan area), and the largest international one (over 7,000 members in total). We've not done the best job in the area of local meetings, admittedly, having rotated them among local dealers—both because of the geographic area to be covered coupled with members' desires not to travel too far, and because we didn't have our own space.

We have had difficulty in finding both a format and the needed number of exciting presentations. We want to change this now that we have space for holding some (at least) of our meetings on our own turf. In preparation, we've been talking with other clubs about how they do their meetings, and find the following useful ideas (many of which we are working to incorporate):

—your own space, at least for some meetings, where you can talk freely without offending the dealer host, where your hardware can stay set up, etc. Community colleges and larger high schools are one possibility if you can't swing your own space; a skill-tradeout with the host should make the idea acceptable to the school.

—a mix of scheduled speakers and informal (probably small-group) hands-on sessions. Some clubs meet twice monthly, alternating their format. Hands-on means hardware, so this is tied to the issue above.

—both a program chairperson who lines up speakers (or a committee to contribute wider contacts), **and** a detail/logistics person to make sure what needs to get done actually does.

—shameless raiding of local companies, the telecommunications nets, and visiting firemen for possible presentors. It helps if you can pay for periodic top speakers (at least travel expenses).

—investment in either a covey of monitors, or a projection TV system; the folks in the back get turned off quickly when they can't see the screen.

—a rule of "no game playing in the back" when the meeting is on, except during the "hands-on" sessions. The beep-beep from the latest shoot-em-up game in the hands of younger members is not only disruptive, it is damned rude.

—development of a wider sense of purpose; perhaps through community service projects, linkage to a school or students, etc. The ham radio operators have used this approach very successfully, why can't we?

The above is only a starter list. We hope to develop a forum for club discussion of these and other ideas. We'd like to hear what the very successful local clubs have been doing with meetings, together with the problems others are having.

CLUB GOVERNMENT

Two Percent for Ninety-Eight Percent. Now that we have your Club up and running, we will cover how the Club is governed. Since the club is formed around a tool for both business and pleasure (the Apple and/or other computers), some members will voluntarily supply the creativity to make the User Group a dynamic and interesting organization. (This creativity, if not channeled and managed, can also be the downfall of the Club.) Note: It is common in many volunteer organizations that 2 percent of the members do 98 percent of the work. However, the other 98 percent supply the money for the Club to carry out its activities.

In the Beginning. The way a Club sets policies, makes and implements decisions, and spends the members' money depends to a great extent on the size of the Club. The Founder and/or first President plus the first members play a crucial role in the Club's development and early growth by making the major decisions affecting how new members will be found, what general qualifications they should have, how much membership dues will be, etc., etc.

The "Nuclear" Club. If the Club has done the "advertising" for members effectively and by the time it has 25-50 members, the nucleus of the Club officers is present. Using a modified version of the San Francisco Apple Core's Bylaws, the following description of the President's and other officers' functions are provided. The traditional officers are: President, Vice President, Treasurer, and Secretary. Initially, the Founder is all of these. The next officer can be the Secretary/Treasurer. As the Club expands, the functions of the officers are split up. When and how they are split depends on the how much work there is to do, and how much time each of the officers have.

President. The President is the general manager and chief executive officer and has general supervision, direction and control of the organization and other officers. The President presides at all meetings of the members and at all governing meetings. The President has the general powers and duties of management usually vested in the office of President.

Vice President. In the absence or disability of the President, the Vice President performs all the duties of the President and, when so acting, has all the powers of, and be subject to all the restrictions upon, the President. The Vice President shall have such other powers and perform such other duties as from time to time may be prescribed by the President.

Secretary. The Secretary keeps a book of minutes of all meetings of members, the governing meetings and its committees, with the time and place of holding, the names of those present at governing meetings and committee meetings, the number of members present, and the proceedings. The Secretary keeps the Constitution and Bylaws, as amended to date.

The Secretary gives notice of all meetings of the members and of the governing meetings and any committees, and shall have such other powers and perform such other duties as may be prescribed at the governing meetings.

Treasurer. The Treasurer is the chief financial officer and keeps and maintains adequate and correct accounts of the properties and business transactions of the corporation, and reports to the governing members such financial statements and reports as are required by law or for proper management. The books of account is open to inspection by any member at all times.

The Treasurer deposits all moneys and other valuables in the name and to the credit of the organization with such depositaries as may be designated at the governing meetings. The Treasurer disburses the funds as may be ordered at the governing meetings, renders to the President and the officers an account of all transactions and of the financial condition of the organization, and shall have such other powers and perform such other duties as may be prescribed at the governing meetings.

An example. If your Club grows at the rate of 5 new members per month (which is reasonable), your Club will have about 50 members at the end of the first year. Shortly after the Club is in operation, the Secretary/Treasurer starts the membership list and collects the dues. If the membership dues are $25, the treasury will grow from $0 to about $1,000 before expenses. Once the second year starts, 10 membership renewals/month plus 10 new members effectively doubles the workload for the Secretary/Treasurer. This dynamic will probably elicit a "Wow, am I busy," and additional help will be requested. Depending on the desires of the President and Secretary/Treasurer, the job can be split into its two components, or a Membership Committee (of one or more people) can be formed.

Elections and Appointments. In the earliest stages of a Club's develop-

ment and growth, the officers may be appointed to their positions by the Founder and/or President. As the Club grows and more volunteers become active in its management, it is desirable to have the officers elected by a vote of the membership. Campaigns can be held, ballots with qualification statements can be given out or mailed to the membership, and majority's will can be served. If the Club continues to grow with many members outside the local area, the members can elect a Board of Directors who appoint the Club officers. When these various transitions take place depends on the desires of the membership and the need for effective management.

All committee heads are appointed by the President and serve at the President's pleasure. There are: Standing committees and Special committees. Standing committees, such as: Membership, Newsletter and Library, perform the on-going tasks of the Club while Special committees such as: Election, New Meeting Place Location, and Special Equipment Acquisition, are appointed to carry out specific, intermittent assignments. When the need to get something done is perceived, ask for volunteers, set up a committee, notify the members, and ask for a report at the next governing or general meeting.

Final observation on officers and management. Above it was noted that 2 percent of the members do 98 percent of the work. However, this 2 percent will do about 75 percent of the work that has to be done. Some volunteers will perform at 150 percent, others at 50 percent. Who will do how much at any given time is a semi-random function. But, take heart, all of the activities that NEED to be performed somehow get done.

INSIDE THE IAC

by Joe Budge
IAC Secretary

As scheduled, the IAC annual meeting was held in Chicago on May Second and Third. Representatives from member clubs came from as far away as Singapore to attend. The meeting began with an open forum discussion on copy protection. As might be expected, a variety of opinions were expressed by both users and manufacturers. It's clear that the issue is far from solved. Following the forum, Directors from each U.S. region were elected. Ballots from absent member clubs were combined with the floor vote to reach a determination. Jerry Vitt from the South and Bernie Urban from the East were the two incumbents re-elected to their posts. James Hassler was elected from the Northern region, and Jim Simpson was elected from the West. During the next day the IAC hosted a series of seminars on Apple-related subjects. To start the day, Apple showed their impressive multimedia slide show. Barry Yarkoni, from Apple, followed with a report on the recent history of the Apple ///, concluding with the announcement that the machine was debugged and operational. The two Steves spoke on their recent activities. John Couch, also from Apple, presented some of his thoughts and philosophies on the future of software development. Tom Woteki of Washington Apple Pi gave an informative explanation of Pascal from the beginner's standpoint, and Mark Pump of the Northwest Illinois Users Group did the same for DOS. Dick Switzer from Verbatim showed how disks are made and explained how they work. Vern Rayburn from Microsoft gave an excellent presentation covering CP/M on the Apple II. Phil Roybal, the closing speaker, excited everyone with his views on the computer revolution.

The IAC would like to thank all the speakers for the time and effort they put into their presentations. We would also like to thank all the volunteers from NIAUG and the rest of the Northern region who made the whole weekend possible.

During the several months since the last issue of the Apple Orchard went to press, the IAC has sent several mailings to its member clubs. These are listed here:

—IAC software disks 6, 7, 8, and 9 were shipped.

—A set of Apnotes was sent in July.

—The Bulletin has been going out on a monthly basis.

—All clubs who were members at the time should have received the July Orchard (and this one).

—A packet of information containing pointers for writing for the Orchard.

—A listing of the IAC documentation library.

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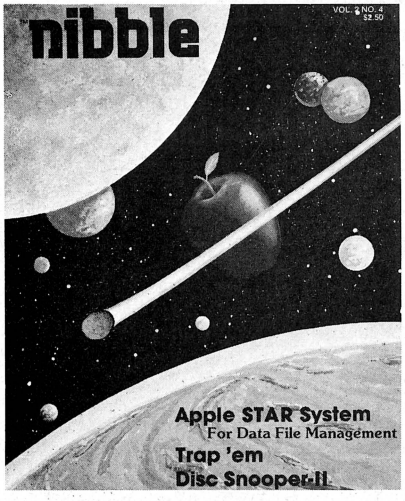

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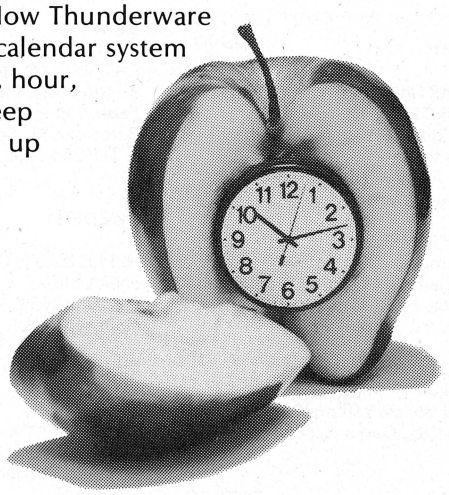

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*A 006 HELLO                07/07 16:37
*A 006 CLOCK                06/08 09:07
*A 004 FRAME                06/08 09:08
*A 004 DISK INFO            06/17 16:13
*B 003 BACKOFF              06/17 16:13
*B 005 SCREEN               07/24 17:32
*B 002 TCPUTIL              06/17 16:13
*B 004 SDTIME.O             06/17 16:13
*A 007 ADIGCLK              05/19 08:05
*A 011 SET TIME             06/08 09:08
*I 009 IDIGCLK              05/19 08:05
*A 007 TIME                 06/08 09:08
*A 003 SLOTFINDER           07/07 16:56
*A 014 DEMO                 06/17 16:14
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(continued on page 80)

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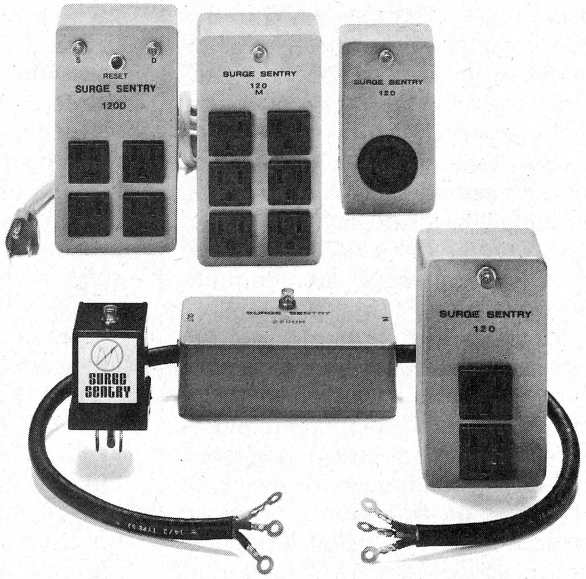

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DEALER INQUIRIES INVITED

SHAPE DEFINITION CONVERSION TABLE

by David G. Huffman
Call—A.P.P.L.E.

The necessity that mothered this invention was that of listing and debugging complex shape definitions destined for Apple's high resolution shape drawing routines. It is not designed for creating shape definitions, as there are several excellent commercial programs available that simplify the design of shape definitions, and there are also some in the literature, such as Mark Crosby's "Shaping up the Apple II" in **Apple Orchard,** 1 (1); pages 37-45.

However, once a shape definition has been created the result when DRAWn on the screen may not appear as intended. At this point, an examination of the hex codes in the shape definition would be appropriate, but converting these hex codes to moves is tedious, at best, using the Apple manuals. With this conversion table, one need only examine the hex codes of the shape definition from the monitor and look up the corresponding moves in this conversion table. The decimal equivalents are provided in case you are examining the shape definition from BASIC with PEEKs, or if you wish to POKE a short shape definition into memory from a BASIC program.

In the "Move" column are the moves that would be affected by the hi-res shape routines when a DRAW, XDRAW, or DRAW1 command is executed and the corresponding hex code is encountered in the next byte of the shape definition. The Move column should be read from left to right (A-B-C), with the first move corresponding to the first (right-most) three bits, the second move to the 2nd three bits and the third move (if non-printing) corresponding to the last (left-most) two bits of the hex byte.

All underlined moves refer to "printing moves", those that plot a point before moving. The non-underlined moves refer to non-printing moves. Note that the third move in a byte must always be non-printing. For instance, there is no code for ULD. If you wanted to produce this sequence, you would have to use UL (hex code $18) and follow it with a byte beginning with L. Hex codes $08 through $3F correspond to bytes that contain two moves, and which are followed by a printing move which will always be the first move of the next byte. Note also that there are no bytes with two non-printing "up"s unless they are followed by a non-printing "right", "left", or "down". It should also be pointed out that hex codes $01 through $07* really involve only one move, that given in section A, because a non-printing "up" in section B will be ignored whenever the next move in sequence is a printing one (first move of the next byte). Hex code $00** results in no moves, and is interpreted by the shape routines as "end of shape definition".

Probably the best way to use this table is to examine the hex codes from memory (making sure you are starting with the first byte of the shape definition, not the shape table index) and plot the corresponding moves on graph paper. When moving from one square to the next, shade the square in before leaving it behind if the current move is underlined, otherwise, just draw a line through the square.

In order for any shape definition to function with the hi-res shape routines, it must be preceded by a shape table index, formatted as outlined on page 95 of the Applesoft Reference Manual.

If your gray matter is really aching for some exercise, page 92 of the Applesoft Reference Manual explains some of the un-logic behind this bewildering array of exceptions.

see* in table
see in table

DEC	HEX	Move ABC
0	$00	UU **
1	$01	RU *
2	$02	DU *
3	$03	LU *
4	$04	UU *
5	$05	RU *
6	$06	DU *
7	$07	LU *
8	$08	UR
9	$09	RR
10	$0A	DR
11	$0B	LR
12	$0C	UR
13	$0D	RR
14	$0E	DR
15	$0F	LR
16	$10	UD
17	$11	RD
18	$12	DD
19	$13	LD
20	$14	UD
21	$15	RD
22	$16	DD
23	$17	LD
24	$18	UL
25	$19	RL
26	$1A	DL
27	$1B	LL
28	$1C	UL
29	$1D	RL
30	$1E	DL
31	$1F	LL
32	$20	UU
33	$21	RU
34	$22	DU
35	$23	LU
36	$24	UU
37	$25	RU
38	$26	DU
39	$27	LU
40	$28	UR
41	$29	RR
42	$2A	DR
43	$2B	LR
44	$2C	UR
45	$2D	RR
46	$2E	DR
47	$2F	LR
48	$30	UD
49	$31	RD
50	$32	DD
51	$33	LD

DEC	HEX	Move ABC
52	$34	UD
53	$35	RD
54	$36	DD
55	$37	LD
56	$38	UL
57	$39	RL
58	$3A	DL
59	$3B	LL
60	$3C	UL
61	$3D	RL
62	$3E	DL
63	$3F	LL
64	$40	UUR
65	$41	RUR
66	$42	DUR
67	$43	LUR
68	$44	UUR
69	$45	RUR
70	$46	DUR
71	$47	LUR
72	$48	URR
73	$49	RRR
74	$4A	DRR
75	$4B	LRR
76	$4C	URR
77	$4D	RRR
78	$4E	DRR
79	$4F	LRR
80	$50	UDR
81	$51	RDR
82	$52	DDR
83	$53	LDR
84	$54	UDR
85	$55	RDR
86	$56	DDR
87	$57	LDR
88	$58	ULR
89	$59	RLR
90	$5A	DLR
91	$5B	LLR
92	$5C	ULR
93	$5D	RLR
94	$5E	DLR
95	$5F	LLR
96	$60	UUR
97	$61	RUR
98	$62	DUR
99	$63	LUR
100	$64	UUR
101	$65	RUR
102	$66	DUR
103	$67	LUR
104	$68	URR
105	$69	RRR
106	$6A	DRR
107	$6B	LRR
108	$6C	URR
109	$6D	RRR
110	$6E	DRR
111	$6F	LRR
112	$70	UDR
113	$71	RDR
114	$72	DDR
115	$73	LDR
116	$74	UDR
117	$75	RDR
118	$76	DDR
119	$77	LDR
120	$78	ULR
121	$79	RLR
122	$7A	DLR
123	$7B	LLR
124	$7C	ULR
125	$7D	RLR
126	$7E	DLR
127	$7F	LLR
128	$80	UUD
129	$81	RUD
130	$82	DUD
131	$83	LUD
132	$84	UUD
133	$85	RUD
134	$86	DUD
135	$87	LUD
136	$88	URD
137	$89	RRD
138	$8A	DRD
139	$8B	LRD
140	$8C	URD
141	$8D	RRD
142	$8E	DRD
143	$8F	LRD
144	$90	UDD
145	$91	RDD
146	$92	DDD
147	$93	LDD
148	$94	UDD
149	$95	RDD
150	$96	DDD
151	$97	LDD
152	$98	ULD
153	$99	RLD
154	$9A	DLD
155	$9B	LLD
156	$9C	ULD
157	$9D	RLD
158	$9E	DLD
159	$9F	LLD
160	$A0	UUD
161	$A1	RUD
162	$A2	DUD
163	$A3	LUD
164	$A4	UUD
165	$A5	RUD
166	$A6	DUD
167	$A7	LUD
168	$A8	URD
169	$A9	RRD
170	$AA	DRD
171	$AB	LRD
172	$AC	URD
173	$AD	RRD
174	$AE	DRD
175	$AF	LRD
176	$B0	UDD
177	$B1	RDD
178	$B2	DDD
179	$B3	LDD
180	$B4	UDD
181	$B5	RDD
182	$B6	DDD
183	$B7	LDD
184	$B8	ULD
185	$B9	RLD
186	$BA	DLD
187	$BB	LLD
188	$BC	ULD
189	$BD	RLD
190	$BE	DLD
191	$BF	LLD
192	$C0	UUL
193	$C1	RUL
194	$C2	DUL
195	$C3	LUL
196	$C4	UUL
197	$C5	RUL
198	$C6	DUL
199	$C7	LUL
200	$C8	URL
201	$C9	RRL
202	$CA	DRL
203	$CB	LRL
204	$CC	URL
205	$CD	RRL
206	$CE	DRL
207	$CF	LRL
208	$D0	UDL
209	$D1	RDL
210	$D2	DDL
211	$D3	LDL
212	$D4	UDL
213	$D5	RDL
214	$D6	DDL
215	$D7	LDL
216	$D8	ULL
217	$D9	RLL
218	$DA	DLL
219	$DB	LLL
220	$DC	ULL
221	$DD	RLL
222	$DE	DLL
223	$DF	LLL
224	$E0	UUL
225	$E1	RUL
226	$E2	DUL
227	$E3	LUL
228	$E4	UUL
229	$E5	RUL
230	$E6	DUL
231	$E7	LUL
232	$E8	URL
233	$E9	RRL
234	$EA	DRL
235	$EB	LRL
236	$EC	URL
237	$ED	RRL
238	$EE	DRL
239	$EF	LRL
240	$F0	UDL
241	$F1	RDL
242	$F2	DDL
243	$F3	LDL
244	$F4	UDL
245	$F5	RDL
246	$F6	DDL
247	$F7	LDL
248	$F8	ULL
249	$F9	RLL
250	$FA	DLL
251	$FB	LLL
252	$FC	ULL
253	$FD	RLL
254	$FE	DLL
255	$FF	LLL

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ED-SCI STATISTICS requires an Apple II with the Applesoft or Language Card, or an Apple II+, 48K memory, and at least one disk drive with DOS 3.3 (16 sector).

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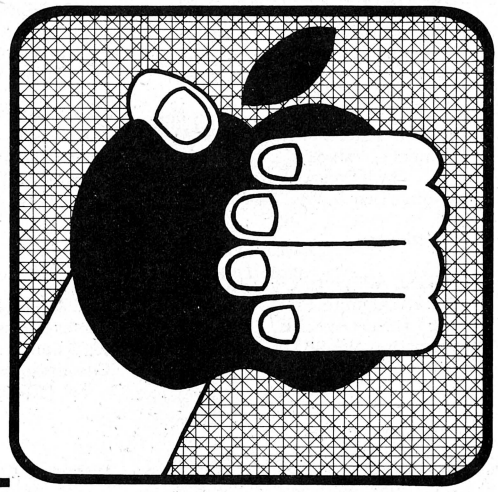

Forbidden Fruit

Pick these new products for your Apple

Edited by
Mark L. Crosby

Producers of hardware and software for the Apple line of computers should send news releases 3 months in advance to NEW PRODUCTS EDITOR, Apple Orchard, P.O. Box 976, Daly City, California 94017. The IAC cannot be held responsible for claims made by manufacturers.

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INPUT/OUTPUT

The **Hayes Stack Smart modem** is an RS-232 compatible 300 baud data communications system for small computers. Features program control in any language, switch selectable options, full or half duplex and LED status indicators—$279. Hayes Microcomputer Products, Inc., 5835A Peachtree Corners East, Norcross, GA 30092 (404) 449-8791.

Super Paddle consists of a high-precision linear potentiometer and a big industrial quality push button mounted in a sturdy 4×2×1 inch metal case which matches the Apple. Each of the two paddles is connected with a long 5-foot cable to the Apple game socket—$39.95 plus $2 postage and handling. Super Joy Stick uses the same circuitry that is used in the paddles and provides high precision—$59.95 plus $2 postage and handling. Peripherals Plus, 39 East Hanover Avenue, Morris Plains, NJ 07950 (201) 540-0445.

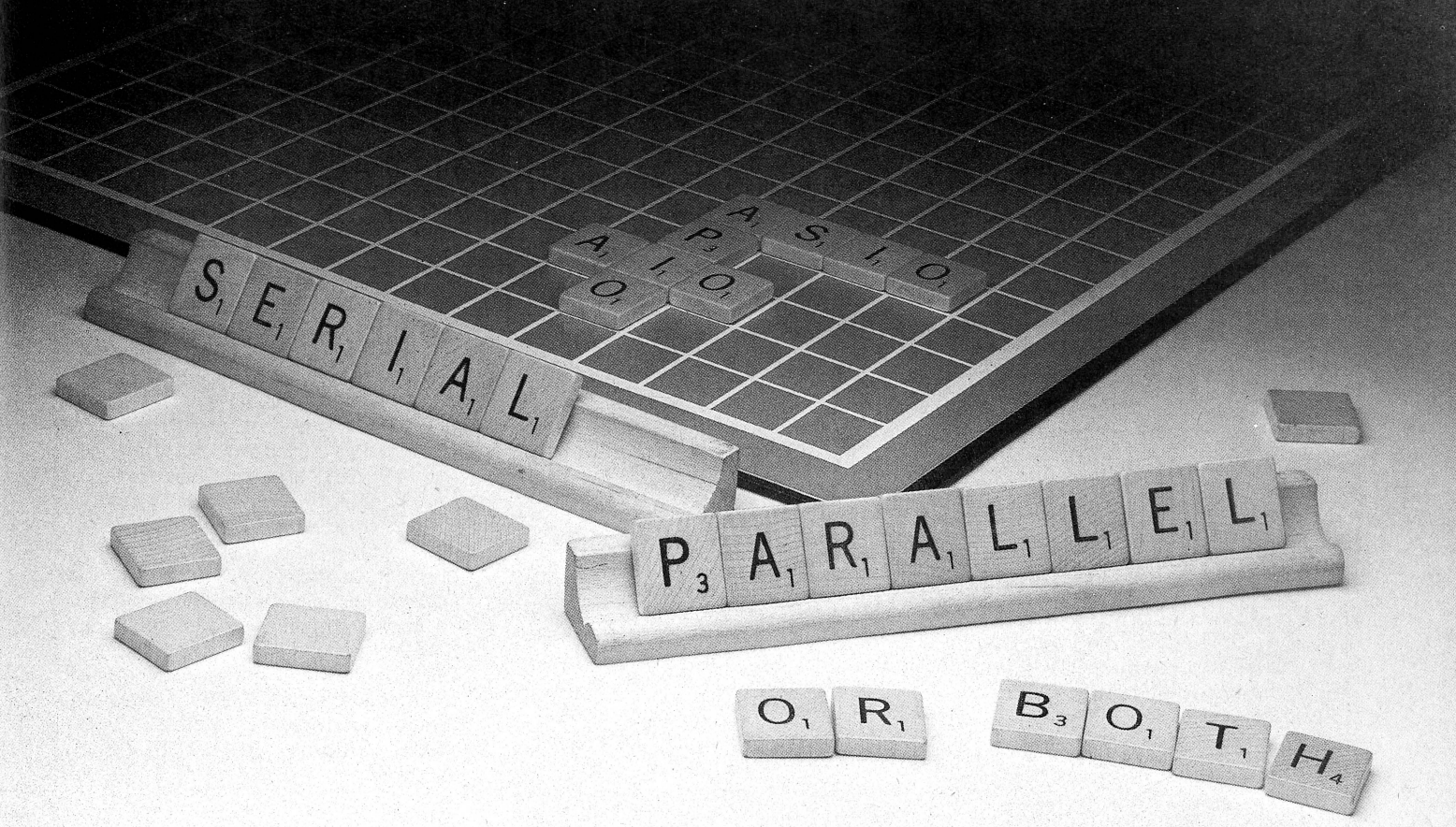
80-column card—**Doublevision**—offers new features for the 80×24 video display. Now available are hardware schematics and a completely commented source listing of software. Doublevision also includes a SYSGEN program to select type of cursor, monitor bandwidth and display of control characters. Doublevision is compatible with Z-80 SoftCard, Magic-Wand, Wordstar and Phoenix word processors, Programma International's Apple-Pie 2.0 and Information Unlimited's Easywriter Professional System—$295. Computer Stop, 2545 West 237th Street, Suite L, Torrance, CA 90505 (213) 539-7670.

Hard Disk Drive family includes 5¼ inch 6 megabyte (unformatted) drive with a 450 5¼ floppy backup, controller and interface—$4,850. 8 inch model stores up to 10 megabytes with a 1 megabyte backup floppy—$5,795. 14 inch model will store up to 58 megabytes each—price unavailable. Enhanced version of APPLEDOS permits you to build a data file as large as 16 megabytes. See your local dealer or contact Lobo Drives, Int'l, 354 South Fairview Avenue, Goleta, CA 93117 (805) 683-1576.

Remote I/O Board is a direct connection AC carrier communication interface designed to control and monitor remote devices thru existing AC power lines. Includes a battery backed-up CMOS real time clock. Allows software setting and reading of the clock and simulates the command console of a BSR controller. Two interrupt driven routines which are selectable by the user displays time on the screen and/or scans the timing table for control instructions. Foreground/background operation—$185. Intelligent Control Systems, Inc., P.O. Box 14571, Minneapolis, MN 55414 (612) 699-4342.

Laboratory System for the Apple is designed to collect data from spectrophotometers, chromatography systems, pH meters, strip-chart recorders, and temperature controllers. Features 12-bit D/A and A/D converters with ranges of .5 to 4 volts differential input and automatic zeroing. Real time clock, interrupt circuitry, handshaking signals and TTL compatible signal levels. Quick I/O program makes it easy to write BASIC programs to control scientific instruments. Includes diskette, three cables, self-test adapter board, diagnostic software, two manuals—$495. Interactive Microware, Inc., P.O. Box 771, State College, PA 16801 (814) 238-8294.

Type-'N-Talk is a new text-to-speech synthesizer from Votrax that can be connected to almost any computer. ASCII code from your keyboard is fed into the synthesizer producing speech. Contains 750 character buffer to hold the words



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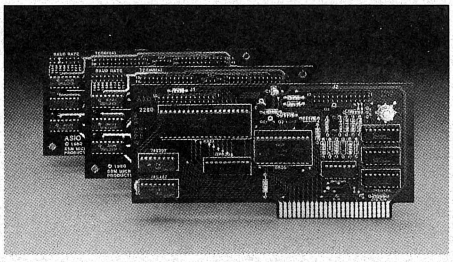

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you've typed. Can be used online between a computer or modem and a terminal to speak all the data sent over the line. Utilizes standard RS-232 serial interface. One-watt audio amplifier, phoneme access modes, data switching capability, 75-9600 baud rate—$375. Vodex, 500 Stephenson Highway, Troy, MI 48084 (313) 588-0341.

Eight-inch Floppy Disk Controller (the A800) enables Apple II users to access up to five megabytes of online storage through conventional disk operating system (DOS) commands. Provides high speed transfer of data from the drive directly to the Apple II memory without processor intervention. Compatible with the most popular disk operating systems for the Apple II. It also interfaces to all Shugart/ANSI Standard eight-inch floppy disk drives with complete IBM format compatibility in both single and double density modes—$595. Vista Computer Company, 1317 E. Edinger Avenue, Santa Ana, CA 92705 (714) 953-0523 or (800) 854-8017.

Multifunction Card provides 1) calendar/clock functions from one second to 99 years—battery backed-up and compatible with MCI Apple Clock time access programs. Also features 2) parallel output with auto line-feed, Apple tabbing, line length, delay after carriage return, lower to upper case conversion, status bit handshaking. The other function 3) is a serial interface with transparent terminal mode, local echo, simultaneous serial and parallel output, 16 selectable baud rates, half/full duplex operation, RS-232 standard asynchronous/synchronous—$239. Mountain Computer, Inc., 300 El Pueblo, Scotts Valley, CA 95066 (408) 438-6650.

A new **Disk Controller** for the Apple is completely software compatible with Apple DOS and contains 256 bytes of on-board boot ROM. Controls up to four 8 inch, single- or double-sided, single- or double-density disk drives with a total storage capacity of 4.4 Mbytes—$699. Lobo Drives International, 354 S. Fairview Avenue, Goleta, CA 93117 (805) 683-1576.

Hi-Res Light Pen with full 280 × 192 resolution is now available. Compatibility with all available languages: Applesoft and Integer BASIC, FORTRAN, PASCAL, PILOT, FORTH, and CP/M. Usable in every screen mode of the Apple. High speed allows animation and true drawing. Uses video synchronization information to determine the instantaneous light pen location. Installs on Apple motherboard with low power consumption. Includes extensive documentation, manuals with numerous examples. Applications programs on diskette—$285. Gibson Laboratories, Building 10, 406 Orange Blossom, Irvine, CA 92714 (714) 559-8727.

The **MSC-16 Microprocessor/controller** is a low-cost, interactive, acquisition/controller system. The system has 16 control ports, 16 digital and 15 analog data acquisition ports. Includes 256 channels of BSR capability. Operates from a game port on the Apple but also has RS-232 capabilities. It is programmed in a high-level language written for the Apple II. The program is compiled by the MCS-16 and then can operate independently or in background with the main computer. Energy management and biomedical monitoring and control are two areas that are a natural for this system. Has battery backup and a 7 day real time clock/calendar. i/e associates, Inc., 3702 East Lake Street, #202, Minneapolis, MN 55406 (612) 721-5066.

A new **Direct-Connect Telephone Modem** for use with Apple II and Apple II PLus microcomputers has been introduced by ESI LYNX. It is easy to install and use. It plugs into the peripheral slots and the telephone line without an acoustic coupler and is styled to match the Apple II. Features originate/answer, programmable word length, parity, number of stop bits, and full/half duplex. Optional at extra cost are auto-dial and auto-answer functions. Instruction manual lists free bulletin board telephone numbers and describes how to call these and other services, including the Source and Compu-Serve. One-year factory warranty—$295.95. At your local dealer or ESI LYNX, 123 Locust Street, Lancaster, PA 17602 (717) 291-1116.

MEMORY

The **Saturn 32K RAM Board** for the Apple features on-board bank selection, write protect, switch selection of RAM board or motherboard ROM. Compatible with Microsoft's Z80 SoftCard, either DOS 3.2 or 3.3, Integer BASIC, Applesoft, PASCAL, FORTRAN, LISA Ver 2, VisiCalc. 90 day warranty. Applications software includes relocation program for DOS, alternate language, making extra memory available to programs, etc.—$239. Saturn Systems, Inc., P.O. Box 8050, Ann Arbor, MI 48107 (313) 665-6416.

MUSIC

Noisemaker II uses one General Instruments AY3-8910 Sound Chip with three tone generators, one envelope generator, one noise source, two 8-bit I/O ports. Applications vary from games and graphics, to aircraft and machine simulation to audible alarms. Also contains an audio amplifier, bread-board area. Create phasers, music, gunshots, "outer space" noises and more. Kit $60. Assembled and tested $79.95. Ackerman Digital Systems, Inc., 110 North York Road, Elmhurst, IL 60126 (312) 530-8992.

POWER CONDITIONING

Mayday, an uninterruptible power supply will handle up to 600 watts. Protects against power surges, sudden drops in voltage or disruption of power. Prices start at $240 for the 150 watt system. Sun Research, Inc., Box 210, New Durham, NH 03855 (603) 859-7110.

PRINTER/PLOTTERS

Matrix Printer provides multiple character sets, letter quality printing. The **Malibu Dual-Mode 200** can perform high speed DP tasks at an efficient 165 to 200 characters per second and can produce letters of outstanding quality at speeds of 42 to 70 CPS as well. Expanded character sets, italics, gothic, greek/math at various pitches, graphics too—$2,995. Malibu Electronics Corporation, 2301 Townsgate Road, West Lake Village, CA 91361 (805) 496-1990.

The **Bytewriter-1** is an **80-column Dot Matrix Printer** for under $300! Uses a 7-wire print head with bi-directional printing at 60 lines per minute (80 cps) continuous. Utilizes a 96 character ASCII set with upper and lower case. Prints at 10 characters per inch plus expanded printing. Friction feed (synchronous), accepts single sheet or roll paper up to 9½ inches wide. Replacement heads are less than $30. Prints original plus three copies—$299. Microtek, Inc., 9514 Chesapeake Drive, San Diego, CA 92123 (714) 278-0633.

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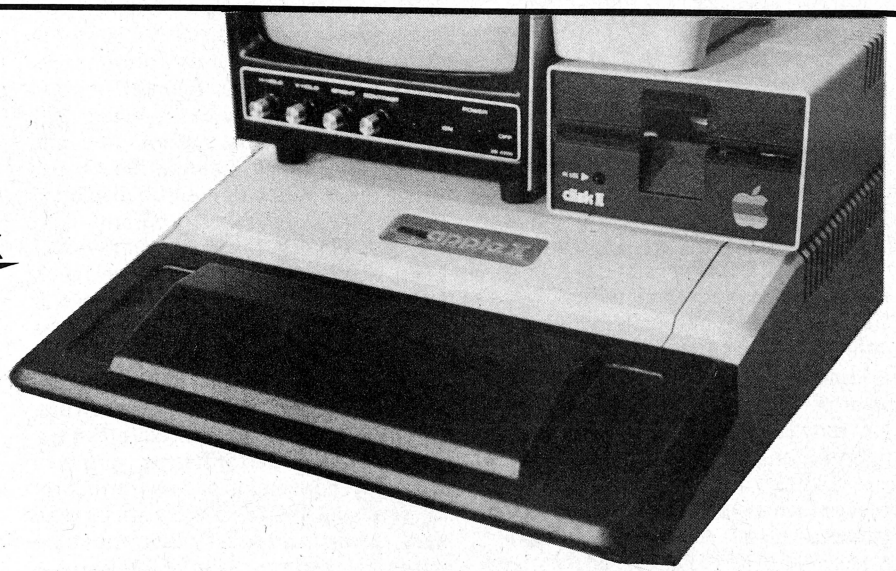

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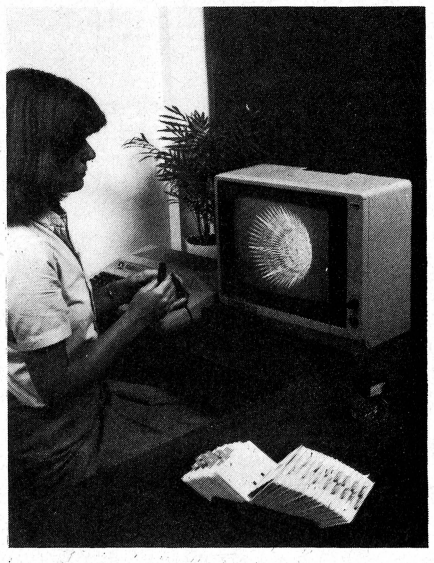
Allow six weeks for delivery.

* Apple®, Apple II®, Disk II® are trademarks of Apple Computer Company.

Epson MX-100 is a 15 inch wide **Matrix Printer** with letter quality printing and an ultra-high resolution bit image graphics capability. Up to 233 columns of data on 15 inch wide paper. Both a friction feed and fully adjustable, removable tractors. Priced under $1,000. See your local Epson dealer or contact Epson America, Inc., 23844 Hawthorne Boulevard, Torrance, CA 90505 (213) 378-2220.

MISCELLANEOUS

Robot "Turtle" and **Interface Card** is available for the Apple II. The interface enables the user to conveniently control the turtle from a high level language (BASIC, Pascal, LOGO, etc.) via simple I/O statements. It can be used at home or in the classroom for teaching, learning or just having fun. Interface includes a parallel port, a separate regulated, current-limited power supply, and interface software. Turtle control commands include forward, back, right, left, eyes, pen, horn, tone, off, front touch sensor. Turtle $399.95 kit, Interface $199.95, Pascal software $14.99. Terrapin, Inc., 678 Massachusetts Avenue #205, Cambridge, MA 02139 (617) 492-8816.



Three **Monitors** are available from **Amdek Corp.** The first is a 13 inch High Resolution Color monitor which is directly compatible with the Apple II. A peripheral board is available to interface the Apple II. 32 lbs. $999 (pictured). A normal color monitor—compatible with the Apple II is 25.6 lbs. $449. Also offered is a green phosphor monitor weighing only 17 lbs. with a 12 inch screen $249. Amdek Corp. (formerly Leedex), 2420 E. Oakton Street, Suite "E", Arlington Heights, IL 60005 (312) 364-1180.

Software

BUSINESS

Electronic Stock Package for the Apple II includes password and programs for accessing the Dow Jones Stock Quote Reporter (contains more than 6000 daily stock prices). Current rates permit nightly updating of 30 stocks for about $.50 per session. Downloading programs provide for auto dialing, logging on, retrieving daily data (prev. close, open, high, low, close, volume) for up to 200 stocks stored in easily edited file, disconnecting from system, and the writing of data to a single file on the user's disk. Data can then be displayed or printed. Conversion programs read this disk file, formats data (M/D/Y/VOL/FNL), and automatically updates each individual stock file. Requires Apple II/II+, Applesoft, 48K, Disk, D. C. Hayes Micromodem II—$80. Stock Market Utility programs provide for manual entry of stock data, correction of errors, stock splits, etc., comparative evaluation of stock performance, graphics hardcopy, conversion of data from Compuserve's MICROQUOTE financial data base. Demo included—fully compatible with Electronic Stock Package—$59.95. H&H Scientific, 13507 Pendleton Street, Oxon Hill, MD 20022 (301) 292-3100.

The **PEAR System** is a portfolio recordkeeping and reporting system for stockbrokers and other investment professionals. It is the first complete portfolio management system for the Apple which is designed with multiple portfolio recordkeeping in mind. Includes automatic pricing from Dow Jones, matching of proceeds and cost basis by tax lot, automatic adjustment of positions for stock splits, and fully formatted portfolio appraisal, unrealized gain and loss, realized gain and loss, and investment income reports. Features a full cross reference listing of client holdings by security. Complete documentation. Requires 48K, 2 floppy disk drives, 132 column printer, D. C. Hayes Micromodem (or Apple Communications Card on special order). Add on disk includes a VisiCalc interface and a multiple data disk cross reference capability—$500. PEAR Systems, 27 Briar Brae Road, Stamford, CT 06903 (203) 322-5593.

BUSINESS/EDUCATION

Electronic Mail for the Apple is provided by **Micro-Courier** which allows rapid transmission of charts, graphs, correspondence, VisiCalc reports and entire programs to other Apple computers over standard phone lines. Transmissions can be sent automatically allowing the owner to take advantage of low night phone rates. Micro-Courier can send 1,000 words of text in one minute for less than a quarter. A comparable TWX message would cost $4.32—$250. Micro-Telegram allows Apple owners to access Western Union Service, worldwide. Besides sending mailgrams, Apple owners can send and receive TWX, Telex, and international cables. Also allows access to Infomaster, the Western Union Data Base—$250. Microcom, 89 State Street, Boston, MA 02109 (617) 367-6362.

Fast Facts was created and designed by a Certified Financial Planner for quick analysis of the personal investment planning needs of his clients. Operates very easily with single key program selection and printing commands. Includes planning for retirement, college financing, diversifying your investments, the result of inflation in devaluing your earnings, costs of borrowing money and loan balance at any point in time, investment calculations for compounding and with disk and printer (desirable)—$95 includes disk and instructions. Richard Lorance and Associates, Ltd., 3336 N. 32nd Street, Suite 102, Phoenix, AZ 85018

AIDA: Apple Interactive Data Analysis is a new statistical analysis system. The program builds self-descriptive data files on the disk, then recalls variables by a "virtual memory" process as they are referenced by the user. Up to 11,000 data points may reside in memory at once, allowing a maximum of over 4,000 cases in analysis. Sub-setting, transformation, missing data and case weights are supported. Statistics include mean, variance, distributions, histograms, two-way tables (with Chi-square), Pearson and rank correlation, pair and standard t-tests, ANOVA, and multiple linear regression. Uses provisional means algorithms for accuracy of variances and cross-products, and computes significance levels. Data may be input from text files, or through an enter and verify routine. Users may modify program code or write their own "special" commands. Requires 48K with Applesoft ROM and one Disk II or Corvus—$235. Action-Research Northwest, 11442 Marine View Drive, S. W., Seattle, WA 98146 (206) 244-9360.

SOFTSWAP is a joint project of the San Mateo County Office of Education and Computer-Using Educators. Offers a collection of approximately 240 public domain instructional programs for the Apple, TRS-80, PET, Compucolor, and Atari. Most are short, stand-alone in-

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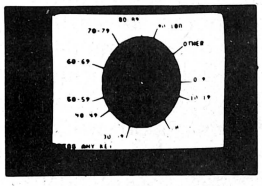
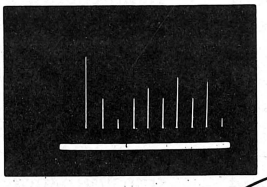
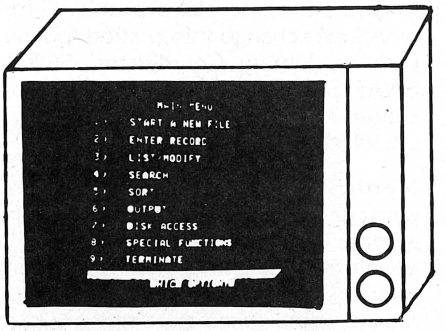
THE DATA REPORTER

MORE THAN JUST A DATABASE

Version 2 of the versatile Modifiable Database

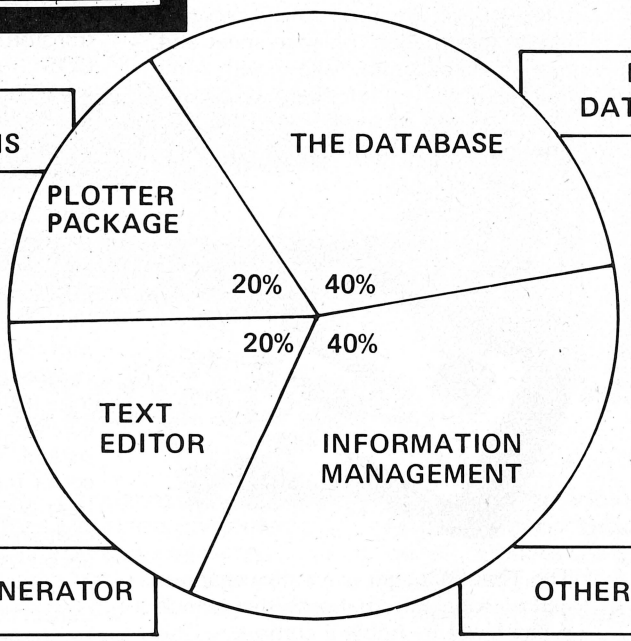






DATA PLOT & ANALYSIS

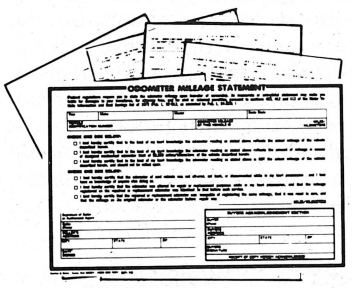
- Data may be plotted in a variety of formats such as scatter graphs, line graphs, bar charts, and pie charts.
- Ranges, minimums, maximums, means, standard deviations, correlation coefficients, etc. of any number of data files can be calculated



POWERFUL DATA MANAGER

- Versatile, user definable database can store data segmented by up to 35 fields.
- User oriented format is easy for the novice or professional to utilize. The use of menus, extensive prompting, single keystroke commands, and a universal escape capability allow anyone to store or retrieve information in seconds without errors.
- Machine language searches and sorts operate in a fraction of the time required by other programs.
- Searches or sorts, subtotals or totals may be performed on any field at any time, not just on those that are indexed or specified in advance.
- Search results may be displayed, printed, deleted, counted, totalled, edited, and/or saved to a new data file.

REPORT GENERATOR



- The sophisticated report generator allows you to format your data output in an infinite variety of ways.
- You can print form letters, columnar reports, lists, mailing labels, etc.
- Data, ratios or the results of calculations can be embedded anywhere in your letters or reports.
- The report generator gives your output the professional appearance that you require.

OTHER FEATURES

- You can append or merge up to a full disk of data files, or segment your data into separate files by a search key.
- Searches can contain up to 10 levels. You can search for a key word in any field, the absence of a keyword, or a number being within a specified range.
- Global editing of data may be performed.
- Arithmetic processing can be performed during record entry, edit, or output.
- Record entry, edit, or deletion (individual records or blocks) can be performed with no tedious delays waiting for disk accesses, index file updates, etc.
- Data may be stored on any number of floppy or hard disk drives.
- Data files can be reformatted at any time without reentering the data.
- Backup disk for $5.00.
- The package requires an Apple II plus or Apple II with Applesoft firmware, 48K RAM, at least one disk drive, and DOS 3.3.

SYNERGISTIC SOFTWARE

Retail Price will be **$220.00** effective September 1, 1981

Introductory price of $150.00 available from June 1, 1981 through Sept. 1, 1981. Existing copies of the Modifiable Database may be returned (original disk and manual), with $75.00 for the complete Data Reporter package. Order yours today!

Available from your local dealer or send check or money order to **Synergistic Software**, 5221 120 Avenue S.E., Bellevue, Washington 98006 or phone **206-226-3216**.

Washington residents add 5.4% sales tax.
Apple is a trademark of Apple Computer, Inc.

structional units. Many are drill & practice exercies for the elementary school level or for remedial work at the secondary level. Each disk contains from 5 to 28 programs for various subjects and grade levels. Programs and disks may be copied without charge by visitors to the center. Purchase is available by mail at a cost of $10 per disk or one SOFTSWAP disk per original program (trade) on disk. Newsletter also available. $1 for ordering/exchange information to Ann Lathrop, Library Coordinator, SOFTSWAP, San Mateo County Office of Education, 333 Main Street, Redwood City, CA 94063.

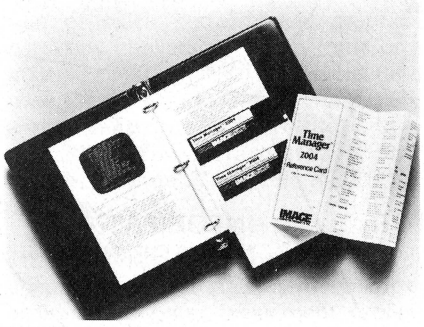
Medical Secretary applications package for the Apple allows for the automation of appointment scheduling, private patient billing, insurance form preparation, medical history and patient record maintenance and word processing. The latest release 2.0 adds extended record lengths, improved editing, global diagnostic search, record reformatting, recent records review, and patient form letter preparation. The system also offers improved handling of specialist's medical reports, summary medical record prearation, and form preparation of referral letters. Operates in Apple II with ROM Applesoft and 48K or Apple /// with at least 96K RAM. Requires 2 disk drives and a 132 column printer—$695.95. Monument Computer Service, Village Data Center, P.O. Box 603, Joshua Tree, CA (800) 854-0561 ext. 802, in CA (800) 432-7257.

The **Real Estate Analyzer** offers true after-tax cash flows for any ten-year period, return-on-investment, internal rate-of-return, return-on-equity, boom/bust comparisions, current and future tax consequences, six different measures of profitability, report generation, and a tutorial on investment analysis. Ideal for scrutinizing property inflation, rent control, negative cash flow conditions, property tax limitation—$150. Howard Software Services, 6713 Vista del Mar, La Jolla, CA 92037 (714) 454-5079.

Interactive courseware program in computer literacy is designed for junior and senior high school students. It involves the student with both the programming concepts and the social issues related to computers. Using a teacher directed approach, including group introduction to each chapter, **Computer Discovery** can be completed in approximately six weeks of normal presentation. The program can also be used on a student-directed basis allowing an individual to complete the course in as little as 15 hours, without the direct involvement of a teacher—$195. Science Research Associates, 155 N. Wacker Drive, Chicago, IL 60606 (312) 984-2053.

Micro-DSS/FINANCE is a complete financial modeling and graphics software package for the microcomputer. Built-in functions include depreciation, net present value, internal rate of return and amortization. Flexible report writing lets the user custom design financial reports. Unique graphics feature permits retention for later replay as a "slide show" on the monitor. Over a year of field testing in a variety of business settings—$1,500. Addison-Wesley Publishing Company, Business & Professional Division, Reading, MA 01867.

Life Insurance Client Management System stores 750 clients per diskette and runs in DOS 3.3 under Applesoft. Add, delete or change data in the file—print out selectively or produce mailing labels. Future enhancements to include interview comments, policy records, family information, balance sheet and more. One program diskette with 2 initialized diskettes for client records—$85. Life Plan Analysts, P.O. Box 215, Springtown, PA 18081 (215) 326-8544.



The **Time Manager** is a daily organizer and personal information system which runs on a 48K Apple II computer. The user is able to create daily schedules, prioritize activities and record appointments, expenses and all pertinent personal data. Important information can be retrieved in seconds by scanning forward and backward in time. The built-in alarm alerts the user for key appointments or meetings. Daily, monthly and yearly totals are obtained quickly and easily. Provides generalized or itemized totals based on individual specifications, such as, a general travel account of itemized trip expense. Prints schedules, agendas, phone lists or any other important data. Includes both program and data disks complete with operating examples in a three-ring binder, instructions and a reference card—$149.95. Image Computer Products, 615 Academy Drive, Northbrook, IL 60062 (312) 564-5060.

Paymaster Payroll System is totally menu driven and easy to use. Every element of data in every file is available to the user for modification—making corrections quick and easy. Detail is kept for each check issued so you don't have to worry about timing the payroll runs with your quarterly reports. Prints the contents of the screen at any time! Supports variable pay periods. Tax tables are disk based so you can change the tables as the Government changes the rules. Multiple drives and system configuration are standard features—$175. Masterworks Software, Inc., 1823 West Lomita Blvd., Lomita, CA 90710 (213) 539-7486.

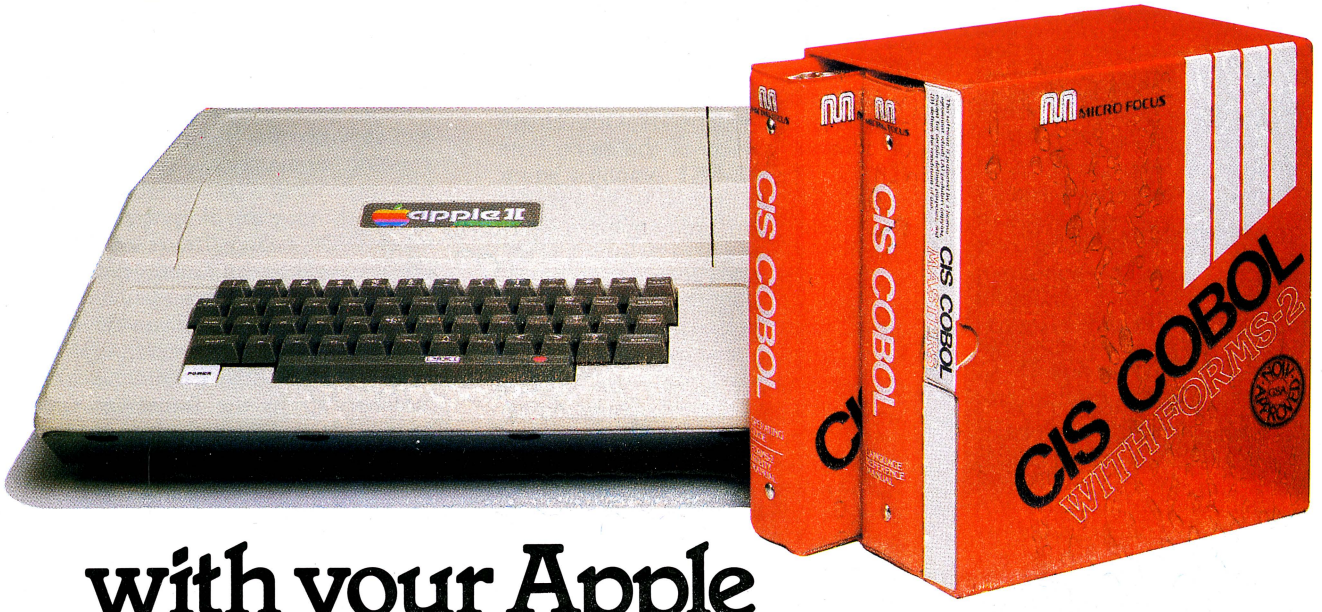
A-STAT is a statistical analysis and file maintenance system for the Apple II. Computes frequencies, bi-variate tables—chi sqares, correlation matrices, multiple regression, residuals. Includes a plot interface, File Cabinet interface, file sort, aggregation, report writing, reads VisiCalc files and has a complete transformation languge. Uses standard DOS Text files and EXECs. Requires 48K and Applesoft in ROM—$125. Rosen Grandon Associates, 296 Peter Green Road, Tolland, CT 06084 (203) 875-3541.

SoftCare is an advanced, software system designed to automate the billing and receivables functions in a medical office of one to seven physicians. The fill-in-the-blank screen formats are self-prompting and are edited for completeness and correctness. Unique "browsing" feature allows you to quickly and easily page through an electronic file of patient records. Produces a complete set of forms and reports including patient bills, insurance claims, claims exception report, patient and carrier aged accounts receivable, revenue by doctor, procedure frequency by doctor, patient transaction list and a daily transaction list. Procedure and diagnosis codes are user defined, with no limit on the number in the system. Runs on the Apple II with eight inch diskette drives or the Corvus hard disk—$1,995. Demonstration diskettes with operator manual are available for $60. Professional Business Software, 119 Fremont Street, San Francisco, CA 94105 (415) 546-1596.

Micro-Set is a computer phototypesetter service using microcomputer files. Words can be drafted on an Apple II word processor, then edited to add typesetting commands, such as font and size changes. Finally a special program sends the text to a typesetting machine. Text can be accepted either on disk or over the phone (at up to 1200 baud). Over 150 available type faces. Compu/systems 2724 First Avenue South, Seattle, WA 98134 (206) 622-3422.

Personal Software has introduced four new business software packages. They are **VisiPlot,** a high-resolution plotting

Start talking business



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COBOL is the most effective business language.
Apple II is the most friendly business computer.
CIS COBOL with FORMS-2 brings together the best features of COBOL and Apple to enable you to deliver the most effective, user-friendly applications.

Business Programmers: Take the COBOL expertise you have acquired on big business mainframes, and use it on Apple II to create friendly applications that will talk directly to your users – where it suits them best, on their own desks.

CIS COBOL's dynamic module loading gives you big application capability and the FORMS-2 source generator lets you build and modify conversational programs from visual screen formats, creating much of the code automatically.

Application vendors: CIS COBOL with FORMS-2 steps up the pace for your development of the high quality professional application packages needed today. And creating them in COBOL makes them more maintainable.

Over half the Apple II's now being sold are going to business or professional users so demand for quality applications is growing fast, creating big business opportunities for you.

Stability proven by the US Government. CIS COBOL has been tested and approved for two consecutive years by the US General Services Administration as conforming to the ANSI '74 COBOL Standard. Apple II under CP/M is included in CIS COBOL's 1981 GSA Certificate of Validation (at Low-Intermediate Federal Standard plus Indexed I-O and Level 2 Inter-Program Communication).

Get your hands on CIS COBOL at your Apple dealer.

Talk business with him now!

Micro Focus Inc., 1601 Civic Center Drive
Santa Clara, CA 95050. Phone: (408) 248-3982.

MICRO FOCUS

CIS COBOL with FORMS-2 for use on the Apple II with CP/M is an Apple Distributed Product.
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and graphics package that produces plots in six different formats and colors automatically using the lastest version of VisiCalc—$179.95. **VisiDex** is a highly flexible and personal information system which can store and retrieve information on a screen in a free-form unstructured way using keywords—$199.95. **VisiTrand/VisiPlot** is a combination of VisiPlot graphics and a program for time-series manipulation trend forecasting and descriptive statistics—$259.95. **VisiTerm** allows a personal computer to communicate with a variety of computers ranging from mainframes to micros. This program can send data files from the other programs between computers—$149.95. Personal Software, 1330 Bordeaux Drive, Sunnyvale, CA 94086.

COMMUNICATIONS

The **Buffered Modem** is an advanced telecommunication operating system for the Apple II. Works with a wide variety of hardware including the D. C. Hayes Micromodem, the Apple Communications Card and any Serial Card made for the Apple today. Most 80-column boards are also supported using the configuration program provided. Includes a print buffer that prints only as fast as the printer can accept data. A capture buffer allows the user to capture in memory any or all of the modem sessions up to 23,000 bytes and save to or retrieve from disk if desired. Also supported is disk-to-disk transfer of any Apple DOS file with error check and re-transmission. This makes even a poor connection a secure link for transmitting important programs and files. Complete with full terminal program. At your local store or contact: Agent Computer Services, RR#3, Columbia City, IN 46725 (219) 625-3600.

GRAPHICS

Ultra Hi-Res Graphics for the IDS Paper Tiger 460G/560G is now available. This program is designed to take full advantage of the high resolution capabilities of either of the IDS printers. The program, which is transparent to Applesoft, first writes to disk then dumps from disk to printer without being restricted to the 280 × 192 resolution of the Apple's Hi-Res page—$49.95. Computer Station, 11610 Page Service Drive, St. Louis, MO (314) 432-7019.

Software Driver allows the user to dump the contents of the high resolution pages to the new Epson MX-80 or Centronics 739 printers to obtain hard copy graphics. Enhanced version was designed for ease of use as well as flexibility for the more advanced user. Supports eight (MX-80) or five (Centronics) types of interface cards. Fully menu driven with options for expanded graphics, position on the page, inverse or normal, page 1 or page 2, etc. Either version: $44.95. Computer Station, 11610 Page Service Drive, St. Louis, MO 63141 (314) 432-7019.

A family of **3-D Programs** for your Apple includes the **A2-3D1** graphics package which is a utility designed to handle 3-D data bases and display them on the Hi-Resolution screen/s—$59.95 on disk. The enhancement package **A2-3D2** adds color and independent movement of different objects at the same time $24.95. The **A2-GE1** graphics editor allows you to create images as you view them. Scan them, animate them, combine them or add text or labels—$34.95. **Saturn Navigator A2-3D/A** is an adventurous flight to Saturn, enter orbit and rendezvous with an orbital space station that awaits your arrival—$24.95. The last three items require the A2-3D1 package. subLogic, Box V, Savoy, IL 61874 (217) 359-8482.

LANGUAGES

Pegasys Systems' new **P-LISP Interpreter** is a full implementation of the well-known Artificial Intelligence language. Written in machine code, this powerful interpreter includes the following features: 55 functions implemented, 45 page user manual, full function trace, fast, efficient garbage collector. Supplied with function editor and pretty-printer. Runs in 32 or 48K Apple II or II+ with disk. Eliza and other sample programs included—$99.95. Specify DOS 3.2 or 3.3 Pegasys Systems, 4005 Chestnut Street, Philadelphia, PA 19104 (215) 387-1500.

APL for the Apple requires CP/M, Microsoft's Z-80 Soft Card and a 24 × 80 video card. A version is available which does not require a video coard is the user can use mnemonics in lieu of the actual APL character set. Includes: 11 arithmetic functions, 11 Boolean and relational functions, 11 selectional and structural functions, and 9 general functions including execute and format. Supports arrays up to eight dimensions. Includes 4 applications packages: Simulation of APL*PLUS file system, keyed Indexed Sequential Access Method (ISAM), Text Editor, and Check Management—$500. Vanguard Systems Corp., 6901 Blanco, San Antonio, TX 78216.

SIMULATIONS/GAMES

Robotwar gives the players the opportunity to write a special battle language program which gives his or her robot its individual personality. This language controls such things as the robot's radar, lasar cannon, speed and position. On the Robot Test bench, the player "de-bugs" this Battle Language program to ensure that the game strategy will be logically executed on the battlefield. Completed robots may be stored in an encrypted format on a friend's disk. This allows players to share robots without revealing their program secrets. Provides a birds-eye view on the Hi-Resolution screen showing robots scurrying about, radar beams flashing, lasar cannons aiming, flying shots exploding and expired robots disappearing in a poof. Like chess, it is an elegant strategy game. The basics of Battle Language are easily learned, yet RobotWar mastery may take a lifetime. Requires 48K, Applesoft ROM and a disk drive—$39.95 includes membership in the RobotWar Club. Available at computer stores everywhere or from Muse Software, 330 N. Charles Street, Baltimore, MD 21201 (301) 659-7212.

Two new games from Sirius Software are **Sneakers** and **Gorgon.** Sneakers are little guys who appear to be friendly but will quickly stomp you out if you do not get them first. After sneakers come wave after wave of Cyclops, Saucers, Fangs, H-Wings, Meteors, Scrambles, and Scrubs. Written entirely in assembly langauge by Mark Turmell, Sneakers will operate on a 48K Apple II or II+ with disk drive and is playable with keyboard or paddle—$29.95. Gorgon has you as a fighter pilot defending the planet by destroying strange creatures who are stealing people from the surface of the Earth. Do not run into these creatures or let their "smart eggs" hit you or you will explode. Features pause, restart, and sound control keys and some of the fastest color graphic routines ever programmed for the Apple. Has many different levels—$39.95 requires 48K and a disk drive. From your local dealer only.

Phantoms Five by Nasir is a fast action full color hi-resolution fighter pilot game which places you in the cockpit dropping bombs on emplacements as you pass over them. At unexpected times, you soar into the sky in a dogfight with phantom fighters. Superb graphics and challenging action—$29.95. **Pulsar II** is two programs in one—Pulsar has as its object the destruction of the spinning shields around the pulsar and the destruction of the pulsar itself. **Wormwall** is an ever-changing maze where walls do

not connect and openings occur temporarily. In the center circles spin madly with little creatures awaiting your arrival into their level of the maze—$29.95. By Sirius Software, Inc., at your local dealer.

Crossword Puzzle System lets you create and play your own crosswords or work on the ones included. The Crossword Machine has easy or hard puzzles that are topical—$24.95 disk plus $2 postage and handling. L&S Computerware, P.O. Box 70728, Sunnyvale, CA 94086 (800) 227-1617 ext. 481 in CA (800) 772-3545 ext. 481.

Mate is a chess-problem-solving program that quickly determines whether or not mating is possible within the remaining number of moves, and it can solve mate, helpmate, and self-mate in n moves. Supports all four promotions, en passant, and castling. Uses FIDE standard notation and European board notation with user definable notation. Requires 48K with one disk drive—$60. Mike Korhonen, Neitsytpolku 6 A 8, Sf-00140 Helsinki 14, Finland.

Mychess is the most advanced microcomputer chess program available for your Apple computer. Nine levels of play for beginners to grand masters. Winner of the Fifth West Coast Computer Faire. USCF rating of 1615. Requires Z-80 SoftCard—$34.95. Through your local dealer or Datasoft, Inc., 19519 Business Center Drive, Northridge, CA 91324 (213) 701-5161.

Pool 1.5 for the Apple II is the first and only color graphics pool simulation. Provides real-time animation, 256 directions for aiming, 4 popular games: eight ball, straight pool, rotation, and nine ball. Instant replay for any shot and a special slow-motion control. Requires 48K Apple II with disk II and paddles—$34.95. At your dealer or IDSI, P.O. Box 1658, Las Cruces, NM 88004 (505) 522-7373.

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Disk Fixer and **Monitor Extender** are machine language programs which enable the experienced programmer to manipulate, protect and display data. Disk fixer provides easy access to either 13 or 16 sector formatted disks at either

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the track or sector level. The user is allowed sector by sector access to named files. Displays information in hex, ASCII or a mixture of both $29.95. Monitor Extender is a handy programming tool that enhances the capabilities of the Apple II Monitor ROMs. Memory may be displayed in ASCII or binary. A range of memory may be disassembled into an ASCII file in memory with the result a labelled file that can be used for assembler source code—$19.95. Image Computer Products, 615 Academy Drive, Northbrook, IL 60062 (312) 564-5060.

Micro/Apple 1 is the first in a series of volumes containing 30 articles selected from MICRO magazine from 1977-1980. The staff has re-entered, listed, and tested the programs and put them on a diskette. Includes chapters on BASIC aids, graphics, education, games, I/O enhancements, runtime utilities and references—$24.95 for book and diskette at your local store or add $2 for surface shipment from MICRO, P.O. Box 6502, Chelmsford, MA 01824.

Memory Management System will put Dos into your memory expansion card giving you 10.5 K more program—useable RAM! Works with 3.2 or 3.3 and establishes all the hooks and links necessary to use DOS in its new location—$39.95. Micro-Sparc, Inc., P.O. Box 325, Lincoln, MA 01733 (617) 259-9710.

Dual DOS in ROM for the Apple II permits you to switch from one DOS (3.2 or 3.3) to another without booting. This utility is contained in two ROMs, which when plugged into MC's Romplus or the Andromeda ROMboard, will be permanently imbedded in your Apple's memory and waiting for instant access. Switching is practically instantaneous. A simple CALL from BASIC or direct from the Monitor is all that is required. Recommended for drives configured with 3.3 ROMs. Operates with either BASIC or the Language Card and requires 48K, DOS 3.3 and the above mentioned expansion boards—$49.95. Soft CTRL Systems, Box 599, West Milford, NJ 07480.

Copy II Plus is the ultimate Apple disk copy program. Copies multiple formats: DOS 3.2, 3.3, PASCAL, FORTRAN, and CP/M. Copies diskettes in less than 45 seconds, which is faster than most other copy programs. Written entirely in ultra fast assembly language. Requires Apple II with 48K and at least one Disk Drive—$39.95. Central Point Software, Inc., P.O. Box 3563, Central Point, OR 97502 (503) 773-1970.

Apple Alarm is a program that converts your computer into a sentry, keeping track of intrusion, smoke, motion, fire, moisture and other on/off sensory inputs. Attach your switch, fire alarm, floor mat, etc. to the paddle buttons and your Apple will sound an alarm or quietly keep time from the moment triggered—$20. Andent, Inc., 1000 North Avenue, Waukegan, IL 60085.

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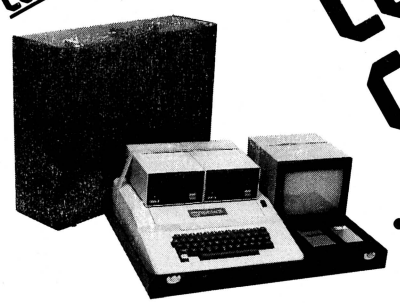

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Letter Perfect is a character oriented word processor for the Apple II/II+. Fast action machine language, menu driven, single load program. Requires disk drive and 32K memory. One-time configuration for your system, printer type, etc., can be reconfigured at any time. Supports proportional spacing, underline, boldface with NEC or Qume/Diablo. Will use any of the special print characters of your specific printer. All text packed during saving for greater disk storage capacity. Uses Super'R Term 80 column board—$149.95. LJK Enterprises Inc., P.O. Box 10827, St. Louis, MO 63129 (314) 846-6124.

Hebrew II is the first foreign language word processor for the Apple II in America. This program puts Hebrew characters on the screen from right to left (and numbers left to right in their natural order) and allows full cursor movement and character editing. Text can be printed, saved to disk, and recalled for further editing. Ideal for labeling graphs, charts, etc.—$60. Aurora Systems, Inc., 2040 E. Washington Avenue, Madison, WI 53704.

Catalogs

Three "where to find it" books are now available. They are: **Business Software** $5.95, **Games and Recreational Software** $4.95, and **Educational Software** for the teacher/student $5.95. WIDL Video, 5245 W. Diversey Avenue, Chicago, IL 60639 (312) 622-9606.

CATALOGS/BOOKS

32 BASIC Programs for the Apple Computer is exactly what the title says, a group of practical applications programs for home and work, for education, graphics, and mathematics. Also includes games. By studying the programs, you can also pick up some pointers on efficient programming. Written by Tom Rugg and Phil Feldman. 285 pages, 5½ × 8¼ inches, perfect bound, softcover. $17.95. dilithium Press, P.O. Box 606, Beaverton, OR 97075 (503) 646-2713.

An atlas to the Apple Computer, **What's Where in the Apple** is written by William F. Luebbert. This definitive programmer's guide to the Apple II describes all the hardward and firmware characteristics important to programmers, including over 2,000 memory locations. The book expands upon the author's highly popular article published in MICRO, August 1979. Approximately 192 pages 8½ × 11 inches, cardstock cover and wire-O binding. Publication in August 1981—$19.95. MICRO, 34 Chelmsford Street, P.O. Box 6502, Chelmsford, MA 01824 (800) 227-1617 ext. 564 in CA (800) 772-3545 ext. 564.

Here is a complete **product catalog** of computer supplies, accessories and cables; includes furniture, printer forms, media, modems, printers, media carriers, etc. **Inmac,** 2465 Augustine Drive, Santa Clara, CA 95051 (408) 737-7777 or (201) 767-3601.

The Fall 1981 **Brain Food Catalog** is now available, with a $1 off money-saving slip inside to be used on all orders of $10 or more. Over 80 titles are featured with the scope of difficulty ranging from complete novice to confirmed computer user. Highlighted are such books as **Computers for Everybody, Small Computers for the Small Businessman** and **How to get Started with CP/M.** Call the toll free number 800-547-1842 or write dilithium Press, 11000 SW 11th Street, Suite E, Beaverton, Oregon, 97005.

This **general catalog** of computer supplies and accessory products contains binders, media, word processing items, ribbons, work stations and supplies, calculators, templates, etc. **Visible Computer Supply Corporation,** 3626 Stern Drive, St. Charles, IL 60174 (800) 323-0628 in IL (312) 377-0990.

A new **catalog** from **Mini Micro Mart, Inc.,** has printers, media and supplies for micros and minis includes Cromemco systems, plotters, software, etc. 1618 James Street, Syracuse, NY 13203 (315) 422-4467.

1981 Tool Kit Catalog offers specialized test equipment and tools, cases, oscilloscopes, digital multimeters, probes, wire wrap tools, etc. **Specialized Products Company,** 2324 Shorecrest Drive, Dallas, TX 75235 (800) 527-5019 in TX (800) 442-3034.

Dataguide is the master catalog and directory of OEM computer products. Some items for sale are computers and processors, memories, disk and tape drives, crt displays, printers, plotters, punched card/tape, peripheral controllers, data communications devices, data acquisition analog I/O systems, test/development systems, software and media and supplies—$25. **Sentry Publishing Company,** 5 Kane Industrial Drive, Hudson, MA 01749 (617) 562-9308. Published semi-annually, subscriptions $50/year or $75 oversea.

Personalized Computer Consultants provides a **catalog** of many computer-related items including computers, peripherals and software. 11426 Rockville Pike, Suite 110, Rockville, MD 20852 (301) 770-5311.

Monument Computer Service has announced the release of its new free Summer-Fall **Software Catalog.** The new catalog features, for the first time, products specifically prepared to operate on the Apple /// computer. It also features many new or improved educational products for the Apple II and Apple II Plus computers. Free. Monument Computer Service, Village Data Center, P.O. Box 603, Joshua Tree, CA 92252 (800) 854-0561 ext. 802 in CA (800) 432-7257.

Queue, Inc., has issued new updated **directories** of educational software. Catalogue IVA contains the most complete, comprehensive lists available anywhere of education software and educational software publishers for Apple, Atari, and Compucolor. Catalogue IVB contains 97 pages of educational software program descriptions for Pet and TRS-80. The most complete selection available, hundreds of programs grouped by computer, subject matter, and grade level—$8.95 each from Monica Kantrowitz, President, Queue, Inc., 5 Chapel Hill Drive, Fairfield, CT 06432 (203) 372-6761.

Miscellaneous

Mini-Flex Diskette Holder has a clear plastic smoke-colored cover to seal out dust. Bottom is stepped and dividers keep disks from falling over. For 5¼ inch diskettes. Advance Access, 2200 South Main Street, Lombard, IL 60148 (312) 629-5800 or (800) 323-3412.

Tee-shirts are available to user groups or individual group members from Automated Simulations, Inc., maker of the EPYX line of computer games including the popular "Temple of Apshai". Light blue tee shirt bears a bright red dragon and dark blue logo and slogan: "EPYX, Computer Games Thinkers Play." Normally priced at $6, the shirts are available to group members at $5 in mens' sizes small, medium, large and extra large from Automated Simulations, Inc., P.O. Box 4247, Mountain View, CA 94040 (415) 964-8021.

Catalog of gifts for Apple fanatics includes such attractive and useful items as coffee mugs, tumblers, tee-shirts, playing cards, jewelry, paper weights and pens. **Apple Computer Gift Catalog,** 2280 Arbor Blvd., Dayton, OH 45439.

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Buffer Overflow

CONVERSATION WITH A CUSTOMS OFFICER

by Brian Strong
from **The Electric Apple**

(Note: Mr. Strong, Publisher of **The Electric Apple,** lives in Wellington, New Zealand. We offer here his description of a situation which highlights the relative newness of Apples, the government process, and the truly international nature of the IAC. —PCW)

Have you ever had to clear a computer program through Customs? It can be quite an experience.

Part of the problem is that personally owned microcomputers are a new fact of life in New Zealand, but every package of software seems to be regarded as something "for commercial use" and liable to extortionate duties. I received a program for personal use and spent some time explaining the whole concept of personal computing to the Customs Officer, who seemed unaware of its existence. I also halted traffic around the Post Office counter by letting loose with a strangled scream, just in time to stop him from scratching the surface of the disk with his fingernail to see what it was made of.

My conversation went along these lines:

"Yes, it is a magnetic recording."

"No, it's not the same rate of duty as magnetic tape or cassette (music) recordings."

"It's a recording of information data and only works on my computer."

"No, I'm not going to sell it to anyone."

"It's binary encoded data, sort of electronic writing that the computer understands."

"Try another page in your book, perhaps it's there somewhere. Try 'computer program'."

"No, it's for personal use."

"Yes, it's a commercially available program overseas, but not in New Zealand."

"No, I can't make copies and sell them"

"Try another page; perhaps it's under electronic goods or something."

"No, the 40 percent import duty is just for hardware, not software."

"Hardware? That's the bits of wire and stuff all thrown together to make a piece of equipment."

"No, it's not equipment. The disk doesn't count as equipment. Try 'computer programs' again."

"That rate of duty is for programs for mainframe computers."

"Sorry, they're those big installations that fill up half a building—y'know, like IBM. It can't be the same rate."

"No, my computer fits under one arm and you can carry it around."

"When's the other guy get back from lunch?"

Look, the usual duty is just on the medium—that's the value of the disk, and they're about three to five bucks each in the States."

"You feel you should charge me on the value of the program too—hey, that's a bit steep. Let's have a last look in that book again."

"Hey, look on that Customs sticker—it says total value twenty dollars."

"How do I know what it costs? A mate in the States sent it to me to have a look at."

"Come to think of it, it was probably about what it says. Things like this are cheap in the States."

"Look, what about working the duty out on the cost of the disk, say four dollars, and half the balance? It's about the nearest we'll probably get."

"Yeah, it is a fairly new hobby; that's probably why it isn't in the book."

"Yeah, it is all rather confusing and needs straightening out."

"See you again sometime."

"Bye."

I've been through that situation twice, with roughly the same conversation each time. Not to go through it could mean a massive 40 percent duty on a program purely for personal use and of no interest to anyone else. There is still a lot of confusion between this type of computer program and "commercial" programs that hasn't been sorted out. Hopefully, it will be soon, otherwise next time I get a card in my postbox saying that there is a computer program waiting to be cleared through Customs, I'll be ready to be fitted with a long-sleeved canvas overcoat.

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*requires a 48K, 16-sector disk based APPLE II system

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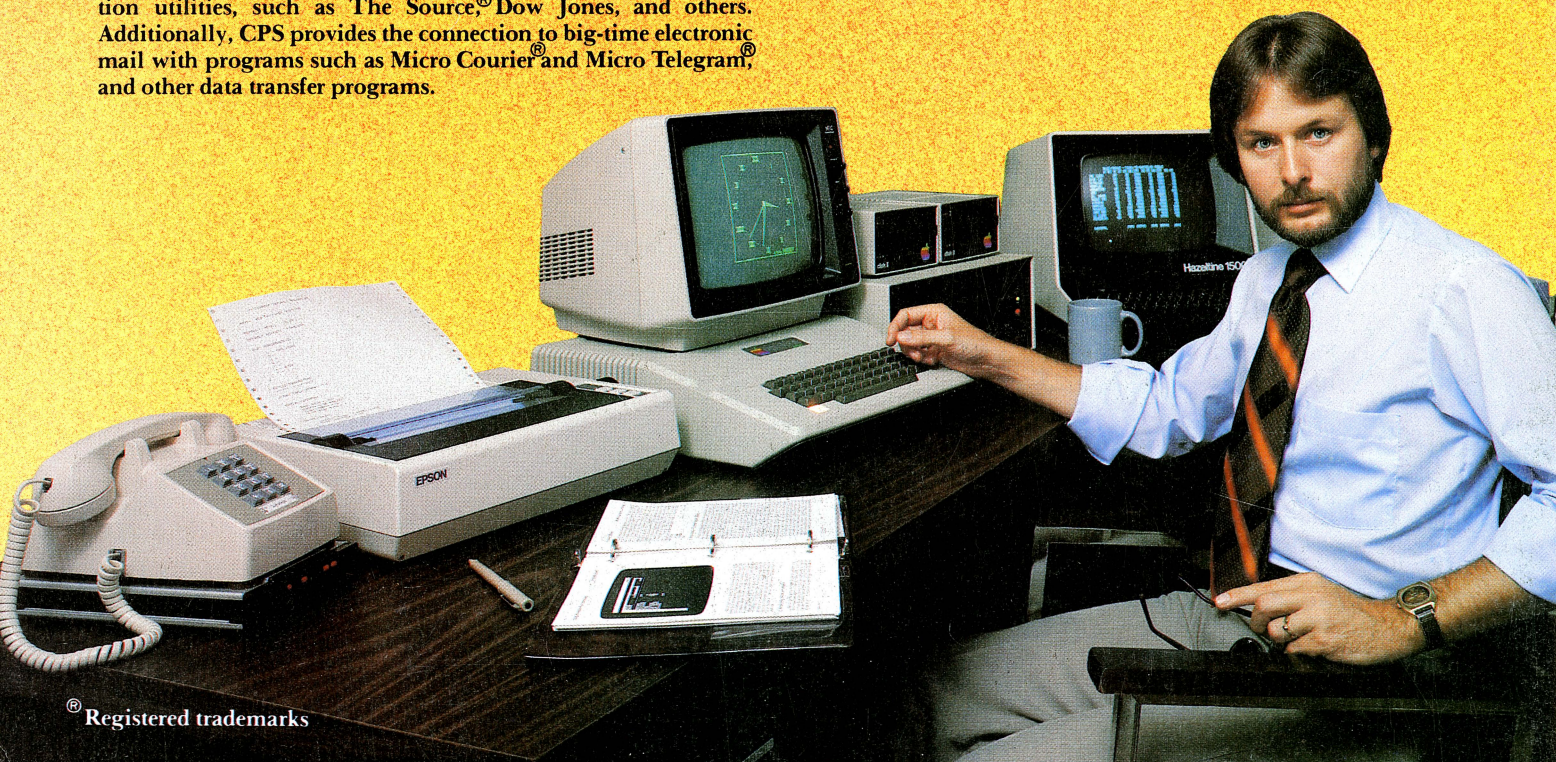

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