SPOT

The Society of PET Owners and Trainers

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PET POINTERS

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PET LISTING CONVENTIONS

PET Program listings in *People's Computers* employ the following conventions to represent characters that are difficult to print on a standard printer: Whenever square brackets appear in the listing, neither the brackets nor the text they enclose should be typed literally. Instead, the text between the brackets should be translated to keystrokes. For example, [CLR] means type the CLR key, [3 DOWN] means [DOWN, DOWN, DOWN] i.e., press the first CRSR key three times.

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TAPE TIP

I recently bought tapes and was able to load only one side of each tape. I couldn't load the other side and was ready to mail them back until I tried this: I placed a small piece of cloth (about 3/8" by 2") under the cassette and forced the lid to close. Then they both loaded O.K. Maybe I aligned the tape and tape head by doing this? R.L. Mc-Arthy, San Clemente, CA.

Who knows . . . but it certainly sounds worth passing on the information. Thanks for the tip. — Ed.

Commodore's PET is a factory assembled personal computer based on a 6502 microprocessor. The $795 system includes a keyboard, cassette tape unit, built-in TV screen, some graphics, upper and lower case, and extended 8K BASIC, and 8K of user memory. Each bimonthly issue of People's Computers *since the September-October 1977 issue has included an article on the PET.*

RANDOM REMARKS

Concerning RND(X): Memory locations 218-222 store previous random number, in usual PET notation:

$$R = ((((PEEK(222)/256 + PEEK(221))/256 + PEEK(220))/256 + PEEK(219))/256 + .5)*2 \uparrow (PEEK(218) - 128)$$

To "randomize," try a statement like "X=RND(−TI)." Don't use the resulting X, but call RND(1) thereafter. (RND(negative #) fills memory locations 218-222 with a scrambled-bytes version of the argument.)

Mark Zimmermann
Pasadena, CA

VANCOUVER PETS

The Vancouver PET Users Group recently held their second meeting. The success of the PET has caught us all by surprise. The attendance at our second meeting was over double the first, with some 40 owners and 15 PETs. The Commodore dealers indicate that there are many more PETters who are not aware of our group. Interested persons should phone Rick Leon at: (home: (604) 734-2060); (work: (604) 324-0505). They can also write to:

Vancouver PET Users Group
Box 35353 Station E
Vancouver, BC
Canada

The club format includes a short presentation by a PET owner on programming on PET hardware, news from Commodore and other sources. Followed by PET Patter and program swapping.

PROGRAM TAPE SEARCH

I use an external cassette recorder with my PET, and I have 10 seconds between programs on a tape (recorded at zero volume). This makes it possible to locate any program using a **SHARP RP 1155** Deck with Automatic Program Search System (APSS). On fast forward or rewind it will stop at the first blank in the tape. Great for verifying and locating programs.

Jack Clark
Oxon Hill, MD

PET PAWS

KEYBOARD HOOKUP

In a recent SPOT column we learned that our PETs can be trained to speak (via hard copy printout) using a Diablo Printer and a PET ADA interface (see the article on "PETting a Diablo," Jul-Aug of *PC*, p.47). Well, now it is also possible to produce, if you will, a new set of "paws" for our PETs. ("Paws" in the sense of a new kind of keyboard for the PET . . . or, another "set of fingers," a new "hand," so to speak). I am alluding, of course, to the possibility of wiring up another, more standard kind of keyboard to the PET-one which will work in parallel with the existing PET keyboard.

As Ludwig Braun pointed out in a recent review of the PET which appeared in *Creative Computing* (see page 24, July/August issue), the PET does lose some

points if you consider the more negative features of its keyboard design. Obviously this keyboard is best suited for young users with small hands. It is apparent that many adult users would prefer a larger, more standard size keyboard to work with, especially when they want to enter a lot of text, graphics, or data. It is particularly true that when the PET is used for business applications, often requiring large amounts of data processing (number crunching), the present PET keyboard is not so well suited for rapid data entry in volume.

So, we must conclude that for some purposes the PET needs a new set of "paws." And for those SPOT readers who may be interested in checking out the following reprint of an article on this topic, here is a solution to this problem:

"So you don't like the KYBD that comes with your PET?!!! Well it has proven to be a snap to add on your own KYBD . . . and I do mean add on, not replace!

Since encoding the KYBD information for the PET is done by the BASIC under the 60-cycle interrupt, there is only one of ten lines strobed out to the existing KYBD (10 by 8) matrix at a time. The BASIC then looks to see if there is a return of this strobe on any of the eight returning lines from the matrix, caused by a depressed key. If there is no return of the strobe, the BASIC chooses another of the ten lines to strobe until it has gone through the full ten, when, if there have been no keys

pressed, it will put a 255 (or FF hex, or the Pi character) in location 515 (or 0203 hex). If a key had been depressed, a simple contact was made from one of the ten strobe lines to one of the 8 return lines. The BASIC would then have inserted a value in location 515 which was equivalent to the sum of the decimal numbers in the corresponding row and column (as indicated in the first diagram to follow).

The KYBD plug/receptable on the mother board (inside the PET) has numbered strobe lines and lettered return lines. If you arrange your add-on keyboard strobe line connections according to the pattern in the second diagram to follow, so that they make contact with the return lines (indicated by the lettered groupings over the diagram in figure 1), then you can connect your eighteen lines to the existing KYBD plug (in parallel) and still retain the graphics keypad on the PET!!!!

As an example: a #4 strobe line connected to, and returned by an "E" line will print the character "P"."

This excerpt was from an article originally printed in the "PET User's Group Newsletter" (volume 0, no. 1), published by Pete Rowe, for the PET Computer Project, Lawrence Hall of Science, Berkeley, and was written by Neil Bussey and Richard Tobey.
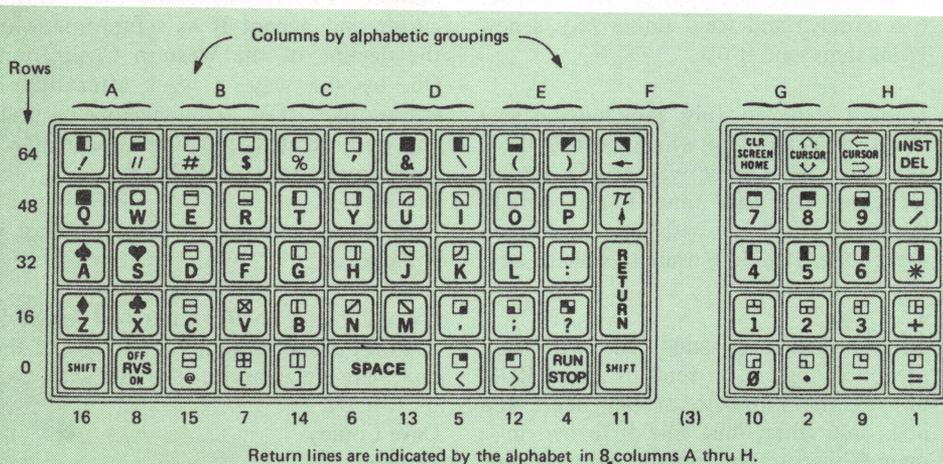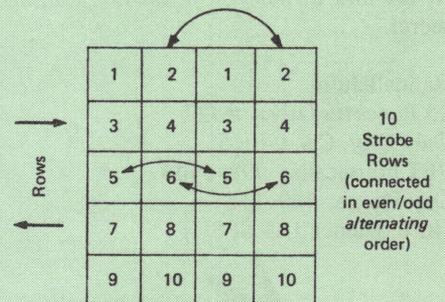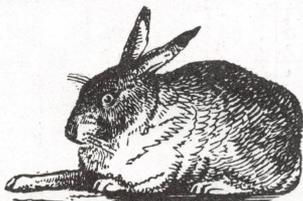

Figure 1

Figure 2

In my experience, it was a little bit more than "a snap" to add on my own keyboard to the PET! However, I can now say that all my effort was really worth it, because now that I have another keyboard to use with my PET it is really easy to sit down in a comfortable chair and enter in long passages of text or a great many data statements! With a larger size, typewriter-like keyboard, it would be quite easy to type in text at 60+ wpm speed (with the aid of a mini-word processing software system). If you are able to wire in a 3-foot long ribbon cable from the keyboard to the PET, then you could conveniently place the PET on a table top and still sit nearby in a comfortable chair with the new keyboard resting on your lap. Now isn't that a neat way to make home computing fun and comfy?!!

For those of you who might be interested in tackling this project of adding on another keyboard to your PET, you can write to me at the address given below for more details. It will not be a very expensive project, as the keyboard alone only costs about $30.00. However, you must be willing to spend several hours wiring up the keyboard matrix connections, which I found to be not an especially easy task. If you are interested in contacting me, then I will be able to give you further hints that may save you time and trouble.

I'll conclude this letter now by leaving you with this thought to ponder: wouldn't it be neat if you could shift-LOCK on the PET, especially when you want to draw on the screen using the graphic keyboard characters? Well, with an add-on keyboard you can do just that. I know of at least three other PET owners who have trained their PETs to do this trick. Write to me and I'll let you in on this training secret.

Randall Julin
15 Poncetta Drive #322
Daly City, CA 94015
PET housecalls: 992-6946
Day Phone: 469-1157
(Info Science Lab SFSU)

PET PEEVES

CONLEY VS. COMMODORE

Thanks for the copy of *People's Computers*. (I guess my subscription has expired—just can't figure out the Greek on your mailing labels.) Thought I'd let you know what happened on that Commodore/PET problem we were having.

Sometime about the middle of June, I got a letter from a Ms. Lennie A. Cooper, Manager, Customer Services at Commodore. It basically (BASICally?) said that the PET has a defective ROM and the tape transport heads may be out of alignment and that I should send it off to Palo Alto to get it fixed. I wrote back and said that I didn't want to send our PET off for an unknown length of time to who knows what kind of treatement at the gentle hands of UPS/Commodore. I said to forget the tape deck problem (I don't think she read my second letter too closely) and we'd rather *buy* a new ROM than send it off.

I got a letter in July showing the new ROM part number which cost $10.65, and that the defect was in the BASIC software. By this time I was totally PO'ed and had my assistant call her on the phone. (I didn't want to talk to anyone by this time).

After much back-and-forth with her, she finally agreed to send us a new ROM out of the kindness of her heart and not only that, but she'd throw in a manual/instruction book. After a few days, we got the book and the ROM (book?! That thing wasn't much more than the 8-page throwaway that came with the computer. It *was* on shiny paper, though).

The ROM wouldn't fit!!! $@#%¢#%$*&!! It seems that the older machines (I don't think she read my first letter either!) use a 24 DIP ROM and she sent me a 28 DIP ROM that the newer ones use.

Another phone call. "Send it back and we'll send the right one."

Another week . . . I got the other ROM with the attached note. This one went in OK. Did that fix it right up, you ask? All I can say is that it works *somewhat* better. I only lose the cursor (or curser, as I call it) about once a day now, instead of 5 times a day.

At this point, I'm giving up on Commodore—I'll live with the disappearing curser and accept it as symptomatic of the decline of the Western Civilization. Oh, by the way, a week after that, I got another ROM in an envelope without any note at all (good Fairies?). It didn't work any better than ROM #3.

How those guys run their service dept is strange!

I wonder how their printer will work? If it won't work correctly right out of the box, here we go again. The hell with 'em.

Dave Conley
Minister
Universal Life Church
of the Pacific

PET PRODUCTS

S-100 BUS CONVERTER BY EXCEL

Excel Co. has designed two products to extend the usefulness of your PET. One is the S-100 Bus Converter (S100 BC), an inexpensive device to allow your PET to interface with the many S-100 products on the market. Some of the boards that can be used are Godbout's 4K, 8K static memory; Solid State Music's 4K, 8K static memory; and IMSAI's Multiple I/O boards. The S100 BC is $85, not including cables and connectors.

The other product is an ASCII Keyboard Interface. It allows any ASCII encoded keyboard to talk to the PET through the same connector as the original PET keyboard. No modifications are necessary; and since the PET keyboard is not disabled, it can be used for all its original functions including graphics. The Interface is $80. For more information contact:

EXCEL Company
P.O. Box 1147
El Cerrito, CA 94530

CGRS MICROTECH S100 ADAPTOR

CGRS Microtech, Inc. announces the PET /S100 adaptor. CGRS, the 6502/S100 experts, have developed an adaptor card that will convert the "memory expansion" connector from the PET computer to the S100 bus. With this card the owners of the PET can expand memory, add I/O devices (printers, floppy disc, etc.) and enjoy the advantages of the numerous S100 products.

The PET/S100 is a single board that plugs into a card slot of any S100 motherboard and connects to the PET memory expansion connector via a flat ribbon cable. the PET/S100 adaptor can be used to adapt the KIM, the MOTOROLA EVII, and other 6502 or 6800 computers to the S100 bus using the appropriate connector cable. This board is unique in that it generates all of the required S100 control signals such as Psync, I/O address, wait states and — much more. This is the same design that has been proven by CGRS over the past several years with their S100 6502 MPU card.

The PET/S100 comes with instructions and a complete S100 compatibility list. It is available fully assembled and tested for $195.95. Send check or money order to: CGRS Microtech, Inc., PO Box 368, Southampton, PA 18966.

PET CRT SPACING CHART

PET CRT spacing and layout charts are available in 8½ by 11 inch pads. With green printing on white background, one side shows 25 numbered rows by 40 columns for planning your PET screen output. The other side is printed with spaces to record BASIC variable descriptions, subroutine descriptions and also shows the PET keyboard with ASCII codes. approximately 50 sheets per pad at $2.00 each, or 5 pads for $7.50 post paid.

Alcorn Data Services
P.O. Box 1535
Corinth, Miss. 38834

PET GAZETTE

The *Pet Gazette* is an informal publication that includes reveiws of software and equipment, tips on operating and using your PET, and a software exchange. The *Pet Cassette Exchange* has over 150 user supplied programs available for only $1.00 each. The *Gazette* also features subscriber donated articles.

The pocket sized issue ran 40 pages in July '78, and operates on a small income from advertisers. Copies are free to individuals, but they would love any donations you can send. It's worth it for the helpful bits of information that isn't readily available elsewhere. Contact:

Len Lindsay, Editor
Pet Gazette
1929 Northport Dr., Room 6
Madison, WI 53704

READ, WRITE PET MEMORY©

The PET computer's BASIC language instruction set provides four commands/statements which allow the programmer to store and execute machine-language programs. There are: POKE, PEEK, SYS, and USR. The POKE statement, which stores data directly in memory, is a little clumsy to use because it takes a separate statement for each memory position; and the address of the memory position, and the data to be stored have to be in decimal form. Addresses and memory contents are usually expressed in hexadecimal form.

The *Read, Write PET Memory* program by Don Ketchum, greatly simplifies the entire procedure. With this program you store data in memory by simply keying in the starting address (in hexadecimal) and then just key in the hex digits in the sequence in which you want them stored. Nothing could be simpler! Here is a list of the functions which can be very easily carried out with this program. (All data and addresses will be in hexadecimal.)

1) Write into memory.
2) Display memory (both as hex digits and as assembly language mnemonics).
3) Change data in memory.
4) Save memory on tape.
5) Load memory directly from tape starting at any selected memory address.
6) Execute machine-language programs.

Read, Write PET Memory (Copyright 1978 by Don Ketchum) is available on tape cassette, $7.95 postpaid from:
Don Ketchum
313 Van Ness Ave.
Upland, CA 91786   □
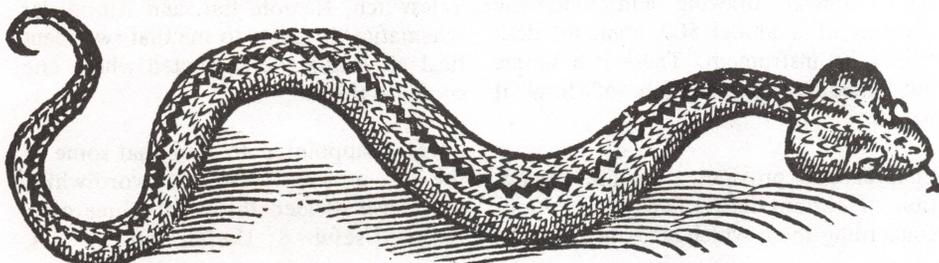
REVIEWS

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TELEPHONE ACCESSORIES YOU CAN BUILD
By Jules H Gilder
Hayden Book Company, Inc, 1976
84 pp. $4.95

The telephone is to electronics as military thinking is to thinking. It is intended for only one use—to carry the human voice (or a modest reproduction of it) from one place to another and work when everything else fails. The secrecy which surrounds this device is legend. If you doubt the legend, try this experiment. Call your local telephone business office, and order a schematic for your telephone.

On second thought, to actually do the experiment may be a bad idea. If you are the sort of person who might read, enjoy and act upon *Telephone Accessories You Can Build*, then you may not wish to suggest to the phone company that you are about to peek and poke into their instrument. Ma Bell's reason for discouraging you is simple and mechanistically logical. If you and millions of other people are allowed to unscrew telephones, and place Foreign Attachments on the line, the reliability of the entire system will be reduced. And this would be a violation of the prime directive.

Anything that touches the telephone installation in a clinging way is a Foreign Attachment. I have heard stories dating many years back, of the persecutions of small town businessmen who eked out a living by printing ads on plastic telephone *directory* covers. Is it

any surprise that Michael Scheff opened his introduction to *The Pushbutton Telephone Songbook* with these words, "About the only bond people the world over seem to have these days is (1) a desire for peace and (2) a dislike of The Telephone Company." The *Songbook* was Scheff's effort to help improve the telco image.

The Bell System has long had the very best technical reputation and a consistently poor record of human relations. Three factors are known to have improved customer satisfaction with Bell services: (a) federal court litigations and FCC rulings; (b) actions before the state public utility commissions, and (c) disclosures of financial and technical information to the general public.

Technical disclosure is necessary because Bell made a practice of telling technical half-truths biased toward gaining favorable regulation. The most outrageous example is that of the infamous Voice Connecting Arrangements. Gilder briefly discusses them in chapter two. The "need" for VCAs was hastily discovered following the 1968 Carterfone Decision, but this need was actually financial, not technical. The Carterfone, by the way, is a two-way radio phone patch.

Telephone Accessories is a somewhat useful interim book on do-it-yourself telephone technology. I hope that later and better illlustrated books on this subject will appear. The book has absolutely no discussion of Blue or Black Boxes, or phone phreaking of any kind. Unfortunately for computerists, it also has no discussion of modems, cheap or otherwise.

The only proprietary information revealed is in chapter one, which is a little less than four pages long. There is a cutaway drawing and schematic diagram of a Model 500, standard desk telephone instrument. There is a simple but adequate explanation of how it works.

Chapter two provides a concise description of current tariffs and your options concerning them which are: obey and use

loopholes; obey and pay Bell; or ignore them. Telco propaganda generally encourages you to believe that tariffs are laws. In general, they are not.

Tariffs are rules of system use including fees for service, made up by regional telephone companies (plus AT&T for long distance service), and submitted to utility commissions and the FCC for approval. In spite of all the discussions of "illegal" extensions you have probably heard over the years, violation of a simple tariff is not a crime. The worst that could happen is loss of phone serivce until you agree to abide by the rules.

Having said that most tariffs are toothless, please note that there is also a short list of laws which make some irregular acts, illegal as well. It is a crime to: make obscene calls; fail to yield a party line in an emergency; commit wire fraud (i.e., use a Blue Box to avoid long distance charges, or use a computer to steal money/secrets/data via the phone lines); commit a few other acts such as theft of telco equipment.

Chapter three contains some simple and clever methods for quickly making printed circuit boards using among other tools, a leather punch.

A major defect in all the projects is a lack of mechanical drawings or pictures. I find it very irritating to read a long paragraph of construction steps with no drawings to reference. It makes an otherwise easy project unnecessarily difficult.

The best feature is the use of building block circuits, to which the builder is introduced one at a time in the early projects. The later, more complicated accessories are often collections of the earlier units. This approach does get out of hand. From a casual inspection of the Teleswitch, Remote Ear, and Autodialer schematics, it seems to me that two identical circuits are constructed where one could do the job.

I was disappointed to find that some of the 15 projects were not worthwhile, so I have divided them into three categories: Useful—8; Useful, but . . . —4,