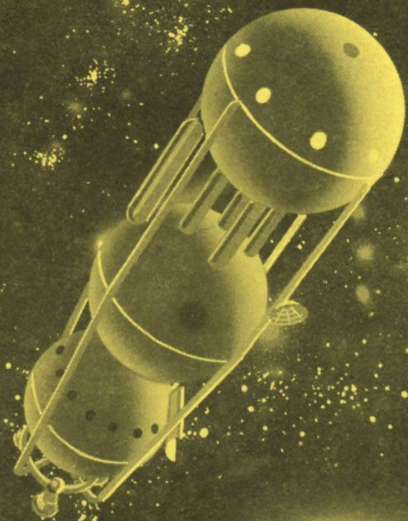


PET[®]

GAZETTE

FREE

OCTOBER—NOVEMBER 1978



—OVER 25 REVIEWS—

HOW TO MERGE & OVERLAY PROGRAMS



The PET[®] Gazette

NOTE: We are not connected with Commodore. We are learning everything the hard way too. We hope to hear from you.

BE WARNED

Just because a product is advertised or announced in this GAZETTE does not guarantee that it exists. Most products are announced before final production starts. Often unintentionally production starts several months late.

We suggest that you never order a product until you have 1) seen it, 2) spoken with someone who has it, or 3) seen it reviewed in the PET GAZETTE or another trusted magazine.

Better to be safe than sorry.

NOTE: to all companies. If you are marketing software for the PET Computer—get it reviewed. All you need to do is send a review copy to us. If you are marketing accessories (hardware) for the PET Computer—get them reviewed. If the cost of a review copy is prohibitive, please contact us and we will see if special arrangements can be made. Contact: Len Lindsay, Editor, PET GAZETTE, 1929 Northport Dr., Room 6, Madison, WI 53704. Phone: (608) 249-2666. Our budget does not allow us to return long distance calls except collect.

SPECIAL IMPORTANT NOTE

When writing or calling any company—make sure to tell them you read about it in the PET GAZETTE. WHY?? Advertisers keep us going. If you like our service, please help us to keep and increase our advertisers. Best of all, you can read all the ads for most of the companies in one place—here. Perfect to aid you in your decision.

ARTICLE SUBMISSION

Articles and Reviews—Please send them typed, SINGLE-SPACED, preferably as a 4½ or 5 inch column. Better yet, send your review or article on a tape made with Connecticut Microcomputer's Word Processor Program.

Len Lindsay, Editor

1929 Northport Dr., Room 6
Madison, WI 53704

VOL. 1, NO. 6

OCT./NOV. 78

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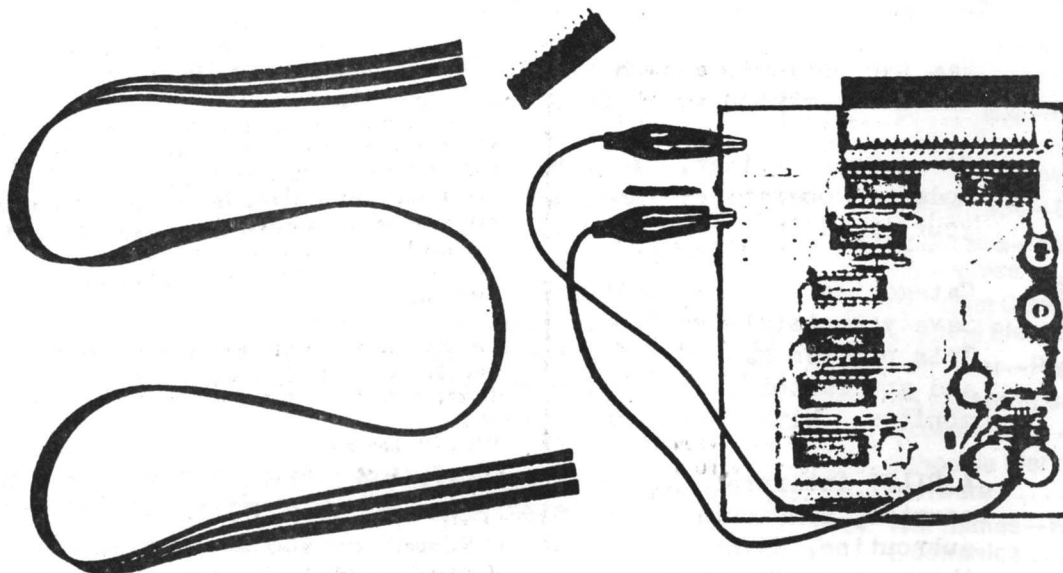
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REVIEWS
How to do one

In your review mention the favorable points of the product. If there are major drawbacks mention them. For programs, are they human engineered? Do they use GET commands for yes and no type answers? Is there any graphics used? Animation? Sound? (Is the sound abiding by our conventions?) When displaying a lot of text to read is it in lower case? Are the instructions clear and easy to understand?

Make sure to explain what the product does. (Does it do what was advertised?) For PET accessories, describe how easy it is to hook up or use. Are they safe around children? Also you could mention how good the service was. Any problems? Were the problems resolved? End with a sentence summing up your impression of the product.

Type your review. Make sure that it fits inside a 4 and 1/2 inch column. (Set your margins at 4 1/2 inches and don't go over that) Better yet, if you have access to use the Word Processor from Connecticut Microcomputer send us a tape with your review. We will then read it in and type out the review here. Send your review to:

PET Gazette
1929 Northport Dr.
Room 6
Madison, WI 53704

As a safeguard we will only print reviews for products we have seen/used ourselves. That is the only way we can be SURE the product exists. We don't want any part in promoting a non existent product.

Remember, just because a product is announced or advertised does NOT guaranty that it exists. If it is reviewed in the PET GAZETTE you can be sure it exists.

If you send us a review for a product we have not seen/used we will contact that company and advise them that we have your review, and will print it as soon as we verify that the product exists.

We encourage people to send in a follow up review on a product previously reviewed. This second review will be by a different person with a different view. This is important, especially if you disagree with a review.

REVIEW
PET DUST COVER
\$17.95

New England Electronics
248 Bridge St
Springfield, MA 01103

This beautiful dust cover is semi-transparent. It is shaped to snugly cover the PET but allow you to still see it beneath. It prevents dust from getting in through the expansion ports. And since it is waterproof a spilled Coke will not give you heart failure.

After spending 800 bucks for your computer the least you can do is protect it while it is not in use.

REVIEW
TNW 488/232 Serial Interface Module
\$240

The Net Works
5924 Quiet Slope Dr
San Diego, CA 92120

This is a bidirectional RS-232 module. It is also available as a dual channel module for \$280. With this unit you can have input as well as output with your PET via the IEEE bus. The networks also includes an extra IEEE port slot so you can connect another IEEE device if you wish.

It comes with a thorough manual which includes schematics. They explain what is going on when you use this unit. AND they give software examples for your benefit. You can hook up any RS-232 peripheral to this unit. This includes printers, modems, keyboards, etc.

For an extra \$35 you get an attractive case with decorative wood sides and a beautiful gold top. \$20 will get you a complete set of cables you will need to hook it up to your PET.

If anyone is using one of these modules please send us some notes on how it works for you.

REVIEW
TNW 488/103 LOW SPEED MODEM
\$320

The Net Works
5924 Quiet Slope Dr
San Diego, CA 92120

This modem module will allow you to use your computer via the phone lines. It is an auto originate, answer, and dial modem. Thus it truly is a full service modem. It is well documented. The manual includes schematics and tips on how to use it. The best part is that included is a cassette ready to load into your PET that will allow your PET to function as a full duplex terminal.

Now your computer can not only answer the phone for you, but also can dial any phone for you, even long distance (watch out for a huge phone bill).

The unit has an extra IEEE slot which allows you to hook up other devices and use them simultaneously. A beautiful cabinet is \$35 extra (and it matches the cabinet for their RS-232 module) and cables to connect it to your PET are \$20. For \$15 they will send you the necessary cables to hook into a CBS or CBT.

If anyone is using one of these modems please send us some notes about your experiences.

REVIEW
CURSOR
12 months/\$24
Box 550
Goleta, CA 93017

CURSOR is a Cassette sent to subscribers once each month. It contains about 5 or 6 programs ready to use with your PET. Programs are a variety of categories including educational, household, and games. The games are well done and very unique.

At 5 or 6 programs a month for 12 months is about 60 to 70 programs for only \$24. Cursor is very worth getting.



TNW 488/103 LOW SPEED MODEM AUTO ORIGINATE, ANSWER, DIAL

The TNW488/103 Low Speed Modem is a full-service modem that puts you and your PET "on line". A PET program tape that allows you to use your PET as a terminal on a timesharing system accompanies the unit. Because the TNW488/103 connects to the telephone system through a CBT or CBS type Data Access Arrangement (not included), you can have your PET pulse-dial your phone calls, or answer calls from other computers. Baud rate (75 to 600 bits per second), character length, and parity are software selectable. TNW488/103 Low Speed Modem, assembled and tested: \$320. Interface to CBT: standard; interface to CBS: \$10 additional. Cable to CBS or CBT: \$15.



USE YOUR PET AS A TERMINAL

TNW 488/232 Serial Interface

Now you can interface RS-232-C and MIL-STD-188C serial peripherals such as printers, modems, CRT terminals, plotters, paper tape readers and punches - even other computers - to your PET. The TNW488/232 Serial Interface provides two independent BIDIRECTIONAL asynchronous serial data channels for your PET, plus additional input and output signal lines you can use to control peripheral devices. Baud rate (75 to 9600 bits per second), character length, and parity are strapped on the board independently for the two channels. TNW488/232 Serial Interface, assembled and tested: \$280. Single channel version of TNW488/232: \$240.

Both the TNW488/103 and the TNW488/232 incorporate a REAL IEEE 488 interface: other devices can be used on the bus with them, and they can be used with IEEE-capable computers other than PET. Each unit is a single 9 by 13 inch printed circuit board, with power supplies built right on the board; you provide only 117 VAC. An attractive cabinet is available (\$35), as is a cable to connect to the PET's IEEE port (\$20). An extensive documentation booklet accompanies each unit, and a 90 day warranty applies. California residents add 6% sales tax to all orders. We accept VISA and Mastercharge. Allow one to three weeks for delivery.

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Dealers: Write for distributorship information

Now that I have your attention, let me plainly announce that there is no such thing as free software. Some software might seem like it is free, but even a closer look at the PET cassette exchange in the PET Gazette costs a program and \$1. Someone had to spend some time in preparing the program that you submit to the exchange. Now, I don't want to downgrade the exchange, I have exchanged programs myself to obtain some of the more interesting ones there. It can and does serve a useful purpose.

A major problem of the exchange, and other similar exchanges, is that some of the more unscrupulous users submit programs which they have not prepared themselves. That is, they have ripped off some other person's effort in writing, debugging and documenting a program. Let us take a moment to explore the consequences of this type of action.

Good software, be it a game or systems software, is very expensive to prepare. It is complicated, laborous to develop, and requires effort to find all the ways in which the user can bomb the program, and then to prevent the bombing from happening. Typically this process requires about 10-15 minutes for each line of BASIC code. A typical 8K PET program then might require 100 or more hours to develop and perfect. This 100 hours is a considerable investment in effort. This probably means that this typical 8K program represents at least \$1000. worth of effort. Somebody has to pay for that cost. If you want to have low-cost (to the user) software, there must be a way to pay for it. Software is not, and cannot be, free.

For the user to give this software away then removes the incentive for the developer to continue writing programs. The programmer produces software on venture capital and hope to sell enough of the packages to recover the investment. For what the user might consider a reasonable price, then a very large volume is necessary. For instance, if we assume that my \$1000. worth of effort is to be recouped, then 100 each must be sold at \$10. each. This neglects to include our costs. If it costs \$5. each to produce the tape, advertise it and ship it to the user, then 200 packages must be sold.

Investigation of the alternatives points out the sad fact that if the user further distributes my software, then that takes my incentive to develop further software and put effort into distributing programs. If I can't recover at least a major portion of my investment, then I won't continue to develop programs. If I (or some of my competitors) stop publishing programs then you, the user, will suffer a great software vacuum. Much of the neat work that is now being done would not be generally available.

Finally, please note that much of the software is copyrighted. Giving it away is illegal. Many software vendors are going to begin to prosecute if the great software ripoff continues. In fact, many offer rewards of \$10,000 to 25,000. for arrest and prosecution of copyright violators.

Please Support your local software vendor. — DR. DALEY —

REVIEW - SCHEDULE PLANNER - Sawyer Software - \$15

This program has a lot of features but is difficult to use. In fact, I gave up in frustration after only a few sessions with it. The program is intended to allow one to keep a computerized combination of an appointment book and a "to do" list. One may create, alter, manipulate and/save on tape a file of appointments or activities. For each activity the file contains a date-time, a priority and a description.

This sounds good. Unfortunately, the program has bugs and seems designed to discourage use. For example, for each activity one must press 13 keys to enter the date-time: 3 letters for the month and 2 digits each for the day, year, hour, minute and seconds. Yes, seconds are required. A more serious problem is the remove command. To remove a finished activity from the file one must retype the entire entry letter for letter. This can be a lot of unnecessary, boring work. And if one makes a mistake the program does not inform him. Instead it effectively removes the last entry in the file, which is rarely the correct one.

The program has many other features and many other problems. It comes with 3 pages of instructions which are well written but inadequate to describe all the eccentricities of the program.

--Pete Weiler--

What you're looking at is our first step towards becoming a full sized magazine. Subscription is still free, But we sure could use some donations. We just bought a Teletype 43. We sorely needed it. Now with Connecticut Microcomputers Word Processor and printer adapter we can produce a better looking magazine. Plus you may notice that we are using some typesetting as well. This issue is a couple weeks late due to the editor being sick for a couple weeks.

Our number of pages will now be in multiples of 16 (excluding the cover). Thus if we can't afford 48 pages we must go with 32.

This issue could have had about 16 more pages if we had the funds to pay for the printing. We are up to 3000 copies now!! We could have afforded it without the purchase of our Teletype 43. But without the Teletype 43 we couldn't keep up. Your donations are keeping us going. Thanks a million!! We are trying to get PET info to you the best we know how. If you are considering a donation, we are non profit (actually negative profit) and everyone here is strictly a volunteer. PLUS remember to tell any PET product company that you deal with that you keep informed through the PET GAZETTE.

Since we had to delete pages we decided to delete our list of addresses, and software/accesories sources since you could use last issues list or use the updated one in the BEST OF THE PET GAZETTE. We also deleted some program listings and quite a few BITS & PIECES of information. These will all be included in the BEST OF THE PET GAZETTE hopefully.

We are skipping our next issue to publish a book, THE BEST OF THE PET GAZETTE. It appears that it will be about 4 times the number of pages as this issue. (Same page size as this issue, 3 ring binder punched) It will include all of the review from each Vol 1 Gazette plus more new reviews (totalling over 50 reviews). It will also include a directory of PET user groups and PET related companies, as well as a list of all available accesories and software. To top it off we will reprint most of the useful information from previous issues. It will be virtually a PET Resource Manual. Suggested retail price will be \$10. BUT we will send one directly to any one sending us a donation. See the form at the end. We are hoping to print 4000 copies. They will go fast. Send in your request with donation before DEC 1 to be included in our first mailing.

- continued -

Last issue I presented some ideas for making programs more understandable to people. I showed how the blinking cursor and program-able error detection could be implemented. This issue I'd like to add some more "neat" features.

Have You Got the TI\$?

First I'd like to explain an important feature about the PET: the built-in clock. The PET keeps track of what time it is automatically. It uses two special variables to do this: TI and TI\$.

TI\$ is a string variable which contains the time in the format "hhmmss" on a 24-hour clock basis. TI\$ is set to "000000" when the PET is turned on. Thus, if TI\$="001053" the PET has been on for 10 minutes and 53 seconds.

TI is the count of the number of "jiffies" since the PET was turned on. A "jiffy" is one sixtieth of a second. Thus, if TI=30, the PET has been on for 1/2 a second.

TI\$ can also be set to a specific time of day. This allows you to set it to the correct time of day (so you can use the PET for a \$795 digital clock!). For example, if the current time is exactly 7 p.m., you would execute the statement TI\$="190000" (19 oclock is 7 p.m. on the 24-hour clock). Note that you must set TI\$ to a numeric string of length 6. For example, if you want TI\$ set to 1 a.m., you set TI\$ to "010000", not "10000".

Note that variable TI can not be directly set, but that it varies according to TI\$. Thus, by setting TI\$ to "000000" (not just "0") you set TI to 0. (Variable TI is numeric; it is a count of the number of jiffies since the PET was set to a time of "000000"). If you set TI\$ to "010000" you set TI to 216000.

Timing:

You can use TI and TI\$ to time things. For instance, you can require a person to press a key within a certain amount of time. E.G.:

```
10 PRINT"PRESS A KEY WITHIN THE NEXT SECOND"
20 T=TI: REM set T to the current time
30 GET A$
40 IF TI-T>60 GOTO 100: REM time up?
50 IF A$="" GOTO 30: REM no key pressed
60 PRINT"VERY GOOD!"
70 END
100 PRINT"TOO LATE!!"
110 END
```

Line 30 will GET the next character from the keyboard. Line 40 checks to see if one second (60 jiffies) has passed since line 20 was executed. Remember that line 20 sets T to the current time. Thus, the expression TI-T will be equal to the number of jiffies that have passed since line 20 was executed. Line 50 is executed if one second (60 jiffies) has not passed since line 20 was executed. It checks to see if A\$="", indicating that no key was pressed in line 30. If no key was pressed, we go back to line 30. Thus, the program waits for one of two things to happen: either the user presses a key, or one second goes by, causing the computer to print out the message "TOO LATE!!".

You may also want the computer to "wait" a specified portion of time. For example, the program below prints out the alphabet very slowly. Line 40 is the timing loop, which cause the computer to "wait".

```
10 FOR I=65 TO 90
20 PRINT CHR$(I);
30 T=TI
40 IF TI-T<30 GOTO 40
50 NEXT I
```

Look in your Reference manual for info on FUNCTION CHR\$.

Line 30 sets variable T to the current time. Line 40 checks to see if TI-T is less than 30. IF TI-T is less than 30, meaning that less than 1/2 a second has passed since line 30 was executed, the program will GOTO line 40 again. Thus, line 40 will just GOTO itself until half a second has passed since line 30 was executed.

-CONTINUED-

MORE Editors Ramblings

We now will begin to provide programs from our exchange to PET users who have no programs of their own to exchange. The 1 for 1 exchange will continue of course. Since sales and royalties are a hassel (IRS & more) for us and the program authors we p. to funtion as follows:

We will have packages of 6 programs available to anyone without any programs required in exchange. There will be a copying charge of \$1 for each program, \$2 charge for the tape (the tape is the BEST we know of, AGFA in screw type, top of the line cases), \$1 charge for the cassette box and postage, and \$1 handling charge (paper work is a pain). Thus you can get 6 programs for \$10. (NOTE we are not selling the programs)

Rather than give the authors a royalty check we will offer them "credits" towards FREE programs from our exchange. Thus they will not have any extra IRS problems and get some more programs (what they probably want anyway). Most program authors thus far have told us to keep any "royalties" or "credits" as a donation (And we sure appreciate that).

Our PET program paks will include:

- Games Pak 1
- Educational Pak 1
- Useful Pak 1
- Music Pak 1
- Demo Pak 1
- BEST of Pak 1 (the best program from each Pak 1)

Each Pak costs \$10 for 6 programs. Each program is guarranteed to load or we will replace it free. We already have people set up to copy the programs each individually, so you can send your orders in NOW.

GOOD GUY AWARDS

Here is where I can mention outstanding companies. There are 2 this issue:

- Bob Crowell of New England Electronics
- Mike Sawyer of Sawyer Software.

The ONION award goes to us (for being late with this issue). We also messed up our mailings to other countries. Thus now we are hoping to have a distributor or two overseas. We are contacting PETSOF (318 Fulham Rd, Chelsea, London, England SW10 9UG) and SKYLAB (VIA N Gioia 66, 20125 Milano, Italy).

-CONTINUED-

0 REM*****PRINT ON PRINTER EACH KEY HIT*****
1 OPEN1,5,2:CND1
2 POKES25,0:WAIT525,1:GETA\$:PRINT#1,A\$;GOTO2
READY.

This technique can be used to produce some neat effects. Consider this slightly more complicated program:

```
5 M$="WELCOME!"
10 FOR I=1 TO LEN(M$)
20 PRINT MID$(M$,I,1);
30 T=TI
40 IF TI-T<20 GOTO 40
50 NEXT I
```

*SUBSTITUTE ANY MESSAGE
FOR M\$ IN LINE 5.*

REPEAT Key:

Last issue I presented some ways to use the GET command to input a string. There are many ways of using such ideas to make a program much easier to use. One such idea is to add the REPEAT key. On many more expensive computers, there is a special key on the computer keyboard labelled "REPEAT". When this key is held down along with another key, that second key is repeated for as long as it is held down. Thus, typing twenty "cursor ups" would be very easy. Some computers implement this by repeating a key if it is held down for a period of time, say a second. It is then repeated until you let up of the key.

It's a shame the PET doesn't have such a feature. But it would require a more expensive keyboard. So we'll do the next best thing: we'll simulate it with software.

But first you must understand one slightly complicated idea. The function PEEK (more fully explained in the JULY '78 issue of the GAZETTE) will return the contents of a specified memory location. Thus, the statement:

```
A=PEEK(515)
```

will place the contents of memory location 515 into variable A. But memory location 515 is a special memory location. It contains information about the last key pressed. What that information is doesn't really matter to us right now. But you should know that if memory location 515 contains 255, it means that no key has been pressed since the last GET or INPUT statement. SO we now have a way of determining if a key is being held down (GET won't work for this application).

So, try the following program:

```
10 GET A$:IF A$="" GOTO 10
20 D=60
25 PRINT A$;: T=TI
30 IF PEEK(515)=255 GOTO 10
40 IF TI-T<D GOTO 30
50 D=6
60 GOTO 25
```

Line 20 sets D to 60. This means that the timing loop in lines 30 and 40 will wait 60 jiffies before repeating a key. So, keys are only repeated if they are held down for a second. Then, D is set to 6 and the key is printed every 6 jiffies (one-tenth of a second). D is the variable that controls the timing loop. In order to change the time required to hold down a key to repeat it, or to change the speed at which it repeats, simply change lines 20 and 50.

Line 30 checks memory location 515. If memory location 515 contains 255, then no key is being held down. Thus, a new character is gotten and D is set back to 60.

UPPER/lower case

Add the following lines to the program above to get it to reverse upper and lower case letters (i.e., holding down the SHIFT key gets upper case, letting go gets lower case):

```
5 POKE 59468,14: REM get lower case
15 GOSUB 100
100 REM REVERSE UPPER/LOWER CASE SUBROUTINE
110 A=ASC(A$)
120 IF A>64 AND A<91 THEN A$=CHR$(A+128)
130 IF A>192 AND A<219 THEN A$=CHR$(A-128)
140 RETURN
```

*← REVERSE Upper
TO Lower*

*← REVERSE Lower
TO Upper*

NOTE: The idea for the repeat key and the upper/lower case subroutine came from PET User Notes, Vol 1, issue 5.

I am currently writing a "friendly" text-editor that will have blinking cursor, repeat, reversed upper and lower case, cursor controlled editing of lines, etc. Let me know if you have any ideas in this area.

As always, feel free to write to me at my address

Jon Staebell
5102 Arrowhead Dr.
Monona, WI 53716

EVEN MORE Editors Ramblings

Comments have been pouring in from our readers. Hopefully the BEST OF THE PET GAZETTE will have a summary of comments on service, products, and problems. About Microsette, who sells short length cassettes. We have had several letters saying that the tapes and service was good. We also have had people tell us of problems such as: programs fading away after only a few loadings (yes the heads were demagnetized and cleaned about everyday), and doctored up invoices. If we would have room we would print their letters. Microsette does seem concerned about it.

We are giving MICROTRONIX a double take. There supposedly are threatened law suits if anything is printed, so being cautious I will mention some things. 1) Their joysticks as sent to us were definitely used, nicks and all. 2) Close to three months ago, Mr. Aiken of Microtronix called and said they were going to send me their fantastic chess program. About 3 weeks ago Mr Aiken again called me. When asked he said he would send the chess program right away. We still don't have it. Mike Sawyer of Sawyer Software has called me several times concerning that chess program. According to Mike Several months ago he sent Microtronix his CHESS program, inquiring if they would like to be a distributor for it. He said that after a LONG time they told him NO but now are selling a program using graphics that look VERY MUCH like his. Since they are not giving him any royalties it appears suspicious. However the listings must be compared before we will know for sure. But Microtronix seems to be stalling. Neither Mike nor us can get a copy of their Chess program. Maybe they are trying to come up with their own code before sending out copies. We HAVE ordered the Chess program from Microtronix and thus have the right to use it. So, if anyone has received Microtronix's Chess program PLEASE send us a copy. It will be used only to compare listings (we have Personal Softwares Microchess 2.0 and love it). We can send you a couple programs from our exchange for your trouble. 3) Also, about 3 months ago when Mr. Aiken called, he told me that within a couple days they would have the Integral Data printer printing full PET graphics and lower case. 3 weeks ago he told me that they were still working on it. Today (OCT 19) we have NOT heard that it is working yet. Thus with these suspicions, we would really appreciate hearing from anyone who has dealt with Microtronix. Send us your comments, good and bad.

- continued -

TAPE TIPS by A. BARSAMIAN

Here are some tips to help PET users avoid headaches in saving/loading programs on cassettes:

1. Use only brand-name LOW-NOISE, HIGH OUTPUT music tapes (not Cr O₂!) such as MEMOREX MRX₂ or MRX₃, and TDK D-C60. Their output is about twice that of a regular cassette, and this high signal to noise ratio insures almost 100% reliability (well 99.5%!)). The cost varies between 99¢ and \$2.50 for a C-60 (NYC area).
2. Use only C15-C30 or C60 cassettes. Longer playing cassettes have thinner tape which causes "print-through" and almost guarantees errors. I had always had load errors with SCOTCH Highlander C-90!
3. Keep your cassettes in a STEEL index card file box, with the lid closed, away from heat, air conditioner (motor), loudspeakers (magnets), transformers and TV sets (radiated Horizontal Scan frequency causes print-through like a tape duplicating machine!). Minimum distance for above ≈ 2 ft.
4. If you have load errors on a hot-humid day and no air-conditioning (using el-chlapo cassettes!!), put the cassette in a plastic sandwich bag and then store in a refrigerator for 1 hour (not freezer!) After that, it usually is possible to load from that cassette (might require 2-3 tries!). Save the program on a high-quality cassette as in (1) above. THROW-AWAY the offending cassette or you'll be tempted to re-use it....with the same problems....or worse! I had experienced this problem with canned software tapes from Computer Factory....one gets mad as hell if you pay \$10-\$16 and it doesn't work....
5. Use Q-tips and rubbing alcohol to clean-up the tape heads once a week (takes 1 minute!!).
6. Demagnetize the tape heads every two weeks! It is well worth spending \$6-\$10 on demagnetizer (from Radio Shack or Lafayette Radio) if you want your program tapes to last 40-100 'plays' without load errors! Make sure you don't have cassettes laying around in the open when you do it!
7. Always have 2 copies made of any program you save (on different cassettes, of course!) for backup purposes.
8. Always push the cassette knockout tabs in with a ball point pen to prevent accidental erasures. To record new material, just place a piece of scotch tape over it.
9. NEVER-NEVER touch the tape in the cassette with your fingers! Grease film will mess up your precious recording.
To copy tapes WITHOUT a PET:
 1. Get 2 cassette recorders; one of them MUST be a MONO recorder, preferably with automatic level control (ALC), and AC erase instead of a magnet.
 2. The Master cassette recorder holds the original tape to be copied, and it can be any reasonable quality (\$40 & up) MONO/STEREO recorder. The Slave recorder holds the new virgin tape (the copy!) and it MUST BE A MONO recorder to give you a full half track recording width on the tape. If you attempt to use a stereo recorder for the Slave (as I did initially!) the 1/4 track recording output played back on the PET is not high enough to load properly.
 3. Use or make patch cords (available from Radio Shack) to connect the Master high-level output (or speaker output - 2nd choice!) to slave high-level input.
 4. Use play/record controls as specified by recorder manufacturer. If you don't have ALC on the slave, you'll have to experiment with the volume and tone control settings on both Master and Slave (A scope will help). Write down the knob settings for future reference on masking tape and affix it to the back of the recorders.

- continued -

STILL MORE Editors Ramblings

It looks like the PET Printer will start being shipped in March 79. It has been totally redesigned and looks different now. If you need a printer, you can either get an RS-232 adapter to use any RS-232 printer OR you can use the Parallel User Port to hook up a printer in parallel. (SWTP printer now has a PET connector as an option)

LISTINGS

We now can provide hardcopy listings of your programs. Since we still have to read in your cassette and list it we must include a \$1 handling charge (due mainly to our time limitations - we would love to do it free for everyone, but...).

TRY THIS

To avoid escaping from your program at an input point (by hitting return with no other data) you can open your keyboard as a device thus:
10 OPEN1,0:REM keyboard
20 GET#1,A\$
30 PRINTA\$
40 AA\$=AA\$+A\$
50 IF A\$(<>CHR\$(13))THEN20
60 RETURN:REM if you use it as subroutine

H-E-L-P

Our Center has a very good and nearly complete collection of computing magazines. We are missing the first two Volumes of Creative Computing and a couple early issues of Peoples Computer Company. Please contact us if you have any and would part with them for some free programs (or even money).

REVIEW

COMMODORE
PET USER CLUB
NEWSLETTER
10 pounds
Commodore Systems
360 Euston Road
London NW1 3BL
** ENGLAND **

Yes, it's true. Commodore in England actually gives out information. They even have a newsletter, an excellent one to boot. It is now probably on its 6th issue. Long ago they printed a memory map of the PET and told how PET stores a BASIC program. Issue 3 told how to link programs via overlays. A condensed version is printed in this issue. From it you can tell that they have an excellent, informative newsletter. We are checking on how Americans can get it. Write to them and inquire. It probably will cost extra for the airmail postage. In one word - FANTASTIC !!

To locate quickly a program out of many on one cassette you can try the following:

1. Load the program in front of the program you want.
2. Rewind the tape and time it with wristwatch the time required to go to beginning of tape.
3. Write on cassette label the time and FF in parenthesis after file name.
4. Next time you want to load the program, make sure the tape is completely rewound, and then fast forward for the amount of seconds you have written down.

NOTE: Fast forward and rewind speeds could be very different, but you can time them on your machine and calculate the ratio by which you have to adjust your search time...and all this for lack of a 99¢ counter!!!

TAPE TIPS by DENNIS CUMBERTON

Tangling with the good, the bad, and the ugly is obviously the lot of any dedicated PET hobbyist. One of the more frustrating tasks has been the search for a reasonable high quality C-10 Cassette. I had already ordered some from Pyramid Data before I saw the Gazette review of them. I rate them unsatisfactory. I have also tried some C-10 AGfa tapes from AB Computers. They are no better. Now, Pyramid guarantees their Tapes, and I would suspect that AB Computers would do the same. [AB Computers is perhaps the most fantastic mail-order people I've dealt with--I just had an order return in 8 days, and that was over Labor Day weekend.] My point is that these firms should be aware that their product is not PET-compatible and should not market them to PET users. Be that as it may...I advocate the following.

Go to a Radio Shack. Buy three C-30 Green Label "Concertape" Cassette tapes in a pack for \$1.99. Buy a splicer for under \$3. Record any length of program or programs you desire. Press play for about 15 seconds to be certain you have adequate leader at the end in case you desire to use the other side too. Cut, pull what you don't want off the end of the cassette, and splice the ends together. I have over a dozen in use at the moment and have experienced absolutely no problems. by DENNIS CUMBERTON

REVIEW-ACCOUNTING PACK 1-\$25-Sawyer Software

ACCOUNTING PACK I by Sawyer Software can be described in one word: Fantastic. Anyone who has prepared a balance sheet manually will have a slight heart murmur upon using the Accounting Pack. It is amazing that the program fits in 8K. It keeps track of the General Ledger, allows tape input and output, and prints several reports, including a Balance Sheet and an Income Statement (a/k/a Profit and Loss statement, Earnings statement, etc). Not only that, the tape comes with sample data immediately following the program. This allows you to test out the program and see how it works without actually inputting massive amounts of your own data.

The program is fairly easy to use. Unfortunately, the error messages and prompts for input are not very informative. This was obviously done to save space. A good reference manual would help with the cryptic messages. Unfortunately, therein lies my sole complaint: while the program is very good, the "documentation" (if it can be called such) is primitive, to say the least. You are handed a set of 13 Xeroxed pages, stapled together. The instructions take you through all the various instructions, but they are not very well explained. And while all the necessary information you would need to modify this program is in the instruction "booklet", it too is not very well written. I want to make it clear that Sawyer Software is not the only software company which has difficulty communicating in the English language; computer people are renowned for their lack in people to people communication skills. But if these people are going to sell a product, they should at least provide the consumer with the basic instructions needed to use that product. Those instructions should be written in a clear, concise manner. Sawyer Software obviously took a lot of time to develop the Accounting Pack; I wish they would have taken a little time (and pride) in their documentation.

On the whole, I would say the Accounting Pack is useful and could justify the price of a PET unto itself for any small business. review by Jon Staebell

EDITORS NOTE: I felt the 13 pages of instructions and examples PLUS sample data on the cassette were quite adequate. The packaging may not be professional, BUT it is the program that counts, and IT is FANTASTIC.

REVIEW
PLAY-GRAMS
\$10

Reich Engineering
635 Giannini Dr
Santa Clara, CA 95051

WARNING!- These game programs are addictive.

SLOT MACHINE- This program simulates a slot machine. Up to 4 players can play and place bets varying from 1 to 9 dollars. A 3 dimensional slot machine is displayed, the player places his bet, the coins are simulated going into the coin slot, the handle is pulled down, the symbols swirl around in the 3 windows - and just like Vegas (if you win) - the money pours out of the coin return. (Based upon an odds table that is also shown on the screen) Your current money balance is also displayed.

All input is thru GET statements, therefore, you do not have to hit return. The graphics are great! This would make an excellent party game.

SHARKS - You are swimming in a lagoon and suddenly 3 sharks attack you! Fortunately you have a spear gun with 5 spears you can fire. But now the bad news - one of the sharks is CHAUS - and it takes 2 spears to kill him! The object of the game is to swim to shore without being devoured. You control the direction of the swimmer and the firing of the spear gun. This is a fun (and frustrating) game. (Out of 50 tries I made it to shore only 5 times - bad swimming?)

Both SLOT MACHINE and SHARKS have a unique and clever method of protecting the programs from unauthorized copying.

HANGMAN - This is the best version of this educational game I have ever seen! A gallows is displayed with the noose hanging down and steps leading up to it. A "stick man" is shown at the bottom of the steps. You then guess the letters in the variable length word the program chose. For every guess you miss the stick man takes a step up the stairs. Eventually he is underneath the noose. On the next miss he reaches up and places the noose around his own neck and on the next miss the floor drops out and he is hung - with arms and legs flailing (that's some punishment for being a bad speller)

All three programs are well written, have good instructions, excellent graphics, and would make a good addition to anyone's program library.
REVIEW by Bill Coughlin

SAWYER SOFTWARE

PAYROLL —
Especially designed with the small businessman in mind. Utilizing cassettes can record data for any number of employees (10 employees per cassette). Computes tax information and updates totals for quarterly and yearly reports. Employees can be salaried or hourly and pay periods can be either weekly, bi-weekly, semi-monthly or monthly.
..... \$30.00

BUSINESS GRAPHIC PACK 1 —
Business Graphic Pack 1 is a simple program to use, but professional in output. The graph includes title, labeling of axis, dual graphic ability, whether the data is in Mill's, 100's or 1000's, and an optional x-axis = date and labeling of the x-axis with month and year. Entry is as easy as typing the title, # of entries, the X,Y value (Jan. 15, 1978 would be entered as 115,78), entering if the x-axis = date, if the user wants crosshatching and then graphing. The program also includes Nth order and Geometric regression to give the user a formula for his set of data (if possible).
..... \$25.00

BUSINESS ANALYSIS —
Business Analysis allows management to have available to them information for financial planning decisions. Up to 4 years of balance sheet and income statement information can be entered with resultant analysis in the areas of liquidity, leverage, profitability and activity. The ratios generated for each year are the: current ratio, acid test, debt-nw, profit-nw, profit margin, sales-rec, sales-inv, sales-wc, with a brief explanation of each. The growth analysis gives the yearly growth in 5 areas and the average growth in 5 areas. Future growth analysis projects figures for the next year.
..... \$30.00

Sawyer Software is quickly becoming recognized as a leader in quality business and personal software for the PET user. If you are the software author of a quality business or personal program (not games, please), contact us about our royalty program.

ACCOUNTING PACK 1 —
Accounting Pack 1 is a general ledger package designed for small businesses and homeowners. It contains check journal, general ledger, income statement (current ytd, previous month ytd and current month), balance sheet (current month and previous month). There are 15 commands and 6 reports that can be generated. The system uses an unique single-entry bookkeeping system and can hold up to 50 entries per period (month, week, day) and up to 40 different accounts. Each period's data is kept on convenient cassette tapes. Utilizing the general ledger command the user can view the general ledger entries for the month from Assets to Expenses or stop in midstream and view one particular account. Or the user can type in an account name such as "Advertising" and view the entries for that month. The Account Pack 1 program includes a checkbook reconciliation routine which aids in finding checkbook errors. **Sawyer Software** plans updates to Accounting Pack 1 to enable the user to use a printer, floppy disk or more memory. Accounting Pack 1 is well documented, with a 14 page User's manual. Several businessmen are using Accounting Pack 1 and have written to us their satisfaction with the program along with their purchase of other software.
..... \$25.00

CHECKBOOK RECONCILIATION —
Designed for ease of use and to find those troublesome checkbook errors, this program balances your checkbook and bank statement from month to month. Records data on cassette for next month's balancing - saving re-entry of figures.
..... \$25.00

SCHEDULE PLANNER —
Schedule Planner can be used by secretaries, receptionists, housewives or anyone wanting to plan and have at their fingertips their own schedule. Data entered is date, time, priority and description. The commands available allow the schedule to be shown for a particular day, request of time, or the "viewing" of appointments as they come up. Schedule Planner #2 is for one or more individuals. Utilizing Schedule Planner #2 a customer can call in asking when his appointment with Dr. Jones is and in seconds the receptionist can give the date and time. Or Dr. Jones can find out his schedule for the day. With the viewing command, an appointment at 12:00 or a particular day will display on the screen at that time allowing receptionists and secretaries to validate appointments.
..... \$15.00

Other programs for your 8K PET™ —
Calculator \$10.00
Chessboard \$15.00
Financial Pack 1 \$15.00
Schedule Planner #2 \$20.00

All Programs include documentation, are in BASIC and on cassette.

SAWYER SOFTWARE
828 Lewis, Rt. #3
Dexter, Mo. 63841
314-624-7611

Here is a program NO-NO:

```
100 IF E=F OR E=G THEN.....
```

With this you will get "SYNTAX ERROR" because PET picks it up this way:

```
IF E=FOR....
```

Should you be faced with this situation simply reverse as follows:

```
100 IF E=G OR E =F THEN.....
```

PROGRAM OVERLAYS

Mike Stone

Condensed from his article in:

Commodore PET Users' Club Newsletter
Issue 3

Commodore Systems
360 Euston Road
London NW1 ENGLAND

Some background info:

- * PET stores BASIC programs in location 1024 upwards.
- * Along with each BASIC statement PET stores a forward chain address. This tells PET where the next highest line number is.

- * The forward chain address and BASIC line numbers are stored in TWO consecutive memory locations as low byte then high byte. Multiply the high byte times 256 and add it to the low byte to come up with the decimal line number.

- * When a new line is added to BASIC PET moves every statement around as necessary and readjusts the forward chaining. Thus BASIC programs are always stored by increasing line numbers.

- * When a LOAD is executed under program control and the new program is not longer than the previous one variables are not changed.

- * Any statements in the previous program not overwritten by the new program remain unchanged in PETs memory. PET just doesn't realize they are there.

If we code instructions we do not want overwritten with high line numbers - and if the new program segment does not overwrite them - and if we can force the new segment to chain into them - THEN we have a real overlay system.

SO - Find in PETs memory the last statement you do not want preserved. Included with it is the forward chain information pointing to the next statement. That next statement is one you DO want preserved. Now, when your new program segment is loaded in (not overwriting the instructions you were preserving) you must find its last statement. Now you simply replace its forward chain with the chain you previously found from the old program. Now the two segments are joined.

An Illustration of this:

Enter the following program. DO NOT use any spaces except 1 after the line number.

```
10 A=A+1
20 GOSUB50
30 LOAD"NEWPROB"
50 PRINTA*2
55 RETURN
```

-CONTINUED-

ADDRESS VALUE MEANING

1024	0	delimiter
*1025	11	forward chain low byte=11
1026	4	plus high byte of 4 x 256=chain to 1035
1027	10	line number low byte=10
1028	0	plus high byte of 0 x 256=line 10
1029	65	A
1030	178	=
1031	65	A
1032	170	+
1033	49	1
1034	0	delimiter
*1035	19	forward chain low byte=19
1036	4	plus high byte of 4 x 256=chain to 1043
1037	20	line number low byte=20
1038	0	plus high byte of 0 x 256=line 20
1039	141	GOSUB
1040	53	5
1041	48	0
1042	0	delimiter
*1043	34	forward chain low byte=34
1044	4	plus high byte of 4 x 256=chain to 1058
1045	30	line number low byte=30
1046	0	plus high byte of 0 x 256=line 30
1047	147	LOAD
1048	34	"
1049	78	N
1050	69	E
1051	87	W
1052	80	P
1053	82	R
1054	79	0
1055	71	G
1056	34	"
1057	0	delimiter
*1058	43	forward chain low byte=43
1059	4	plus high byte of 4 x 256=chain to 1067
1060	50	line number low byte =50
1061	0	plus high byte of 0 x 256=line 50
1062	153	PRINT
1063	65	A
1064	172	*
1065	50	2
1066	0	delimitter
*1067	49	forward chain low byte=49
1068	4	plus high byte of 4 x 256=chain to 1073
1069	55	line number low byte=55
1070	0	plus high byte of 0 x 256=line 55
1071	142	RETURN
1072	0	delimiter
*1073	0	no forward address exists

-CONTINUED-

ZZYP-PAX

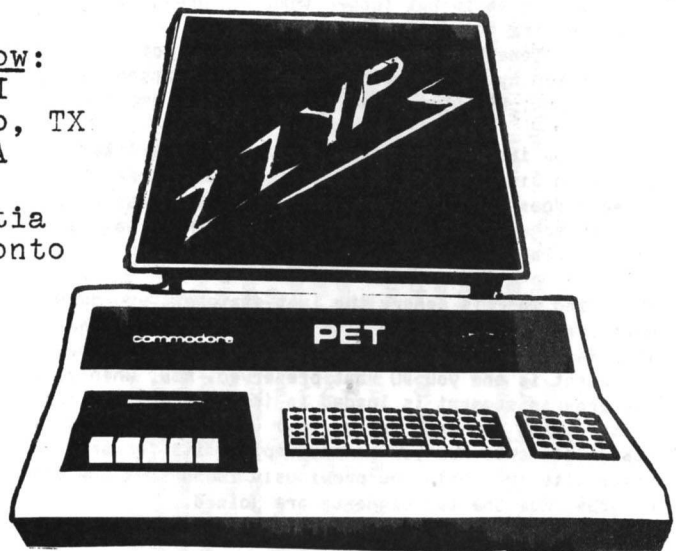
A cassette with two games
An educational booklet to encourage and improve
your programming skills.

- ZZYP-PAX No. 1 IRON PLANET and HANGMAN
DARLING! WHAT TOOK YOU SO LONG? exclaims the princess if you can rescue her from the laser sword wielding Dark Prince. Select a name for your trusty robot. PET graphics are used to enhance the word guessing game of HANGMAN. Explanations given of memory-mapped graphics and other techniques such as flashing messages and time delays.
- ZZYP-PAX No. 2 BLACK BART(Poker) and BLACK BRET(Blackjack)
Transform your mild-mannered PET into one of these mean-mouthed gamblers from the old Wild West. Customize the gambling strategy, peek at BLACK BART's hand with the instructions from the booklet.
- ZZYP-PAX No. 3 FOOTBALL and BLOCK!
PET graphics are used for the football field and scoreboard and you can see the ball move up and down the field. BLOCK! pits both strategy and reflexes against either the PET or a friend. Press the Magic Transporter key and you get another chance, even if cornered.

See your dealer if listed below:

The Madison Computer Store, WI
The Computer Shop, San Antonio, TX
The Computer Systems Store, VA
JADE Electronics, CA
Kobetek Systems, Ltd. Nova Scotia
The Home Computer Centre, Toronto
(Dealer Inquiries Invited)

ZZYP Data Processing
2313 Morningside
Bryan, TX 77801



I enclose \$9.95 each for the following ZZYP-PAX

ZZYP-PAX No. 1 _____, ZZYP-PAX No. 2 _____, ZZYP-PAX No. 3 _____

Total \$ _____

Name: _____

Street: _____

City, State _____ ZIP _____

We wish to use lines 50 and 55 with our new program, thus we made sure our new program was short enough and did not overlay them. Next we need to know where line 50 begins so that we can create a forward chain to it. N-O-T-E--- We do not wish to forward chain to the address storing line 50 (address 1060) BUT rather to the forward chain just preceding it (address 1058).

Next we must have the highest line number in the new program forward chain to line 50 (address 1058, remember?)

Let's see how it works!! Save the first program on tape, call it "PROG". Immediately after it on that tape save the following program, call it "NEWPROG". Before entering this program remember to clear out the previous one by typing NEW.

```
5 A=A*2
TO GOSUB50
15 STOP
```

List it to make sure there are NO extra spaces and that lines 50 and 55 are gone.

You now have a tape with "PROG" immediately followed by "NEWPROG". Rewind your tape and hit shift RUN. PROG will be loaded, run, and will print a "2". Then it will load in NEWPROG. When that has been loaded PET will tell you

?UNDEF'D STATEMENT ERROR IN 10

That is because now the program is:

ADDRESS	VALUE	MEANING
1024	0	delimiter
*1025	11	forward chain low byte=11
1026	4	plus high byte of 4 x 257=chain to 1035
1027	5	line number low byte=5
1028	0	plus high byte of 0 x 256=line 5
1029	65	A
1030	178	=
1031	65	A
1032	172	*
1033	50	2
1034	0	delimiter
*1035	19	forward chain low byte=19
1036	4	plus high byte of 4 x 276=chain to 1043
1037	10	line number low byte=10
1038	0	plus high byte of 0 x 256=line 10
1039	141	GOSUB
1040	53	5
1041	48	0
1042	0	delimiter
*1043	25	forward chain low byte=25
1044	4	plus high byte of 5 x 256=chain to 1049
1045	15	line number low byte=15
1046	0	plus high byte of 0 x 256=line 15
1047	144	STOP
1048	0	delimiter
*1049	0	No forward chain exists

-CONTINUED-

N-O-T-I-C-E!! The last line (line 15) does not chain into our old line 50. BUT line 50 is still there, beginning in location 1058. NOW DO THIS:

```
POKE 1043,34
POKE 1044,4
```

NOW LIST and there are lines 50 and 55. It worked. RUN it to prove it.

You can program all this to happen automatically. First assume that the lines to be preserved in the first program start at line 5000. So, just before that add these 3 lines. (Remember, NO spaces)

```
4997 N1=PEEK(201)
4998 N2=PEEK(202)
4999 RETURN
5000 your first line to be preserved
```

Locations 201 and 202 always contain the address of the next instruction (during program execution). Actually the location of the "0" between instructions.

NOW, just prior to your statement in your first program LOAD "NEWPROG" add the following lines. (You can use spaces now if you wish)

```
850 GOSUB 4997
860 N1=N1+14:REM low address of 4999
      4998 is 14 bytes long
870 N2=N2+256:REM actual high address of 4999
880 IF N1<256THEN900:REM adjust low byte
      for page boundary
890 N1=N1-256
900 BC=N1+N2+1:REM BC is now actual machine
      address of line 4999
910 Z1=PEEK(BC):Z2=PEEK(BC+1)
915 REM hold the forward chain locations
      out of 4999
920 LOAD "NEWPROG"
```

Chain adjusting must be done in the first and last statements of NEWPROG. At the END of NEWPROG these should be the VERY LAST statements (NO spaces):

```
3997 N1=PEEK(201)
3998 N2=PEEK(202)
3999 RETURN
```

The first lines should be:

```
10 GOSUB3997
20 N1=N1+14
30 N2=N2+256
40 IF N1<256 THEN 60
50 N1=N1-256
60 BC=N1+N2+1:REM BC is now the actual
      machine address or 3999
70 POKE BC,Z1:POKE BC+1,Z2
```

FINISHED.

The ideas in this article could lead to several more articles. Please send us your findings.



*** LETS PLAY BALL ***

Sound Familiar? It should. Now for the first time a real time simulation of Major League Baseball is being offered for your PET. This is not a word game.

Play your PET, play your friends
or let PET play itself. PET calls
all the plays.

Pitch the ball. Watch PET swing the bat. See fielders catch the ball. Watch runners advance bases. Foulballs, Doubleplays, errors, extra innings, its all there in realtime action on your screen.

Order "Realtime Baseball"
Send Check or Money Order
For \$12.95 To:
JERRY BRINSON
P. O. BOX 36014
Indianapolis, Indiana
46236
1-317-898-3604

PET keeps the score, lets you know
whose at bat, and tells you when the
game is over.

"Don't be "Thrown out at Home"

Order Now! Orders Shipped Within 4 days Postpaid.
Requires 8K PET.

THE HUSTLERS
Ready to USE - "LOAD and GO" SOFTWARE

Your P E T (tm) can play a new "game" -
BUSINESS-SURVIVAL & PROSPERITY

Now Available- USEFUL, PRACTICAL low cost business programs, pre-recorded
Each program includes: MASTER pre-recorded on PerCom "Pilon" (tm) cassette
with DEMONSTRATION program on Side 2, 2 PerCom "Pilon" (tm) record tapes
and complete detailed directions for use.

GENERAL LEDGER: For small businesses of all types
Keeps individual accounts-

DEPOSITS: 4 types of INCOME, 4 types of NON-INCOME (loan repyts, ect)
WITHDRAWALS: 27 types of EXPENSES, 3 types of NON-EXPENSES
6 major account accumulated totals, including CURRENT BANK BALANCE
Price: \$19.95 plus \$1.50 shipping & handling- pre-paid

CHECKING ACCOUNT: For personal accounts

Keeps individual accounts-
DEPOSITS: 3 types of INCOME and NON-INCOME
WITHDRAWALS: 18 types (utilities, groceries, insurance, loans, mortgage pyts)
Running grand totals on DEPOSITS, WITHDRAWALS, BANK BALANCE ect.
Price: \$19.95 plus \$1.50 shipping & handling- pre-paid

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REVIEW
BETSI

\$119/\$165

Forethought Products
87070 Bukhobor Rd
Eugene, OR 97402

The BETSI is an S-100 adapter for the PET. We just got ours and only have been able to test it with a 24K memory board. It seems to be working fine. It will work with I/O boards too. It has 4 built in sockets for EPROMS. That is very useful. You can put your favorite routines or a small word processor program on EPROMS and BETSI will handle it for you. Part 2 of this review will be next issue. Till then, it looks very good.

SUMMARY

Commodore is now mailing every PET owner who purchased their PET prior to a certain date a package containing a Machine Language Monitor on tape, 2 programs (Squiggle & Big Time), a booklet explaining them, and a booklet, PET COMMUNICATES WITH THE OUTSIDE WORLD. Thus you now have information you have been waiting for. We are presenting here a summary of the information we think is important. (Actually the whole book is important)

PARALLEL USER PORT

The User Port has 12 positions / 24 contacts. There are .156 inch spacing between centers of the contacts.

The contacts on the top are intended for use by a Service Technician. Use the top 12 connectors with EXTREME caution.

PIN 1 - Ground
PIN 2 - T.V.Video
PIN 3 - IEEE-SRQ
PIN 4 - IEEE-EOI
PIN 5 - Diagnostic Sense
PIN 6 - Tape#1 READ
PIN 7 - Tape#2 READ
PIN 8 - Tape WRITE
PIN 9 - T.V. Vertical
PIN 10- T.V. Horizontal
PIN 11- Ground
PIN 12- Ground
PIN A - Ground
PIN B - CA1
PIN C - PA0
PIN D - PA1
PIN E - PA2
PIN F - PA3
PIN H - PA4
PIN J - PA5
PIN K - PA6
PIN L - PA7
PIN M - CB2
PIN N - Ground

PA0 - PA7 are bi-directional I/O lines. CA1 is an input handshake line for those 8 lines. CB2 can act as the input or output of the VIA shift register as well as do most of the same things as CA1.

-CONTINUED-

REVIEW

PET DATA SHEETS
\$2

Alcorn Data Services
PO Box 104
Corinth, Miss 38834

These data sheets come in pads of 50 for \$2. They are 3 ring binder punched. The front side is a numbered 25 x 40 grid to aid in graphic layouts. The back side has all the CHR# and POKE # info for every symbol as well as a place to keep track of variables and subroutines.

Great to help keep organized.

SECOND CASSETTE INTERFACE

The second cassette interface has 6 connectors (12 contacts). Contact centers have .156 inch spacing between centers. Any connections to this port, other than the Commodore second cassette system are made at the users risk.

PINS A,1 - Ground
PINS B,2 - +5 volts
PINS C,3 - Motor
PINS D,4 - Read from cassette
PINS E,5 - Write to cassette
PINS F,6 - Sense if PLAY, REW, or FFWD pressed

MEMORY EXPANSION CONNECTOR

Spacing between the 40 positions (80 contacts) are .1 inch. All upper 40 contacts are ground returns for the corresponding lower contacts.

PIN 1 - BA0 - Address bit 0
PIN 2 - BA1 - Address bit 1
PIN 3 - BA2 - Address bit 2
PIN 4 - BA3 - Address bit 3
PIN 5 - BA4 - Address bit 4
PIN 6 - BA5 - Address bit 5
PIN 7 - BA6 - Address bit 6
PIN 8 - BA7 - Address bit 7
PIN 9 - BA8 - Address bit 8
PIN 10- BA9 - Address bit 9
PIN 11- BA10 - Address bit 10
PIN 12- BA11 - Address bit 11
PIN 13- No connection
PIN 14- No connection
PIN 15- No connection
PIN 16- SEL 1 - locations 1000-1FFF
PIN 17- SEL 2 - locations 2000-2FFF
PIN 18- SEL 3 - locations 3000-3FFF
PIN 19- SEL 4 - locations 4000-4FFF
PIN 20- SEL 5 - locations 5000-5FFF
PIN 21- SEL 6 - locations 6000-6FFF
PIN 22- SEL 7 - locations 7000-7FFF
PIN 23- SEL 8 - locations 8000-8FFF
PIN 24- SEL A - locations A000-AFFF
PIN 25- SEL B - locations B000-BFFF
PIN 26- No connection
PIN 27- RES - reset
PIN 28- IRQ - interrupt request
PIN 29- B02 - Buffered phase 2 clock
PIN 30- R/W - Buffered Read/Write from 6502
PIN 31- No connection
PIN 32- No connection
PIN 33- BD0 - Data bit 0
PIN 34- BD1 - Data bit 1
PIN 35- BD2 - Data bit 2
PIN 36- BD3 - Data bit 3
PIN 37- BD4 - Data bit 4
PIN 38- BD5 - Data bit 5
PIN 39- BD6 - Data bit 6
PIN 40- BD7 - Data bit 7

All Data and address bits are fully buffered. Address 8000-8FFF seems to be missing.

IEEE BUS LIMITATIONS

Three physical limitations should be noted when connecting devices to the IEEE bus.

- * 20 meters is the maximum bus extension
- * Up to 15 devices can be connected
- * Spacing between devices can be up to 5 meters

-CONTINUED-



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INPUT/OUTPUT COMMANDS

OPEN - Open a logical file
CLOSE - Close a logical file
PRINT# - Write data from PET to I/O device
CND - Write data from PET to I/O device
Leaves device an active listener
Must close with a PRINT#
INPUT# - Read data from I/O device to PET
GET# - PET accepts one character
from I/O device

There are four parameters to consider.

- * Logical file number (LF)
- * Device number (D)
- * Secondary address (SA)
- * File name (FN)

EXAMPLE:

OPEN LF,D,SA,FN
or
OPEN 1,5,2,"EXAMPLE"

DEFAULT PARAMETERS

If you do not specify each of the four parameters listed above, the PET assigns default values.

DEFAULT VALUES

DEVICE NUMBER (D) - 1 (cassette #1)
SECONDARY ADDRESS (SA) - 0 (read or none)

EXAMPLES:

OPEN 1 - means OPEN 1,1,0
OPEN 1,2 - means OPEN 1,2,0

LOGICAL FILES

To store and retrieve data you can use logical files. The greatest number of files the PET can control at one time is 10. Exceeding 10 files will result in loss of your PET. It must be turned off and back on again. A logical file number may be any integer from 1 through 255.

DEVICE NUMBERS

Device number 0 is Keyboard
1 is Cassette 1
2 is Cassette 2
3 is Video Screen

All other devices are assumed to be IEEE devices. Most IEEE devices allow you to choose the device number by means of a switch or the connection of jumpers.

SECONDARY ADDRESS

The secondary address allows several modes of operation to each device. The secondary address can be any integer from 0 to 31.

EXAMPLE:

PET cassette units 1 and 2 use the following set of secondary address rules.

- 0 - Tape OPENed for -read-
 - 1 - Tape OPENed for -write-
 - 2 - Tape OPENed for -write-
- An -End Of Tape- (EOT) marker will be forced when the file is closed.

-CONTINUED-

FILE NAMES

A file name on Cassette 1 and 2 can be up to 128 characters long. When a file is searched for, characters are matched in ascending order. Although the PET will only print the first 16 characters of a file name, it matches as many as you ask it to up to 128.

CASSETTE OPERATION

PET has control over the motor movement of the cassette units. One switch is also used to sense if either PLAY, FFWD, or REW are depressed. It cannot distinguish between those three buttons.

RECORDING TECHNIQUE

PET records data at two audio frequencies in two consecutive blocks. A single tone is written between each data block to synchronize speed and position. Also by writing about 10 seconds of leader before opening a file, the PET allows for normal tape leader.

TAPE BUFFERS

Both cassette 1 and 2 have a 192 character buffer. Cassette 1 begins at decimal address 634 followed by cassette 2 beginning at decimal address 826.

When reading from or writing to tape the data is stored in the tape buffer until 192 characters are accumulated. If reading, the next block of 192 is read in. When writing, the contents are then written on tape. Thus all data blocks (and file headers) are 192 characters long.

The program files are written directly onto tape from memory as two consecutive redundant blocks. Since program memory locations are variable, beginning and ending addresses are included in the file header.

I/O OPERATIONS

There are 3 main steps when dealing with I/O and files.

- * OPEN the file
- * Read/Write data to/from the file
- * CLOSE each file before ending

OPENING FILES

As mentioned earlier under Input/Output Commands you OPEN a file using the following format:

OPEN LF,D,SA,FN

Your command is OPEN. You specify which logical file, the device number you are assigning this file to, the secondary address if necessary, and the file name (if any). Since this data is interpreted by BASIC you may use computed numbers for the logical file, device, and secondary address.

N-O-T-E: The PET has a problem with OPEN for data files on tape. The file is automatically opened, but the file header may not be written at the beginning (the operating system does NOT always correctly initialize the buffer pointer).

-CONTINUED-

PRIOR to each OPEN include the following fix:

Cassette 1: POKE 243,122
POKE 244,2

Cassette 2: POKE 243,58
POKE 244,3

If a tape file is opened directly via the keyboard, then the appropriate prompting messages are displayed (PRESS PLAY ON TAPE 1, SEARCHING FOR FILE NAME, etc). However if tape files are opened under program control, NO messages are displayed on the screen. The current programs video display thus is not disturbed.

If the command LOAD is executed under program control variables are not initialized and remain unchanged (the second program must NOT be longer than the program which executed the LOAD).

TAPE INPUT

For each file OPENed for read on a cassette unit each character requested from BASIC is fetched from the tape buffer. Whenever the buffer is empty, the program is suspended while the next data block is read in from tape. If an error occurs it is noted in the STATUS WORD. A good programming technique would be to check the STATUS WORD (ST) after every input from tape. (See the section on Error Detection)

INPUT#

One command you can use to transfer data from an I/O device to the PET operating system is INPUT#. Format for it is:

INPUT# LF,A - LF is logical file number
A is the variable
or
INPUT# LF,A\$ - LF is logical file number
A\$ is the string variable

You may have several variables after one INPUT# command. Example:

```
INPUT# LF,A,A$,B$,DC$,X
```

LF is logical file number
following it are input variables
separated by commas

EXAMPLE of a short routine to read 50 numbers from cassette 1 from the file called EXAMPLE.

```
10 OPEN 5:1,0,"EXAMPLE"  
20 FOR L=1 TO 50  
30 INPUT#5,A  
40 PRINT A : REM print the number  
50 NEXT L  
60 CLOSE 5
```

GET#

GET# will fetch one character and put it in the specified field. It's format is:

```
GET# LF,Field
```

INPUT BUFFER

All data input to the PET (via INPUT# and GET#) is received one character at a time. In order to edit it, BASIC accumulates the characters in an 80 character input buffer. This buffer MUST be terminated by a carriage return. If more than 80 characters are read without encountering a carriage return the operating system variables are overwritten causing the PET operating system to malfunction. The PET must be turned off and back on again to function properly again. If the I/O device sends more than 80 characters, you can use the GET command and build you own strings inserting the necessary carriage returns.

-CONTINUED-

ERROR DETECTION

The PET uses a "Status Word" to aid in I/O error detection. You may call it any time during your program. The status word is stored as ST.

The cassette units only check data on a read. Errors that are detected:

- * SHORT BLOCK - ST=4 bit 2
spacer tone encountered before expected
possibly a short program file
instead of a data file
- * LONG BLOCK - ST=8 bit 3
spacer tone was not encountered as expected
possibly a long program file
instead of a data file
- * UNRECOVERABLE READ ERROR - ST=16 bit 4
more than 31 errors on the first block
of redundant blocks
or an error in the same place in both blocks
- * CHECKSUM ERROR - ST=32 bit 5
checksums did not match
- * END OF FILE - ST=64 bit 6
End Of File mark was encountered
- * END OF TAPE - ST=128 bit 7
End Of Tape mark was encountered

When doing a verify the status words are:

- * SHORT BLOCK - ST=4 bit 2
- * LONG BLOCK - ST=8 bit 3
- * ANY MISMATCHES - ST=16 bit 4
- * CHECKSUM ERROR - ST=32 bit 5

EXAMPLES:

```
100 INPUT#2,X,Y,Z  
110 IF ST=0 THEN GOTO 200:REM process normally  
120 IF ST=64 THEN GOTO 300:REM end of data  
130 IF ST AND mask THEN instructions  
mask=the bit being tested
```

DATA OUTPUT

For output from the PET to a device you may use the command PRINT#. The format to use is:

```
PRINT# LF,A$  
LF is the logical file  
A$ is the string variable
```

or

```
PRINT# LF,A  
LF is the logical file  
A is the numerical variable
```

You may have several variables after one PRINT# command. Example: PRINT# LF,A,A\$,C\$

The above example may not do exactly what you think. Data is transferred one character at a time to the device. Many file delimiters such as commas are automatically eliminated by BASIC. This doesn't affect the printing. However, remember when reading the data back, file delimiters must be forced. This forcing of delimiters may be accomplished by inserting a CHR\$(44), a comma, between fields. Thus

```
PRINT# LF,A,A$,C$
```

would be sent as:

```
AA$C$
```

-CONTINUED-

To correct for this you should make your statement similar to: PRINT# LF,A;CHR\$(44);A\$;CHR\$(44);C\$

or
PRINT# LF,A;"",A\$;"",C\$

Each of these will send:

A,A\$,C\$ followed with a carriage return

Or you could have a separate PRINT# for each variable sent:

PRINT#LF,A
PRINT#LF,A\$
PRINT#LF,C\$

This will be sent as (cr=carriage return):

A cr A\$ cr C\$ cr

N-O-T-E: PRINT may be abbreviated as "?" but PRINT# cannot be abbreviated as "?#". PRINT# can be abbreviated as "Pr" (P shift R).

N-O-T-E: Some PETs do not automatically turn the cassette motor on before starting to write the data. Thus it is best to have your program monitor the buffer. Just before the 192nd character is transferred into the buffer turn on the cassette motor for .1 seconds. The simplest way to do this is to

POKE 59411,53 for cassette 1

or

POKE 59456,207 for cassette 2

after EVERY PRINT# statement. This keeps the motor on all of the time. However, you should not run the cassette motor for extended periods of time. You should then POKE the motor on and have a .1 second delay loop just prior to each PRINT# statement.
CMD COMMAND

The CMD and PRINT# commands are very similar. Basically, each assigns a device as a listener, and sends the data. When the PRINT# is finished, the device is "unlistened". The CMD leaves the device as a listener. Thus to get out of a CMD command you must issue a PRINT# for that logical file. Until then BASIC treats the last CMD device as the primary output device (rather than the video screen).

EXAMPLES:

OPEN 3,5 where device 5 is your printer
CMD 3
LIST lists onto the printer

Then to print and write to disc at the same time:

CMD 3
PRINT#15,X,Y,Z

The above has logical file 3 previously opened to your printer and logical file 15 previously opened to your floppy disc. Now to monitor an input device:

CMD 3
INPUT#15,X,Y,Z

The above again assumes your printer has been opened with logical file 3 and you are reading from your floppy which was opened previously.

CLOSING FILES

Once you OPEN a file you should close it when you are finished using it. If it is a tape or disc file you MUST close it before the program ends. If it is not closed no "End Of File" mark will be recorded. Thus when the tape is loaded into memory your PET won't know when it reaches the end of file. To close a file:

CLOSE LF LF is the logical file
To close logical file 3: CLOSE 3

REVIEW- LEM LANDING FROM MOON ORBIT- \$9.95- Alpha Omega Software, 1015 Saturn Springs Dr, Garland, TX 75041

The cassette has the instructions on one side and the game on the other side.

The instructions are very detailed, typed in lower case, and tell us what, why, where, but not how! PET graphics have been well used - sections of the program are pointed out for those interested in how the program functions. NO instructions were given as to how to input three variables

T - time of engine burn
P - percentage of thrust
A - angle of thrust

Thanks to Len (the editor) I found it necessary to input each variable followed by a comma. It would be helpful to include in the instructions "HOW" to input (T):(P) and (A).

The game uses graphics and animation very effectively to "reward" you for YOUR choice of engine burn, thrust and angle. The program author suggests about 45 minutes to successfully land the LEM on the moon. The program is well done and really requires thought. Since the instructions are on the same tape as the game they cannot become separated or lost.

REVIEW BY J H KINAST

REVIEW- PET TUTOR- \$39.95- The PET Paper, PO Box 43, Audubon, PA 19407

This is a package to teach a beginner PET BASIC. It comes separately as 2 tapes containing a total of 20 lessons, ready to load (\$19.95) and a manual that is the same text and examples as on the tapes only in printed form (\$29.95). Both the tapes and the manual come together as a package for \$39.95.

The PET Tutor explains PET BASIC right from the bottom up (similar to self teaching guides to BASIC on the market, but this one specializes in PET BASIC). There are some very good tips inside as well as some short programs as examples. This is NOT a manual for the PET itself but rather a guide to PET BASIC. If you are low on money get just the tapes. Then you won't have the manual for quick reference, but you aren't missing any information since the manual is merely reproductions of what the tapes display on the screen.

This is a good way for beginners to learn BASIC.

REVIEW- DICTATOR- \$7.95- Dr. Daley, 425 Grove Ave, Berrien Springs, MI 49103

This simulation is similar to King and Hammurabi. You are the ruler of a country. You must decide how much to feed/pay your people, how much to plant, how much land to sell, and how much to spend on education and anti-air pollution. The unit of "money" is not the dollar yet there are no guidelines as to the worth of the fictitious unit. There are really no instructions so to speak. You are left confused with questions such as: How much do you want to pay your comrades? There are no guidelines given as to how much 1 comrade needs to survive. Several other variables enter in which unexplained seem confusing. Besides this, supposedly normal transactions had strange results for me. Example: I start with 2000 sq. miles of land. I sell 500 to get some money. Then I am told that I only have 500 left. What kind of math is that?

This is a simulation and simulations are my favorites. But I kept losing after 1 or 2 turns (due to lack of info to make my decisions) so I was frustrated. GET commands are NOT used. You must type the whole word Y-E-S [RETURN] to answer some questions (just a Y will not suffice).

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SATISFACTION OR YOUR MONEY BACK !

Beginning with their JAN 79 issue, KILOBAUD will have a monthly column for PET users. The column will be written by Len Lindsay, whom you all know. With Kilobaud's permission sections of the first column are reprinted here.

With over 100 companies supporting the PET you can expect to be able to get almost any plug in accessory you would want. You're right! The first things on most users lists are a printer, floppy disc, extra memory, and full sized keyboard.

Commodore first announced their printer early last summer, expected delivery in late August. The price has since then gone up \$100 to \$695 and delivery is now indefinite, probably March or later. But there are several adapters on the market to allow any RS-232 printer to be hooked to the PET.

Connecticut Microcomputer, (150 Pocono Rd, Brookfield, CT 06804), has a printer adapter for \$169 completely assembled with case, power and cables, and the Networks (5924 Quiet Slope Dr, San Diego, CA 92120) have a dual channel, bidirectional RS-232 module for \$280, assembled.

Two companies now have floppy disc modules for the PET: Convenience Living Systems (648 Sheraton Dr, Sunnyvale, CA 94087) and CGRS Microtec (PO Box 368, Southampton, PA 18966). Commodore supposedly will have a dual mini-floppy for \$1000, but don't expect to get one till next summer.

The PET is extremely memory efficient, and you will find that even a 16K program can be coded into an 8K PET. Thus for ordinary use, 8K should be enough. There are, however, several memory expansion modules available now. (None from Commodore yet).

Convenience Living Systems have the ExpandaPET module, 16K for \$399. Computer Mart Systems (13 East 30th St, New York, NY 10016) has the PME-1 with 16K for \$550. International Technical Systems (PO Box 264, Woodridge, VA 22194) has the PME-8K for \$279.

Due to the PET's small keyboard, most users wish to have a full sized keyboard to plug in, but still keep the original keyboard functional. Excel Company (2241 Tamalpais Ave, El Cerrito, CA 94530) has an adapter for \$100 that allows you to plug in any ASCII keyboard and use it simultaneously with the original keyboard. For \$175 they have a full size keyboard you just plug in and use. New England Electronics (248 Bridge St, Springfield, MA 01103) has a full size keyboard for about \$125 that operates simultaneously with the PET keyboard.

Some hints on programming with your PET.

Use lower case whenever the user has to read alot of text, such as in instructions. To put the PET into lower case mode simply add a line:

```
225 POKE 59468,14:REM LOWER CASE MODE
To return to graphics mode:
280 POKE 59468,12
```

Don't assume that the PET will be in graphics mode. One of your first lines should poke in the mode you wish to use first. Throughout your program you can switch from graphics to lower case and back again.

The PET has a GET command. This allows an easy way to input information while your program is running without having to hit the return key. A typical example follows:

-CONTINUED-

```
100 PRINT"Do you need instructions?"
110 GETA$: IF A$="" THEN GOTO 110
120 IF A$="Y" THEN GOSUB 1000:REM INSTRUCTIONS
START AT 1000
130 Your program continues here.
Remember, your instructions are in a subroutine
beginning at 1000. The last command should be:
1999 RETURN (use the appropriate line number)
```

Another use of the GET command is for indefinite delays. For example:

```
1500 PRINT"This is the end of instructions"
1510 PRINT"Hit any key to continue"
1520 GET A$:IF A$="" THEN GOTO 1520
1530 Program continues here after waiting for the
user to hit a key
```

Clear the screen before starting. Use a line such as:

```
60 PRINT"[CLR]":REM CLEAR THE SCREEN
```

As with the line above, I will use standard conventions for listing PET graphics and special keys.

Use KEY CAP identifiers if possible and enclose them in square brackets (use regular parenthesis if square brackets are unavailable).

Use a number before an item to show how many times it is to be repeated.

Enclose consecutive special keys within the same brackets, separated by commas.

For example:

```
230 ?"[HOME]":REM PRINT A HEART 3 SPACES DOWN FROM
THE TOP LEFT CORNER
```

You type:

```
2 3 0 ? " the HOME key CURSOR DOWN 3 times
shift S " : R E M P R I N T A etc.
```

Remember, a capital letter inside brackets means to type the shifted character.

If your PET has a problem take it to your dealer, he is authorized for repairs. If you bought it direct from Commodore, ship it back to them for repairs. Use the original container, but add more solid cushioning, such as newspapers, especially in the corners. Don't use small pieces of styrofoam. Ship it via UPS to: Commodore, Customer Services, 901 California Ave, Palo Alto, CA 94304. Commodore's Customer Services phone number is (415) 327-4030.

REVIEW- WORD PROCESSOR- \$29.50- Connecticut Microcomputer, 150 Pocono Rd, Brookfield, Conn. 06804

We are now using this word processor to do this review as well as most of the articles printed by our Teletype 43. This program is very good. It allows you to make corrections as you type. You also can make corrections or changes later on. It then looks for any string in any line you specify and changes it to the string you request. It will center for you as well as allow you to format the output. (line lengths, spacing, margins) You can move whole blocks of text from one place to another. Everything can be saved on tape, or printed on you IEEE printer. (Connecticut Microcomputer also sells an adapter for your PET so you can hook up any RS-232 printer. As it reads any of the data tapes you previously made, it prints the textfile on your screen. Your tape input can be inserted in the middle of an existing file already in the computer. It comes professionally packaged along with an excellent manual that includes many examples.

Anyone submitting articles for future GAZETTES may submit them on tape made with this program. In one word - EXCELLENT.

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Books

6C. Basic Computer Games: Microcomputer Edition. Edited by David Ahl, this major revision of *101 Basic Computer Games* is our best seller. All the classics are here: Super Star Trek, Football, Blackjack, Lunar Lander, Tic Tac Toe, Nim, Life, and Horseshoe. Lots of sports simulations: Basketball, Bowling, Boxing, Golf, Hockey and Darts. Casino games: Craps, Poker, Roulette and Slots. Total of 102 games all in Microsoft Basic with large, legible listings. 200 pp softbound, \$7.50.

9F. Basic and the Personal Computer. By Thomas Dwyer and Margot Critchfield. One of the best and most comprehensive presentations of Basic with examples specifically developed for personal computers. Lots on graphics, games, data bases and much more. 350 pp. \$12.95.

7E. Basic Programming. By Kemeny and Kurtz this book was termed by a reviewer as "the best text on Basic on almost all counts." An excellent, gradual introduction to programming in Basic with lots of examples. 150 pp. softbound. \$8.50.

7M. Some Common Basic Programs. By Adam Osborne. An ideal workbook for use in a Basic programming course or for self study. Contains 76 general purpose, practical Basic programs with complete listings. 192 pp. softbound. \$7.50.

PET (8K) Software

CS-1001. Logic Games-1. Six favorites from *BASIC Computer Games* with super graphics. **Awari**, the African logic game with 12 pits and 36 beans. **Bagels**, which challenges you to guess a secret 3-digit number. Martin Gardner's **Chomp** in which you chomp on a cookie with a poison corner. **Flip-Flop**—change a row of X's to 0's. **Hexapawn** played with three chess pawns. **Hi-Q**, a solitaire peg-removal game. \$7.95.

CS-1002. Number Games-1. Six number logic games including **Guess** in which you guess a secret number. **23-Matches**—try not to take the last match. **Letter** in which you guess a secret letter. **Number**, a random jackpot game. **Trap** in which you trap a mystery number between two trap numbers. **Stars** gives you stars as clues to the secret number. \$7.95.

CS-1201. Sensational Simulations-1. Five super simulations including the popular **Animal** in which the computer learns animals from you. **Fur Trader** lets you trade furs in old Canada. **Hammurabi** in which you manage the city-state of Sumeria. Or try making your fortune in the **Stock Market**. A logic game, **Word**, has you guess secret words. \$7.95.

CS-1003. Logic Games-2. Six challenging puzzles including **Rotate**, in which you order a matrix of random letters. **Strike-9**, try to remove all nine digits without striking out. The classic number game, **NIM**. In **Even-Wins** try to take an even number of chips. **Hi-Lo**, a number guessing game with a jackpot. **Batnum**, the super "battle of numbers!" \$7.95.

CS-1004. Graphics Games-1. Five amazing realtime graphics games designed especially for your PET. In **Chase**, one player pursues the other through a maze of obstacles and "zap doors." **Escape**—attempt to escape from a prison patrolled by robot guards. **Dart** provides arithmetic drill and indicates how close your response is to the correct answer on a dart board. In **Snoopy** you compute distances on a number-line while trying to shoot down the Red Baron. In **Sweep** you must try to hit nine targets in order by controlling the path of a cannonball. \$7.95.

CS-1005. Graphics Games-2. Six favorite games. **LEM**, lunar lander with a graphic display and optional auto-pilot. **Nuclear Reaction**, a game of skill for two players. **Artillery**, in which two players shoot it out over computer-generated terrain. **Bounce** traces the path of a ball bouncing around the screen. **Checkers**, with graphic display, from our *BASIC Games* book. **Dodgem**, try to outmaneuver another player or the computer to get your pieces across the board first. \$7.95.

CS-1006. Conversational Games-1. Talk to **ELIZA**, the computerized psychoanalysis program. Compose poetry with **Halku**. Challenge your vocabulary and word-guessing skills with **Hangman**. **Hurkle**, try to find the hurkle on the 10 by 10 grid in five moves. In **Hexletter**, you compete to capture more letters on a hexagon than your opponent. \$7.95.

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REVIEW - JOYSTICK - Microtronix.

The pricing appears to be \$40 for the first Joystick with two games and \$20 for an additional Joystick and a 2-person game. Assembled to connector add \$10 each.

These are Fairchild Joysticks which, in this reviewer's opinion, are the best around because they can do more than any other Joystick made. Some people find them hard to get used to, but once you do they are great. One connects to the IEEE port, the other to the user port.

They worked very well with the sample programs included. They also had a test program to make sure the Joysticks were working properly.

One very bad drawback was there were no instructions on programming them. Trying to figure it out by looking at listings of the programs was very difficult. So, if you intended to use only bought software they are great but if you want to write your own, it will take a lot of work.

- Bill Bendoritis -

REVIEW - JOYSTICKS - Coyote Electronics - \$50

The price might seem steep but this Pkg. is definitely worth it. You get 2-Atari Joysticks, a very neat prewired connector, extensive documentation and sample games. If you happen to own an Atari video game, write to Coyote for just their connector and documentation.

The documentation is on cassette and gives very detailed explanations on how to program the Joysticks. There is a test program to make sure the Joysticks are working properly. The games were paddle ball and breakout. Both worked well.

This is a very well put together pkg.

- Bill Bendoritis -

EDITORS NOTE: The Atari joystick rests on the table (or you can hold it in your palm) and you move a "stick". Many people prefer this. The fairchild joystick has to be held in your hand. You also can twist the handle besides moving it back and forth. A full resolution joystick will register and respond to even the slightest movement. This is much better than the other two, but involves more software to use it.

Coyote has an excellent connector. No bare wires are exposed. Well designed.

The joysticks in our package from Microtronix were used, and had several nicks in them. See the Editors Ramblings for comments on Microtronix (be cautious).

Please write if you have ANY ideas on conventions for joystick use.



REVIEW
MICRO SET 1
\$15

Micro Software Syst.
PO Box 1442
Woodbridge, VA 22193

Unfortunately the review for this Utility package is late and will have to go in the next issue. Till then, it exists. It is advertised to: Create an ASCII file copy of a program, Add and delete lines, Renumber lines, and give you program info.

REVIEW
BLOCKADE
\$8

Smith Business Serv.
PO Box 1125
Reseda, CA 91335

The review for this real time starship battle game did not get done in time. Thus it will be reviewed next issue. It does exist.

REVIEW-ZZZAPPP-\$7.95 -Dr. Daley

reviewed by Jon Staebell

ZZZAPPP! is a slightly amusing no skill "game" which is based on no known real-life game. The object of the game is to launch little arrows at a bouncing ball in hopes that the little arrows will hit the little ball. Oh joy. The ball starts out moving very fast and slowly lessens in speed until you finally hit it. Then, you are told how many seconds it took you to accomplish your feat and how many arrows you had to launch. One good point is that it keeps track of this information if you play multiple games. When you end the game, the program gives you your averages.

Another thing I like about this program is that it does make use of the PET's ability for graphics and animation (if you care to call floating arrows animation). It's a start anyway. Soon, DR. DALEY may devote his talents (which are obviously plentiful; the program is not an easy one to write) to more interesting programs. ZZZAPPP is an interesting game for the first three minutes of play. And some people might want to have a copy.

REVIEW - BLACKJACK - J K Johnson - \$5

This version of blackjack allows as many as 5 people to play. The interesting graphics show the cards of a hand overlapping so that all hands, including the dealer's, can be shown simultaneously. The blackjack rules of the program are not standard. A natural pays twice the bet instead of 1½ times it, but the dealer wins all tie bets. One may double down only if the total of the first 2 cards is 10 or 11. With 3 or fewer players, pairs may be split. The dealer must stand with a total of 18 or more or with a 17 that does not include an ace counting for 11. With lesser totals the dealer may or may not stand; one of the players must make the decision. Thus a sixth person could play the dealer, although the program does not keep track of the dealer's winnings. There are bugs in the program. Occasionally it skips the play of one of the hands or displays the wrong point total for a hand. This program is not for the serious blackjack enthusiast, but is for those who want to have fun playing with a group of friends.

--Pete Weller--

PET Software

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CHECK MANAGEMENT

Check Management is more than a simple add and subtract routine. It will allow you to double check your figures in your checkbook to catch any mistakes. It will also reconcile your bank statement for you. BEST OF ALL it will help you see where your money went (it did disappear, didn't it?). It will let you set up accounts and either tell you how much you spent for each account as well as the percentage or you can tell it what percentages to assign each account.

It uses GET command for ease of use and doesn't have a distracting scrolling screen. When entering your checks and assigning them to accounts, each account and its account number is displayed at the top of the screen for easy reference.

This is a good way to start managing your money.

ADD 'EM UP .

Add 'em Up is a great and fun MATH drill. There are good sound effects to let you know how you are doing. The sound abides by our conventions so if you hooked up your own speaker it will work.

You first choose the level of difficulty. If you choose easy, one digit number addition, you can choose to be timed to see if you can get 20 right in 90 seconds. That is an excellent way to learn the basics.

One interesting thing about the program is that it keeps track of RECORDS. This way you can try to make a new record for number right (or for the most wrong).

A very good educational program - and kids love it!

REVIEW - WAR GAMES PKG #1 - New England Electronics - \$10 ea/\$25 all 4

There are four highly graphic games. They are not particularly difficult although each allows you to vary the difficulty. To demonstrate the graphic capability of the PET these games are among the best. Younger persons or people into video games will enjoy these the most.

DEPTH CHARGE - You are controlling a destroyer shown at the top of the screen. A submarine is shown changing depths underneath you. You fire depth charges by hitting a number key. The higher the number, the deeper the depth charge detonates. You can vary the closeness needed for a kill.

BOMBARDIER - You fly a Bomber shown as a plane on the screen. You drop bombs on an aircraft carrier shown as a rectangle moving under the plane. You can choose the height which varies the size of the rectangle. After dropping the bomb, the screen displays a side view of the ship showing the bomb dropping in front, back or a direct hit which causes the ship to explode.

ANTI-AIRCRAFT - In this game you drive a tank shown on the screen moving from R to L. An airplane comes at you from L to R varying its height as it flies. Your shot goes to different heights by which key you press to fire. You can change the difficulty by varying the number of hits it takes to down a plane. If you don't shoot it down it may either bomb you or make another pass.

DOGFIGHT - This is the least graphic but most difficult game. By using the key pad you can dive, fly level, climb, turn left, right or go straight. What you see is a sight which you try to line-up on a blip moving around the screen. You are limited by time and if you miss six (6) times you're shot down. You can vary the speed at which the blip moves to increase difficulty.

In all games you are given information such as, number of hits and success rate. Although they are similar, for the money, it is worth getting all 4 games for the variety. Since we received these games they have added sound which works with their speaker system. This would really add to the games.

- Bill Bendoritis -

REVIEW
MICROCHESS 2.0
\$19.95
Personal Software
PO Box 136-L10
Cambridge, MA 02138

Chess for the PET!! At long last a chess program is available for the PET. The screen displays a (necessary) abstract representation of a chess board and pieces. Players may choose from 8 levels of play. At level 1 the PET makes its move in about 3 seconds. Of course it then isn't looking very far ahead. At level 8 the PET may take a minute to make its move (even 5 or 6 minutes if a complex situation arises). A clock at the side times each player.

The PET checks to see if your move is legal and if so moves your piece on the screen. You can exchange pieces with the PET at any time. Because of the range of IQ levels there is something here for everybody. The lower levels can be enjoyed by beginners. At the highest IQ the PET will give you a real run for the money.

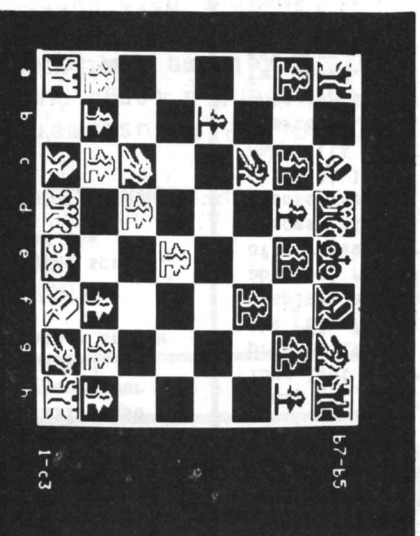
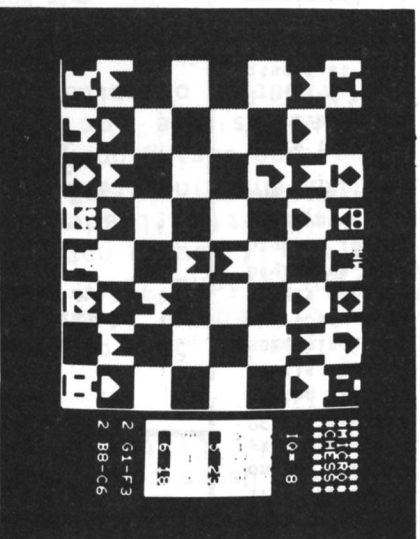
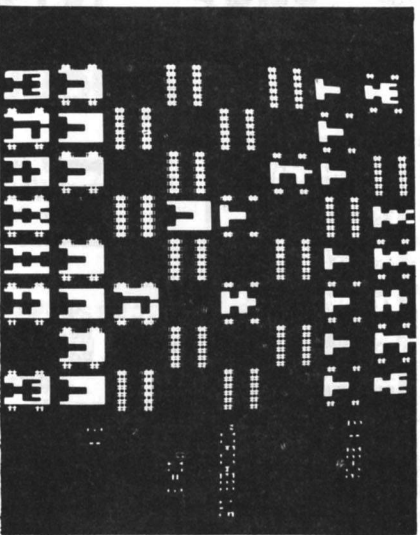
Since the positions can be reversed at any time I played the PET against itself at IQ 8. It's opening move was quite unorthodox and the game progressed in a rather bizarre fashion. The result was a draw. All in all it's a very enjoyable game. At a price of \$20, your enjoyment per dollar will probably be higher than any other game I can think of. I would rather spend \$20 for one good game than \$5 for half a dozen games of the Wumpus - Lunar Lander ilk. And who knows, maybe the next Bobby Fisher will get his start because his dad owns a PET with a chess program.

Review by Pat O'Donovan
registered chess player

TRS-80

PET

APPLE



PLAY CHESS WITH YOUR COMPUTER!

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ON DATA FILES:

The problem of data handling on the PET is not as severe in most applications as has been suggested, although Commodore's failure to provide information has forced us individually to find solutions. On the assumption that no single output (PRINT#) exceeds 191 characters (which is usually true for most uses), the following simple approach suffices.

use a conventional PRINT#1 line for output. After each such set which might total 191 characters (or after each statement of the kind if you prefer) insert the desired interrecord gap. One easy way to do so is: POKE59411,53:POKE514,0:WAIT514,16 You may thereby make the interrecord gap longer than desired, but it will always be at least 16 jiffies, which is adequate. Input the data through the conventional INPUT#. Use the interrecord gap generously - it can't hurt.

I always use a backslash as the final record on a data tape. It is worth checking that you got the backslash when you should, or that you failed to get the last record to ensure a valid read. In typical coding, correcting for Commodore's blunder costs about 10% of the data read/write time, one extra statement, and about four GOSUBs. The following example writes and reads a 64-element array of strings.



```

100 REM WRITE X$ TO TAPE
110 OPEN1,1,1,NM$: PRINT#1, NM$
120 FORI=0TO63:GOSUB190:PRINT#1,X$(I):NEXTI
130 PRINT#1,"\\":GOSUB190:CLOSE1:RETURN
190 POKE59411,53:POKE514,0:WAIT514,16:POKE59411,61: RETURN

200 REM READ X$ FROM TAPE
210 OPEN1:INPUT#1,NM$:PRINTNM$
220 FORI=0TO63:INPUT#1,X$(I):NEXTI:CLOSE1
230 IFX$(63)!="\\":THENRETURN
240 PRINT"DATA READ ERROR":END
    
```

Note that the (optional) POKE59411,61 is used in line 190. That is necessary since the RETURN on 190 is used to return to the main program from the write subroutine; without it, the cassette would be left on at the return. If you still have trouble reading the data tape, expanding line 220 and using GET# may help, but it approximately doubles the read time, a painful solution.

Michael Richter
2600 Colby Avenue
Los Angeles, CA 90064

REVIEW-LIFE-\$10-Smith Business Services

LIFE is not the most exciting, action-packed computer game available. But it is an intriguing program just the same. If you are really a LIFE addict, this cassette is a must for you.

The cassette comes with three programs all recorded on the first side. The first program is an attempt to explain the game of LIFE. It fails miserably. It poorly explains the rules of LIFE and doesn't even attempt to explain to the user how to get the other two programs into the computer and working. Throughout these three programs, the instructions are skimpy, poorly written, and non-user orientated. They offer little help. If you're not familiar with LIFE, forget this cassette.

If you are already familiar with Conway's LIFE, you will appreciate the next two programs. The first, "LIFE 40*25" is a simple LIFE program. You place the "seeds" (shift-Q) on the screen and then initiate the program by typing "GOTO 100". The program then generates the succeeding generations. This can be very fascinating to watch.

The third program, "LIFE 64*64", is a more sophisticated version of LIFE. It keeps track of the number of generations displayed and also allows you to "pause" the program to give you a chance to see whats on the screen before it disappears. It also allows for more "seeds" to be on the screen since it uses a smaller character for the "seeds". The quarter-square characters are used. By combining them (e.g. using the shift-question mark character) complex and large populations can be displayed. This is one of the finest versions of LIFE I've ever seen (and there are a lot!).

The really fascinating thing about these programs is the fact that they are written in machine language. The BASIC programs that come on the tape really POKE the program into memory and then cause it to be executed. This allows for MUCH faster generations. If you're interested in programming the PET in machine language, you might be interested in taking a look at these programs.

revised by Jon Staebell

CMD COMMAND
The CMD command redirects the output of BASIC onto the device specified. EXAMPLE: the current BASIC program listing can be directed to tape #1 with: CMD 1 : LIST

PRINT# BUG
The PRINT# statement has a bug writing string variables. To correct this bug, place the quote symbol around each string printed. EXAMPLE:
10 Q\$=CHR\$(34)
50 R\$=the string you print
90 PRINT#1,Q\$+R\$+Q\$

RECORD GAP BUG
The PRINT# command does not always allow a long enough inter record gap between tape buffer writes. Thus on long data files, records may be lost or misread by the INPUT# command. Commodore's fix is:
90 Q\$=CHR\$(34)
910 PRINT#1,Q\$+R\$+Q\$
920 P1=P1+LEN(R\$)
930 IF INT(P1/191)<P2+1THEN970
940 POKE59411,53:T=TI
950 IF(TI-T)<5 THEN 950
960 POKE59411,61:P2=INT(P1/191)
970 RETURN

SAMPLE CALLING PROGRAM
100 OPEN1,1,1:P1=0:P2=0
110 FORI=1 TO 1000
120 R\$=STR\$(I)
130 GOSUB 900
140 NEXT I : CLOSE 1

**REVIEW
PERSONAL LEDGER
\$20
CHANNEL DATA SYSTEMS
5960 Mandarin Ave
Goleta, CA 93017**

We just received this program with manual. Next issue will have it's review.

**REVIEW
FOOTBALL / BLOCK
\$10
ZZYP DATA PROCESSING
2313 Morningside
Bryan, TX 77801**

We just received this cassette and manual. We did manage to have some fun with them already, even though the review will not be till next issue. They look well done.

**REVIEW
CHECKERS
\$9.95
CNS SOFTWARE
5115 Menefee Dr
Dallas, TX 75227**

The review for this checkers program is late. It does play a legal game of checkers. For more details see next issues review.

SOFTWARE FROM PETSHACK

NUMBERAMA

Numberama is a number guessing game based on the popular game of "Mastermind". The computer will generate a random number with the number of digits you select (1 to 9). As you try to guess the number, the computer will give you clues. This game takes a great deal of strategy for a quick solution.

STATES

Help the kids with their geography and brush up on your own. Match States and Capitals by multiple choice or write in your own answer.

MATH TUTOR

To help your youngsters learn math in an enjoyable way. The child selects the category they want to work in, addition, subtraction, division, or multiplication. This program uses oversized numbers, the child's own name, and lots of pats on the back for encouragement.

MAD LIBS

A party favorite. You supply the nouns, adjectives, adverbs, etc. and the computer will write a hilarious story around them.

WORLD CONQUEST

An advanced game of strategy; you pit your wits and forces (Tanks, Troops, Planes, etc.) against the forces of enemy nations in an effort to conquer the world.

STARTREK

All time favorite re-written for the PET and improved with special PET graphics.

MORTAR

An advanced technical game involving X-Y coordinates and angles to direct the Mortar shell to the target as seen on the Radar screen.

PSYCHO ANNIE

Got a problem? Tell Psycho Annie: You will usually get both an interesting and provocative answer.

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P.S. An 80 Column 8" Impact Printer is now available for your PET. This is NOT Commodore's Printer nor does it print Graphics. Only \$495 with interface.

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If you ever need to fill consecutive locations in memory (up to 256) with the same character, try this little machine language subroutine. It is especially useful for clearing out a section of the screen VERY QUICKLY. It's a lot faster and cleaner than printing strings of blanks.

```
10 REM LOAD THE TAPE#2 BUFFER WITH MACHINE INSTRUCTIONS
20 FOR I = 826 TO 836:READ A:POKE I,A:NEXT I
30 DATA 169,*1,162,*2,157,*3,*4,202,208,250,96
```

where the *'s stand for the following:

- *1: The numeric value of the character you want to propagate. (blank is 32)
- *2: The number of repetitions.
- *3 & *4: The starting location, computed as follows:

Take the first location you want filled with the character and subtract one. (Remember, the screen starts at 32768.) Convert this to hex. Reconvert the last two hex digits back to decimal. This is *3. Then convert the leading hex digits to decimal. That is *4.

As an example, say you wanted to start in the first screen position. That's 32768. Subtract 1 and convert to hex to get 7FFF. The FF then becomes 255, decimal, and goes into *3. The 7F is 127, and goes into *4.

So if you wanted two lines of x's across the top of your screen, the data line would read DATA 169,24,162,80,157,255,127,202,208,250,96.

Whenever you invoke the subroutine, use a SYS(826) in your program.

If you want to change the values of the *1 - *4 mid-program, just poke the actual memory location, since the rest of the subroutine remains intact. That is, to change the above X's (24) to hearts (83), just use a POKE 827,83. Then invoke it with SYS(826).

For some crazy effects, try something like:

```
200 FOR J = 1 TO 100
210 POKE 827,256*RND(1):SYS(826):REM PICK A RANDOM CHARACTER 100 TIMES
220 NEXT J
230 POKE 827,32:SYS(826):REM CLEAR IT WITH BLANKS
```

If you want to decipher the machine code, it's the following:

```
LDA with *1 / LDX with *2 / STA (absolute + X format) into *3 & *4 /
DEX / BNE (back 5 bytes to the STA) / RTS
```

Have fun with this. I think you'll like what it does for your programs.

REQUEST - REQUEST - REQUEST by Bill Bendoritis

Having reviewed a number of products which plug into the user port we found a need. Constantly connecting and disconnecting an edge connector is both difficult and hard on the PET. If someone would market a multiple edge connector which would allow you to plug in a number of items ie; speaker, joystick, lightpen etc. it should sell very well. A connector similar to Coyote's joystick connector would be great.

Speaking of requests- would somebody who cares about their customers, buy the rights to PET from Commodore. Through my association with the Gazette and the PET Computer Club in Madison, I've talked with a number of PET owners. The overwhelming opinion of most is that the PET is a fantastic computer but the management of Commodore doesn't give a darn about those of us who have boughten them.

If it wasn't for the tremendous support of companies selling hardware and software for the PET, it would be about as useful as a lump of clay to someone new to computers. For as long as the PET has been on the market, you have to believe that if Commodore cared about their customers they could put out a decent instruction manual, or answer their mail. If I sound bitter, I am, and so are many other PET owners who know they own super machines but can't get any support from the jerks who make them. So how about it, why don't one of you companies who wants satisfied customers as well as profits, talk to Commodore about getting the PET before they totally screw-up a good thing.

```
90 REM A TEST PROGRAM FOLLOWS
100 PRINT"WHAT IS YOUR NAME?";
110 GOSUB9000:NAME$=R$
120 PRINT"WHAT IS YOUR AGE?";
130 GOSUB9000:AGE=R
140 PRINT:PRINT"NAME - ";NAME$
150 PRINT"AGE - ";AGE
8999 END:REM *****
9000 R$="":RR$="":R=0:REM:INITIALIZE ANSWERS **** INPUT SOUND SUBROUTINE ****
9010 POKES25,0:WAIT525,1:GETRR$
9020 POKES9467,16:POKES9466,10:POKES9464,222:REM TURN TONE ON
9030 FORJ=1TO15:NEXTJ:REM TONE LENGTH
9040 POKES9467,0:POKES9466,0:POKES9464,0:REM TURN SOUND OFF/RECORDER BACK ON
9050 R$=R$+RR$
9060 IFR$=CHR$(13)THENPRINT"?":GOTO 9000:REM RETURN WAS HIT WITH NO DATA
9070 PRINTRR$:REM LAST KEY TYPED
9080 IFRR$=CHR$(13)THENR=VAL(R$):RETURN:REM R$ IS THE STRING / R IS THE NUMBER
9090 GOTO9010:REM GET NEXT CHARACTER
```

SOUND INPUT ***BY LEN LINDSAY***

```
30 REM R$ IS THE STRING
40 REM R IS THE VALUE OF THE STRING-
50 REM ALLOWING FOR NUMERICAL INPUT.
60 REM A CHECK COULD BE ADDED FOR
70 REM NUMERICAL INPUT TO ASSURE THAT
80 REM A NUMBER WAS ACTUALLY TYPED
```

B.C.-Society of PET Owners and Trainers -Victoria, 947 Russell St
B.C.-Vancouver PET User Group Box 35353, Station E

CA-PUG (South Bay) meets every 1st WED
CA-SPHINX (East Bay) meets every 2nd & 4th Thurs. (415) 451-6364
CA-BANUG call for info (415) 523-7396
CA- North Orange County Computer Club, Dave Smith, 3030 Topaz #A, Fullerton,CA
CA-Sacramento PET Workshop meets every 3rd Thurs at 7:30 (916) 445-7926
CA-Valley Computer Club meets at 2006 Magnolia Blvd, Burbank every 1st Weds at 6 pm CALL 213- 849- 4094

ENGLAND-PET Users Group, Tom Turnbull, 49x9th Row, Ashington, Northumberland

IN-Indianapolis PET users may contact Jerry Brinson at (317) 898-3604

Japan-PET User Group Shinsen Park Himu Room 201, 4-13 Shinsencho Shibuya-ku, Tokyo

MN-Twin Cities contact John Fung (612) 376-5465

MO-St Louis contact Ginny Perkinson, 46 Westwood Ct

NJ-PET users meet every 4th Fri at 7pm. (201) 233-7068

NY-Westchester PET User Group meets every 2nd Tues CALL 914- 428- 7872
NY-White Plains contact Computer Corner

TN-River City Computer Hobbies meets every 1st Mon at the main library

TX-contact John Bowen of Texas A&M Microcomputer Club

VA- PET users may contact Bob Karpen in Reston at (703) 860-9116

WI-Madison area meets every 1st Thurs 7pm at 1400 E Washington Ave, Rm 150.

MACHINE LANGUAGE IS FAST - TRY THIS:

```
10 REM PATTERNS - EARL WUCHTER
20 FOR M=826 TO 852
30 READ Y : POKE M,Y : NEXT M
60 POKE 1,58 : POKE 2,3
70 PRINT"OK"
80 GETA$:IF A$="" GOTO 80
90 C=ASC(A$)
100 IF C=18 THEN R=128-R : GOTO 160
110 IF C=17 THEN L=2-L : GOTO 190
120 IF C=17 THEN S=64-S : GOTO 150
130 D=C
150 D=D AND 191
160 IF D AND 128 THEN D=D AND 127 OR 64
170 D=D OR R
180 D=D OR S
190 POKE 59468,10+L
200 M=USR(D)
210 GOTO 80
220 DATA 32,167,208,160,0,132,48,169,132
230 DATA 133,49,165,180,198,49,145,48,136
240 DATA 208,251,166,49,224,128,208,243,96
260 THE REV, CRS DOWN, CRS RIGHT KEYS
270 FLIP/FLOP RVS, SHIFT, GRAPHIC/LWR CASE
```

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*The keyboard & typewriter interface
will not be available until early '79.*

PET can make sounds in many ways. Follow these easy conventions to remain compatible with other PET users. Use pin N (ground) and M (sound line) of the user port (middle connector in back). M & N are the bottom right corner pins. Hook these into a speaker / amplifier. To turn on sound capabilities POKE 59467,16. The pitch varies from 1-255 as the value of X in POKE 59464,X. Three octaves of the pitch are available via POKE 59466,Y (Y=15 or 51 or 85). ALWAYS turn off the sound as soon as it is done with: POKE 59467,0 : POKE 59464,0 : POKE 59466,0

Rumor is that Commodore is adopting our conventions for sound now. Their explanation is said to be similar to our past article.

REVIEW - COMPUTONE - Microsignal - \$14.95

This sound system has a very attractive, good sounding speaker. It gets its signal from the I/O port. Instead of a battery it receives its power from the second cassette port. The connectors are extra and if purchased from Microsignal w/speaker, come attached.

There are (5) pages of documentation on programing sound. They are very good. One complaint is there is no volume control. Microsignal suggest using location and direction of the speaker to change the sound you hear. This is a pain! They should raise the price to cover a volume control. Microsignal has programs for the PET that make use of their sound system.

- Bill Bendoritis -

EDITORS NOTE: The Computone is a very goodlooking speaker which needs no batteries to operate. But it has no volume control. Since it is pretty loud that is a nuisance. It is compatible with our music conventions however, and it is what I use now (with a piece of cardboard taped over the speaker to lower the volume).

REVIEW-MUSIC BOX-\$49.95-New England Electronics

Have you ever felt the urge to compose great melodic masterpieces? If this secret fantasy is limited by a tin ear or any other musical handicap, then NEECO's MUSIC BOX is for you. The MUSIC BOX comes with a speaker-amplifier which is directly soldered to an edge connector. This edge connector is then plugged directly into your PET. You need to know absolutely nothing about soldering, electronics, or witch-craft to use the MUSIC BOX. The speaker-amplifier which came with our MUSIC BOX was the standard unit many PET users got from Radio Shack. However, NEECO is now reportedly sending out a nicer unit, which mounts directly inside your PET.

In addition to the raw hardware you need to make music, NEECO includes a couple of programs which will allow you to compose, edit, store, and play your musical creations. It should be considered to be a text-editor, only with musical notes instead of text. Everything you need to help you compose those tunes is included. You can play one particular page of music, a group of pages, or individual notes within that page. Editing your creation is a simple matter. Anyone who wants to compose music on their PET should buy this MUSIC BOX.

I have two complaints however. My first complaint is that the sound I got was not particularly good. This was probably caused by two things: the battery was low, and the speaker-amplifier is awfully small. In either case, I would like to have been able to connect my own speaker-amplifier; this would allow some really far-out effects - imagine connecting such an orchestra to your stereo. But no such information was provided. My second complaint is in the manner that the MUSIC BOX is connected to the PET. They use different connections on the User port than we Gazette loyalists are used to. I would have preferred that they use the Gazette Standard: the M&N pins. But perhaps they had a reason for using different pins. Unfortunately, to use any of the sound games I currently have, I would have to switch back and forth between my current set up and the MUSIC BOX.

That switching back and forth has caused a lot of wear on the connector coming out of my PET. I almost wish that NEECO had not included the connector with the MUSIC BOX. I imagine, however that it would be a simple matter to unsolder the MUSIC BOX wires and then wire it to your own permanent connector. Of course, you must use the same pins if you want the music. You could also have wires coming out of the M&N pins (the Gazette standard) and just switch your speaker-amplifier between the two. All of which is a bother. I would prefer to have some standards.

But, all in all, the MUSIC BOX is superb. I recommend it to anyone who wants to compose PET music. review by Jon Staebell

REVIEW- MORSE CODE- \$7.95- Dr Daley, 425 Grove Ave, Berrien Springs, MI 49103

This program uses Pins M&N on the user port for sound (abiding by our conventions). The program allows you to type in any message and it then sends the message via your speaker. Not only can you send morse code but this program will help you learn morse code. It will send 50 random characters. Then it will print on your screen what it sent. The WPM (words per minute) can be varied from 1 to 30. There also is a special mode which sends the morse code for each key as you hit it. A good program for beginning morse coders.

REVIEW VIDEO CHECKERS \$14.95

COMPUQUOTE
6914 Berquist Ave
Canoga Park, CA 91307

We just received this program. A quick test proved it to play a legal game of checkers (with graphics and no screen scrolling). Review in next issue.

REVIEW STARTREK \$12.95

DAD'S RELIABLE SOFTWARE
1614 Norman Way
Madison, WI 53705

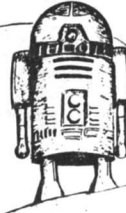
The review for this game is late. It does work however and will be reviewed next issue.

REVIEW MACHINE LANGUAGE MONITOR \$12 SMITH BUSINESS SERVICES PO BOX 1125 Reseda, CA 91335

The review for this monitor is late. Thus you will have to wait till next issue for it.

PET software directory-buy from:
Robert Purser, PO Box 466, El Dorado,
CA 95623. \$2 for NOV / \$4 for FEB

Robert Elliott Purser's Reference List of
TRS-80, PET, & Apple II
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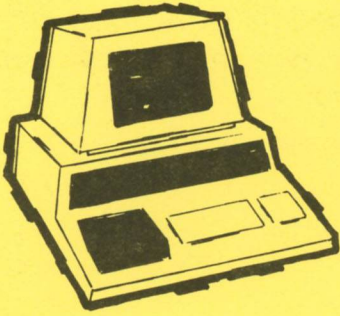
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The cassette exchange is still operating as usual. For every program you send us we will send you one in return (\$1 per program copying charge). You may refer to our list of programs in last issue.

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ANIMATED RUN

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