```
5000 PG$="":PRINT"ñENTER 6 NUMBERS TO ¬
     ¬DEFINE THE CHARACTER:
5010 PRINT"(ONE AT A TIME FOLLOWED BY ¬
     ¬RETURN)
5020 IFD=4THENCLOSE5:OPEN5,OU,5
5030 FORK=1TO6:PRINTK;:INPUT#IN,F$:
     ¬IF64ANDSTGOTO7000
5040 C=VAL(F$):PRINTC:IFD=1ORD=2THENL$=L
     ¬$+F$+CHR$(13)
5050 PG$=PG$+CHR$(C):NEXT:IFD=4THENPRINT
     ¬#5,PG$
5060 PRINT"ñ";:FORK=1TOLEN(H$):POKEQ,1:
     ¬PRINTMID$(H$,K,1);:NEXT
5070 POKEQ,0:PRINT"h↓↓↓↓":FORK=1TOLEN(G$
     ¬):POKEQ,1:PRINTMID$(G$,K,1);:NEXT
5080 POKEQ,0:PRINT"$←";:GOTO290
5998 REM              SET LINES/INCH
5999 REM          "-----------------"
6000 PRINT"ñNUMBER OF LINES PER INCH? ";
6010 IFD=4THENCLOSE6:OPEN6,OU,6
6020 INPUT#IN,F$:IF64ANDSTGOTO7000
6030 M=VAL(F$):PRINTM:IFD=1ORD=2THENL$=L
     ¬$+F$+CHR$(13)
6040 IFD=4THENPRINT#6,CHR$(144/M)
6050 GOTO5060
6998 REM              END OF PROGRAM
6999 REM          "-----------------"
7000 PRINT:IFD=1ORD=2THENCLOSEOU
7010 END:IFD>2GOTO5060
7020 PRINT"?CAN'T CONTINUE ERROR":END:
     ¬RUN                              ©
```

Three Reviews:
Superchip, Spacemaker, Sort

Harvey B. Herman
Associate Editor

The Petmaster Superchip

Some of us may have envied the tricks one can play with the new 80 column PETs using BASIC 4.0. For example, one can define a window which is seemingly immune from scrolling. SUPERCHIP, firmware from our English cousins, is intended to provide some of these screen handling functions and additional goodies also. It is available for all the current PET ROMs and does not conflict with the TOOLKIT.

The first feature I made use of (and liked) is called single key BASIC. That is, G stands for GO, N stands for NEXT,R stands for RETURN, etc. The full word appears, as if by magic, when a control key is pressed simultaneously with a letter. Another function that caught my fancy is called escape. This allows you to toggle back and forth between quote and direct modes of cursor control. If you ever get stuck in the wrong mode you know how useful that could be. I also made frequent use of the hold function which suspends execution until RETURN is pressed.

SUPERCHIP has a total of 18 functions:

erase begin	erase end
scroll up	scroll down
escape	retrace
message	functions
movit	single key
delete line	insert line
scroll window	graphics toggle
hold	stop
shrink	reverse

Most functions can be accessed either in immediate mode or from a BASIC program. A concise reference chart on the rear cover of the 26 page user manual summarizes the functions and states any exceptions or limitations. The manual is, for the most part, easy to understand by a first time user. However, I did have trouble with the scroll window section and I was confused by the use of the word "bracket" for "open parenthesis."

SUPERCHIP will appeal, I think, to many people and, if the reader is in this group, by all means buy it. You will have added quite a few useful functions to your repertoire which are not available elsewhere. Programs which use these features will be able to generate displays which ordinary PETs cannot do without great difficulty. As for me, I am not convinced that it is a good buy. Even with the recent drop in the pound exchange rate, SUPERCHIP still costs more than comparable firmware such as the TOOLKIT. In its favor, however, is that it offers some desirable features of BASIC 4.0 without losing the use of previously developed machine language software, which may be ROM-dependent.

Supersoft
28 Burwood Ave.
Eastcote, Pinner, Middx., England
£45

Spacemaker II

New Commodore CBM/PETs have empty ROM sockets on the main logic board which allow users to install special software packages. These include the CBM word processors, VISICALC, and the TOOLKIT. Recently I received for review two firmware (EPROM) programs which, alas, required installation in the same empty ROM socket. This meant that I could not switch back and forth between the two programs without risk of permanent damage to the IC pins (or to my psyche). My problem was solved when I received the SPACEMAKER II for review. This nicely crafted piece of hardware is capable of switching between as many as four different ROMs when plugged into a single socket on the PET logic board.

I had no trouble working with SPACEMAKER II. The hardest part is insertion of the ROMs, but this time everything went smoothly. Jumpers which depend on ROM type, are placed on posts and no soldering is required. SPACEMAKER II is particularly easy to plug into a socket on the PET as you can get a grip on it more easily than a much smaller ROM. The four page instruction leaflet had quite explicit directions and I noticed only one typo (figure 2 instead of figure 3). The version I received employed manual switching with a switch mounted on the side of the PET (no drilling necessary). It is also possible to switch using software, with control by the User Port or with optional hardware (ROMDRIVER).

I have no hesitation about recommending this hardware to PET users who require software on ROM, but have addressing conflicts. SPACE-MAKER II is professionally done and is reasonably priced. My only gripe is that they did not include a circuit diagram in the unlikely event that service is needed. In a way I'm glad they didn't as I was hard pressed to find any negative comments.

CGRS Microtech
P.O. Box 102
Langhorne, PA 19047
$39.00

SORT

(3.0 or 4.0 ROMs)
(40 or 80 column screen)

If you do much computing you will eventually need a good sort routine. I started to write a program recently which sorted and printed the names of up to 256 programs on PEDISK I diskettes. To my horror, I realized that I did not have, in my "junk box" of programs, a fast sort routine. **COMPUTE!** came to my rescue. An early issue compared sort routines and I was able to adapt one of the BASIC listings in the article. However, not everyone has the ability or inclination to fit published programs to their own use. Matrix software offers a SORT program (on EPROM) for people who need a fast machine language sort that can be used with a minimum of effort even by novice programmers.

I had little trouble writing my first simple sort program. Their seven pages of instructions were quite helpful. I was able to do a four character sort on 1000 items in under seven seconds (average). Try doing that in BASIC sometime and you will be as impressed as I was. The program is executed with a SYS call after a few required POKEs. For example,

POKE 905,a — which dimensioned array
POKE 906,b — number of keys
POKE 907,c — dimension of array
POKE 927,d — number of characters to evaluate
POKE 947,e — what character to begin sort at
SYS 36864 — for EPROM at $9000 (specify when ordering)

For review purposes only, the company included a demonstration program. I believe they should include a listing of this program with each order. Otherwise, I have no complaints about this package. The sort is fast. It works with integers, real numbers, or strings. And, as a bonus, they include a printer screen dump in the unused space on the ROM. Check this program out if you do lots of sorts and you need a fast routine resident at all times. You should find it very useful.

Matrix Software
315 Marion Ave.
Big Rapid, MI 49307
$55

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