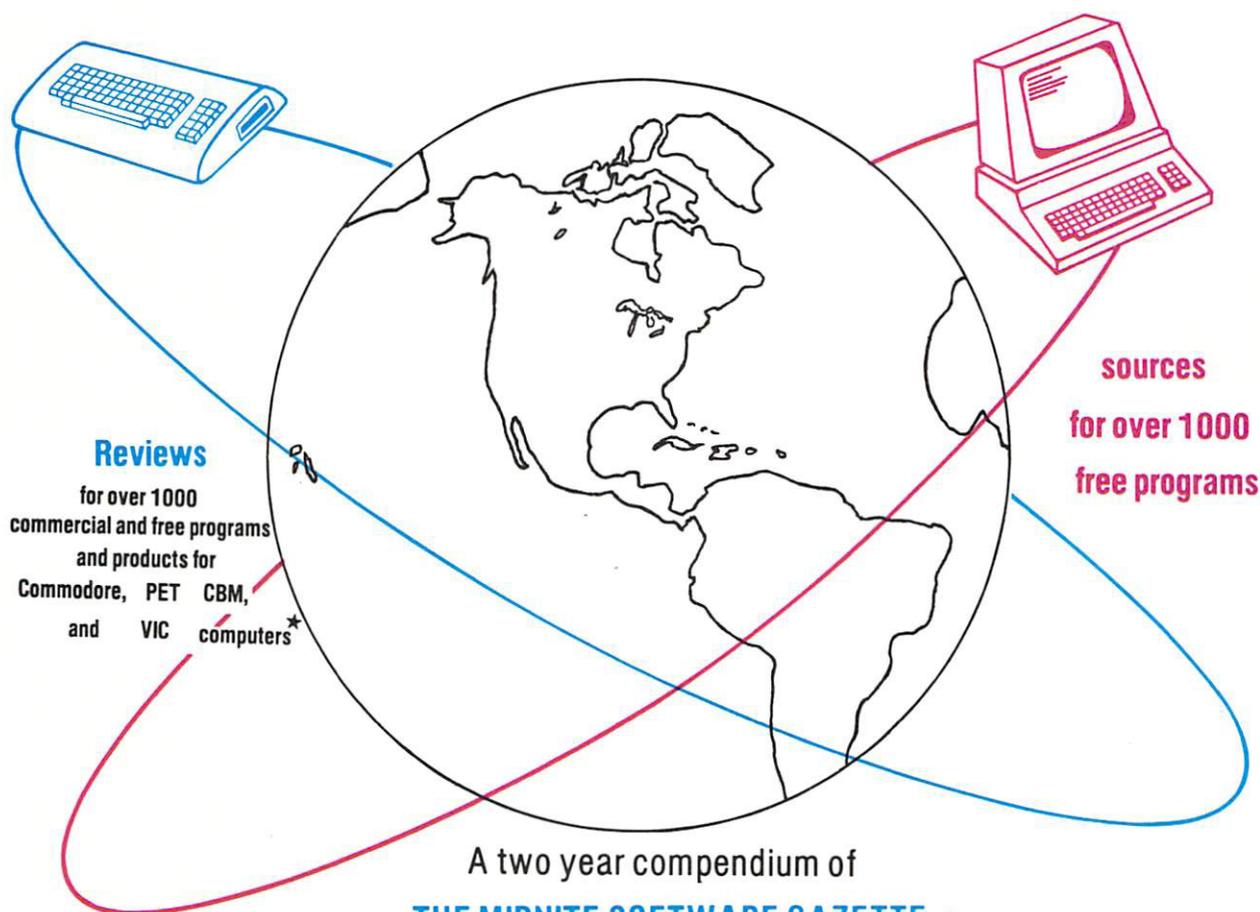


The **WHOLE** **PET** ★ **CATALOG**

Edited by
James and Ellen Strasma with Bruce Beach



A two year compendium of
THE MIDNITE SOFTWARE GAZETTE Issues 1 — 7
and other sources
with ***much*** new material.

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This book is **NOT** from Commodore.

\$

VIC-20

The Friendly Computer



Commodore Vic 20 hardware and software
available at or through your nearest Eaton store.

EATON'S

The Whole PET Catalog

edited by

James and Ellen Strasma

with

Bruce Beach

Fall 1982

The Whole PET Catalog

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TPUG GAME REVIEWS

Starting on page 233 are the critical reviews of the games on the TPUG game disks. Further information about these critiques is found on that page.

COMPLETE TPUG ALPHABETIC LIST

Starting on page 244 is the TPUG Alphabetic program index. Further information about the alphabetic list is found on that page.

TPUG INDIVIDUAL DISKETTE DIRECTORIES

Starting on page 259 are the disk directories for each of the TPUG disks. Further general introductory information about these disks is found on that page.

TPUG VIC DISKETTE REVIEWS

Starting on page 276 are the critical reviews of the games on the TPUG VIC game disks. Further information about these critiques is found on that page.

The advertisers start on page 281

Be sure to see
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 PET Copy tree 312
 VIC Copy tree 307

Introduction

Welcome to the **Whole PET Catalog**. A word about NAMES: VIC and CBM owners are hereby officially advised that they ARE included in PET user groups and publications. Nearly all such groups use "PET" to mean all Commodore-brand computers, rather than just 40 column graphic keyboard models.

This volume contains all the material from the **Midnite Software Gazette** since its beginning two years ago

plus

much brand new material

plus

brand new, never before published, game reviews of the Toronto Pet Users Group (TPUG) game library,

plus

a complete catalog of the TPUG library which is the worlds largest public domain PET/VIC library

plus

the complete working catalog of the Ontario Computers in Education Committee which will be in the public domain in the fall

plus

a complete catalog of the ATUG library which is of special interest to users interested in machine language.

The **Midnite Software Gazette** is an off-the-wall quarterly publication of Central Illinois PET users attempting to fill the vacuum in PET reviews since the **PET Gazette** folded. All its reviews have been updated, and completely reorganized by category before being republished here.

Who are we to do the reviews?...Just ordinary PET owners. Most of the reviewers live in Central Illinois, and have a variety of hardware and software. JS has written widely. The rest have other writing experience. Between us, we have almost all models and varieties of Commodore equipment. We want PETdom to prosper. Good software helps. We point you to it, and steer you away from trash.

Until the demise of the **PET Gazette** in 1978, nearly every available PET program was reviewed quickly. Since then, lots of PET programs have been offered for sale, but very few have been reviewed outside of the pages of the **Midnite Software Gazette**. Some of the new programs are VERY expensive. Who wants to spend \$1,000+ on a program that may be junk?

Are You a Potential Reviewer?

When we aren't competent to review some categories of PET software, notably scientific applications, programs

in these areas are reviewed by competent PET owners further away. Programs for review are only sent to those who have already demonstrated their skill and reliability by contributing reviews.

Authors and companies willing to risk a review of their products are invited to send in programs. Only your reviewer will see them. Users are welcome to send guest reviews. Be honest and fair in them. Keep them short, or they'll be edited. If you have a program you want to sell, but can't see spending \$2,500 for a full-page ad in *Byte*, then *Midnite* will review it for you. (This isn't a come-on to build the editors' library. We already have more programs than any human can use!)

There are three advantages to actually sending us the product for review. First, we are widely recognized as objective in our reviews. Second, we may do a better job of writing the review than someone unfamiliar with our needs. Third, only products personally reviewed by JS are acceptable to *Micro* magazine.

Our key questions about a program are:

- 1) Who can use it?
- 2) Does it work?
- 3) Is it fun?
- 4) Does it do anything important?
- 5) Is it worth the cost?
- 6) What don't the ads say?
- 7) How does it compare to similar programs?
- 8) What are its limitations?

Unless otherwise stated, disk programs reviewed should work on BASIC 2 or 4 and both keyboards. Non-disk programs should work on all PETs. Graphics programs may not display correctly on 80 column CBMs. Unless otherwise stated, VIC programs should work on any VIC, but may not work on PET or CBM models.

Here is a sample review from issue #2:

THE MIDNITE SOFTWARE GAZETTE,

more or less free from CIPUG. Unprotected: requires no ROM and applies to any PET. Inexpensive. Useful to those who think about buying programs, or selling programs. Uneven quality: they reviewed VISICALC, without mentioning what it does. Perhaps controversial: will there be 'rebuttal' reviews in future issues? Money-back guarantee. Well worth twice the price (free). Hopefully quarterly.--Jim Butterfield.

Attention: Companies

JS is also a contributing editor and product reviewer for *Micro* magazine. On request, some products may be reviewed by both *Micro* and *Midnite*. *Micro* focuses on advanced products, such as machine-language programs and add-on hardware; they rarely accept games for review. *Midnight* reviews most everything.

We've noticed that several of the companies with the most expensive programs (BPI, LTA, MAS, MAGE, CMS's GAS, Info-Designs 2001, etc.) rarely send them out for review. This does NOT keep those products from being reviewed by *Midnite*, but does make it more likely that the review we receive will be from an unhappy customer, rather than an objective reviewer.

Anyone who gives more than a day's pay for a program, without seeing it reviewed, deserves what they get!

Thanks to all of the companies listed in issue #7 of the *Midnite* who have recently hastened to assure us that they "exist". Several are having one or more products reviewed in this volume. We also received a couple of fliers from companies that we've wondered about, but fliers don't count.

Several of our primary authors are members of the Central Illinois PET User Group. Their names are abbreviated throughout this volume, and include: Brent Anderson (BA), Gary Hooste (GH), Mark Niggemann (MN), John O'Hare (JOH), Jim Oldfield (JO), Keith Peterson (KRP), Michael Phillips (MP), Jeff Porter (JP), Robert Samuelson (RS), Jim (JS) and Ellen (ES) Strasma, Jim Tucker (JT), Monty Throneberg (MT) and Pete Vandrew (PV). We also thank Dave Goff and his game review staff of the Toronto PET Users Group and all those whose names appear beside their comments and reviews for their help in compiling this volume.

Some of the reviewers in this volume are:

John W. Adams	Brent Anderson	Jay Balakrishnan
Bonnar Beach	Gene Beals	John Beel
Russ Bennett	Bob Bergevin	Ron Blattel
Ralph Bressler	Fred Bruey	John Buckley
Jim Butterfield	Peter Calver	Geoff Capell
Joel Casar	Arthur Cochrane	David M. Conley
Sam Cook	Ed Crossman	Doug Dachenbach
Steven Darnold	Paul Dixon	Wayne Drouillard
John Easton	Paul Eckert	Norm Eisenberg
John Ellison	Harold Elrod	Peter Farrow
Ken Flynn	Ed Frost	Duane Garber
Elaine Garber	Fred Gitelman	Ron Gunn
Hal Hardenbergh	Mayland Harriman	Harvey Herman
Gerald Hasty	Thomas Henry	Paul Higgenbottom
William Hinrichs	Gary Hooste	Dick Immers
Bruce Jaeger	Candy Jens	D.C. Johnson
Greg Johnson	Quintin Johnson	Jo Johnson
Dick Juvet	Denny Ketter	P.W. Kelley
Jerry Key	Sue Key	Harold Kingsbury
Mike Kouri	Robert Lemon	Chet Lewis
Len Lindsay	Kim Lowndes	Phil Lynch
Tom Lynch	Leon Malinofsky, Jr.	John Malone
Charles McCarthy	James Mehl	John Melchior
John Melissa	Roy Merme	John Mielke
John Milton	Hank Moreno	B. Earle Mountcastle
Mark Niggeman	John O'Hare	Jim Oldfield
Tom Owen	Constantinos Pattichis	Keith Peterson
Lyle Phillips	Michael Phillips	George Piasecki
Doug Pierce	Dave Pippitt	Ed Pollock
Steven Poppish	Jeff Porter	Malene Pratto
Ed Ricchezza	L. Richmond	Hank Roth
Jim Russo	Walter Sadler	Robert Samuelson
Lou Sanders	Larry Sapp	Paul Schmidt
Fritz Shafer	Jane Shiek	Ben Shiek
Ross Sherwood	Johan Smilde	Eugene Smith
Bob Snyder	Joe Spatatora	Stan Spence
Chuck Spriggs	Clark Stewart	Gary Stone
Ellen Strasma	Joe Suddoth	Chuck Summers
Monte Throneberg	Tim Tremmel	Phyllis Tremmel
Jim Tucker	Dan Underwood	Marvin Van Der Kooi
Pete Vandrew	Roy Wagner	John Walker
Bill Wels	Bob West	Rick West
Larry Williams	Richard Williamson	Conway L. (Slim) Wilson

*Bill Womelsdorff
John Young*

Dylan Yolles

Dave Young

Our apologies to the others that we have undoubtedly (but unintentionally) failed to mention.

IN MEMORIAM

Commodore Staff

While giving credits we wish to light a candle to honor the memory of great and helpful Commodore employees who have moved on...:

*Dieter Aaman
Rick Lehr
Bob Skyles*

*Mike Heck
Chuck Peddle
Gregory Yob*

*Karl Hilden
Bill Seiler*

P.S. Four late contributors to whom I owe special thanks. Gerry Gold for the latest TPUG VIC reviews, Pat Scringeour and Don Whitewood for getting in The Education Groupings, and Peter van der Veen, both for some game review contributions and doing a lot of the computer typesetting.

Once again, our apologies to any others we have failed to mention.

*Bruce Beach
Horning's Mills, Ontario
Canada*

The Horn Blows At Midnite
by JS

The **Midnite Software Gazette** has been published quarterly since September, 1980 by members of the Central Illinois PET Users Group, and paid for by donations and ads from readers. It has traditionally been sent out at no charge to all who provide stamped self-addressed envelopes for that purpose.

And what do we have to report to you after two years of publishing the **Midnite Software Gazette**?

My wife and I spent this past year editing the third edition of the Osborne/McGraw-Hill **PET Users Guide**. We hope the manual will be as helpful to you as this **Whole PET Catalog** and future issues of the **Midnite**, but right now, we hope even more that the two versions of the book will be published soon! Corrected errors have surged past 2,000. We've also added 3 chapters, divided the book into PET and CBM volumes, and added the most detailed memory map you may ever see for PET, covering at least 6 variations of BASIC. Though we've spent some time at each other's throats, Ellen and I are a good pair for this work: I work on accuracy and she works on clarity.

If what we're doing is worthwhile, (and you've all said it is), the **Midnite** can and will be supported. That's our experience in the Church. (Brent, Ellen, Jim S. and Jim O. are all active in the United Methodist Church.)

Future Publishing Plans:

We have been assured by competent consultants that we must become at least a bi-monthly regular subscription magazine in order to continue growing. We must also make more use of the computers we discuss. The great success of this Compendium issue of the **Midnite** assures us that we can work with the format our consultants recommend.

Beginning with the next issue, planned for October, 1982, the **Midnite** will also go to subscribers of **The Paper**, one of the very first PET resources. At the same time, other changes will occur. Primary among these will be that the **Midnite** will no longer be free. We were faced with the immediate choice of either folding, or paying those who are doing our work. With the help of several consultants among our readers, Midnite Software has elected to carry on and adopt the subscription policies of **The Paper**. This means:

- * The **Midnite** will now be published bi-monthly, rather than quarterly.
- * Advertisements will now cost \$100 per full page, and \$25 per quarter page.
- * Dealer and club orders to one address are welcome, at one-half the regular subscription cost.
- * The **Midnite** will now also accept articles, as well as seek reviews.
- * The **Midnite** will be continuing the new large format and unreduced type of this volume.

If you enjoy this book, we invite you to read the **Midnite** regularly. You may

subscribe by sending a letter together with the necessary U.S. funds to:

The Midnite Software Gazette
c/o Jim Oldfield
635 Maple
Mt. Zion, IL 62549 USA
Telephone: 217/864-5320

Also use the above address for any correspondence about your subscription, advertisements, or product reviews.

Here are some other addresses that may be helpful to you:

1) The editors, Jim and Ellen Strasma, may be reached at:

Midnite Software
400 Sixth St.
P. O. Box 647
Pawnee, IL 62558-0647 USA
Telephone: 217/625-7494

2) Articles may be directed to Ralph Bressler at:

Centerbrook Software Designs
P. O. Box 460
Livingston Manor, NY 12758 USA
Telephone: 914/439-3591

3) Requests for Public Domain programs should be directed to Brent Anderson at:

ASM/TED User Group
200 S. Century St.
Rantoul, IL 61866 USA
Telephone: 217/893-4577

4) Our publisher for this volume is Bruce Beach. He may be reached at:

The Publisher
Horning's Mills, ONT
L0N 1J0 CANADA
Telephone: b519/925-5376 h519/925-6035

We will welcome Ralph Bressler and *The PAPER* to our staff and pages, beginning with Issue #9 in October. *The PAPER* is one of the oldest PET resources. Under Ralph's leadership, it has been a fine magazine. With the coming of *The PAPER* to our pages, we are finally be able to accept articles and program listings for publication, and if finances allow, may begin to offer some payment for them. (Authors are requested to send articles in WORDPRO format, and include any programs used, on a Commodore format diskette.)

After much debate, we have decided to ask \$20 for a six issue subscription. In return for the money, we will provide the **Midnite** on full-size printed pages, and send it to you via First Class mail. For overseas Air Mail, please send \$40; \$30 via surface mail. Bulk store and club orders are still very welcome. For these we now ask \$10 per bundle of 6 copies of one issue shipped to one address.

If you move, be sure to either leave a forwarding address at the post office, or let us know your whereabouts. Although we doubt if anyone will want to, we won't mind if individuals continue copying us for noncommercial use. But if you do, please tell us how many copies you usually make, since that is now of interest to our advertisers. Naturally, donations from those making copies will still be welcome.

Publication Schedule:

Initially, we are planning a bi-monthly publishing schedule. As others who have attempted regular publication know, it is easier to claim a bi-monthly schedule than to achieve it. However, since the **Midnite** has always been delivered well within its assigned quarter, we figure we can handle a bi-monthly schedule, if anyone can, especially with the help of the paid staff your subscriptions will make possible.

In short, we hope all our readers subscribe, because if the **Midnite** doesn't succeed as a subscription magazine, there's no one else in the wings to take our place.

**** WIN A VIC ****

The merger of **The PAPER** with the **Midnite Software Gazette** creates a problem. According to our consultants, we need a new name - one that identifies our support of Commodore products. Also, there were problems with our old names. The **Midnite** hasn't been limited to software reviews for over a year, and **The PAPER** bears little resemblance to a newspaper. Your editors still get misty-eyed over the name **PET Gazette**, but it doesn't mean anything to **VIC**, **CBM**, or **MAX** owners, most of whom never saw the original.

So, we're leaving the choice to you, dear readers. Thanks to the generosity of the "Computer Country" stores, headquartered in St. Louis, we have a free **VIC** computer waiting for the creative genius who comes up with our new name (and perhaps a logo, too?) If we have difficulty deciding, we'll submit the finalist entries for your vote in Issue #9 this fall. Naturally, members and families of the **Midnite** and **The PAPER** staffs are not eligible to win the **VIC**. (My son Jamie doesn't like that rule!).

WHAT ABOUT ADVERTISING?

Because our ads are cheap, we insist they be simple for us to handle. We just take a picture of what you send us. It must fit on an 8-1/2 by 11 inch page, and costs \$25 per quarter page (\$100 per full page), payable in advance.

Readers, please thank our sponsors by: 1) reading the ads, and 2) considering buying from them. Each of the companies advertising in the **Midnite** has first been favorably reviewed by us. We recommend them with a clear conscience.

Editor's Reply:

Other software houses have also contacted us in shock after the recent advertising rate hike at **Compute!** Other magazines have raised their costs, too, but it is especially noticable at **Compute!**, since they get the most Commodore-related ads. Having all the ads together is very convenient for users -- no need to get a hernia holding the latest **Byte**. However, with a quarter page ad costing \$700 a month, advertising there has lost some of its appeal, especially since **Compute!** no longer has an identifiable PET section.

Those who have advertised with us so far have been more interested in insuring our survival than in seeing circulation figures. But for the record, we are printing 10,000 copies of this volume.

Speaking of ads, having William Shatner do Commodore ads is great! Most wage earners admire him as a very honest and intelligent fellow. I can't imagine *Star Trek's* "Captain Kirk" or "Admiral (synonymous with Commodore!) Kirk" hawking junk. Through these ads, Commodore is finally achieving U.S. recognition.

Comments from Advertisers:

TRANSONIC LABORATORIES' president, Thomas Henry, writes, "I mentioned that we are a small company and I'm getting this thing started on a shoestring. Of course I want to advertise, and I know that advertising is expensive, but I nearly fainted when the rate card came in from **Compute!** I'm hoping that I can find many 'grass roots' and 'word of mouth' ways of advertising. I find the prices of most software items have skyrocketed, and I suppose the high prices reflect the advertising expenses. I'm trying to keep our prices as low as possible. This dictates finding some alternate ways of advertising."

Dear Sirs:

In the case of VIC-20 software, where the base of VIC users doesn't justify the ad rates now in force at **Compute!**, publications like yours are particularly useful, and your efforts to build a grassroots users' network are particularly appreciated...-Leon Malinofsky, Jr., president of Recreational Software Services

ATUG NOTES
by Brent Anderson

ATUG GENERAL INFORMATION

The Asm/Ted Users Group (ATUG), founded by Jim Strasma, is associated with the **Midnite Software Gazette** and the Central Illinois PET Users Group. ATUG's Public Domain Library of CBM formatted DISKETTES is internationally known through word of mouth, the **Midnite, Micro**, and Bob Baker's column in **Microcomputing!**

As ATUG Librarian, I gather useful PET/CBM disk files (BASIC and machine code programming, WORDPRO documentation, and particularly "source code" files that PET assembler packages can edit and translate into machine code). We SPECIALIZE in SOURCE files for CARL MOSER'S ASSEMBLERS for PET (**MAE, Asm/Ted**, and **Macrotea** sold by Eastern House Software, Skyles Electric Works, and so forth).

Moreover as Librarian, I expand documentation and examples of received material, organize exchange diskettes, publicize what we have, and fill orders for exchange diskettes. As yet, ATUG has no dues (rather copying/handling fees to me, the Librarian). You're a "member" by ordering ATUG diskettes and especially for contributing useful Public Domain material. (Of course, I give public recognition for what you write, adapt, document, etc.)

By using and adding to the ATUG diskettes (especially the assembler source files) you should: 1) At low cost, 2) gain much useful software 3) which can be tailored to your PET and needs, and 4) which will teach you good programming, especially at machine level.

PLEASE DONATE to ATUG any USEFUL and copyright-free CBM DISKETTE FILES (preferably 4040 format). Explain what you send. We PREFER machine language programs in MAE assembler source form. Strasma's "Unassembler" converts machine code to MAE source. The program "cbm.to.mae.bas" converts CBM Assembler source files to MAE source files. Both conversion programs are on the UB diskette.

CONVENTION IN NAMING ATUG FILES

To guide your handling each file in the directory below, ATUG generally uses a file-naming convention based on Carl Moser's suggestions. (**A file name code

associated with "MAE" means you need a Moser assembler to use that file.***) When tag codes are combined as follows, they mean:

name.CT - Controls MAE's assembly of the "name.Mxx" Module files
 name.Mxx - Module referenced by MAE Control File or (to be) linked by Asm/Ted's .CT "name"
 name.ASM - MAE source file complete in itself.
 name.EXE - Executable object file
 name.REL - Relocatable object file (using MAE's relocating loader)
 name.MAC - MAE File has only Macros
 name.LIB - Library of symbols for MAE
 name.MLIB - Library of Macros for MAE
 name.AID - MAE file which aids use of MAE
 name.INS - User instructions/documentation
 name.NOT - Program Notes
 name.BAS - BASIC Program
 name.DAT - BASIC Data File
 name.LDR - BASIC program load/activates BASIC or machine code
 name.WP - WORDPRO file to document use of program or equipment

ATUG DISKETTE LIBRARY HOLDINGS

As of June 1982, we have 15 official ATUG diskettes, labelled C2, UA, UB, UC, UD, UE, UF, UG, UH, UI, UK, UM, UV, UX, and HELP. In addition, we also distribute "as is" about 30 diskettes of mixed material, including the Toronto PET User Group (TPUG) library monthly diskettes, the 7 Canadian Education Advisory Board (CEAB) diskettes plus one education diskette labeled "Finzer One."

15 OFFICIAL ATUG DISKETTES as of 6/82:

(C2) Campbell#2 (Asm/Ted adapted for MAE disk files) REVISED

Restriction: Include proof you own cassette-based ASM/TED, such as the serial # on your manual.

4.asm/td.dsk.exe Asm/Ted for disk.4.0 BASIC, by Moser/Seiler/TPUG/Anderson
 3.asm/td.dsk.exe Asm/Ted for disk, Upgrade BASIC by Moser/Seiler/TPUG
 asmtd.dsk.wp New features in Asm/Ted for disk by Anderson
 mae.to.asmtd.wp Edit MAE files re: Asm/Ted for disk by Anderson
 sign-on.ldr load/run "exec hello" machine code
 exec hello load/execute commands in "hello"
 hello here load/protect/run "4.asm/td.dsk.exe"
 build.hello.bas Create your own "hello" file application
 exec-hello.asm For assembling "exec hello" by Campbell/Strasma

PLUS 24 more files of utilities, assembler source, and games

(UA) atug.source1: PET MAE source files (REVISED)

exmon.ct and .mXX Extramon source, BASIC 2&4 by Bill Seiler
 exmon9.3ins.bas Instructions (BASIC)
 fast wedge.asm Disk Aid for BASIC 2 by Commodore
 ieee 488.asm Controls bus for 2.0 via PET IEEE book
 keysort.asm Fast sort for BASIC 2 by Jim Strasma
 learning.aid How to use MAE by Carl Moser
 mae.pat.asm Print fix for BASIC 2 by Strasma
 mlmacros.mlib Handy MACROs by Moser
 pgmr.univ.asm For EPROM programmer board by Seiler/Moser/Strasma
 prom.pgm.ins.bas sold by A.B. Computers
 print time.asm Prints TI\$ BASIC 2 and 4 by Moser
 repeat.all.asm Repeat key for BASIC 2 by Moser and Cochrane
 tim.ct and .mXX Source: 2.0 ROM monitor by Commodore
 uart.mXX prom imitates UART Serial I/O by Moser and Cochrane
 useize.asm Autostart for BASIC 2 by Len Sasso
 useize.wp Instructions (WORDPRO)
 wedge/basic4.asm Disk Aid for BASIC 4
 sign-on.ldr load/run "exec hello" machine code
 exec hello load/execute commands in "hello"
 hello here toggle text/graphic, load/run "exmon9.3ins"
 build.hello.bas Create your own "hello" file application
 exec-hello.asm For assembling "exec hello" by Campbell and Strasma
 XX.lister.asm Aids MX-80 and NEC printers

(UB) atug basic Object and BASIC programs

6522.display.bas Reads VIA by Silicon Valley PUG
 keymake.bas File copiers (BASIC 2) via Henry Chow
 cas.to.cas934.ex # is where to sys to in use
 cas.to.dsk973.ex (cassette to disk)
 dsk.to.cas973.ex (disk to cassette)
 change/ladr.bas Sets disk load address by Len Sasso
 cbm.to.mae.bas CBM's ASM. talks to MAE by Seiler, Strasma
 datamaker.bas Object becomes Data by PET Gazette, Strasma
 dechex.bas Hex to decimal and back via Strasma
 display.t&s.bas Diskette hex dump by Commodore
 dynatext.bas Text-shaping editor by Strasma, Anderson
 dynatext.ins.dat Instructions (sequential file)
 explor.basic.bas Shows tokens and locations by Arthur Cochrane
 ram.test.bas Memory tests for 2 and 4 by Jim Butterfield
 rom.test.bas
 scrnwash.896.ldr Use 40 columns on 8032 by Coward, Mansfield
 seq.to.wpro.wp Put seq. data in WORDPRO by Cochrane
 stop.this.exe Autostart Mandala by Seiler
 super.disas3.bas Prints out 2.0 ROMs by Butterfield

supermon4.ldr Early extension of 4.0 by Butterfield
 supermon.ins.wp machine language monitory
 unass.1ja.bas Symbolic MAE disassembler by Seiler, Strasma
 unass.ins.wp Guide: Unassembler
 view.dos1bam.bas See blocks available by SILPUG
 wordpro.read.bas Display loaded WordPro file by Strasma
 romrid.bas ROM call finder
 graph.ldr machine language
 graph.demo.bas graphic routines by Malmberg
 graph.ins.bas
 tiny.forth.bas Languages beyond CBM BASIC
 tiny.fth.ins.bas
 scardiac.v7.bas (needs fix for 4.0 BASIC)
 pogo.v7.bas PET Logo

(UC) atug.copyright REVISED/Augmented and RESTRICTED

Restriction: Must certify you buy Compute and Micro magazines

3d.plot.asm 3 Dimensional Plot - 3.0 from Micro
 inside.dos.bas Hex dump dos1/2 disk memory by Butterfield in Compute
 key.print3&4.asm Hit key, print screen from Compute
 ky.prt40.3&4.exe (40 column screen)
 ky.prt80.3&4.exe (80 column screen)
 l.c.lister.asm List with 03 printer ROM by Jim Strasma in Micro
 mean 14/pet.asm Arithmetic in 16 bits from Micro
 mini-compile.bas BASIC Compiler for 3&4 from Byte, Strasma
 m-cmpile.ins.bas Instructions
 pet16.asm Wosniak's SWEET16 on PET by Strasma in Micro
 pet16.mac MAE speaks SWEET16 from Micro
 set.key.asm and = a line of BASIC from Micro and Strasma
 symbol.dis.bas Disassembly with labels from Micro
 tiny.pilot.asm PILOT for BASIC 3 from O'Hare in Micro
 t-pilot.ins.bas Instructions
 face.loader.bas Display emotion-laden FACES from Heise in Micro
 facecode machine code routines
 facemain main BASIC program
 faces.upgrd.asm source (only 2.0 BASIC for now): "facecode"
 tree.loader.bas Query user about topic from Heise in MICRO
 code and analyze
 main results
 trees.ins.wp Guide to Growing Knowledge Trees
 tree.upgrd.asm source (only 2.0 BASIC for now): "code"

(UD) atug-directions Document ATUG Files (UA-UG) REVISED

mae.3/25not.wp MAE hints
 exmon9.3.insX.wp EXTRAMON for BASIC 2 and 4 (See UA)
 jem.insX.wp Jeff'S Expanded Monitor (See UE)

learning.aidX.wp How to use MAE
 load.seq.file.wp
 mae.to.seq.bas
 scroll&tape.wp MAE modules scroll screen/write ASM/TD tape files
 strwrite.chrs.wp for C. Itoh printer
 starwritr.ins.wp
 supermon1/2/4.wp Pre-EXTRAMON relocatable monitor (See UB)
 wordpro3&4.wp Compact overview of WordPro word processor
 tiny.pilot.wp (UC) Languages beyond
 pogo.ins.wp (UB) Commodore BASIC
 scardiac 7a.ins (UB) explained
 forth.ins.wp (UF)
 trees.ins.wp (UC) Growing Knowledge Trees
 w.pro.print.bas Print WORDPRO files w/out WORDPRO by Baker
 w.pro.buster.bas Split WORDPRO files to fit WPRO 4+ Butterfield

(UE) atug asm #2 PET MAE source files

music.asm cb2 music WHILE other by Zimmerman, Malmberg
 music.loader prgs run (all BASICs)
 dec.iface.asm white oak mill balance interface to dec via sadi
 rs232-1200bd.exe
 rs232-300bd.exe
 pilot.asm v4.1 PILOT language for PET by John O'Hare
 pilot.ins.bas
 pilot.exe v4.1
 jem.asm Jeff's Expanded Monitor by Jeffrey Dukes
 unass/p(ACKED).bas Convert object code to
 unass/c(RUNCHEd).bas MAE Assembler files by Strasma
 unass20ap.bas Full version
 assemble-me.ct Control file/modules to assemble an
 real1 and 2 I/O jump table which in real time
 jump2 adjusts to Commodore by Patterson
 jumptable BASIC of host machine by Feagan, Fairbairn
 set.key.asm+ and a line of BASIC by Kolbe, Strasma
 set.key.ldr
 set.key.exe
 set.key.wp
 stringthing.exe Overcome INPUT's 80-char. limit
 bmbstrngthng.asm (loads at 32514)
 terminal.r10.bas Also need intelcom3 by Steve Punter
 term.r10.exe prg and RS232 modem
 terminal.i10.bas Also need by Steve Punter
 term.i10.exe IEEE modem
 intelcom3 terminal prg. loads \$3c90 to \$4000

(UF) forth 5/02/81

forth h75.7 Very Complete FORTH

forth disk0 for BASIC 4.0 and DOS 2.1 by Bill Seiler

(UG) forth.src 6502 Source and WORD PRO GUIDE for FORTH

(UH) baid src Seiler/Butterfield/Cochrane BASIC AID (aids edit BASIC) for 4.0/upgrade; 40/80 screen; grph/bus kybd; asci/cbm printer

baid.move.exe move 4K of code at \$0500 to \$7000 (do from BASIC)
 baid.move.asm source code for move program
 basic-aid.ct control file for MAE to assemble BASIC-AID
 basic-aid.dos modules used by .ct
 basic-aid.m1a-m4 to assemble BASIC-AID
 basic.aid.ins.wp WORDPRO 3/4 instructions to BASIC-AID
 baid240a1019.ldr assembled for BASIC 2,40 column ASCII printer
 baid240c1019.ldr BASIC 2, 40 column Commodore printer
 baid440-1019.ldr BASIC 4, 40 column CBM or ASCII printer
 baid480-1019.ldr BASIC 4, 80 column CBM or ASCII printer
 baid.f4016c.ldr Fat 4016, Commodore printer
 baid480c\$9@2.exe 8032 BASIC-AID \$9000 rom, load at \$2000

(POWER AID: abridged BASIC-AID enhances Templeton's POWER, 2/23/82]

power-aid.cta control file to assemble 2/23/82 version
 power-aid.mXa modules for .cta to assemble POWER-AID
 pwr-aid.move.asm source code for move program
 powr.aid.insX.wp WORDPRO 3/4 instructions to POWER-AID
 power.ins.wp Quick POWER reference guide
 mem.calendar2.bas by P.T. Spencer
 March sequential file for example calendar
 pX-lister.bas Program loader/lister by Ellis, Spencer, Smith
 database2.0.bas Apple database prg (BASIC 2&4), by G.Byrd
 database4.0.bas Same as above for BASIC 4 only
 basename sequential file for example database
 inventory header and inv. index " "
 ascii.ins.bas MAE to ASCII printer from Carl Moser
 pet.mags.not.bas good PET periodicals from Carl Moser
 strwritr.ins.bas MAE to starwriter printer from Carl Moser
 poke.mae.bas use this to poke Commodore assembler file into memory for MAE. Have MAE in memory and label fields set. Lower top of memory to \$1800 then run this to poke file to memory (if big file, set MAE text limits and change start poke location). When program is done, it SYSs to MAE warm start. Edit out all ;; Make assembler directive changes and then PUT to disk.

BASIC-AID is a super aid to editing and debugging BASIC programs. Assemble it for 4.0 or Upgrade BASIC; 40 or 80 column screen; graphic or business keyboard; ascii or cbm printer. BASIC-AID has TOOLKIT-LIKE commands such as: Auto line numbering, Delete lines, Dump variables, Find items, highlight where error occurs, Merge program file from disk, Renumber Lines, and Trace run of program.

BASIC-AID ALSO FEATURES: repeating cursor keys, scroll program list both ways, break to TIM monitor, dump screen to printer, change specified items in whole program or line range, dos wedge commands, list directly from disk, Hex/Dec conversion, kill scroll or BAID, upper/lower mode flip, pack program (a **treacherous command for now**), display sequential file, display program size and load address, SPOOL directly from disk to printer, un-new, stop key defined as escape. Many commands' output can be paused or halted.

Cochrane's abridged variation POWER-AID (2/23/82 version) supplements Templeton's POWER (Professional Software). POWER-AID has dump screen to printer, dos wedge commands, soft change disk device #, list directly from disk, Hex/Dec conversion, upper/lower mode flip, Merge disk file, Pack program (**treacherous**), show size and load address of program, Spool a file to printer, un-new, display seq. file, and SPECIFY LOAD ADDRESS. Its output may also be paused or halted.

(UD) atug.instructs (for UH - HELP)

w.pro.print.bas display WORDPRO files (BASIC) by Baker
w.pro.buster.bas split large files by Butterfield
basic.aid.ins.wp see UH
powr.aid.insX.wp see UH
bennett.insX.wp see UM
code.field.wp see UM
mimon.e.wpX see UX
e.plus.wp see UX
e-rom.mon.wpX see UX
procep.insX.wp see "HELP"
atug.info.Xwp ATUG annotated directory by Anderson

(UK) koch utilities: source from Hans Koch (Germany),
trans. by B. Anderson

label.2001 mae-labels, 2001-O.S. (Old ROM)
label.3001 mae-labels, 3001-O.S. (Upgrade ROM)
label.4001 mae-labels, 4001-O.S. (BASIC 4/40 column)
label.8001 mae-labels, 8001-O.S. (BASIC 4/80 column)
unassembler.bas updated version with same labels as above (BASIC)
autoload.ldr load/execute '.' routines at reserved memory
.dump dumps variables and arrays
.find similar to TOOLKIT find
.help similar to TOOLKIT help
.hex hex to decimal conversion or dec to hex
.list special basic-list for adcomp-x80-sp printer
.page see special mem-page, serviced from interrupt
.reverse reverse screen
.uhr time (interrupt-driven) at upper right screen

.exec execute seq file as commands (merge, batch s/r's)
 autoload.asm autoload in mae-format
 dump.asm--exec.asm .dump thru .exec in mae format
 screen-edit.exe updated version of CBM's screen-input for 8032
 instring.asm input string routine: sys in,a\$.b\$.c.d
 keyboard.asm Special graphic characters for 8032
 inst/keyb.asm instring and keyboard together
 editor.ctl Assembler source for CBM screen-input
 editor.m01-m03
 inst/keyb.exe instring and keyboard together
 schlaf.gut.exe 'sleep well papa', from Koch's 2 yr old daughter
 speech.asm Digital speech recording and playback, source
 day.of.week.bas convert dd/mm/yy to day of week (BASIC)

(UM) mail list: by Chris Bennett, enhanced by Strasma (**Revised**)

mail.list4040ldr 5/82 version (BASIC 4.0 and machine code)
 4040 menu
 4040 format
 4040 update
 4040 print
 bennet.insX.wp Instructs mail list (esp 4040 version)
 code.field.wp Guides coded access to list
 mail.list.2.ldr Upgrade BASIC and machine code.
 format earlier version
 update of Bennett Mail List
 print
 menu

(UV) Venture Games **New**

adventure.bas The Original Adventure by MIT, Butterfield
 monopoly.bas Graphic monopoly game by John O'Hare
 ohare's.#1.bas "Cavern of Riches" by O'Hare
 ohare's.#2.bas "Great Pyramid" by O'Hare
 ohare's.#3.bas "Haunted Mansion" by O'Hare

(UX) xtnd monitor: MICROMON "E" (BASIC 2/4) **Revised**
 and "e-rom.mon"

mimon.e.wpX WORDPRO 3/4 guide to MICROMON "e", 4/8/82 version
 mimon.e.plus.wp1 Guide: MICROMON "E" additions, 4/8/82 version
 micromon.cte controls MAE assembly of MICROMON "E"
 micromon.mXX MAE modules to assemble MICROMON "E"
 micromon.cte+ controls MAE assembly of MICROMON "E" additions
 micromon.mXX+ MAE modules to assemble MICROMON "E" additions
 e-rom.mon.wp1 WORDPRO 3/4 guide to "e-rom.monitor"
 e-rom.mon.ct controls MAE assembly of "e-rom.mon" modules

e-rom.mon.mX MAE modules to assemble "e-rom.mon"
 mm.e--.\$2.exe MICROMON "E", \$2000 to \$2fff (40 and 80 column vers.)
 mm.e--.\$a@\$2.exe mimon "e", \$a000 to \$afff (40 and 80 column)
 mm.e++\$a@6b.exe add to \$a000 MICROMON "E", reside @ \$6b00
 mm.e+\$a@e9 2.exe add to \$a000 MICROMON "E", reside @ \$e900
 (f40/8032)
 mm.e--&+@6b.exe mimon "e" and additions @ \$6b00 (40 and 80 col)

MICROMON "E" and MICROMON "E Additions" (4/8/82 versions) by Seiler, Strasma, and Cochrane is the latest MACHINE LANGUAGE MONITOR EXTENSION for upgrade and 4.0 BASIC PETs. Included are previous extended commands: simple assemble, set break address, compare memory, disassemble, fill memory, hunt memory, memory dump with ascii conversions, (convert addresses to) new location, quick trace, transfer memory, and single step (walk) code.

MICROMON "E" (40 or 80 column versions) has repeating cursor keys and scrolls displays up and down. It also supports additional ONE CHARACTER commands: change character sets; hex, decimal, binary, and ascii conversions; hex addition and subtraction; calculate branch; checksum; exit to original monitor or BASIC with Micromon disabled; printer disassembly or memory dump; show load address; default load/save via disk; send to PROM programmer; text/graphics flip; dos support commands; and control characters for 8032 special features.

MICROMON "E" adds PRINTER ON/OFF, set printout form-feed (heading option), view seq. file, SPECIFY LOAD ADDRESS, SPECIFY SAVE ADDRESS, soft change disk device#, (new) TEST MEMORY, and (new) HUNT command with "don't care" feature. (for example, ".h 2000 3000 ?aa 4c aa 90" hunts \$2000-\$3000 for ALL jumps to \$9000-\$90ff area).

Cochrane derived the (new) extended monitor, "e-rom.mon," from EXTRAMON. It is designed for the \$E900 to \$EFFF address range on only 8032s and FAT 40s. To fit into 1 3/4 K, the following alterations were made in EXTRAMON:

- * Fill command removed.
 - * Hunt for ASCII string removed (instead Hunt for ASCII characters with the HEX equivalent).
 - * The un-needed repeat function removed.
- HELP disk (5/22/82 version) ATUG BASIC and object file sampler by Strasma for third ed. of Osborne PET Guide

'contents' List of HELP programs, detailed notes (BASIC)
 ascii.fix.bas machine code converts PET ASCII to true ASCII
 border.print set screen window, do simple border (all PETs)
 concat Demonstrate CONCAT statement
 date Demo entry/verify 6-digit date
 minimail30oc handy primitive database uses relative records
 modem BASIC chat program for IEEE modems
 name&address Demo simple mail list info entry
 seq.mail.b4 BASIC 4 demo sequential file methods with strings
 seq.num.b4 as above, but use numeric data

window demo view data in screen window (primitive Visicalc)
 mail list 4040 powerful mail list manager use rel. files, by Bennett
 bennett.ins.wp WORDPRO guide for mail list 4040 by Strasma
 baid240c1019 Aid write/edit BASIC loads at 1025, by CBM, JS,
 baid440c1019 RUN activates it at 28672. Versions for Cochrane,
 baid4f4c1019 BASIC 2 and 4 (40, Fat 40, 80 columns). etc.
 baid480c1019 Assumes CBM-like printer
 basic.aid.ins.wp WORDPRO guide to BASIC AID
 backup Sorted Drive to Drive copy, from TPUG
 bar graph 2.4 Hi-resolution graphs for CBM screen/printer, by Easton
 cass.data.copy Seq. cassette data read into seq. disk file
 cbm 4032 v2 Make 80 col screen act like 40 cols by Chee
 copy all Disk copying selective of files and units, by Butterfield
 datamaker machine code to DATA statements adapted by Strasma
 draw PET as "etch-a-sketch" by Peninsula School
 draw.ins Instructions in BASIC
 eater Diet-spoofing game, great screen graphics
 mandala Fascinating screen graphics
 micromon-d.40 Powerful extended monitor for 2.0 and 4.0 BASIC,
 micromon-d.80 40 and 80 column versions, by Seiler, Cochrane, JS, etc
 micromon.ins WORDPRO guide to MICROMON
 petsong 3.2 Bach music thru CB2 sound from PET Gazette
 procep.editor Extended Screen INPUT and Math package from CBM France
 procep.example Requires 80 col screen as supplied
 procep.insX.wp WORDPRO guide to PROCEP
 reread Read most relative files by Butterfield
 soup output how 2 prgs on disk differ (BASIC), by Troup, JS
 scopy Scratch and copy utility for CBM Disks by Peterson
 terminal.ieee Excellent IEEE modem package, handles program
 term.ieee upload/download via bulletin boards by Punter
 word pro printer Display WORDPRO 3/4 files (BASIC) by Baker

ALSO AVAILABLE (About 30 diskettes of mixed material)

Via Toronto PET Users Group:

2 Utility and 1 Business diskettes

10 Monthly Diskettes of utilities, games, etc.(from 12/80-4/82)

CEAB (Canada Education Advisory Board) #1 through #7 on 6 diskettes

Finzer One (Education programs)

For now, I release "also available" diskettes 'as is.' I hope gradually to better organize and integrate them into our collection. Please tell me about any copyrighted program on our diskettes, so that I may remove it.

To Follow Future ATUG Developments

The ATUG exchange library constantly increases, with your help. TO RECEIVE THE LATEST ANNOTATED DIRECTORY OF ATUG DISKETTES, send a letter-sized, double-stamped SASE and request ATUG INFO.

ALSO watch the **Midnite Software Gazette** for "ATUG Notes." which will mention files and diskettes new to our exchange. I also hope to feature DETAILED SOURCE CODE LISTINGS where you might learn more about your assembler and machine level programming.

TO OBTAIN ATUG DISKETTES, SEND:

- 1) Clear list of which diskettes you desire.
- 2) Quality diskettes.
- 3) PROTECTIVE mailer (stiff photo mailers are cheap and good).
- 4) Pre-addressed return label.
- 5) Enough Postage to return your diskettes PLUS enough to mail latest Annotated Directory (2 ounces), and
- 6) \$5 PER DISKETTE for our labor and expenses.

OR SEND \$10 PER DISKETTE, if you wish us to handle diskette, mailer, label, postage (especially out of the U.S.), or whatever.

For **CBM's 4040, 2031 or 2040 Disks**, make ALL REQUESTS AND PAYMENTS to:

Brent Anderson (ATUG)
200 S. Century
Rantoul, IL 61866

For **CBM's 8050 Disk Drive**, make ALL 8050 REQUESTS AND PAYMENTS to:

Baker Enterprises
15 Windsor Drive
Atco, NJ 08004

The ATUG library is available as follows:

The 4040 ATUG diskette number: is the same as 8050 diskette number:
UA, UE, UX U1 (ATUG SRC. 8050]
UB, UF, UG U2 (ATUG LANG.8050]
UH, UK, UM U3 (ATUG UTIL.8050]
UC U4 (ATUG (c).8050]
UD and UI (incorporated into U1 - U4)
HELP HELP.8050
C2 Campbell #2.8050"

For each 8050 diskette, the same restriction, financial and mailing terms apply as 4040 diskettes through Brent Anderson. In addition, Baker will accept VISA or Mastercard.

CHURCH NOTES

by John Easton

In overview, we at C.C.C. (Christian Computer-based Communications of Toronto, Ontario Canada) have been involved in the concept of searching out and encouraging Christian and/or Church-oriented applications of Micro-Computer Technology since May of 1980.

We have purchased three computers, a dual-disk drive, printer and a modem. Two of the computers are small 8K units used primarily for training and demonstration, while the third has 32K of memory and is used for program development and all the major work one might expect of the usual computer applications - Membership and Mailing lists, Word Processing, Budget Reports, etc. It will also be tied in with our telephone within the next month to operate as a central terminal (11 pm to 8 am) for a Christian Communications Network. This network will allow anyone with a terminal to access the Bulletin Board, leave messages and requests, up and down-load programs for others to share - in general, acting as a central reference point to encourage the use of these machines in Christian applications. The above equipment is all manufactured by or for Commodore Business Machines, which we chose because of their almost universal use in schools of this Province. This firm is very active in the Toronto area, having originated here.

We have personally developed, or have encouraged others to develop, most of our software. One solution, creatively shared, will usually produce several alternative or better applications once the sharing process is recognized for the help it can be. We have, however, purchased the Word Processing and Telephone Bulletin Board packages - both too good to bother wasting time in developing alternatives.

We are using a MAIL-LIST, MEMBERSHIP package that was developed here in Toronto, modified by Rev. Jim Strasma in Illinois and re-applied to our needs here.

Our church secretary has come to rely on our monthly CHURCH ACTIVITIES CALENDAR to keep on top of all activities planned for the church. She up-dates the data once a week, and we give her a new calendar any time she wants - up to a year in the future. Our Committee chairmen also get an up-dated copy once a month covering the following two months for their use in planning activities. At last no one has an excuse for not knowing what is going on!!

Our church treasurer has access to our COMMITTEE BUDGET program, allowing monthly up-date and printout of spending by each department or committee. This program, based on budget allowances, keeps track of expenses and commitments by category and gives a running account of the balance.

Word-processing is, of course, a natural and logical usage of the Micro. And a very powerful tool it is. This particular version rivals the capabilities of the fancy \$20,000 units installed at my place of work.

....Future developments will probably occur in the application of programs such as VISICALC to budgeting and forecasting - and perhaps we might even convince our Finance Chairman that this machine can greatly reduce his work in the weekly processing of tithes and offerings.

We have to a greater extent become active in the development of actual programs to aid in Bible Study, Bible Games, Bible Principles, etc.— one application seems to lead to another. We do not necessarily do all this on our own machines, but attempt to encourage the interest in and development of these programs by others.

Our Daily Vacation Bible school in 1981 was blessed with the loan of 10 Commodore PETs from a local Christian dealer (Peter Smith of Richvale Telecommunications). The machines were programmed to re-enforce the lessons covered by the teachers and the whole experiment was apparently an unqualified success. Participation and interest has never been so noticeably observable, and even kids who would never under normal circumstances darken the door of any church were manfully tackling the problem of answering questions about this Jesus guy just to experience the thrill of operating the computers. That this involvement led to several new commitments to Christ was an added bonus — and through means of a technology that until now seems to have eluded the thinking of our evangelical advisors.

As of December 1, we have been on-line in the Toronto area with a program on WHERE DO I COME FROM — WHY AM I HERE (MAN'S INTERPRETATION VERSUS THE BIBLE'S). And, though I haven't yet seen it, I think the DRUG program is now up and running on the same system.—John Easton

Future plans? Hard to tell, we're kept so busy now attempting to be obedient to the leading of the Lord that we haven't really had too much time to try and outguess Him.

COMAL NOTES

by Len Lindsay

The following are excerpts from Len's COMAL Users Group newsletter, the COMAL Catalyst, Issue #2, April, 1982, and accompanying letter:

COMAL Users Group Announcements:

- 1) COMAL program exchange disks will no longer be available in 8050 format, since we don't have an 8050 disk drive. Only 4040 format will be provided.
- 2) User Group Disk 2 was released in May 1982.
- 3) The COMAL STARTER KIT is discontinued due to arrangement with Reston Publishing to professionally publish the COMAL Handbook (in the fall). The newsletter will continue.

Talks are under way to have a COMAL cartridge included with each Commodore 64 in a new deal for European schools. A COMAL Users Group has been formed in England — It even has meetings. Contact is John Collins, 4 Grimthorpe House, Percival Street, London, EC1V 0B5 England.

A few months ago, Commodore U.S.A. said it was not going to support COMAL. Now, we hear that they are planning to give away 10,000 COMAL disks...

...What everyone seems to want is an easy paced tutorial on programming in COMAL. Well, relief is on the way. Borge Christensen's book, **Problem Solving Using COMAL** should be available in May 1982 from Ellis Horwood. It is presented in a textbook manner, with self tests and workbook. Another book from Ellis Horwood,

Structured Programming with COMAL-80 should also be released this Spring. A second COMAL newsletter is rumored to be about to appear, under the guidance of, once again, Ellis Horwood.

We were really excited when we heard that COMAL was already running on VIC, complete with SOUND and COLOR - not only color control commands, but actual use of color in the presentation - KEYWORDS were color coded, adding a new dimension to a program listing. Fantastic! But as rumors go, we heard all development of COMAL on VIC was stopped since Commodore was not interested in it. If any company IS interested, it would be fairly easy to complete the implementation.

A CP/M version of COMAL is currently available from Metanic Aps. We just received their users manual, which is very well done. However, we have had problems with the interpreter.... Work is under way to run COMAL-80 with the 6809 processor under the FLEX operation system. Apparently, work at the Technical University of Copenhagen was stopped on a COMAL version for the INTEL 8080. COMAL is running on the Data General NOVA. MTU is considering implementing COMAL on their system. Tandy in Europe is apparently interested in COMAL. Research Machines in England has COMAL running on their RM-80 computer. Ireland has endorsed COMAL for its education system. Sweden and England are heading that way, too."

Commodore has finally reached agreement with the authors of CBM COMAL (Mogens Kjaer, Jens Erik Jenson, and Helge Lassen). Apparently, the rights are split - with Commodore getting rights to the disk-based CBM 8096 version, and Instrutek getting rights to the ROM version (see under Language Reviews). The two versions are said to be nearly identical. It is not yet known whether Commodore will release the CBM 8096 version to the Public Domain.

COMAL FINALLY HAS A STANDARD:

COMAL, a language like both BASIC and Pascal, has been in existence since 1975. Several implementations have been in use, each having minor differences. On May 7, 1982, at a meeting organized by COMAL's creator, Borge Christensen, a standard for COMAL was accepted, allowing COMAL programs written on one machine to run on another, as long as each meets the new standard, referred to as the COMAL KERNAL.

The three main companies selling COMAL, Metanic Aps, Regnecentralen, and Instrutek, were all at the meeting, along with Trinity College in Ireland, which is writing a COMAL. The COMAL Users Group was represented by Len Lindsay, who has since updated his **COMAL Handbook** (forthcoming from Reston), to match the new standard.

Each company had changes to make, since the standard is a full language, not a least common denominator of current versions. Instrutek hopes to have their COMAL version 1.02 finished by July, 1982. It will run on the CBM 8096 with about 37K bytes free, or as a plug in ROM board. (See separate reviews).

CBM COMAL VERSION 0.11 REPLACED BY VERSION 0.12

CBM COMAL version 0.11 was immediately upgraded to version 0.12, to meet the new standard. It is in the Public Domain, and beginning to circulate. Do NOT use the Public Domain version 0.11 (COMAL BLUE) released in May, 1981, any more. Advise your user group to replace it with version 0.12.

Transporting a program written in version 0.11 to version 0.12 requires three steps:

- 1) While in version 0.11 LIST the program to disk.
- 2) Convert the file type from PRG to SEQ (a program called DIRECTORY will do this for you).
- 3) ENTER it into version 0.12.

Remember to check for anything in the program that needs to be changed to meet the new syntax. Also note that version 0.12 does not include a split version.

Changes from version 0.11 to version 0.12 include:

** A program LISTed to disk is now SEQ type file (as it should have been from the start).

** Substrings now are specified by the start position and the end position. The old method was start position and length.

** ZONE is now a system function instead of a system variable. ZONE=6 now will set the ZONE to 6, while the old version would have used ZONE:6.

** The keyword PASS is now available to pass disk commands to the disk.

** The keyword NULL is available. As its name implies, it does nothing.

** The error messages are in a disk file. These now can be turned off by the command SETMSG-. Then only the error number is reported.

** Functions are now separated from procedures and are started with a FUNC statement and ended with an ENDFUNC. Version 0.11 used a procedure as a function, assigning the function value to the procedure name. Now a value is returned with a RETURN statement.

** To return to BASIC, simply enter the word BASIC. This did not work in the old version 0.11.

COMMODORE NOTES

According to one issue of **Commodore** magazine, the Commodore Hotline handled 2000 calls a month during Fall, '81. Since that was apparently more customer support than Commodore had in mind, the call is now on you. Address your no longer toll-free calls to: 215/687-9750 or 215/687-4311. (Apple cancelled their toll-free hotline, too.)

ON COMMODORE PHILOSOPHY:

The new equipment shown at the January, 1982 Consumer Electronics show in Las Vegas said a great deal about Commodore's corporate philosophy. They are not pioneers, but optimizers, developing existing products to a peak of sophistication. Like the Japanese, they are willing to copy, and hence will be with us a long time. Commodore's chief executive, Jack Tramiel, summed it up: "We're the American Japanese...We don't want to invent anything; we just want to make sure we have the best." (WSJ, week of 1/3/82).

ON COMMODORE ETHICS:

Two users sent detailed articles about Commodore last year, and asked **Midnite** to comment. One article was from the March 2, 1981 issue of **Barron's**. The others were from the **OEM Computer Newspaper** for November 16, 1980 and March 16, 1981. The gist of the first article was that Commodore obtained some of its capital by shady, if not illegal, stock practices over several years. A second article told how Commodore, (like Apple), ditched its wholesale distributors. The third quotes Chuck Peddle as leaving Commodore out of boredom. The fourth says the parting wasn't amiable -- Peddle and Commodore sued each other for millions of dollars. (Commodore eventually won.)

By all accounts, Commodore was in trouble in the mid '70s. Badly bruised by calculator wars, they found rescue in newly-acquired MOS Technology and Chuck Peddle's idea for PET. It was an instant success, marred only by total orientation to immediate, not long-run, profit. Commodore's top management is expert at making money, never mind how. Eventually, those used along the way left, employees, dealers, wholesalers... Meanwhile, the bosses had multi-millions, and like the rich throughout history, fought over them.-JS

HOPEFUL COMMODORE SIGNS FOR THE FUTURE?

Several major events have bolstered my faith in Commodore's future:

1) The wonders seen at the Chicago NCC show in May, 1981, at the Las Vegas show in January 1982, and NCC in Houston in June, 1982.

2) Main Street Computers in Decatur IL, which was 'Apple all the way' two years ago, is still a Commodore dealer a year after taking on the line.

3) Working on the Osborne PET Personal/CBM Professional Computer Guides made us realize that Commodore's computer equipment can do more than anything from competitors anywhere near its price range. And Commodore is finally offering a wide range of top-quality software. Some of this, such as SILICON OFFICE, is better than anything comparable available for Apple, Atari, etc. IBM may win big in the end with its personal computer, but it will be a while before your local dealer has many to sell, and longer before you can get the dollar value out of IBM that you do now out of Commodore. In short, I'd rather have Commodore stock right now than Apple stock...

4) PET PROVEN USEFUL! During the 1980 MGM Grand fire in Las Vegas, Commodore moved its entire COMDEX '80 booth downstairs to help track guests, rooms, etc. According to Infoworld, 7 PETs with OZZ data-bases (predecessor to SILICON OFFICE) were used for two straight days. Local police agreed they could not have kept track of the guests as well as the PETs did. Also, untrained operators quickly learned the system. In the crisis, PET was both powerful and useable. THANK YOU, COMMODORE!

5) Datapro Research Corporation of Delran, NJ, reported that in 1980 Commodore and Apple tied among the top 10 brands of personal computers in user satisfaction. Of popular brands, only Ohio Scientific's CHALLENGER got a slightly higher mark. Not bad, considering the heat CBM took from Apple-happy users and dealers in '80.-JS

6) The fact that nearly everything Commodore promised to bring out in 1981 was delivered by year's end, with manuals, says a lot. For instance, the 8023P printer was in stock at my local dealer's WITH a manual precisely when Commodore told me it would be. The same was true of the new 8300P printer, the SuperPET, and most other products announced at NCC last May. Only the new 8250 and Winchester disk drives and 8033 Color Computer (a promotional gimmick) were delayed. Dealers seem thrilled with the VIC, and our new dealer in Springfield is having trouble keeping CBM and VIC equipment in stock. Any 22 year old electronics company has to be doing something right!

CURRENT PRODUCT REVISIONS and UPGRADES:

Computers:

We recently received a letter from a reader to the effect that Commodore may reduce its prices on current equipment. I doubt if that will happen before the new 64 is in full production, but it would probably be a good idea then. It's a cinch everybody else will have to reduce prices to match the 64, so why not Commodore itself? On the other hand, Commodore rarely reduces prices on existing models.-JS

BA, J&ES, and many others working independently around the world invented a new model PET! It is a transformed Fat Forty, with an 80 column screen, and the graphic keyboard. You **cannot** get it from Commodore, and you probably void your warranty to build it, but it certainly is popular! Even some of Commodore's own employees have created them. We support it in **Midnite**, as the "Graphic 80", or "G80" for short.-JS

Disk Drives:

The Hotline folks aren't aware of any plans to make the forthcoming DOS 2.7/3.0 available to owners of 4040's, but your dealer can get updated ROMs: 8050's need -06 and -07 ROMs now, while waiting for an eventual DOS 2.7 retrofit. 4040's need -14, -15 and -16 ROMs. A -17, -18, -19 ROM set for the 4040 is also rumored, presumably to match the DOS in the newly-announced 'B' models.

NEW PERIPHERALS ARE HERE:

VIC Line:

The VIC-20 is selling well now; our local dealer can't get nearly enough of them, even though Commodore is making a rumored 60,000 a month world-wide. Most of the necessary accessories are now available for it, including disk, printer, programmer's aid/monitor/graphics-sound cartridges, modem, added memory, and a ton of games.

Commodore U.S. reports no plans to upgrade the VIC-20 to 40 columns, nor will its cartridges fit or work in newer models. Quantum Data is advertising 40 (and 80) column VICs, though we understand BASIC may not know the added columns are there. Also, there is a question about how it handles normal 22 column programs when set up for 80 columns. Expect other companies to offer 40 column VICs soon.

Apparently the IEEE-488 interface for the VIC-20 is available now in Europe. A different one is being advertised by Micro-Systems in Texas. If you ever plan on upgrading to a CBM or PET model, consider getting this first, and then using standard PET peripherals instead of VIC ones. (Be the first on your block to connect a 7.5Meg hard disk and daisy wheel printer to a 3K VIC!)

One person wrote **Microcomputing** that since no one uses the IEEE protocol, the Osborne I should have used a simple parallel port instead of the IEEE port. Time, several hundred thousand PET owners, 30,000 Osborne I owners, and two subsequent letters to the editor, proved him wrong. Commodore was far-sighted in choosing the very simple, but powerful IEEE-488 bus. Even Apple owners can now buy an IEEE interface. You can use the IEEE as a simple parallel port, but with lowering prices, why settle for anything less than the power of IEEE-488?-JS

CP/M Choices:

CP/M is finally available for PET. To run CP/M on the PET, a Z-80 chip and add-on memory are required. There are 2 contenders: **Small Systems Engineering** and **Madison Computing**. Neither is sold directly by Commodore here.

Users have to choose between the SUPERPET, the 8096, and the 2 CP/M's, since they all tie up the same space on an 8032 motherboard. It's not an easy decision, as all four products seem great! CP/M (and/or CP/M-86) will supposedly be available on the forthcoming Commodore 64, 'P', 'B', and 'BX' models. CP/M options include:

OPTION #1: Small Systems Engineering advertises a price of \$900 retail for a SOFTBOX that allows an 8032 to use CPM software. This unit attaches externally to the rear of an 8032. It reportedly turns the PET into an intelligent terminal on this separate computer box.

OPTION #2: Madison Computers, is producing an internally-mounted CP/M board, called Z-RAM. It is slightly less expensive (+\$700), and sits nicely out of the way under the video screen inside the case. It is being marketed through Computer Marketing Services Inc as well as AID in Minneapolis.

OPTION #3: Wait for the 64, 'P', 'B', or 'BX'.

Disk Drive Line:

Due to the huge 2 Megabyte capacity of the 8250 disk, the previously-announced 8061 and 8062 8 inch disk drives probably won't appear. They cost as much as a hard disk and store less, not to mention their weight and noise or the cost of 8 inch diskettes.

Read about the 8250 and hard disks under Commodore Previews: Disk Drives.

Printer Line:

Commodore may be working on a 4 color printer.-Lyle Phillips

WHAT THOSE LUCKY BRITISH USERS CAN GET:

Here's what Americans are missing in the way of British software, as of the third London PET Show in June, 1982. Great, but amazingly expensive!

ADMINISTRATOR II, from Stage One. An applications generator, in new 8096 and Mator hard disk versions. The new version allows restructuring of data.

DIALOGUE, from Kingston Computers. An "ultra-safe" interface, which is said to be able to talk at one speed while listening at another.

DMS, from Compssoft. Claimed to be the most popular data management system in the UK. The new version includes a mini-word processor, which shows they've heard about SILICON OFFICE.

HORNET, from Claremont Controls. A project planner and management package that links into SILICON OFFICE.

KEYNET, a local network scheme from Commodore. Said to be able to link up to 200 of most any of the Commodore machines over a distance of up to about a mile at about 250 kilobaud.

MW-1000, from Small Systems Engineering. A 12MB hard disk that can be divided into separate sections for CP/M, includes a Z80 computer, and CBM DOS, and simply plugs into the PET.

OFFICE MATE, from Microcomputer Centre. A multi-terminal accounting package of 40 programs for the 8032 or 8096.

PC BASIC 8096, from Intex Datalog. A compiler that generates either true machine code or optimized speedcode (showing they've heard of PETSPEED.)

SILICON OFFICE 2 for the new 'B' series machines may have been previewed at the show.

VICSWITCH, from Datalect Computers. A way to link up to 15 VICs.

NEW SOFTWARE PACKAGES:

The SuperPET is in production again. Owners can ask for a free upgrade at the end of July, '82. The upgrade includes an interpreted COBOL. Eventually, there may also be new ROMs available to make slight changes in the communications code and to include COBOL in the menu. Since most, if not all SuperPETs, have EPROMS instead of ROMs, that upgrade could be a quick, cheap chore for owners with EPROM burners.-JS

SuperPET BASIC and FORTRAN compilers are still rumoured for 1982, along with the already-announced COBOL and MUMPS interpreters.

For the 8096:

A quick peek inside the 8096 at the NCC showed that the 8096 is still not a single-board unit but the existing boards have been improved in their layouts to make EPROM changing easier.-from a forthcoming issue of **Hardcopy**

UCSD Pascal, version 4, is available for the 8096, and eventually promised for newer machines; it costs \$175, and is both fancier and cheaper than the previously-available TCL Pascal.-JS

Also for the 8096 expansion memory board, WORDPRO 5+ is here, an official VISICALC 8096 is here, SILICON OFFICE is here, and some other packages (such as a new WORDCRAFT) are likely. Which model should you get? For educational uses, Commodore recommends the SuperPET. For business, they currently support the 8096, but naturally the new 'B' machines will take over when they appear.-JS

Commodore is coming out with the new EASY line. Price range will be from \$149 to \$65 nominal.

1) EASY CALC is an electronic spread sheet which is not limited to a mere 10K. It will be able to use the entire 96K and work it in conjunction with disk memory so as to offer unlimited virtual memory. This is good news for those frustrated VISICALC(tm) users who hate [VisiCorp] for ignoring their complaints. The program will allow merging of fields and easy report generation.

2) EASY GRAPHICS will take the EASY CALC data and help in graphic displays. The price will be somewhere about \$120.

3) Another EASY package will aid the user in planning projects. The price will be about \$70.-from a forthcoming issue of **Hardcopy**

COMMODORE PREVIEWS

DISK DRIVE PREVIEWS:

The following three disk drives were announced again at NCC '82, but are already shipping, at least in small quantities.

D9060 "WINCHESTER" HARD DISK, \$2995 from Commodore. 5MB non-removable disk drive in 2031-size case. Uses DOS 3.0, said to be identical with DOS 2.5, except that relative files have a new side sector scheme to allow files of any size. Supposedly an included utility transfers DOS 2.5 relative files to the new format, and a configuration byte allows the new unit to emulate DOS 2.5 to use the older relative file format. Not boxed with an 8250 drive, but have their own cabinets., which look a lot like a 2031.

D9090 "WINCHESTER" HARD DISK, \$3495 from Commodore. As D9060 above, except 7.5MB capacity. Seems easily available now. I got to use one briefly at Computer Country just before this went to press, and found it much like a huge 2031, except for much faster response. As soon as you request a directory, it's on your screen; entirely internal commands like RENAME and COPY are much faster than on the

floppies. However, program loads and saves aren't too much faster, due to the limits of the IEEE-488 bus. Relative files from DOS 2 must be transferred to DOS 3 using Butterfield's COPY/ALL program. Don't forget to buy another disk drive along with it for backup.-JS

CBM8250. \$2195 from Commodore. A 2.1MB double-sided 5-1/4 inch dual floppy disk drive. Uses DOS 2.7, said to be identical with DOS 3.0. One file may fill both sides of a single diskette, or about 1.1MB. Commodore is trying again with Tandon Magnetic drives, a brand with very high performance, (7 times as fast as Micropolis track to track). In fact this very speed caused some problems when first used in the 8050. A simple fix has since been developed, so goodbye Micropolis and hello Tandon. There is some question as to whether the 8250 is shipping or not, even though Micropolis 8250s exist in significant numbers. Check with your dealer if you want one.

As for compatibility, there are two problems. First, when you first insert an 8050 diskette into an 8250, the new DOS manual says you'll get an ILLEGAL TRACK OR SECTOR message, but to ignore it. There is a MEMORY-EXECUTE command in the manual that should allow the 8250 to use 8050 relative files. However, going the other way, is more difficult. If an 8250 diskette is placed in an 8050, only its first surface can be read. Of relative files, only those created in 8050 mode on the 8250 can be read directly. Others will have to be transferred back using COPY/ALL to communicate from an 8250 to an 8050. Naturally, even this can't work if the 8250 file exceeds the file size limitation of the 8050, at least until the DOS 2.7 retrofit for the 8050 is available, and even then the file will be limited to one surface of the 8050 diskette. Actually this is about as much compatibility as could have been hoped for, given the added capacity of the 8250.-JS

Observations:

One great feature of the MINI-WINNIES and 8250, compared to other new hard disks, is that the ENTIRE drive can be treated as a single file. Imagine having 30,000 252-byte relative records on line at once in a single file! I've heard from several dealers who need a database manager that can handle LARGE records and LOTs of them. Looks like relief is now available. Dubbed DOS 3.0, the new hard disks allow a single file to fill several Megabytes.

Backing up such large files can be time-consuming and difficult. Unfortunately, Commodore's new hard disks, like most MINI-WINNIES, offer no realistic backup. Consider the speed of Commodore's UNIT TO UNIT program. At 1 hour per megabyte, who will ever back up a 7.5 meg disk? That, in turn, guarantees loss of data. Fortunately, since the IEEE handshake in DOS 3.0 will be optional, vastly faster data transfers are possible if someone writes suitable software.

I was interested to note from Commodore's spec sheet at NCC that ALL of their IEEE-488 disk drives have the same data transfer rate on the IEEE-488 bus, which is to say sloooowwww compared to a PEdisk for example. The hard disks, for instance, can move 5MB of data per second internally, but barely handle .2%

of that rate down the IEEE-488 cable (1.2K/second). Who will be the first to get the hard disks to work at a more realistic speed?

Another apparent solution is suggested by a recent Commodore announcement that they plan to build a streaming tape drive (quite unlike your VIC cassette drive). It should be able to backup a 7.5 Meg disk in about 10 minutes, if it can be suitably connected.

As to whether the new drives are a good buy, it depends. If you want a hard disk, find out how long it will take you to completely back up its data. Then, unless you just don't have \$500 more, the 7.5MB version gives far more bytes per buck. If it's the 8250 you want, be sure there's no problem with data from one surface writing through and tampering with the data on the flip side, a traditional problem with double-sided drives.-JS

COMPUTER PREVIEWS:

"Any computer that is in production is obsolete."--copied

In the electronics industry in general, and with Commodore in particular, there is always a new generation of wonder machines coming just over the horizon. They are usually announced at the big trade shows, and both the prices and delivery dates promised then only apply if no new problems develop. Usually new problems DO develop, as evidenced by non-functioning equipment at the shows. Some of this equipment never does finally appear, and some of the other equipment looks much different in final form than at the shows.

It is rarely a good idea for a person or a business that needs a computer now to wait for these "pie in the sky when you die" machines. Even if all proves true, and the model you buy today is outdated in 8 months, by then it should have paid for itself, and it will still, even as a less-than-latest machine, be able to do everything you bought it to do. I am writing these words on a 2001-32B Commodore computer, a model that was obsolete two years ago. But we still use it several hours a day, and all but about 20 of my 1000s of programs can still use it.

Therefore, use the following previews of forthcoming equipment for information, but don't depend on them.

VIC LINE PREVIEWS

MAX. \$180 from Commodore. 66 key keyboard in VIC layout. Built-in RF modulator. Mini-cartridge slot. Dual joystick ports. 2K RAM. 40 X 25 color display (not included), 320 X 200 pixels in "HiRes" mode. 16 colors at once. 8 movable and expandable Sprites. 3 voice, 9 octave music synthesizer with programmable Attack, Decay, Sustain,

and Release. Envelope generator, Programmable Filter, Master resonance and volume controls. Uses VIC-20 peripherals except for cartridges. TINY BASIC is an extra cost option. Appears from photos to be a bit smaller than the VIC-20.

PREVIEW #1: In January 1982, Commodore stunned everyone with an expanded VIC line. Most exciting to some within Commodore is the \$180 membrane keyboard MAX, also known as the VIC-10. It is nearly the same price as the Sinclair ZX-81 and is to the VIC-20 about what the ATARI 400 is to the 800. The MAX, based on the Commodore 64, but with a tiny memory and no standard BASIC, may end up good for games and cheaper than VIC, but will take some added options to be what I would call a real computer.-JS

PREVIEW #2: MAX is very well shaped and makes good use of excellent music and graphics capabilities. That it is also well qualified for instruction of BASIC, makes it the new leader in the low price range. With the new VIC modem, it could become the cheapest communicator with real computer power, a boon to the deaf and verbally impaired. The excellent design features Sprite graphics with the ability to display 16 colors simultaneously. The music circuit has 3 synthesizer voices with a 9-octave range which can be used independently or with each other to create unique sounds. With the MAX it's back to the membrane keyboard but one which is superior to the keyboard on the original Pet. Combine this and you have a package that allows the best 3-D graphics games in the industry.-CHUG

COMMODORE 64, \$595 from Commodore. 64K RAM VIC upgrade, with new 6510 processor (eases bank select, up to well over a megabyte of potential RAM capacity). Z80 is promised as plug-in co-processor via user port, along with CP/M. 39K RAM free for BASIC programs, 52K free for machine language programs. VIC keyboard. 40 X 25 display (not included), with same details as MAX. Sprites may be up to 21 X 24 pixels, and use 3 colors. Sprite collision detection and object priority is included, allowing apparent 3-dimensional animation. Pixel by pixel 4-way scrolling of sprites. 6581 sound chip has 4 waveforms, sawtooth, triangle, variable pulse, and noise. Filters each voice separately, with low-pass, high-pass, band-pass, or notch outputs. Details same as for MAX. Uses VIC-20 peripherals, except cartridges, and handles up to five 1540 disks. Hookups appear same as MAX. IEEE-488 and PET EMULATOR cartridges are promised. Twenty useful programs are promised immediately, including most of the desired categories of business programs. LOGO is also mentioned as coming.

PREVIEW #1: The Cadillac of the VIC line is the Commodore 64, said to equal Apple II in features for 1/3 Apple's price. Software houses have already been trained in its use, its manual has been written, and it should be in production as you read this.-JS

PREVIEW #2: The Commodore-64 might well have been called the VIC-64. It appears in every way to be a VIC-20 upgrade. The -64 seemed a disappointment to a minority due to unrealized expectations. For instance, CHUGger Michael Weiss lauded the price per byte ratio (64K for \$600 list), the Sprite graphics capability, and the new 3-D dimension in games, BUT he also offered negatives: it seems to be another Barbie Doll; One buys it cheap and spends more money dressing it up. Everything costs extra. Initially, one won't be able to use most PET peripherals

because the IEEE-488 interface isn't available yet. And when it is, it will cost an extra \$120. However, it WILL include a pass-thru to use other cartridges at the same time. The Sprite commands are not in BASIC and there may not be a machine language monitor. The Z-80 CP/M option is just a promise so far. The -64, like VIC, offers BASIC 2, which, like most Microsoft BASICS has garbage collection problems. Fortunately, it may be able to handle a BASIC 4 upgrade. While being demonstrated at the NCC '82, part of the -64's memory failed and the Sprites wouldn't work.

Weiss recommends staying with the VIC-20 and expanding with one of the 32K boards which offer 22, 40 and 80 column options or getting the new Commodore P model as a better alternative to Commodore-64.-Adapted from CHUG

PET LINE PREVIEWS:

COMMODORE 'P', About \$1000 from Commodore. 6509 processor with potential 896K RAM, 1MHZ clock. Accepts optional Z-80 or 8088 as co-processor. Switching power supply. Uses all PET peripherals. 128K RAM standard, 256K maximum on-board. Uses 6567 NTSC Video chip. Output to RBG monitor or to TV, via built-in RF modulator. Simultaneous text and graphics. 40 X 25 line display. (not included). 16 simultaneous colors, 320 X 200 pixels in hi-res mode. Same sprites as MAX. Two joystick ports. Graphic VSP and Sprite editor included. 94 key keyboard. Full IEEE-488 protocol in hardware, with matching software planned someday. That will allow SRQ interrupts, and multiple bus controllers. Clock with alarm. Two programmable 8 bit ports with handshake, etc. Hardware network option planned. 6551 ACIA chip for fully-programmable RS232. 50-19200 baud, hardware BRK. Auto-conversion to and from PET ASCII and TRUE ASCII at 300 or 1200 baud. 6851 sound chip, with MAX's features.

Includes a new BASIC, upward compatible with BASIC 4. However, programs using PEEK, POKE, WAIT, SYS, and USR will need changes (as usual with Commodore!) Even some kernal jump table routines will change entry syntax requirements. New commands include: BANK(0-15), which selects a 64K bank in which to PEEK, POKE, BLOAD, or BSAVE data; BLOAD and BSAVE, which load and save binary files at specified addresses; FRE(0-15), gives remaining space in specified BANK; PRINT USING; DELETE; TRAP, RESUME, and ERR\$ commands for handling errors; INSTRING to modify strings. BASIC text, simple variables, array variables, and dynamic strings may be in separate banks, allowing fairly practical use of use of 256K of RAM.

Co-processors will share a split bus, running at same time as 6509, communicating via shared RAM. Co-processors will come with Bootstrap ROM and I/O. The Z80 is rated at 4.5MHZ, and runs CP/M 2.2, using 64-192K. The 8088 is rated at 5MHZ, and runs CP/M-86, using 256K RAM Minimum. Plug-in 24K cartridges will only be compatible with 'B' series models, not MAX. UCSD Pascal has been announced for the 'P', 'B', and 'BX' series.

The PET-2, (formally known as the 'P' series) will also share some features with the 64. Both will support the same color displays, the same synthesized music

capability, and the same turtle graphics (renamed "sprites"). Unlike the -64, the 6509 processor in the 'P' uses a built-in 8-bit port at location 0 for memory management. Four bits are set to select from which 64K bank the next instruction will come, and the other 4 bits select which bank contains the data for that instruction. The new chip will quickly and easily address as much memory as an 8050 disk unit!

APPLE EMULATOR? Back in January, 1982, Commodore made headlines with rumours of a forthcoming "emulator", able to run Apple, TRS-80, and IBM-PC programs. I presume it was the 'P' the rumours were discussing. To an extent, the rumours are true. If someone goes to the trouble of writing a suitable BIOS program, a 'P' running CP/M or CP/M-86 should be able to run Apple, TRS-80, and IBM-PC CP/M programs, and long as they don't do any system specific PEEKs or POKES. Further, since the Commodore disk drives are entirely programmable, it should be possible to make them read and even write "foreign" diskettes. Along the same lines, it should be possible to rework Applesoft, and TRS-80 BASIC to use Commodore hardware locations properly in any machine from the -64 on up. Or an even more advanced program could EMULATE Applesoft, etc., trapping incorrect POKES and such, and substituting the correct Commodore POKE on the fly. This would presumably slow things down some, but would let all Apple etc. programs work. However, don't hold your breath waiting for these programs to appear. Apple's suing of the Franklin Ace people has put a temporary damper on this idea. More likely, you'll trade only CP/M programs with Apples, etc., over the phone, using a modem. All this is in keeping with Commodore's new goal of modularizing and standardizing all units as much as possible.

According to **Wall Street Journal**, everyone expected the Japanese to develop this kind of machine--next year. Apple stock fell \$2 a share the day of the Winter '82 CES show, and Apple showed its first sales decline ever in the first quarter of 1982.-JS

CBM LINE PREVIEWS:

COMMODORE 'B', \$1700 from Commodore. Shares many features with 'P' model. Fan-cooled. 2MHZ 6509 processor. Built-in 12-inch tilt/swivel 25 X 80 green screen monitor, with 9 X 14 dot matrix. Said to have some kind of "super dense" graphics mode. Keyboard movable to 5 feet from monitor. Built-in dual 4040 capacity disk drives (possibly available in single drive, and double-sided versions.) Disks directly accessed by computer without going through IEEE-488 bus, allowing a huge speed increase.

The 'B' is also known as the CBM 2, or "Porsche PET". It has the same keys as the 'P', including a true CONTROL key. The common interfaces will be IEEE-488 RS-232C, CBM cassette, 8-bit User Port, Direct Audio/Video Output, Cartridge Slot. Only the 'P' will have Joystick Ports.

COMMODORE 'BX', \$3000 from Commodore. Shares most features with the 'B' model. The only announced features for the additional \$1300 are 128K RAM and having the 8088 co-processor built-in, rather than optional. Presumably, Commodore either intends to throw in some free software with this model or make a higher markup on it. I hope it's the former-JS

PREVIEWS SUMMARY:

Which of the new machines is best? That depends on your needs. Commodore intends to have a model for everybody. However, Commodore history offers two bits of advice. First, their best support efforts are directed to their most expensive models. Second, cheaper models can sometimes be modified to match the top model.

If I didn't already have a computer, the COMMODORE-64 looks like a cheap way to get serious, and also have fun this year. If I didn't care about games or color (I don't), and especially if I didn't have a disk drive, the 'B' looks like a great buy -- when it finally hits the market in 1983. For my son's gaming interests, I'm considering a MAX. Whether the 'P' is a great, good, or bad buy depends on how much of the 'B' and COMMODORE-64 software it turns out to be able to run. Whether the 'BX' is a good buy depends on what else it includes besides what has been announced.-JS

IS THE 16-BIT MICROPROCESSOR COMING?:

Commodore is newly rumoured to have a true 16 bit microprocessor in the wings, for 1983 introduction. I'm told Commodore has suddenly gone in for compatibility in a big way. Supposedly this chip will be instruction compatible with both the 6502 and the 68000. That would be some trick, but that may not be the hardest part of the design. Supposedly, it will also sell for \$6, less than 10% of the prevailing price for the 68000. No word so far on speed, but supposedly the internal design is 64 bit, even though the data path is "only" 16 bits.-JS

COMPETITOR'S NOTES

A classic battle is shaping up now, between machines stressing compatibility with existing software, and those stressing peak performance. Compatibility is stressed by IBM's new PC(tm), with CP/M and 8088 processor. The performance team is headed by Tandy, with a 68000 processor version of the TRS-80(tm) Model II. Apple(tm) is also said to be working on a 68000-based computer. The 68000 will run BIG circles around the 8088, but 68000 users will have to wait a while for programs like WORDPRO or VISICALC.

APPLE NEWS:

Hal Hardenbergh, editor of **DTACK Grounded**, feels that the Apple III(tm) is dead. It was already dead before the TRS-80 announcement, but the 68000 board for Tandy tamped the earth over its grave.

I received independent confirmation on the "death" of the Apple III from a nationally-known Apple expert, though I have yet to convince the leader of the Decatur Apple group. Apple's future hopes appear to rest on 2-3 as-yet widely rumoured but unannounced models. With products like Commodore's new line nipping at one leg, and IBM nipping at the other, they'd better be good, and they'd better appear this year.

Hardenbergh also reports that Apple has 2 new 68000-based computers coming. One in the 5-figure price range, code-named LISA, was intended to scare the Hewlett Packard(tm) System 45 or at least the Xerox(tm) "Star", at NCC, but it failed to appear there. The other may give the Osborne/I(tm) a run for its money late in 1982. Supposedly smaller than the Osborne, it may cost \$500 without disk, or \$1,500 with two disks. Apple/II will be replaced with the DIANA project, intended to be compatible with current units (hopefully more compatible than the Apple/III; it can't handle Apple/II programs that use peeks or pokes!).

Hal's QUOTEABLE QUOTE from **Dtack Grounded**: "The Apple III is not selling well enough to justify the book value as a computer. It is also too stiff for a hula hoop and too light for a boat anchor."

REPLY:"Hal Hardenbergh was quoted as saying that Apple/III is too light to use as a boat anchor. I beg to differ! I have a 12' boat I use for fishing in San Diego Bay, and Apple/III is the correct weight for a boat this size. The disk drive, with its whirring and clicking, actually seems to attract fish. (Although a CBM/8050 works even better - 2 drives, you know.) There are other problems, however. The power cord is much too short, requiring an extension cord to use the Apple in deep water (an additional expense). The greatest reason not to use the Apple/III as an anchor is that because of its odd shape, it continually gets hung up in rocks! I personally have lost 4 Apple/III's because of this. Unless Apple changes its design, I will be forced to use another micro, possibly a CBM, although bass like a color display...

Currently, the Apple is being used as a block to keep my car from rolling backwards on hills. However, I still think a brick works just as well.

I will continue my research, and keep you up to date on my search to find a use for the Apple/III."-David M. Conley

ATARI(tm) NEWS:

ATARI is rumoured to have a new computer model coming out this year, but failed to show it at NCC. Microsoft BASIC is finally available for the 800, but apparently users are too used to the old Kiddie BASIC to switch. Speaking of Kiddie BASIC, it has the old "cursor gone out to lunch" bug of the first PETs, plus some equally enjoyable "disk went out for supper" bugs. Either way, turn it off and start over. I'm amazed that anyone would still buy a computer with such unreliable operation.

DEC NEWS:

"Take a look at their new "Rainbow" machine, announced at NCC '82 in Houston TX..."-CHUG

IBM NEWS:

Speaking of unreliability, Hal Hardenbergh strikes again with a note on the new PC. Apparently the beast can't add reliably. According to **Softalk's** new IBM edition, "Divide a double-precision variable by ten twice, and the result will sometimes be off by a factor of ten." Interestingly, the prior article was on using the PC in banking.

The **Softalk** article goes on to list another 6 "bugs" in the PC, including unusually-large rounding errors, display errors, faulty starting values of variables (fixed in the new DOS), a fatal error using VAL on variables including the "%" character (ie. percentage data), faults in the serial port at some baud rates, (partially fixed in the new DOS), and a "cursor gone out to lunch" bug on some of the first units made, (a board swap fixes this one).

These bugs in the Atari and IBM computers illustrate the advantage of buying brands that have been in the micro marketplace a while.

OSBORNE I NEWS

The Osborne I has been quite successful in the past year, selling some 30,000 units. A new model is rumoured, one that will have more columns on the screen and thus eliminate my major objection to the present unit. Four new competitors were shown at NCC, but only one matched the Osborne I price, and offered less software. With its IEEE-488 interface, the Osborne should work well with Commodore equipment.

RADIO SHACK NEWS:

In Spring '82, Tandy announced a \$1500 add-on 68000 processor to their TRS-80 Model II (\$5000 complete). The big news: it kept its Z-80, for keyboard scanning, input, output, etc. This keeps speed down (6 megahertz clock), but allows software compatibility with existing products. PET and Apple II owners can have 68000 models too. Digital Acoustics is shipping 68000 boards for both, priced well under Tandy's \$1500.

Digital Acoustics president, Hal Hardenbergh feels the Z8000 processor chip is dead, for lack of a second source, among other problems.

QUASAR(tm) NEWS:

Does anybody remember the Quasar pocket computer that was supposed to wipe everyone else out of the water a year ago? Supposedly, it's finally making it to market. But if you want it to do much, it won't fit in your pocket. A useful version looks more the size of the Osborne 1.

VICTOR/SIRIUS I(tm) NEWS:

Chuck Peddle's new brain child is now out. Peddle was the father of both the 6502 processor and the PET computer. His able assistant, Bill Seiler, designed the 8032 and authored several of the best PET utility programs. Therefore, their new product is of more than passing interest to PET owners... In the U.S., it will be known as Victor, in honor of the company paying Peddle to develop it. In Europe, it is known by its corporate name, Sirius, after Sirius Systems Technology, Peddle's new company. The new computer kindly includes an IEEE-488 port (perhaps to run the flocks of PET computers adorning the Sirius factory?), 2 fully programmable

RS232 ports, 400x800 dot graphics, fully programmable character sets on a 9x12 dot screen matrix, and keeps all software on its 1.2 megabyte built-in disks. This makes swapping languages and disk operating systems or fixing bugs quite simple compared to ROM software. Standard software includes CP/M-86, Microsoft's IBM DOS, and nearly everything that will run on either. It appears to "carbon copy" the IBM, with better keyboard layout. Both run the same software and cost about the same, but Peddle's machine looks about a year ahead in features. IBM will still succeed with their machine, if only on the strength of their name and software backing, but Peddle's new effort also looks like a winner, unless Commodore's internal nickname for the 'BX', "Peddle killer", proves prophetic.

XEROX NEWS

The Xerox 820 has now become the 822, with bigger disk capacity, and faster disk access, for \$300 more.—Hal Hardenberg

NATIONAL COMPUTER CONFERENCE:

Houston, Texas, June, 1982

Eyewitness Reports from CHUG members John Walker and Slim Wilson:

John Walker and Slim Wilson both attended NCC '82. Here are excerpts from their full reports, to be printed in the next issue of CHUG's **Hardcopy**.

The 1982 NATIONAL COMPUTER CONFERENCE (N.C.C.), held for four days in Houston, Texas, set an attendance record of 93,260 delegates. According to CW Communication, Inc. the number of people attending this year was greater than the combined populations of Monaco, Lichtenstein, Vatican City and the Falkland Islands (including sheep?).

Houston's central location may have been responsible for the surprising turnout. Last year, the NCC Chicago show drew 73,526 registrants. The Houston 30,000 room hotel market was caught unprepared for the blockbuster. The conventions housing bureau used computers to help locate rooms and they were forced to seek shelter as far away as Galveston, Texas (55 miles away). Plans are in the making for adding 6000 new hotel rooms in anticipation of the 1984 NCC return to Houston.—John Walker

A) **Commodore** seemed to have captured the show. You could hardly get to the booth.... The game program which showed the Pacman PET eating the Apples was a show stopper.—Slim Walker

Commodore presented the widest variety of new microcomputers. The 'Max' and the '64' we heard about in January, but the rest were new. Expect a big winner with Commodore-64. Instead of the PET II, Commodore has released the series P. Instead of the Porsche Pet, we now have the series B and BX. Each extracted "WOW's" and big eyes from most visitors, but each also looked hand-made with some time to go before the cloning process takes place at the factories.

After the Japanese pulled out their cameras, all the units were ordered closed for the remainder of the convention. So sorry.—John Walker

B) The **Apple** booth seemed to be packed until I got closer. Then what I found seemed to be a convention of Apple users.... Very few people were actually in the booth.... All I saw was the Apple III, which seems to sell for more than the DEC "Rainbow", a much better machine.-Slim Walker

I noticed that the Apple booth was far more crowded than the Commodore booth, but by the end of the day the situation reversed. Apple was pushing Apple III and related business applications. The big feature was the addition of 25 new software programs, 11 of which were for the Apple III. A few peripherals were also mentioned (nothing new or spectacular). An Apple exhibitor said that Apple didn't plan to stop making the III's because they have finally learned how to make them.-John Walker

C) The **Radio Shack** booth was nicely arranged, but there did not seem to be much action there.....-Slim Wilson

D) **Atari** was nowhere to be seen.-Slim Walker

They did, however, have a tiny booth at the show.-John Walker

E) There was plenty of action around the really fancy **IBM** booth. But did I just imagine that most seemed to be wearing 3-piece suits? They reeked of big money. But it was a good booth.-Slim Wilson

While the new Commodore line sends tremors through the halls of their competitors, some of Commodore's own models are feeling the same instability. Buyers seem to be holding back on all but the VIC-20. Already the PET 4016 is dead, and the 8000 line has an estimated life of 1-2 more years. In the world of computers, this is a long time. For those who can't wait and need a computer **now**, it seems prudent to go for the 8096. SILICON OFFICE is written only for the 8096 and will represent the state of the art in good office software for quite a while.-John Walker

Sam Cook of SCOPE in Irving, Texas, had this to report:

"Ron Williamson gave a run down on what he had seen at the NCC computer meeting. Lots of fantastic new equipment. Commodore had a good show and crowds of people milling about over their exhibits. Ron and I were overwhelmed with the new offerings. The 68000 computers generated lots of interest. There were several new dot matrix printers which were just about perfect. Even with a magnifying glass you would swear they were daisy wheels. The compact floppy drives were very impressive. Epson also had some nice exhibits."-Sam Cook

From what I've been told, Apple didn't announce any of their long-rumoured new machines at NCC. Nor did Atari. However Digital Equipment Corp., IBM's toughest competition in the mini market, DID. It's called the "Rainbow", and that's all I know about it for sure right now. Radio Shack is rumoured to be planning an 80 column version of the Model III, but they usually make their announcements in August. Their new 68000-based Model 16 is selling well, and supposedly already being shipped, but without much, if any, software thus far.-JS

DEALER NOTES

RESOURCES

Here are the addresses for products mentioned in this issue:

AARDVARK TECHNICAL SERVICES 2352 S. Commerce, Walled Lake MI 48088
 A.A.B.S. GAMEMASTER: see GAMEMASTER
 A.B. COMPUTERS 252 Bethlehem Pike, Colmar PA 18915
 ABACUS PROGRAMS 186 St. Helens Av., Swansea, West Glam., UK
 ABACUS SOFTWARE P.O. Box 7211, Grand Rapids MI 49510
 ACADEMY SOFTWARE P.O. Box 9403, San Raphael CA 94912
 ACT (MICROSOFT) LTD ? UK
 ADDISON-WESLEY PUB. CO. One Jacob Way, Reading MA 01867
 AID 5901 John Martin Drive, Minneapolis MN 55430
 AUDIOGENIC LTD. Box 88, Reading, Berkshire, UK
 AUTOMATED SIMULATIONS 1988 Leghorn, Mountain View CA 94043
 AVALON HILL 4517 Harford Rd., Baltimore MD 21214

BAKER ENTERPRISES 15 Windsor Drive, Atco NJ 08004
 BATTERIES INCLUDED 71 McCaul St, Toronto, ONT M5T 2X1 CANADA
 BENSON GREENE 210 Fifth Av., New York City NY 10010
 BETTER SOLUTIONS 1163 Peterlynn Drive, San Diego CA 92154
 BLACKSBURG SERIES CONTINUING EDUCATION SERIES: see HOWARD SAMS
 BMB COMPUSCIENCE CANADA LTD. 363 Main St., Milton ONT L9T 1P7 CANADA
 BOB WEST PUBLICATIONS 34 W. Main St., Brevard NC 28712
 BRILEY SOFTWARE P.O. Box 2913, Livermore CA 94550
 BRISTOL SOFTWARE FACTORY: (see AID for U.S. customers, or)
 c/o Associated Marketing Systems, Inc., 55 Central Dr., Farmingdale NY 11735
 BUG-BYTE 98-100 The Albany, Old Hall St., Liverpool L3 9EP, UK
 BUSINESS EQUIPMENT COMPUSERVE 1711 E.Valley Parkway, S.109, Escondido CA 92027
 BYTE/MCGRAW-HILL (+magazine) 70 Main St., Petersborough NH 03458

CALIFORNIA SOFTWARE ASSOCIATES: See SOFTWARE BY SASSO
 CALUMET CARTON CO. P.O. Box 405, South Holland IL 60473
 CANADIAN MICRO DIST.(CMD) 500 Steeles Av., Milton ONT L9T 3P7 CANADA
 CANSOFT DATA INC. Box 76752, Stn. S, Vancouver B.C. V5R 5S7 CANADA
 CASCADE COMPUTERWARE P.O. Box 2354, Everett WA 98203
 CBM MICROCOMPUTING: see COMMODORE U.K.
 CENTERBROOK SOFTWARE DESIGNS: see THE PAPER

CFI COMPUTER SOLUTIONS 875 West End Av., New York, NY 10025
 CGRS MICROTTECH Box 102, Langhorne PA 19407
 CHANNEL DATA SYSTEMS 4141 State St., Santa Barbara CA 93017
 CHIPS and DALE P.O. Box 31607, Seattle WA 98103

CIMARRON CORPORATION 666 Bakert St.-Suite 319, Costa Mesa CA 92626
 C-MART P.O. Box 77286, Atlanta GA 30357
 CMC: see CONNECTICUT MICROCOMPUTER
 CMD: see CANADIAN MICRO DISTRIBUTORS
 CMS SOFTWARE SYSTEMS (Charles M. Stuart) 5115 Menefee Drive, Dallas TX 75277
 CMS (NJ); see COMPUTER MARKETIN. SERVICES
 THE CODE WORKS P.O. Box 550, Goleta CA 93116
 COGNITIVE PRODUCTS P.O. Box 1658, Bloomington IN 47402
 COMAL USERS GROUP & COMAL CATALYST 5501 Groveland Terrace, Madison WI 53716
 COMM-DATA SYSTEMS Box 325, Milford MI 48042
 COMMODORE CANADA 3370 Pharmacy Av., Agincourt ONT M1W 2K4 CANADA
 COMMODORE U.K. 360 Euston Rd., London, NW1 3BL, UK
 COMMODORE U.S. & magazine The Meadows, 487 Devon Park Rd., Devon PA 19087
 COMPETITIVE SOFTWARE 21650 Maple Glen Dr., Edwardsburg MI 49112
 COMPUSERVE 5000 Arlington Centre Blvd., Po box 20212, Columbus OH 43220
 COMPUTE! magazine P.O. Box 5406, Greensboro NC 27403
 COMPUTER DEPOT 3515 W. 70th St., Minneapolis MN 55435
 COMPTER FACTORY 483 Lexington Av., New York NY 10017
 COMPUTER FREAKS,INC.: see CFI
 COMPUTERMAT Box 1664, 2984 Daytona, Lake Havansu AZ 86403
 COMPUTER MAIL ORDER 501 E. Third St., Williamsport PA 17701
 COMPUTER MARKETING SERVICES (CMS) 300 W. Marlton Pike, Cherry Hill NJ 08002
 COMPUTER SHOPPER magazine P.O. Box F, Titusville FL 32780
 COMPUTHINK 3260 Alpine Rd., Menlo Park CA 94025
 COMQUEST 221 E. Camelback, Suite 1 Phoenix, AZ 85012
 CONNECTICUT MICRO COMPUTERS 34 Del Mar Dr., Brookfield CT 06804
 COPYTRONICS,c/o Johann Smilde,Burs.V.Suditelen Straatusse FU13 XP Deventer NETH
 CORD LTD. 1548 Brookhollow Dr., Santa Ana CA 92705
 CREATIVE COMPUTING magazine P.O. Box 789-M, Morristown NJ 07960
 CREATIVE SOFTWARE 201 San Antonio Circle#270, Box 4030, Mountain View CA 94040
 CYBERIA, INC. 2330 Lincoln Way, Ames IA 50010

DATAACAP 73 rue du Village, 4545 Feneur BELGIUM
 DATA TRANSFER ASSOCIATES 5102 Pommeroy Dr., Fairfax VA 22032
 DATA EQUIPMENT SUPPLY (DES) 8315 Firestone Blvd., Downey CA 90241
 DES: see DATA EQUIPMENT SUPPLY

DIGITAL ACCOUSTICS 1415 E. McFadden, Suite F,
Santa Ana CA 92705
DILITHIUM PRESS P.O. Box 92, Forrest Grove OR
97116
DISKS, ETC. P.O. Box 327, Center Valley PA 18034
DR. DALEY SOFTWARE Water St., Darby MT 59829
DTACK GROUNDED: see DIGITAL ACCOUSTICS
DYNACOMP 1427 Monroe Av., Rochester NY 14618

EASTERN HOUSE SOFTWARE 3239 Linda Dr.,
Winston-Salem NC 27106
ECCLECTIC SYSTEMS CORP Box 1166, 16260 Midway
Rd., Addison TX 75001
ECX 2678 N. Main St., Suite 6, Walnut Creek CA
94596
EDUCATIONAL ACTIVITIES Micro Dept., P.O. Box 392,
Freeport NY 11520
ELCOMP PUB. CO. 3873L Schaefer Av., Chino CA
91710
ELLIS HORWOOD ? UK
ETCETERA INTERNATIONAL P.O. Box G, Apex NC
27502
EXECOM 1901 Polaris Av., Racine WI 53404

FANTASY GAMES SOFTWARE P.O. Box 1683,
Madison WI 53701
FARM COMPUTER NEWS 1716 Locust, Des Moines
IA 50336
F.L.C. INC.
FSS SOFTWARE P.O. Box 8403, Austin TX 78712

GAMEMASTER (Voice 312/328-9009; House
312/864-0516; ABBS 312/475-4884)
GENEALOGICAL COMPUTING: see DATA TRANSFER
ASSOCIATES
GILA NEWSLETTER 1700 Gateway Rd., Las Vegas
NV 89115
GREAT WESTERN SOFTWARE COMPANY 1624 NW
9th. Av., Fort Lauderdale FL 33311
GREENE, BENSON: see BENSON GREENE
GREENWICH INSTRUMENTS ? UK

HAL LABS, see Systems Formulate
HARDCOPY c/o John Walker, 8738 Wildforest,
Houston TX 77088
Dirk Hassinger Heinrich-Hoff-Strasse 5, D-6800
Mannheim, WEST GERMANY

HAYDEN BOOKS 50 Essex St., Rochelle Park NJ
07662
HI-TECH COMPUTERS LTD Dept. A, 7 Queensway,
Hemel Hempstead, Hertshire UK
HOWARD W. SAMS 4300 W. 62nd St., Indianapolis
IN 46268
HUH ELECTRONICS 1429 Maple St., San Mateo CA
94402
HUMAN ENGINEERED SOFTWARE (HES) 71 Park
Lane, Brisbane CA 90066

IBME 601 University Av., Suite 261, Sacramento CA
95825
ICUSS NEWSLETTER c/o Robert Lemon, 326 Joliet
St., West Chicago IL 60185
IDPC Box 11594, Philadelphia PA 19116
DICK IMMERS 1502 Brookfield Ct., Adrian MI 49221
INFOWORLD magazine 375 Cochituate Rd.,
Framingham MA 01701
INSTANT SOFTWARE Elm St. and Route 1,
Peterborough NH 03458

INSTRUTEK Christiansholmegade, DK-8700 Horsens,
DENMARK
INTERFACE AGE 16704 Marquardt Av., Cerritos CA
90701
INTEGREX, INC. 233 N. Juniper St., Philadelphia PA
19107
INTERLINK, INC. P.O. Box 1334, Berrien Springs MI
49103
IPUG (Independent PET Users Gr.) 109 York Rd,
Farnborough, Hants, GU14 6NQ, UK
ISLAND SOFTWARE Box 300, Lake Grove NY 11755

JEFFRIES REPORT: see CODE WORKS
JINI MICRO SYSTEMS & JINSAM NEWSLETTER P.O.
Box 274, Riverdale NY 10463
JOURNAL OF COMPUTERS READING AND
LANGUAGE ARTS Box 13039, Oakland CA 94661

KANSAS CITY COMPUTERS 5214 Blue Ridge Blvd.,
Kansas City MO 64133
KRELL SOFTWARE 21 Millbrook Dr., Stony Brook NY
11790

LEADING EDGE COMPUTER PRODUCTS 225
Turnpike St., Canton MA 02021
LEMDATA PRODUCTS P.O. Box 1080, Columbia MD
21044
LEVEL LIMITED P.O. Box 438, Hampstead, London
NW3 1BH, UK

MADISON COMPUTERS 1825 Monroe St., Madison
WI 53711
MAG, INC. Central Office, P.O. Box 346, 493 E.
Clayton St., Athens GA 30603
MANNESMANN-TALLY 8301 S. 180th Kent, WA
98031
MATOR 3002 Santa Monica Blvd., Santa Monica CA
90405
MATRIX SOFTWARE 315 Marion Av., Big Rapids MI
49307
MCI: see MICRO COMPUTER INDUSTRIES
MELLOR COMPUTER CONSULTANCY 3 Town St.,
Marple Bridge, Stockport, SK6 5AA, UK
MERLAN SCIENTIFIC 247 Armstrong Av.,
Georgetown ONT O7G 4X6 CANADA
META TECHNOLOGIES 2611 Brush Av., Euclid OH
44132
METANIC APS ? UK

MICRO COMPUTER INDUSTRIES (MCI) 500 East Oak
St., Fort Collins CO 80524
MICRO COMPUTER CENTER 28 Sheen Lane, London
S.W. 14, UK
MICRO-ED, INC. P.O. Box 24156, Minneapolis MN
55424
MICRO LOGIC CORP. P.O. Box 174, Hackensack NY
07602
MICRO magazine (MICRO INK INC) P.O. Box 6502,
Chelmsford MA 01824
MICRO SOFTWARE SYSTEMS P.O. Box 1442,
Woodbridge VA 22193
MICRO TECHNOLOGY UNLIM. P.O. Box 12106, 2806
Hillsborough, Raleigh NC 27605
MICRO-SYSTEMS 11105 Shady Trail #103, Dallas TX
75229
MICROCOMPUTER PRINTOUT Editorials: Box 48,
Newbury, RG16 0BD, UK
Subscriptions: Stuart House, Perrymount Rd.,
Haywards Heath, West Sussex UK
MICROCOMPUTING magazine 73 Pine St.,
Peterborough NH 03458

- MICRODIGITAL 752 John Glenn Blvd., Webster NY 14580
- MICROPHYS 2048 Lord St., Brooklyn NY 11229
- MICROSETTE CO. 475 Ellis Street, Mountain View CA 94043
- MICROSPEC LTD. 2905 Ports O'Call Ct., Plano TX 75075
- MICROTECH P.O. Box 102, Langhorne PA 19047
- MICROTEK, INC. 9514 Chesapeake Dr., San Diego CA 92123
- MICROXCHANGE 222 E. Carrillo, Suite 101, Santa Barbara CA 93101
- MIDWEST COMPUTERS c/o Bob Johnson, Manhattan KS
- MIDWEST MICRO ASSOCIATES c/o James Rothwell, Box 6148, Kansas City MO 64110
- MILLIKEN PUB. CO. 1100 Research Blvd., St. Louis MO 63132
- MINNESOTA MICRO SYSTEM 514 Cedar Av, Minneapolis MN 55454
- MIS 250 Fern Rock Way, Boulder Creek CA 95006
- MOS TECHNOLOGY 950 Rittenhouse Rd., Norristown PA 19401
- MTU see Micro Technologies Unlimited
- NEECO 679 Highland Av., Needham MA 02194
- THE NETWORKS: see TNW
- NORTHERN TECHNOLOGY BOOKS P.O. Box 62, Evanston IL 60204
- NUFEKOP Box 156, Shady Cove OR 97539-0156
- ORANGE MICRO 3150 E. La Palma, Suite 1, Anaheim CA 92806
- ON LINE SOFTWARE Box 2044, Orcutt CA 93455
- OPTIMIZED DATA SYSTEMS P.O. Box 595, Placentia CA 92670
- OSBORNE/MCGRAW-HILL 630 Bancroft Way, Berkeley CA 94710
- O'SULLIVAN INDUSTRIES, INC. 19th and Gulf Streets, Lamar MO 64759
- PENDULUM SOFTWARE 1310 Dover Hill Rd., Santa Barbara CA 93103
- PERSONAL SOFTWARE: see VISICORP
- PETTED MICROSYSTEMS Box 21851, 4265 W. Loomis Rd., Milwaukee WI 53221
- PIXEL PRODUCTIONS 39 Ripley Gardens, London SW14 BHF, UK
- POWER/PLAY magazine: see COMMODORE U.S.
- PRINTOUT PUBLICATIONS: see MICROCOMPUTER PRINTOUT
- PROFESSIONAL SOFTWARE 51 Fremont St., Needham MA 02194
- PROGRESS COMPUTERS 7073 Lynnetree Way, Citrus Heights CA 95610
- PS SOFTWARE: see COMPETITIVE SOFTWARE
- QUANTUM DATA 3001 Redhill Building 4, Suite 105, Costa Mesa CA 92626
- QUIET DESIGNS 2522 Grand Canal Blvd., #4 and #5, Stockton CA 95207
- QUILL CORPORATION 100 S. Schelter Rd, Lincolnshire IL 60069
- RABBIT SOFTWARE 380 Station Road, Harrow, Middlesex HA1 2DE, UK
- RESTON PUB. CO. 11480 Sunset Hills Rd., Reston VA 22090
- SAMURAI SOFTWARE Box 2902, Pompano Beach FL 33062
- SCELBI PUBLICATIONS 20 Hurlbut St., Elmwood CT 06110
- Fritz Schafer Schnackebusch 4, D-5106 Roetgen, WEST GERMANY
- SHUGART ASSOCIATES c/o Ivy Lewis, 475 Oakmead Parkway, Sunnyvale CA 94086
- SKYLES ELECTRIC WORKS 231 E S. Whisman Rd., Mountain View CA 94041
- SMALL SYSTEM SERVICES: see COMPUTE!
- SMALL SYSTEMS ENGINEERING 222 B. View St., Mountain View CA 94041
- SOFTBREW ? UK
- SOFTSIDE SOFTWARE 305 Riverside Dr., New York NY 10025
- SOFTWARE BY SASSO Box 969, Laguna Beach CA 92652
- SOURCE TELECOMMUNICATIONS 11616 Anderson Rd., McLean VA 22102
- STAGE ONE
- SUPERSOFT 1st Floor, 10-14 Canning Rd, Wealdstone, Harrow, Middlesex HA3 7SJ, UK
- SYBEX 2020 Milvia St., Berkeley CA 94704
- SYNERTEK P.O. Box 552 95052, 3001 Stender Way, Santa Clara CA 95051
- SYSTEMS FORMULATE CO (415/969-7499 CA)
- TALLY: see MANNESMANN-TALLY
- TAYLORMADE SOFTWARE 8053 E. Avon Lane, Lincoln NE 68505
- TEACHING TOOLS: MICROCOMP. SERVICES Box 12679, Research Triangle Park NC 27709
- TEMTECH INFORMATION PRODUCTS, 271 Westcourt Pl.#201, Waterloo ONT N2L 2R8 CANADA
- TEXAS TECHNICAL SERVICES, INC. 3115 West Loop S., Suite 26, Houston TX 77027
- TNW CORPORATION 3351 Hancock St., San Diego CA 92110
- TORPET c/o Bruce Beach, Horning Mills ONT LON 1J0 CANADA
- TRANSACTOR magazine: see CANADIAN MICRO DISTRIBUTORS (CMD)
- TRANSONIC LABORATORIES 249 Norton St., Mankato MN 56001
- TRANSTAR 2110 - 116th Av., Bellevue WA 98005
- TSASA 2 Chipley Run, West Berlin NJ 08091
- UNITED MICROWARE INDUSTRIES (UMI) 3503 Temple Av., Suite C, Pomona CA 91768 or 3431-H Pomona Blvd., Pomona CA 91768
- UNITED SOFTWARE OF AMERICA 750 Third Av., New York NY 10017
- VIRGINIA MICRO SYSTEMS 14415 Jefferson Davis Highway, Woodbridge, VA 22191
- VISICORP 2895 Zanker Rd., San Jose CA 95134
- VIXEL: see THE CODE WORKS
- WAYNE GREEN PUBLICATIONS: see BYTE, MICROCOMPUTING, AND INSTANT SOFTWARE
- ZEODEX 325 Broadway, Boulder CO 80303

Yes, we know some addresses are missing; where we could find them, they are included. Please include company addresses with any reviews or comments you send.-ED

GENERAL INFORMATION

DISC:

COMMODORE DEALERS were forming their own user group called DISC, headquartered in Atlanta last year. It was intended to help dealers find and evaluate CBM software. We've heard nothing since, but if interested, contact President Alex Amor, 50 W. 68 AV. Miami FL 33126 (305/261-7866) or Philip Snedegor, Jr., 1119 Wilderness Trail, Richardson TX 75080 (214/669-1758).

Disk Drive Parts:

Need parts for a 2031/2040/4040 disk drive that Commodore can't supply? Try contacting the manufacturer directly: SHUGART ASSOCIATES, 475 Oakmead Pkwy., Sunnyvale CA 94086 (408/733-0100). Ask for Ivy Lewis.-Dick Immers

Hardware Chips:

For ordering hardware chips, your best price breaks start with a minimum order of 8 per customer.-Jerry Key

Repairs:

Speaking of repairs, I highly recommend Commodore's SERVICE SCHOOL, tuition \$750, for dealers only. Provides over 540 pages of repair instructions, 2 clip-on ROM-based testers, several test diskettes and cassettes, 3 days of instruction, and free lunch!-JS

PHILOSOPHIES ON SALES AND SERVICE:

On Customer Satisfaction:

Some readers have praised or panned specific companies (see following section). We remember bad software from 2 years ago. We'd assumed more recent program offerings do run. Now we know better. But we don't do anonymous reviews. If a program is a rip off, get someone to review it openly.

On behalf of sellers, it's VERY difficult to write programs for all PETs. We have four ROMs, three character generators, three screen widths, four disk densities, more than three DOS's from Commodore, plus two other incompatible brands of disk drives, each of which comes in more than one variety, three printer ROMs and six printer models from Commodore, plus several brands of competing printers and printer interfaces. I can hardly wait for the new line!

Even so, companies should provide upgrades for new equipment. A usual policy is to provide fixes at no or low charge. Major improvements are available for the difference in price between the versions. The line between fix and upgrade is fuzzy. Most good programs can be, and are, improved.

Some software houses refund money for returned programs. Others don't. This makes it essential to know whether a program will work for you. If you order sight unseen, say as much as possible about your equipment. The company may warn you if the program won't work for you, or notify you if they discover a problem with your equipment. If you don't get good service, write again.

In this light, we received a complaint about a requested fee to upgrade ASM/TED. The complainer had good points, and so did Carl Moser, ASM/TED's author. I find Carl to be honest and helpful. If not, I wouldn't have started his ASM/TED user group. Given my bias, I won't judge this disagreement. However, it shows the need for both sellers and buyers to do what they can to achieve customer satisfaction.-JS

LOCAL vs. MAIL ORDER Dealers:

This is a perennial hot issue, made hotter recently by Apple Computer Company's decision to ban mail order sales of Apple computers. As this goes to press, we understand Commodore U.S. may be giving some thought to a similar move. As you might expect, Apple's local dealers liked the ban; hobbyists and mail order houses didn't. What effect it had on Apple's future we haven't heard.-JS

"As a dealer who is providing complete service and customer support, I don't appreciate mail order firms who undercut retail prices (which already have such low margins for the dealer.) Case in point: I spent 30 hours off and on with a potential customer in our town, demonstrating machines and software, and giving him the benefit of much time and money spent in researching resources. He made his list from this and got prices from AB COMPUTERS which were very close to the wholesale prices I pay as a dealer. He gave me the opportunity to match them, which I refused to do. There are a lot of expenses that have to be paid for out of the meager mark-up, including demonstration and consultation time, plus all labor required under warranty. Result--he bought his boxes from AB Computers, and guess who he came to for help after they arrived? That's right, his local dealer! I don't know of any dealer who is willing, more importantly--**who can afford** to give free local support to cut-rate mail order houses."-Bob West

REPLY: Which is more important to you, buyers, fast local service (especially later on) or low initial cost? All Commodore dealers are required to service their products. For users with limited patience and imperfect understanding of computer problems, local dealers are worth their weight in gold. Mail order houses serve a purpose, too, by providing discount prices to experienced users who don't mind the time, postage and phone costs of support by mail-ES

On Advertising (Reflections of a Dealer):

"One lesson I have learned about marketing anything to do with computers is an ad does not sell your product, but draws postcards asking for more free information. So if you ever sell a program through the magazines, sell the documentation, or add to the price to cover sending many letters out ~~with~~ little return."-Chet Lewis of Progress Computers

National Dealers and Mail Order Houses:

A.B. COMPUTERS:

REVIEW #1: Reader Candy Jens wrote praising AB COMPUTERS, of Montgomeryville PA for "good material, good prices, speedy delivery" and CIPUG agrees.-JS

REVIEW #2: "Probably one of the most recognized mail order dealers for Commodore equipment and related hardware/software in the country. Ever since they have moved, though, it has taken a long time to get orders filled. It took them four months to send me the SUPERGRAPHICS software, which didn't work right. Luckily, I was able to fix it. I have heard many other people with similar complaints. A friend has a small suggestion to make: start using computers to handle orders! They currently are hand writing orders. I like most of the software/hardware that AB sells, but I cannot tolerate ultra-long waiting times."-MN

REVIEW #3: "No store here }in San Antonio, Texas} handles Commodore except as a side line for schools.... Most of us buy our equipment from A.B., and in general, A.B. has been a good, reliable source, but lately they do seem to be taking an awful long time to make shipment after the order is placed."-Larry Williams

REVIEW #3: "Have experienced rather frequent delays in obtaining ordered equipment. I wrote them a letter suggesting a postcard be sent on delays, but received no answer. Other users in this area have had similar problems and lots of mixed up orders. Most were cleared up, but some with a lot of agony. Business must be too good!"-Jerry Key

REVIEW #4: A.B. DID have a problem with an employee. Gene Beal at AB told me Jerry was one of those whose orders were affected. Changes were made to solve that problem. Some delays are from Commodore itself. When ordering from a distant dealer, I suggest ordering by phone, and asking first whether what you want is in stock. Some companies lie about this, but Gene never does.-JS

COMPUTER MAIL ORDER

REVIEW #1: "They were very friendly and a pleasure to deal with. Just order by phone and have a money order ready when the goods are delivered. My 4022 arrived within 5 days. It suffered slight shipping damage (a bent paper advance knob). I was informed in a quick call to CMO (via their toll free number) that I could send it back, take it to a local Commodore service representative, or attempt to repair it myself. I opted for a 4th alternative. I ignored the problem."-Greg Johnson

REVIEW #2: "Following the above favorable review, I confidently sent them an air mail order on 12/15/81. What a mess! Although my order said I have a 4032, on 1/19/82 I received a postcard asking what version of BASIC I have...(all 4032's have BASIC 4). I immediately sent them a telegram saying I had BASIC 4 and reminding them to send my order by air mail. (Because sea mail to New Zealand takes 4-6 months, I had sent an extra \$11 for air mail). On 1/30/82, I received another postcard }same question}.... I immediately sent a postcard }with the same answer}. Several weeks passed with no word. I wrote to them for the fourth...fifth...sixth time. Again no word. At last, on 3/27/82 I received a post card (air mail!) saying that my order

had been sent sea mail on 11 February. There was no explanation why it had not been sent air mail and no offer to refund my \$11. Tsk, tsk. Out of 8-9 mail-order firms with whom I have dealt, COMPUTER MAIL ORDER is unquestionably the worst. I'll be lucky to receive my order before mid-July (7 months after my order).... My big worry is what to do if the POWER chip I ordered doesn't work. I don't dare sent it back to CMO -- I suppose I'll have to try sending it direct to Professional Software. Oh, dear."--Steven Darnold of New Zealand

REVIEW #3: "They have the lowest prices advertised on most Commodore equipment, with a toll-free number to place orders or make inquiries. Most people that I know have dealt with them have given them high praise. I got a VIC 8k expander from them; however, it took them quite a while before they got it to me. They made a mistake the first time they sent it; instead of a VIC 8k expander, I got an ATARI (tm) 16k module. I called them to explain the problem, and was placed on back order for awhile when I sent the ATARI (tm) module back. I finally received it one month later. I would order from them again, but not order many items in the VIC product line."--MN

COMPUTER MAIL ORDER EAST. "Toll free line definitely a plus but doesn't really help a lot. Make sure that they have the item you want on hand or it make take a while, took over two months for POWER. Contact at CMOE admitted it was their buyers that held things up."--Jerry Key

COMPUTHINK (makers of disk drives and added memory): "I've spoken quite regularly with Computhink people over the past year. I had one problem with the disk in the beginning. They paid (via Federal Express) to have it shipped down to them from Alaska, and returned within 5 days, the same way. I like that attitude!!"--John Malone

DATA CAP: "...after receiving ARROW [see Utilities reviews], I was unable to perform any high speed functions associated with the chip. Remembering that another chip with similar cassette features required the newer type cassette deck, I decided to trade my old one. When the new deck arrived, I eagerly plugged it in and recorded a program in high speed...[unsuccessfully]. So I decided to place a call to DataCap to find out once and for all what I was doing wrong. Mr. Milt Bathurst listened to my story and then suggested that if I was using tape that had a leader, that I run past the leader before recording. To my amazement, my program was saved.... Since I] purchas]ed] ARROW in]5/81], Milt has made an improvement in High Speed Save by adding a 10 second header."--Pete Vandrew

DISKS, ETC.: "Best buy I've found for printer paper and labels. Orders by mail or phone. Very helpful, good service. Sells paper (3300 sheets of 18 lb.) for \$20 and labels (box of 5000) for \$11. A 10% discount to club members takes care of shipping costs."--Jerry Key

EASTERN HOUSE SOFTWARE: (Tongue-in-cheek dept.) "I must say I am very disappointed with Carl Moser and EHS! It took him almost 4 business days from

the time I called him to send a version of MAE for BASIC 4.0. But seriously, he even sent it without waiting for payment. I feel \$20 for an upgrade on a \$170 package is very modest. This has to be one of the best companies around!"-Ralph Bressler

ECLECTIC SYSTEMS CORPORATION:

REVIEW #1: "They said over the phone that they will match or even beat most other mail order houses. I ordered an RS232 interface from them. They told me what day I should receive it: they were right on the nose. Since they sell more products than they advertise, use their toll-free number to find out. I am for sure going to buy from them again!"-MN

REVIEW #2: "Rockwell employees who buy their own equipment on the company plan actually received their equipment from ELECTIC SYSTEMS CORPORATION. Seems like underhanding dealing to me...."-Jerry Key

FANTASY GAMES SOFTWARE: "I purchased ESCAPE FROM THE DEATH PLANET from Fantasy Games Software. After having difficulty in getting it to load from my non-CBM cassette, I wrote for help. They were very prompt in replying and referred me to their "troubleshooter", Jerry Pietenpol in Raleigh NC. From him I received a 2 page typewritten (single-spaced) response along with a new cassette in exchange for the one I was having trouble with, and some "Q-tips" and intructions for cleaning my tape recorder. In short, I was amazed at the effort this company was taking to support a customer."-Clark Stewart

FSS:

REVIEW #1: "I've bought a lot of programs in the UK and USA, and there were only 2 companies with no reply: HAYDEN and FSS. Six months ago I wrote to FSS software to order 2 of their programs, NUCLEAR WAR and DEATHRACE 2001, enclosing \$32 (airmail price). As they didn't answer, I sent another letter - no reply! I finally called them 2 months ago (very expensive!!!). A friendly man on the phone told me something must have gone wrong; he searched in his office and found my letter. He apologized to me and promised to ship my software immediately, but I STILL don't have their programs. If you had good dealings with them, could someone remind FSS of my order?-Fritz Schafer (West Germany)

REVIEW #2: "I have bought/sold a number of copies of the FSS software. Maybe you should let your readers know that they must specify 40 or 80 column version. I've run into some problems with 80 column, but Charles Lohf is sending me a new master disk which will hopefully solve the problems. I've bought it onthe basis of one of the reviews in the Gazette."-Sieg Deleu

HAYDEN:

REVIEW #1: We waited 8 weeks for a book on converting PET/Apple/Radio Shack programs. When I called, they couldn't find my order in their files, but the book did arrive a week later.-Sue Key

REVIEW #2: "I've bought a lot of programs in the U.K. and U.S.A., and there were only two companies with no reply: HAYDEN and FSS..."—Fritz Schafer (West Germany)

HUMAN ENGINEERED SOFTWARE (HES):

REVIEW #1: "Received HESLISTER without needed changes to recognize Basic 4's commands. Brief letter resulted in a new copy that works very well on all BASICs, letter of apology and some very nice additional routines for the inconvenience! Human Engineered Software is not a name, but a fact in their business! Programs received included BASIC AID, versions of Wedge, TINY MUSIC, COMPACTOR and others... I have to hand it to them for their attitude, even if I already have what they sent. It's amazing that people with lower cost programs try so hard to please, when it would be so much easier not to."—Jerry Key

INSTANT SOFTWARE: "Last year, I ordered a PET Demo cassette...had loading problems...returned it and they replaced it. Instant Software claims PET has the highest rejection rate of cassettes...I returned it again stating it will not load...and I have NEVER had a load error on a Cursor tape on any of (my eight) cassette decks..."—Bob Bergevin

MICROSPEC LTD: "I learned of MicroSpec's software through their ad in **Compute!** and wrote for their free catalogue. I am very pleased with their operation as they are helpful and prompt. It took only three days from the time I called in the order to the time I was running the programs. Needless to say, I will not hesitate to deal with them again.... MicroSpec markets their software for the VIC under the name of VICWARE."—Richard Williamson

NEECO: NEECO, of Needham MA, was listed as a "good guy" dealer in the old **PET Gazette**. JS affirms their wholesale division is still good to dealers.

SKYLES ELECTRIC WORKS:

REVIEW #1: "June 1980 I bought a Skyles Electric Works 8K memory-expansion board. Worked wonderfully until recently, it began to hang up my PET. Writing Skyles about their honoring TWO-YEAR GUARANTEE and some possible alterations, I received in a FEW DAYS a phone-call and letter from Bob Skyles assuring me they would. So far my dealing with Skyles has been great!"—BA.

REVIEW #2: "Let me add my own plug for Skyles. I've had memory problems - real strange ones - on two occasions. Both times S.E.W. fixed the problems quickly and at no cost! They ship their products fast, too."—Bruce Jaeger

REVIEW #3: "In November 1981, I sent for their catalog advertising a splashy modem package, D-CAT. Skyles offered not only the modem, but also a free subscription to **The SOURCE**. I paid \$395 for D-CAT. A full month passed before I called...I called again 2-3 times. In early April, I finally gave up and demanded a full explanation

and my money back, when they finally told me that the software hadn't been finished yet! The SOURCE also charged me \$10, which I had to personally cancel and also pay the extra fee to have it turned off. It angers me that Skyles advertized a product they hadn't completed...and also wouldn't admit it until I demanded an explanation. I'd like to know if anyone else ever received this modem package or had similar troubles...John Buckley, Belpre OH

REPLY: In 1980, a similar situation was created when JS tried to write a software review of Carl Moser's MAE ASSEMBLER/text editor and compare it to Skyles' advertised MACROTEA. When JS couldn't find MACROTEA, he wrote that information into his review for **Compute!** magazine. When **Compute!** finally published the review 6 months later, MACROTEA had just been released for 2 weeks--close to one year after it was first advertised.--ES

SUPERSOFT:

REVIEW #1: "In the UK there is a superb software company for PETs only, named SUPERSOFT. Most of my good programs I bought from them (SUPER-GLOOPERPACMAN, ASTEROIDS, COSMIADSGALAXIANS, COSMIC JAILBREAK, MEREORITES, ...). You can buy a SUPERSOFT program without worrying whether it will be good. **Every** one of their programs is superb and well worth the money."--Fritz Schafer

REVIEW #2: Among SUPERSOFT's current offerings is SUPERSORT, but it is not the same as my own program originally of that name. This should be comforting to all of you who called to warn me about them. Also note that some of the games mentioned above are from Commodore U.K.'s Public Domain arcade series.--JS

TSASA Programs:

REVIEW: "The TSASA programs appear to have been written by someone who took a beginning BASIC course and hurriedly put together a lot of short programs which really amount to subroutines or incomplete programs. They require users to get involved in programming and enter input as data statements. And if you want to use the printer, you have to buy another program and merge it with the one you want to print from. (I wonder if they know the printer manual has such a program in it.)

The Amortization program prints integers (dollars, no cents) with the numbers unformatted. The figures are inaccurate. And there are programming errors. Yet it is advertised as a program that will put you in competition with the company you now buy amortization schedules from. They had a good idea. We can use some business software for the VIC. They just went to market before they had a product. We returned their software, and are still hoping they will be kind enough to return our money."--Bob West

EDITOR'S NOTE: We often heard the same tale in the early days of PET software. Do NOT buy VIC programs from an unknown company until you have tested them or seen them reviewed; plan on following this rule until the VIC market settles down a bit.

Local Dealers:

In **MANHATTEN, KS**: "I would also like to mention the local Commodore dealer (Bob Johnson, MIDWEST COMPUTERS, Manhattan, KS.), as he is very helpful with both hardware and software problems. He has written quite a bit of software and gives it away with hardware purchases (i.e., he furnished a modem program and enough advice to allow me to interact with the Kansas State University mainframe computer, which has half-duplex dial-in lines.)"—Ross Sherwood

In **SPRINGFIELD, IL**: "Welcome to the COMPUTER COUNTRY. This St. Louis chain has just moved into our area in Springfield, and temporarily at least, their entire lineup is from Commodore. What's more, they're selling lots of Commodore computers.—JS

In **New Hartford, NY**: Bob recommends Tony Violante of UPSTATE COMPUTER SHOP of New Hartford NY, near Utica as a helpful dealer.—ES

VIRGINIA MICRO SYSTEMS: "I would like to praise the men...Stu Mitchell, Roy Busdiecker and Phil Poole. They have been very sensitive to my needs and respond, as did you all, to my requests for help."—B. Earle Mountcastle

DISKETTE NOTES:**ON DOUBLE-SIDING SINGLE DENSITY DISKETTES: Don't!**

First, when flipped, the diskette rotates in reverse, pulling dirt back onto the surface from the pad. Second, Commodore says 2040 drives may write-thru to the reverse surface.—JS

XRAY THREATS TO MAGNETIC MEDIA:

When mailing diskettes, X-rays may erase magnetic media. Wrapping in aluminum foil gives some protection, as does well-padded box.—JS

"The problem is in the pulse nature of the Flash X-ray devices used for baggage inspection. These devices typically discharge a very high voltage capacitor onto a vacuum load in a very short time period. This is a messy operation which results in a high frequency (rf) discharge. This magnetic field is what does in the disks just like a super demagnetizer. The aluminum wrap builds a 'screen house' which can partially protect the disks. My advice is that you never let magnetic media go through this sort of inspection since it means the disks get close to the rf field. Furthermore, you should make a point of keeping your disks (and tapes) as far from such devices as possible. The public is protected fairly well from X-radiation by the built-in shielding, but it appears no one gave much attention to the rf problem associated with these units."—Quintin Johnson

A Canadian PET user commented during our recent trip, that British X-ray scanning for letter bombs is so powerful, especially in the southern part of England, that it's a wonder any disks or tapes survive the check at all!-ES

OTHER DEVICES THREATENING MAGNETIC MEDIA:

Several people have warned us about leaving magnetic media next to telephones. Even if 6 inches away is "safe", who wants to take the chance of erasure when your computer buddy gives you a ring?-ES

"PETs also dislike electronic flashguns."-Geoff Capell

EDUCATION NOTES

Classroom group teaching hints:

1) If you bought a video buffer to hook a 9" PET to a TV monitor for displaying programs to large audiences, and cannot get it to work with 12 " models, try this 1-line program before firing up the display:

```
0f0i0to12:rEj:p059520,l:p059521,j:nE      :dA62,40,34,15,32,,25,28,,7...16
```

Note that it uses abbreviated commands to fit on 1 line. This is the same as:

```
0 for i=0 to 12
1 : read j
2 : poke 59520,i
3 : poke 59521,j
4 next
5 data 62,40,34,15,32,,25,28,,7...16
```

It will make the display begin in column 21, without the right half of the display, but the monitor will show a nice, black-on-white centered display. It's cheaper than Madison Computer's \$65 model, and saves using a ROM too.-JOH?

2) The same program above was on KRP's bulletin board, with one exception: line 5 had different data. It read:

```
5 data 62,40,50,15,33,0,25,30,0,7,0,0,16
```

The first 40 is apparently the line length divided by 2, the 15 is the start column, the 33 and the 30 affect the vertical position, and the 7 sets the number of dots of height per character.-KRP

3) Another variation of the same technique is this program:

```
10 read a,b:if b0 then end
20 poke 59520,a: poke59521,b: goto10
30 data 0,60,2,46,4,32,7,28,0,0
```

This one originally came from Europe and is intended for use with their TV standard, but we did a few modifications that seem to help.-KRP

Public Domain Software Available:**COMMODORE EDUCATION ADVISORY BOARD (CEAB):**

COMMODORE CANADA has released seven 4040 diskettes of primarily educational public domain programs chosen by the Commodore Education Advisory Board (CEAB). These diskettes are sent FREE to all Commodore Canada dealers AND TO ALL REGIONAL U.S. COMMODORE REGIONAL OFFICES, who may then distribute them for a reasonable copying fee. Our local dealer, Computer Country, has received a copy from Commodore on four 8050 diskettes, along with a matching **Educational Marketing Resources Book**. The ATUG library also has the original 7 diskettes (See under ATUG Notes).-JS

Educational Magazines and Newsletters:**Journal of Computers, Reading and Language Arts:**

A new quarterly **Journal of Computers Reading and Language Arts** has been announced by its editor, Gerald H. Block. He is seeking articles relating computers to reading and writing in school. No word yet on what CRLA will cost, or whether it will pay for articles. Sample jargon from his publicity release: "The theme of the journal will be pragmatic in perspective. It will emphasize presenting papers which have clear classroom/teaching implications."

Anyone interested in this venture may contact Mr. Block at P.O. Box 13039, Oakland CA 94661.-JS

ICUSS: Illinois Commodore Users Swap System:

The following policy statement is taken from the first issue of **ICUSS: Illinois Commodore Users Swap System** newsletter, published by Robert Lemon (and Frank Burzynski). It is written by educators for the general PET public.

POLICY STATEMENT:

If there is one thing you don't need, it's another swap system. If you're writing your own software, a swap system is merely a way for less talented people to get copies for free. If you wanted to steal things, you'd buy an Apple or take up mugging little old ladies in the park. Anyhow, swap system newsletters only have two kinds of articles: my students did well...aren't I wonderful; and my students are terrible...aren't I wonderful to put up with them. All the rest of that stuff is advertising. Hopefully, this swap system and this newsletter will be different.

We will try to respond to three needs. All of us have small programs which don't merit the hassle of marketing, but which are useful. These should be traded around. We don't have sufficient finances to buy all available software. We need evaluations... but the magazines fear losing advertising revenue and therefore only review software when they can say something "nice." This leaves us with no warning on the dogs. We all have programs which we would like to sell. A little free advertising to educational users of the PET would be better than an expensive ad in a general magazine.

This swap system will therefore have three aims:

- 1) the exchange of public domain software
- 2) the timely dissemination of reviews of commercial software
- 3) the publishing of a bulletin board listing software available for sale by members.

The system already has five reasonably filled disks of educational software which are in the public domain. These more than 200 programs constitute a reasonable start. Success is dependent upon your response. If you send software, you will receive your tape or disk back with other items recorded on it. It is expected that all items sent will be unencumbered by copyright or marketing restrictions. You will also receive a list of items available so that you can prioritize your requests. If you don't submit anything, there is a high probability that you will not receive anything. Please do not expect all 200 titles at once.

I don't want to start an intimate relationship with my C2N. Nor do I wish to provide dust catchers for archives. Furthermore, the only reason I'm willing to distribute is because I too want additional software. Sharing is a two way proposition.—Robert Lemon

MIDNITE GAMING NOTES

by Jim Oldfield

This is the first installment of a new column devoted exclusively to the world of PET and VIC gaming. Within this realm we will be covering all aspects of games, their strategies, new and old ideas, high scores, and all that pertains to games. This is an invitation to all you GAMERS out there burning the MIDNITE oil to share with us what you're doing with the games you play. If you have a favorite, let us know. Have you touched up a game to make it better or more to your own tastes? Write it up. If you have any hints on playing some of the games we've reviewed, drop me a note. And on the subject of reviews, if you've bought a game and haven't seen a review for it, write your own review! It's easy! There's enough of us out there playing on our PETs and VICs that we should be heard!

As I said earlier, I will be printing a list of high scores. This includes PET games and VIC cartridges. Just give your name and address, the date, the game or cartridge, what level (if any), and your best score, along with a picture of that score. An example would be: Joe Customer, Smallville IL, July 4, 1982, VIC Avengers, 12500 points.

Beginning with **Midnite #9**, a true game-freak in his own right will accompany me in MIDNITE GAMING, John O'Hare. He has marketed many games for the VIC, and his game of MONOPOLY 2001 for the PET was a TORPET game of the month. But you don't have to be a programmer to write in MIDNITE GAMING! If you play any of the games, we want some correspondence. So now's your chance to share.

Besides John and myself there have got to be more of you who're crazy about games. Let's face it, isn't that why we bought our computers? Yeah I know, I told my wife the same things -- you bought it to do your checkbook, or figure your taxes, or do your mortgage schedules, or calculate your savings or.... Wrong-o! I wanted to play STAR TREK! And next time, that's what I'll be talking about: STAR TREK lives!

HAM NOTES

by Clark L. Stewart, W8TN

This new column is written for ham radio operators who also use PET/CBM/VIC computers. There are probably hundreds of such people. So far I have been able to identify about 80. I have prepared an address list of those, with a description of their computer systems where known. You may obtain this list by sending an SASE to me at 104 Henrietta St., Ravenswood WV 26164. Please indicate in your note that you want the HAM PUG (Ham PET Users Group) List and include the appropriate information if you want to be listed with this group.

There are at least two PET NETs in operation that I have "checked into": Saturdays beginning at 8:30 a.m. Eastern Time on 7.156 MHz and Sundays at 12 Noon Central Time on 14.240 MHz. Both nets juggle the frequency to get around the QRM. Those on the West coast may want to check with W6HJE about a 40-meter net. If there are any others with an established (or new) PET NET, please send me the information on it and I'll see that it gets passed around.

For those of you with the Macrotronics RTTY program, K4EVY (Hank Roth) has come up with a machine language subroutine which allows you to get hard-copy from the program. He will send the program to anyone who sends him some public domain programs on tape or 8050 disk. Hank has also volunteered to be this HAM PUG's librarian for tape and 8050 format. There's no charge for copying programs (including VIC). Just send him a tape or disk with the programs you wish to contribute to the library and indicate the type of programs you wish in return: games, educational, utility, ham radio, etc. Hank is in the process of moving to Orlando and can be reached in care of John Roth, 817 San Domingo Road (Pine Hills), Orlando FL 32808. Check into one of the PET NETs for information on program exchange in formats other than those supported by K4EVY.

Macrotronics told me at the Dayton Hamvention that they have stopped supporting the Commodore line. I guess the money is all with TRS-80... However, I did see a Kantronics presentation of an RTTY hardware interface and software for the VIC-20. The display was modeled after that of Macrotronics, with split screen showing the transmit buffer, receive buffer, current information being transmitted and status line. It looked quite good. The list price on the hardware was \$189.95 and the software was \$49.95 but both will probably be discounted.

For those of you with modems, the AMSAT (Radio Amateur Satellite Corp.) Software Exchange (ASE) is operating a bulletin board using Bell 103-type modems at 512-852-8194 0400-2300 UTC Monday through Friday. This is separate from the AMRAD CBBS at 703-734-1387 which is operated by the Amateur Radio Research and Development Corp.

If you have information useful to HAM PUG, please contact me by letter or on the air (I usually manage to participate in the Saturday PET NET). Let's create a disk full of programs related to ham radio for anyone interested. This would also serve to encourage hams to purchase PET's over other brands. Let me hear from you, but please enclose an SASE if you wish a reply.

MODEM NOTES

AGNET Notes:

"For those of you who have always wondered, AGNET, the agricultural computer system in Nebraska, works with normal modem systems, such as ORION with the 8010, MCTERM, etc."-KRP

CompuServe Notes:

As I understand the situation from one CompuServe user in Tucson AZ and another one in Columbus OH, Commodore users cannot at the moment get full access to upload and download services of CompuServe. Anyone can get ON CompuServe. All you do is buy a TRS-80 manual from Radio Shack, or a VIC Modem. However, until Commodore sees fit to release their protocols to CompuServe for access to the CBM inner system, PET users may not be able to download programs from CompuServe. (But don't underestimate the users; JOH is having a great time exchanging programs via the SOURCE.)

Meanwhile, one user in Tucson AZ is supposedly trying to start up a CBM Users Group Special Interest Group on CompuServe and a Commodore staffer is supposedly setting up a companion users group for U.S. Commodore dealers. Another Commodore staffer described the CompuServe system as much easier to access for the uninitiated user than the Source, once the hierarchical charts, menus, and other protocols are established.-ES

The Source Notes:

For those of you who subscribe to The Source, **Midnite** was briefly placed on The Source by The Source PET User's Group, and may appear there again. Please address Source mail for CIPUG to JOH at TCY 946 (PETMAN).-ES

If you are a SOURCE member, try the following at command level:

```
>BASIC (12)CL2505>READ
>BASIC (12)TCY946>READ
>CBM
>POST READ CBM/PET-COMPUTERS.
```

PET Bulletin Board Systems

HERE are some useful MODEM NUMBERS for MIDNITE READERS (either free bulletin boards, to reach CIPUG members and PET "MUGs", or all PET):

- a) ABBS GAMEMASTER, Chicago IL 312/475-4884 (24 hrs.)
- b) AMRAD CBBS 703-734-1387 (Amateur Radio R&D.Corp.)
- c) AMSAT CBBS 512-852-8194 (Soft. Exch. 4am-11pm UTC)
- d) APPLE NET, College Station TX 713/654-0759 (Apple; free for now)
- e) BULLET-80, Springfield IL 217/529-1113 (TRS-80; a slow way to contact Strasma)
- f) BULLET-80, Houston TX 713/331-2599 (CHUG's MUG group)
- g) Family Historians' Forum 703/978-7561 (**Genealogical Computing**)
- h) NET-WORKS C.A.M.S., Decatur IL 217/429-5541 (Apple; contact Oldfield)
- i) PETBBS#1, Ypsilanti MI 313/484-0732 (may be defunct)

- j) PETBBS#2, Milwaukee WI 414/282-8118 (was down briefly in 3/82)
- k) PETBBS, K.C.C.I. MO 806/356-2382 (KCCI Club)
- l) PunterBBS, Toronto ONTARIO 416/624-5431 (Steve Punter)
- m) " " " #2 416/923-1917 (TPUG:8pm-8am)
- n) PunterBBS, Racine WI 414/554-9520 (SEWPUG and Tim Tremmel)
- o) PunterBBS, Chicago IL Dealers only (Keith Peterson, CBM Chic.)
- p) PunterBBS, Wyoming 307/637-6045

MODEM Test:

On function of the CBM 8010 modem that is rarely tested but can be vital is the operation of the status bit. First a bit of theory.

The 8010 has a two character buffer. When a character is received, if the IEEE bus is busy, it is put into the buffer. The 'status' tells the computer that something is waiting to be read. Some programs use this method, some don't. So if your modem seems to work but won't do certain operations or work with certain software, test the status function.

Test the status operation of the modem with this program:

```
1 open5,5
2 get#5,a$:printa$:st:goto2
```

Plug in the modem and run the program. Put the modem in originate mode and in the test position. The program should print lots of 2's, signifying 'buffer empty'. Now whistle into the 'cord' end of the modem. Random characters will appear on the screen along with a status of 0, signifying 'character in buffer'.

Most modems that have a bad status don't send the status '2'. With this program, you can be sure yours does.-KRP

Modem User Groups (MUGs) Notes:

ILLINOIS:

One new PBBS using Steve Punter's programs is sponsored by Keith Peterson of Commodore Corporate out of Chicago. It is for dealers only, and offers a LOT of information.-JS

TORONTO, ONTARIO:

Dear Mr. Gazette,

Your name has been selected from a computer-generated list, and you may be the winner of a free...oops, wrong form letter.

The Toronto PET group is hanging together a PET Bulletin Board System ...a little shaky yet, but running typically 8PM to 8AM. The number is 416/923-1917.-Jim Butterfield

Steve Punter has been running his own bulletin board system for over one year. Phone number is 416/624-5341 (evenings only). It uploads and downloads programs as well as handling messages. Call him to download the latest versions of his FREE terminal package. If you want to start your own bulletin board system, you can buy his bulletin board package.-ES

John Easton has been instrumental in setting up two different PunterBBS systems. One is run by the Ontario Ministry of Education for Ontario educators. Contact John at the Ministry during the day (phone:416/965-1230) for more information on this education bulletin board.

The second one John has set up is run by Christian Computer-Based Communications (CCC) through Alderwood United Church of Canada for spreading the Gospel by use of computer technology. Contact John in the evenings at 416/251-1511 for more information on this religious bulletin board. (Please remember he also needs to sleep!)-ES

TEXAS:

CHUG's new MUG (Modem User Group) reports:

Steve Garmon (713/433-7086) and Warren Laurell (713/467-5266) have volunteered as Houston area CHUG **Modem User's Group** co-ordinators. You can direct questions to them about future MUG activities and modem nets.

The following CHUGGERS have been noticed on the local, free (BULLET 80) net (713/331-2599): John Walker, Daniel Walker, Peter Farrow, Steve Garmon and Pete Farrow. The net offers options for TRS-80, PET, and APPLE II. Usually, it starts at Noon of any day and continues into the night. It's mostly just a busy signal from 5pm MDST to midnite. You can tune in on it with a 300 or 1200 BAUD modem. The (VOICE) on this net offers more information and can be reached at 713/331-3776. Tell him thanks from CHUG. We appreciate it.

Another free net in the area is APPLE NET, an Apple II-based, but Commodore compatible, bulletin board system. Located at Young Electronics in College Station TX (phone 713/693-3462), this APPLE NET will soon be operated on a paid subscriber basis.

We tried the VICMODEM during our June 10, 1982 meeting.]We've excerpted MUG's comments on it under VIC Hardware Reviews.]

MUG is supporting an effort to help put the deaf and verbally impaired on computer modem nets. The time has come to recognize that these people now have the tools to greatly overcome their handicap. What better way then by the very inexpensive but p o w e r f u l VIC-20 and VICMODEM? CHUGger "Slim" Wilson (ham radio W5PWO) of Beaumont Texas (713/-833-1646) is the man to contact if you want to help him out in this worth-while effort. Slim has a lot of experience working with voice and hearing kids (v and h). He likes to tell about their excitement when they are able to modem to the folks at home. Computer modem activity for the v and h is still very new, and there is a long way to go before it beccmes common place. Maybe we can help speed up the process.-from **Hardcopy**

WISCONSIN

Another PunterBBS is sponsored by Tim and Phyl Tremmel of SEWPUG (Southeastern Wisconsin PUG) in Racine, Wisconsin. The number is 414/554-9520. For those of you wanting the latest **Midnite** news and reviews, you can get it here! For reasons of space, only new information added to the **Whole PET Catalog** is included for issue #8. Tim is also on **The Source**, #TCF059.-JS

Stock Broker Systems:

Has anyone heard of **TICKERSCREEN** in New York City? Supposedly one can actually order stocks through a discount broker by placing order at nite with your personal computer over phone lines. Broker comes in next morning and executes order. I have written, but no reply, so don't know if they actually exist. So far as I know, none of the other stock services allow you to actually place an order.-Ed Crossman

REPLY: While we don't know anything about **TICKERSCREEN** yet, KRP reports that CompuServe is supposedly setting up a stock broker system, which may cost 50 cents per minute (expensive, but with lots of good information). Please write in so that we can print more information as we hear about it.-ES

PROGRAMMING NOTES

CBM BASIC Hints:

1) POKE 14,1 before an INPUT statement will cause suppression of the '?' prompt.-JOH

2) Looking for a new way to get to the built-in machine-language monitor? Here's a new BASIC bug that may do the trick -- just enter the number 351000 all by itself on a blank line.-JS

3) NAME A ROM CONTEST (for the different versions of CBM BASIC).

Three years have passed without the various Commodore departments agreeing on the name for the first ROM used on the 40 column large-keyboard PETs. **The Commodore User Club Newsletter**, in announcing the availability of "upgrade" ROMs for older PETs to give them the same BASIC as the large keyboard models, called the upgrade BASIC 2.0. For the next year, this was accepted as the title within Commodore, although there had been another upgrade a year before, called the "019" ROM. During this time, a BASIC 3.0 was developed within Commodore, which changed only the method of garbage collection in string-handling and was never released. Then came BASIC 4.0, whose name everyone accepts, thanks be to the genius who had its name given in the sign-on message when PET is switched on. Thus, according to the CBM engineering department, there was first BASIC 1.0,

then BASIC 2.0 and now BASIC 4.0. However, someone must have wondered what happened to BASIC 3.0, so the CBM software department filled the gap by calling the BASICs 2.0, 3.0 and 4.0 respectively. Personally, I worry just as much about a missing BASIC 1 as I ever would have about a missing BASIC 3.

Jerry Key summarizes the versions nicely below: "The conventions established (don't tell Commodore U.S.) by Commodore Canada in *Transactor* (v.3, issue#1), adopted by Loren Wright in *Micro*(April 1981) and well said by the PET Guru, Jim Butterfield, are as follows:

CBM Canada and Wright Butterfield.

Basic 1.0 Original ROMs
 Basic 2.0 Upgrade ROMs
 Basic 3.0 (never released)
 Basic 4.0 Basic 4.0

To show this is not a trivial problem, there is a BASIC 5.0 already completed, but unreleased. I am sure a large number of Commodore computers have gone unsold, due to the confusion over all these mutually-incompatible ROMs.

The best solution would be for Commodore to enforce uniform naming on its various departments. May that happen soon! Meanwhile, we use 1.0 to refer to PETs with the first release of BASIC, both 011 and 019 ROMs. We use 4.0 for the BASIC in the 8032, which is nearly the same as the variants for 40 column PETs. We call the in-between BASIC 2.0, to be consistent with the VIC sign-on message (VIC BASIC V2).

Commercial Software Hint:

INVADERS key locations:

\$0E01 sets the speed you move and fire, normally 2. \$0E09 controls invader firing speed, usually 4. \$0E0E is the mother ship's speed, usually 6. Finally, \$0623 is the character after missiles to erase them--try \$66 for Wall Invaders. (Paul Higginbottom, in *Microcomputer Printout*)

Computer Screen Hints:

1) Here's a way for programs to learn if your PET has 40 or 80 columns:
 "wd=80:poke 8*4096+4*256,ch:if peek(8*4096)=ch then wd= 40"--Jim Butterfield

2) **CAUTION !!** Does your 8032 screen image suddenly shrink while becoming brighter? This is not a good thing. It may mean that the phosphorus is being burnt off the back of your screen. **Turn off the power as fast as you can.** Reload, but don't run your program and examine the listing. Look for and remove: POKE 59468,62.--Paul Dixon

Computer Internal Hardware Hints:**1) Places to put utilities like MICROMON or POWER-AID) on 12 inch Screen PETS:**

a) If you ground pin 20 on the J4 memory expansion connector, the standard ROM set is disabled, allowing you to have other ROM or RAM chips at the same addresses in spite of the originals' being soldered in.

b) You may replace the 2K ROM in socket UD7 with a 4K 2532 EPROM. 256 bytes of added memory are taken by PET's I/O routines, regardless of ROM contents, but nearly 2K of memory is yours. I keep POWER-AID in such a ROM, starting at \$E900, making it easily usable with sys59648.-JS

c) 48 unused locations are found in screen memory at the end of your screen, but don't appear on the screen. Use 34768+ to hide a small routine.

2) If you want to keep BASIC 4.0 machines with 9" SCREENS from flashing the EOI line (as in BASIC 2.0), change:

e3e5 a9 32 to a9 3c

e37d likewise

SuperPET and 8096 Hints:**1) Program Incompatibilities:**

Both SuperPET and 8096 have 64K extra RAM in overlaid blocks on top of the normal 32K and xK ROM. But BEWARE, programs such as WORDPRO 5 and WORDCRAFT 8096 that are written to make use of memory expansion, work on the 8096 but NOT on the SuperPET.

It's a long story, but a computer like PET (with 8 bit bytes and using 2 byte addressing) can only address up to 64K. Hence, special arrangements must be made to allow this expansion (by making more than one area of memory share addresses and switch these blocks into and out of use. The trouble is use of extra memory is implemented in different ways in the two machines.-Paul Dixon

2) Mounting the 8096 Board:

The 64K Expansion memory board sits about two inches over the main board of the 8032. This guarantees that you will need special lay-down versions of all the little boards that plug into ROM sockets. You'll also have to remove the 8096 to change a ROM. Since the lay-down boards also interfere with each other, there has to be a better way. Madison Computers did better with their CP/M board; it sits just under the video board at the top of the main cabinet.

Moving the 8096 Board takes some skill, and probably voids your warranty. The power cable to connector J10 on the main board is too short for upside-down mounting. You need to get a longer cable, or lengthen the one supplied. Then you'll need a way to mount the flipped board. I screwed one inch wood dowels

to the 8096 board to keep the board from touching the case, and then stuck the dowels onto the case with double-stick foam tape. (I've since heard that radio-control airplane tape used for fastening the controls works even better.)

If all goes well, you'll end up with plenty of room for stand-up boards on the main board, even if yours is a low-boy case like mine.-JS

3) "The DIAL-A-ROM (see later review) is still alive and well. We now have one which controls both sockets. A novel application is to use it to switch off both ROM sockets on the SuperPET. As you may know, the early versions did not have a switch allowing the user to "switch off" the ROM sockets. If they had an old WORDPRO in it, the SuperPET refused to come up on 6809 mode. The DIAL-A-ROM solved the problem."-Sieg Deleu

4) "It's always dangerous to handle disks and chips while standing on carpet, but SuperPET goes a step further. If you build up some static electricity and touch the processor switch, the system will do a reset. That is, cold start, everything gone. So beware, and get rid of that carpet!"-KRP

5) "Some of the new SuperPETs are being shipped with ROMs installed in the ud11 and ud12 sockets. These are just test ROMs, and are not required for operation of the SuperPET. Just remove them if you need to plug in some other ROM."-KRP

Disk Drive Software Hints:

1) Random Files:

The 2031 includes a demo program called RANDOMEXAMPLE. A working copy of RANDOM 1.00, which has been on 2040 and 4040 demo disks for years. RANDOM 1.00 has NEVER WORKED with DOS 2, but continues to appear on 4040 demo disks. Use RANDOMEXAMPLE instead, if you must use RANDOM files. Better yet are true relative files. I have yet to see a CBM demo program for those. The best Public Domain example, as far as I know, is Chris Bennett's latest version of MAIL LIST 4040 and MAIL LIST 8050, available from the Toronto PUG, our ATUG, and other user groups.-JS

If you have diskettes containing DOS 1 random access files, you can't move them from DOS 1 to DOS 2 with the COPY or BACKUP commands. You must write a program to read and rewrite the files, no easy task.-Doug Dachenbach

2) There are two former bugs in the 8050 disk drive. Both are fixed by the current -06 and -07 disk drive ROM set:

a) If two relative files with the same record length are open at once, one reading and the other writing, data may go to the wrong file. The cure is a short delay loop between reading and writing.

b) If, in using the COPY command on some (but not all) 8050s, you try to "copy d0 to d1" or vice versa, early units may quit with a false error after copying eight files. Use COPY program instead.

3) To kill the AUTO-INITIALIZATION feature on a 4040 disk drive, use:
"m-w"chr\$(243)chr\$(16)chr\$(1)chr\$(1)

4) It's not feasible on the CBM system to use disks with any Damaged blocks. Give them to Apple users!-Geoff Capell

5) If you INITIALIZE every time you insert a disk, a duplicate ID will never bother the system; it will merely confuse you.-Geoff Capell

6) Use >\$0:=S and the disk will return a DIRECTORY of SEQ files or use P for PRG files, U for USR files, or R for REL files. Do a >U; and then a >I to software reset the disk. These items were found in **Microcomputer Printout**. -Arthur Cochrane

7) Selective Directories:

a) To get a selective directory off both disk drives at once, either from the Wedge or from a PRINT# command, use a comma instead of a colon after the dollar sign: (Arthur Cochrane)

```
>$0:whatever
plus
>$1:whatever
becomes
>$.whatever
```

b) Users brought up on BASIC 4.0 probably use the DIRECTORY (DIR) or CATALOG (CA) statements to look at disk file names...but I found myself using the old method when looking at the contents of a demo disk that came with the SILICON OFFICE. The old form (load "\$0",8) will load the diskette directory in drive 0 as if it were a program. LIST (II) will display it on the screen. The demo diskette had about 150 files on it which make up about 10 different applications. ...every file [of a hotel management system application] was named in the form:

```
"x.hotelxxxxxxxx"
such as "t.hotel "
and "c.hotel "
```

[Since] these were a little difficult to see amongst so many file names, simply enter LOAD"\$0:??hotel*",8 and the required (19) file names are loaded and LIST will show them. "?" means any character in this position and "*" means followed by anything.-Paul Dixon

Disk Drive Hardware Hints:

1) To Check Your Disk Drive Motor Speed:

Turn your disk unit upside-down and watch strobe on bottom of drive under fluorescent light while disk drive motor is on. (You may have to remove drive from its cabinet.) If strobe marks stay still, all is well. If not, adjust pot, either on rear of drive or on analog board. If preceding sentence is confusing, leave adjustment to your dealer. Don't just run motor speed test program--it passes some disks that show adjustment needs under strobe.-JS

2) 2031 Hardware Bug:

We've heard a rumour that early 2031 disk drives have a hardware error that will sooner or later cause them to break down. On asking Commodore Chicago about it, we learned that there is an error on some early units that may cause them to incompletely format a diskette at times. This hardware bug can supposedly be fixed by adding a transistor to the disk logic board and cutting a couple of traces there. Unfortunately, we have not yet learned the specifics of the fix, or whether this fault can really lead to a breakdown of the disk unit. (Since ours is an early 2031, it is of more-than-academic interest to us.) If anyone is willing to share the fix with us, we'll try and report it in a future issue of **Midnite**.-JS

3) 8050 Disk Drive Problems:

A local dealer had an amazing failure rate on 8050 disk drives in 1980. Nearly all the drives received in the past few months were dead or ill on arrival. Other dealers tell us the 8050 has been very reliable for them. So what's the story? Well, three of the units had problems anyone good with an erector set could fix--LED in backwards, connector unconnected, and small part clear out of place. The rest were a mystery till we contacted Bill Seiler. It turns out the 8050 drives are intended to float freely within their mounting case. However, in shipping, the outer case flexes against the too-tight front cutouts, thus bending the drives or breaking the plastic doors. This in turn misaligns the heads, which are very critical on this octal-density drive. Moral of story: dealers, learn how to re-align Micropolis drives. Now that Tandon Magnetic drives are being used, the problem may go away.-JS

4) In a CBM floppy, the usual head-load solenoid has been omitted; this means the head is permanently loaded against the diskette. Consequently, if power is turned off for as little as a second while a disk is in the drive, a record can be destroyed.-Geoff Capell

5) Reader Gerald Key managed to do in the UK6 chip in his 2040 disk drive while converting some files. The program to be converted existed on both drives, and UK6 wore itself out trying to decide which version to read.

Printer Hints:

1) Are you wondering why you can't send monitor listings to the printer with BASIC 4? You're probably calling it with 'open4.4:cmd4:sys1024'. The fix is to type 'open4.4:cmd4:sys54386.-JS

2) "Be careful when doing peel-off labels. They can roll off backwards and jam up the mechanism. This has been observed with 4022s and 8023s. It helps to center the labels in the printer, instead of running them along the left side. Also, never let labels sit in the printer. The label will tend to straighten, separating from the paper and causing problems when you start printing again."-KRP

3) "When printing in REVERSE MODE, the 4022 bi-directional ROM (part number 901631-02) automatically reverts to uni-directional mode for the next line. This is to avoid overheating of the head. (Remember how the 2022 pauses after a reverse field line?). Subsequent lines go back to bi-directional mode."-KRP

Other Hardware Hints:**IEEE 488 Bus:**

"PET's internal firmware can talk with 12 distinct (4-15) external IEEE addresses. This does not necessarily mean 12 items can be connected to the IEEE bus simultaneously; that depends on the driving ability of the TALK circuits. More than one BASIC 4.0 PET can be connected to the same IEEE bus, with no special precautions, provided only one PET uses the bus at a time."-Geoff Capell

Recalled ROM Hints:

1) The -019 ROM in BASIC 1.0 replaces the -011, to make the PET quit going out to lunch unexpectedly after editing screen row 25.

2) BASIC 2.0 ROMs replace BASIC 1.0 ROMs for those who buy a CBM disk drive, since the disk drive won't work with BASIC 1.0.

3) The -07 ROM allows CBM 2022/2023/4022/8023 printers to print lower-case text easier than the earlier -03 and -04 ROMs.

4) DOS 1.2 for the 2040 disk drive has been replaced with DOS 2.1. DOS 2.5 (and soon DOS 2.7) goes on the 8050.

5) The -23 ROM replaces the -19 ROM in BASIC 4.0. It keeps a check for disk status to prevent PET from going out to lunch.

6) The -07 and -06 ROMs replace the -03 and -04 ROMs in the 8050 disk drive. This improves reliability.-Mike Kouri.

PROGRAMMING STANDARDS

Proposed British Program Standards.
as of December 1981:

Programs which hope to be Commodore-Approved in the U.K. must meet input standards. Here are the standards to consider:

- 1) Each screen to be titled in top line(s)
- 2) Status line to show what to do next, errors, what's happening
- 3) (shifted return) =accept screen of information
- 4) 'c' continues to next screen
- 5) full horizontal cursor control during field editing
- 6) (home) =goto start of field #1
- 7) (clr) =restore original screen contents
- 8) (return) =accept field, and goto next field
- 9) (up) =goto last field; (down) =goto next field
- 10) (stop) =goto menu or print 'help' message
- 11) after (shifted return) or going beyond last field, allow 'accept or reject' of screen. If reject chosen, allow re-edit
- 12) sc\$ is the screen data array
- 13) the (stop) key is to be disabled

Paul Higginbottom (Commodore Canada), has written an Input Editor to aid in meeting the standards.

READERS' QUESTIONS AND COMMENTS

Quotable Quotes:

1) "My wife has a quotation that she keeps repeating. 'I am cuter than a computer.'"—P. W. Kelley

2) "We make both Commodore compatible 68000 boards and FULLY Commodore compatible boards. The FULLY compatible boards are the ones which have big holes drilled in the unpopulated RAM locations."—Hal Hardenbergh in **Dtack Grounded**

3) Just for fun, here is "Ode to Jinsam", by Nancy Iscaro (to be sung to the tune of "I Hold Your Hand in Mine", by Tom Lehrer):

I feel your fingers on mine, dear,
I help you all I can.
I handle every byte,
I'm your personal clerical hand.

I fill your every need, dear,
 From mailing lists to graphs.
 I follow your commands,
 To ease your administrative tasks.

My joy would be complete, dear,
 If more applications were here.
 But still I follow your plans,
 As a precious chore, my dear.

The day I came I started to
 Assist you all I could.
 And now each time you seek my help,
 I feel so very good.

I'm happy now to serve you,
 Assisting every day.
 Until the end of time
 I will ease your work this way.

4) "Never trust a computer you can't carry."—James Finke, Commodore's President,
 in Dallas TX, May, 1981

Opinions:

RE: UPGRADES

In my change from BASIC 2.0 to BASIC 4.0, my biggest concern was that some of my favorite and/or expensive software would cost a fortune to convert to BASIC 4.0. I found that some packages like WORDPRO and VISICALC worked on both. Others like AB's VISIBLE MUSIC MONITOR required only a few POKES. Other companies upgraded my version of programs for about 10-15% of purchase price. Eastern House (MAE), IDPC (fullFORTH+), and ABACUS (VIGIL, TINY PASCAL) were all very helpful. In addition, many companies seem to now be offering newer versions of their old software to purchasers for only a small fee. Have the software producers begun to see the light? Do many of them now understand that the better the documentation and the more complete the support, the more programs they will sell?—Ralph Bressler

Well, JS expected to strike a sore nerve with someone sooner or later...and we did...with the discussion in M#4 of Dr. Daley's MAIL LIST. Here are friend Jerry Key's comments to us. Amazingly enough, this is the only letter of complaint **Midnite** has ever received about itself.

RE: CONTROVERSY AT MIDNITE(?)

Should reviews be colored by telephone comments solicited by the Editor? I think not. MIDNITE should not involve itself in obtaining rebuttals. Reviews are in the eyes of the beholder. I am an avid supporter (maybe short on \$?) of the MIDNITE and would like to see it unchanged. There is nothing more useful to all of us than a well thought out review as D.D.'s of Daley's MAIL LIST . Frankly, I thought it was mild! He was more than fair considering the countless hours invested in thoroughly digesting the manual (much more than the 1 day indicated) and the only changes made were to keep his business running until Dr. Daley provided a permanent fix.-Jerry Key

Hal Hardenbergh strikes again! His latest DTACK Grounded newsletter includes this:

"Our problem is, this industry is as inbred as the old Hapsburg monarchy. Carl Helmers talks to Jim Butterfield who talks to Bill Seiler who talks to Bill Godbout who talks to Sol Libes who talks to Jim Strasma who, of course, talks to Carl Helmers!"

No I don't even know Carl Helmers, Hal. But I DO read your newsletter, all the way to the end.-JS

Questions:

RE: DUMMY ROMS

'What is a dummy ROM?' A dummy ROM is 1 that is used by the program ONLY for protection against copying. For instance, KRAM, which is a dummy despite appearances, merely alters a register and returns. If not for protection, that could be done faster without the ROM.

RE: MIDNITE PRAISE (we love it!)

JO pointed out the other day that he has yet to receive a letter with anything but praise for the **Midnite**. "It's downright embarrassing", he says. I reminded him of the one complaint I had received (above). Here's a sample of a typical letter JO was very glad to receive:

"I'm very happy that I've found a newsletter with **independent** reviewers. As I own nearly all programs available for PET, I very often can agree with your software review. I also just bought a program because of your review in issue 5 - DRAGON'S EYE. I must agree, it's one of the best PET programs. Because here in Europe the PET is leader on the market (over 50%!), there's a lot of excellent software available here (especially in England) that is not available in USA, I think. I've a lot of superb programs like SARGON 2, PAC-MAN, ASTEROIDS, SCRAMBLE, GALAXIANS and lots of other 'arcade-games'. If you are interested in reviews of them or an address where you can buy them, please tell me. I would like to write some reviews in WORDPRO 3+ or 4+ format for your gazette. I also could write you a little book about the behaviour of U.S. software companies. As I very often buy programs in the U.S.A., I've a lot of experience. Some companies ship very fast (AUTOMATED SIMULATIONS for example), some never answer, although I've sent money and several letters (HAYDEN and FSS software!!!)"-Fritz Schafer

USER GROUP NOTES

We KNOW there are many more PET User Groups around, but only the following groups officially notified us IN WRITING of their existence, meeting times and contact persons. For instance, Jack Moss mentioned the Denver group, but didn't list meeting times and location, group name &/or contact. Keep us informed so that we can make accurate referrals!-ES

LIBRARIANS: Please try to keep your libraries somewhat weeded. For example, though SPACE INVADERS versions abound, one recent version works on both upgrade 2.0 and 4.0 ROMs, which should replace at least 2 others in our library. Otherwise, we must constantly erase the same old versions as they come in from groups around the world. That is manageable if everyone leaves program names alone. If you improve a program, just add a sequence number or date to the end of the existing title. It will also help if every changed line is marked with a 'remnl>

Nation-Wide Special Interest Groups:**ASTROLOGY.**

Dan Underwood of Phoenix AZ is interested in information on ASTROLOGY. Contact him at 3202 W. Roma Av., Phoenix AZ 85017

CHAO'S "USERS GROUPS" USERS GROUP (Rochester NY).

Phillip Chao is not, strictly speaking, a group. However, he provides a user group service. He is accumulating an exchange library for PUG groups to access. He is up to 40 disks now, cataloged by subject and alphabetically. PUG groups are welcome to contact him about obtaining copies of library programs, and adding their own exchange libraries to the collection. He now has many of our ATUG disks. Other users in upstate NY should probably help out. Write him at Box 387, Rochester NY 14646-JS

COMAL USERS' GROUP (Madison WI).

For BASIC 4.0, 32K and CBM disk drive. Interpreted structured language. COMAL combines the best of both BASIC and Pascal. Almost any command or statement that either accepts is usable in COMAL, except "goto line#", a "no-no" in Pascal and COMAL. Version 0.12 is a 27K program. Organizer Len Lindsay treats this as a first-class project, comparable to UCSD Pascal.-JS

EPSON USERS GROUP.

Readers, does this group still exist? Our original Raleigh NC address is apparently incorrect. Please let us know for the next **Midnite**.-ES

HAMPUGS.

Clark Stewart, of 104 Henrietta St. Ravenswood WV 26164 (304/273-4680) is writing a newsletter contacting other AMATEUR RADIO OPERATORS and HAM PET

User Groups. (See his HAM NOTES for more information). The following groups do exist:

#1: **AMATEUR RADIO PET-USER'S GROUP.** Hank Roth (K4EVY), newly of Orland FL, represents this ham radio group. It meets on the first clear frequency above 7.150 MHz @ 8:30 am EST every Saturday morning. The group usually have about 5-15 "check-ins."-ES

#2: **HAM NET.** Larry Williams belongs to a PET HAM NET, in operation since June 1978, when Orin Batesole (W6HJE) suggested it in the former **People's Computers** magazine. HAM NET meets each Sunday at 12 Noon Central Time (after Church, we hope), at 14.240 MHz, and would be happy to have other interested hams join them. Varying with the season, they usually have about 3-8 "check-ins."-JS

#3: Orin Batesole also started a local HAM group in his "home turf" on the West Coast. Please write Clark Stewart (above) and **Midnite** with more details, guys!-ES

JAPANESE COMPUTER CLUBS.

If your club wants to exchange ideas, software, etc., with Japanese computer clubs, send your club name, size, when formed and type of activity to ORII, Box 1358, Mountain View CA 94042.)Remember that many of the best PET arcade games have come from Japan, and that the VIC appeared there long before here.-ed]-copied from **Microcomputing**

PEDISK OWNERS USER GROUP.

"I would like to start a user group/column for all the owners of PEDISK II systems. Have you written any programs that use the PEDISK II ? Any interesting applications? Would you like to share them with others? If so, drop me a line at CIPUG, so that we can get together with our ideas. JOH has kindly got the ball rolling with a few programs that includes menus (even for light pens!) and various other utilities. PEDISK versions for the MAE assembler and PAPERMATE word processor are also reviewed in this compendium, and WORDPRO (tm) will be available soon. ATUG disks are now available for PEDISK II's at the same ATUG price. If you are interested in these, contact JO at CIPUG address for further information. Let me hear from you!"-JO

PERPETUAL PET PROGRAM PYRAMID.

Those at the bottom of the list send exchangeable programs to those at the top. A cute gimmick started by Gary Stone, but never reached "critical mass". (He's still looking for a "decentralized, distributed network approach" for "PET program and idea exchange." Write him at P.O. Box 153, Annapolis Junction MD 20701.

Strictly Commodore?

Loren Wright of **Micro** magazine has received a publicity release from a Roger Olanson, of 47 Coachwood Place N.W., Calgary, ALB T3H 1E1 in CANADA about a new all-Commodore newsletter. Sample issue supposedly costs \$2. No word yet on publishing frequency or subscription cost.

VISICALC USERS GROUP?

"Anyone know of or want to form a VISICALC USERS GROUP? Contact Bill Womelsdorff, P.O. Box 2339, Auburn AL 36830 (205-826-3691 or 5205-821-3678)."

REPLY: The company, Visicorp, has published the **Visigroup newsletter** as an informal User Group network. It was reviewed very unfavorably by a couple of PETters in 1981. Has it improved in 1982?-ES

User Groups by Locality:

One PET owner requested **Midnite's**, but forgot to include his addresses. If anyone knows GEORGE POTTER, please give him a copy of all **Midnite's** starting with Issue #5. Thank you, Harry Briley, for locating another missing PETter, MO JUDSON.-JS

ARIZONA:

CAPP (Central Arizona Area PET People). Dick Juvet writes that CAPP "is alive and doing well." Coordinators are Roy Schahrer, at 842 W. Calle del Norte, Chandler AZ 85224 (phone:899-3622), and Dan Underwood (phone:249-1816). Meetings are held the fourth Saturday of each month at 2pm at Arizona Tech, 4837 E. McDowell Rd. (Phoenix AZ?). In January, Dick "demonstrated some of the experiments developed for my course on "Computer Interfacing to Chemical Instruction..."-ES

BELGIUM and NETHERLANDS:

PET Users Group for Belgium and the Netherlands. Contact Johan Smilde, at Copytronics, Burgemeester van Suchtelenstraat 46, Deventer, Holland, 7413 XP. An excellent Dutch PET Users' Group newsletter, the **PET Benelux Exchange**.-JS

CALIFORNIA:

CBM/PET/VIC User Club in Canoga Park (northwest of Los Angeles). Contact Tom Lynch at 22323 Sherman Way #9, Canoga Park CA 91303 (213/889-2211 x2118).-ES

LLNL (Lawrence Livermore National Laboratory's) PET CLUB in Livermore CA (Alameda Co.). Meets inside the gates at noon on the first Wednesday of each month. Security clearance required to attend. Contact is Ron Gunn at 415/447-4260.

PALS (PETs Around Livermore Society), also in Livermore CA, is for less technical users than LLNL's user group. It meets the third Wednesday of the month at Fifth Street School, 2253 Fifth St., Livermore CA. Emphasis is on utilities and education. Contact Jo Johnson at 415/449-1084.

PET-A-GREES (Ventura County CA PUG) in Ventura County CA meet each third Tuesday [evening?] at the Camarillo High School (except July and August). We also have special event days. Contact Duane and Elaine Garber, Presidents, 1224-7th St., Port Huneme CA 93041 (805/483-8146). Other contacts in other areas include: Hews McCann (3430 Frankfort Ct., Oxnard CA 93033, 805/483-7183) and Bill Wels (1377 Sterling Dr., Thousand Oaks CA 91360, 805/497-4356).-Bill Wels

SCPUG (Southern California PET Users Group) in Downey CA (southwest of Los Angeles) has approximately 100 members. It meets the first Tuesday of each month at DES (Digital Equipment Supply), 8315 Firestone Blvd., Downey CA 90241 (213-923-9361), and has members attend from as far as 90 miles away. Our information was provided by Roy Wagner and Lyle Phillips.

SPHINX in Berkeley CA, is one of the first, largest, and most expert of the early PET user groups. It is still alive and well at Box 151 in Berkeley CA 94701. The group meets the second Tuesday each month at Lawrence Hall of Science at 7PM. It has a large exchange library on disk and cassette, including some offerings for the VIC. Bill MacCracken apparently handles tape exchanges, Bax Babin handles VIC exchanges, and Glen Fisher, handles disk exchanges. For meeting information, call 415/486-5101.

SILICON VALLEY PUG (Mountain View CA area in Santa Clara Co.) meets on the first Wednesday of each month, in the Ford Aero Space cafeteria, from 7-10pm. Contact Marvin Van Der Kooi at 408/446-1936. As of April 1982, they now have over 20 exchange disks available (8 for games, 2 for "adventure" games, 4 for education, 2 for business, 1 for COMAL, 3 for machine language and utilities, and 1 for VIC programs).-ES

COLORADO:

Colorado Commodore Computer Club, in Boulder CO. Contact secretary John W. Adams, at 1435 Gillespie Drive, Boulder CO 80303 for more information.

FLORIDA:

SPCA (Sun Coast PET Computer Association), meets in the St. Petersburg-Tampa FL area. For more information, contact Joe Spatafora, at 6219 Thirteenth Av. South, Gulfport, FL 33707. The group specializes in business and utility programs. Has Bennett's Mail List disk with instructions (they charge a copying fee of \$8).

SFPUG (South Florida PET Users Group) in the Miami FL area. This group has recently revived its efforts to hold monthly meetings. Contact (former?) President Dave Young, at 7170 S.W.-11th St. West Hollywood FL 33023, or Hank Moreno, at 3260 S.W.-21 St., Miami FL 33145.-ES

ILLINOIS:

CIPUG (Central Illinois PET Users Group). Contact is Jim Oldfield, 635 Maple, Mt Zion IL 62549. Includes PETters from anywhere in Illinois who want to know more about Commodore-compatible software and equipment and want to spread their knowledge to others. Meetings daily by phone! Also meets at Computer Country, 1305 W. Wabash, Springfield IL 62704, on the third Friday at 7pm.-ES

ICUSS (Illinois Commodore Users Swap System). Contact is Robert Lemon, Community High School District #94, 326 Joliet St., West Chicago IL 60185. Publishes the ICUSS newsletter. Educational emphasis and sharing of public domain and inexpensive "home-produced" programs.-ES

PVC (Chicago area) PET VIC Club. President is Paul Schmidt, of 40 S. Lincoln, Mundelein IL 60060. Group has more general interests than ICUSS above.-ES

Macomb PUG is just getting started for anyone living in "Forgottonia" (Western Illinois). Contact Betty Kaspar at 808 Jamie Lane, Macomb IL 61455. Regular meetings will resume in the fall of 1982.-Ben Shiek

Rockford Area PET Users Group. Contact is Dave Pippitt, 1608 Benton St., Rockford IL 61107. General interest group, with interests in education, business, and game programming. A few members have VIC's, but most have PET/CBM's.-MN
Group has over 50 members of which maybe 1/3 show up at each meeting. Meetings are held every 2nd Thursday each month at Rock Valley College, Building 2, Room 228. For information or trade of non-copyrighted software, send SASE to Dave Pippitt.-MN

KANSAS-MISSOURI:

PET Users Group of KC and I. Kansas City and Independence MO: Contact Rick West at Kansas City Computers, 5214 Blue Ridge Blvd., Kansas City 44133. Treasurer is Mike Gregory (6203 E. 1477 Terr., Grandview MO 64030). Meets 7-10pm on the first Wednesday of each month in the Blue Valley Federal Savings and Loan, on the corner of Osage and Truman in Independence MO.

MICHIGAN:

SEMPUG (Southeast Michigan Pet User Group). Detroit MI area: Started in May of 1981, with emphasis on machine language applications and education. Meets 2nd Tuesday (even months), and second Thursday (odd months), at O.E. Dunckel Middle School, 32800 W. 12 Mile Rd., Farmington Hills MI 48018. For more information, contact Norm Eisenberg at the school. This group now has all 7 Commodore Education Advisory Board (CEAB) public domain program diskettes in its exchange.

NEVADA:

LVAPUG (Las Vegas Area PET Users Group): Contact Gerald Hasty (702/453-3544) and Jim Widener, 1700 Gateway Rd., Las Vegas NV 89115 (702/452-7032). "Non-profit organization formed in June 1979. Initial membership fee \$6...new members will receive 6 programs from the group master library, free subscription to the **Gila Newsletter**, participate in education seminars, and benefit from group discounts."-from **Gila Newsletter**

NEW HAMPSHIRE:

VIC-NIC Club. Salem NH. Send a stamp for their newsletter, **VIC-NIC-NEWS**, c/o D. McCormack, P.O. Box 981, Salem NH 03079.

NORTH CAROLINA:

GPUG (Greensboro NC PET Users Group): The former GPUG user group in Greensboro NC may be revived if interest warrants. Interested VIC/PET/CBM owners may contact Malene R. Pratto, 413 S. Chapman St. in Greensboro, NC 27403.

OHIO:

COPUG (Central Ohio PET Users Group) in Columbus OH area: Contact librarian Denny Ketter (3270 Penfield Rd., Columbus OH 43227), President Phil Lynch (107 S. Westmoor Av., Columbus OH 43204), or Jerry Key (151 Flint Ridge Av., Gahanna OH 43230). The group specializes in CBM Assembler applications. Other special interests include data bases, ham radio, education, VIC and hardware modifications/add-ons. Have details of a home grown version of 2040/4040 error/on light w/o sound for you-do-its. Send self-addressed stamped envelope (SASE) for details, or letter if interested in exchanging programs/information. The group meets the third Thursday each month at State Savings Bank, Hamilton and Havens Corners Rds, Gahanna OH.-Jerry Key

PET STOP. On the road and without your trusty PET? Are you passing through the Central Ohio area? Stop in for a PET refresher or indulge in some PET talk. 8032, 2001, 4040, VIC, and even lodging available with prior arrangements. Like **Midnite**, cheap at twice the price (free). Could this be the start of a chain of PET motels? Call 614/475-6060 if coming this way (Columbus area).-Jerry Key

REVIEW: The above ad is a highly-biased, but accurate summation of services, in that the owner of the "hotel" is both the advertiser and a fine host. Most of your **Midnite** staff imposed on Jerry and Sue for two nights of lodging recently. Easy access to Interstates, air-conditioned, interactive QUBE color TV, local PET user group only a few blocks away and farmer breakfast available. Thanks again, Jerry and Sue!-JS

OREGON:

Oregon PUG meets the second Saturday of each month, in Portland Oregon. Contact Ken Flynn.-JS

PENNSYLVANIA:

PPG (Pittsburgh PET group): Contact Joel Casar, 2015 Garrick Drive, Pittsburgh PA 15235 (412/371-2882). The group meets the third Sunday morning of each month at C.N. Formation, following the Pittsburgh Area Computer Club meetings in the Northway Mall. We're a new group for any owners of Commodore equipment, who have been meeting informally for about a year. With a Commodore dealer just opening up in town (C.N. Formation), we're expanding rapidly. Meeting in the mall beforehand has been good for the family outings, but a little crowded for serious information exchange.-Lou Sander

SASKATCHEWAN, CANADA:

SEPUG (Saskatchewan Educators PET Users Group, in Regina, Saskatchewan, Canada: Contact is President L.R.S. Richmond, at 1429 Uhrich Av., Regina SAS CANADA S4S 3P7. We've just organized...-L. Richmond

TEXAS:

CHUG (Commodore (Houston Users Group, in Houston TX area: Contact is John Walker, of 8738 Wildforest, Houston TX 77088 (713/999-3650), who is Director and Editor (of their newsletter, **Hardcopy**). PET group meets on the second Wednesday evening, and VIC group meets the next night at Texas Technical Services, 3115 West Loop South-Suite26, Houston. "CHUG meetings are run convention style. We break into little groups of great interest for most of the night. However, there is a core period of perhaps 20 minutes where we meet as a single group to discuss common interests. Come, join the fun! There is no admittance fee.

CHUG is forming a MODEM USERS GROUP (MUG) within its framework (see under Modem Notes). One of our goals is to establish a 24 hour per day electronic bulletin board and network. Contact CHUG at the above address."-John Walker

SNUG, Beaumont/Port Arthur TX: CHUGgers Slim Wilson (W5PWO) and Mayland Harriman are starting a Sabine Neches users' group, SNUG, for the Beaumont/Port Arthur golden triangle area in Texas, with plans for a future SNUG newsletter. Contact Conway L. Wilson 4145 Lakner in Beaumont, TX 77705 if interested.

San Antonio TX PET Users Group: Larry Williams reports there is a PET user group in San Antonio, Texas, meeting on the second Friday of each month. Anyone interested may call Larry at 512/226-3542.-JS

SCOPE, Dallas TX: SCOPE PET User Group has about 60 members. It meets once a month on the second Sat. (or occasionally the third Sat.) from 11:30 AM to 1:30 PM in rooms available at no charge: the Jaycees park building in Irving, and at the Texas Power and Light meeting room in Richardson. Members come from the Dallas-Fort Worth area: most from North Dallas, some from as far north as Greenville, and several teachers from Irving which has recently acquired about 20 PETs for their elementary schools. Some of the members have VICs; most have PETs or CBMs. Quarterly, we have a software exchange of non-copyrighted programs. Other meetings we have a lecture or demonstration. New developments are discussed. We need more public domain software programs for club distribution. We have tried to assist the teachers in Irving program some useful things on their PETs. New officers are: President, Bill Knight; Vice President, Tom Brooks; Treasurer, Shing Mao; Secretary and newsletter editor, Sam Cook. Cook reports, "Our membership is increasing since we have made available the TPUG disks and the **Midnite Software Gazette**."-Sam Cook

VIRGINIA and WASHINGTON, D.C.:

A new user, Stephen Poppish, of 4608 Jackson Rd. in FREDERICKSBURG, VA 22401 would like to meet nearby PET owners. Go to it, brothers and sisters; make the man welcome.-JO

C.A.P.E. (Capitol Area PET Enthusiasts). Contact is John Beel. (Unfortunately, we missed an address on his correspondence... Please write us again!-ES)

WISCONSIN:

SEWPUG, Racine WI: SouthEastern Wisconsin PET Users Group (SEWPUG) meets the third Saturday each month. "We started as a PET users group, but there are VIC-20 users, and a (gasp!) TRS-80 Color computer owner. We have pretty loose meetings. Between 10-20 members show up. The mailing address is SEWPUG, 3614 Sovereign Dr, Racine WI 53406."-Tim and Phyllis Tremmel

VIC NOTES
by John O'Hare

Books :

Commodore's new Programmers reference guide has several errors in it which may cause serious problems for most. Corrections are:

p.89 =Line 20 in the bottom program should read: 20 FOR L =0to7:FOR
M =0to7.

p.90 =Line 5 at the top should read: 5 POKE 36869,255, not 36849.

p.91 =Line 100 in sample program needs an extra ending right parentheses.-JOH

Computer Screen notes:

1) If the screen position on your TV seems to be off center when using Commodore's Game Cartridges, the whole screen may be adjusted using the cursor keys.-JOH

2) If your VIC is having bad RF interference problems:

a) See your dealer for a free 'fix' from Commodore (Installation may cost \$25).-JOH

b) Carefully open up the VIC and locate the small 'pot' covered with blue enamel, right behind the video cable connector. Turning this will adjust Video intensity and in some cases really improve the overall picture quality.-JOH

c) Try replacing the black audio cable (black) that goes from the RF Modulator to the computer/tv selector with a standard audio cable from Radio Shack or any other local source (the regular stereo type). It cleared up my two VICs and a couple of others here.-Jerry Key

d) To reduce TV interference from your VIC, get a Ferrite core (an iron doughnut), and pass 3 loops of the TV cable through it. The needed cable goes between the TV modulator box and the switch box hanging from the TV antenna terminals.-Jay Balakrishnan

Program Handling Notes:

1) To load a VIC program without its being automatically relocated by the VIC, type: LOAD "",1,1

2) To do a soft reset on the VIC, type: SYS64802.

3) Sometimes the intermittent reset will not always show Commodore BASIC on power up. We have traced this problem to a marginal chip at position UE1 on the original VIC pcb. It should be replaced with a 74504 TTL Date.-KRP

A PEEK at POKEs:

1) If you have just finished using a game which uses redefined characters, type POKE 56,30 before loading a new game. This restores the top of memory pointer which may have been altered by the program.-JOH

2) Some VIC POKE locations are:	204 cursor on flag.
51 decrements when key hit.	211 cursor column.
56 pointer to top of memory.	214 cursor row.
67 holds 1 when key hit.	36865 border position (vertical).
197 value of key depressed.	36864 border position (horizontal).
145 flag for left shift key.	36869 pointer to character generator.
245 detects special keys.	240 =norm. 255 =7168.

4) To disable the RUN/STOP key on the VIC, type in 'POKE 808,114' at the beginning of your program. Location 808 is part of a linking address that points to the routine in ROM that tests the STOP key. To re-enable the STOP key, type in 'POKE 808,112'. You can also use the RESTORE-RUN/STOP sequence.-MN

Joystick Program Hints:

1) To read a joystick on a VIC (standard Atari joystick works), use the following subroutine:

```

9000 POKE 37154,127
9010 JO =(NOT((PEEK(37152)AND128)/8+( PEEK(37151)AND60)/4))+32
9020 POKE 37154,255
9030 RETURN

```

JO Values returned are: 1 =up, 17 =up&rt, 16 =right, 18 =down&r t,
2 =down, 6 =down&lft, 4 =left, 5 =up&lft. -JOH

2) Here are some clues (about programming joystick control on the VIC), courtesy of Jim Rothwell of Midwest Micro (via KRP):

```

10 poke 37139,255
20 poke 37154,127
30 east =(peek(37152) and 128)
40 poke 37154,255
50 p =peek(37137)
60 south =(p and 8)
70 west =(p and 16)
80 north =(p and 4)
90 fire =(p and 3)

```

Peripherals:

1) Here's a helpful tip if you're using HESCOM with an 8K expander:

Set the expander memory to \$A000.

Load in HESCOM on VIC.

Type: POKE 56,192:RUN

When it finishes, type: POKE 55,0:POKE56,30:NEW

Now you have HESCOM loaded in a place where it will not bother BASIC, and doesn't need to be re-loaded everytime!

2) "If you have a U.M.I. 8K memory expansion, you may have discovered that it will not operate in Block 2 of memory. This is due to a design error which can be easily corrected. It is necessary to cut the connection to pin 21 of the 74154 chip. Pin 21 should then be connected to +5V (Pin 24) via a 2200 ohm register."-Russ Bennett

3) "The March issue of **Byte** has the 6116 static memory chip listed \$8 each. Eight of these plus a few odds and ends should make a 16k memory available for less than \$100. The 6116 was \$15 at the end of 1981! I would be interested in hearing from anyone who has built any hardware."-Peter Farrow

4) If you really want a color PET, Commodore suggests you consider buying a VIC as a peripheral for your PET! Seriously, it uses Upgrade BASIC V2, is cassette-compatible, and has excellent color compared to Apple, and Atari.-JS

5) When working with the VIC-1515 printer, it locks up and prevents me from listing my program. If I first save the program to tape, then reload it after using the printer, the program will list. Is there any special POKES that are needed to get me out of this mess?-Peter Farrow

REPLY: It sounds like you're not properly closing the file that has been opened to the printer. If you are using CMD, you must do a PRINT# before a CLOSE statement. You can also cause a SYNTAX ERROR by typing gibberish + RETURN.-MN

WANT ADS AND ANSWERS
(Product Needs)

We often receive requests for new program applications and have to let them sit until someone else writes in with a similar request. By then we can't remember the name of the first person who wrote! We will eventually put all this in a data base or refer people to area specialty user groups when they get going. Meanwhile, we'll try this method to speed up the process. If we have no immediate connection (program or user group) to suggest, we'll print your name, address and need here for others to contact you. If something comes out of it, send us a review of your programs and/or name of person or group to contact for the specialty. Here are the first requests:

General:

WANTED: For the Asm/Ted User Group Diskette Exchange, Public Domain programs, routines, and assembler source.-BA

WANTED: Programs, routines, and techniques using the 8096 expansion board.-BA

Agriculture:

WANTED: Quality software for ON-FARM USE, primarily for 8032/8050 or 8032/4040 systems.-Bill Womelsdorff of Eagle Microsystems, P.O. Box 2339, Auburn AL 36830

REPLY #1: Check with Cyberia, Inc., of Ames IA, and AAA Ag Services in IL. Does any farmer want to act as contact for others in the U.S.?-ES)

REPLY #2: Have written to Canadian university for programs offered for PET-will report when/if received. **Farm Computer News** vastly overpriced, on basis of sample copy received.-Candy Jens

WANTED: Anyone who has successfully chatted with AGNET in Nebraska using a PET 4032 and 8010 modem, and anyone with farm programs or VISICALC templates for PET is requested on contact Ed Frost, 307 E. Jefferson, Winchester IL 62694.

REPLY: On AGNET, see the comments under Modem Notes. On farm applications of VISICALC, contact Bill Womelsdorff, of Eagle Microsystems, P.O. Box 2339, Auburn AL 36830.-ES

Business:

WANTED: OPTOMETRIST'S PATIENT RECORDS and MONTHLY BILLING program which can recall by letter at specific intervals 5000-20,000 patient records, with

Jinsam's speed, Dr. Daley's capacity and flexibility, and Chuck Stuart's (CMS) accuracy! Has ANYONE met that criteria yet for an understandable data base (at a reasonable price)? He doesn't say whether 256 bytes in one patient's record is large enough either. Write him if you can TRULY meet his criteria.-Douglas Dachenbach, 159 N. High St., Gahanna, Ohio 43230, 614/471-7177

REPLY: How about contacting CIMARRON about their Medical Accounting System? Also contact CMD's Manager. They've got at least one happy Canadian physician customer.-JS

WANTED: Appointment scheduler for eight or more individuals, that interfaces with a client billing program.-Joe Spatafora, 6219 13th Av. South, Gulfport FL 33707

REPLY: Will Cimmaron's LTA and MAS do this?-JS

WANTED: Comprehensive FINANCIAL MODELLING PACKAGE (ala DSS micromodel, Microplan, FPL, SuperCalc, etc.) that will RUN ON THE 8032/8050? Help! CBM VISICALC is a nice initial package, but lacks powerful features in the others. With the surge of sales of the CBM 8032/8050/8250 units being sold to small businessmen, software houses are missing the boat by not supporting Commodore. Let your voices be heard out there!-Joe Spatafora

WANTED: OIL and GAS OPERATOR programs for an 8032.system.-Sam Cook of Cook Compus ystems, 309 Lilncolnshire, Irving TX 75061, 214/253-6979

WANTED: 20,000+ word vocabulary spelling checker for WORDPRO.-Joe Spatafora

REPLY: (Joe waited a while, then wrote his own, from what he told me recently. He plans to offer it commercially soon.)-JS

WANTED: Information on which DATA BASE PROGRAMS:

- 1) can completely fill an 8050 disk with data, and accepts records longer than 255 bytes in length.-Computer Country of Springfield (OZZ can now, and JINSAM may under DOS 3.0-E&JS)
- 2) can provide QUICK, CHEAP way to fill out specialized MEDICAID insurance form for medical office. MAS can't. Will MARI, or something simpler?-ES

WANTED: JS is looking for the ultimate church package. And on that subject, here are 3 definitions from a free computer dealers' magazine that may help you define your needs:

Vertical Market Church application

Horizontal Market Funeral Home application

Copyright mark appearing even on paper towels in security-conscious computer companies; legally equivalent to a paper towel.

WANTED: Reviews or review copies of BUSINESS packages and programs. Will return review copies if requested.-ES

Commercial Program Extensions:

WANTED: A way to dump VISICALC formulas to printer.-Joe Spatafora (Just takes a sequential file reader; I've done one here.)-JS

WANTED: Another user wants a dot matrix correspondence printer that works well (i.e., can handle stuff like underlining) from WORDPRO and VISICALC.

Commercial Programs Now Unavailable:

WANTED: Where I can buy a program named TAIPAN? It's no longer available.-JO

REPLY: Another user donated his copy to JO, saying the program was junk anyway)-JS

Education:

WANTED: SCHOOL BUS MAINTENANCE and RECORDS program for a 40-bus fleet.-Bob Bergevin, Au Sable Valley Central School District, Clintonville NY 12924

WANTED: DAILY ATTENDANCE program to meet NY State Education Dept. requirements in keeping school attendance.-Bob Bergevin

REPLY: If you don't find what you want, you might start with a school attendance program by JS and sold by Dr. Daley Software, or found on early disk versions of JS' SUBSORT.-ES

WANTED: We are a school district producing our own programs and we are presently using a telex copier to copy our cassettes. What unit do most people use for high speed DUPLICATION OF CASSETTE TAPES?-John Melchior, Parsippany-Troy Hills Township Schools, Ed. Resources Center, 1213 S. Beverwyck Rd., Parsippany NJ 07054.

REPLY: Try contacting Peter Smith, of Richvale Communications, 10610 Bayview Plaza #18, Richmond Hill Ontario L4C 3N8 Canada. He prepares the monthly cassette exchange from the Toronto PET Users Group monthly diskette.-ES

WANTED: Anyone working with the HANDICAPPED is requested to contact college student Constantinos Pattichis, 780 Montgomery St., Apt. 104, Fredericton, N.B. E3B 2V1 Canada. He writes, "What I'm intending to do is work with the PET computer to change its normal keyboard to an EXPANDED KEYBOARD (used to accommodate people with motor or limb dysfunctions)...and also interface this with a SPEECH SYNTHESIZER for non-verbal disabled persons...(and) write some programs for young persons in their first steps of learning."

WANTED: Families to come to a FAMILY SUMMER COMPUTER CAMP in WATSONVILLE, CALIFORNIA. According to director, Ed Pollock, this two-week summer day camp is designed for the whole family to attend (ages 10-90), 7:30-5:30 daily Monday through Friday, from July 12-23, 1982 or from August 3-13, 1982. The location is the 90-acre campus of Monte Vista Christian School at 2 School Way, Watsonville CA 95076. The camp is mostly PET- (and VIC)-oriented, with guest speakers on various computers, and will offer courses in beginning and advanced BASIC, Pascal, FORTRAN, COBOL, COMAL, etc. Family discount prices available. Contact Ed Pollock, Director of Family Summer Computer Camp, in care of the school address -- if you're interested in going next year!-ES

WANTED: Users, do you have any good kindergarten level (READING READINESS), music or scientific programs?-ES

Genealogy:

WANTED: Good GENEALOGY program, reasonably priced, for large data base. BASIC 2 or 4 and DOS 2.-Jerry Key, 141 Flint Ridge Dr., Gahanna OH 43230 (614/475-6060)

Hardware:

WANTED: An interface to work with a ROYAL 5010 electronic typewriter.-Peter J. Farrow

WANTED: NMI SOFT RESET SWITCH

I ordered a hardware product known as the UNCRASHER on May 12th, and since then I've re-ordered this product twice by phone. 3 weeks ago I called again and I was told it was mailed to me 3 days before. I'm still waiting.... I've inquired a few times with MasterCard, and each time was told they didn't bill me. I gave up on that company. Can you recommend a company that sells an uncrashing device?
-Roy Merme, Brooklyn NY

REPLIES:

1) I wrote an article for **Microcomputing**, September, 1980 on how to build one.-JS

2) The Kingston Repeat Key now being advertised in the U.S. is said to have one in its deluxe version.-JS

3) I consider Roy Busdiecker trustworthy and think he is associated with International Technical Systems, the seller of the UNCRASHER. Roy had an article in the last issue of **The PET Paper**, but I was unable to locate him for you.

4) Maybe Eclectic Software (Dallas TX, 214-358-1307), who made one for the old PET and I believe also did one for newer ones.-Candy Jens

5) If someone wants OTHER OPTIONS BESIDES the RESET button, the KRK-2 includes it, repeat keys, clicking keys, and an amplifier with music capabilities, for \$120 from Microtek, Inc. (San Diego CA). I don't have this, but it was reviewed in 8/81 **Kilobaud Microcomputing**, p.15.-Candy Jens

6) The new third edition of Osborne's CBM/PET Guides will include complete instructions for installing your own.-ES

WANTED: A 64K CP/M BOARD for PET that handles bank selection and other controls exactly the same way as on the 8096 memory expansion board. Ideally, it would mount out of the way under the video monitor like Madison Computer's Z-RAM CP/M board. Reason? So you can run both CP/M and the new 8096 programs (such as SILICON OFFICE) on the same board.-JS

WANTED: I am interested in upgrading my 2001-8K PET from Upgrade BASIC (2.0) to BASIC 4. however, I have the 28 pin ROM (6540) set, and need to find out how to modify it for that purpose. I would appreciate any information you have available on such a project.-Harold Kingsbury, Rt. 1, Box 99a, Avon MN 56310.

REPLY: Check out the Better Solutions ad in **Computel**, April 1982, p.81.-ES

WANTED: A VIDEO INTERFACE to hook up another monitor to my PET.-JO

REPLY: HUH Electronics (San Mateo CA) makes Sup'R'Mod and Video Buffer for use with a monitor or TV. Also, Computer Depot (Minneapolis MN) makes an Auxilliary Video to connect additional monitor(s). Addresses (see Resources) are over a year old so I hope they're still valid.-Candy Jens

WANTED: directions for Graphic '80 CONVERSIONS, 40- to 80-column screen conversions and vice-versa, etc.-many users

Two Answers:

1) TPUG's TORPET newsletter (10/81 issue) published details on turning a 4016 into a Graphics 80. It isn't a task for beginners.

2) Jim Russo of SEMPUG can provide a variety of 2K ROM images for UD7 on models with 12" keyboards. They include:

a) Graphics 80

b) 8032 masquerading as a 2001/B upgraded to 4.0

c) Graphics 80 masquerading as a 2001/N upgraded to 4.0

d) Fat Forty masquerading as a 2001/N upgraded to 4.0

e) Graphics 80 masquerading as a Fat Forty

His address is 1421 Pine Valley, Ann Arbor MI 48104. Write him to be sure, but recent cost was \$10 per EPROM. (If you want a reply, include a stamped self-addressed envelope.)-JS

Sports:

WANTED: A Competitive SCORING program for an ICE SKATING MATCH.-Doug Dachenbach, 159 N. High St., Gahanna OH 43230 (614/471-7177)

(REPLY: Doug eventually wrote his own fine program. A similar sports application was described in TORPET, on using THE MANAGER to score a Scouting race car derby.-ES)

Utilities Software:

WANTED: Program to WATCH the ADDRESS BUS during execution of machine-language programs, and PAUSE when data AT a PARTICULAR ADDRESS is referenced or altered (not the same as setting a breakpoint for the program counter). Might require a second PET, since so many machine-language programs trap IRQ on the host PET.-JS

WANTED: Program to WATCH the IEEE BUS and COPY DATA going to or from a specified device. Would require a second PET or other hardware. One use would be to make a security copy of information going to the new Commodore hard disk. A nice added feature would be the ability to single-step the bus and display data.-JS

WANTED: MICROMON version for the 8096. The key problem is switching the banks in and out for PEEKs and POKEs (in for access, and out before the PET crashes for lack of an operating system in the banked memory).-JS

ATTENTION COMPUTE! READERS (AND LAZY PROGRAMMERS):

One item in each of the last two issues needs a quick comment:

1) In the Dec. issue, Hal Hardenbergh described an error in early versions of BASIC AID. Anyone wanting the latest error-free BASIC AID 4.0 can get the program and source code from ATUG, TPUG in Toronto, COPUG in Columbus OH, plus others. The last few bytes of current versions are its assembly date-10/22/81. 6 versions are available: BASIC 2.0 or 4.0, CBM and ASCII printers, and 40 or 80 column screens. Other versions (Fat Forty and G80) are also accommodated in source form. ATUG also offers a shortened version by Arthur Cochrane, called POWER-AID. It contains all BASIC AID features missing in POWER-JS

2) If you want a more current version of MICROMON than the one in the 1/82 issue, get it and its source code from the above user groups. Arthur Cochrane and I developed the published version for ATUG from Bill Seller's original. Again the last few bytes should give the date of assembly.-JS

New Hardware Available: EPSON PRINTER: The 10/81 TORPET announced a new ROM for the EPSON MX-80 printer, to give it a full PET GRAPHICS character set.

HARD DISK: LVAPUG's GILA NEWSLETTER, 12/81, reports that MATOR, INC (Santa Monica CA) is selling a 10 to 45 megabyte HARD DISK UNIT for PET, using an extended DOS 2.5 and the IEEE-488 bus.

ASSEMBLER REVIEWS

ASM/TED, \$50 from Eastern House Software. Needs 16K. Not for disk*. Best cassette-based assembler commercially available. Printer driver available on request. Versions available for most 6502 computers. It includes nearly every desirable command, even conditional assembly and macros. Slightly confusing manual.-JS
(*Registered owners many contact ATUG for a disk version.)

ASSEMBLER, \$10 on tape, \$15 on diskette from Baker Enterprises. Needs Commodore disk. Includes an editor, assembler, loader, and copier, all in BASIC with no ROM-dependent PEEKs or POKEs. Will allow use with future ROMs. Syntax error detection excellent. Requires memorization of syntax which may not be consistent with some assemblers. Good place to start, but if you are into large assembly programs, this package is too slow.-RS

CALC, \$100 from Matrix Software. For users of MAE or CBM assemblers.

REVIEW #1: A much-enhanced equivalent of SWEET-16 on the Apple II. Allows PET users to pretend 6502 is a 16 bit chip while writing code. Unlike SWEET-16, you don't have to have CALC in ROM to run a CALC program. Capable of attaching its own run-time portion to programs, so any PET with same BASIC ROMs can use them. Consists of 4K ROM chip available at various addresses in memory, plus file of macros to assemble. Also includes debug feature that steps through finished programs to track errors. Learning CALC is much like learning a new processor's "op" codes. The lengthy, and otherwise helpful, manual neglects to illustrate correct syntax for several commands with practical examples. I have so far failed even to get it to emulate a simple question and input statement. The debug mode hasn't been able to lead me to my error yet. Now that two full Microsoft compilers for PET BASIC 4.0 are available, I won't give CALC another thought.-JS

REVIEW #2: "I have had some time to play with CALC. It really is a new language. The initial reaction of a novice programmer is that it is easier and CHEAPER to program in machine language or assembly without CALC. I am sure that this opinion is partly due to my own ignorance."-Ralph Bressler

REVIEW #3: "I have been working with CALC about 3 months. It has proved to be quite powerful. Statistical programming has been much enhanced. Provides most advantages of assembly language, like allocating and freeing up space wherever I want it, without drudgery. I had very little trouble learning to use CALC, after a thorough study of the manual. I prefer BASIC for I/O to the I/O macros included in CALC. Trace Window is invaluable, especially for large programs. CALC code is portable between PET and Apple machines, and between different PET ROMs."-Doug Pierce

CBM ASSEMBLER PACKAGE, \$90 from Commodore. Not for BASIC 1. Needs Commodore disk.

REVIEW #1: This is an excellent assembler, similar to MAE (see later review). However, it does not include macros. It has a fine brief manual. It handles high and low parts of labels better than MAE, and allows resetting of the program counter during assembly. Output is sent to the disk. It needs a special loader to get it back in memory.-JS

REVIEW #2: All machine language and fast. Excellent assembler with terrible documentation. Includes an editor, assembler, and 3 loaders (for different areas of memory). Editor has Auto Number, Break to monitor, Change string, Find, Delete, Format as assembler, Kill, Cold, Resequence lines, Get and put files, and Cput (save file without spaces). Cold and Cput are not mentioned in the manual. Two-pass assembler allows 6 character labels, and all standard directives and commands. Allows conditional assembly (also not mentioned). Disk includes SUPERMON, an early 2K version of BASIC-AID, and should have source files for the editor and the loaders. Make certain that these source files are included; they are not in some of the earlier disks. Source files use conditional assembly, and by reading them with the editor, you will see how that works. The source files have excellent documentation, and are much better than the manual for demonstrating the assembler directives.-Ron Blattel

EDITOR/ASSEMBLER, \$69 cassette from Elcomp Pub. Co. "I couldn't read the instructions because the copy was so bad."-Arthur Cochrane

HESBAL AND HEEDIT, \$66+ from Human Engineered Software. Assembler/editor. BASIC and machine-language. Reasonably capable for its size. It's the only reasonable choice for PET owners limited to 8k of memory, or using cassette or certain non-Commodore disks. Far better than Personal Software's assembler. However, it takes a fairly long time to load and save data and change from editor to assembler each time a mistake is found during assembly, even with disk. Includes an early version of MICROMON+ (ATUG's favorite PET monitor), which works on both BASIC 2.0 and 4.0 PETs and features scrolling.-JS

(+MICROMON is available in MAE source form from ATUG.)-JS

M.A.E. (Macro Assembler Editor), \$170 from Eastern House Software.

Distinctive advantage: It is the only assembler system (including Macrotea and ASM/TED) having "Macro" capabilities and available for many 6502 micro machines, including Apple, Atari, CBM/PET, KIM, and SYM.

FOR 40 COLUMN PETS: Needs 32K. Not for BASIC 1. ASM/TED perfected. Well-mated to disk and printer. Good manual. Includes LOTs of useful accessory programs. The word processor module, included, is better than WORD PRO 2 in many ways. The latest version is relocatable and compatible with ASM/TED tapes. Has its own user group (started by me after reviewing MAE for **Computel**.)-JS

FOR CBM 8032: Screen listings are vastly easier to read with 80 cols. Notes errors with a chime. This is still my favorite assembler for many purposes, such as sharing listings with owners of compatible assemblers on other 6502 computers, the variety of programs developed by these users over the last three years, and author Carl Moser's continuing support. Highly recommended, along with PAL (see later review).-JS

PEDISK VERSION: For PET owners with a CGRS PEDisk system. By far the best assembler available for PET. Even includes a Word Processor. Works very well with PEDisk system; commands include Put a file, Get a file, Kill a file, and assemble in modules from disk. Highly recommended.-JOH

MIKRO-Chip based ASSEMBLER, \$80 from Skyles Electric Works. Assembler chip Skyles imported from England. I now use it for all SHORT assembly jobs, which most of mine are. You must weigh convenience of using a SYS to have assembler present against its price. Can write assembly just like you would BASIC, giving full use of PET's screen editor. Compatible with COMMAND-O, which can be used for editing. Only 3 commands: one gives formatted listing to screen, another does assembly, and the last does base conversion. Assembly may be listed to printer; all standard mnemonics and addressing used. Good documentation; points out some GOTCHA's. Biggest aggravation: allows BASIC to tokenize your source code, so that standard labels like CHRGET cannot be used, since parts of them are changed to tokens.-Ralph Bressler

PAL, \$60 from TemTech Information Products. Cassette or disk. Not for BASIC 1. VERY exclusive piece of PET software! Few have it, but those I know, use it regularly. Much like POWER: extremely simple in concept, extremely flexible in use, and extremely powerful in skilled hands. Like POWER, it documents all key routines and variables, a great help. It comes as a 4K program assembled for various addresses. I use it in my DIAL-A-ROM alternately with POWER, which serves as its editor. This leaves the entire normal memory free for source code. PAL's own source code all fits in memory at once for editing. It easily assembles and stores itself as object code in under 10 seconds beyond disk access time, far faster than any other assembler I've used. Its syntax is like the CBM assembler, but its files are stored as ordinary BASIC. Has the usual amenities: conditional assembly, relocatable object files, a sorted symbol table and pseudo-ops for all data, lacking only macros. The manual isn't for beginners, but is excellent. I have written three important programs for it (in the ATUG disk exchange): UNASSEMBLER, MAE-to-PAL converter and CBM-to-PAL converter. Highly recommended, along with MAE.-JS

BOOK REVIEWS

Many of these reviews have been done either by Arthur Cochrane of South Carolina or by a "Committee" made up of Jim and Ellen Strasma, Jerry and Sue Key, and Brent Anderson. Thanks for all your input, people!

BASIC BASIC-ENGLISH DICTIONARY, by Larry Noonan. \$11 from Dilithium Press. Brief description of all BASIC statements (dialects) in Apple, PET and TRS-80, compared side-by-side. David Lien's **Encyclopedia of BASIC** covers more machines and is more helpful to me when typing in magazine program listings for other machines. Very unpleasant format for reading.-"The Committee"

THE BASIC CONVERSIONS HANDBOOK FOR APPLE, TRS-80, AND PET USERS, by the Brain Bank (firm). \$8 from Hayden. Strictly an aid for converting another 6502 program to your machine. You only need one of its three chapters. Rather thin for its price, but helpful initially. More readable format (column arrangement and commands in alphabetical order). Some simple subroutines, screen conversion charts, and sample conversions (only one per machine combination). At least a few of the comments are incorrect for converting Apple to PET (for instance, it claims there is no equivalent to CALL on PET, failing to notice the SYS command). In other words, the book is probably wrong when claiming "no" PET version exists of any particular command. The comments are probably right when describing the specific PET commands the authors did know about.-"The Committee"

BEYOND GAMES! SYSTEMS SOFTWARE FOR YOUR 6502 PERSONAL COMPUTER, by Ken Skier. From Byte/McGraw-Hill. 433p. Book covers the memory monitor for Apple, Atari, and PET. Includes a source listing in back for monitor and BASIC programs for each machine to POKE code. With SUPERMON, EXTRAMON and MICROMON, why do you need another monitor?-Arthur Cochrane

COMMODORE SOFTWARE ENCYCLOPEDIA, a listing of commercial programs available from various sources to run on CBM and PET computers. From Commodore.

FIRST EDITION, \$5: The list is FAR from complete, and I presume Commodore won't guarantee some of the more outlandish claims in the descriptions of outside programs. One wonders how so many major software houses were omitted. The only 'rating' used is the corporate symbol beside CBM's own stuff, and "Commodore Approved" beside 2 other programs. It's interesting that WORDPRO 4+ and VISICALC failed to gain approval. The book includes twenty pages of game listings, most of which are not worth cataloging. Sixty pages of education programs are, in vendor, not age level or subject order. Without some kind of rating, or at the very least, testing of vendors' claims, I certainly can't recommend using the book to select software for purchase. However, the book's most serious fault is its labeling of CBM BASICs as "2.0, 3.0 and 4.0". Wait for the second edition...-JS

SECOND EDITION, \$10: Software houses omitted in the first edition supposedly could have been included by sending a copy of their programs to CBM's software department in Pennsylvania. Twice as many listings as the first edition, but also twice the price. Still no obvious effort to weed out the duds. Reviews seem to have been written by the companies themselves without much critical evaluation by Commodore staff.-JS

COMPUTE'S FIRST BOOK OF PET/CBM, \$13 from **Compute!** Magazine.

REVIEW #1: Very good book which contains many useful utilities and articles from past issues of **Compute!** Also provides several useful memory maps and cross-maps. Even if you have all **Compute!** issues, it's very handy to have the 'best' together. Recommended.-JOH

REVIEW #2: According to another caller, the book also includes all errors in the original articles - even the ones later corrected in followup **Compute!** notes.-JS

HANDS ON BASIC WITH A PET, by Peckham. "I still hve found nothing better than Peckham's **Hands On BASIC With a PET** for teaching high level students who are unfamiliar with BASIC."-Ed Crossman

A HITCH-HIKER'S GUIDE TO THE PET; CBM Series 3000 and 8000. About \$21 from ACT (Microsoft) Ltd. A little like the Abacus machine language guide. A few nice routines in it, but not worth the money for only 48 pages. Who still uses the Computhink disk? A memory map of ROM routines with a short guide on how those routines manipulate data. Nothing much new that hasn't already been published at a much lower price. Readable format (column arrangement in ROM numerical order). However, the Ray West manual, **Programming the PET/CBM,** is much more worthwhile for the money.-"The Committee"

LIBRARY OF PET SUBROUTINES, by Nick Hampshire. \$20 from Hayden. BASIC and machine language programs for inputting, sorting, plotting, tracing, repeat keys. Each program is listed from PET printer, has thorough description and list of variables used. Program disk available for \$10 more.-Arthur Cochrane

MOSTLY BASIC: APPLICATIONS FOR YOUR PET, by Howard Berenbon. \$11 from Sams. Includes 24 generalized applications programs usable with virtually any microcomputer using BASIC. Editions exist for TRS-80, Apple and PET, which are all BASICally the same. Even ATARI, with its primitive BASIC, can run programs from the PET edition with few changes. Programs ARE useful, though nothing special. IRONY: the clock programs don't use the PET clock! Since one program's instructions recommend hitting CONTROL-C to quit, I presume the Apple edition came first. Fortunately, PET does have a CONTROL-C key for this purpose; it is labeled (STOP)!. On balance, this is more a manual on generalized program writing and good documentation than on PET programming or good applications.-JS

OSBORNE CP/M USER GUIDE, \$13 from Osborne/McGraw-Hill.

REVIEW #1: "Of all the CP/M guidebooks, this is easily the most inviting, and generally regarded as the most technically correct."--Art Kleiner in **The Next Whole Earth Catalog,** second edition

REVIEW #2: I've been reading it to try and help out a church group in trouble with a CP/M system. The book is quite understandable, even for beginners, and quite complete in explaining options. Skilled users may safely drop in just at the page containing the command needed. Well bound and printed for a paperback. If you use one of the new CP/M attachments for PET, you need it.-JS

PET AND THE IEEE BUS. by Eugene Fisher and C.W. Jensen. \$15 from Osborne/McGraw-Hill. Great for persons wishing to know how PET communicates with the IEEE-488 bus. Has IEEE to RS-232 interface circuit and programming examples. All bus transactions are explained in detail.-Arthur Cochrane

(Note: The second edition is being published this summer, 1982.)

PET BASIC: TRAINING YOUR PET COMPUTER. by R. Zamora, B. Albrecht and W. Scarvie. \$13 from Reston Pub. Co.

REVIEW #1: This is the first book to fully explain to the TRUE novice how to write and execute PET BASIC programs. Commodore approved. Highly illustrated, and very readable, even if you've never used a computer. Another volume in the series may be coming. Recommended if you are just starting on the PET.-MN

REVIEW #2: This is an excellent manual. However, it has 3 major faults. First, the small calculator keyboard, which has been unavailable for over a year, is used throughout the book. Second, only at the book's end do you learn VERY briefly how to save a program or load it from cassette, without a word on reading or writing cassette data. Too bad Albrecht didn't include his excellent piece from *Interface Age* 2 years ago on how to turn on the PET and load a program. Third, nowhere are disks or printers mentioned, though over half the PET owners I know have one or both. I suspect the bulk of the book was written before the large keyboard PET, disk or printer existed, but it still could have been revised before its 1981 publication date.-JS

REVIEW #3: I have used this book to teach PET BASIC to graduate students in psychology. The results were disappointing. The book is really designed for high school and junior high students. It emphasizes a graphics approach by concentrating on the various ways to accomplish screen displays. As a result, it skimps on learning and becoming flexible in BASIC, itself. I still have found nothing better than Peckham's *Hands on BASIC with a PET* for teaching high level students who are unfamiliar with BASIC.-Ed Crossman

PET/CBM PERSONAL COMPUTER GUIDE. \$15 from Osborne/McGraw-Hill.

FIRST EDITION. by Carroll Donahue and Janice Enger.

A folksy style made this very easy reading and very helpful for the original 8K PETs, with calculator keyboard and cassette drive. Helpful memory map. Good introduction to PET BASIC.-ES

SECOND EDITION. by Adam Osborne and Carroll Donahue.

REVIEW #1: The best book for PET. The second edition covers 8032, BASIC 4.0, disk drive and printers. Memory map in back is very useful for machine language programmers; formats for variables are also helpful. Page 383 contains an error about PRINT# and carriage output. I don't go through the day without looking up something.-Arthur Cochrane

REVIEW #2: "Initial elation that the **PET/CBM Personal Computer Guide** was being considered for the National Book Award wore off rapidly once it was learned that it had been nominated for the fiction category. A spokesman described the chapter on relative data files as a masterpiece of imagination." -**Microcomputing Magazine** quoting **Microcomputer Printout**

REVIEW #3: This book is the only manual to adequately cover the use of both 40- and 80-column CBM computers with both keyboards, CBM disk drives and printers. Much more formal style, with more attention to business and mathematical examples than game and educational graphics. Unfortunately, the file handling and array storage chapters are just plain wrong! Readers, thank you for your prayers while we tried to repair those chapters!-ES

THIRD EDITION: The Strasmas have edited a third edition, published in July 1982, and would appreciate all such continuing corrections. Please note that the text has been split into two separate books. **The CBM Professional Computer Guide** covers the CBM 2001/32B and 8032 computers with business keyboards, using 80-column, lower case text mode format. **The PET Personal Computer Guide** covers all the 40-column graphic keyboard computers, using 40-column, upper case graphic mode format. Both books describe the Commodore cassette drives, disk drives and printers, but with different emphasis. Neither book covers the VIC line of computers nor the new hard disk drives.-ES

PET FUN AND GAMES, \$10 from Osborne/McGraw-Hill.

REVIEW #1: Disk copy of the games available directly from The Code Works. Includes selected games from **Cursor** magazine. Has easy to read listings, using the **Computel** listing conventions. If you missed **Cursor** in the beginning, and you don't mind typing in (or buying) the programs, this is for you.-MN

REVIEW #2: Features large clear type and is well illustrated. Has Osborne's usual high quality printing and binding. A subtle benefit of this book for those who subscribed from the beginning, as I did, is that **Cursor** has fixed the programs in the book to work on current models. Now that **Cursor** is passing, I value this book as a keepsake.-JS

PET GAMES and RECREATIONS, by L. Lindsay, M. Oglesby, and D. Kunkin, \$13 from Reston Pub. Co.

REVIEW #1: Primarily for graphic keyboard PET models. Includes over 20 well-structured games for PET. 5 types of games covered: Plan ahead, Deductive reasoning, Chance, Language and counting skills, and Recreations. Good book. Most games are worth keying in and will provide enjoyment for all ages.-JOH

REVIEW #2: Listings are typeset, using **Computel** magazine conventions for cursor control characters, making programs easier to enter than CBM printer listings. Cassette of 10 longer programs available (price unknown). My only complaint: none have sound! Highly recommended if you love to play games. -MN

REVIEW #3: Even non-gamers like myself will find this a good book for its excellent BASIC structure and program explanations. Also be sure to catch the humorous lectures at the end. They hide some useful programming hints that have been carefully made compatible with PETs of every vintage.-JS

PET INTERFACING, by James M. Downey and Steven M. Rodgers. Blacksburg Continuing Education Series. \$17 from Howard Sams. 262p.

REVIEW #1: Just received. Not only explains three (IEEE, user and memory expansion) ports of PET, but has accompanying experiments. Looks very good for person wishing to hook the PET to the outside world.-Arthur Cochrane

REVIEW #2: An understandable guide to three of the most useful interfaces included on Commodore PET and CBM computers - the user port, memory expansion connector and the IEEE-488 bus. Includes a wide variety of hardware projects with a full description of the CBM BASIC software needed to put these interfaces to work. Primarily for large keyboard PETs with BASIC 2.

Omits new BASIC 4 features of BASIC 4, which affects two major interfacing problems: the line-feed normally following carriage-returns sent to an IEEE or cassette file, and the computer's timeout on slow IEEE devices. Both are now easily selectable from BASIC. Two other BASIC 2 errors no longer "crash": inputting a string variable longer than the input buffer ("string too long" error), and inputting string information into a numeric variable from a file ("bad data" error). Doesn't cover two new hardware features - how to disable the entire standard ROM set by grounding a single line on the memory expansion connector of current models, and the built-in capability of the 6545 video interface chip to handle a raster-scan light pen.

What the book does cover, it does extremely well. The 6522 VIA chip explanation alone makes the book worth its cost. Has excellent discussions of the user port, address decoding, many common 7400 series TTL integrated circuits, and IEEE handshaking. When the book finally introduces machine-language, it includes source code to vastly ease your task in changing the program for future needs. BASIC listings are fairly easy to convert to machine-language.

I instantly recognized one construction project, which I had flunked, for lack of proper wire-wrap techniques to get a successful electrical contact at the wrap. Hobby kits are rarely cheaper than assembled products in the long run. Reasonably priced good printer, modem, plotter interfaces, home control interfaces, and joystick interfaces are already commercially available for CBM computers. Therefore, if you build your own, do it to get special features, use up surplus chips, or practice wire-wrapping, not to save money. My next planned project (not in the book) is a super-simple bidirectional IEEE to serial interface. On the other hand, a VIC would do the same thing for under \$300.

In summary, **PET Interfacing** is an excellent book, from which you will learn a great deal. However, to use it well, bring to it some knowledge of wire wrapping, 7400 series integrated circuits, and what products are commercially available.-JS, abridged from **Microcomputing** article

PET REVEALED, by Nick Hampshire. \$20 from Hayden. Good hardware description of the nine-inch screen PET, all in one book. All I/O chips are covered in much detail.-Arthur Cochrane

(Even includes PET schematics!-JS)

PRACTICAL BASIC PROGRAMS, edited by Lon Poole. \$16 from Osborne/McGraw-Hill. Heavily business-oriented book of programs. Being an engineering student, I find most of these programs of very little use. All are written in Microsoft BASIC, making them very easy to customize to the PET/CBM. Most of the programs are very simple, and could need changes for more complicated number crunching tasks. Might be of use to some small businesses.-MN

PRACTICAL MICROCOMPUTER PROGRAMMING: THE 6502, by W.J. Weller. \$32 from Northern Technology Books. For Apple users. Hardbound, very thick, expensive. Assembler source listing in back. Editor/Assembler available on APPLE II cassette or disk. Most of book covers various parts of the assembler. Useless for PET users, except to see source code and how an assembler works.-Arthur Cochrane

PRACTICAL PASCAL PROGRAMS...converted to Pascal by Greg Davidson. \$16 from Osborne/McGraw-Hill. Based on the book **Practical BASIC Programs**. (See review above.) BASIC programs converted to Pascal. They did a good job converting BASIC to Pascal. They took into consideration Pascal's different processing, such as transferring FOR-NEXT loops into many of the various Pascal formats. Fairly structured and condensed. A few places could have been improved, but it is a good book. Recommended.-Loren Cook

PROGRAMMING A MICRO COMPUTER: 6502, by Caxton C. Foste. \$9 from Addison-Wesley Pub. Co. Very little use to me because it's for KIM-1. Contains mostly hardware experiments.-Arthur Cochrane

PROGRAMMING AND INTERFACING THE 6502, by Marvin L. DeJong. Blacksburg Continuing Education Series. \$16 from Howard Sams. 416p. A good book covering 6502 hardware and software; the first half covers programming well, and the second half nicely explains interfacing to 6502.-Arthur Cochrane

PROGRAMMING THE PET/CBM, by Raeto West. \$35 from Level Limited or \$25 from **Compute!** magazine. BASIC and Assembly-language PET guide.

REVIEW #1: Who on earth pays \$35 for a paperback? You will, if you want the **latest** information for expert-level programming in BASIC and 6502 machine-language on PET/CBM computers. This is no book for a beginner; it uses hex notation in the fifth paragraph! On the other hand, it **BEGINS** where Osborne/McGraw-Hill's second CBM/PET Guide leaves off, and leaves virtually no high-level programming stone unturned in its 500 tightly-printed pages.

Skilled PET users will find it takes very careful reading to understand fully, but is worth the effort. For example, it documents entry points and register contents on entry and exit of each BASIC command, as well as other major routines called during execution. It is current through January, 1982, and seems entirely accurate--no small feat! It is the only adequate machine-language PET programming guide available so far.

Anyone who is deeply enough into PET to benefit from this book will use it daily as a dictionary-style reference guide. For a paperback, it's fairly well bound,

but if I'm already paying twice the price of a U.S. book, I wish it were spiral or hard-bound. Larger print and white space on the pages would have been nice too, but imagine the cost then! Highly recommended. Anyone who programs the CBM/PET computers for a living MUST get a copy.-JS

REVIEW #2: I agree with JS's review of the book, but some other comments are in order. This book is for everyone! Granted, experienced users will benefit the most at first but this book has something for everyone. Author not only covers all the PET/CBM commands but provides implementation on many that are not PET/CBM but should be such as PRINT USING. Has seven sorting routines plus routines for crunch, merge, append, set, renumber, etc. A bargain at most any price.-Jerry Key

PROGRAMMING THE 6502, by Rodnay Zaks. \$13 from Sybex. 304p. I have the error-filled first edition, which should be corrected in later editions. This is the first book I read on the 6502. It thoroughly confused me on addressing modes.-Arthur Cochrane

6502 APPLICATIONS BOOK, by Rodnay Zaks. \$13 from Sybex. 284p. Great for a hardware nut to see how some experiments can be connected to 6500 series chips. Limited use for PET users.-Arthur Cochrane

6502 ASSEMBLY LANGUAGE PROGRAMMING, by Lance Leventhal. \$13 from Osborne/McGraw-Hill. 606p. The best book for machine language programmers to use in learning 6502 assembly language. Each instruction is covered in detail, with many, many examples. Also covers 6500 series I/O chips. This is the first book that explained addressing modes in language I could understand.-Arthur Cochrane

6502 SOFTWARE DESIGN, by Robert Findley. Blacksburg Continuing Education Series. \$13 from Howard Sams. 204p. Although mainly for the AIM 65, it has many useful routines quickly adaptable for PET. Good explanation of 6502 instructions and addressing modes.-Arthur Cochrane

6502 SOFTWARE GOURMET GUIDE and COOKBOOK, by Robert Findley. \$11 from Scelbi Publications. Not as well written as the other book on the 6502 microprocessor. I prefer 6502 Assembly Language Programming and 6502 Software Design. The book does have many routines and if I didn't have the other two, I would use it more.-Arthur Cochrane

VISICALC: HOME AND OFFICE COMPANION, by D. Castlewitz and L. Chisauksy with P. Kronberg. From Osborne/McGraw-Hill. Over 50 useful Visicalc templates. Written for the Apple version of VISICALC, but with a few exceptions, these models are also entirely usable on the PET version as well. (The main exception is the "@LOOKUP" command that references variables in Apple VISICALC.) The templates supplied help out in finance, accounting, sales, personnel, and home. Each includes necessary field entries, a sample printout, and instructions. An excellent aid in using VISICALC.-JS

INSTRUCTION SET SUMMARIES

reviewed by Arthur Cochrane:

6502 MICRO CHART, from Micro Logic Corp. This instruction set summary is the BEST. A hard plastic notebook sheet with the most information in one place you will ever find on the 6502.

6502 INSTRUCTION HANDBOOK, \$2 from Scelbi Publications. A shirt pocket book on the 6502. Good for quick explanation. One error noted: for STORE instructions (STA, STX, STY), it states the flags are affected (untrue) the same as for loads.

SYNERTEK and MOS TECHNOLOGY, INC., have 6502 instruction set summaries. Synertek also has a 6522 summary which is great for working with the User port. Write them and request one.

POCKET REFERENCE GUIDE, from Leading Edge Computer Products (wholesaler only). Free when you buy a product from a Leading Edge dealer. Very handy PET reference. BASIC 4.0 is not included on the ones I have, which are over 2 years old.

BUSINESS REVIEWS
Accounting Packages

EDITOR'S NOTE: The following is condensed from an original three-page review. Joe deleted the recommendation paragraph after receiving more dealer support.—JS

BEC ACCOUNTING SYSTEM, about \$1000 from Business Equipment Compuserve. Needs 32K memory, CBM disk and printer. Interactive accounting package of 7 programs, including General ledger, Accounts receivable, Accounts payable and Payroll. Results of some programs automatically posted to others. Inventory, Job cost, and Mail list stand alone. G/L handles up to 1,000 accounts and 4,400 transactions, using 2040 disk. All programs edit, add, delete, list files, print reports, etc. and follow the Osborne accounting format.

There are three companies on this system and reasonably satisfied, but it hasn't been easy. Payroll does detailed reports, writes checks, 941 reports and W-2's and provides current, quarterly, and year-to-date information on check stubs as well as the report. Details deductions. Data is posted to G/L journal automatically. Accurate and fairly fast. Only required inputs are: number of regular and overtime units worked. Variable periods option.

G/L is more difficult to implement. Documentation is sketchy. Very difficult to determine when to post. It took three months to learn how to edit beginning or year-to-date balances. Fairly good prompts; however, it used different names for same files. Needs less capacity and less disk shuffling. Capacity is severely restricted by the time it takes reading, sorting, and printing. At 5500 transactions, it takes 7 hours to prepare the monthly report. An update ROM and disks corrected some bugs. The package arrived without documentation. Some account numbers had been changed. We stepped all over files to which we'd assigned those codes, causing tedious manual reconstruction. The update provides upper/lower case, but you have to enter marital status in lower case or else all deductions are made from the single tax tables. The extended warranty is a kindly voice on the phone, sympathizing, and informing us that if we modified any program part, our warranty was invalid.-Joe Suddoth

B.P.I. Accounting System Programs. \$395/each of 5 programs from Commodore. The programs include ACCOUNTS RECEIVABLE, GENERAL ACCOUNTING, JOB COST, INVENTORY, and PAYROLL. Protected by a dummy ROM. Requires 80-column screen and 8050+ disk.

REVIEW: BPI GENERAL ACCOUNTING is all the accounting a SMALL business may need, but is also highly expandable via the other programs (ACCOUNTS RECEIVABLE, JOB COST, INVENTORY, and PAYROLL). BPI GENERAL ACCOUNTING has an excellent reputation - independently certified by the famous Arthur Anderson CPA firm. Suitable for CPA's who do accounts for many companies. Also easily handles 10 departments separately, and can combine up to 9 accounts into a single line on a balance sheet. Allows a trial balance balance sheet or profit and loss statement at any time during the month. Well protected against fraud via altered entries. Fairly easy to use. Includes a fine manual and a full demo disk. Good use of special journals, such as cash register, but won't print checks. Highly recommended.-JS

UPDATE: Payroll checks and other BPI forms can be purchased from: Trinity Forms, Total Forms Dept., Carrollton TX (1-800/527-0625).-KRP

CMS ACCOUNTING SYSTEM II, from CMS (Charles M. Stuart) Software Systems. \$300 for GENERAL LEDGER only, \$900 for GENERAL LEDGER and PAYROLL, \$1500 for complete package which includes ACCOUNTS RECEIVABLE and ACCOUNTS PAYABLE. Protected by a user port dongle. Requires 8032 and DOS 2. CBM or ASCII Printer optional.

REVIEW #1: One of the most straight-forward, well-prompted packages around. Entry-level accounting knowledge more than adequate to setup and operate. If A/R and A/P are as good as G/L and P/R modules, this is IT! EVERY entry is provided with the necessary prompt information to ensure correct entry. Error trapping and out-of-balance conditions are clearly defined. Excellent manual complements program. Some reports limited. Biggest oversight is lack of ability to make use of 8023 printer features within program, but printer can be set to proper mode (pseudo letter quality) before startup and will not be reset. As a new micro user, I couldn't have made a better choice.-Jerry Preissler

REVIEW #2: CMS GENERAL LEDGER, Version 2.5 operates on either BASIC 2.0 or 4.0. Requires 32K, dual disk and printer. Random access files give 1/2 second access by account number. Setting up an account file is not hard, but requires planning. Once established, the results are very professional hardcopy. Documentation is a little light, but program is so turn-key, it doesn't need much. An Osborn manual is provided with program to aid in setup. Excellent audit trails and reports; match accountant files very closely. Only one disk need be copied to get a full backup. In 1-1/2 yrs. of use, I've never broken out of the program nor lost a file due to a bad "write". I highly recommend this program for any business.—Doug Dachenbach

REVIEW #3: Review copy included Version 3.6 of GENERAL LEDGER, ACCOUNTS RECEIVABLE, AND ACCOUNTS PAYABLE. Really super ONCE you've got it set up, but it's not easy to set up. G/L handles 300 accounts with 3000 transactions per month. A/P handles 200 vendors and 400 invoices. Includes an audit trail, prints checks, and does invoice aging. A/R handles 300 invoices, 1000 customers, and allows partial payments. Based on the original Osborne accounting books package. Documentation lacks a simple trial set up and advice on planning (what you want to do and what data you should have already collected?). User will end up reading and re-reading the manual.—Jayne Schiek

L.T.A. (LEGAL TIME ACCOUNTING), by Cimarron Corporation. \$595 from Commodore. Protected by a dummy ROM.

REVIEW: "I purchased it in December 1981 and received version 2.0. I have since received (at no additional cost) versions 2.5, 2.6, 2.7, and just this week 2.8. While there were problems with the early versions, version 2.7 has worked well. I have not used version 2.8 yet, but after I use it for a couple months, I will write a review for you. Cimarron Corporation employed Laszlo Ory early this year to work on L.T.A., and he has been willing to talk and provide assistance whenever I called."—John D. Young

UPDATE: Checks, statements, invoices and other forms (for LTA and MAS) from: Checks To Go, 8384 Hurcules St., P.O. Box 425, La Mesa CA 92041 (1-800/854-2750)

MAGIS, \$2000 from dealers working with MAG Inc. Full accounting package. Requires 8000+ computer, 8050 disk and printer. Standard version allows custom changes to BASIC source code. Dongled version also available, price and access to custom changes unknown.

This is not a full review as I have not tried to use MAGIS seriously. However, it does exist, load, and run. Some main points I've already noticed are its completeness -- even prints checks -- and its ability to be customized. However, dealers tell me it is also limited in some ways. For instance, if memory serves me, it is only willing to do a balance statement and income statement as it erases all data for the month. Documentation isn't too bad, except that it badly needs a demo set of books and a walk through them in the instructions, like the one that comes with B.P.I.'s package.—JS

M.A.S., \$495 from Commodore. Medical accounting system by Cimarron. Requires 8032, 8050 disk and tractor-feed printer. Protected by dummy ROM at \$9000.

REVIEW #1: Able to do cash management, accounts receivable, billing, and Universal Insurance form C 4359 (11-78) for some physicians. **LIMITS:** The practitioner must have under 100 patients a day total for all of 1-5 physicians together. The practice must also have some novel way of caring for poor folk, since Medicare and Medicaid special insurance forms are not included in the package.

FEATURES: Each physician carries a 'traveler', a little crib sheet of diagnostic and procedure codes commonly used, and which apply to a particular patient's current treatment. The traveler gives the secretary enough info to make out a bill and/or insurance form, either while the patient waits, or later. An end of day summary prints forms and an audit trail of the day's activities, then summarizes information into a journal. A similar process ends each month, with bill preparation.

ADVANTAGES: Reasonably userproof, menu oriented and "helpful" to the operator. For instance, the disk light blinks on the disk drive you are supposed to use. Has nice display of the current time. More useful is the way it assures that no patient be entered into the system without a guarantor to pay bills. Better yet, guarantors can't be deleted until their bills are paid. Also includes quick methods to enter new patients, and handle one-time only patients.

A good feature is the ability to enter custom diagnostic and procedure codes, with 2 price levels for each treatment. Can make adjustments, such as fixing a billing error, with an audit trail for safety. A wide variety of special reports are also available, including guarantor aging (of bills), codes, referrals, and performance data on individual doctors, places of treatment, and outside services. Some aids for quick entry of redundant data and a quick option to print the most needed monthly reports are included. Manual is thorough and fairly easy to follow.

DISADVANTAGES: First, the manual buries some key operator requirements, such as the need to enter patient names as `LASTNAME(slash)FIRSTNAME`, and the special keys that enter default data. Needs a summary and specification sheet. Second, insurance, referring physician, outside service, and place of treatment codes are assigned by the program, not selected by the user. Third, one early version refused to recognize its own data disks, so backups had to be made outside the system.

Consider this a preliminary review, since we have not yet seen MAS in daily use by a physician. It is not capable of handling my father-in-law's joint allergy practice of 200+ patients a day, nor his need for a quick handler for Medicaid forms. But for a more typical practice, it might be quite adequate. There is a competing program, called MARI, but its makers are unwilling to have it reviewed. Until they change their mind, give first consideration to MAS.-JS

REVIEW #2: M.A.S. lacks enough detail on patients' monthly statements.-Jayne Schiek

UPDATE: Checks, statements, invoice and other forms are available from: Checks To Go, 8384 Hurcules St., La Mesa CA 92041 (1-800/854-2750).-KRP

MeDECS, from IBME. (Caution: not seen by the reviewer.) IBME has developed a way to test a wide variety of hospital equipment, and keep track of maintenance information, using Commodore computers. Actually, a token HP 9845 is used as

the central node of a distributed star network, with CBM 8096's at the points of the star, and VIC-20's as data entry terminals, all aided by a semi-automatic "smart cart" that handles the testing and maintenance.

One primary purpose of the package is to prove good maintenance in the event of negligence lawsuits. Another is to automate the reports hospitals have to file on such equipment. The package is leased, not purchased, and looks very good on paper. How about a customer review?--JS

TAXMAN-82: an interactive Tax Management Program for VISICALC and SUPERCALC users, from Atsuko Computing International. The Commodore manual made it to press before April 15, 1982, but not the accompanying diskettes to actually run the programs. Supposedly the same as published versions for Apple, Radio Shack, etc. Let's hope that Atsuko has better timing for TAXMAN-83.--ES

UPDATE: In March 1982, you could supposedly get tax preparation forms from: Spee-D-Tax Forms, Inc., 700 Tower Rd., Mundelein IL 60060.--KRP and ES

BUSINESS REVIEWS: Data Base Managers

ASERT (Aid for SEarch and ReTrieval of Information, \$450 from CFI. Requires 80 column screen and 8050 disk. Query-type database manager. Holds 1900 large records, accessible from outside ASERT. Protected with a functional ROM. Includes my SUBSORT, and Higginbottom's INPUT EDITOR. (Sorry, since I was the only one in CIPUG with an 8050 when this review was requested, I did the review.) It has three main sections in each record: 1) a typical mail list section with variable number of fields, any of which may be sorted or subsorted, up to 5 levels deep; 2) a REMark section that is totally free-form and neither sorted nor searched; 3) a yes/no section for membership in up to 90 categories, for later searches. Searches may be very complex, with "must-haves", "must-not have", and "get-brownie-points-for-having" categories, which may be mixed in most ways. Printouts are simple and inflexible, but easy and useful. Originally developed to keep track of campers' records and talents. Typical application: to store resumes. ASERT could easily find names (if such exist) of 5 engineers with doctorates who speak Spanish, have worked with integrated circuits, and are willing to travel. User manual and demo disk are very well done. Only lack: details on the file layout needed to access records from outside the program. Recommended --JS

THE CLASS MANAGER, from Merlan Scientific. See under Education Reviews.--ES

DATA-PLUS. CREATE-A-BASE has been bought by Professional Software, and will now be sold under the name DATAPLUS (or is it INFO-PRO?). The package has been changed somewhat, according to their lawyer. No word yet on what happens to customer support for buyers of CREATE-A-BASE.--JS

FILE CABINET, from Progress Computers.

ORIGINAL VERSION: Was \$65. Data base manager, simple but with twist. 18 programs use PET overlay programming, filling only 60 at a time. Not ISAM, but FAST ml sort module makes it faster to use? Does multiple subsorts. Good manual if you know data bases. Menu-driver with excellent prompts and good error recorer options. Special uses include: WORDPRO 3 and 4 files read into it as data; optional "PR" (print) module sends partial file to disk for WORD PRO to load. Minus: no "browse" function in "Edit" (but can be done crudely). Should have suppression of leading characters at points to prevent goofs. All in all, a fair price for a good package.-JT

VERSION 1.2: \$35. Creates and manages data in sequential files with 18 menu driven modules which use only 6K at a time. Includes fast machine language sort with subsorts (by JS). User-defined default entries for current filename, printer device, and each file field. May combine files into a new file and generate simple reports using file data. Allows extensive editing of files and file structures, except report format. Has good screen prompts and error trapping. Fair manual describes typical uses.

MINUSES: It should say, "For DOS 2.0's sake, use NO spaces in file names." The report feature is clumsy to use. I prefer the modules to allow pausing/aborting output and successively to pull in previously named series of files. HOWEVER, its straight-forward, unprotected programming let me add these features. Its use of little memory and sequential files will work on BOTH my 40 column upgraded PET and my GRAPHIC 80. Not fancy, but a good buy of a work horse.-BA

FLEX FILE, by Michael Riley. \$60 from A.B. Computers.

REVIEW #1: Needs CBM disk with DOS 2. Versions for BASIC 2 and 4. Versatile Database manager with 18 overlay programs. Uses relative records. Fast access. Able to convert relative files to sequential ones and visa versa. This aids in changing file structure at any time. Defines four keys for sorting. Maximum record size is 250 characters. Field sizes are not fixed. Includes tips for changing programs and using mixed BASIC/DOS versions. Has 12 commands for adding your own routines. Includes excellent report writer with summing and totals.-Doug Dachenbach

REVIEW #2: In BASIC and machine language. CBM or ASCII printer. Up to 42 fields. Finds records from partial name plus backward or forward browsing. Unique key field data is not needed. Has room for 1000 records of 127 characters per 4040 disk drive, or 2800 on an 8050 dis drive. Saves label format. Includes report headers, column titles, arithmetic on data, and a logical search for report data. Easy-to-follow 28 page manual. Worth its weight in gold.-Dr. George Piasecki

REVIEW #3: It runs very slowly with 200 records having 20 fields each.-Bob Snyder

INFO-PRO, from Professional Software. See the comments under DATA-PLUS.-ES-

IRMA (Information Retrieval and Management Aid), by CFI. \$495 from Commodore.

REVIEW #1: I would say it's all right for its primary design purpose - for a body shop or personnel service. You can examine it, but there's not much to look at. A single field data base, up to 15 screens full of qualifiers, fixed for whole file. It takes forever to find a name in a large enough base. It's nice for a **small** personnel agency.-Jerry Key

REVIEW #2: "If you try to format a data disk before you set the parameters, you will get a "file data error in 2" just after the screen says "take a short break". In other words, do part 3.4 before you do part 3.3 (of the IRMA manual).-KRP

JINSAM, \$150-800 and up, from Jini Microsystems. ROM protected. Version 1.0 for 16K and DOS 1 disk. Version 4.0 for CBM 4000 series and DOS 2 disk drive. Versions 8.0 and 8.2 for CBM 8000 series and DOS 2 disk. Version EXECUTIVE for CBM 8000 and 9000 series and DOS 2 disk (and IBM Personal Computer). System requires security passwords (3 levels) to access. Versions 4.0 and up include JINSORT (JS' adapted ROM version of SUBSORT).

Module (extra-cost) options include: WORDPROPACK (to produce letters, reports, etc., via WORDPRO), MULTI-LABEL (mail labels), MATHPACK (global calculator/editor), DESCRIPTIVE STATPACK (more statistical applications), ADVANCED STATPACK (adds to DESCRIPTIVE STATPACK) CALCPACK (2-way interface to VISICALC and other user programs), and INTERAC (to read other sequential files).

1.0: Needs 16k and 2040 disk. Not for DOS 2. Uses a dummy ROM at \$9000. The best available PET database manager for DOS 1. Very complete. LOTS of documentation. FAST random access to 650 records. Over 150K of well-written BASIC programs, and add-on modules to do about everything. Current version takes some setup and lots of disks. Well worth it for serious uses. Far better than their earlier JINI database, sold by the Computer Factory for \$125.-JS

4.0 (for 4032), \$700, and JINSAM 8.0 (for 8032), \$400 from Jini Micro Systems. Need BASIC 4 and Commodore disk with DOS 2.

REVIEW #1: "By far the best database program for CBM systems currently available. No other software firm has one with as many features and applications. Unlimited record length, up to 5 prime keys and unlimited defined keys plus unparalleled machine language sort. Highly taunted OZZ is no match for JINSAM. With OZZ, you have limited access, no sorting, and more importantly, no support (i.e., customized modules). For \$40 more each, JINSAM provides WORDPRO and VISICALC interfaces, extensive math and statistical applications, with more to come."-Lyle Phillips

REVIEW #2: JINSAM does have a unique way of handling files to allow the user to assign more than 256 characters to a single record. As soon as the enhanced DOS 2.7 comes out on the 8250, the file limitations of only using one-third of an 8050 disk should also be removed, so that JINSAM can hold three times as many records on a single disk. Meanwhile, you are effectively limited to no more than one-third of an 8050 disk at a time, unless you're lucky enough to have a hard disk already. Also, several users have commented that it is a complex package that takes awhile to figure out how to set up and use. Also, chaining between modules seems to be rather slow (written in BASIC?).-ES

REVIEW #3: "I've also been disappointed by JINSAM - I think the documentation is way too complicated. They never answered my letter on problems I was having with the disks they sent me - some programs would not load at all...."-Sieg Deleu

KRAM, \$100 from Computer Factory. Needs disk and 16K. Protected by dummy ROM at \$a800. Excellent and fast random file manager. Fine manual. Comes with a simple mailing list program. Can't have multiple keys to the same data, a serious limitation in uses that need later sorting. An alternative to JINSAM for those who need to write their own programs.-JS

MAC, \$795. Church database package, for 8032 and CBM 8050 or 4040 disk.

REVIEW #1: Allows practical maximum of 2000 members. Uses 80 column screen to great advantage, to show all data for member family at once; screenprint utility dumps it easily to printer. Very polished, and designed for easy, idiot-proof use, but more limiting than I like. Handles name, 3-line address, 2 phone numbers, Sunday School class, 4 job/skill categories, pledge, year-to-date gifts, birthday, date of last attendance, and one "other" field. But does not include spouse name, kids' names, 12 month record of attendance, date of last pastoral visit, etc. Capital letters, commas, semi-colons and colons cannot be used in data, but are allowed. Data cannot be sent to any other program. Reports in member # order or alphabetically by name, but not in zip code order. Enter weekly contributions by member # (with automatic updating of last attendance date), but cannot update by name. No auto allocation of available records. In summary, I wish JINSAM were as easy to use, because it's not limited by these problems and costs half as much. However, MAC shows great promise.-JS

REVIEW #2: "We find we are unable to get software support from the author. All our questions by phone and mail have gone unanswered. Therefore, we will no longer distribute MAC."-Bob West

(ED. NOTE: Bob was formerly the main distributor for MAC. A Texas company contacted us last April 1982 to say they are now distributing MAC. However, we didn't catch their name or address. We're still hoping to hear from them again as promised. Author Charles Ivey is reportedly no longer involved in work on the package.)

THE MANAGER, \$250 from CMD. Requires CBM disk and 8032. Protected by dongle.

REVIEW #1: This file manager has become very popular. Had we been free to review the pre-release copy we saw earlier, it would have received a rave review. Even now, it's a GOOD package, second only to SILICON OFFICE. For users who only need one file at a time (and already have WORDPRO), it should be quite adequate, perhaps even better than S.O., and certainly cheaper.

ADVANTAGES: Uses standard relative files, with nearly every desirable convenience for working with them included: sorts, searches, reports, screen dumps, dumps to

WORD PRO, etc. Has well-done Commodore-recommended screen formatting, allowing you to easily design file formats on 1 or 2 display pages. Includes somewhat programmable arithmetic functions. Display variables are recalculated each time the record appears to conserve diskette space. It's other key advantage is its user-accessible BASIC code. Several of its machine-language modules have very useful skills, such as the ability to input strings up to 253 characters long, and then easily alter any portion of the string.

SHORTCOMINGS: CMD suggests users and dealers develop custom applications. It is, for example, possible to relate two files in a report, as in S.O., if the user writes a suitable program. Unfortunately, none of the SYS calls and parameters are documented. Dealers can obtain some added documentation from CMD, but most added powers will have to be figured out by studying program listings. This is the exact opposite of Human Engineered Software's approach. (HES could do well with a reference guide to THE MANAGER!) Other obvious lacks include any way to restructure a file of more than 20 fields, enter data from a sequential file (I wrote my own), prevent duplicate records from being entered, or find new data without constant time-consuming key updates.

For those with more time than money, THE MANAGER is quite a bargain. Recommended.-JS

REVIEW #2: The MANAGER is a very powerful and versatile data base manager, with user defined screen formats, a very nice editor with very flexible searchvch functions (including pattern matching and indexed searches) and very flexible report and file generation. Interfaces with WORDPRO. The best things about this program is that the end user may modify it for his specific application. I have added commands, entered default responses, and used the BASIC extensions. Highly recommended and a very good value at \$250.-KRP

REQUEST, from U.S.A. DOES NOT EXIST as of June 1982. When questioned, they were just finishing the Apple version, and hadn't even started writing the PET version. They may beat Commodore and Skyles Electric Works in pre-advertising their products... Let's just hope the quality of their final product comes even close to that of Commodore and Skyles once their products finally do reach market!-ES

SILICON OFFICE, \$999 from Bristol Software Factory. Requires CBM 8096 computer and 8050/8250 CBM disk drive. According to our dealer, Computer Country, a free upgrade version for the CBM hard disks is available, with enhanced features. A 22MB Mator hard disk version is also available, if you are willing to wait 5 months for delivery of the disk. IEEE modem and printer optional. Protected by "foreign DOS".

REVIEW #1: Claims to handle ALL the software needs of a small office, and nearly succeeds! Combines the first microcomputer database language on any microcomputer, relational data files, possibly the best micro-based word processor yet, and full remote control and communication via modem, all in a single 54K byte machine-language program (claimed to be the largest program ever written for a micro). Already outselling all other Business programs in Europe, where it has been available for 6 months.

SILICON OFFICE is the FIRST TRUE RELATIONAL DATABASE MANAGER for Commodore

equipment. Up to 6 (or 30 using hard disk) independently defined files may be defined and related in nearly any way, using both disk drives for data, plus any number of work disks. This allows several thousand records, or individual records of more than 1,500 characters, or combinations thereof on an 8050 disk, and more on a hard disk.

As a true database LANGUAGE, it includes all the expected amenities: numeric and string variables or expressions, parentheses, arithmetic, comparisons, subsorts, high-speed wild card searches, IF-THEN, GOTO, built-in functions (notably a calendar), and the ability to work in both immediate and programmed modes.

As a WORD PROCESSOR, it has true multi-column printing capability, uses a virtual disk technique to link 120-150 page documents into a single file, can evaluate complex expressions at print time, and can add in ANY data from any current file. Text is continuously and RAPIDLY formatted as it will be printed, with horizontal scrolling on wide documents. Justifies text even within printed words, giving an extremely polished appearance to printouts.

As a TERMINAL, it is capable of doing, on a remote SILICON OFFICE system, nearly anything that could be done by a local operator of that system. However, the real power of the program is that all these powers are completely linked in a whole that is vastly more powerful than the sum of its very capable parts. The package even comes with a 2 year guarantee.

Documentation is excellent! Includes easily understood full-size bound training manual, plus a separate, very complete and well-organized reference manual in a binder durable enough for daily use. The program itself includes several help screens, with cross references to the manual. A diskette of sample screen masks, including all the usual accounting functions is also available. A help hotline, newsletter and videocassette training course are planned.

My main complaint is that the diskette cannot be copied, and comes with only one backup. Replacement diskettes are said to be available within 2 working days. Also disk data is stored using screen codes, requiring (simple) conversion to PET ASCII before use in ordinary programs.

Beginners can easily use SILICON OFFICE, but even expert programmers will be unable to exhaust its capabilities. If you could only have one program, this is the one to have! Of all the programs the *Midnite* has reviewed in two years, SILICON OFFICE is the VERY BEST. It is easily the most useful program I have ever seen! Nothing available for any other microcomputer even approaches its power.-JS

REVIEW #2: A very versatile relational database. This program is very good for people who understand computers and programming, and wish to have the flexibility to design and modify their own application software. The templates may also be created by a programmer for the specific needs of a business. In either case, development time is greatly decreased, but the great power of this program is in its ease of use and many combinations of access and/or output options. Highly recommended for serious programmer-users and a good choice for inexperienced users if they get good programming help from their dealer.-KRP

JS UPDATE: After another couple of months with SILICON OFFICE, I've had a chance to compare it to DBASE II, the closest thing to a competing package on Apple and CP/M systems. I've also uncovered a couple of commands S.O. lacks, and could use.

S.O.'s a bit weaker than DBASE II as a video-only database manager. DBASE II includes a few more useful commands that make it easier to use. These include,

if memory serves me, PRINT AT, MID\$0, and GOSUB...RETURN. I really miss all three in S.O. DBASE II also allows any number of related files, up to Apple's (far smaller) disk capacity, rather than SO's absolute limit of 6 or 30. On the other hand, DBASE II lacks the power and simplicity of S.O.'s Report Generator/Word Processor, not to mention the terminal capability, making SO, on balance a far better package for many uses.

Both packages lack one other desirable feature: the ability to refer to fieldnames as array variables. In S.O.'s case, it is not even possible to enter a field name in response to an INPUT statement and then access that field. This makes it almost impossible to design a way for an unskilled user to update only one of a large number of similar fields. For example, this week's contribution to a file that has fields for each of 3 funds for each of 13 possible weeks per quarter. Without such a capability, the operator cannot easily be guided to the correct field for update.

If you've wondered, as I have, why S.O. doesn't allow ordinary paragraph indentation, here's a way to achieve it. Set a tab where indentation is needed as you begin work. Then drop down a line, and clear the tab from there down.

As it turns out, the 5 megabytes worth of demo disks don't include any working programs; just screen formats. I would be glad to see any useful S.O. programs developed by readers. That may be a good combination.

Despite the above, I stand firmly by my earlier opinion that this is the best single program I've ever seen. If its authors could squeeze in the missing features I've mentioned, it would be very near perfect.-JS

THE WIZ, \$495 from Dr. Daley Software. Requires CBM 8032 and 8050 disk. CBM or ASCII printer optional. Uses ROM board at \$9000. Data manager package. THE WIZ contains several good and unusual touches, compared to most other data manager packages. For one thing, it is largely self-documenting, with a 125 screen manual on-line at all times. From almost anywhere in any module, 1-2 help screens are available to deal with any current problem. Another major advantage is its ability to handle truly HUGE numbers of records, organizing them on up to about 30 full 8050 diskettes, each containing between 2,000 and 10,000 records. However, each record is still limited to a more usual maximum size of 250 characters, allocated among up to 64 fields, with each field no larger than 78 characters. Another advantage of THE WIZ is its built-in plotting capability.

Like its most worthy competitors, THE WIZ uses Commodore's recommended screen input editor to design records, has programmable arithmetic, and handles simple reports. It also allows sorting on any field or combination of fields, and either fixed field or global searches, with or without regard to case of the text. Results may be sent to the screen, a printer, or WORDPRO-compatible disk file.

It is not intended to be modified, listed or even halted by the user, but it has enough documentation for programmers to read and write WIZ data from other BASIC programs, using supplied sample interface listings. Also includes a WIZ menu option to jump to a user-written module, and better yet, a claimed ability to read in data from a sequential file, which would avoid retyping when upgrading from a lesser data package.

THE WIZ has one other nice touch: its ROM comes in a small flat board that fits the 8096. Normally off, THE WIZ automatically turns the ROM on at start-up and off at sign-off. The board has an empty ROM socket for whatever ROM you use when THE WIZ is inactive. (If you use the 8096, remember POKE40958,255; that will turn off THE WIZ ROM after using the 8096's added memory.)

I recommend THE WIZ to four groups: the new users, the non-programmers who never read manuals, the people who need graphs, and any user needing over 2000 ordinary-sized records in a single file.-JS

**BUSINESS REVIEWS:
Mailing List Programs**

Please note that most data base managers described in the previous section also contain sophisticated mail list programs.

BENNETT'S MAIL LIST, by Chris Bennett. See under Public Domain Program Reviews.

DR. DALEY'S MAIL LIST (Improved), \$160 from Dr. Daley Software.

REVIEW #1: Needs BASIC 2/DOS 1 or BASIC 4/DOS 2. Output to screen, printer, and user-defined sequential files for use in WORDPRO. One system master is required per file, but one master controls up to 89 data disks, with up to 1340 records per 4040 disk. This allows one file to have several thousand records. Fast access only by record number, but it searches up to three fields at once, including wildcard, at about 3 records/second. All fields are user defined (15 maximum), with a fixed record length of 117 characters. Input features include: auto repeat, defined duplicate, field from previous record duplicate, etc. Records are placed in proper order and on the correct diskette, regardless of input order.

Has good documentation, but it's not current with the program. I have received about 5 updates thus far, with another coming to correct printing and disk maintenance bugs. The program needs house cleaning to eliminate screen errors and is ultra sensitive to disk errors. Hardware maintenance is essential: disk heads MUST be cleaned regularly, and on the 4040 disk drive, COLLECT must be run at intervals to keep the directory free of pointer errors.

This is the only program I've seen that controls several thousand records in a single file and is so user defined in its format. A good buy at the price and will probably get better as Daley continues to update it.-Doug Dachenbach

REVIEW #2: Dr. Daley, from a phone conversation, feels some of Doug's problems may be due to changes Doug has made in the program. However, Doug is, from what I've heard, by far not the only user to have trouble with the program. Daley and user Chuck Spriggs have commented that this is not a program you can expect to use without serious preparation, or without a manual. Prepare to spend a full day with the manual, and beware of surprising side effects if you change ANYTHING. Dr. Daley has an excellent reputation as a PET programmer, spanning 3 years.-JS

REVIEW #3: Menu-driven program with overlays totalling approximately 60K of BASIC and machine code. Fields within each record are user defined and print routine allows formatting of fields in any sequence and can print labels up to 8 across. Directory allows up to 80 disks each with 1380 names to be maintained in zip code order (an advantage in bulk rate mailings which must be pre-sorted). Other features include: re-sort, disk compress, wild card search, record update,

and a useful routine to scratch dups or near dups. Input is error-proof and can be used by anyone. Several recovery programs included if errors occur (I've had none since changing to DOS 2.0). Well-written program; usable in business environment (ours has 5000 names). Can supply labels required by a mailing house and can be kept current easily. Several readings of the 100 page manual and careful thought on initial setup is important (i.e., will zip codes have 5 or 9 digits?). Updates are available as Commodore products change by returning your disk plus \$15. Program and support have been well worth the cost. It's a good program, but it takes time to learn to use it.—Chuck Spriggs

REVIEW #4: Have been deeply involved with D.D. since he first received MAIL LIST. Infant problems were fixed in reasonable time, but more problems persisted. Exceptionally tightly coded (good) programming technique that defies user repair or modification. Problems included: lost records when crossing data diskettes on 2 or 3-up labels (may be fixed), re-sort problems, lost directories and format files (persistent), and collapsed non-recoverable records. Only modification made was to keep the program (and business) running until a fix was made. Currently, the only modification in the program is a routine to allow a specific WORDPRO file to be generated from multiple data diskettes. Otherwise, the untouched version is used. One early version came sans print routines. The last version received was missing one program. May function well as a straight mail list but its reliability is questionable when used to its full potential (and it is a powerful and unique program). I would like to hear directly from other users of program.—Jerry Key

BUSINESS REVIEWS: Word Processors

DYNATEXT, \$17 from Brent Anderson, of the ATJG disk exchange. JS's authorized PET version of Mitchell and Law's '79 "article of the year" word processor from **Microcomputing**. "Of all the inexpensive word processors, your DYNATEXT is the best. I have tried or purchased the CMC, the Petshack, the Computer Factory and WORDPRO 1 (word processors). When, and if, I get a floppy (disk drive), I may learn to love WORDPRO 3, as you do. Meanwhile, I'll live with my present version of the M. and L. text editor with my embellishments."—Harold Elrod

M.A.E. (Macro Assembler Editor Package) includes a very capable line-oriented word processor, using the same editing commands that M.A.E. uses, plus sufficient additional commands to handle a regular business letter or short article. A nice touch is its ability to print text in unusual shapes, such as Christmas trees. See also under Assembler Reviews.—J and ES

PAPERMATE, \$70 from A.B. Computers. By Michael Riley. Inexpensive. On disk or cassette.

Original Commodore version:

REVIEW #1: Features machine-language for the PET to ASCII conversion routine. Fast, and could be faster, but for PET's garbage collection routine (BASIC 4 cures

this!) Word wrap-around, without awkward splits, optional hyphenation, formatting, headers, page numbers, commands for disk or cassette, linked files, form letters, and even options for various printers are built-in. Instructions are good and Mike Riley is steadily improving it.—Tom Owen.

REVIEW #2: I bought PAPERMATE from AB Computers in March of 1981 for use with my 2001-32K PET and 2023 Printer. I found it easy to use and considerably advanced over WORDPRO 2. I especially appreciated the freedom to switch to other programs without having to power down. I stopped using WORDPRO 2 in favor of PAPERMATE.

PAPERMATE does operate a bit slower than WORDPRO 2, and it does disappear at intervals while the PT performs "garbage collection," but I use those moments to collect my thoughts and plan what I am going to write.

The instruction book is a concise and easy to follow 16 page manual with a summary of commands printed on the back cover. Every command uses the initials of the command function: LMLLeft=margin; RMRRight=margin; BMBBottom=margin. What could be simpler?—Benson Greene

PAPERMATE 60, \$60. A new May '82 version has just come in from **Microcomputing** magazine for my review. It arrived too late to include in this book, but does exist, load, and run. Also, since it includes a PAPERMATE to WORD PRO converter, we can now accept reviews and articles in PAPERMATE form.—JS

PEDISK version, \$60 from CGRS Microtech. Full feature word processor is now available for PEDISK II (version 4 and up), converted by Bob Freeman of AB Computers.—JO

SILICON OFFICE includes an excellent word processor, combining Wordcraft's "what you see is what you get" screen format, the ability to simultaneously print two column output (for newsletters and such), and can incorporate any data from anywhere within any SILICON OFFICE data file. A bit clumsy with ordinary formatting, such as paragraph indentation and centering. See also the rest of the review under Business Reviews: Data Base Managers.—JS

WORDCRAFT, from Commodore. \$395 for 80-column version, \$295 for both 9" and 12" 40-column versions. Protected by dncgle.

WORDCRAFT 80, \$395. Protected by dongle. Variations for most models

REVIEW #1: Europe's most popular word processor has never quite caught on here. The most likely reason is that WORDPRO had become totally dominant here before WORDCRAFT appeared. From brief testing, it does not appear to be either as hard to use as WORDPRO, nor as powerful. It is also slower in use, especially when you change often between various modes. Always shows text as it will appear when printed out, with horizontal scrolling as needed. This is a recommended feature, but I don't like it, as it slows things down, and makes the screen jump too much. Organizes everything into small chapters, which seem harder to organize than WORDPRO files. Even though Commodore sells WORDCRAFT, I note their staff still uses WORDPRO heavily in-house, and suggest most readers do likewise. The exception would be a new unskilled user who doesn't need to trade text files with other users. In that situation, WORDCRAFT could be the best option.—JS

REVIEW #2: "The proper selection (configuring WORDCRAFT for the 8300 printer) is 'Commodore' (selection V). Once you get into the command mode, execute the command '#,d'. This configures the output for the daisy-wheel printer.... This option is documented on page 50 of the Wordcraft Manual, although the manual says not to select the daisy wheel function in the Commodore mode. In fact, this combination does work properly with the 8300P."-KRP

WORDPRO. from Professional Software. Protected by dummy ROM.

VERSION 2. \$200. Needs 16K and disk.

REVIEW #1: As most PET users know, this is a super program. PET word processing is second to none with these. Very well documented. Use WORDPRO 2 for a great letter, but use version 3 (below) for anything longer. Version 2 uses dummy ROM at \$f000.-JS

REVIEW #2: I purchased WORDPRO 2 in January 1980 and used it for letter writing and for printing a 50-page manual for my accounting program. The program was well laid out and simple to use with an excellent spiral bound manual of about 20 pages, which was printed reduced size at about 5 inches square. I objected strongly to having to turn the power off on the computer in order to work on other programs, but it served well with my AXIOM EX-801 Printer. When I finally got a PET 2023 printer, I was disappointed that WORDPRO 2 did not enable use of the PET graphics that the printer provided.-Benson Greene

REVIEW #3: OVERWRITE actually does SAVE with REPLACE.-Geoff Capell

VERSION 2 PLUS. This is supposedly coming for both cassette and disk. Still haven't seen it anywhere.-ES

VERSION 3. \$300. Needs 32K and disk. Dummy ROM at \$a000.

REVIEW #1: Well documented. Has more commands than Commodore has ROM sets. Worth its cost. I use it for all my sermon texts, because it can hold one 7-8 page (double-spaced) text in one file. For that reason, I especially recommended this version for standard term papers and documentation.-JS

REVIEW #2: The new 12" screen versions of the 4016 and 4032 computers will not run WORDPRO 3 as is. One poke is said to be needed to fix the program. Some other fancy programs may also fail with the new edition. Apparently, the 2K ROM at \$E000 has been revised, as in the 8032.-JS

REVIEW #3: REPLACE actually does SAVE with REPLACE.-Geoff Capell

REVIEW #4: Jim Halsey of EXECOM Corp., makers of the new 80 column board for 9" screen PETs, sent a good article on adding a QUIT feature, and sequential output/display feature to WORDPRO 3. Since **Midnite** previously didn't publish articles, we sent it to **The PET Paper**. Meanwhile, anyone can get the changes by sending Execom your copy of WORDPRO 3 plus \$5 for handling.-JS

VERSION 4, \$300. Protected. Needs 32K, 80-column screen and disk. Uses dummy ROM at \$9000.

REVIEW #1: WORD PRO 3 for the 80 column PET! PET word processing moved into the professional market with this product. All WORDPRO 3 features plus Begin Printing from any Page, and Output to Video to see your output before it goes on paper."-Mike Kouri

REVIEW #2: I often use Version 4 for the extra text lines (158) when I don't need global printouts with boldface or header/footer formatting commands beyond 20 pages.-ES

VERSION 4 PLUS, \$400.

REVIEW #1: I wrote the entire text of the Osborne guide using WORDPRO 4+. Was able to print out the entire 500-600 page text through file linking. Extremely versatile manipulation of files, once you learn the commands. Manual badly needs summary pages of all commands (JS wrote a set, which are available from the ATUG disk exchange). Output to Video command is essential for this word processor, since "what you see" is NOT "what you get." Corrected a few bugs in Version 4. Still has bug in the underline command when used to draw horizontal lines on CBM printers. Too bad the file size is limited to only 115 lines. JS would like to keep one sermon entirely within one file.-ES

REVIEW #2: In January 1982, I purchased an 8032 computer, and WORDPRO 4+ to use with it. The instruction book that came with it is almost 200 pges. I glanced through it, then put it aside as a future project. In March, I took a look at it again and got as far as printing the Example Letter, which printed out ten pages before I realized the printer was in a loop and would continue spewing out paper until I stopped it. I was not impressed. Again, I was discouraged and put it aside.

OK, so today I decided to get this \$300 program working. The CONTENTS of the Instruction Manual showed that most of the book was lessons, starting with Lesson 1 - Turning on the Equipment. I skipped forward looking for a Summary. I found one but it wasn't much help. Since I had previous experience on two other word processors, I thought I could start here. I was wrong. I tried loading the "demo" file onto the screen and finally succeeded, but when I tried to print a copy of it with what seemed a reasonable command, my printer hung up, my disk drive hung up, and my PET went into limbo. Being thoroughly humiliated, I turned to page 1. When I read in the first paragraph, "We would like to welcome you to the world of electronic word processing. This is supposed to be an Instructional manual, not an invitation to a tea party. Now, I'm mad. I'm going to pack up this monster and send it back to AB Computers for credit. I will order a copy of Michael Riley's PAPERMATE for my 8032 for \$40. As near as I can tell, PAPERMATE include all of the capabilities of WORDPRO 4+ except search for a string. I can do without that.

When I first wrote the manual for my accounting program, I thought it was impressive to have 50 pages. Now I am going to review it to see if I can cut it back to 20. Since it is far more complex than a word processor, I doubt if I can.-Benson Greene

VERSION 5 PLUS, \$400. Needs CBM 8096 (64K add-on expansion board) and disk.

All that extra memory has been allocated to three additional "extra text" areas. This means you have a total of 5 text areas of 115 lines each. Don't ask me why Punter didn't just double the size of one of the text areas instead. You can now store the directories of both disk drives in each of two extra text areas, or just have pages 1-5 all in computer memory at one time and linked. Not worth my time to switch over yet, even though I need the extra text area.-ES

BUSINESS REVIEWS:
Other Related Programs

COMPUTER HOUSE DIVISION PROGRAMS, from F.L.C., Inc. See under Industrial Reviews.

COLUPAD, \$150 from Etcetera International Software. Protected. Needs 32K. Similar to VISICALC (like an accountant's columnar pad). Features include: add, subtract, multiply, and divide one column by another; use constants, description and instruction file; merge data from one file to another; call and print each automatically numbered pad page (one file) separately or print entire "book" with summaries, column and page subtotals, and totals; screen entry form; 24 column-40 row "accountant's worksheet and format?" accepts alpha and numeric column values. Has good editing, but it can't subtotal rows. "It works very well and is well integrated to disk and printer. It, too, uses a worksheet formula, but is not as complicated as VISICALC and costs \$50 less."-John Ellison

DATE BOOK, part of Baker Enterprises program collection. "You can request a list of dates by month, all, or special. However, "all" does not include the "special" category. All dates are entered via data statements you have to have previously set up. Not good."-GH

FINANCIAL REPORT, \$60 from COMM-DATA SYSTEMS. Manages a simple checkbook journal on any 16K++ PET with cassette or disk. Handles 100 to 300 possible entries per file. Packs lots of information on an 40 column screen. Error recovery is ok. With Strasma's fast SUBSORT, it quickly reports the data in order by check number, date, account name, or description with ending balance(s) calculated. WORDPRO instructions (about 12 pages) and sample data are adequate to understand the package. MINUSES: Capacity is limited because the whole file must be in memory. Line 458 has an error: "sys ss" should be "sys so". Screen display should allow an 80 column text mode to make it as attractively spread as the printout. Since SUBSORT alone costs \$35, the price isn't too bad. Menu-driven programming, better use of disk files and a few other polishing touches would make it more worth it.-BA

VISICALC, \$200 from VisiCorp. Protected by dummy ROM.

ORIGINAL: Needs 32K and disk. Electronic equivalent of an accountants' multi-columnar pad. Instantly recalculates contents of all rows and columns when any number is changed. This is a super program, as Apple owners already know. Highly useful and fun to use. The instructions are the best yet. Well worth the cost. My only gripe is that it uses a dummy ROM at \$9000 and runs out of memory too soon. A functional ROM would leave more memory for data. Otherwise, it's perfect.-JS

VISICALC 8096: Now officially available from VisiCorp. If it is like the user group converted program, it should have 69K RAM free for spreadsheets instead of the usual 10K.-E and JS

WORDCHECK. \$200 from MCI. For all PETs with WORDPRO 3 and up. Greatly needed and fairly well done, although its vocabulary seems small. Identifies bad spellings without changing them...an advantage, since most unknown words are correct.

File checking goes quickly, but updating the word list is SLOOOOOW. The screen display blames the delay on my SUBSORT (part of the package), but the trouble was in a BASIC subroutine. I redid it in machine language, and sent it to the company, once in December 1981, and again in February 1982. Since they still have not acknowledged it as of June 1982, don't count on getting the improved version. The lack of a reply may also say something about the after sale support you can expect: they are now 1 year behind on my SUBSORT royalties.

Claims 3 printer options. ASCII lines end incorrectly, with VERTICAL TAB, wasting reams of paper on most ASCII printers. Select PET printer option for ASCII printers. Word list contains names and addresses of author and company. Delete these for maximum vocabulary. Skinny forty models need changes in PEEK(151) values in "update".-JS

COMPILER REVIEWS

CALC. from Matrix Software. See under Assembler Reviews.

DTL BASIC. \$350 from CMD (Canadian Micro Distributors) Ltd. Requires 32K, CBM disk, and cassette port dongle to compile. Compiled programs require \$50 "run-time" dongle. Complete PET BASIC Compiler.

REVIEW #1: Object files run on any PET with adequate memory to hold program and same set of BASIC ROMs. It's the program I've been wanting desperately for 3 years! Congratulations, authors, for developing most significant PET program since WORDPRO! Thanks also, CMD, for bringing it to North American users at 1/3 the overseas cost. Have you wanted speed, compactness, and protection of machine-language programs, but been unable to handle assembly-language? Have you been using assembly-language, but cursing the time it takes to do even the simplest machine-language program? If so, you need a compiler. But not just any compiler. Those offered before handle a very small subset of BASIC, with many new rules/restrictions. In effect, you had to write each program within the compiler's limits. Compiling existing programs was more work than rewriting from scratch. No more!

Unlike any previous PET program, DTL BASIC is a **complete** compiler, for anything in BASIC 2.0 or 4.0, so long as the source program: 1) is in BASIC (i.e., no attached machine-language before or after program text); 2) has no POKEs modifying program text as it runs; and 3) doesn't preserve variables while chaining among program modules. BASIC statements seem to execute 20 times faster with integer variables, and at least twice as fast with real number variables. Compilation itself runs at 1-2 lines of source text/sec. An in-memory compiler might run faster, but couldn't handle large programs that benefit most from being compiled. Includes simple commands for changing some or all program variables to integers, during compilation, for maximum speed; extensive error-trapping with very adequate warning messages; and facility for redoing a compile process after a faulty try. Like CALC and TCL Pascal, DTL BASIC attaches a 4K block run-time module to each program to keep most programs from ending up shorter overall after compilation. However, since the object portion is at least 20% more compact than before, the largest programs do end up shorter.

Examples: After a full day with CALC (best of the near-compilers), I failed to write even a simple question/answer routine. After 4 hours with DTL BASIC, I compiled my largest program, plus 3 smaller programs. All now run vastly faster. Baker's COMPACTOR (see review under Utilities: Program Packages) takes 18 minutes to squish itself (or 11 minutes if the squished version does the squishing), while the compiled version takes under 4 minutes! Commodore's DISPLAY TRACK and SECTOR, normally too slow to use, now updates displays in a few seconds. MAZE PRINTER used to take 10 minutes to think up a 17x34 maze, but now does it in 25 seconds. PETSPEED, a competing compiler, has since become available, with rumors of other compilers from Germany and elsewhere. Meanwhile, DTL BASIC works well. Highly recommended!-JS

REVIEW #2: A very complete compiler, not as fast as PETSPEED, but more flexible. Input and output file names may be chosen, and more creative programming is allowed. For instance, extensions to BASIC like those used by the MANAGER may be used with no problem. The big disadvantage is the need to have the dongle (or "key") to run the programs. For that reason, it is not a good choice for general-purpose compiling (no program trading allowed). Conditionally recommended (only if you never let anyone have a copy of your programs.-KRP)

UPDATE #1: Reader James Mehl wrote in with further questions about DTL BASIC. He noticed a very negative review of it in the TORPET, (Toronto PUG's newsletter), and wondered if our tests were hard enough on it. Mehl supplied a test program, a fairly well optimized version of Commodore's "Display Track and Sector" program from the Commodore's system diskette. The original took 36 seconds to display a sector. Mehl's BASIC version takes 15 seconds. DTL BASIC took 110 seconds to compile Mehl's version, occupies 22 sectors instead of Mehl's 11, and displays a sector in 9 seconds...not exactly a blinding improvement. However, this tests the compiler at its worst. Mehl's version performs far fewer calculations than the original, and has relatively few line numbers to deal with. **Compilers shine best when the program involved is either: 1) badly coded, 2) huge, or 3) crunches lots of integer numbers.**

UPDATE #2: DTL BASIC owners may essentially disregard the warning notice

in the front of the manual about copying (so I was told when I protested to CMD about it). Rumor has it they are considering doing away with the required run-time dongle. Owners are urged to join me in lobbying for that change.-JS

PC-BASIC Compiler, from England. Uses a 4K library in ROM at \$a000. Apparently generates true 6502 code. It does not allow dynamically allocated arrays. It also cannot compile programs much larger than 200 lines - it runs out of memory. The **Interface Age** benchmark takes 18 minutes 33 seconds to run in my 8032. The DTL version took 10 minutes 26 seconds. The PC version takes 8 minutes 01 seconds.-Lyle Phillips

PETSPEED, \$350 from Small Systems Engineering (U.S.). Complete PET BASIC Compiler

REVIEW #1: Very easy to use and very fast. Normal BASIC programs compile reasonably quickly and run on the order of 20 to 40 times faster. More advanced programs require some care. Extensions to BASIC are not allowed, although SYS calls are. Very good programming aid for users who need faster programs. There are some real advantages to writing in BASIC and Petspeeding it, rather than getting into machine-language. Recommended for speed and ease of use.-KRP

REVIEW #2: PETSPEED appends an 8K library. It is a 4 pass optimizing compiler. The break even point (on program size) is about 70 blocks (in the disk source file).-Lyle Phillips

REVIEW #3: I have chatted with a happy user, who reports it is much faster than DTL BASIC, and handles almost anything. The main disadvantage is that it saves its dimensioned arrays as part of the program file, making many of the larger programs into disk hogs. A demo the PETSPEED people offer runs about twice as fast as the same program compiled by DTL BASIC.

PETSPEED will probably end up with most of the market, but not just because of its speed. Its REAL advantage over DTL BASIC is that it does not require a run-time dongle on compiled programs. Being \$50 cheaper doesn't hurt either. We hope the DTL people have some improvements in mind to meet the new competition. (I'm still quite pleased with DTL BASIC.)-JS

VIC/PET TINY BASIC COMPILER, \$25 (cassette) from Abacus Software. Abridged PET BASIC Compiler. "I should have known better, but I purchased Abacus' TINY BASIC COMPILER. It was about the same quality as their **Machine Language Guide**".-Bruce Jaeger

For those willing to wait a bit, there are two more entries in the compiler sweepstakes. Professional Software has one coming soon. Price and features are all "to be announced". There is also a PET compiler of some kind available in Germany. I've seen it, and have heard it works well on small programs, running quickly, but hogging space. It does not handle BASIC 4's added commands. I have no idea where to order it or what it costs.-JS

DISKETTE REVIEWS

Diskettes:

DISKETTE RELIABILITY: I've used Dysan, Elephant, Verbatim Datalife, Maxell, Memorex, Scotch, Basf, Immac, Syncom and Verbatim, in order of reliability. For quality, I buy only Dysan (the most expensive) and Elephant (the cheapest) diskettes.-JS

BASF Diskettes. Some of these loaded without difficulty when sent by users, but many did not. Mediocre.-ES

COMMODORE Diskettes. Are really DYSAN diskettes in disguise. See review below.-ES

DYSAN Diskettes. \$60 per box of 5. Cadillac of the diskettes: not only fantastic quality and reliability, but you also pay double for the name. We keep our most valuable programs on DYSAN, but use cheaper diskettes for daily and mailing use. At least some COMMODORE diskettes are really DYSAN diskettes with a new label pasted over the old. Commodore U.S. has used these internally. Highly recommended, if your're willing to pay the price.-ES

ELEPHANT Diskettes. about \$25 per box of 10 from Leading Edge dealers. Made by Dennison Kybe. All varieties for CBM equipment (single- and dual-density, double-sided). ANSI-certified. 100% tested. Reinforced hub rings. Only out since Christmas 1981, but already, we are on our third order of 100 and find them both quiet and entirely reliable on ALL Commodore drives. Only the box seems cheap; it won't stand up to daily use. Considering the price, I can live with that. Recommended, especially if you're in the user group business of mailing diskettes around the world!-JS

IMMAC Diskettes. Mediocre.-ES

MAXELL Diskettes. When Scotch diskettes became unreliable and unavailable in the summer of 1981, we switched to these for a few months. Very reliable until December 1981, when my Dad couldn't header the first **three** diskettes (out of a box of 10). Being a total beginner, he was ready to trade in the whole computer system! We've avoided Maxell diskettes since then... Let us know if their reliability improves, readers!-ES

MEMOREX Diskettes, formerly \$20 per box of 10. They usually work.-ES

MICROSETTE diskettes, \$25 per box of 10, with quantity discounts from Microsette

Co. Had three defective out of 100 and some problems with others. Good price, but low reliability. Not Recommended.-Jerry Key

SCOTCH DISKETTES. formerly \$28.50/box of 10 from AB Computers. We used to use these regularly until they became unavailable in 1981 when the company reissued them with reinforced hubs. Since then, they have been much less reliable, while the price has increased. We do miss their original boxes, with separate tops, which store diskettes so nicely.-ES

VERBATIM Diskettes.

ORIGINAL: Old Verbatim diskettes usually fail to initialize on my 4040 disk drive, are very noisy, and I am rarely able to "new" them. Not Recommended-JS

DATALIFE: Commodore Canada, through the **Transactor** and employees, says Verbatim "Datalife"s are better. We've had much better luck with them than the "plain" VERBATIM diskettes. Recommended-.ES

Equipment and Supplies:

DISKETTE CLEANERS: TOTAL rip-off. The whole design of the disk drive is self-cleaning. Each diskette is lined with a dirt-catching pad. If your drive is noisy, you may have a dirty head pressure pad (\$.25 piece of felt). Turn it 90 degrees to double its life. Replace it after 2 years daily use.-JS

FLIP SORT, \$35 from Quiet Designs. A very pretty disk organizer, in static-resistant smoked plastic. Includes a built-in carrying ridge and internal dividers. Said to hold 60 disks, but 30 is about tops for regular use. Much easier to use than anything else I've seen.-JS

HUB RING KIT, \$10 from Meta Technologies. Reinforces diskette center hole. Plastic centering tool and 25 mylar rings. 50 more rings are \$5. Quick and easy. However, even more easy and precise to buy diskettes with rings included. Disks with a hub ring always work for us, no matter the brand (excluding Scotch). But what if the glue migrates? Because 2040 Shugart drives are rough on center holes, I recommend hub rings for diskettes likely to be abused. However, Commodore does NOT recommend them for high-precision 8050 Micropolis drives.-JS

STAY-FLAT MAILERS, \$17 per 100, from Calumet Carton Co. (wholesaler). Are actually photo mailers, but size #1 nicely protects up to 3 mini-diskettes per mailer. In three years of use, only one failed to arrive safely. It was folded in half and stuffed in a P.O. Box! I've reused them over 4 times with no hassles. Many readers

who have received diskettes from us in these mailers have since requested ordering information. Very highly recommended.-JS

EDUCATION REVIEWS

Baker Enterprises Programs:

WORD HUNT, \$5, or as part of Baker Enterprises program collection (described under Utilities Reviews: Program Packages). 5K.

REVIEW #1: Requests and hides 10 words in 10 x 10 letter matrix. For each word, you guess the row and column or the first letter and direction code. Points are awarded for accuracy and speed (5 skill levels). Screen displays about all you need, but the matrix is tight and hard to look at. Good input channeling and error trapping. Entertaining, though I prefer Len Lindsay's **HIDDEN WORD** (published in **Recreational Computing**) for its unscrunched matrix, printer option, and answer key. Uses: puzzle fans or student (10 yrs+) practice in word recognition.-BA

REVIEW #2: My wife liked this one very much. Uses words commonly found in crossword puzzle books. Good.-GH

Cascade Computerware Programs:

EDUCATOR II ALGEBRA QUIZ, \$10. Very well written, good documentation and easy to use. NOT a tutorial, but a concept drill of material already learned by students. Second version is **PRINT ALGEBRA**, which gives a hard copy of the quiz with or w/o answers adjacent to the problems. Offers many print format options. Excellent source of computer-written tests for teachers. This education program does what it was designed to do and doesn't promise to make the user eligible for a Rhodes Scholarship! Worth the price.-D.C. Johnson

Comm-Data Systems Programs:

FINANCIAL REPORT, \$60. William L. Brown has developed what appears to be a helpful and inexpensive program package for school finances. See under Business Reviews: Other Programs.-ES

Comquest Programs:

SOLICUBE, \$50+3 shipping. Requires 32K RAM (16K version will be released later), 40 column screen and CBM disk. Somewhat protected against listing. Rubik's Cube solver, complete with Rubik Cube!

REVIEW #1: Comes in a fancy box like florists use for mommy's flowers. When the Rubik cube is all messed up, it tells me how to get it back together. I couldn't

figure how to do it by myself. It took my Dad 2 hours to solve one with a book, but we did it with this program in 15 minutes. It's only made for big people who can read long words, but I tried to figure them out from the great pictures. I liked the CB2 music, especially "Jesu, Joy of Man's Desiring". Dad had to get the cube partly solved though, before the program would take over, and he had trouble doing that. (All the corner pieces on one face have to be correct before you start. Two pages in the instructions tell how to get them that way.)--Jamie Strasma, age 6.

REVIEW #2: The instructions said a 6 year old can run the program, so we let Jamie try... The program offers many modes, from beginner to expert, and is likely to be used here for a long time. Its goal is to teach users to solve their own cubes, and it probably will succeed. It is a highly "useful" educational program, and should be effective in motivating some problem students. Fifty dollars is steep for a game, but the package does represent a huge effort on the part of the author, and it is surely the best such program now available for Commodore machines. Too bad it's unlistable; users could surely learn from the way it manages to appear to be doing several things on the screen at once.--JS

Commodore Programs:

BASIC BASIC. "BASIC BASIC is a set of tutorial programs about the BASIC language. They appear to have been written for the original 4K PET with 1.0 ROMs. The programs are compatible with all ROM sets because they use only the most primitive commands. The authors have made a crude attempt to take advantage of the PET graphics set.

This set of programs is important only as a bad example. If one wants to write explanation and then ask questions, he could use a typewriter. If one uses the computer, he should take advantage of its ability to recycle to earlier information or skip over simple topics. The PET is easily capable of some low resolution animation. The lack of animation in these programs leaves them boring. The obvious attempt at making the screen attractive was to put a border around it. This dresses up the title pages a little but is unimpressive.

Commodore still makes this set of programs available. Salesmen still mention it to novices. Hopefully someday Commodore will realize that a tutorial program about the machine is a good idea which has not been well executed. Hopefully they will find something better."--Robert Lemon

Island Software Programs:

MINDSTRETCHER SERIES. \$20/each of 5 program sets. Protected. These 5 program sets are meant for gifted and talented upper elementary students (grades 3-6), but seem to fascinate all ages. Are NOT drill and practice, but help develop critical thinking and problem solving. Each set includes 2 programs. Potential buyers should not be put off by stange names like Welter, or Black/Kayles. Excellent use of PET graphics made throughout ALL programs. One program does a two-dimensional representation of the Rubik's cube. Another has students try to beat each other or the PET at a game similar in strategy to NIM but with great graphics, while another program has devilishly clever jigsaw puzzles. The programs are protected but the reasonable price hardly makes this a problem. All problem tapes are promptly

replaced. Several sheets of background and teaching suggestions comes with each program. A BEST BUY for everyone.—Ralph Bressler

Merlan Scientific Ltd. Programs:

THE CLASS MANAGER, \$70 (cassette version) or \$74 (diskette version). Requires 16K. Specify Commodore printer or NCP (non-Commodore printer) version. Includes separate instruction sets for BASIC 2.0 or 4.0, and for tape users. Instruction set A contains an apparent contradiction—it seems designed for the 8K (BASIC 1.0) PET. Otherwise, operating instructions are reasonably clear. Keeps class grades for up to 36 students with at least 26 marks per term up to 4 term. A 13-item menu allows a teacher to create or modify a class file, read and save the file, enter or change grades, select and change the weight of a grade or grade distribution. Carries previous term averages into the new term. The printed grade record ("markbook") includes the most recent 16 student marks, plus previous term averages and a final averages. Prints class averages for each set of marks and for each term, along with the weight distribution of marks. Can also print a blank 10-week class attendance sheet. For users with no printer, it prints the record on the screen.

This is an excellent, easy to use set of programs, for a teacher with some computer experience. For teachers unfamiliar with computers, a short period of instruction by an experienced user would probably suffice. Helpful notes for programmers allow for ease of adaptation such as changing the maximum number of students or marks, or using different terminology. The menu does not provide an "exit" routine, so the program is ended by pressing the RUN/STOP key. This omission can easily be corrected. Highly recommended.—John W. Milton

MATHEMATICS FOR SCIENCE SERIES, \$20 per cassette (12 programs), \$180 on diskette. Requires 16K. Contains 4 series of 2-4 programs: MEASUREMENT (Scale reading, Linear scales, Vernier scales), BASIC MATH TECHNIQUES (Significant figures, Rounding off, Calculation and rounding off), EXPONENTIAL NOTATION (Scientific notation, exponential calculations), and MISCELLANEOUS (Metric conversions, Slopes of graphs). The demo disk supplied the measurement programs. Leads students through the lesson depending on their skill in answering questions related to a single stated objective. They may choose the "drill" portion only, for which a score is kept. The program on reading vernier scales is especially effective. These are good programs for review, drill, and reinforcement, if coupled with work on reading real scales in the laboratory. Recommended.—John W. Milton

WAVES AND VIBRATIONS, \$24-32 per cassette (7 of them), \$138 on diskette. Requires 8K, no printer. Each of 5 modules contain 2-5 programs, plus 2 programs intended for teacher use with a class: LONGITUDINAL WAVE DEMONSTRATOR and WAVE DEMONSTRATIONS. They effectively use screen animation to illustrate behavior of pulses reflected from free and fixed terminations, and pulses hitting the boundary between two wave media. The modules state 2-3 objectives per program, then give illustrations and examples leading to definitions, with review question scattered throughout for reinforcement and feedback, and ending with a (repeatable) review quiz. Each lesson takes about 10 minutes to complete. Physics classes can and should do extensive laboratory investigation of all topics of this series. This programs could then clarify concepts and provide review. The animated wave diagrams will make more sense to students who have already seen the phenomena on vibrating springs

and strings. Recommended, especially for physics courses which use individualized instruction or independent study.-John W. Milton

MICRO-ED, INC. Programs:

THE ATOM, \$8. Requires 16K+ and 40 column screen. Fails to set graphics mode for the 2001/32K business keyboard. Teaches basic concepts of subatomic particles. Has interesting graphics, and uses them in testing. Stop key is not disabled, and test results are not stored for teacher review. Has a variety of activities within the program. Recommended for Junior High science use.-JS

GREAT TIMES HR, \$8. Similar to GUZINTA HOTEL. Crashes on BASIC 4.0, due to the protection routine being overwritten by DOS variables on loading. Easily unprotected, but that isn't a teacher's task. Otherwise, it's a very nice program, with good graphics and a puzzle that is fun to figure out, even for adults. Teaches multiplication of 2 or 3 small numbers together. For late elementary.-JS

NUMBOWL, \$8. Crashes on BASIC 4.0, like GREAT TIMES above. Otherwise, teaches various ways to combine numeric factors to approach a desired arithmetic result. Gives a total score, but no indication of whether the score is optimum for the random numbers given, or even in general. Best used in a group setting, with several students figuring out the highest scoring solution before the answer is entered. Late elementary.-JS

GENERAL COMMENTS on the Micro-Ed educational programs described next: For ANY 8K PET. Unless noted, \$8/cassette or 12 for \$84. Protected. Its catalog is the instruction manual. Definitions are built into the programs. Programs Use clear, sound approaches to the subject matter. Have distinctive graphics and screen layout in problem presentations and feedback to the student. Students can repeat problems until they're correct, ask for help, get a detailed performance report, and as needed, choose the difficulty level. Could use many programs/subroutines to teach other subjects. Very worthwhile if you need packaged education programs.-BA

BAR GRAPH. Elementary. Graphs and varying information are displayed. 10 problems require graphs to be read.

CATCH THE RHYMING FISH. Elementary. Screen game. Catch the fish whose word rhymes with the problem or else your boat will sink. Moves quite fast.

COUNT'EM. K-1st grade. Count the pictured steam engines. Right answer chugs engine across screen. Wrong answer makes it fall apart.

DICTIONARY GUIDE WORDS. Elementary. 4 lessons. Put the problem word between the right guide word pair. PET flags the pairs as used.

DIRECTION AND DISTANCE. Primary. Simple game teaches 8 directions (N, NE, etc). Also estimates distance.

GUZINTA HOTEL. Elementary. Teaches least common denominator. Attractive

game: Each elevator on the screen stops only on certain floors. Choose the right elevator to stop at 2 floors given in the problem.

MATH SHOOTOUT. Elementary. Practice your speed on add, subtract, multiply, divide. Graphic feedback on speed. Animated shootout with Bad Math Meg.

MATH SPIN. Elementary. Reaction response game chooses difficulty of multiplication problems generated for yourself or the PET.

SPELLING WORDS IN CONTEXT. For each level of second–sixth grades. 36 lessons on 7 tapes (\$50). Teaches spelling rule or pattern. 10 problems per lesson give sentences with desired words missing.

SUBJECT AND PREDICATE. Elementary up. 20 random sentence problems identify simple or complete forms of the subject or predicate.

SYNONYM SERIES. Senior High up. 3 tapes for \$21. 15 lessons, 30 problems each. Match the word and its synonym. Flag matches. Graphic feedback. Big smile face or gremlin.

TARGET MATH. Elementary. Add, subtract, multiply, divide. Super graphic feedback. Parachutist hits/misses the target according to the student's answer.

TROUBLESOME PRONOUNS. Elementary up. 20 problems in noun/pronoun agreement. Game decides the number of points per right and wrong answer. Great flashing screen routine on right answer.

WORD DEMONS (LAY/LIE). Elementary up. 20 problems. Select right verb from a pair. Fine graphic feedback. "Word machine" visually processes student's answers.

WORD DEMONS (TO/TOO/TWO). Elementary. Introduction grabs your attention (shoots out letters to spell word demons). 10 random problems per lesson in using demons correctly.

MICROPHYS Programs:

MICROPHYS Programs #721–724: \$20 each. For senior highs. Common format gives random user code and questions keyed to that code. Displays 2 per screen. User solves on paper. After 6–8 questions, the program displays the answers (optionally suppressed.) You correct the paper by changing a line, running from a different start, and giving the user code and answers. Little program interrupt protection. No assistance, 'See Instructor for help'. Dull programs, too much code, too many dollars for so little payoff. Only saves teacher time by random problem generation. Ditto sheets are cheaper.—Walter Sadler

Milliken Science Series Programs:

"I can offer a "fix" for Milliken Math Sequences on cassette for the PET to run of 4.0 BASIC...with anyone that has the Milliken set and cannot get them to

go on the 4.0 series. Milliken refuses to answer my letters asking for help and refuses to answer my offer of a "fix."—Bob Bergevin

Teaching Tools: Microcomputer Service Programs:

General comments: \$20 for 2 copies of each program on cassette. Less than 8K, compacted, somewhat protected BASIC programs. Should work with all ROM sets. Short manuals help the teacher or parent assist students. Most screen displays needed instruction. Input routines ignore undesirable use of keys. Cute figures, words, or flashing for feedback. My usually reliable tape deck had much trouble loading 2 of the programs. Also (foolish in an educational setting), the record-lock tabs were still on the cassettes.—BA

ADDITION. Turns screen into a timed, electronic math sheet. The student chooses from 24 difficulty levels, 1 to 99 problems. An adult may preset this plus maximum time to do all problems, number of tries before the correct answer is given, time before "Answer Please" is displayed, and whether cute feedback pictures are used. Each problem is nicely screened. Screen input and pointers guide student to the answer or show carry from right column to left. (May delete left to right.) Final report: average time for problems correctly solved on the first try. Excellent, except the screen, like the manual, should say ' Press (=) when ALL DONE with your answer.'

SUBTRACTION. Same techniques as ADDITION above. Also excellent.

LETTERS AND NUMBERS. Practice matching letters or numbers or complete ordered sequences of them. The screen displays large characters including upper/lower case. Choose: case of letters displayed, number of characters per problem, 1 to 999 problem sets, and fixed or random location of a sequence's blank. Well-done and good options in many ways. But probably too complicated for the young or learning-disabled students who would use it.

MATCH GAME. Many variations on the "Concentration" memory game (where you turn over face-down "boxes," 2 at a time and try to make the most matches.) Students choose (or adult presets): large or small board (12 or 20 boxes); type of items to match (shapes, animal names, French-English words, math problems, or set your own); difficulty level (1-20); and 1-4 players (you may play against the PET). Students must be able to follow screen directions to proceed through the game. Excellent, enjoyable way to teach many facts.—BA

Tele-Trex Programs:

HI-RES ULTRA PLOTTER PACKAGE, \$13. See under Utilities Reviews: Graphic Aids (Software Packages).

Transonic Laboratories Programs:

SPRINTYPER. Typing program for VIC. See review under VIC Reviews: Education.

(Midnite requests reviews of other commercial education program packages. What programs are you educators presently using?—ES)

FURNITURE REVIEWS

COMPUCART, \$895 from IBME. For all PETs. (CAUTION: not seen by the reviewer.) The Compucart appears to be a beautiful piece of birch and oak furniture, and also VERY functional. It holds a Commodore computer on a lazy susan, with room for a wide carriage printer on the right, with a disk drive slot and hanging file draw below it. The whole unit is movable, with carpet casters, and a 20 foot retractable power cord, complete with multiple outlets, single lighted power switch, and (apparently) a spike suppressor. A shelf pulls out below the printer to extend your work area, and the disk drive also slides out on a shelf. Overall size is 48 X 26 X 26 inches. Unit appears to be much better looking, and also more functional than the two desks reviewed last issue. It is also MUCH more expensive! So far, it's the only computer desk I've heard of that may be easily movable. Definitely worth checking into, and how about a customer review?—JS

FORMICA DESK, \$395 from ECX. A typical-looking 60"x28" imitation walnut or oak desk, with several nice features. Has 22" well in middle suitable for any model PET, deep shelf on one side for most disk drives (but no back access to plug them in!) and 1 deep drawer on the other side. One side of desk top is ample for CBM 4022 printer, but not large enough for the TALLY 8024 or daisy wheel printers. Very close to what is really needed, but still not the one I will buy.—JS

METAL DESK, \$295 from Interlink. Nice metal desk designed for CBM computers. Has (optional) cutout at left (or right) end of the Formica-type top, to hold an 8032 perfectly. Other options: shelf suitable for a CBM disk, with holes for fan and cables, and multiple outlet extension cord. Matching printer stand also available for \$100, but unlike most others, lacks a rack to catch printouts. Knocks down easily for transport.—JS

MICRO WORK STATIONS. Texas Technical Services, Inc., have just taken on the regional distributorship of a micro work station (desk). It comes in a number of designs to suit different microcomputers. It is sturdier and cheaper than others we have seen. The feature I really like is that anyone can assemble it in just a few minutes.—Paul Dixon

O'SULLIVAN DESKS, from O'Sullivan Industries, Inc.

LARGE DESK, \$150. 30"x45" surface. For PET and CBM computers. Lower shelf holds a dual- and a single disk drive beside each other. Has back slot between surface and raised desk back to connect and store equipment cords. Includes shallow pressboard drawer above disk drive shelf for storage. Room under shelf for printer

paper box. Has removable raised shelf over back of working surface. Not built to easily withstand vibrations from a large letter-quality printer. No castors. Still the best buy for the money that I've seen to date, if you don't need the "living room furniture quality" look.-ES

SMALL DESK, \$120. For VIC computers. 30"x30" surface? Has removable raised shelf for separate TV/CRT monitor. VIC printer fits nicely under shelf. Hole in back of lower shelf and between sections for cord connectors. Available with casters. Also recommended.-ES

GAME REVIEWS

ACTION GAMES, \$8 from Creative Computing Software. Includes 6 games: SPLAT, CAR RACE, BOWLING, TANKS, BREAKOUT, and SUBS. All games are well done and use graphics, but about half won't run on BASIC 2 and 4. Fair-JOH

ADVENTURELAND, by Scott Adams. \$10 from Adventure International. First adventure game sold for PET. Text only. Lots of helps. For beginners.-COPUG user, JS and Barbara McKean

ASTEROIDZ, \$10 from ComputerMat.

REVIEW #1: Arcade-type game patterned after asteroids. Has 4 skill levels. Uses machine language for fast graphics and good sound effects. Game is fun and challenging, but differs some from the original asteroids. Good.-JOH.

REVIEW #2: With acceleration. Asteroids fly across wrap-around screen. If you hit one, only dents it (not break up). Since the game only keeps track of 3 missiles at a time, erases the first one if you fire a fourth time. If used to real thing, you'll be disappointed.-JP

REVIEW #3: Good use of graphics. In BASIC with some machine language subroutines. SLOW action, especially at level 4. Poor structure and self-modifying code. Poor.-MN

B-1 BOMBER, \$15 from Avalon Hill. Cassette. Needs 16K. Simple, but very challenging. Control altitude, heading, weapons, evasive action and electronics to penetrate Soviet defenses and drop nuclear bomb. Uses screen as teletype. Need good map of USSR west of Uval mountains. Unprotected INPUTs.-Gary Stone

BIKE, \$10 from Softside Software. An economic simulation of running a bike co. You must deal with the number of workers, the price to sell your bikes, whether to invest in more machinery or an ad campaign. At times a worker will break a

machine and you always have to contend with inflation. No graphics but written well and even if it does run with a random number generator, I still enjoy it. Sales will fluctuate with the seasons. A one player game.-JO

BLACK FRIDAY, \$10 from Baker Enterprises (also part of the Baker program collection of 40 programs, described under Utilities Reviews: Program Packages). Needs 8K.

REVIEW #1: Allows 1-4 players to spend \$5000 and buy or sell 10 different stocks each turn (which represents 1 year). Stocks increase or decrease and split each year, with a summary of how much you own and your profits. A fairly good game.-GH

REVIEW #2: A good stock market simulation for 1-4 players. More realistic than most. Very easy to play. Worth the price.-JO

BOWLING GAME, from Baker Enterprises program collection (described under Utilities Reviews: Program Packages). 6K. Graphics keyboard. Doesn't do much. A man throws the ball to randomly knock pins down. Has no skill level or rewards incentives. Not recommended.-GH

CHECKER KING, \$20 from VisiCorp. 8K. Machine language. Protected. I've never been beaten by a computer checkers game...until now. It took three defeats at level 4 (of the 8 levels you can play) before I beat the computer at levels 5 thru 7. Tries to set up multiple jumps on you. Many options plus 3 built-in checkers problems to solve. This program is to checkers what MICROCHESS is to chess for the PET. A good investment.-JO

COMPUTER ACQUIRE, \$15 from Avalon Hill. 16K. Machine language. The computer version of the Bookshelf game of the same name. Since I never played the board game before, I can't make a comparison. Has 1-5 levels of play with 1-6 players, or you can play the computer or watch it play itself (handy for learning to play well). You place hotels randomly on a numbered board, try to build chains, buy stock in them, and try to have the controlling interest. You can beat level 1, but past 3 it's tough. Try out the program at your computer store if you can. I prefer graphics and sounds games compared to numbered board games.-JO

CONFLICT 2500, \$15 from Avalon Hill. 16K. Space war game in which you try to stop the Planet Pulverizers from destroying the universe. Average game. Found one bug. Uses graphics, but they are slow, simple and confusing. Hard to play at first, but fun once you get the idea.-JOH

DATESTONES OF RYN, \$15 from Automated Simulations. Intermediate complexity. The same concept used in this role playing game is used in their other fine program, TEMPLE OF APSHAI. The graphics are adequate, but slow. It's all in real time.

which makes for a good game. If you can't afford TEMPLE, then buy DATESTONES, and save some more for the rest of Automated Simulations's fantasy role playing games.-JO

THE DRAGON'S EYE, \$25 from Automated Simulations. 32K.

REVIEW #1: You must locate Dragon's Eye within 21 days. Problems are weather, health, and assortment of terrible monsters. GREAT graphics: full screen map of area you are exploring. When you encounter a monster, the map switches to an animated display of your efforts to defeat it. You fully control your character by using arrows, magic, and many sword maneuvers. One of the best uses of graphics I've seen on PET. Highly recommended.-JOH

REVIEW #2: I consider this one of the best PET games. When I show off my PET to others, I let them play this one. DRAGON'S EYE goes a logical step beyond the other high quality EPYX adventure games.-JO

DOW JONES, \$8 from Instant Software. Uses 8K. Simulates the stock market. Accomodates 1-6 players...if less than six players, the computer plays for the remaining players. You choose the game length by choosing how many trading days you want. You buy and sell stock of 4 companies in each of 3 categories: industrials, transportation and utilities. You must watch flashing bulletins and other players' transactions (plus the high influence option) to become the richest. Stocks split and pay dividends. Recommended.-JO

DUNGEON OF DEATH, \$8 from Instant Software. Fun for awhile, but the games run too long, and get boring. Poor-JOH

ENCRYPT, \$15 from FSS. Decode messages that you or the computer make up. I've only played this kind of game in 2 other programs and like this one best. Protected from accidental inputs and easy to learn, like other FSS games.-JO

ESCAPE FROM DEATH PLANET, \$13 from Fantasy Games Software. Blast your way through storm troopers and killer robots as you try to rescue princess from 5-room space ship. Good graphics, and excellent sound effects. Good.-JOH

EXPLORE, \$20 from Channel Data. Includes 4 adventures (MALL MIXUP, TANK BATTLE, SPELUNKER, BEWARE, HAUNTED CASTLE) plus a self teaching practice adventure for beginners. Well written. Very good price. Recommended for everyone! Excellent.-JOH

GALAXY, \$15 from FSS. Object is to loot as many planets in a solar system as you can. You and/or 5 others create a galaxy (by specifying number of levels) and move around by number keys only one space at a time. With other players, it becomes a strategy game of planning moves and saving fuel to loot other planets.-JO

GAMES PAC II, \$10 from Dynacomp. Requires 16K. A collection of six small games programs, primarily of cards (for example, Acey Duecy, Crazy 8's). User groups have better versions of these games, at a better price.-JO

HEARTS 1.5, \$15 from Dynacomp. If you need to have a card game of Hearts, then you'll buy it. Otherwise, don't.-JO

HELLFIRE WARRIOR, \$25 from Automated Simulations. 32K. Best in the DUNJONQUEST series. Four new levels: 1) Lower Reaches of Apshai, 2) Labyrinth, 3) Vault of the Dead, and 4) Plains of Hell. Many new treasures (some magical) are present, but they are guarded by many new monsters!-JOH

INVASION ORION, \$25 from Automated Simulations. 16K. Another space war game. Many options and variable scenarios. Uses phasers, torpedoes, tractor beams, etc. Very good game, even with its simple graphics. Play time: 15 minutes to 3 hours. Good manual.-JOH

JURY HOSTAGE, \$10 from USA. Includes 2 games. One is confusing, and both are boring. Not recommended.-JOH

LABYRINTH, \$13 from Minnesota Micro Systems. Dungeon adventure. Explore a castle (whose dimensions you pick) searching for chests of gold hidden on each level. Encounter ogres, goblins, spiders, and dragon. Objects help you reach your goal, such as swords, magic rings, keys. Good use of PET graphics; draws each level you explore. Very good game.-JOH

LORDS OF KARMA, \$20 from Avalon Hill. 32K. Machine language. Adventure game with over 150 locations, an assortment of weapons, and a hoard of monsters. The object is to do good deeds, such as saving the princess, giving to a beggar, and slaying evil monsters. One of the best adventures I have seen for a PET.-JOH

MICROCHESS, from VisiCorp. For three years, this was the best - and only - chess game commercially available for PET. Has 8 difficulty levels. Screen displays clock. Good game. See the SARGON review for a comparison to its new rival.-ES

MICROTHELLO, \$10 from AB Computers. Challenging to impossible. For anyone remotely interested in Othello, I recommend this program. Written in BASIC and machine language, it is FAST. Has 5 skill levels. Forget level 5; it's nearly impossible. You use a blinking cursor to move, and you watch PET analyze the board, while thinking about its moves. It has many built-in options. You'll enjoy playing it.-JO

MIDWAY CAMPAIGN, \$15 from Avalon Hill. Intermediate complexity. If you like war simulations, you'll enjoy this one. Scaled version of the Battle of Midway between the U.S. and Japan during World War II. The computer is a tough opponent. It takes charge of the Japanese forces, which outnumber yours. As in PLANET MINERS, you must read the well written instructions if you expect to beat the computer. One of my favorite games.-JO

MILLIPEDE, \$15 from On Line Software. For BASIC 2 and 4. BASIC and machine language. While PET games are getting scarce, good ones are even more scarce. This one uses PET graphics, which aren't that precise, but the play action and animation is great. Based on the arcade game CENTIPEDE. Play is enhanced by good sound effects and well-written machine language sub-routines. Well worth the price. An excellent game. Highly recommended.-JO

MUNCHMAN, \$10 from ComputerMat. BASIC and machine language with sound.

REVIEW #1: Variation of PACMAN arcade game. Good PET graphics and excellent sound effects, but action TOO SLOW for some. Object: 'eat' all dots while avoiding Zip and Zap (2 computer foes). Good game for children.-JOH.

REVIEW #2: Two munchmen search for you in a maze (one horizontally, the other vertically). Extremely slow, yet still challenging and addictive. No fruit (bonus points) as in PAC-MAN(tm). Not bad for \$10.-JP

REVIEW #3: Has self-modifying code (hard to make backup copy). Needs slight change to work on the FAT 40. Being a regular player of arcades PACMAN, I think this program is not well written. Poor structure. Not recommended!-MN

NUCLEAR WAR, \$15 from FSS. Battle up to 9 other opponents (human or computer) and the world, by building up your factories, ABM missiles, and CONs or troops, plus your R&D (to reduce equipment costs). Another nuclear war program uses some board displays, but this text version is better and tougher. Take notes when the computer plays, because this one's hard to beat. Recommended.-JO

(...Nuclear war is NOT an arcade game...)-Mike Louder, paraphrased

NUKE WAR, \$15 from Avalon Hill. Full-scale nuclear war strategy and planning game. Access to missile bases, bomber bases, nuclear subs, and defense missiles. Watch it, though, the computer has tricks. Fair.-JOH

PENNY ARCADE, \$8 from Instant Software. 8K. Easy. The only good program in this games collection is SOLITARE. With a little dressing up, it's a good card game. To my knowledge, it's the first SOLITARE program available for PET.-JO

PENTAGON, \$15 from Briley Software. 8K. One of several CLUE type games.

Good example of what a good programmer can do. Good.—Eugene Smith

PIRATES COVE. by Scott Adams. \$10 from Adventure International. Requires 24K. Available for PET. Well-constructed adventure game, but slow. Wonderful plot. Fits together well. This is Scott Adam's best BASIC program. Recommended for any age.—COPUG user, Barbara McKean and JS

PLANET MINERS. \$15 from Avalon Hill. Intermediate complexity. Good game of strategy and chance. Many variables to contend with. Your mission is to be the wealthiest of 4 families, after exploring and mining the planets of our solar system. Figure on spending some time playing, as this game takes thought and planning.—JO

PYRAMID ADVENTURE. \$15 from Aardwark Technical Services. 8K. Adventure type game. Fair to good. Challenging.—Eugene Smith

REAL TIME BASEBALL. \$8 from Softbrew. Cassette only. BASIC and machine Language. Not for BASIC 4. Heavily protected. All action is on the screen, with 9 players represented as numbers and the entire baseball field shown, including outfield bleachers. You play a person, the computer, or watch the computer play itself. Use the 5 and W keys to pitch or bat. When a ball is hit, the 4 and 6 keys move the outfielders. You must reach the outfield bleachers to get a hit, represented by S, D, T and H, after each pitch. The innings, balls, strikes and outs displayed. You also have sacrifices, bases on balls and double plays. Simple to play. Graphics are excellent.—JO

RESCUE AT RIGEL. \$20 from Automated Simulations. To win, you must fight guards through a 6-level space station on your search for 11 hostages held captive by the High Tollah. Good.—JOH

ROBOT. \$40 from Pendulum Software. Any Commodore-made computer. Modified Radio Shack inflatable Robot, (#60-3023A, \$20.) Includes the program and a modified controller. Attaches to the CBM/PET/VIC User port. Includes three modes: 1) teach a path, 2) replay a path, and 3) random movement. The robot can go straight or turn left while backing up. A cheap PET robot, though movement is limited.—Arthur Cochrane

SANTA PARAVIA AND FIUMACCIO. \$50 from Instant Software. Needs 16K. The best 'Kingdom'-type game available for PET to date. Up to 6 players can participate. With 4 difficulty levels, it's challenging. You decide how much to feed subjects, when to buy and sell land, what grain reserves to keep, what taxes to charge on income and sales, what to pay soldiers, and what justice to provide. You must build markets, mills, a castle and a church to become king. Must accumulate wealth within 20 years (average) to win. Graphics are very well done. Bad points: Plays too short a game. If you change the year to begin the game, it could last all night.—JO

SARGON II, from Hayden Books. First, a bit of history. Programma International, a subsidiary of Hayden, paid a HUGE price for the rights to SARGON a couple of years ago. They released the Apple II version, intended a PET version, but then went belly up. In the process, they took me for quite a ride regarding my SUBSORT program. Hayden never reimbursed me a dime. A VIC version and an improved "legal" version for PET are now said to be available.-JS

Now for the **REVIEW**: I set up SARGON to play the prior PET Chess King, MICROCHESS. With SARGON at level 0 of 6 and MICROCHESS at 8 out of 8, they played about evenly. When SARGON was raised to level 1, it wiped MICROCHESS out in very short order. Level 6 apparently takes forever to play, but that presumes someone who can beat it at lower levels. The graphics are excellent, the game is very easy to play, and all it lacks is MICROCHESS's clock. Highly recommended.-JS

SOLICUBE, from Comquest. See under Education Reviews.-ES

SPACE INVADERS, by Commodore Japan. \$10 from CMS Software and free from user groups. "The most addictive game I have...in machine language. Just like the arcades."-JP

STOCK MARKET, \$15 from FSS. My favorite market game! From 2 to 10 players (any combo of human vs computer) buy and sell stocks of 5 companies to become the first to be worth 1 million dollars. Well documented with REMarks and written instructions. Uses routines to prevent program breakdowns. Drawback: when 2 of you play, the goal should be higher. Recommended.-JO

SWORD OF ZEDEK, \$65 from Krell Software. Adventure game in which you forge allies and gather treasure before RA (Master of Evil) attacks you. Would be a good game without its many bugs. Fair.-JOH

SWORDQUEST, \$13 from Fantasy Games Software. Explore twisting corridors on your hazardous way to wizard's tomb, with hoards of demons and giant spiders to stop you. Luckily you have a sword, bow and arrow, plus some magic arrows. If you make it, the jewels and holy sword are yours. Fair.-JOH

TIME TREK, \$15 from VisiCorp. 8K. BASIC and machine language. Heavily protected. By far the best 8K STARTREK game for PET. 9 difficulty levels with stationary klingons or with moving klingons. All motion, information, action, stays on-screen at all times. Good use of PET graphics for objects (ships, stars, bases) and shooting phasers and torpedoes. Uses all standard commands. Great game. I always like shooting the unknown '?'!-JO

TREK-X, \$8 from Instant Software. Uses 8K. A different approach to STARTREK. Klingons, Romulens, Orions are after you in all directions and real time. The top

three-fourths of the screen is your window to space. After you set the replot time (which determines approximately how far you've traveled in the universe), the screen clears and redraws the area. Commands include shields, torps, phasers, and warp or impulse drive. If you go too fast, you burn. Let your shields get too low and you'll vaporize. Map shows your location. You MUST find a base as you destroy 50 enemy vessels. Good graphics, sounds and real time action make it a good game for anyone just learning to be 'Captain Kirk'. Changing some variables makes it tougher.-JO

TUNNEL VISION-KAT AND MOUSE, \$8 from AB Computers. In TUNNEL VISION, you try to escape from a maze seen in perspective. In KAT AND MOUSE, you see the maze from above, and have to escape before the cat catches you. Both use PET graphics well and are fun to play. Fair.-JOH

WALLBANGER, \$15 from On Line Software. For BASIC 2 or 4. Uses 8K. BASIC and machine language (instead of data statements). An "original" design. Player stands in the middle of 4 walls to shoot at bouncing balls. The walls slowly close in on you. Uses PET graphics and very good sound. Smooth graphics. Excellent documentation. A minor complaint: when you quit playing, the computer does a soft reset, and I don't like being called a "chump" when I lose. Overall, it's a good game. Recommended.-JO

HAM RADIO PROGRAM REVIEWS

SATELLITE TRACKER, from Optimized Data Systems. This arrived too late for review in the Compendium, but does exist, load and run. It will be reviewed for the next **Midnite**-JS

HARDWARE REVIEWS

Computers

CBM 8032B COMPUTER, \$149 5 from Commodore. 80 column screen, business keyboard. 32K. Expandable to 96K with the 48K Expansion Memory Board (see later).

GREAT NEW FEATURES include: repeating cursor control keys and bell, variable screen windows, can set screen at very low brightness, and have 3 more columns in VISICALC (no more claustrophobia with 40 col. version!).

NEGATIVE FACTORS include: unpleasant reading from squished characters; may not be able to set screen brightness high enough to read near windows; and a noticeably cheaper, harder-to-use keyboard than the early 32K/B PET version from High-Tech. Since High Tech keyboard sells for \$30 retail, why did Commodore economize here?

OTHER CONSIDERATIONS: All but one BASIC ROM is soldered in. Does this mean the company offering 3 BASICs in 3 years will no longer change ROMs?

Dream on! A new BASIC has already been announced for new models. The 4 "missing" sockets are worth less than \$6. Some customers have successfully insisted sockets be installed before accepting delivery.

In beauty, some like it; some don't. For games, have yet to see many with graphics. We converted major business software package from WANG to CBM/PET last year. With the CBM 80-column screen, this was a far easier task than similar work done earlier on the PET 40-column screen. New screen and relative records of the new 4040 and 8050 disks make many minicomputer programs usable on PET. In sum, the 8032 is improved, but chintzy in stupid ways. Get it till the next model comes.-J&ES

CBM SUPERPET 9600 (formerly the "MICRO-MAINFRAME"), \$1995 from Commodore.

REVIEW #1: The SuperPET is a 128k RAM machine, with 96k available for programs in BASIC, APL, FORTRAN, Pascal and Assembly language. It was developed at Waterloo University, Ontario, and includes RS232 communications, and both 6502 and 6809 processors.

It is an excellent tool for schools teaching programming, users working in multiple languages (and not needing them compiled yet), those wanting a cheap 6809 machines, and those linked with mainframe computers. However, few, if any, business programs needing expansion memory will work on the SuperPET.-JS

REVIEW #2: "It's always dangerous to handle disks and chips while standing on carpet, but SUPERPET goes a step further. If you build up some static electricity and touch the processor switch, the system will do a reset. That is, cold start, everything gone. So beware, and get rid of that carpet! (Also), some of the new SUPERPETS are being shipped with ROMs installed in the "ud11" and "ud12" sockets. These are just test ROMs, and are not required for operation of the SUPERPET. Just remove them if you need to plug in some other ROM."-KRP

GRAPHIC-80 PET, a "Fat 4016" upgraded to 32K and 80 columns.

POSITIVE FACTORS: I love the price, 32K, BASIC 4 disk commands and faster garbage collect, the 80 column screen for word processing and editing programs, built-in sound, expansion ROM sockets, graphic keyboard and repeat keys. **NEGATIVE FACTORS:** losing my dealer warranty, having to use the keypad decimal point for a " period," having to add my own 8032 special ESCAPE and TAB keys, and the hassle getting old programs (especially with screen memory POKes) to work on the screen.-BA.

MTU-130, \$3000+, depending on options, from Micro Technology Unlimited. 6502 computer with disk.

REVIEW #1: The MTU-130 has been a pleasant experience. The similarities between CBMs and MTUs can be quickly described. Both are 6502 based machines and the BASIC interpreter on both systems is an "enhanced" Microsoft BASIC.

A few aspects of the MTU-130 have been disappointing. No more software clock (best known as TI or TI\$). The "too small" 10-character keyboard input buffer

has dwindled to 1 character. Most importantly, my 80K computer provides 27.5K of available memory to application programs written in BASIC. Furthermore, 5K of machine language support programs, tucked away in ROM at \$9000-\$A3FF on the PET must now consume additional RAM that would have been available to BASIC. Result: I lost 7.5K! (compared to the 32K CBM.)

Now for the brighter side: it has 480 x 256 hi resolution bit mapped graphic display (240x256 with 4 levels of gray scale); fiber optic light pen; ninety six character keyboard including 18 key numeric keypad, 5 cursor control keys and 8 special function keys; three key "system control" keypad; eight bit D-A converter; cassette interface; serial port (programmable) and 6522 type parallel user port.

Our configuration includes two megabytes of disk storage on two eight inch double-sided, double density floppy disks. Add on drives are available. The disk is very fast. A 32K program can load and begin execution in under 3 seconds. One Megabyte limit on file size. Data within any file can be randomly accessed to each byte (or field (or record)). Once positioned, data can be transferred in single bytes, by record, or in binary "block" format.

Has well documented procedure to add BASIC commands. Libraries of user-defined commands can be omitted if they are not required. CIL provides BASIC with 14 I/O commands, one of which allows the execution of any CODOS monitor command from BASIC. IGL provides 17 more graphics commands allowing BASIC programs to utilize the light pen, graphics crosshair cursor, and do standard line drawing. Another library (VGL-Virtual Graphics Library) optionally extends this graphic capability to include Virtual windows of graphic data.

CODOS (Channel Oriented Disk Operating System) provides a device independent file handling system. I/O is over logical software channels (0-9). Physical devices, such as printers, serial port peripherals, memory, disk storage, the console or custom peripherals, are assigned to channels. CODOS contains 36 built in commands. Most execute as "overlays" in a 256K block of high memory. These maintain disk file structures and provide an extended monitor. Any machine language program can become a system monitor command simply by SAVEing it.

Jump tables to entry points of the keyboard, text display and graphics display driver are fully documented. I was pleased to find tables of important page zero locations and a jump table of addresses providing a BASIC interface. MTU's notable commands include LEGEND (defines char. strings for display in eight rectangles corresponding to eight special function keys). The variable KEY (returns a value of 1-8 for function key depressed). ON KEY GOTO ... works very nicely.

Has an Instrument Synthesis Music Interpreter for high quality four-voice music; with an added D-A converter, stereo can be selected. MTU has a prototype speech digitizer board through which they have recorded phrases distributed with the system...very life-like, even to the southern accent!

In summary, most experiences with our "lavish" ergonomic micro have been pleasant. The disk based operating system and language processors are a wise design step, easing upgrades and providing for different languages. Everything of importance executes out of RAM, from the character font table to volume, pitch and duration of the key click. We have on order (from MTU) the 256K Datamover board. This product will allow the full utilization of MTU's extended addressing (128K Basic programs - 64K code, 64K data). In addition, it has on-board an 8 megahertz 68000 that can share tasks with the 6502.-MT

REVIEW #2: The 130 is also a PET upgrade. Begin with added memory, then a disk or two, and finally the box. This may help those with machines that cannot

otherwise be upgraded, such as original 8K PETs with Upgrade BASIC. That's one reason the 130 is included in this "all-PET" Gazette; the other reason is that MTU has supported PET for years with fine add-on equipment.-JS

PET 4016N COMPUTER, \$995 from Commodore. BASIC 4.0 with 16K. Their price leader. An EXCELLENT buy, especially for schools able to get the educational discount. Expandable to 32K and 80 columns (but not by Commodore). Has the largest letters on the low cost market, for easy visibility from a distance or by the visually impaired. Most need a simple adjustment to screen height in order not to lose two lines when "?chr\$(14)" is executed. The spot is marked on the underside of the CRT board in the main box. Needs TAB and ESCAPE keys added to run some business programs. Recommended.-JS

PET 4032N COMPUTER, \$1295 from Commodore. BASIC 4.0 with 32K. If you'd rather pay a bit more and not have to add the extra memory yourself, buy this one.-JS

NOTE on screen brightness: We received some badly adjusted CRTs. (Has anyone seen a PET delivered with a correctly adjusted CRT?) Inside the CRT hood, there is a second brightness control that needed a simple twist. Users, of course, are not to remove this hood, because of very high voltage inside. Owners of Fat Forty's, who use Text Mode, may want to have a similar adjustment made to a little internal "pot" called "height", so that '?chr\$(14)' won't pop the cursor out of sight. If your screen either seems tilted or fuzzy, see your dealer. I sent a PET back to Commodore California twice under warrantee 3 years ago, and asked to have a bad tilt fixed both times, but they never touched it. Repairing it myself took all of 45 seconds, once I saw a service manual!-JS

HARDWARE REVIEWS

Cassette and Disk Drives

RANDOM FILES NOTE : The 2031 includes a demo program called RANDOMEXAMPLE, which works! RANDOM 1.00, which has been on 2040 and 4040 demo disks for years has NEVER WORKED with DOS 2, but continues to appear on 4040 demo disks. Use RANDOMEXAMPLE instead, if you must use RANDOM files.-JS

CBM 2031 SINGLE DISK DRIVE, \$695 from Commodore. DOS 2.6 (like DOS 2.1).

REVIEW #1: Mine arrived today, only 2 years after announced. Literally half of a 4040 dual disk drive, just as smart, but has only 1K of buffer memory, which limits it to 1 relative file open at a time. Drive to drive BACKUP and COPY commands not allowed (no second drive to use!). Has only 1 single-color LED light: it is "on" when the drive is active, and "flashes" after an error. If the power-on diagnostic

fails, a flash code lists the trouble.

My particular unit passed its performance test easily, but disliked my 4040-formatted diskettes, and vice versa. After much checking, the trouble was blamed on the Shugart SA390 drive. Apparently, Commodore got a batch with bad belts. However, on careful testing, the drive was well within specifications, and only a bit off in motor speed. Since testing has to be done in a 2040/4040 drive under DOS 1, I then swapped the 2031 drive with one from my 4040. That cured it! No one at Commodore knows why, unless 4040 has more error correction logic than the 2031. If your 2031 gives trouble, especially ID mismatch errors, check belt and motor speed, by inspection, not with a test program (described under PET Programming Notes). If it's OK and you still have troubles, try another drive. Commodore says the 2031 has been quite reliable so far, except for the belt problem.

I revised Chris Bennett's MAIL LIST for this drive, but had to put INITIALIZE commands throughout to make it work reliably. It's an excellent product for those with a 4040 drive who need a second work station, or for those starting cheaply. However, plan on trading up, since most users really do need dual drives. Recommended.-JS

REVIEW #2: Data transfer rate for the 2031 is about half that for the 4040. I suspect this has to do with the 2031 being set so that one BASIC machine can be used with the appropriate interface for both VIC and GPIB.-M.G. Ryschkewitsch

UPDATE: Ryschkewitsch is right. It is slower, but Commodore reports the VIC disk is even slower, by about the same factor, due to its serial interface. Remember the tiny memory size and IC chip count in a 2031 relative to a 4040. Even so, it's still as fast as an Apple drive and has larger capacity.-JS

CBM 2040/4040 DUAL DISK DRIVE, \$1295 from Commodore. 2040 was DOS 1. 4040 is DOS 2. Commodore's first and still "standard" disk drive. It is apparently to be built into the forthcoming "B" and "BX" computers. Extremely reliable in my use, though Dr. Daley Software considers it unreliable. A new set of update ROMs (-14, -15, and -16) supposedly fix some bugs in using true random files, but I avoid those files in favor of relative files anyway. Uses industry standard Shugart drives very efficiently. BACKUP and formatting chores are much faster than on the 8050, and capacity is quite adequate for my 370 member church's needs. However, some advanced programs are only available for the 8050. On the other hand, most Public Domain programs are only available for the 4040. Highly recommended.-JS

CBM 8050 DUAL DISK DRIVE, \$1795 from Commodore.

REVIEW #1: The long-awaited Megabyte disk is here. Looks like a 2040, but uses better Micropolis disk drives, two 6502 microprocessors and DOS 2.5. Two disk drives were ordered and promptly delivered. One works fine. The other had a drive so warped that we couldn't even insert a diskette. To the good, a replacement came in 2 days. Amazing capacity. That's not always a blessing - NEWing a disk takes 2 minutes and BACKUP takes 8 minutes. The UNIT TO UNIT copy program works quickly, but not always successfully. I use COPY/ALL instead. Businesses need the 8050, and perhaps a 4040, too. For others, it may be overkill, as many programs need their own diskettes, and huge directories are hard to read. On the other hand, triple the storage for a third more is not to be sneezed at. Good documentation.-JS

REVIEW UPDATE: The 8050 briefly came with Tandon Magnetic drives instead of Micropolis ones, but that didn't work out. If you buy an 8050, be SURE to buy it from a dealer who will replace it AS OFTEN AS NECESSARY to get you one that works. The acid test is BACKUP (the hardest command for the disk to carry out). Few 8050s with the old -03 and -04 ROMs could back up a diskette reliably in both directions. Since some of the problem is alignment, ask your dealer to adjust that before demanding another drive. The 4040 disks I've seen all work reliably, but they don't try to do as much. If you already have a weak 8050, help is on the way in the form of another set of ROMs for your disk. Mine works reasonably well with the new -06 and -07 ROMs installed. However, it still needs forced initialization of drive 0 at least once a week.-JS

C2N DATASETTE RECORDER, \$75 from Commodore. Replacement for original tape deck w/o counter. Cream in color with added tape counter. However, there are several problems: first one I bought had an incurable tape head alignment problem; capstan drive on second one would let tape slip every now and then (original PET frequently had same problem). Have heard several others complain about similar problems (mostly VIC owners). If you're planning to buy a new tape deck to replace your old deck w/o counter, have dealer check out the deck first.-MN

(See also the notes under VIC Hardware Reviews.-ES)

PEDISK II FLOPPY DISK MODEL 540-1, \$595 from CGRS Microtech.

REVIEW #1: Low-cost IBM-compatible drive which plugs directly into \$e000 slot with an interface board. Board has its own 2K operating system, which adds commands preceded by !. Could be used as remote data entry facility for large OBM-compatible facility. Handles program or data files, but 4040 programs will have to be modified for PEDisk (possible in BASIC, but nearly impossible for machine-language programs)). CGRS has popular packages like MAE, Papermate, and Flexfile available to work with their drive. Less expensive than a 4040, even if you buy 2. Its direct memory access avoids IEEE bus and makes it up to 4 times faster than the Commodore line. Its incompatibility with 4040/8050/2031 disks may be too much of a problem for some.-Ralph Bressler

REVIEW #2: My system includes: 1 double-density disk drive plus housing, 143k storage on 5 1/4" disks, logic board, ribbon cable, manual, master diskette containing DOS with monitor. The instruction manual gives step by step instructions on installation and start-up and many clear illustrations on all PEDISK II commands and error message codes. DOS uses 2K from top of BASIC RAM, and operates with 'sys59904' command.

Two modes: DOS and direct mode. Direct mode (BASIC) has all familiar commands, plus extensions, such as !load !save !open !print !input and !run, and linked to your BASIC by the supplied ROM. !run command acts like a SHIFT/RUN, and can chain programs (e.g., !run"invade:0" to load and run INVADERS on drive 0). !list (version 5) lets you view disk contents w/o disrupting programs in memory. DOS monitor includes disk utilities to format disks, compress files, rename files/programs, copy

entire disks (even with 1 drive), save machine-language programs with starting and ending addresses plus the execution addresses.

GOOD POINTS: Since the disk loads directly into memory, it's FAST!! (8K program which takes 2 min., 18 secs. to load from cassette loads in less than 2 1/2 secs. and 24k program takes over 7 mins. from tape compared to a PEDISK II load time of 4 secs!) (Vastly faster than CBM disks, too.-JS) Controller board connects up to 3 disks, easy to use, cheaper (by \$100) than Commodore's 2031 single disk drive, and excellent support (including phone conversations and now a newsletter). I've had no problems with the disk system (in over 4 mos. use).

BAD POINTS: Will not read CBM disks, takes top 2K (2050 bytes) of your memory (if your program uses this, you'll need to 'sys' to access the disk again), can't use TOOLKIT(tm) ROM with disk, file names are only 6 characters long, and cannot read CGRS quad density disks with the double density system.

For anyone who's been using a tape recorder with their PET/CBM computer, this product is a much needed relief. A disk does to cassettes what keyboards and CRTs did to LEDs and toggle switches (remember them?). As an alternative to mass data storage devices on the market today, PEDisk II disk system is worth considering. Recommended.-JO

CBM 8250 DUAL DISK DRIVE, from Commodore. See under Commodore Notes: Previews.

CBM's 5-1/4" hard disks, made by Winchester. See under Commodore Notes: Previews.

Corvus is advertising a hard disk for PET, but apparently this is different, and cheaper. (see under WANT ADS?)

Mator is also selling a 10 to 45 megabyte hard disk for PET, according to LVAPUG's **Gila Newsletter** of December 1981. It supposedly uses an extended DOS 2.5 and the IEEE-488 bus. Has anyone seen it or used it yet?-ES

HARDWARE REVIEWS: Memory Expansion Products

CBM 8096 EXPANSION MEMORY BOARD, \$500 from Commodore. 64K RAM board that attaches as daughter board to the 8032.

REVIEW #1: Not compatible with anything rising over two inches from the main board, unless re-mounted (see under PET Programming Notes). Has 4 banks of 16K each, with only 2 active at a time; these totally replace BASIC ROM address space. Requires extensive knowledge of machine-language to develop new uses, and even then is a real pain to program.

However, its primary importance is for prepackaged programs. Is already supported

by several extremely powerful programs, including: SILICON OFFICE, VISICALC 8096, COMAL 1.00, UCSD PASCAL, WORDPRO 5 PLUS, and WORDCRAFT 8096. Most users can wait until they get one of the above before buying the board. However, if you need to run BASIC 2.0 or 40 column BASIC 4.0 on your 8032, the 8096 board comes with them on diskette. Alas, a bug in these supplied versions makes them shake on-screen; correct this with POKE 59520.5:POKE 59521.5.-JS

REVIEW #2: Microcomputer Printout (April '82) reports the 8096 now outsells the 8032 in Britain, because the added memory is required in order to run SILICON OFFICE. (See Business Reviews: Data Base Managers.)-JS

REVIEW #3: "Introducing...the 4096. The 64K memory expansion board that converts the 8032 into an 8096 will also operate on the "FAT 40" 4032. The operation is the same as on the 8096. Don't expect it to upgrade a 4016 to a 4032, but it will take a 4032 up to a 4096."-KRP

COMAL ROM BOARD, \$495 from Instrutek. See under Computer Language Reviews.

EXPANDAPET/EXPANDAMEM, \$525 from Computhink. Add-on RAM for ancient PETs. Usually works perfectly, has 4 expansion slots with pinouts almost identical to Apple so Apple cards can plug right in--but not the DC Hayes moden card (DC Hayes requires -12v, not available on Expandapet, but not impossible to add, copying the +12v circuit with reversed polarities). But due to a design error in the refresh circuitry (confirmed by the manufacturer), the memory loses data when continually addressed, as in a software wait loop. BASIC programs are no problem, because the board refreshes itself adequately during the keyboard scan interrupts; but critical timing with interrupts inhibited causes trouble, so that Chamberlin music, software modem programs and such must not be placed in this memory. (In Nov '80, the manufacturer promised to let me know if a fix were possible; haven't heard from him since).-Charles A. McCarthy

MEMORY EXPANSION, \$50 interface + \$200/8K from Skyles Electric Works. Expands PET to as much as 40K RAM. Available in (stackable) modules of 8 or 16K. Two year guarantee, prompt delivery. Solid, compact, stacks and connects easily inside PET. Connector on cable allows later use of untapped RAM/ROM expansion (i.e., other SEW products). Fast, thorough test program provided on cassette. Clear instructions for installation/testing. Nice map of memory expansion lines. So far, it is perfectly reliable, very useful and worth the price.-BA

PTX40 PET COLOR ADD-ON UNIT, \$399 from Integrex, Inc. The company sent this to NCC 1981, but since it broke in shipment, we didn't get to see it perform. Has anyone seen it since?-JS

SOFTBOX, \$900 from Small Systems Engineering. CP/M peripheral. We've never seen this, although it's been rumored about for at least a year. See the discussion under Commodore Notes.-ES

Z-RAM CP/M EXPANSION BOARD, by Madison Computers. About \$700 from AID or Computer Marketing Services. This product does exist and should be available by the time you read this. (See also the CP/M discussion under Commodore Notes). It is a 64K memory board with a Z-80 micriprocessor, which allows it to take over the PET as a CP/M machine. The board is neatly mounted out of the way under the CRT in the top of the main case. Under CP/M, a typical dumb terminal is emulated, using the user part as a software RS232 port (as in their other product, MCTERM. See its review under Modem Reviews). It uses the 8050 disk drive as 3 logical volumes per diskette (thus losing about 40% of the 8050's capacity. Thus far, WORDSTAR, the best CP/M word processing program, is said to be available. Check on availability of programs you need before buying the board. To trade CP/M programs with other systems, you'll need to copy files via modem, because CBM disk formatting is used.

Since the 64K of memory uses a different bank selecting arrangement than Commodore's board, 8096 programs won't work with it. However, it comes with a useful utility to "cache" programs in the added emory to be copied quickly into normal memory as needed. They supposedly have THE MANAGER working this way. Recommended.-JS

HARDWARE REVIEWS:

Printers

CBM PRINTER HINT: "A word on using either WORDPRO or WORDCRAFT with most Commodore printers. If you do an 'open7,4,7:print#7:close7' so that the printer is in upper-lower case mode rather than upper case-graphics mode and load in either WORDPRO or WORDCRAFT to print a document, the results will be in upper case-graphics mode. Before using the wordprocessing software, be sure to reset the printer with 'open10,4,10:print#10:close10'."-Ross Sherwood

Dot Matrix Printers:

ANACOM 150 PRINTER, \$1150 from Orange Micro. 9x9 dot matrix, logic-seeking, bidirectional, 132 columns, 200 characters/second, 6 and 8 lines/inch. Front feed with adjustable tractors and quiet. I interfaced it with a standard Centronics cable from Virginia Micro Systems (super guy at V.M.)-Douglas Dachenbach

CBM 4022 PRINTER, \$795 from Commodore. Replaces CBM 2022 and 2023 printer.

REVIEW #1: Epson MX80 at heart, with PET graphics and formatting, and costs at least \$150 more. Now bidirectional, but I'd still say most users should get Epson's MX-80, or their newer models, instead of the 4022.-JS

REVIEW #2: It features adjustable tractor only paper feed, intelligent IEEE 488 Interface, and is packaged similar to the new Epson MX-70/80 printers. Uses 8-wire impact print head; bottom wire is used for descenders on appropriate letters, making very readable text font. Prints all normal PET graphics characters. Vertical spacing

is adjustable via software to print continuous graphics. Supports 11 secondary addresses: 0 =normal printing, 1 =print per previously defined format, 2 =store formatting string, 3 =set line per page, 4 =enable printer diagnostics, 5 =define programmable character, 6 =set spacing between lines, 7 =select upper or lower case, 8 =select ASCII/graphics, 9 =suppress diagnostic messages, 10 =reset printer. Reverse field printing and enhanced (expanded width) characters also available.-Greg Johnson

REVIEW #3: The manual was next to impossible to decipher. It looked as if someone in Engineering sat down and deleted all references to Epson, then deleted a few random paragraphs and pages, and rebound it. I hope they are planning to rewrite it (& the 8010 modem manual), as I was just getting used to Commodore's documentaton. I consider this (& the modem manual) to be a step down.-Mike Kouri

REVIEW #4: Closest thing to a "scam" that I've been involved with in this industry...I'd call it a camouflaged MX-70. Unidirectional, 5X7 dot matrix, and only 1 linefeed option (all or none). You get automatic paging whether asked for or not. No question--the MX-80 is the best value to come along in printers.-John Malone

CBM 8023P PRINTER, \$995 from Commodore. 150 cps bi-directional 8 dot matrix printer with logic-seeking (that means FAST! with choice of fair or good print quality). The 15" carriage tractor plus friction-feed printer has it all! Features: overstrike correspondence mode (for GOOD print quality), 16 cpi condensed mode, bit image mode for high-resolution graphics, all PET graphic characters, formatting and commands from earlier CBM printers, plus true descenders in lower case text.

ADVANTAGES: Quiet (compared to earlier models), easy paper/ribbon loading, flip lever to change from friction to tractor-feed. Built-in diagnostics recognize faulty electronics AND blocked carriage, missing paper, or lifted cover. For only \$200 more than the 4022, it's no contest!

A real competitor to the Epson MX-100 in features (fewer character sets and 1 less dot in the matrix, but twice as fast, and easier to adapt to friction-feed.) Compared to Epson MX-100, 8023P is totally PET-compatible, and cheaper (no IEEE interface needed).

DISADVANTAGES: Normal fast print gives poorer print quality than 4022 and Epson MX-100, and not likely to match massive, reliable Tally 8024 for continuous business use. Mine suffers from faint type, even with a new ribbon, and proper platen adjustment. It's also quite difficult to use in friction format, or run 3x5 card stock through the platen.-JS

EPSON MX-80 PRINTER, \$500-650, depending on dealer.

ORIGINAL: 9x9 dot matrix. "An amazing animal...simple...close to correspondence-quality printing. I especially like the smaller printing in the 132 column format."-Lyle Phillips

Don't get Epson's IEEE interface. Ones we've seen substitute TRS-80 graphics for lower-case. Lyle uses, and likes PIE interface. We've also tried, but not yet succeeded with CMC 1600 interface.-JS

MX-80 F/T: \$645 from A.B. Computers. Friction plus tractor-feed version of the popular MX-80 printer. Takes tractor feed paper or remove the tractor to use

rolls or single sheets. An 8161 IEEE (\$45) interface works with the PET, if PET programs in use send true ASCII for lower case. Wordpro, the new Pascal, Visicalc, and MAE (with patches supplied by EHS) can send true ASCII. BASIC can send upper case and numbers. Versions of Basic-aid (public domain) have been developed to screen dump to an ASCII printer in lower and upper case. No PET graphics (it is rumored that someone is working on a ROM for them), but it is a cheaper and better printer than the CBM 4022.-Arthur Cochrane

INTEGREX CX80 COLOR MATRIX PRINTER, \$2,000 from Integrex, Inc. The color PET printer we saw at NCC' 81 does exist and is essentially a CBM 2022 printer (though the company would never describe it that way), with the addition of a 3 position ribbon lifter, with a special tri-color ribbon. Color prints are VERY slow, as each line is passed in all three colors. Color commands from PET are fairly detailed in order to get anything very fancy. If you REALLY need a color printer...-JS

NEC 8023A and AC TRACTOR PRINTER, by NEC, \$795, discounted as low as \$465, depending on dealer.

REVIEW #1: 100 cps bi-directional, logic-seeking dot matrix printer. 5 character sets (French, German, Greek, etc.), friction and tractor feed. Prints pica, elite, condensed, proportional, enhanced, boldface on all, underlined on all, or both at once. Close to correspondence quality. Well built, sturdier and better cased than MX-80. Same printer inside as the CITOH dot matrix PRO-WRITER. Requires IEEE to parallel interace (we use PIE-C). Works very nicely. Highly recommended. Only fault is the manual is written for NEC Personal Computer. Requires a good deal of deciphering for PET, but it is worth it. If anyone wants a demo program utilizing all of its features on a PET, write me.-W.L. Hinrichs

REVIEW #2: Has 1.3K buffer. Faster than MX-80. Paper rolls forward and backwards easily. Doesn't waste a page at the start of each document. Has proportional spacing, sub- and superscript. Graphic density is greater than on the MX-80.-Walter Brown

TALLY 8024 PRINTER, \$1,700 from Mannesmann Tally.

REVIEW #1: A nice, FAST dot-matrix printer. We have the 7x9 version, and have been very pleased with it. I consider it a must for business applications with a lot of in-house paper demands.-Mike Kouri

REVIEW #2: Super fast, heavy, quiet 7X9 dot matrix printer. Definitely top-of-the-line for PET, unless you need letter-quality. (In that case, use the "L" option, offering multi-pass correspondence-quality printing.) Good 20 db. quieter than the CBM 4022, and at least 4 times as fast. Takes up to 15 inch paper. Keep input paper away from output, or it will tend to refeed and jam. Hard to change paper easily (threaded past the dual tractors and platen). Handles CBM formatting codes and displays cursor control characters, but not other PET graphics. Can also act as a regular ASCII printer. On arrival from another user, an IC was laying out loose and a pin broken; Tally, known for their service, talked me through a wire-wrap fix over a toll-free phone line immediately. Recommended.-JS

REVIEW UPDATE: FAST tractor-feed printer for business users who don't mind dot matrix, (7X7 and 7X9 available), and need 132 pica columns on 15" paper. 160 cps, bi-directional, logic-seeking, with high-speed slew. No PET graphics. 6 or 8 lines/inch. Enhanced characters available. Rear loading, with paper-out alarm. A quiet 58 db. Its maker, Tally, known for very good printers and gives immediate on-site service if needed. The programmable character may not work on the 8024.-JS

Letter Quality Printers:

STARWRITER F-10 (letter quality) PRINTER, about \$1500-2300, plus interface (parallel or serial) from C. Itoh. 40cps Diablo mechanism, friction-feed printer on 15" carriage. Bi-directional, logic-seeking print with high speed tabs in all directions. Tractor and 55cps options. Diablo daisywheels and ribbons. Friction adequately feeds a few pages, but tractor-feed mechanism needed for more pages. Noise level is OK, except for a high-pitch when idle. Cheaper, 10 lbs lighter, and prints more clearly than the Starwriter II (See review under Antique Shoppers' Guide: Hardware). Its excellent print, especially with carbon ribbons, is loved by our electronic stencil scanner. Highly recommended.-BA

TRANSTAR PRINTER. Same printer as the STARWRITER F-10, but with a higher price tag.-BA

Printer Supplies:

NOTE: When buying paper supplies for your printers, be sure to get your ditto masters, mimeograph stencils, and other "paper masters" labelled specifically for computer printers or word processing, since the regular masters may not provide you with as dark an imprint as you would desire.-ES

You can also buy 3x5 or 4x6 index cards for tractor feed printers, as well as mailing labels (either "one up" or "three up"). Check with your local office supply dealer. We order through Main St. Computers in Decatur IL, ourselves.-ES

PAPER TRACTOR. \$19 from Paper Tractor Ltd. (\$1.00 less for each extra copy). Plastic paper holder to allow tractor-feed printer to hold paper without sprocket holes. Holds 2 sheets of 8 1/2 x 11 paper at a time for continuous printing. Can make your own letter head stationery by overlapping sheets within holder & continuously printing letterhead program on the top of each paper. My husband doesn't get excited about it, but I do.-Sue Key

RIBBONS FOR CBM 2022/2023 PRINTER (#604-E-263), under \$2 each from Quill Corporation. Same Nytronic Dye Black Intense nylon ribbons which came packed

with your printer & are so hard to get. Dark, long-lasting print, cheap, & quick service. Highly recommended.-BA

(Quill only sells to companies and churches, not individuals.-ED)

HARDWARE REVIEWS: Interfaces

CBM PET-IEEE Cable, \$40 from Commodore.

CBM IEEE-IEEE Cable, \$50 from Commodore.

These have come in two lengths and in two styles. Most users will prefer the longer cable, but they cost more. As for the connectors, the "molded-on" ones are more reliable, but both are adequate. Current cables include grounding straps you supposed to screw onto the case. Few will, but it keeps the F.C.C. happy.-JS

ELTEST MSF-2, IEEE-488 to parallel or serial interface, \$68 for parallel version, \$85 for serial version, from Progress Computers. Test version is parallel, serial version uses same board. Full instructions, including schematics. Seems well designed and manufactured. Parallel connection almost trivial, requiring only standard plug-in cables. Like other reviewed interfaces, takes power from Centronics parallel connector pin 18. Most parallel printers expect this, and supply +5 volts to that pin. No case or switches to control character conversion and device address. (Set now via soldered jumpers as device 7, code correction 'on'.) One great advantage over PIE-C board: can't crack the computer's main board with this one!

Vitals on untested serial version: 300 baud, mark parity and 1 stop bit are standard. Changing parity requires changing a couple of minor components. Baud rate change takes 2 new components, and an oscilloscope or CMC's baud rate tester program. Serial version cannot halt output when print buffer fills, but has a 400 millisecond delay for carriage return. Output levels are true RS232, but you supply +5, +12 and -12 voltages. (CMC's SADI interface uses only +5 volts, fudging the standard, but cutting costs.) In short, if you or a friend can solder, the ELTEST boards may save \$50 or more. But you make the modifications. Of the 2 offered, I'd recommend parallel version.-JS

1450 PRINTER INTERFACE, \$130 from Connecticut Microcomputers, including case and power supply. Set for 300 baud, even parity, and one stop bit. Only baud rate is adjustable, with screwdriver and included program. Other settings changed by adding jumper block, but not documented. 1 instruction page.-JS

HESCOM, \$50 from Human Engineered Software. Cable to connect VIC and PET user ports plus 2 ML routines that sit in high memory in each machine. Requires PET and VIC. Includes demo program. Package comes from same company that produced excellent HESBAL assembler package. Another triumph of clear, concise programming and excellent documentation. You can transfer program or any memory

block from VIC-PET or PET-VIC, almost without a pause. Can also allow PET to use VIC's music or joystick capability. 2 machine games also explained. Package definitely has some real potential. Ability to store VIC programs on list and list them on 4022 printer is nice. Its usefulness may decline as more VIC peripherals hit the market. Documentation should serve as a model for entire PET software field.-Ralph Bressler.

PIE-C PRINTER INTERFACE, \$120 from Lem-Data Products. Corrects lower-case, and makes Epson MX-80 work with PET. Plugs vertically into PET's back with side IEEE edge connector on side. Be VERY careful not to flex it, as leverage of vertical mounting could crack mother board. Avoiding this problem costs \$40 for extra PET-to-IEEE cable. Draws power from Epson, requiring jumper to connector from MX-80. Hookup may void MX-80 warrantee. Very good instructions, easily adjustable and works well-JS

RESPONSE: Just as this book went to press, Ken Lemkelde called to clarify that the mother board flexing problem would only occur if you fail to unplug the interface before opening the computer's case, and has never actually been a problem to his customers.-JS

(Midnite requests user's reviews of MUPET from CMD-ES)

SUPERCORD MODEL 200 PRINTER INTERFACE, \$425 from Cord, Ltd. Used with the Adler SE1010 printer. Easy hookups. Works well, but has non-defeatable code correction. This means you have to use it in the CBM setting in WORDPRO, and thus can't underline or overstrike anything. Correction should be made switchable as on most competing interfaces.-JS

SADI, \$290 from CMC. Versatile bidirectional serial and unidirectional parallel interface for PET, but may drive you nuts in daily use. SADI can't just be plugged in and used. First, you must command a baud rate (unless it's 300), and other information, outside WORD PRO, etc. Once set, SADI is OK until a power failure. Unfortunately, mine was defective, and had to be reset every few hours, to unlock the IEEE bus. (CMC has an unconditional 30 day money-back guarantee.) If you need a powerful interface, SADI is a true 6502 computer, complete with two 6522 VIAs. But if a simple bi-directional RS232 interface is all you need, try the NETWORKS 2000 instead.-JS

HARDWARE REVIEWS : RAM and ROM Modules

RAM Replacements for ROM Sockets:

INSTANT ROM, \$162 from Greenwich Instruments. RAM module for ROM socket.

REVIEW #1: Excellent ! Recommended. It's 2K or 4K of CMOS RAM with built-in Lithium battery, which should last 10 years. ROM size, except 0.9" thick. Operating System changes are relatively simple.-Geoff Capell

REVIEW #2: I also saw the INSTANT ROM while in Toronto. It is said to be like the SOFT-ROM except: 1) it's far smaller, 2) it has CMOS RAM plus a battery backup good for three months after PET is turned off, and 3) it can't be paired with a real ROM.-JS

RAM/ROM for the PET/CBM, 8K version, \$120 from AB Computers. RAM board for ROM socket. Nice package that works very well. Four position switch but only two functions, read only and read/write. Battery backup available for \$30. Only problem was hookup instructions were not sent with it. With a little thought, additional sockets could have been added for ROMs and other switch positions used. Recommended for those not hardware oriented but with the price of 6116 RAMS coming down so fast, do-it-yourselfers could save a lot.-Jerry Key

ROM-SOCKET RAM, 4K version \$44 from Zeodex. \$24 for 2K version. Plug-in RAM module for ROM sockets. For all CBM/PET models with empty ROM sockets, or any other computer with a 2716/2532 compatible ROM socket. Unlike most competitors, this is not a large circuit board but a solid module, barely taller than a ROM. One British competitor, "Instant ROM" also has this shape and a battery backup, but costs far more. One wire from the module connects via a small test clip. (To the fourth pin from the rear of the PET on the inboard side of the rearmost memory expansion connector.) If this connection is broken, the module becomes "read only". If you need that feature, add a switch to the wire and extend it outside PET's case. Otherwise, you will have to open the case to protect memory. Lacks the undocumented spare ROM socket of CMD's "Soft ROM", but fits well on a ROM switcher board. Instructions are shorter than this review, so beginners will need help with installation and use. Even so, the cost is so low that it is still worth buying. Recommended.-JS

SOFTROM, \$130 from CMD. RAM board for ROM socket. For all 1979 and later PETs. It stands vertically in a ROM socket and plugs into the memory expansion connector. Unlike its competitors, it can also have a ROM on the board, selected with a switch added by the user. However, it has no instructions, and you have to cross the wires to get this feature to work.-JS

2114 RAM ADAPTER, \$23 (\$16 kit) from Optimized Data Systems. RAM board. As needed, 4"x3" circuit board lets one replace 8 of 6550 RAM memory chips (4k) with longer lasting, more available, and cheaper 2114 RAMs (not included). Clear instructions, easily installed, hints to use adapter for cheap memory expansion or screen RAM replacement. Very reliable after 2 months use.-BA

ROM and BASIC Switcher Modules:

THE BASIC SWITCH. \$130 and up, from Competitive Software. A BASIC switcher for those upgrading to either BASIC 2 or BASIC 4.

REVIEW #1: Flips quickly and easily between 2 versions of Basic. Includes an extra socket for the Toolkit or whatever. Instructions for the upgrade to 4.0 are sparse so far. The best way to go to 4.0, if you can afford it. Too bad it doesn't also flip the other two ROM sockets.-JS

REVIEW #2: The company is supposed to have another switch to flip between the 28 pin (old PET) ROMs and 24 pin ROMs.-BA

BETTER SOLUTIONS. Upgrades old PETs to 4.0 BASIC. The company has promised us a review copy. Will report later, if it is received.-BA

DIAL-A-ROM. \$88 and up, from Kobetek Systems Ltd. ROM switcher board. The first answer to the rash of new ROM programs for PET, and protection ROMs used in other programs. Switches instantly between 6 ROMs at any one address. Comes in a very nice case that sits next to PET. Has a light to show the PET is on.-JS

SPACEMAKER II. \$39 from Microtech. ROM switcher board. Available in stand-up or lay-down versions. Improved version of the old Spacemaker. Has 4 sockets instead of 2, selected with a slide switch. Allows use of EPROMs (couldn't be used on older Spacemaker) and ROMs with jumpers to accept Intel 2732 EPROM. Plugs into PET same as old Spacemaker. Software selection of chips is an extra-cost option. A good design at a good price for chips that want the same socket (VISICALC, JINSAM, COMMAND-O, CALC). If you don't do ROM software development, it is cheaper than SOFT ROM and eliminates need for loading.-Arthur Cochrane

SWARM 100. \$150 from Batteries Included. A BASIC switcher. "It seems to operate OK. It just plugs into the ROM slots with no cables or wires. Room for BASIC 2.0 and BASIC 4.0 and 5 utility ROMs. Allows 2 ROMs at \$9000 and 2 at \$A000 and 1 in the \$B000 slot. A simple POKE chooses which utility ROMs are enabled. To switch BASIC 4.0 to BASIC 2.0, you can hang up the system with a POKE and then reset or use a simple machine language program. With the program swap, there is no loss of your BASIC program. I have not been able to go back to BASIC 4.0 without losing my program and am inquiring about this."-Ralph Bressler

TRIPLE FLIP. \$28 from Kansas City Computers. 3-way ROM switcher. Available in either stand-up or lay-down versions. Well built.-Jayne Schiek

HARDWARE REVIEWS: Sound-Producing Equipment

PET 4010 VOICE SYNTHESIZER, \$395 from Commodore. Speech synthesizer.

REVIEW #1: Looks like a 1930's AM radio. Commodore Chicago has shown it with a disk program that gives it a 4000 word vocabulary. Sits nicely, and looks good atop an 8032. Probably works with all models. Made by the same company as TYPE-N-TALK below, sounds as good, but is **vastly** harder to use. Works from the User port, but since it has an IEEE connector at the synthesizer end, it requires a \$50 P-I cable. Dead as a doornail until a large BASIC program is loaded and run. The program needs lots of input to say much, and cannot save its input for reuse. NOT recommended!-JS

REVIEW #2: "I was mildly impressed. It is better than the Radio Shack, but still sounded mechanical. Limited use. Perhaps for handicapped and education."-Lyle Phillips

TYPE-N-TALK, \$275 from Votrax. Speech synthesizer. Requires RS232 input (RS232 printer interfaces from PET run about \$120), and standard hi-fi speaker. This little box is amazing! Substitute it for an RS232 printer to "say" anything you would normally send to the printer! Like others of its breed, sounds very mechanical at times, although it says "United States of America" perfectly. Requires NO software; can even be operated in immediate mode (i.e., open4,4:print#4,"united states of america"). Being RS232, it works equally well on most other brands of computer. Highly recommended if you need voice synthesis. Commodore plans to support this for some VIC programs.-JS

VISIBLE MUSIC MONITOR, \$60 from DES. Hardware includes: a digital-analog 4-voice converter, with CB2 sound enabled and extended User/2nd cassette ports. Software includes: an excellent 8K machine-language program for music entry and playing. Has 11 octave range, displays treble and bass clefs, user definable note-keys for keyboard entry, and full range of scales, notes, sharps, flats, and tempos. Manual is well done with tutorial example. User COMMENTS: very impressive, good sound capability, relatively easy to use, is both disk and tape oriented. User CRITICISM: lacks capability to play notes while in edit/entry mode, though partial sections can be played in play mode. Music saved is currently saved with a copy of monitor, and autoplay feature will only work with tape saved music. (Software and music tapes will work with the old PETUNIA board; CB2 sound is not produced and it has no extended ports. I simply re-soldered my CB2 wires to the PETUNIA board. Software-only price unknown.)-Roy Wagner

**HARDWARE REVIEWS:
Other Equipment**

BRANDING IRON, \$80 from AB. EPROM Programmer. For all PETs, (Old PETs need an add-on 24 pin EPROM board.)

REVIEW #1: Software by Bill Seiler (see Commodore news) and others. Hardware by Seiler and the St. Louis PET SET. Programs 2716 (2k) and 2532 (4k) EPROMs. Connects to user port and cassette #2 port. Easy commands, patches into Commodore's monitor. Handy LED shows programming in process. Nice screen display zips thru bytes being programmed or shows errors byte by byte. Can VERIFY results or COPY the EPROM into RAM. FAST, CHEAP, RELIABLE. Don't pass this up if you want to program your own ROMs.-BA

UPDATE: It is incompatible with the 8096 memory expansion board.-JS

JOYSTICK, \$10 from Commodore. "Atari-style" joystick. See under VIC Hardware Reviews.

LE SHTICK, \$40 from Computer Country and other dealers. Mercury switch joystick. See under VIC Hardware Reviews.

RADIO SHACK GLARE REDUCER, \$10. Fine mesh netting to fasten over a 12" CRT screen. Can apparently be cut down for 9" screens, but that idea was not tested. Appears to work like silk finish photographs, by reducing visual acuity. I need sharp focus more than I need to avoid glare, so I wouldn't use it. -JS

3M CRT SCREEN, \$15. Glare reducer for terminals with 12" screens. A highly effective glare-blocking plastic screen, if glare comes from above or below the screen. Shinier than no screen at all if the glare is from in front of the terminal (i.e., off your white shirt). Protects against prying fingers when used with kids, as well as flying glass if you manage to break the CRT. Unfortunately, I sit tall enough that I cannot read the bottom screen line unless I slouch. When cut down to fit 9" screens, it blocks the whole screen from my view! Could be solved by insert'ng a washers in front of the screen to tilt it upward, but would also increase glare from above. Normally does not reduce clarity of text, but late at night, screen characters seem to shimmer and dance. A fine product, for short people.-JS

2040 ERROR LIGHT, \$30 from CMD. I bought this little board that changes the red LED in the middle of a 2040 or 4040 front panel to a green/red one, with a built-in buzzer. Normally, this one is on and green, to show the disk has power. On error, it turns red, and the buzzer goes until you reset the disk off or read the error channel. Since the noise might get to you after a while, CMD partially muffled it on my copy. You can hear it, but not as loudly as on the ones I heard up there. Also, since my drive is an old one, I had some trouble fitting the little board in position and had to jury-rig a ground for it. But I sure like it all the same. Recommended.-JS

HOME APPLICATIONS REVIEWS

DINNER'S ON, \$15, by Briley Software. Gives you up to 25 days of prerecorded, randomly-selected meals. You enter all ingredients and meal information as DATA statements within the program. Good description in manual. You really need a printer to use this program; otherwise, you have to hand-copy the computer lists, which defeats the purpose of the program.-JO

GROCERY MART, \$15 from Briley Software. You use DATA statements within the program, as in above program. Very good manual explains everything. Again, you need a printer to use the program effectively. Advantage: since you use the data in both programs, you don't have to build data files. Loads quickly to both tape or disk. I doubt if non-PET users (like my wife) would go to the trouble of writing data into these programs. Debbie would rather shop the old way.-JO

HOUSE INVENTORY, \$5 from Baker. Program is input bomb-proof. Prompts memorization not required--displayed at all times. Fails to return character set to original at end. This is an excellent purchase, and if used with a copy of data in a safe place, takes a large step in home protection.-RS

NOTE: If some enterprising company wants to, contact Sue Key, at 151 Flint Ridge Dr., Gahanna OH 43230 about marketing her work. I've seen her neat "cookbook" of favorite recipes she has gathered over the years as a military wife (in Italy, too!), and then in Ohio. The recipes are all on WORDPRO files, with an index generated using FLEX-FILE. I wouldn't mind having recipes on diskette--I just don't want to type them all in myself! Oh yes...how about also developing a simple English/metric conversion program to print out the recipes in either format! (Sue, please don't kill me for mentioning this...)-ES

INDUSTRIAL AND SCIENTIFIC PROGRAM REVIEWS:

COMPUTER HOUSE DIVISION PROGRAMS, from F.L.C., Inc. Requires Upgrade or 4.0 BASIC and CBM disk. Microcomputing gave me these programs for review and then decided not to print the resulting opinions, because they don't print very unfavorable reviews. I have never seen programs of so little distinctive value protected so heavily! If you must buy them, limit yourself to technical programs with no commercial equivalents, such as BOLT CIRCLE 2.0, SPUR GEAR, TANK THICKNESS, and TRIG/CIR/TAN X&Y. The other dozen programs checked are less capable/reliable than other commercial/public domain programs, and impossible for most users to modify for special needs. Some can't even be run on new equipment. NOT recommended.-JS

HI-RES ULTRA PLOTTER PACKAGE, \$13 from Tele-Trex. See under Utilities Reviews: Graphic Aids.

MINI-COUNT, from Optimized Data Systems. Frequency counter. This arrived too late for review in the Compendium, but does exist, load and run.-JS

WINDCHILL, part of Baker Enterprises program collection (reviewed under Utilities: Program Packages). 3K. Not very good. Only allows one temperature at a time. It would be better to produce a table or graph with the temperature you wanted in it.-GH

WATANABE WX4671 DIGILOT PLOTTER, \$1400 from Skyles Electric Works. See under Utilities Reviews: Graphic Aids.

COMPUTER LANGUAGE REVIEWS

CALC, \$100 from Matrix Software. For users of MAE or CBM assemblers. See under Assembler Reviews.

COMAL 1.00, \$495 from INSTRUTEK of Denmark for ROM Board version, price in RAM unknown. ROM version requires twelve inch screen (see next review). RAM version requires 8096 expansion memory board and CBM disk drive. Finally, COMAL comes into its own. If you disliked Public Domain COMAL's tiny 4K memory space, or having to use separate edit and run modules to get more space, then take another look! The COMAL RAM version now comes up with almost 39,000 bytes free! It has more commands than earlier versions, which already included nearly every desirable feature of both BASIC and Pascal. COMAL has all the recommended control structures for structured programming, along with most of the usual programmer's aid functions, and the 8032 expanded editing commands. The more notable commands are: multi-line IF...THEN...ELSE, CASE...WHEN...OTHERWISE, REPEAT...UNTIL, WHILE, FOR...NEXT...STEP, EXEC PROCedure (either as a subroutine or as a multi-line defined function, with global or local variables), INstring, printUSING, INTERRUPT (via SRQ on the IEEE bus), and LABELED lines. If you already know what these do, then you can understand why I like COMAL. If you are just beginning, you'd be a lot better off learning to program using these commands than any BASIC substitute.

Includes other MARKS OF EXCELLENCE: long variable names are allowed and kept distinct, lines are automatically indented to show structure, several command names are completed automatically if you omit a portion, the (SPACE) bar pauses both listings and disk CATalogs, added utilities can be merged directly into the language with a single command, all CBM disk functions, including relative files, are fully supported, and all syntax is fully checked each time a line is entered.

NEGATIVES: Primary is lack of documentation. Len Lindsay has written an excellent manual (not available until Fall 1982), but there is still much to learn about COMAL (such as how to get back into it after exiting to the BASIC ROM monitor). The other obvious lack is BASIC 4's added disk commands. COMAL mostly uses Upgrade

BASIC 2.0 syntax for disk control. If I can get source code for COMAL, I'm sure the disk commands can easily be added as an OPTION ROM.

Another OPTION ROM is already available, along with a matching RAM graphic board. The new board can give COMAL full TURTLE GRAPHICS in extremely high resolution, with two separate high resolution screens. According to a letter from Erling Nielsen of Instrutek, the board features 512 by 256 pixel resolution, controlled by extensions to COMAL. It has 32K memory of its own, giving 2 complete screens - one can be altered while the other is on display, and both are independent of the regular screen image.

COMAL is catching on like wildfire in Europe; many schools there refuse to buy a computer that cannot run it. And for the moment, only Commcore version 1.00 fully implements COMAL on a micro. Probably only Waterloo microBASIC on the SuperPET comes close to its power as a language for most PET users. Highly recommended.-JS

COMAL ROM BOARD, \$495 from Instrutek. 64K ROM board, with 16 sockets for 4K EPROM chips (the COMAL interpreter uses 10 of them). Requires twelve inch screen. One additional 4K EPROM chip is available to control their high resolution graphics board using turtle graphic commands. Supports both tape and disk. Completely compatible with the full enhanced COMAL interpreter written for the CBM 8096 (Instrutek wrote the interpreter, as well as producing this board). Whenever your computer is turned on, it will come up in COMAL. To switch back to PET BASIC, simply enter the word BASIC. Although no U.S. distributor has yet been named, Instrutek is a large and dependable company. I would not worry about ordering from them direct.-Len Lindsay

FORTH, by Bill Seller. See under Public Domain Reviews.

FULLFORTH+, \$75 from IDPC. Excellent implementation of FORTH, in its 5th version, and best I've seen on PET. Supports all FORTH structures and FIG standards. Many added enhancements to handle special PET and PET peripheral features. Upgrades offered for just postage and handling costs. Many significant improvements might qualify it as new product. Maintains program compatibility between versions. Company support includes HOTLINE, excellent newsletter with tips, new user structures and screens. Compiler addition means FORTH programs can be run w/o fullFORTH system present. Package would be excellent value at twice the price. Advantage over Bill Seller's (public domain) version is the company's support.-Ralph Bressler

MATRIC, \$125 from Cognitive Products. Extension of BASIC for Matrix algebra and array processing. Machine language. Uses 5K in high memory. Adds 14+ matrix commands to BASIC 3, tape or disk (tested on DOS 1.0). 8-12+ times faster than BASIC. I'm very impressed! Routines all work, are fast, easy to use, and greatly shorten BASIC programs. Has well-written manual, with good examples and demo programs. Uses non-standard notation, such as '10 REM)CF CF' instead of '10 MAT CF INV (CF)', but not confusing. Output to screen or printer. The only fault I could find was no algebraic sign for the determinant value, only the absolute value. Enabling the Toolkit ROM disables the MATRIC routines. The price seems

steep, but if you handle numeric arrays, or use matrix methods, and can afford it, this package is for you.—William L. Hinrichs.

OS-96, \$200 from A.B. Computers. Extended BASIC interpreter for the 8096 expansion memory board. Expands BASIC workspace to an apparent 64K bytes free, (32K reserved for program text, and 32K for variables.) Also adds several enhancements to BASIC, and some new commands, including most of those in the SM-KIT (see separate review.) Because variables are separate, changing program lines or chaining large modules after small ones doesn't clear them. The BASIC stack has been lengthened, allowing deeper nesting of loops and subroutines. Key sequences access the 8032 extended editing commands. Program lines and variable data may now be up to 255 bytes long. Spaces are automatically deleted from program lines, and reinserted on LISTing, with a further option moving each statement to a new line, properly indented for structure. New commands include: CLR only some variables, RESTORE data to a particular line and element, REDIMension arrays, ON ERROR GOTO...RESUME, DISPOSE (of stack entries), PRINT or INPUT at a screen location, printUSING, read disk CATALOGs into an array, INSTRing, and ELSE.

OS-96 is fully compatible with PET BASIC syntax and programs. However, ordinary program load addresses must be altered to work, and vice versa. Fortunately, a LOAD at option is included, but there is no matching SAVE at, so you'll still need something like POWER-AID's 'YOU' command to convert OS-96 programs back into a form usable on ordinary machines.

The cursor column is very significant to OS-96; this allows the 255 character lines, as well as automatic AUTO line numbers. However, I found the automatic AUTO quite disturbing, and would vastly rather it weren't automatic. Since programs and variables are kept in the 8096 add-on RAM, and OS-96 is located in the usual 32K RAM, none of the usual SYS calls or enhancement ROMs work.

The documentation I saw was preliminary, and will be improved. I found it adequate for those who already know PET BASIC, though it hints at undocumented commands. According to the instructions, OS-96 will be further enhanced later, to include at least the rest of the SM-Kit commands.

If you need a LOT of memory space free for programs to be written in a nearly standard PET BASIC, and can live with its slight inconveniences, OS-96 is for you.—JS

KMMM PASCAL, \$69 disk from AB Computers. "Very much like TINY PASCAL but Char, Boolean, and Text types are also supported. Floating point is said to be coming. Has interpreter but also translates p-code to 6502 machine code. The editor does not use screen editing, though."—Arthur Cochrane

TCL PASCAL, \$350 from Commodore. For BASIC 2.0 and Commodore disk. Supports printer. Uses dummy ROM at \$A000. In machine language. 8032 version recently announced.

REVIEW #1: "Fantastic. Full-blown and much more. Well documented manual (quite thick)."—Lyle Phillips

REVIEW #2: Has 2 compilers: a limited resident interactive one that does small projects easily; and a disk version that is full Pascal with extensions, able to compile 3000 line programs. Can attach 10K run-time module of itself to object files, allowing them to be run on any 16K+ PET with BASIC 3. Also links several object files into 1 program. Includes powerful screen editor much like BASIC AID. Very readable manual with many examples in 1 section, and a brief guide for experienced users.-JS

TCL PASCAL for 4032, \$295 from Commodore. For 4032 (BASIC 4.0) and Commodore disk. Uses a dummy ROM at \$9000 or \$A000. Improved over Upgrade BASIC 2.0 version in that, on startup, a printer setup menu is executed. Rest of the functions are the same and BASIC 4.0 disk commands can be executed in direct mode.-Arthur Cochrane

TINY PASCAL, \$75 disk, \$40 cassette from Abacus Software. "Good for learning Pascal. Tape and disk supported. Trace and single step in Interpreter (listing available for modification). Since the editor and compiler is in BASIC, it is SLOW, but can be modified. The editor uses Get instead of Input to read a file. Does not use screen editing. Only I/O is keyboard and screen. Has Mem (like PEEK or POKE) and Call (like SYS) and decimal and hex input/output. Only Integer and array of Integer types are allowed."-Arthur Cochrane

RPL \$81 complete, from Samural Software. Versions for 40 or 80 column screen. RPL is very much like a compiled version of FORTH, even faster and smaller than its predecessor. However, unlike some compiled languages, its processed code (a 'p' code), can be logically interpreted by the optional debugger.

One of the best features of RPL is its full integration into BASIC's editor. All the usual ROM aids work with its source files. Also, unlike FORTH, it uses the full 80 column screen, and scrolling. RPL programs may be addressed anywhere in memory, and even burned into ROM.

RPL can definitely be used in serious programming. The review copy came with an amazing demo of guitar fingering, quickly showing every possible way to create every possible chord. Another article received since shows how to use the high-resolution plotting powers of the Spinwriter printer via RPL. The article also shows how to get around RPL's lack of decimal math by using BASIC and RPL together. RPL is very well documented, with a very complete and easy-to-read manual. The optional debugger has every desirable feature, and has been widely praised.

My only complaint so far is that RPL is called structured, but lacks most of the structures of COMAL and Pascal. Also, in order to preserve the BASIC editor, RPL uses some BASIC tokens to mean something entirely different in RPL. As a result, I find RPL programs anything but self-documenting. On the other hand, it has only about 3 dozen commands to memorize, and should be easier for most people to use than assembly language. Commodore users are quite lucky to have both RPL and COMAL entirely to themselves right now. Both are excellent in their intended uses, far surpassing the BASICs and FORTHs they replace. If you like FORTH, I think you'll LOVE RPL, and if you like Hewlett Packard calculators, you really ought to give RPL a try. Recommended.-JS

UCSD Pascal, \$175 from Commodore. Version 4.0, a later and better version than Apple's, is now available for the CBM 8096. It includes an editor not in older versions. Has a huge manual. Doesn't work as is with graphic keyboard. How about a real review, from someone who knows Pascal?—JS

MAGAZINE REVIEWS

Here are our opinions of magazines with PET material (monthly unless specified):

Byte, \$19/year. Token PET coverage. One of the best magazines for non-PETters. VERY thick, with more ads than articles. If you consider price versus pages per issue, it's a bargain.—JO and ES

CBM Microcomputing (formerly **Commodore PET User's Club Newsletter(U.K.)**) from Commodore U.K. "I subscribe to the official PET UK newsletter in the belief it will always be correct about CBM products. Recently, 2 series of articles started, and I know their contents to be rubbish. Hence, (I wrote) the CPUCN letter, which wasn't acknowledged by the editor, or either author. My subscription will not be renewed."—Geoff Capell

COMAL Catalyst, free newsletter from the COMAL PET Users Group when join. Published about quarterly. Good content, but does ramble slightly. Literally crammed with rumors, announcements, reprinted articles, resources, and eventually programmer's tips (and I thought **Midnite** didn't have enough "white space" for easy reading!) Editor needs a good spelling checker program.—ES

Compute!, \$20/year from Small System Services, Inc. Best PET articles. Back when they had it, the PET GAZETTE section featured some of the best authors in PETdom (Butterfield, Baker, et al). Program listings, helpful programming tips and trouble shooting hardware and software for PET makes good reading. If you subscribe to only one magazine (besides the **Midnite**), **Compute!** is it—JO

Commodore Magazine (formerly **Interface** and **Commodore Pet User's Club Newsletter**), \$15 for 6 "bimonthly?" issues, from Commodore U.S.

REVIEW #1: Long-awaited. Has many items of general interest to the novice. Very nice section on the VIC. Pretty good layout. Good supplement to anyone who owns or uses PET.—MN

REVIEW #2: Another season, another name for Commodore's magazine, and another editor as well, but **finally** an improvement. Issue #1 under the new name was fairly decent for beginners, and issue #2, which nearly made it out in the cover month, is quite respectable. If it continues improving at the same rate for a few more issues, they'll really have something. Still mostly for beginners. Advanced users should take Commodore Canada's **Transactor**.

Computer Shopper. \$10/year. Newspaper format. Contains free ads for new/used computers, accessories and software for many micro-computers. Good source when want to buy or sell computer equipment on tight budget. I sold my Apple II and bought my 32K PET through them. Worth my subscription!-JO

Creative Computing. \$20/year from Creative Computing. I read this cover to cover (except R.S. articles) . Excellent reading material for beginning computer owners. Has general program listings in each issue (normally in BASIC) from games to utilities (very few are specifically for PET, however-ES). Annual PET column by Gregory Yob. If you've never heard of it, where have you been?-JO

Cursor. from the Code Works. Only back issues are now available (Nos. 1-30). The notes are to be continued in the forthcoming **The Jeffries Report.**-ES

REVIEW #1: **Cursor** is a widely-praised tape magazine. I've subscribed almost from its beginning. However, I don't like games much, and that's over half of **Cursor's** content. Recently, I went through 10 disks full of games to select those I am willing to play. Result: one mostly full diskette, with only one **Cursor** game on it. On the other hand, at least twice a year, they included a utility program so good, I would have paid the annual cost for that alone. I wish it had included utilities more often, but I still got my money's worth from **Cursor**. I'm sure you will too.-JS

REVIEW #2: This cassette magazine still remains one of the best software buys for PET. One late issue includes an arcade game, 16K adventure plus 4 others. Recommended.-JOH

Dtack Grounded. The Journal of Simple 68000 Systems, \$15/6 bimonthly issues from Digital Acoustics. Excellent newsletter on how to use the 68000 superchip. Since the editor has a CBM 8032, the newsletter is correct for PET users. Even if you aren't ready to spend \$600 for a new processor board, assembly-language programmers and hardware hobbyists will get far more than \$15 benefit from this newsletter. If you DO have \$600, some PET programs can already use the 68000 speed, with more PET commands being transferred to the 68000 over time. If, as I suspect, the 68000 will be one true replacement for the 6502, especially for large scale applications, reading about it now will prepare you for the future.-JS

Farm Computer News. \$40/year. Vastly overpriced, on the basis of a sample copy received.-Candy Jens

Genealogical Computing. \$12/ 6 bimonthly issues, from Data Transfer Associates. Complimentary issue upon request by mail or call 703/978-7561 and leave message on Family Historians' Forum (a bulletin board). First issue was very informative. Included many articles dealing with use of personal computers in genealogy, short sample programs, reviews on known genealogy programs and genealogy tips. Has surname search and queries for reasonable fee. First issue was TRS-80 oriented, but promises to cover other systems as information becomes available. Highly recommended for those interested in genealogy.-Jerry Key

Gila Newsletter, from Las Vegas Area PET Users Group (LVAPUG). Editor: Gerald Hasty. Free to members. Well-formatted, beautifully illustrated 12-page newsletter with a general article or two, brief hints, club announcements, software news, and descriptions of programs in the club library. Pretty short on content, however.-ES

Hardcopy, free newsletter of the Commodore (Houston) Users Group (CHUG). Hopefully monthly. No subscription; \$10/year suggested club membership donation. Director and Editor is John Walker, 8738 Wildforest, Houston TX 77088. First issue was small, short on content, and had an irregular format, but has two excellent columns: Dixonary, by Paul Dixon; and VIC-20 Corner by Peter J. Farrow (see their hints and reviews elsewhere). Likewise, it included **Midnite** #6's VIC SOFTWARE REVIEWS (of course, we like it, content-wise!). We have reprinted their NCC'82 news in this compendium.-ES

ICUSS: Illinois Commodore Users Swap System (newsletter), free to those who donate (swap) good usable educational programs on cassette, from Robert Lemon and Frank Burzynski. First notice contained one review, ads for two inexpensive educational/utility programs, one programming article and one listing. See under Education Notes for their policy statement in handling swaps of public domain educational software. Will they join the Educational Resource Center network that Commodore talks about setting up? Since I no longer use cassette, I can't use the information. However, teachers with old PETs now have somewhere to turn in Illinois for help.-ES

Infoworld, \$18/year. Biweekly. Timely news. Usually excellent software reviews, but none on PET, except for one thoroughly uninformed review on the 8032 in the spring of 1982. For those who like to keep completely up-to-date and don't mind near-total neglect of the third most popular brand of microcomputers!-JS

Interface Age, \$18/year.

REVIEW #1: Business oriented, few PET ads or articles. Good general business articles. Now has monthly "Commodore Logbook" by former Commodore staffer Mike Heck. The column is well done, and business oriented. That it has run for 10 months without PET owners noticing until last week shows IA had been neglecting Commodore. Welcome back, I.A.-JS

UPDATE: According to columnist Mike Heck, I.A. may have just dropped all the product columns. Some magazines never seem to know when they've got a good thing going!-ES

IPUG Newsletter, from Independent PET Users Group, England. Seems to be Users Groups' User Group, along the lines of "International Apple Corp". All PET, and much like **Midnight** in size, contents, print quality and viewpoint, though pages

far less crowded, and fewer reviews. User-oriented, includes several good programming hints. I'm sure I'd subscribe if I lived there.-JS

The Jeffries Report, \$15/6 months from The Code Works. Monthly. Flash! A bit of **Cursor** may survive. The bit involved is the pithy page of notes included with each issue. Ron Jeffries is offering them separately as a monthly 4 page newsletter, costing \$15 for 6 issues. (About the same annual price we used to pay when we also got program cassettes!) The notes won't be limited to Commodore anymore. (were they ever?) but they should continue to be very interesting reading. He even hints at including some reviews. I imagine I'll subscribe. After all, his humor and style reminds me of the **Midnite**...-JS

JINSAM Newsletter, \$15 from Jini Micro-Systems. Quarterly. This 8-12 page newsletter keeps people informed on what's happening with the JINSAM database manager. Gives descriptions of how others are using it, a few hints, when updates will be available, and announces forthcoming workshops. Information in it is free of copyright restrictions.-ES

Journal of Computers Reading and Language Arts has been announced by its editor, Gerald H. Block. See under Education Notes.

Kilobaud. See under its new title, **Microcomputing**.

Micro, \$58/year from MICRO INK, Inc.

REVIEW #1: Oriented to 6502 and 6809 assembly-language programs and hardware. Monthly PET VET column by Loren Wright, plus 1-3 PET articles per month. Although not for beginners, this is my favorite magazine since six months after I got my PET. Highly recommended. (Note: I wrote this review two years before becoming a contributing editor for **Micro**!)-JS

REVIEW #2: Very Apple-dominated, but they do balance for the PET. Loren Wright's column has a lot of new useful information on CBM products. Jim Strasma is writing some very helpful reviews on the latest in software for the CBM. The second best resource magazine for the PET/CBM/VIC and on its way to #1.-MN

Microcomputer Printout (formerly **Printout**), \$58/10 issues from Printout Publications. Subtitle: "a plain man's guide to personal computing." Independent British PET (and other micros) magazine.

REVIEW #1: Well done and glossy. Very witty and informal. Lots of reviews. Fewer usable programs. No longer only for PET, but still HEAVILY PET-oriented. Amazing list of available PET products, all VERY costly, that we just don't see this side of the "lake." First issue took a while to come, but arrived in good shape. Good British humour, well-done business and technical articles, some full reviews,

REVIEW #2: June 1981 issue has nice glossy appearance, but the few articles are in varying size prints. Some hard to read. Contains 64 pages, 24 pages of articles/columns (generous count) and rest high priced advertising. Better to support *Midnite*, *Transactor*, and *Compute*.—Jerry Key

REVIEW #3: Sort of the *Computel* of the U.K. Too bad it costs so much to get it sent over here. Not bad!—MN

Microcomputing (formerly *Kilobaud*), \$25/year from Wayne Green, Inc. Supports PET better than any other large-circulation magazine. Prominent *PETpourrie* column by Robert Baker for over 2 years. Devoted whole September '80 issue to PET. PET articles every month. Well balanced between hardware and software, personal, business, and educational users at all levels of skill. Recommended.—JS

Microxchange, \$15 for 10 issues/half year, from editor Maisie Irish Cohen (805/963-4187). I haven't quite figured **Microexchange** out yet, though I have their newsletter. Maisie Irish Cohen is editor, and interested in PET, but the group itself, if it is a group, is heavily APPLE oriented. In a couple of pages, the newsletter covers most anything, and is a cross between a catalog, a reference, a newsletter and a magazine. One nifty idea: renting PETs, etc., for \$75/month.—JS

Midnite Software Gazette, from CIPUG. Formerly free (donations accepted), quarterly. Beginning with #9, \$20/year for 6 issues.

REVIEW #1: "Remarkably informative and whimsical - a rare combination."—Paul Eckert

REVIEW #2: "I must say I have enjoyed reading the *Gazette* and have purchased several programs based on your reviews. The magazine is circulated to several of my colleagues and we all feel that it is a real service to the community of users."—Harvey B. Herman

REVIEW #3: (Used to be) more or less free from CIPUG. Unprotected: requires no ROM and applies to any PET. Inexpensive. Useful to those who think about buying programs, or selling programs. Uneven quality: they reviewed *VISICALC* without mentioning what it does. Perhaps controversial: will there be 'rebuttal' reviews in future issues? Money-back guarantee. (Was) well worth twice the price (free). Hopefully quarterly (bimonthly now).—Jim Butterfield.

The (PET) Paper, \$20/year from Centerbrook Software Designs. Quarterly. This is the only U.S. PET journal still in continuous publication since 1978. It has had its ups and downs. When it was a "for profit" magazine published in Auburn, PA, I considered it strictly for idiots—amateur oriented, with little of substance except what came in over the transom from readers. But in the past two years it has become something else—an excellent magazine for teachers and other less-than-full-time PET freaks. It has good articles and lengthy reviews. During the course of volume 3, the printing improved markedly, (just as ours did at *Midnite*). Still not for the same audience as *Micro*, but the world is large enough for both. With the October

1982, it will cease independent publication and continue as part of the **Midnite**. Ralph Bressler will still edit the articles from his New York address, and subscriptions will be handled through CIPUG.-JS

PEDisk Newsletter, free to registered PEDISK owners, from CGRS Microtech. First issue described new PEDISK programs: MAE, PAPERMATE, KM3 PASCAL, fullFORTH, WORDPRO, and a programmer's manual. Tells how to get current DOS 5, a bug in it, and a useful POKE to shut off the drive. Lists dealers. That's all - but a whole lot more than most vendors send registered owners of their products.-JS

PET BENELUX Exchange, f15.00. from Copytronics, The Netherlands. An excellent Dutch PET Users' Group Newsletter. 50 glossy pages per issue. Amazingly good for a newsletter started by a single person in less than a year. Includes ads for lots of products never seen here. Good articles (i.e., 'Tips voor Commoreo floppy gebruikers', not to mention an 8032 Demo program, and 'Commodore's BASIC Cursus' (19 programs)). All right, so I'm part-Dutch - it's still neat!-JS

POWER/PLAY, \$10/4 issues. Quarterly from Commodore. The premier issue consisted of many reprints from previous issues of **Commodore**, the **Microcomputer Magazine**, but there were many more new articles included. Looks like a good start. Aimed specifically at the home computerist. Has a lot of good information for those who do not take any of the other magazines. Annual subscription should be well worth the price to most, but it is a long time between quarterly issues.-Jerry Key

Printout. See under its new title, **Microcomputer Printout**.

TORPET, \$2 per issue, or free to TPUG members (6-10 issues/year), from the Toronto PET Users Group.

REVIEW #1: If you like **Midnite**, you'll LOVE **TORPET**! Official newsletter of Toronto (Ontario) PET User's Group includes "Butterfield Box" for beginners, "BASIC Box" and many good programming articles, hints, full and comparison reviews, printed documentation for large TPUG programs, lots of promotional computer literature, and...parts of the latest **Midnite**. Print quality improves with each issue. Apply for "associate membership" to receive it. (Note: this is a biased review...)-ES

REVIEW #2: "They have a lot of programming information on the PET/CBM, and in recent issues, the VIC. They are the best independent (Commodore) newsletter in Canada."-MN

Transactor, formerly \$11/yr from Commodore Canada. Bimonthly. Edited by Karl Hildon. Formerly Commodore Canada's Tech/News Periodical, now under the wing of CMD, Inc.

REVIEW #1: Official, and VERY informative. Issue 7's summary of PET info worth its weight in gold. Commodore Canada refunded money to Canadian PET owners foolish enough to order vol. 2 of **U.S. PET User Club Newsletter**.-JS

UPDATE: I'm subscribing to the new Transactor. I notice editor Karl Hildon hasn't promised any set publishing schedule for the new edition. Rumor has it that future issues will be on slick paper, with ads together in the back.-JS

VISIGROUP NEWSLETTER, from VisiCorp. For people with VISICALC. According to Jerry Key, the first issue he saw "wasn't much."-ES

MODEM REVIEWS

Equipment and Software Packages:

CBM 8010 MODEM, from Commodore. See under Antique Shoppers Guide.

COMPACT, see STCP.

MCTERM, \$195 from Madison Computer. Baud rates of 110, 300, 600, and 1200. Optional parity. Requires CBM disk for some options; needs alteration for the 2031. Uses BASIC 2 or 4 with either 40- or 80- column screen. ROM at \$9000 and user port cable (supplied).

REVIEW #1: Will work with the Hayes Smartmodem. Able to copy session to disk or printer (but printer may not keep up). Can't write to or from cassette. Translates for ASCII, PET, or WORDPRO codes. Conversion program tokenizes ASCII files and PET files to WORDPRO files. Uses RVS (STOP) to return to control mode. Includes good documentation.-JS

REVIEW #2: "Do you remember I told you I was impressed with a terminal program by Madison Computer - McTerm? It works great until you try to get hard copy (by saving it to the disk). While the program is saving to the disk and checking the error channel, it loses some of the incoming text. It's written in BASIC and can probably be fixed."-John Melissa

PETTERM II MODEM PROGRAM, \$90 (includes interface) from FSS Software. **PETTERM I** (\$80) and **PETTERM III** (\$100) are also available. This program makes PET a really intelligent terminal. For remote system being accessed, it will accommodate: carriage return, carriage return and line feed, or just line feed; even, odd or mark parity; 300,150 or 110 baud; and full or half duplex. A big time saver is "Learn", which stores the message; then "Message x" (your ID) and "Message y"(your password) are sent to systems with 2 strokes each. "Printer" sends all screen input to printer as well. Since PETTERM makes a proper, problem-free connection to THE SOURCE, MICRONET, etc., there is no reason for PET people to depend on THE SOURCE for software.-Ed Ricchezza

PORTMAKER, see STCP under Terminal Communications.

PRENTICE STAR RS232 MODEM, \$130 from A.B. Computers. Switchable between Full and Half-Duplex operation. Has Answer, Originate, and Test modes. LEDs indicate carrier detect, xmit, rcv, and test. I have used it some locally and am impressed by it. All I need is a printer to be set for THE SOURCE(tm).-MN

STCP, \$130 from Eastern House Software. (Includes Portmaker by CGRS Microtek, which sells the combination as COMPACK.) The "Standard Terminal Communications Package" is a smart terminal emulator. Versions for all CBMs and PETs with 32K of memory and BASIC 2 or 4. Requires Commodore or PEdisk II disk drive. CBM or ASCII printer optional. Supports printers needing non-zero secondary addresses in normal printout. Plugs into \$A000 ROM socket, but includes an empty socket for a ROM needing that address. (Addresses \$AFF0-F reserved by the board.) Offers unusual flexibility in RS232 format -- number of character and stop bits, type of parity, etc. Supports XON/XOFF handshake. Program is now 300 baud, a free 1200 baud update is planned. Portmaker board allows use up to 4800 baud with suitable programming. An option to Portmaker adds true RS232 voltage levels for those devices requiring them.

Places all key information in a status line at the top of the screen. Safeguards computer junkies with both a time-of-day clock and an alarm clock. Includes a wide variety of menu options, including a temporary exit to BASIC or Monitor; sending commands to disks, (not limited to unit 8); toggling the printer on or off-line; reading or writing disk files in any of 4 useful formats, (BASIC, MAE assembler, binary object code, pure ASCII sequential). The BASIC option is especially good with non-Commodore hosts, as it will receive any ASCII program file, and turn as much as possible into PET BASIC on the way in. This allows you to download programs from almost any computer that uses BASIC.

Supports both character and line transmission modes, allowing full cursor editing when needed. Also includes a true Alpha lock for upper-case use, UART status report of data errors, and 9 special function keys. These can, with one keystroke, recall a whole file from disk. This eases log-on to remote systems, and also allows messages to be prepared in advance, to reduce time charges.

Users may modify the character translation table, to filter out undesirable characters, or even encrypt data. When a message from the host begins with a selected character, (such as its error or ready prompt), that line is shown in reverse field.

The only obvious lack is of a built-in handler for the somewhat involved upload/download requirements of the now-standard Punter bulletin board systems.

The program manual is well done. It adequately and briefly describes all features, with a few examples of use. Key information is also summarized on the covers. Thankfully, it also documents all key locations used by the program and hardware. This allows skilled users to add to the package. With one exception, the hardware instructions are also adequate. Installation is reasonably simple for skilled users, but no help is included as to which RS232 lines are used, or what their status must be in order for the Portmaker to function. Fortunately, both Eastern House and CGRS Microtek bend over backwards to solve problems in connecting the board. They willingly supplied me the extra-long RS232 cable needed for modems over a foot from the right side of the computer.

One other factor is worth mentioning. Eastern House's assembler has become

standard not only for PET, but for all 6502 systems. STCP may also be offered in versions for a wide variety of computers.

This is much more than a bulletin-board modem package. Its flexibility is amazing; its price is QUITE reasonable; and it is even expandable; (the Portmaker has a socket for a second RS232 UART.) Recommended.-JS

TNW MODEM, \$789 from TNW Corporation. "The hardware is great. The modem simply plugs into the IEEE bus...only 1 adjustment to make.... In 8 months I've had a modem, almost all communications have been virtually error-free. Documentation...can only be considered extravagant. The TNW software package turns the PET into a reasonably intelligent terminal. CB2 sound option is used for the bell function. It allows numbers to be dialed directly from the keyboard...software-selectable options include: case, baud rate, half or full duplex, parity, character set (ASCII or PET), control character display, etc.... Ability to dump to disk was added as an after-thought.... They're willing to help or answer questions-if you get hold of the right person."-Wayne Drouillard-TCI391

VIC 1600 VICMODEM, \$110 from Commodore. See under VIC Hardware Reviews: Other Peripherals.

Network Systems:

ABBS GAMEMASTER is a 'dial up' computer system featuring games and other services. Requires MODEM. Fee is \$75 for FULL membership (includes 8 hrs. system time and 5 mos. mailbox), or \$10 for ALA-CARTE membership (time and mailbox bought as needed). Time costs \$2-\$3/hour. I've had it for a week and think it's GREAT.-JOH.

AGNET Not used yet. See KRP comments under Modem Notes.-ES

COMPUSERVE, \$20 membership fee plus \$5/hour use (local) plus \$2 additional (nonlocal), but have to buy Radio Shack's book, **Videotex Terminal Package** (what a monopoly!) or a VIC Modem (it comes as part of the package). For any PET with a modem which acts as a terminal. "I can talk to it, read its menus, use the national bulletin board, the personal computing section, any of the special interest groups (SIGs), newspapers, Better Homes and Gardens, Dow Jones or Wall Street Journal, play its games, but I can't upload or download programs. Compuserve executives here in Columbus say that until Commodore authorizes the use of Commodore protocol, they won't support PET. May be available soon for VIC; Higgenbottom's column on Punter's bulletin board says new VIC modem comes with automatic Compuserve membership."-Jerry Key

THE SOURCE, \$100 + variable fee/hour, from Source Telecommunications Corp.

REVIEW #1: Unless you can call toll-free, THE SOURCE can cost \$10+/hour

to use. Up to 5 minute wait between commands. Offers toll-free help number. I needed it! It took 3 help calls and a password change to get in. The mailed sign-on instructions were almost totally wrong. We received a few pages of instructions, with a promise of a real manual later. Another user claims they've said that for months. Hard for PET owners to use as they don't offer a PET program like those for TRS-80 and Apple II. Unless you have a great need for its databases, skip THE SOURCE for now.-JS

REVIEW #2: "Evidently put their house in order, because documentation quite comprehensive. 'Mail' and 'Chat' features alone make cost worth while. For instance, the other night, sent a 'Mail' to a Los Angeles friend and had reply the following nite. Big thrill!"-Ed Ricchezza

REVIEW #3: Review #1 was negative, #2 was positive, so here's the tie-breaker! If you are thinking about buying a modem, or already have one, reconsider the source, lately they have many sources of information for PET/CBM/VIC users, provided by both Commodore and the SOURCE PET Users Group.-JOH

REVIEW #4: From what JOH reports, you can find Commodore staffers to chat with on THE SOURCE most anytime.-JS

MACHINE LANGUAGE MONITOR REVIEWS

EXTRAMON. See under Public Domain Reviews.

MACHINE LANGUAGE UTILITY PAC. from PS or Competitive Software.

ORIGINAL: \$71 cassette. "Has memory dump, disassembler (decimal output), screen print, hex-decimal conversion, BASIC renumber and merge. EXTRAMON again much better and easier to use."-Arthur Cochrane

1.2R: \$82 from PS or Competitive Software. Separate versions for BASIC 3 or BASIC 4. 4k ROM at \$9000 or \$A000. Includes an enhancement of Bill Sellar's EXTRAMON, called ULTRAMON. It adds a printer mode, hex/dec/ASCII conversions, logical operations, and a memory test. This part of the program is not as good as MICROMON, in my opinion. In addition to ULTRAMON, the ROM also includes the "Wedge", a screen print, "Un-new" and "Disk Append" from *Computel* magazine, plus my own "Lower-case Lister" from *Micro*, under other names. I hope we authors are getting a royalty, but I have my doubts, as none of us are even mentioned in the 12 pages of instructions. Overall, typical of what is available for just a copying fee from user groups. I'm astounded that *Compute* reviewed it favorably at this price! Not recommended.-JS

MICROMON. See under Public Domain Reviews.

MONJANA/1, \$98 from Elcomp Puf. Co. 2K ROM at \$9000. "Has printer output, disassembler, transfer, relocater, single stepping, memory dump, etc. Doesn't interface to Commodore monitor. EXTRAMON is much better and cheaper and has more commands."—Arthur Cochrane

SUPERMON. See under Public Domain Reviews.

ULTRAMON 1.4 is most of the same stuff, as **MACHINE-LANGUAGE UTILITY PAC** above, in RAM, with less "borrowed" material, and selling for less. Still not recommended.—JS

SPORTS PROGRAMS REVIEWS

BOWLING AVERAGE, part of Baker Enterprises program collection (described under Utilities Reviews: Program Packages). You enter the latest three scores. It computes the series total, night average, a running tab of total pins, number of games, new average, high game, high series, any 200 games, and any 600 games. Data is stored in data statements, so that you save the whole program and reload the next time. Fair.—GH

LEAGUE BOWL-24, \$145 from Briley Software. Requires 32K Memory, printer, and CBM disk or tape. BASIC. "This software package can maintain all necessary records for a bowling league of up to 24 teams...League parameters are entered only once, while names and stats can be easily edited at any time. The program scores, calculates and updates all league data after you simply enter the individual game scores for each player...league standings are printed after all calculations have been completed...It will handle the majority of leagues that use standard bowling formats — handicap or scratch. However, it cannot handle Peterson point scoring or leagues that do not bowl three-game series... An optional program is available to print a complete summary for each player and every team at the end of the season. Other programs are available for scoring tournaments..."—Robert Baker, in **Microcomputing**, June '82.

(NOTE: Harry Briley asked us to reprint the above review in reply to a "wanted" in an earlier **Midnite**. Bob reminded us that reprinting permission isn't his to give, and suggested we just quote a bit, which we have done. See the original magazine article for a full review. Bob added that it IS a good package, but may soon have competition, perhaps at a lower price. If other companies want us to reprint reviews from elsewhere, please contact the magazine's for permission before asking us. Of the majors, we now have good relations with **Micro** and **Microcomputing**.—ED)

UTILITIES REVIEWS:
Graphic Aids

Hardware Packages:

EXECOM 80 CHARACTER BOARD, from Execom. "The EXECOM 80 CHARACTER BOARD you see advertised in *Compute!* and *Micro* is real. I have one of the first shipped. It seems to be a quality product, if not first class, then it is running a very close second."—Tim Tremmel

VISIBLE MEMORY, \$495 from Micro Technology Unlimited. Versions for all PETs. Fits inside PET and allows each pixel to be controlled. Normal PET video can be used with or without graphics video. Software available or programmed from BASIC. All other programs unchanged. On 8-16K machines, when graphics are not used, the 8K video RAM can be used for programs."—Arthur Cochrane

WATANABE WX4671 DIGILOT PLOTTER, \$1400 from Skyles Electric Works. "Phenomenal accuracy, "B" size plot, excellent printing, good instructions. Nice demo disk. Not too shabby on speed either."—John Mielke

Software Packages:

HI-RES ULTRA PLOTTER PACKAGE, \$13 from Tele-Trex. Cassette only. Requires 16K and CBM graphic printer. Uses programmable character to print amazingly precise graphs. Equations are entered into the program and graph corners and other miscellany are input. Will graph many equations at once. Could be a great help for math classes or in the lab. Instructions are well written, and displayed as needed. Uses "HiRes screen feature". Graphs may extend 10mm to 10 pages along X-axis. May take 3 hours or more to print out a large graph.—L.F. Roehrs

(NOTE: The above review was sent in by Louis Roehrs, of Tele-Trex. He swears he got it from a user who wants to remain anonymous. Since it arrived too late to do anything else with it, and since Teletrex was one of the companies whose existence we were trying to verify in our last issue, we're printing the review, but now have a new rule against reviews written by one person but signed by another. Companies are welcome to solicit reviews of their products from happy customers, but the REVIEWER must be willing to sign the review.—ED)

PICCHIP, \$75 from Skyles Electric Works. Graphics extension to BASIC. 4k ROM. Specify BASIC version. (Review copy in RAM for BASIC 2.0 obtained from Europe.) VERY capable graphics package. Provides fantastic animation of PET graphics characters with very high resolution, but only in 1 dimension at a time. BASIC continues to work normally. Recommended for those who often need fast graphics.—JS

SUPERGRAPHICS, from A.B. Computers.
ORIGINAL VERSION, \$30.

REVIEW #1: We like it **very** much. It gives you easy algebraic drawing commands, such as PUT, SWAP, SET, and MOVE to choose screen locations.—Larry Sapp and Chuck Summers

REVIEW #2: Lacked polar plotting.—Louis F. Sander

VERSION 2.0, \$40 on disk or tape, \$55 in ROM.

REVIEW #1: Nice machine language graphics routines accessible from new BASIC statements, **plus** easy control of CB2 sound the same way. It does what the ads say it does. Thorough, well-organized manual. Nice demo programs. Recommended.—Louis Sander

REVIEW #2: Has turtle graphics and is even better, but not quite LOGO quality on the PET 4000 series computers.—Larry Sapp and Chuck Summers

NEW VERSION. This came in too late for review in this book, but does exist, load, and run. It came with a large number of short demo programs which use it.—JS

VIGIL, \$35 from Abacus Software. 4K game language interpreter for 80x50 graphics. For all 40 column Pets.

REVIEW #1: Good for writing short, simple games and for experimenting, but harder to use than BASIC for long programs. Includes commands for plotting points, setting timers, and even using shape tables. Includes 9 sample games, of which some are better than average. It may be worth \$35, but could have included more features (such as plotting a LINE BETWEEN TWO POINTS). The idea is here, but programming has its weak points. BASIC is still better for writing most games, while machine language is best for serious programming.—JOH

REVIEW #2: Not structured. Programs very hard to read, because VIGIL redefines BASIC's keywords. Easy on/off for picture elements. Tests for screen edge. Supports user port and CB2 sound. Two timers, 26 registers (no named variables). Only tests are branch-if-true and branch-if-false. Big number display, 255 max. Easy disk and cassette save and load. BASIC works except during a run. Sometimes "flaky", but this can be avoided. 9 demo games. Faster than BASIC, but slower than machine language.—JP

UTILITIES REVIEWS: Programmers' Aids

ARROW, \$60 from DataCap. 2K EPROM machine-language utility program. Requires BASIC 2.0 or 4.0 (40- or 80-column screens). Adds 10 great features to the Commodore operating system: 6 commands using (new) CN2 cassette deck (3600 baud high speed save, load, verify, append; read/write data block access; 1-9 blocks of tape

positioning), fast repeat key function (15 times/sec.), flip (graphic/text) character set, hexadecimal/decimal calculator (up to decimal 65,535), and quadruple density (80x50 or 160x50) plotting outside any screen text. When purchased, documentation was lacking in some areas, but Milt Bathurst has taken care of that in his new instruction sheet. (See also comments on high speed save under DEALERS.) I would recommend ARROW to anyone. If you're forced to use a cassette drive, then 6 commands will be the most useful. Also works well with PROGRAMMER'S TOOLKIT.-Pete Vandrew

BASIC-AID. See under Public Domain Reviews.

BASIC PROGRAMMER'S TOOLKIT ROM, \$40 and up, from Palo Alto ICs.

ORIGINAL: Not for BASIC 4.0.

REVIEW #1: Best known of all PET programs. Adds several vital commands to BASIC. In ROM at \$b000. Uses end of second cassette buffer. Fine manual. If you write programs, you need something like it!-JS

REVIEW #2: *Practical Computing*, in its March 1981 issue said that owners of BASIC 2.0 TOOLKIT ROMs can 'poke14,0' just before a FIND or DUMP command, to make paper printouts format correctly.-JO

TK40: (\$20 plus your old Toolkit chip.) ONLY for BASIC 4.0.

REVIEW #1: Fixes all known bugs, and adds 'bye' command. This disables the TOOLKIT, so that it can't interfere with another program. 'bye' also returns BASIC to full speed.-JS

REVIEW #2: To undo NEW, enter 'poke 1026,4:sys 50242', (or 46262 in BASIC 4, 50227 in BASIC 1). Then enter 'find it', and you will!-Peter Calver, in **Microcomputer Printout**

DISK-O-PRO, \$75 from Skyles Electric Works. BASIC 2 only. Good imitation of BASIC 4.0 for those who don't want to throw out old programs. Has other added commands, notably beep, scroll and print-using. 4K ROM at \$9000. Compatible with the TOOLKIT ROM. Software compatible with programs for Basic 4, unless they use machine-language ROM calls. Works even during program execution. Slows BASIC 20-30% in use. Manual is too brief. Has a fair list of no-no's: ignoring some crashes BASIC. Not quite as good as having both BASIC 2 and BASIC 4. Like BASIC 4, uses most of second cassette buffer.-JS

POWER, \$90 from Professional Software. Versions for Upgrade 2.0 and 4.0 BASIC, except for the Fat Forty (The 8032 version works on Graphic 80's). Programmer's Aid. This is one program I wanted for a year. Both Jim Butterfield and Commodore Canada use it, which is the highest recommendation I can give.

What is POWER's power? 1) An EXCELLENT manual by Jim Butterfield, to suit any user (beginner or expert) with an excellent reference section by author Brad Templeton. All it lacks is a quick reference sheet of options. 2) Detailed instructions

on how to call its features from other programs, change the way it works, and even add more commands to it. 3) The dealer pack includes a demo disk with instructions, and stick-on labels for the instant keywords (Hit shift plus a key and see a keyword appear on the screen). Since most keywords can already be abbreviated without Power, I don't use the labels. However, instant phrases and subroutines are also available, and that IS powerful. 4) Execution files: you execute the contents of a sequential file as though they had been typed in at the keyboard. This is supposedly good for merging programs, but I use BASIC AID 4.0's MERGE command. A better use would be to get into programs with complex set-ups, like Wordpro or JINSAM. 5) Power's BEST feature is a very sophisticated CHANGE command. Most aids can find things, but only BASIC AID 4.0 and Power can do anything with the information. It finally approaches MAE's powerful editing features. 6) SCROLL, as in other programs. 7) Advanced RENUMBER, as claimed for Command-O, but works reliably in Power. 8) TRACE has bells and whistles to let you choose where the display appears, what is shown, and how rapidly. 9) Its interfaces with Templeton's matching 4K assembler, PAL4, also used by Jim Butterfield. POWER and PAL work together very neatly.

If you write your own programs, Power is excellent, especially if you write for profit rather than fun. I only wish I could have bought it a year ago when first completed. Recommended.-JS

UPDATE: Both Arthur Cochrane and Brad Templeton have new extended POWER with a POWER-AID program. This adds the missing features from BASIC AID 4.0 to POWER. It is in the Public Domain, and available from ATUG or TPUG disk exchanges.-JS

RABBIT, \$30 and \$50, from Eastern House Software. BASIC 2 or 4. Quadruples the program loading speed of PET's cassette. Available on tape or in ROM. ROM sits at \$a000. If that spot is free, get the ROM. It saves 40 seconds loading Rabbit itself each time you reset PET. Compatible with the TOOLKIT ROM. Adds a well-done repeat key feature, hex-decimal conversion and 2 memory tests to BASIC. It's the least cost way to faster program loads. The ROM version uses part of second cassette buffer. Unfortunately, it doesn't speed up data files.-JS

SCROLLING PROGRAM, \$6 from Eastern House Software. Versions for most models. (Check for availability). Sits in 1K of high memory. Scrolls through BASIC program listings by simply holding down CURSOR UP or CURSOR DOWN keys. Hitting DELETE moves the cursor to a blank line at the bottom of the screen to ease program changes. Well-done REPEAT function on all keys. Unlike many REPEAT routines, it's not affected by LOAD and SAVE commands. Cooperates with ROM software, if called before SCROLL, and with DOS Wedges, so long as they are run after SCROLL. A bargain.-JS

SM-KIT, \$40 from A.B. Computers. 4K utility ROM. Requires BASIC 4. Remarkable bargain! Developed in Germany by SM Softwareverbund-Microcomputer. Useful features of SM-KIT include a set of powerful commands for appending programs from disk files to program in memory, merging programs from disk files with a program in memory, and saving a portion of program in memory to disk. Has flexible directory

display options: a filename printed in directory listing can be used as part of load command (similar to FETCH in BASIC-AID). These features simplify building and using BASIC subroutine libraries. Other extensions to BASIC slow execution time by 5-15%; SM-kit slows BASIC by less than 1%. All commands I have used actually work. Includes adequate 21 page manual. My only complaints: a CHANGE command was not included and it only supports printers with automatic linefeed. Highly recommended, nevertheless!-James B. Mehl

SYSRES. by Don Lekei, formerly \$87CDN from Cansoft Data Inc., now distributed for \$75 by Solidus International Corp. Requires CBM disk and 8K RAM. Copy-protected.

REVIEW #1: Source code available for \$150 extra. Program manipulation system a la TOOLKIT, COMMAND-O and POWER, but there the comparison ends. This one does it all. Extended DOS support system, plus about 35 editor commands. Among the best is CHANGE. Offers true disk merge, and ends conversion printing problems on ASCII printers. Key definition provides up to 15 keys and 255 bytes. PUT sends program to disk as sequential file, and GET retrieves it. Full refund for unsatisfied customers. Cansoft is a remarkable company, with a remarkable product.-Stan Spence

REVIEW #2: Programmed to allow 3 copies to be made. 8K loads 4 ways: top of 16K, top of 32K, half at top of 32K and half at \$9000, all at \$9000. Modified EXTRAMON included that avoids locations 0-2 (SYSRES uses them to repeat keys). Disk commands can take file names from a directory. Programs can list on printer without loading. Relative files can be read to the screen. CHANGE is able to find all instances of /a\$/ without also matching /ba\$/. Renumbers GO(space)TO statements. Compared to POWER or BASIC-AID, though, SYSRES does not offer much more. Has to be loaded from disk each time, and uses 8K of RAM.-Arthur Cochrane

REVIEW #3: I agree with Stan Spence that it pretty well does it all. And besides doing it all, it adapts itself to any PET/CBM version including starting at \$9000 if you have RAM there! Allows on screen editing of sequential files and merge to empty RAM. The three copy only protection scheme is more than fair and backup support is more than adequate from the author. 8K space required is well worth the power obtained from this utility as it automatically turns itself off when a basic program is running. Only faults I could find were lack of three copy only limitation in manual and lack of ability to verify a disk prior to making a copy. Highly recommended over any other comparably priced utility.-Jerry Key

UPDATE: Heavily-protected DOS. A programing utility of the nature of POWER and BASIC AID with some very significant pluses. One of those extras is MICROMON, built in the 8k program. The master disk creates three working copies with all variations on each disk and a boot program that identifies the ROMs and lets you select the residing location of the utility. Documentation is quite usable with a good index. The DOS and Wedge commands are improved or corrected. Easy directory loads are possible. The Get/Put commands allow you to read a sequential file into memory, completely edit the file and rewrite it to the disk--a life saver for WORDPRO form letter files. The Renumber command allows all the usual but also will completely relocate a program block. A super tool for the advanced programmer as well as the business user.-Doug Dachenbach

XREF, \$7.50. For BASIC 2. Simple, very handy little machine language program that displays all variables used in a BASIC program, using a SYS command. Won't interrupt your program and is nice touch I'd like to have in ROM. Easier to use than TOOLKIT, since you don't have to run your program first.-JO

UTILITIES REVIEWS: Reviews of Program Packages

Baker Enterprises:

ROBERT BAKER PROGRAM COLLECTION, \$39. Some 40 programs collected, with full documentation, on two 4040 or one 8050 diskettes.

REVIEW #1: Appears to include Baker's entire commercial software catalog of routines from his "PETpourie" column in *Kilobaud* plus longer ones (e.g., DISK MASTER) that he used to sell separately (see above reviews). Well-written and well-explained. Amazingly low-cost way to start library of useful programs, plus 2-3 games. **\$29 price is only for Midnite readers** (Visa and Mastercard accepted) until selling arrangements with major software house are complete.

My favorites: COMPACTOR (squishes BASIC programs tighter than my own similar utility); UNCOMPACTOR (unsquishes squished programs); and XREF (lists all variables used BEFORE program is run, whereas TOOLKIT, POWER, etc., only list variables already used during program run.) Highly recommended.-JS

REVIEW #2: Gary Hooste, Jim Oldfield, Bob Samuelson and others have also reviewed individual programs in the above collection. They are listed under Assembler Reviews (ASSEMBLER), Business Reviews (DATE BOOK), Education Reviews (WORD HUNT), Game Reviews (BLACK FRIDAY, BOWLING GAME), Industrial Reviews (WIND CHILL), Sports Reviews (BOWLING AVERAGE), and Utilities Reviews (COMPACTOR, UNCOMPACTOR, XREF, DATA DISK WITH SEARCH, DISK MASTER, DISK/TAPE-COPY).

Dick Immers:

DISK UTILITY PACK, \$35 from Dick Immers.

REVIEW #1: Complete disk recovery package, including reliable full-feature disk monitor worth the package price by itself. Disk catalog able to store enough data to quickly restore a diskette whose directory track has been lost. Also includes two utilities to save as much as possible from seriously damaged diskettes - one called EAT MY DISK works even on diskettes that can't be initialized (the dreaded 20 error on 18/0.) I even used it to read an 8050 diskette ID in a 4040 drive! Developed as a doctoral project, the result is exceptionally polished and reliable. Since directory portion uses my SUBSORT, BA is evaluating it separately in next *Midnite*. Highly recommended.-JS

REVIEW #2: Good stuff. As the name implies, this package includes a number of utilities for 2040 and 4040 diskette storage sub-systems. (8050 version also available-ED.) The first program on the diskette is the main menu (Nice, just do a SHIFT-RUN), which loads your choice of a number of directory-related functions. After your diskettes have been cataloged, you can FIND A FILE, DISPLAY or PRINT A DIRECTORY, CHANGE DISK NAME, COPY FILES, VIEW THE BAM or a VIRTUAL DIRECTORY (All entries including deletes). In short, all the disk utilities you might need to keep your diskettes straight, and you are led by the hand through them. However, I think the best part is that you can print out ALL your file names (Up to about 750 on a 32k machine) sorted by name, type, and size, with page numbering and headers, at once, and reasonably fast (14 minutes for 364 file names, including printing at about 800 BPS).

MORE! Three quite helpful programs to recover a trashed directory by using the catalog file you made earlier. (I did a NEW w/o ID and recovered the files.) A VERY powerful inclusion (though not on the menu) is ZAP-PET: Look at data, and/or write new data.

MINUSES: Requires more diskette switching than necessary. Changes cosmetic ID, so unless you mark "library id" (01 to 99) on diskette, cross-referencing can be a pain. Speed is not a strong point, especially in ZAP-PET (So what? It works, and is easy to use!). FIND A FILE does not use Commodore conventions for wild-card search (or any, as far as I saw). Documentation is only a vague hint at what the program does, but hand-holding in programs is extensive. COPY does not handle relative files (Why not?), but does merge diskettes.

WRAP-UP: For the price, a good deal, especially if you don't know that much about your disk drive. **RECOMMENDED-JDT**

Software by Sasso:

PET DISK UTILITY PACK. \$100 from Software by Sasso. Needs 2040 or 4040 (DOS 2) disk. Printer optional. Includes three excellent programs: EDIT, MESSAGE, and RECOVER. Programs are also available separately. See their reviews (and higher prices!) by title in the next section under Disk Utilities. All have excellent instructions and prompts. All are reliable and recommended.-JS

UTILITIES REVIEWS: Individual Programs

Computing Aids:

BASIC SOURCE CODE. \$60 from Great Western Software Co. MAE-compatible disk version available at extra cost. Pseudo-source code for BASIC 4.0 on CBM 8032. Fully commented disassembly of BASIC itself, including meaningful labels (though not always official). Better yet, it includes cross references to equivalent addresses in Upgrade BASIC 2.0 for all major entry points. Although I have (but cannot disclose) the official CBM 4.0 source code, the pseudo-code is better commented than the

real thing! It also covers the 8032, while official version is only for the "skinny 40" PET. Appears accurate. Comes in a sturdy binder on good paper, but unfortunately generated by a dot matrix printer. Recommended for serious programmers.-JS

DATA LOGGER, \$15 from Channel Data Systems. Enables creating/manipulating sorted list of data: insert, delete, modify, find, output (printer or screen), or save. Find, modify, and output may operate on a specified field of a data record. Simple but effective. Uses 2K, so leaves much room for data.-BA

HESCOUNT, \$24 from Human Engineered Software. Versions for any PET or VIC. Utility program that aids efficient programming by identifying oft-executed line numbers in a running program. Use is a bit complicated compared to other HES programs, but may be worth the trouble if your programs seem slow for no good reason. Personally, I find POWER's TRC function adequate for the same purpose.-JS

HESLIST, \$15 from Human Engineered Software. Needs CBM disk. Creates wonderfully structured listings from even the most crammed BASIC programs. Doesn't recognize BASIC 4.0 added commands as received, but soon will. Has amazingly good documentation. Easy to change for special needs. A must for programmers with ASCII printers.-NS

MEM EXPLORER, \$8 cassette from Micro Software Systems. "Prints out memory as ASCII and prints out keywords along with memory contents. Information in PET/CBM book and BASIC program will do same thing."-Arthur Cochrane

REMPack, \$10 from The Code Works. Removes all REMark statements, blanks, and leading colons from programs. Loads to high memory or 2nd cassette buffer; called by SYS. Works as advertised, and well documented in short manual with examples. Handy, though I'd rather have it in TOOLKIT.-JO

SUBSORT, \$35 from James Strasma, AB Computers, Eastern House Software, and Kobetek Systems Ltd. Still known to many as SUPERSORT. "Machine language sort for PET. Takes less than 1200 bytes at top of memory. Works with all current PET BASICs and adjusts to any memory size as loads. Won't destroy other programs loaded into high memory. Can sort array of 3000 integers in less than 30 seconds.

Sorts any BASIC string or integer array in ascending or descending order. Some options are: arrays can be 1 or 2 dimensional, and sorts can be specified on any desired field in 2nd dimension; can subsort other fields when match found in prime sort field; and can sort by bit mapping, with 8 categories per byte. Ottmons set with simple POKE statements prior to calling Supersort via SYS. Comment eree used to pass parameters consists of 13 bytes in 2nd cassette buffer. Avoids parts of buffer used by BASIC and DOS.

During sort, 44 locations after 886 in buffer and 1st 44 locations in page zero are exchanged, then restored at end. Sorting only part of an array drastically speeds things up. Tell Supersort where real data ends and save up to 90% of usual sort time. Puts null string elements at top of sorted array, away from user

data. Program sets variable ST to indicate errors which occur. STOP key still enabled, allowing you to terminate execution.

I found it an excellent utility and apparently 'bullet proof.' Complete documentation, with very enlightening demo program. Worthwhile investment if you do any data manipulations. Why reinvent the wheel when you have this handy sort program? Source listing available from Jim Strasma (\$10), once you've purchased Subsort."—Robert Baker (Since JS is **Midnite** editor, above condensed by JO from April, 1981 **Kilobaud Microcomputing**)

SUPERSORT (British Version), about \$70 from Supersoft. This is not the same as my own sort program. From the manual, it appears to have some advantages, and also some deficiencies relative to my own. Since it arrived too late for an independent review in this Compendium, merely be aware that it does exist and load. Whether it runs will take more research, as it comes without any demo program, and has only two pages of instructions.—JS

Disk Utilities:

DATA DISK WITH SEARCH, \$7.50 from Baker Enterprises. I was able to run this program strictly from the prompts. Manual entry inventory program for disk contents. No way to abort search feature without punching STOP key, which then leaves the disk drive active. Too slow when you are looking for something, unless you have used printer option to make hard copy for future reference. Still, the price is quite reasonable, unless you are willing to work for far below the minimum wage in creating equivalent programs.—RS

DISK MASTER, \$10 from Baker Enterprises. Needs disk. Printer optional. The best disk library program for PET now available. It automatically reads disk directories into disk files. It stores 140 alphabetized directories per diskette. Each needs a distinctive ID number; if not unique, you'll be warned. This allows you to update the directory after changing a disk. Able to find which disk contains a particular program, even if you don't remember the program's full name. Also prints a list of IDs in use, to avoid duplicates. Everything is fast, except search routine, which takes several minutes.—JS

DISK/TAPE-COPY, \$2 from Baker Enterprises. 2 programs. Copy data files to tape and conversely. Can't copy programs. Takes about 16 seconds/disk block. Each program is less than 1k long. A single menu-driven program would have been better. Included with Assembler (see Assembler Reviews). The price is quite reasonable, unless you are willing to work for far below the minimum wage in creating equivalent programs.—RS

DISK UTILITY PACK, \$35 from Dick Immers. See under Program Packages.

EDIT, \$60 from Software by Sasso. A simple way to alter sequential and USR files in place. Seldom needed, but occasionally very useful.-JS

FILEMASTER, \$35 from Software by Sasso. Specify for 8032 and 4040 or 8050.

ORIGINAL: Protected. A VERY flexible and powerful disk utility, along the lines of the old DUM program, but light years beyond in power and speed. Sets up jobs in any of several ways, then proceeds to do them. Can easily and quickly copy any portion of a diskette to a new drive, and then immediately delete the original disk's copies. Directory includes scratched files. Able to restore a diskette with twenty or more scratched files in under 5 minutes, without any user intervention beyond hitting a few keys at the start. May even be used as a disk catalog. Usable even without instructions. Highly recommended.-JS

FILEMASTER II:

REVIEW #1: This update on a very capable disk utility program adds much faster directory read routine. For 8050 user, also adds idiot light flasher routine, to **show** you when and which drive to feed diskettes. Unfortunately, same nice routine also sends 4040 drive out to lunch. Presumably will do same to any DOS 3.0 drive, when that upgrade is released. Since program auto-starts from disk, disables STOP key while running, and RESETs PET when done, is hard to disable flasher routine. Very smooth, powerful, and user-proof for those with 8050 drives. But if you use 2040 or 4040, request old, slower (but still good) version for all CBM disks.-JS

REVIEW #2: A much faster disk access routine and some more features. For ease in performing program copying, scratching, and recovery of programs files, this package is unsurpassed.-Joe Spatafora

HESCAT, \$40 from Human Engineered Software. Requires 16K RAM and CBM disk. Disk cataloging program. VERY fast, both at reading disks, and in "wild card" searching for specific words or characters in filenames. Catalogs 3 disks a minute. Able to catalog 134 diskettes on a 4040 drive, or 214 on an 8050. Not limited to memory capacity. Uses 2 digit code separate from diskette ID to identify disk (to allow duplicate ID's in the catalog). It suggests you assign same code as the ID, but doesn't tell you ID number until after you select a code. As usual with HES, instructions are excellent, including complete BASIC program listings, 6502 source code, line by line comments, and variable assignments. Highly recommended unless you: 1) Have my SUBSORT program and are content with its LIBRARY demo, or 2) need the added data security offered by Dick Immer's DISK UTILITY PACK above.-JS

MESSAGE, by Len Sasso. Disk monitor, like the monitor in the PET.

2040/4040 VERSION: \$60 from Software by Sasso. Allows any desired manipulation of the Disk. Seems reliable, and safe in use. Includes warnings, and descriptions of disk organization. For DOS 1, but works fine on DOS 2, except thinks there's a sector 19 on tracks 18 to 24, as in DOS 1. No problem. Files don't use those blocks, and Message considers them allocated.

8050 VERSION: Free from Commodore. This badly-needed utility helps user or dealer try to repair faulty disk data. Like PET's built-in machine-language monitor, it's not for beginners, but in proper hands, can restore priceless lost data. Have your dealer contact Commodore for your copy.-JS

MENU, \$40 from Software by Sasso. Requires 80 column display. "Hello" program intended to be first one on diskette, loaded with shifted RUN key. Displays a well-done directory, then loads and runs program you select. Ideal for those unable to handle disk commands in immediate mode.-JS

PET DISK UTILITY PACK. See under Program Packages.

RECOVER, \$30 from Software by Sasso. Restores files or programs scratched or new/header-ed off a disk, so long as new programs haven't reused the space. It works quickly and reliably. Quite an accomplishment...

DISK DATA FILES: David Conley, of 10571 Kerrigan Ct. Santee, CA 92071 is selling disk data files for several commercial game programs only sold on cassette, along with listings of changes needed in calling programs. Prices range from \$4 for Automated Simulation's DATESTONES OF RYN to \$12 for their STARFLEET ORION. I haven't seen these, but quite apart from likely copyright problems, they're only for beginners. Tape-to-disk copy utilities are widely available through user groups, and the file command changes needed in Automated Simulations programs are trivial -- 1 statement in DUNJONQUEST.-JS

Printer Utilities:

DISKANAL, \$15 from Benson Greene. BASIC 2 or 4. For 32K PET, 2040/4040 disk, plus 2023 printer or ascii printer. "...Nothing...technically qualif(ies) it as a 'program analyzer,'...(but it) provides the user with statistical data of a BASIC language program listing and leaves the processing of analyzing up to the user." Produces reports and summaries on: statistical lists of variables and arrays and commands, a "percentage of relative complexity", and program lines (total, by location, by type of instruction, etc.). It also is "...a good patch for my printer..." (because) "...not only is single spacing back but Commodore graphics characters...as well."-John Walker, paraphrased and heavily edited by ES

HESLIST, \$15 from Human Engineered Software. Needs CBM disk and ASCII printer. Creates wonderfully structured listings from even the most crammed BASIC programs. Doesn't recognize BASIC 4.0 added commands as received, but soon

will. Has amazingly good documentation. Easy to change for special needs. A must for programmers with ASCII printers.-NS

HI-RES ULTRA PLOTTER PACKAGE, \$13 from Tele-Trex. See under Utilities Reviews:: Graphic Aids (Software Packages).

PROGANAL, from Benson Greene. Cassette version of DISKANAL. "One needs to have plenty of time to use it, because the tape version can literally take hours.-John Walker

VIC BOOK REVIEWS

INTRODUCTION TO BASIC-PART 1, by Andrew Colin. \$19 from Computer Mail Order East. First of a learning series on the VIC from England. Does a nice job for the beginner and looks like it will make a an experienced user out of a novice. Consists of a lesson book and two tapes. The book is a study guide while the tapes have utility programs and chapter quizzes. This book starts from day one and progresses well through the commands and minor programming. Designed to be worked with. Has some minor errors but overall, very well done. Highly recommended for beginners.-Jerry Key

VIC-20 PROGRAMMER'S REFERENCE GUIDE, \$17 from Commodore and Howard W. Sams.

REVIEW #1: A very good book for the person who wants to know more than the 'Beginners Guide' tells them. Sections cover programming, machine language, graphics ("HiRes." programmable characters and multi-color mode), vic I/O, and 11 useful appendices. A very informative book, but with some 'errors' that may confuse many people. Recommended.-JOH

REVIEW #2: The most complete guide I have seen for the VIC to date. Starts out for the programming novice and ends up with some very good information for the advanced programmer. There are a few errors, of course, but they are very minor. My only complaint is that they only gave KERNAL ROM routines without mentioning any other routines. Includes VIC schematics. Very well presented.-MN

VIC BUSINESS REVIEWS

DATA MANAGER, \$20 from MicroSpec LTD. Requires 8K expansion cartridge and cassette. "This is probably the best data manager for the VIC available anywhere (as of summer 1982). The data base is user defined. It allows you to set the number

of items in a record and add, change, display, delete, search, sort, and print. It stores data on the cassette when not in use. I find this program very helpful in managing my lawn maintenance business."—Richard Williamson

WORD PROCESSOR (February 1982 issue of *Computer!*). See under Public Domain Reviews.

UN-WORD PROCESSOR, \$13 from Midwest Micro. This, as the name suggests, is vaguely related to a word processor. By using a line number at least every four VIC screen lines, text may be directed to the VIC-1515 printer or a RS232 device. Printed line length can be varied with a poke and normal screen editing makes the system flexible.—Peter J. Farrow

VIC EDUCATION REVIEWS:

FLASHCARD QUIZ, \$8 from Academy. This tape comes with "States and Capitals" plus instructions on how to make your own tests. The program keeps score and gives re-tests of missed questions.—Peter J. Farrow

MUSIC MACHINE, \$6 from PETTED. Music editor program. You write, play, load, and save music in 3 possible voices. Major flaws: Inputting music is very difficult, and you can't play music in all 3 voices at once. Poor.—MN

SPRINTYPER, \$5 from Transonic Laboratories. Any VIC. Typing aid. Uses color and sound to retain interest in random, but sensible, test sentences. Remembers and reports typing speed (WPM), best speed, average errors, and number of sentences tried. Automatically adjusts for user skill. Disables keys that aren't on a normal typewriter, and tests all normal typing keys. SPRINTYPER is the first truly useful program I've seen for the VIC, and a real bargain. Highly recommended.—JS

TYPING TUTOR, \$10 from Academy. Eight level touch typing tape that automatically increases in difficulty as one's skill improves. Errors and typing speed are given thus providing instant feedback.—Peter J. Farrow

VIC TYPING TUTOR, from Taylormade. "We can recommend (this) program...Our customer, who is using it to learn touch typing, thinks it's great."—Bob West

**GAME REVIEWS:
On Cassette**

ALIEN BLITZ. \$25 from UMI. 3K. The BEST space invaders game I've seen in a 3.5K RAM VIC. Its smooth graphics are exactly like the arcade, including UFO's! Recommended.-JOH

ALIEN PANIC. \$10 from Nufekop. 3K. Very good and colorful game similar to Apple Panic. You run up and down ladders in a five story maze digging holes to trap the 'alien'. When an alien falls in a hole, you must knock him through it down to the next level, and so on until he hits the bottom and you are awarded 150 points. A bargain at \$10. Recommended.-JOH.

ALIEN WARS. about \$16 from Hi-Tech. 3K. BASIC. You've to lock a target (ufo) and shoot 'em. Their ad said:"...has 'got to be seen to be believed' graphics!!". Don't trust them! It has "HiRes" graphics and sound, but in BASIC! Slooow and boring. Not recommended.-Fritz Schafer

AMOK. \$19 from United Microware Industries. 3K. Machine language.

REVIEW #1: Incredibly good arcade game. I didn't believe such a superb program would fit in 3K. You fight various robots that have run amok. Very tricky "HiRes" graphics and sound. Not cheap, but well worth the money!-Fritz Schafer

REVIEW #2: Best game for the VIC-20 I've seen so far. Excellent graphics, very fast. Has 9 difficulty settings. Atari(tm) type joystick is essential, but can be played from the keyboard. My only complaint is occasionally being shot by a robot that I just destroyed, but this is a minor fault. Highly recommended!-Ross Sherwood

REVIEW #3: Similar to the Arcade game BEZERK. Fight your way through robot infested rooms armed only with your laser gun. A good game, but not as good as some of the cartridges being released by Commodore and UMI.-JOH

ARTILLERY. \$10 from ComputerMat. 3K. Target game in which two players try to destroy each other by firing cannon shots over a computer generated mountain. Includes sound and color graphics. Good fun for two people.-JOH.

BLACKJACK. \$10 from COMMODORE. 3K. The most complete version of '21' for a micro I've ever played. Plays by Las Vegas casino rules. Fair use of graphics. Minor bug causes a syntax error whenever you double, but that's easy to fix. If you love to play '21', this one is for you. Good.-MN

BLUE MEANIES FROM OUTER SPACE. \$10 from Commodore. 3K. Fair use of "HiRes" graphics and sound. Very similar in playing style to the arcade game DEFENDER, since you must keep track of many controls. After you kill 20 Meanies, they get even meaner! Not a bad game for the price.-MN

CATTLE ROUNDUP, \$10 from ComputerMat. 3K. Object is to return 1 to 8 'cows' back to their pen before time runs out. Variety of options, from pushing to coaxing to help you capture the beasts. Fun, but becomes frustrating after a while. Fun for kids.-JOH

CRAZY PIG, about \$12 from Abacus Programs. 3K. BASIC. Paralyze a crazy pig before it overruns you. Funny "HiRes" graphics, but becomes boring after a few games. Mediocre.-Fritz Schafer

DRAGON MAZE, \$20 from UMI. 3K. You are trapped in a maze and must get to the other side where the exit is, but you can only see the wall so far ahead of you and there is only one way out. Also, the monster sniffs you out and tries to eat you. They also can go thru the walls.-MP

FABULOUS FOUR I, \$60 from UMI. 3K. Contains four games. STAR WARS is a bit boring and hard to play, but plays the whole star wars theme at the beginning which makes it a little better. DRAGONS MAZE is a fairly good game in which you attempt to escape from a maze containing a killer dragon. LASER WAR is not very good. I would never buy this game alone. INVADER FALL (requires 3K expander) is probably the best game in this package. You shoot down falling invaders and an occasional saucer who fires back. This game I would recommend. Nice package, but again, it's just a little too expensive.-JOH

FRUIT FLY, \$13 from MIS. 3K. BASIC.

REVIEW #1: Requires joystick, but can easily be converted to keyboard control. You have to eradicate insects, but don't shoot the helicopter. "HiRes" graphics and sound. Good value for the money.-Fritz Schafer

REVIEW #2: In this game a helicopter (controlled by VIC) and a 'poison shooter' (controlled by you), team up to destroy a swarm of fruit flies popping up everywhere. Eventually you will be overrun or accidentally hit the helicopter and that's it. Fairly good game.-JOH

FUEL PIRATES, \$16 from HES. 3K. By John O'Hare. Similar to PET's JAILBREAK. Impressive use of "HiRes" graphics and sound. Have to move the Base around. Has a couple of bugs: Joystick option doesn't work, and if you change your mind to play again after saying "no", the "HiRes" graphics don't work. Fairly good game. Recommended as soon as HES corrects the errors.-MN

GLOBLER, \$25 from UMI. 3K. No joystick option.

REVIEW #1: You control a centipede type of worm through a field of mushrooms and poison toadstools and must eat the mushrooms to go into another field. More advanced. Really fun after awhile.-MP

REVIEW #2: Sometimes when the playing field is set up, the worm will run into a block the first thing. Grossly overpriced and underdeveloped.-MN

GUARDIAN, \$10 from Hal Labs. Requires joystick. Patterned after the DEFENDER arcade game. Even includes a scrolling landscape as enemy ships zip by your spaceship. Another well done game from Hal Labs.-JOH.

GUNMAN, about \$16 from Hi-Tech. 3K. BASIC and machine language. You and VIC steer a cowboy and try to kill each other with a gun. Nice "HiRes" and sound. Recommended.-Fritz Schafer

INVADERS ON VIC, about \$12 from Mellor Computer Consultancy. 3K. Machine language. Another good SPACE INVADER for the VIC with "HiRes" graphics and sound. Not bad, but I like ALIEN BLITZ, VICVADER and AVENGERS better. Recommended for those, who can't get enough versions of the famous Invaders.-Fritz Schafer

JOURNEY, \$10 from Nufekop. 3K. Game in which you must travel down a canyon hitting fuel pods to stay alive. Not a very good game as it gets boring in a few minutes. With all the good games available, I wouldn't recommend buying this one.-JOH

KRAZY KONG, \$10 from Nufekop. 3K. Game patterned loosely after DONKEY KONG. You attempt to get to the top of a series of inclined girders while jumping over the barrels Kong is rolling down. When you get to the top, you jump up and grab the girl and move on to the next level. Good game.-JOH

METEORS, \$10 from Hal Labs. 3K. Almost like ASTEROIDS arcade game. Requires standard atari joystick. Everything uses re-defined, FAST "HiRes" graphics. A must for all asteroids fans.-JOH

MISSILE COMMANDER, about \$16 from Hi-Tech. Requires 3K expander. Written in machine language with very good "HiRes" graphics and sound. Very similar to the arcade game from Atari(tm). Plays with keyboard and joystick. Recommended.-Fritz Schafer

PACK BOMBER, \$16 from Human Engineered Software. By John O'Hare. 3K. Machine language and BASIC. Joystick option. Uses "HiRes" graphics and sound. Like Atari's MAD BOMBER. The mad bomber moves around easily, but is hard to hit, because you have to catch the bombs "dead on." Kind of slow; I wish it were faster. Still fun! Recommended for kids.-MN

PLANET DEFENSE, \$20 from CFI. 3K. BASIC. You must prevent aliens from landing and destroy their mother ship. Funny sound, but no "HiRes" graphics. Too expensive.-MN

RESCUE FROM NUFON, \$10 from Nufekop. 3K. The object of this game is to rescue 30 human captives from a 5 story alien building of over 100 rooms. In rooms you may find humans, elevators, any one of a number of different aliens, or nothing. Rooms, aliens and humans are all graphically displayed. Very good game, especially for a 5K VIC. Recommended.-JOH.

ROBOT, from Pendulum Software. See under (PET) Game Reviews.

SKI-RUN, 10 pounds from Rabbit Software. 3K. BASIC. Run down 3 different distances at 9 speed levels on your skis. Pretty graphics, but the game is much too slooow and very easy to master. Too expensive. Not recommended.-Fritz Schafer

SLITHER, \$10 from Commodore. 3K. Jim Butterfield's ARROW program re-written for the VIC. Worm goes around playing field eating (or trying to eat) blocks that appear on the screen worth up to 9 points. Tail grows each time you eat a block. A second more challenging version called SUPER SLITHER is also included. The only thing I found wrong with it is it doesn't use a joystick. Good.-MN

SNAKMAN 1.1, \$19 from C-MART. By Microdigital. 3K. All machine language. The best implementation of PACMAN on any home computer! Neighborhood kids have left their Atari(tm)s and preferred this one on the VIC. 'Nuff said!-Jerry Key

STAR WARS, \$17 from UMI. 3K. Similar to STARFIRE arcade game. Kill as many T.I.E. fighters as you can in the time given. Several difficulty levels. I couldn't even shoot down one fighter at level 1 -- fighter movements are too random and don't shoot back at you. Could have used "HiRes" graphics.-MN

STARFIGHTER, \$14 from MicroSpec LTD. 3K. Requires joystick. A lot of game crammed in the VIC's onboard 3K. An arcade style shoot 'em up space game with great "HiRes" graphics, color and sound. At its easiest, it is challenging and at its hardest, it is nearly impossible and addicting.-Richard Williamson

STARQUEST, 10 pounds from Pixel Productions. Requires 16k expander. BASIC. The ad said: "superbly animated adventure game", but I was very disappointed. It's not an adventure at all. You explore several planets, but the only thing you can really do is avoid running into meteors sometimes (very easy). It has impressive sound effects, but no "HiRes" graphics, so I can't recommend it despite it's (19K!) length.-Frltz Schafer

SUPER MOON LANDER, about \$16 from Hi-Tech. 3K. BASIC. Loosely based on Commodore cartridge JUPITER LANDER. You won't like it. Mediocre.-Fritz Schafer

3D MAZE, \$15 from UMI. 3K. Different type of maze game in which you are given a 3D view of the maze from the inside. Good game, but over priced.-JOH

TUNNEL PATROL, \$13 from MIS. 3K. In this one you run around a maze gathering energy crystals and fighting a bat type creature which pops up at random. Game is good at first, but just seems to get a bit boring after a little while. Some may like it, and others won't.-JOH

TREASURE CARRYING, about \$16 from Hi-Tech. 3K. BASIC and machine language. Copies the PET version of MISSION IMPOSSIBLE. You must get the loot, but it's "raining" arrows. Addictive game, but I was very disappointed that the VIC version has neither "HiRes" raphics nor sound. Still recommended.-Fritz Schafer

VIC GAMES PAC, \$25 from Creative Software. 3K. Includes three VIC arcade games: VIC TRAP, SEAWOLF, and BOUNCE OUT. SEAWOLF and BOUNCE OUT are machine language, with very fast action. Very good games, but could be better if they used "Hi-Res" graphics.-JOH

VIC-MAN, \$15 from PETTED. 3K. Mostly machine language. Protected. Arcade style game similar to PACMAN. " HiRes" color graphics, nice use of sound effects. Joystick option is \$2 extra. 3 levels of difficulty. Monsters are normally smiling, but frown when you eat an energy dot, making it possible to play on a B/W TV. Nice addition to anyone's library. Recommended.-MN

VICGAMMON, about \$12 from Bug-Byte. Requires 3k expander. BASIC. Backgammon for the VIC. Nothing sensational about this program, but it plays a pretty good game at 3 levels. No "HiRes" graphics and few sounds. Recommended, because there are no other VIC backgammon programs on the market.-Fritz Schafer

VICMEN, about \$12 from Bug-Byte. 3K. Machine language. The best PACMAN for the VIC (out of seven I own!). Can be played with keyboard and joystick. Sound very good and fast "HiRes" graphics. Highly recommended.-Fritz Schafer

VIC PROGRAM PACK #2, \$25 from PETTED. 3K. Includes MONKS, MEMORY, and BLACKJACK. Protected. Absolutely worthless. None of the games are original in concept. Commodore's BLACKJACK is 10 times better than this one. Not recommended.-MN

(Oh well, there goes another potential advertiser...-ED)

VICVADER, \$10 from Hal Labs. 3K. Needs joystick. This **SPACE INVADERS** game for VIC is one of the best VIC games I've seen so far. Uses great sound effects and has "HiRes" invaders in color! Great.-JOH

**GAME REVIEWS:
On Cartridge**

DRAW POKER, \$30 from Commodore. Not a real poker game, but rather a game in which you win an amount based on the 'odds' of your hand coming up. Even so, it's fun to play, and the card graphics and sound effects (which are more like music) make this a worthwhile game to have. Recommended.-JOH

JUPITER LANDER, \$30 from Commodore. No joystick provision.

REVIEW #1: Very similar to **MOONLANDER**. Excellent use of "HiRes" and good sound effects. Uses function keys to control thrust. I crashed several times running out of fuel. Very impressive. Highly recommended.-MN

REVIEW #2: Commodore's variation of **LUNAR LANDER** arcade game. You are given 3 spots to land (harder spots earn more points), and fuel. The object is to land your Jupiter Lander as many times as possible before running out of fuel. Enlarged view of each landing spot given when you get within a certain distance, and must land as softly as possible to earn points and extra fuel. Recommended.-JOH

REVIEW #3: "I like **JUPITER LANDER** (in comparison to **VIC AVENGER**)."-Hank Moreno

METEOR RUN, \$40 from UMI. This game is similar in some respects to **DEFENDER**. You fly around in space blasting chunks of space rocks and fighting an occasional alien lander who attempts to blast you. Has radar display at top. Graphics are superb, especially when the ship is hit. Very good game, but not really sure it's worth \$40. At \$30, I'd buy it right away. Still, I think most would enjoy it.-JOH

MIDNITE DRIVE, \$30 from Commodore. Commodore version of **NIGHT DRIVER**. Probably the best done version I've seen on a computer. Speedometer and tachometer are shown as real gauges with moving 'needles'. You must all use accelerator and shift thru 4 gears. Very colorful and very well done. Recommended.-JOH.

SPIDERS OF MARS, about \$40 from Audiogenic (U.K.) or UMI (U.S.A.). Game cartridge similar to **DEFENDER**. Instead of rockets and UFOs, it uses (dragon) flies, wasps and spiders. Plays with keyboard and joystick. Graphics are superb using multicolor mode and are better than in the Commodore cartridges. With classical music! The best arcade game for VIC, but could be cheaper.-Fritz Schafer

SUPER SLOT MACHINE, \$30 from Commodore.

REVIEW #1: One armed bandit for your VIC. Good use of graphics and sound. Can use joystick to get the feel of pulling the lever. In all truth, I didn't like the Atari(tm) home system slot machine game and wonder why waste programming time to develop something like this. Still, it played very well. If you play the slots in Vegas, you might like this one.-MN

REVIEW #2: Fast moving, with unbelievable graphics and sound. Even has a display of a little man standing in front of a slot machine who pulls the lever for you. Recommended.-JOH

VIC AVENGERS, \$30 from Commodore.

REVIEW #1: This IS SPACE INVADERS for the VIC-20. The same in every way as the arcade version, with the addition of color graphics! Very well done and highly recommended.-JOH

REVIEW #2: Invaders change color as they get closer to you. Super use of "HiRes" and sound. I'm disappointed that Commodore didn't make a souped up version like those found in the arcades today. Still, it's the best one I've seen.-MN

REVIEW #3: (This) is a terrific game - my 7 year old son and his friends believe it to be superior to Atari "Space Invaders" and most of the arcade versions.-Hank Moreno

VIC SUPER ALIEN, \$30 from Commodore. Joystick option.

REVIEW #1: You run around a maze inflating balloons to 'trap' aliens and then deflate it to crush alien inside. Fair game, but the 'score' display tends to run off the top of the screen on most TV's, and the aliens' totally random movement lets the game become boring too quickly. Would have been a lot better if the aliens came after you. Fair.-JOH

REVIEW #2: Four aliens who will eat you if you don't catch them first. If you don't deflate the balloon quickly, the monster could still break out to eat you. I got killed this way several times when I first played it. Not a bad alternative to PACMAN.-MN

VIC HARDWARE REVIEWS :
Computers

COMMODORE-64, \$595 from Commodore. See the PREVIEW section under Commodore Notes.

MAX. \$179 from Commodore. See the PREVIEW section under Commodore Notes.

VIC-20 PERSONAL COMPUTER. \$299 from Commodore. 5K (3K of usable RAM) memory. Requires TV. Uses BASIC V2.

REVIEW #1: The VIC-20, a \$300 mini-PET first sold in Japan, uses your TV, has 5K memory, color, sound, and a subset of PET BASIC 2.0. The FCC-approved version of the VIC is now available. It is shielded, with the main board thoroughly redesigned as a result, but is said not to include any new features, such as add-on RAM sockets. Based on the interference an early VIC caused on my TV, buy the FCC version.-JS

REVIEW #2: 5K memory (expandable to 32k), 22 column screen, 16 screen colors, 4 programmable function keys, 4 sound generators (3 music, 1 noise), full PET graphics, PET BASIC, accepts plug in ROM cartridges. This machine is Commodore's attempt to recapture the home computer market. With all of the features above for only \$299, it has a good chance to do it. I saw some software (mostly games) at the NCC '81 that Commodore has since released, including VIC INVADERS, and it all looked good. Other companies are also considering or marketing VIC software. LIMITATIONS: 22 column screen, only 5k memory on board, and the original version ran very hot. Also, Commodore doesn't tell how to define a character set, but it CAN be done.-JOH

REVIEW #3: When I first heard Peddle and Commodore were developing a low end computer, I didn't understand why, especially with Commodore's trend, at the time, of building more memory and computer power into their machines while keeping a competitive price. Why would they sell a personal computer with only 5K of memory?

But I was wrong. Wow! What a machine! The VIC-20 has color, sound, and "HiRes" graphics. It is portable, very easy to use, with the best game cartridges available today (as far as I'm concerned). And gee whiz, it's a computer besides - in short, everything I wanted my PET 2001/32N to have but couldn't get. No wonder they're producing 60,000 a month.

DISADVANTAGES: The 22-column screen size has much to be desired. Why they did this I don't know. It would have helped to have included a forty column display. The other problem I see is incompatibility between memory expansion units. Some programs only work with a 3K expander, others work only with an 8K expander, and some only work with the standard VIC! I haven't tested portability of programs on the 16K unit yet. I hope in the future this won't be a big problem. Ah well, there's always trade-offs. Needless to say, I recommend the VIC-20.-JO.

VIC HARDWARE REVIEWS: Cassette and Disk Drives

C2N DATASETTE RECORDER. \$75 from Commodore. See under Hardware Reviews: Cassette and Disk Drives.

VIC 1540 DISK DRIVE, \$599 from Commodore. Single drive, supposedly "media compatible" (whatever that means) with CBM 2031 and 4040 diskettes.

REVIEW #1: "...it will be clumsy to operate until Commodore comes out with a proper DOS wedge. The clumsiness goes for back-up disks, too, ... because sequential files can't be backed up with the VIC-1540 as currently offered. One solution is to "borrow" a friend's 4040... However, even with its few shortcomings, the VIC-1540 is a welcome and big improvement over time-consuming cassettes."—John Walker, from **Hardcopy**

REVIEW #2: Low and long. Plastic case. Reads 4040 diskettes. Slow compared even to the 2031 disk drive. MN is doing a VIC wedge, which is badly needed by VIC's upgrade 2.0 level BASIC V2. Should be able to use a backup program from a recent TPUg diskette, perhaps with changes. For home entertainment, this should be fine. But if you need two drives, get the IEEE interface and a 4040 disk drive instead.—JS

SHUGART MODEL SA400 5-1/4" DISK DRIVE, \$209 each or \$189/each for five from PolyPaks.

REVIEW #1: "If you would like a bigger challenge....these are brand new and guaranteed."—Peter J. Farrow

REVIEW #2: It takes a lot to make one work with a VIC...—JS

VIC HARDWARE REVIEWS: Other Peripherals

JOYSTICK, \$10 from Commodore. Similar to the Sears joystick for their video game system. (No, I'm not going to say the other one!) Good points: less expensive and, for you die-hard original equipment people, it looks nicer. My only complaint is that it lasts no longer than the other type (with me, one week of game playing). I'm still looking for a joystick that won't wear out!—JO

LE SHTICK, \$40 from Computer Country and others. Mercury switch joystick. Can't wear out like others do so quickly. Also, EASILY moveable, unlike most. Unfortunately, it is also somewhat capricious. Due to the sloshing of the mercury, positioning is less precise than with standard models. JO didn't like the action of mine, though he admires its durability. I like it vastly better than the standard Atari model, but I'm not a gamer. If you have a VIC, don't leave the stick laying down when not in use -- it overrides a couple of other keys. Make a holster for it to keep it upright, or unplug when not in use.—JS

PROGRAMMER'S AID CARTRIDGE, \$60 from Commodore. See under VIC Utilities: On Cartridge.

RS232C INTERFACE, \$40 from Eclectic Systems. Converts the VIC User Port to RS232 voltages. I am using it right now with a STAR RS232 MODEM (see under Modem Reviews) and I haven't had any problems.-MN

SYNTHESIZER, \$40 from Dirk Hassinger. Requires 3K RAM expander. Protected. Machine language and "HiRes" graphics. An exciting music synthesizer. You control a moog synthesizer with four VCO, LFO, VCA and ADSR. Two rows of the keyboard become the black and white keys on a piano. FANTASTIC sound!!!! (the author is using a VIC with this synthesizer in a rock group!). Expensive, but it's the second best program available for the VIC.-Fritz Schafer

VIC SUPER EXPANDER, \$70 from Commodore. See under VIC Utilities: On Cartridge.

VIC 3K EXPANDER, from Commodore. Included as part of the VIC Super Expander, described under VIC Utilities: On Cartridge.

VIC 8K EXPANDER, \$60 from Commodore. RAM cartridge providing the VIC 11,000 bytes free.

REVIEW #1: Plugs easily into my older model VIC, but is difficult with the newer ones. Instructions that are included show how to easily switch the memory addresses so that you can add extra memory, when expansion module is available, without conflicting addresses. It's also cheaper than other 8k expanders advertised. A note to the wise: DO NOT plug it in while your VIC is powered on! Recommended.-JO

REVIEW #2: For those with Commodore 8K memory cartridges, there is good news! The printed circuit appears to be ready to accept chips to turn it into 16K.-Peter J. Farrow

(EDITOR'S NOTE: At the moment, upgrading to 16K is a "do-it-yourself" project. **Midnite #9** will describe one person's method....)

VIC 1600 VICMODEM, \$110 from Commodore.

REVIEW #1: "One feature of VICMODEM that was impressive was the selection of two colors so that the screen can distinguish the user identity. Another neat feature was the wordprocessor-type option of being able to automatically format the screen to 22 letters. Rolled-over letters immediately break from the last line and begin all over again on a new line to make reading much more comfortable. The bigger characters and the smaller screen size combine to result in probably the easiest of screens on the eyes.-CHUG

REVIEW #2: "The modem has brought out one of the failings of the VIC-20, the 22 character screen. The VICMODEM software eliminates part of the problem by scrolling without splitting words at the end of the line. This makes things easier to read. It also helps by printing transmit and receive lines in different colors."—Peter J. Farrow

VIC MAGAZINE REVIEWS:

Power/Play, \$10/yr. from Commodore. Quarterly. See under Magazine Reviews.

VIC Computing: In the U.K. there exists a sister magazine from **Microcomputer Printout** called **VIC Computing** — and, you've guessed it, it ONLY deals with the VIC-20 (which sells very well in Europe). It's as good as **Microcomputer Printout** and I'm a subscriber to it. If you want to subscribe, too, send about \$28 to : **VIC Computing**, 39-41 North Road, London N79DP, U.K. Your subscription can be backdated to Christmas 1981. In this magazine several VIC software companies are advertised. I've ordered most of their programs.—Fritz Schafer

VIXEL, \$13/issue from The Code Works. Quarterly? The first issue included a program by our own John O'Hare (JOH). How could it be anything but stellar? Seriously, I haven't seen it yet, but it does exist, load and run, and appears to carry on its **Cursor** magazine heritage well.—JS

VIC MONITOR REVIEWS

ROM DETECTIVE TWO, \$5 from Trasonic Labs. Versions for Stock, +3K, and +8K VICs. On cassette. Another useful program for VIC. This one is part of an extended monitor — the part that studies a program, not the part that writes one. It is especially useful for studying machine-language programs, but can also examine BASIC programs. It uses color to enhance a micromon-like HEX/PET-ASCII dump command, paging, rather than scrolling, but still moving quickly and easily through memory. Disassemblies are also quick, easy, and like those in other good monitors. Includes a convenient HEX/DEC number base converter. Better yet is the 2-byte word FIND command, which locates all references to an address within a defined range of addresses. The program occupies only about 1800 bytes. Naturally, I missed some other commands that MICROMON has, but some of these are on a companion program, and MICROMON won't fit into an unexpanded VIC anyway. A budget bargain.—JS

SUPER VICMON. See under Public Domain Reviews.

TINYMON 1. See under Public Domain Reviews.

VICMON. \$45 from Commodore. On cartridge.

REVIEW #1: Is essentially MICROMON without Arthur Cochrane's many additions. If you know how to use MICROMON, you only need the instruction manual for initial access. Only additional commands beyond MICROMON are zero page flip (E), and remove breakpoint (RB).-BA

REVIEW #2: "Very much like MICROMON. Somehow, though, I can't justify paying money for something that a short time ago was free in the public domain. If you're in the software business, you might find use of this program-aid cartridge.-MN

VIC MONITOR. \$7 from PETTED. Machine-language monitor written in BASIC. On cassette. Very slow. Can only dump memory, enter code and execute it. No register display or load/save routines. Wait until Commodore's monitor comes out. Poor.-MN

VIC UTILITIES:

Cassettes

HESCOM. \$50 from HES.

REVIEW #1: Not a game. Includes user-port to user-port cable and software for both PET and VIC. Can be used to send data or programs between PET and another PET, VIC and a PET, or between 2 VIC's. Very handy utility program to have, especially if you have a disk on the PET (in which case it's the next best thing to a disk on a VIC!). I use it all the time. Recommended.-JOH

REVIEW #2: HES recently provided a revision of HESCOM with an easier-to-use version of the program. No more pokes are needed in selecting options.-JS

HESCOUNT. \$24 from HES. Versions for any PET or VIC. See under Utilities Reviews.-ES

VIC UTILITIES:

Cartridges

PROGRAMMER'S AID CARTRIDGE. \$60 from Commodore.

REVIEW #1: A programmer's aid, much like the original Basic Aid for PET,

with a few more commands, namely: KEY (user defines function keys), further refined by EDIT and PROG. (allow two sets of defined keys), and some control codes that scroll up and down, escape quote mode, or erase to beginning or end of line. Merge may be from any device number. A welcome addition to VIC's skills, though not quite as fancy as those now common for PET. Recommended.-JS

REVIEW #2: "This is a very useful addition for anyone that is programming. There are many new commands that greatly ease the de-bugging of new programmes. Better still is the instruction book, which is much more detailed than usual."-Peter J. Farrow

VIC SUPER EXPANDER. \$70 from Commodore.

REVIEW #1: " At first try, this cartridge was rather disappointing. Now that I have had more time to investigate its use, there are many good features that I had missed the first time. One problem is the documentation which lie so much else for the VIC is rather sparse. What would probably be most useful is a Graphic Screen Dump." --Peter J. Farrow

REVIEW #2: Adds many functions to handle joysticks, game paddles and lightpens; find the color of a point, find graphic mode, find the value of the sound register. Also adds several new BASIC statements to handle 4 different graphic modes (176x176 "HiRes" resolution, multi-color graphics, mixed). Some plotting features include: draw, point, paint, char, and circle. My only complaint is the angular measure for CIRCLE is in grads. Multi-color mode takes more memory than "HiRes" mode, but the effects created far outweigh the heavy memory use. A special music mode uses a special control character in the PRINT statement, followed by the musical notes, duration, octaves, etc. A separate SOUND statement lets the "old hands" have it their way.

The best feature is its programmable keys F1-F8. It works somewhat like POWER for the CBM. You define several keystrokes and include cursor controls with a single KEY instruction.

Short (only 16 pages), non-friendly owners manual. Despite the poor documentation, it's still a very good addition to your cartridge library, especially if you're into programming "HiRes" graphics. Highly recommended.-MN

ANTIQUÉ SHOPPERS GUIDE

Some products are just too good to pass into oblivion when the company stops marketing it or when they can no longer work properly on the newest machines. However, they still work QUITE well on the original machines for which they were designed and sold. Sometimes, too, shoppers still want to be warned when they discover a "sure bargain" on the used market, which also just happens to include a few software programs thrown in.

Yes, I believe the garage and rummage sale days are almost upon us. Those Model I Radio Shacks, Apple I's, and original 8K calculator-keyboard PETs are beginning to show themselves now.

Therefore, you may want to browse through the following sections, to catch a glimpse of our illustrious PET past (or present "bargain basement" items from which to choose.

The programs are divided into the following sections:

Business Reviews
Game Reviews
Graphic Aids Reviews
Hardware Reviews
Magazine Reviews
Modem Reviews
Monitor Reviews
Utilities Reviews

Your reviewers for this guide are:

Brent Anderson
Gene Beals
Fred Bruey
John O'Hare
Jim Oldfield
Jim Strasma

Have fun shopping!

Business Reviews:

PROFILER, formerly \$100 from Intermountain Data. Needs disk. Claims to maintain 1100 files per diskette, but only about 100 can be in the same database. No way would I pay this much for a 4k BASIC database manager with sequential files!-JS

TALKING CALCULATOR, \$15 from Programma International.

REVIEW #1: Needs 16K plus second cassette buffer. Not for BASIC 4. A must for blind people, and great fun for kids. Very recognizable speech.-JS

REVIEW #2: It doesn't do all math correctly, especially dividing or multiplying

by 0. However, it is a great demonstration of non-hardware speech synthesis.—Gene Beas

TELEPHONE BOOK, \$7 from Programma International. Create, change, and store (tape/disk) entries in electronic phone book. Find entry by name, city, state, zip, area code, or category. Works fine, but a hassle without disk. Would be more useful with options to sort and display all listings, especially on paper.—BA

Game Reviews:

ATLANTIC PATROL, \$7 from Programma International. 8K. Very good sea battle simulation. Uses some graphics, but they just sit there. You control the British Fleet, trying to wipe out the German Fleet. You can choose 1 of 3 types of ships to command. If you're sunk 5 times, that's it.—JOH

BULLS and BEARS, \$15 from Speakeasy Software. (Must order thru a dealer.) A stock market game where 2-5 people try to buy stock in and take control of 2-7 companies. Invest in production and borrow to keep afloat. Makes for an interesting game. With \$50,000 you begin the game to make a fortune. NOTE: After many, many tries, I finally accumulated \$43,000,000,000. So much for the national debt.—JO

GREMLIN, \$7 from Programma International. You control a tank trying to destroy outposts before time runs out. Fun at first but lose interest quickly. Fair—JOH

HUNT, \$20 from Programma International. Mini adventure game, with 2 adventures, plus adventure builder program to create your own adventure. Good introduction to programming. Helps you understand how adventure games work. Fair—JOH

SPACE SHUTTLE, \$10 from Programma International. 8K. The object is to take supplies up to a space station. Uses good graphics, but is very hard to win.—JOH

Graphic Aid Reviews:

HAL 6500 PROGRAMMABLE CHARACTER GENERATOR, \$180 from Systems Formulate Co. Upgrade BASIC 2. You redefine 64 PETS characters. Great for designing custom character sets for games, mathematical symbols, foreign character sets, etc. Includes built in CB2 sound effects (improved to eliminate 'noise'), and totally powered by the PET. Comes with 2 tapes: #1 contains very good demo of the Hal's capabilities, and set of programs to help design characters: #2 contains Super Slot Machine game—the BEST slot machine game I've seen on PET (uses hi-res graphics and

great sound effects!). Only disadvantage: you lose upper case when in upper/lower case mode, but hardware fix given; can also fix using a program to load in original character set (not supplied). Also available: 6 other GREAT games (see under game reviews). Highly recommended.-JOH.

HAL Game Reviews. by John O'Hare

Each of the following HAL games are \$20-25, from Systems Formulate. All for Upgrade BASIC 2.0, require HAL6500 programmable character generator, and use high-resolution graphics and sound effects.-JOH

These games are no longer be available for PET, but have been rewritten for VIC. See the same titles under VIC Reviews: Game Cartridges.-J and ES

MOLE ATTACK. Smash invading moles on the head with a hammer, but you'll lose points if you hit a bomb by mistake!

NIGHT DRIVER. Unseen, but if it's as good as others, you can't go wrong!

PACKMAN. Excellent game, JUST like arcade version, right down to the sound effects. One of the Best!

RALLY-X. Arcade type game where you must steer your car thru a maze (of which only a portion is shown on the screen) scoring points while running over flags, but watch out for enemy cars and rocks! Also has 'radar' display which shows general locations of Flags, Enemy Cars, and your car.

SUPER GALAXIANS. Another fantastic game, just like arcade version in which you try to fight off the dive-bombing invaders with your 'Galaxip' ships.

ULTRA INVADERS. Best available Space Invaders game for PET, exactly like the arcade version.

Hardware Reviews:

STARWRITER (letter quality) PRINTER, by C.Itoh.

I (ORIGINAL): \$1,390-2,000 depending on dealer, plus interface. 25 cps Diablo friction-feed mechanism, with electronics by C. Itoh of Japan. 15" carriage. Centronics parallel or RS232 serial versions available (I chose serial for its simpler cable). 65 db, so you may prefer it in a closet! Bi-directional, logic-seeking printing, with high-speed tabs in all directions. As fast as 2023 in normal use. Higher speed, tractors, and sheet feeders optional. Use it with WORDPRO, MAE, and for listings. Also includes Diablo's famous graphics plot capability. Friction-feed skewing noticeable after 5 pages. Prints single sheets w/i 4 lines of page end without slipping. Excellent print quality. Highly recommended.-JS

II: Around \$2,000. Needs a serial or parallel interface to PET. Costs roughly \$300 higher than Starwriter-I. Nearly identical to the Starwriter printer we've used and loved for the past 9 months, but nearly twice as fast (45 cps). According to

one ad, it's faster overall than a 55 cps NEC Spinwriter. It does run circles around our other Starwriter. Print quality is still good, although fainter. A real bargain if you have the extra \$300, and need lengthy printouts. Recommended.-JS

Magazine Reviews:

Cursor magazine... See "In Memoriam."

Epson Information Exchange. Premier issue of the newsletter included tips on using TRS-80 graphics on an Apple, information on the GRAPHTRAX enhancement ROM, and using super-popular Epson MX-80 with TRS-80 and Apple text-editing programs (I'm biased; nothing in Microdom except for WORDPRO and WORDSTAR deserves the name Word Processor.) So far, no PET uses are listed in forthcoming column. Still, since we prefer the MX-80 to the CBM 4022, you may as well hear what others are able to do with it if you buy one.-JS

The PET Gazette, by Len Lindsay. See "In Memoriam."

Transactor, as produced by Commodore Canada. See "In Memoriam."

Modem Reviews:

CBM 8010 MODEM, \$395 from Commodore.

REVIEW #1: Acoustic modem. Originate or answer, 300 baud. Full or half duplex. Apparently the same as the Prentice Star Modem, available from AB Computers for \$265, or \$135 if your modem program simulates RS232. Works, but only with an IEEE modem program. Delivered without ANY instructions or programs! Took two days to get it working well enough to call anyone. I consider modems a luxury, unless you must use an outside computer. If you DO need a modem, a direct connect originate AND answer modem costs little more and works better. The Networks' \$300 IEEE modem has been around for years, and even dials for you. Skip the 8010.-JS

REVIEW UPDATE: Manual finally arrived (all 11 pages). 3 very short program listings, for using it PET to PET, PET to Source, and in testing. We've still underwhelmed-JS

Monitor Reviews:

FET/RECOVER, \$65 from F.L.C Inc. Monitor for the 2040 disk.

REVIEW #1: 'This program works well so far as I've seen. It can be of great use, if you lose part of your index and need to reconstruct it.'-Fred Bruey

REVIEW #2: I understand FET has recently been revised. I watched the old version ruin a disk it was trying to restore.-JS

Utilities Reviews:

BANNER PLUS, \$10 from Programma International. Prints large characters across paper's LENGTH. You choose the message, letter size, and centering. Has nice feature for creating new characters or shapes. Smallest character size (7x9) looks best. Fun to use, potentially useful.-BA

PUBLIC DOMAIN REVIEWS:

Business Programs

Public domain business programs are available from the ATUG library, as listed under ATUG Notes, or from the TPUG library, as listed under the TPUG Library Diskette Listings: Business or VIC.

For CBM/PET:

BENNETT'S MAIL LIST, by Chris Bennett. Available to anyone from ATUG or to user groups and associate members only from Toronto PUG for a \$10 copying fee. Excellent, easy to use program for the amateur PET user. Requires 32K, DOS 1 or DOS 2.1 and CBM or ASCII printer, plus 2 diskettes. The first diskette holds the program and the second holds data for a maximum of 900 records. No manual, but usable anyway (JS wrote detailed instructions which are also available from TPUG or ATUG). Handles U.S. and Canadian postal codes, but not ZIP+4 as sent. Wish it came with a "remark" field in addition to its very useful "Code" field (up to 20 sort fields in a single field). Great for the home user (Christmas card and moving list) or for a small business. Large, complicated mailing lists should try Dr. Daley's commercial program, or Peter Smith's soon-to-be announced Mail List.-E and JS

For VIC:

WORD PROCESSOR, adapted from the February 1982 issue of **Compute!** by Chris Parsons of CHUG. Available from CHUG user group. "This has many useful features, but the main advantage over UNWORD is the elimination of "line numbers."-Peter J. Farrow

Language Reviews

Public domain language programs are available from the ATUG library, as listed under ATUG Notes, or from the TPUG library, as listed under the TPUG Library Diskette Listings: Utilities.

FORTH, by Bill Seiler. From ATUG and others. Requires Basic 4 and DOS 2. Latest FIG-FORTH with extensions. Features reliable relative files instead of the troublesome random access files used by some commercial FORTHS. Also includes some graphics commands and a FORTH equivalent of the DOS Wedge. Best of all for the serious student is that it comes with full CBM 6502 assembler source code.-JS

Machine Language Monitors for CBM/PET:

Monitors add helpful extra commands in machine language the same way that programmers' aids, such as BASIC-AID, POWER, POWER-AID and the TOOLKIT, add helpful commands to CBM/PET BASIC.

"What is the difference between **SUPERMON**, **EXTRAMON**, and **MICROMON**?"

1) **SUPERMON**, by Jim Butterfield, has the fewest commands, but is easiest for beginners, because it is self-relocating to high memory, and is supposedly able to list last 5 entered instructions when asked.

2) **EXTRAMON** is by Bill Seller. It was originally slated to be sold by Programma International for \$15 around the time they stopped selling PET software. Those in CIPUG with both **SUPERMON** and **EXTRAMON** prefer **EXTRAMON**, because it has several commands not in **SUPERMON**. Both exist in versions for all PETs. Both are free from user groups.

3) **MICROMON** is the newest version of **EXTRAMON**, expanded by Arthur Cochrane and Jim Strasma. It adds scrolling during assembly and hex dumps, and works on both BASIC 3 and 4. **MICROMON D** was published in the November '81? issue of **Compute!** A new version E, by F. Arthur Cochrane, available from ATUG, adds a 'don't care' hunt command. JS's new favorite.

Machine Language Monitors for VIC:

SUPER VICMON. **SUPERMON** for the VIC, adapted by David Hook. Uses the self-relocation loader. A step up from **TINYMON1**. Has all the features of **SUPERMON**, except the single-step. Makes good use of colors in printing. Best monitor around for the price (free).-MN

TINY MON. Same as the ROM-based monitor on the PET written for the VIC on tape by Jim Butterfield. Uses self-relocating loader, so that it will work in all memory configurations. Very nice if you don't have anything else.-MN

Utilities Reviews

Public domain utilities programs are available from the ATUG library, as listed under ATUG Notes, or from the TPUG library, as listed under TPUG Library Diskette Listings: Utilities.

Programmer's Aids:

Programmer's aids add helpful extra commands to CBM/PET BASIC the same way that monitors such as EXTRAMON, SUPERMON, MICROMON, ULTRAMON, and MONJANA/1, add extra commands in machine language.

BASIC-AID. Versions available from ATUG (See description under ATUG Notes). Version 'D' widely available and on our HELP disk. This program has come a long way since its first unofficial release by Commodore U.S. The original was termite-infested. A 4K expansion by Commodore Canada did wonderful things, but still had its bugs. Jim Butterfield's TINY AID pointed the way to fixing several of the bugs. Then under first my care, and then Arthur Cochrane's in ATUG, it grew again. Now it's mostly reliable and includes nearly every command we could think of. Until Arthur did POWER-AID, I used Basic-Aid every day.-JS

POWER-AID. Available from ATUG or TPUG in source or object code. Adds all the commands that were in BASIC-AID but not POWER onto Power. The combination is everything I need in a programmer's aid. And it still grows on--. Brad Templeton has recently expanded it again, and Arthur Cochrane is also expanding it now. This is its key advantage over SYSRES - as new features are needed, they are added, without worries about program protection.-JS

Your editors, Jim and Ellen Strasma are pleased (and relieved) to announce that the new third edition of the Osborne/McGraw-Hill Guides for the PET/CBM computers has been sent to the printers and should be available by August 1982. Any group of 15 may make a bulk order of our new **CBM Professional Computer Guide, 3rd Edition**, listed at \$15 at 33%-40% off the list price of \$15, depending on quantity. Just contact Linda Labinsky at 800/227-2895.

To go along with this third edition, there is a special HELP disk of Public Domain and donated software to guide beginners in more advanced applications of CBM/PET computers. Copies of this diskette are now available. Users are welcome to obtain the disk through any user group that has it, such as ATUG for 4040 format, or Baker Enterprises for 8050 format. Otherwise, it will cost you \$15, direct from the Strasmas.

CURRENT CONTENTS OF THE HELP DISK:

First, it includes several of the longer programs from the book itself, to save typing time and errors.

(ascii.fix.bas, border.print, concatest, date, minimail30oc
modem, name&address, seq.mail.b4, seq.num.b4, window)

Then comes our choices for "The best of Public Domain" from the ATUG exchange. These include

Mail List 4040 Excellent relative record handler by Chris Bennet of TPUG; revision and instructions by JS.
Basic Aid 4.0C Programmer's Aid package in 4 versions, by Commodore Canada, revision and instructions by ATUG.
Backup Disk Utility by Jim Butterfield of TPUG
Bar Graph 2.4 To screen and printer. By John Easton of TPUG.
Cass.data.copy Moves data from tape to disk, by JS.
CBM 4032 v2 Makes 8032 a 4032, by Chuan Chee of TPUG.
Copy/All Better Unit to Unit, by Jim Butterfield.
Datamaker Data statements from object code, from PET Gazette.
Draw Etch a Sketch, from Penninsula School.
Eater Game, optional joystick, originally by Ann Arbor PUG
Mandala Kaleidoscope, by Bill Seiler.
Micromon-D Extended monitor, by Seiler and ATUG.
Petsong 3.2 Music player, from PET Gazette.
Procep.Editor Input editor, from Procep
Relread Reads relative files, by Jim Butterfield
Scopy Scratch/Copy disk utility, by Keith Peterson
Soup Compares binary disk files, by Henry Troup
Terminal Modem controller, by Steve Punter of TPUG
Word Pro Printer For those without..., by Robert Baker

The 8050 version of the diskette adds Bennet's 8050 Mailing List, doubling capacity, but lacking many features.

COPYRIGHT NOTES

COPY PROTECTION METHODS:

Henry Chow wonders if a RAM board should exist. It certainly eliminates the need for dummy ROMs. Though useful ROMs could also be bypassed, thousands of PET owners gladly paid \$50 for the convenience of BASIC PROGRAMMER'S TOOLKIT in ROM. Who wants to reload it after each reset, even from disk?

The best protection may be a good product, reasonably priced, with good support and documentation. Most folks don't cheat their helpers. Studying programs is how I learned. If micros are to make America a better place for common people, then programs must be understandable. Secrets are rarely helpful in this life. The programmers I most admire, write readable, changeable programs, even though it costs them sales. It's a matter of democracy, not capitalism.

There's also the question of cooperation. When CIPUG got HESLIST (see review), it didn't work with BASIC 4's added commands. Two hours later, it did; everyone benefits. The same happened to EXTRAMON via Jim Butterfield. Without co-operation, the fanciest micro game might still be WUMPUS!

On the other hand, there's no excuse for selling the work of others as one's own. One solution is either cut them off from advertising or expose the theft. Sieg Deleu of Kobetek Systems, creator of DIAL-A-ROM, reports he sold a DIAL-A-ROM to the company that shortly thereafter began advertising SELECT-A-ROM. Funny how they both switch 6 ROMs in a similar case, with a similar switch, with a similar connection to PET. Don't send us a review of SELECT-A-ROM unless you can prove it's original.

Along the same lines, we've heard from two reliable Dutch sources that U.S. copyrights are not respected in Holland. Both the TOOLKIT and RABBIT ROMs have been pirated there. Will sane authors send programs to Holland?—JS

Commodore's new plan for COPY PROTECTION is the DONGLE, a cassette port connector that is serial-numbered and readable by software. If the dongle number matched the PET serial number, this would be a great idea, but it doesn't. To use 5 protected products, you'll need 5 dongles. Commodore already has trouble with cassette ports wearing out. On the other hand, this way any PET can run that one copy. Great for travelers with a PET in every port. Looks like a "Dial-a-Dongle" in your future.

EXAMPLE: CMD struck sore nerves in the U.S. PET community, by trying to copy-protect and license user programs compiled with their compiler. The gist of the objection as I heard it, is that it amounts to taking credit for thousands of programs CMD didn't write. As a result, some users feel justified in trying to disable the run-time dongle. This is probably a case where CMD was legally right, but tactically wrong. Oxford computer systems is trumpeting in their ads the fact that their competing compiler, "PETSpeed", uses no run-time dongle.

WHEN DOES A COPYRIGHT BECOME INVALID?

When it becomes impossible to purchase from the copyright holder, due to the coming and going of companies (or refusal to offer upgraded versions of programs for sale), is it kosher to make copies of that software or buy them? ...Seems a shame that good software should die with the passing of its author's company, but since copying probably had some part in its demise, it seems to be rubbing salt in the wound to do so after the fact.—Candy Jens

REPLY: According to lawyer friend, Jim Sutton, a copyright does not mean users can't copy your program. It merely means they must pay you for the privilege. Therefore, the question is not whether you can copy software, but rather, at what cost? When a company sells an author's program, the copyright is often kept by the author. If the marketer folds, the author may make other arrangements. If it is the copyright holder who dies, program rights go to the heirs.

1) A recent example was the death of Programma International, who sold the favorably reviewed TALKING CALCULATOR. Although I don't have the author's address, I do have some money for him, from a user who got a copy after Programma folded. I assume the correct fee is what Programma used to charge, but this may not always be true.

Hint for authors: Include your name and address in your program listing and instructions. Then if your seller folds, you may still receive copy fees from honest users.

2) A second example: Gordon Hoch, one of our avid readers, recently died. He was the author of an excellent program called BEAMS, used in calculating various parameters of steel beams for structural engineers (NOT the same as the one of the same name from FLC, Inc.). His widow has graciously agreed to place Gordon's BEAMS program in the Public Domain. Any user group may obtain a copy by sending either a 4040 formatted diskette with a reusable mailer and return postage, or \$10 to me.—JS

3) Companies which want copyrighted products respected by users had best offer them for sale. The programs making the rounds of the user groups the fastest are those which cannot be obtained any other way.

4) **SARGON Copyright:** Those wanting SARGON II will be pleased to know that HAYDEN is finally releasing the PET version for \$30, and also plans a VIC cartridge. The legitimate version fixes a bug in the earlier (illegitimate) version, and runs much faster as a result.—info from Commodore.

WHAT MAKES A PROGRAM IN THE "PUBLIC DOMAIN"?

Publication of a program in a magazine does not make it Public Domain. Rather, it is one way of proving copyright. Copying of magazine programs is widespread, but only legal among those who have purchased the magazine issue containing the copied program. I've never heard of anyone suing individuals for trading programs from magazine articles. But software houses who use magazine software in commercial programs without permission are taking a foolish risk.

Authors who don't want their magazine programs bound by copyright may release the program to a user group or a non-copyrighted publication before publishing it in a copyrighted form. Some PET authors do this regularly.

Recent court cases seem to have decided that a program which does not claim to be copyrighted is not copyrighted. On the other hand, if copyright notices were present but removed by others...-JS

CAN YOU COPYRIGHT A CONCEPT, OR JUST ITS IMPLEMENTATION?

MONOPOLY: (This is NOT a GAME): I'm sure you've seen Atari's announcement by now in recent computer magazines. What have been the reactions so far? It's deleting some programs from the market that belong to us. And it worries me, not because I've written programs similar to theirs (I've never been accused of being a programmer), but because I can foresee buying my software from only one source. For a personal computer consumer, this is not good. I am not against Atari making money. I own one of their Video Systems myself. I know it costs them money to keep their programmers writing games for their arcades and computers. They need a profit from game development or they wouldn't be in business. And they're very much in business. With their resources, what would keep them from owning every version on every computer of every game they've designed, whether legal or not? Who wrote the first WUMPUS, the first STAR TREK, the first ADVENTURE, the first GAME? Are they also entitled to register with the Library of Congress each idea for each game written to date? I'm not a lawyer, but I do know that it's illegal to copy a program except for back-up purposes for your own system. And school systems have problems with the number of copies of a single program that they can have. So why do I write this when I don't know whether ATARI's (tm) actions are legitimate or not? Because I fear for what could be down the road.-JO

READERS SPEAK OUT ON PIRACY!

1) **CONFESSIONS OF A PROGRAM COPIER:** "I have gladly copied many commercial programs, to avoid the hassle of testing a program in a store or buying and returning one my mail, hoping my money would be refunded. After being run a few times, 85% of the programs are either boring or show their real failings. For good programs still not worth buying, i usually send the distributor a letter of comments and a check for what the program is worth to me. For really good programs I use regularly, the documentation and support is usually so good that it is best to buy the programs anyway. No one has a moral right to copy, use and **not** pay the distributor their full worth. I also do not believe in paying \$300 for a program I might use twice a year. This is where a Users Group is nice. You should be able to borrow another member's program to do your infrequent processing. Remember that if you send a letter to a distributor admitting you copied their program, you are sending them evidence against you. Tell them you have played/used their program and wish to contribute, due to your satisfaction. You might mention that you infrequently use it. Programmers are due the worth of their efforts based on your use. Be fair.

Some programs worth buying are: MAE, WORDPRO, VISIBLE MUSIC MONITOR, any of the EPYX games (HELLFIRE WARRIOR, DATESTONES, MORLOC'S TOWER, TEMPLE OF APSHAI, RESCUE AT RIGEL), SPACE INVADERS, VISICALC, MICROCHESS, CURSOR magazine programs."--Roy Wagner

2) **FROM ENGLAND:** "I think it ridiculous that I should pay as much for a copy of WORDPRO 3 as an office using it continuously. I use it and VISICALC 2-3 times a year, but I pay list price for programs I use several times a week. Although I think an annual fixed royalty would be fair, I have to use the existing system, so I pay for software I sue frequently, but provide free copies to people I can trust not to try to exploit it commercially.--Geoff Capell

REPLY: Thanks for sharing your rationales... With so much EXCELLENT software now available in the Public Domain, I see little need to give away worthwhile commercial programs, unless it's a matter of legitimate owners sharing improvements they have added to programs with other legitimate owners, as was the case with one program Geoff sent me. Will we ever solve the fair-fee problem?--JS

3) **BUTTERFIELD ON PIRACY** (Is this the last word? Father knows best...): "It's well to see users speak out, whether or not you agree with them. Should software prices be based on usage? How would you administer it? How does the poor user/victim find out about mediocre stuff other than getting bitten? Wouldn't it be nice if more software houses allowed "trading up" to more recent packages? I think my own measure of worthiness is: if it's mediocre, I'd rather write it myself and know what I've got. If I can't write it myself, or don't want to take the trouble, then I should

pay for it. But it should be accessible code--I will likely want to modify, upgrade or whatever. Why cheat? If you can't afford it, you shouldn't have it, or you should do it yourself...the rationale that it's OK to steal if the item is overpriced doesn't work on fur coats or Cadillacs. But people view morality differently with software. If you steal a car, the owner is out one car. If you steal a program, the owner still has it. It seems more acceptable to channel your theft that way.

Maybe we are using terminology wrongly. Is it theft when you sneak into a movie without paying? Probably not: but it's still cheating. I think we may be better off when we start viewing software as a service rather than a product. You buy the service, not the tape, disk or chip; and if software houses were more visible in terms of service, support, documentation, upgrades and warranty, we might understand better what we're paying for.

Most users pay; few cheat. Some users pay and then discover that what they have bought is worthless. Let's not forget: ripoffs can work both ways, and it's not just users who are rippers and vendors who are rippees. We need MSG to warn of problems in products. Two wrongs don't make a right and it's no excuse to violate a vendor because you once had a bad experience with software.

Take a look at industry prices and you'll quickly see what a bargain micro programs really are. We need those package programmers out there; let's try to treat them right.--Jim Butterfield

WHAT'S IN OUR FUTURE?

Now gaze into our crystal ball to look at copyright issues yet to come. We have now seen the first "foreign DOS" for PET, meaning that the OZZ people have figured out a way to reprogram the CBM disk inner processor to alter the way data is stored on the disk surface. Other software houses are now trying to do likewise. If they succeed, a bit copier program will also appear shortly thereafter, making all their efforts for naught. How do I know these things? I watched it happen on the Apple II. The whole thing bears a remarkable resemblance to the nuclear arms race.

What is the meaning of it all? Nothing new really. It's the old issue of free traders versus protectionists. They've fought for several hundred years now, and won't stop anytime soon. But if I learned anything from a semester studying the European Economic Community in Brussels, Belgium, it was this: the advantages of protectionism are short-run, while those of free trade are long term.--JS

Education Groupings

This is a special release of the working papers of the Ontario Computers in Education Software Cataloguing Committee (an ad hoc committee of the Ontario Ministry of Education).

This was the most up to date catalogue available at press time but the corrected catalogue and programs are expected to be available to the public domain in late fall or early winter or 1982. At that time the programs will be made available in some form through the TPUG library.

Watch the TPUG monthly disk release announcements in the back of each month's TORPET to learn of their availability.

Many, in fact most, of the programs listed here are already in the TPUG library. The advantage to the new programs will be three fold.

- A. There will be a catalogue with comments available for each program.
- B. There will be standardization of each program as to its method of use based on standard screen, input, and presentation.
- C. There will be standardized computerized cataloguing (based on manager data base format) available for each program.

This is all being accomplished at the expense of many thousands of dollars under a grant from the government of Ontario. It should be of great use to educators everywhere.

The standards for cataloguing were established at an international educational conference held in Israel in 1982, and are to be found in a joint paper by Chaim Schlezinger (Israel), David Walker (U.K.), and Don Whitewood (Canada). The paper is entitled **A Positive Step Towards International Microcomputer Software Evaluation.**

During the summer of 1982 45 school boards throughout Ontario applied to participate in a program to apply these criteria to the following list of programs. Representatives from these school boards participated in a training session to learn to apply the criteria, and from the applicants approximately 30 school boards were accepted to participate in the project to correct these existing programs. At least 10 additional boards are writing more new programs.

The Standards and Program Modification Manual (approximately 30 pages) is available from:

Joe Curtis
Audio Visual Department
Metropolitan Separate School Board
80 Sheppard Ave East
Willowdale, Ontario
Canada

Send a blank diskette and \$5 (or \$10 and no diskette) payable to Joe Curtis to receive the document in Wordpro format. The diskette also contains the base routine for program standardization, and a BASIC AID for all versions of PETs.

It is planned that a 1982 fall issue of the TORPET will contain further information about the method for submitting programs in accordance with these standards.

While the following list is not complete, and indeed is very rough, it should still be very useful to educators trying to determine what is available in the TPUG library that is applicable to a particular field of education. The new list and new programs will be much improved.

Administration Catalogue

ANSWER BOX

BONDS Drake R.E.

CAREER INTERESTS

DOG

FIGHT

GRADES Donn E.S.

LESSON COPY

LESSON EDIT

LESSON PLAYBACK

LESSON WRITER

LETTER

LIBRARY CARDS Heath M.

MARKS JB Butterfield J.

SEX ED

Business Catalogue

- A1.1
- AMORT'N TABLES
- BART
- BONDS Drake R.
- BUDGET (PRINTER)
Computerized budget accounting system.
- CALENDAR
A perpetual calendar with which you can see any years and any month's calendar.
- DATES Butterfield, J.
Program is a date calculator. User can calculate how many days ahead or back to any other date, etc.
- FILE
This program is to aid the pet user in utilizing the pet files. Example: preparing a mailing list file.
- GROSS PAY Hatton R.
- ICE CREAM P. Wayne & ARONOFF
- JOURNAL
- LEMONADE STAND Batcher B.
- LIFE TABLES
This program calculates life insurance and annuity tables with any given interest rate.
- MARKET
A simulation of the competition between two companies selling a similar product.
- MORT CALC
User inputs principal, interest rate and number of years, and computer outputs monthly payment.(limited
- MORTGAGE Butterfield, J. .
Program calculates the amount of monthly payments, payments over the years,balance owing on principal.
- MORTGAGE JB Butterfield J.
Program calculates the amount of monthly payments, payments over the years, balance owing on principal.

- PORTFOLIO Butterfield, J.
Program keeps a file of stocks on tape. Will keep record of stocks bought, sold, etc.
- STOCK MARKET2
This program is a game that simulates playing the stock market.
- STOCKMARKET Butterfield, J.
Program keeps a file of stocks bought and sold, etc. Same program as portfolio.
- TAX 80 ONT V3.0 Butterfield, J.
This program helps with the arithmetic involved in the 1980 income tax return.
- TAX ONT 81 V1.0 Butterfield, J.
This program is designed to assist the user with the arithmetic involved in the 1981 income tax form.
- TYPING DRILL Freeman, R. A.
Typing practice including finger drill (left or right hand), random finger drill, and random keyboard

Computer Science Catalogue

- CASTLE CONGRATS
- DEMO SORT Butterfield J.
- DESIGN
- ENTERPRISE
- EXECUTIONER BOO
- HISTORY QUIZ Ray, D.
This program is a computer science history quiz.
- HYPO.AUTO
- JARGON Finzer B.
- LOCKSMITH 2 Butterfield, J.
This program protects basic programs from being copied.
- MAGIC CARPET
- MONSTER Macnaughton R

- PAK JANA** Finzer B.
Make the pak jana figure dance by typing in commands. Method is shown in the 'list' of the program.
- SILLY PUZZLE** Butterfield, J.
Demonstrates difference between program in original rom and upgrade rom.
- SKELETON DRILL** Cooper D.
Program provides skeleton for use by a programmer in writing a program to drill a student.
- SYMETRIC PATTERN** Buckeye, D.
Symetric patterns are produced by input of 4 numbers that represent the byte values for the characters.

English Catalogue

- 2 SPEED SPELLING** Rugg & FELDMAN
A word is flashed on the screen. Student types the word. Computer adjusts flash speed to child's ability
- 3 SPEED SPELLING** Rugg & FELDMAN
A word is flashed on the screen. Student types the word. Computer adjusts flash speed to child's ability
- 4 SPEED SPELLING** Rugg & FELDMAN
A word is flashed on the screen. Student types the word. Computer adjusts flash speed to child's ability
- 5 LETTER WORDS**
A game in which the student must guess 5 letter words. No directions given as to how to play.
- 5 SPEED SPELLING** Rugg & FELDMAN
A word is flashed on the screen. Student types the word. Computer adjusts flash speed to child's ability
- 6 SPEED SPELLING** Rugg & FELDMAN
A word is flashed on the screen. Student types the word. Computer adjusts flash speed to child's ability
- 7 SPEED SPELLING** Rugg & FELDMAN
A word is flashed on the screen. Student types the word. Computer adjusts flash speed to child's ability
- 8 SPEED SPELLING** Rugg & FELDMAN
A word is flashed on the screen. Student types the word. Computer adjusts flash speed to child's ability
- A OR AN** Fisher, GLENN
Completing sentences for practice in using a or an before a word.
- A STORY** Tubbs, P.
Student fills in the missing parts of speech. Computer makes up a madlib story with them.
- ALPHA**
Student puts lists of words in alphabetical order.
- ALPHA-BETTER** Walters, G. M.
Student arranges letters in alphabetical order.
- ALPHA-LIST**
An input list of names is sorted into alphabetical order.
- ALPHABET SEARCH**
Student picks out the abc's in order, when they are mixed up. Program confusing and of questionable value
- ALPHABETIZE**
- ALPHABETIZING**
This program provides practice in alphabetizing drills and tutors. Choice of 4 levels of difficulty.
- APHORISMS** Robertson J.
- ASK** Verplank, J.
The student types in a noun and a verb and the pet prints a sentence using the two words.
- B*BALL MADLIB-P** Alatalo, B.
Teaches parts of speech noun, adj., verb & adverb. Student gives examples and pet uses them in a story.
- BASEBALL MADLIB** Alatalo, B.
Teaches parts of speech noun, adj., verb and adverb. Student inputs examples and pet uses them in a story.
- BILINGUAL SPELL** Hosmon, J.
Spell words in english or spanish that flash on the screen. Words in data may be changed.
- BIRD MADLIB-CRT** Alatalo B.
User inputs nouns, adjectives, numbers & names of songs; computer incorporates them in a humorous passage.

- BIRD MADLIB-P** Alatalo B.
User inputs nouns, adjectives, numbers & names of songs; computer incorporates them in a humorous passage.
- CINQUAIN** Barnes, DOREEN
Helps student write a short poem.
- CLOSED-3** Gamble, A.
Generates closed 3phoneme words. Directions as to what is expected is are not given.
- COMPUTER POETRY** Hansen, L.
Short poetry samples. Computer invites user to write simple poems.
- CONTRACTIONS** Alatalo, B.
This program teaches the formation of contractions.
- CRYPTO** Butterfield J.
- CRYPTOGRAM**
- DEFMATCH**
- ENG. MONSTER** Barton, M.
Rescue students before mean teacher eats them. Must find appropriate association words.
- FISH & WORD**
Supposedly a program to test ability to recall words. But actually tests typing speed. Also known as 'flash'
- FLASH**
Supposedly a program to test ability to recall words. However, it actually only tests typing speed.
- FLASHER** Cooper, D.S.
A word or phrase is flashed on the screen for a specified time. Retype correctly what was flashed.
- GET A NAME** Skinner G.
- GRAMMAR**
The student types in a word and must determine which part of speech it is.
- GUESS AND SPELL** King, R.
Try to guess the word. At any time you may guess a letter, ask for a letter, or guess the word.
- GUESS THAT WORD** King R.
- HAIKU 5**
This program outputs a number of traditional haiku poems.
- HANGMAN** Phillips, L.
Student must guess the letters to a word before the little man gets hung.
- HANGMAN 1** Cue LIBRARY
Word guessing game.
- HANGMAN 2** Toy, R.
Word guessing game. Can be adapted for grade level.
- HANGMAN 3** Tor. PET USERS
Word guessing game with five levels of difficulty.
- HANGMAN 3.0**
Student must guess the letters of the word before the man gets hung.(not the same as hangman 3).
- HANGMAN 4** Saal, H. J.
Word guessing game.
- HANGMAN 5** Gamble, A.
User must guess the letters of the words, before he gets hung.
- HANGMAN 6**
Student must guess the letters of the word before the little man gets hung.
- HIDDEN WORDS** Lindsay, L.
This program allows the user to create and use his own 'word search' puzzle.
- HOMOCONC**
- HOMONYMS** Wilson, L. G.
The student is given two homonyms and must insert the correct one in the given sentence.
- JOTTO** Butterfield, J.
Input words to help guess the pet's word. The pet will tell you how many letters are correct.
- LETTER REC** Mc GUIRE, P.
Recognition of letters of alphabet by typing the match but no association between symbol and name of letter
- LETTER SEQUENCES** Brochmann H.

MADLIB Zinn D.

MISSPELLING 6

NELSON L-12 GR.6

This is a grade six vocabulary test in multiple choice form.

NEW TACHISTO Rugg & FELDMAN

A short phrase appears for a fraction of a second and the student must retype it correctly .

NOT SO EASY

A very unusual paragraph is displayed. The student must discover what makes it so unusual.

PARTS OF SPEECH Birtalan, L.

This program is a review of the parts of speech,noun,adjective,verb and preposition.

PAWS

User corrects unpunctuated quotes selected by toby the tiger from the jungle of punctuation.

PET PIT PAT POTNielson, A. & L.

Given definition of word that begins with pet,pit,pat or pot, must find word.

PLURALS Alatalo, B.

This program teaches various rules for forming the plurals of words, and gives practice.

POEMS Butterfield, J.

Write different poems. Words in data can be changed.

POEMS 2 Butterfield, J.

Write different poems. Words in data can be changed.

POET Conway & ARCHER

PUNCTUATE Furry & ANGEL

Drills the use of some common punctuation marks.

PUNCTUATION DRIL Furry & ANGEL

PUZZLE

Input a number of words and this program will print a word puzzle.

Q'S & Z'S Nielson, A. & L.

Identifying words beginning with q or z from given definitions.

READ LEV & EVAL Noonan L.

READABILITY Gerbens, A.

Test of readability of passage written by student. Evaluated on ease of understanding and human interes

READER Parr, J. T.

A program which gives the student nine choices of speed at which the material is presented.

READING TEST Mc ELWAIN, M.

A reading comprehension test.

RHYMING

RYMECONC

S-HYPHEN Braun AND COMITO

Create a data base using thyphen and use it with this program to test students on hyphenated words.

S-PUNC Hertzberg, M.

This program drills students in punctuating sentences

S-SPELL Comito, J.

This program is used in conjunction with tspell to test students in spelling. Need a tape.

SCI-FI SCENARIOS Musselman, C.

A variety of random science fiction scenarios are given as a basis for creative writing.

SCRAMBLE

Sentences entered at the keyboard appear as scrambled letters which creep back into order again.

SCRAMBLE 3 Reid, C.

Student is shown a scrambled word and given 30 sec. To unscramble it.

SCRAMBLE 4 Reid, C.

Student is given a scrambled word and given 30 sec. To unscramble it.

SCRAMBLE 5 Reid, C.

Student is given a scrambled word and allowed 30 sec. To unscramble it.

SCRAMBLE 6 Reid, C.

Student is given a scrambled word and allowed 30 sec. To unscramble it.

SCRAMBLE 7 Reid, C.

Student is given scrambled word and is allowed 30 sec to unscramble it.

- SCRAMBLE 8** Reid, C.
Student is given scrambled word and is allowed 30 sec. To unscramble it.
- SCRAMBLED WORD**
Computer gives a scrambled word and the user must unscramble it.
- SEARCH** Carey, H.
This excellent program constructs word puzzles.
- SNOWY DAY NOUNS** Harper, S.
A game in which the student names the nouns in the picture as the pet duplicates each part of picture.
- SPEAK AND SPELL** Whitewood, D.
This program has sound. The tape must be placed in an audio recorder and rem. Connector in place.
- SPEED READ** Yoder, M.
Drill to increase your reading speed.
- SPEEDREAD 2** Rugg, T.
Helps students to improve ability to recognize printed phrases quickly.
- SPELL**
- SPELL ERRORS 3**
Student must find misspelled word in list and then type its correct spelling.
- SPELL ERRORS 4**
Student must find misspelled word in list and then type its correct spelling.
- SPELL ERRORS 5**
Student must find misspelled word in list and then type its correct spelling.
- SPELL ERRORS 6**
Student must find misspelled word in list and then type its correct spelling.
- SPELL ERRORS 7**
Student must find misspelled word in lists and then type its correct spelling.
- SPELL ERRORS 8**
Student must find misspelled word in the lists and then type its correct spelling.
- SPELLING**
A word is flashed on the screen and the student is required to correctly spell it and type it in.
- SPELLING** Walsh, B.
The user enters a number of words which the computer uses to aid in a spelling drill.
- SPELLING 3 MEANI**
This is a multiple choice test, testing grade 3 vocabulary.
- SPELLING 4 MEANI**
This is a multiple choice test, testing grade 4 vocabulary.
- SPELLING BEE** Cochran, & C.
The student is shown a word for a fraction of a second and must then type it in correctly.
- SPELLING BY PET**
Type in the words that you need help in spelling and the computer will test you on them.
- SPELLING DRILL** Cooper, D. S.
Computer misspells words. User must spell the words correctly.
- SPELLING TEST**
This program allows you to create and use a file of words for testing vocabulary and spelling.
- SPELLING TUTOR**
Teacher or student types in words. Computer drills by reversing letters, omitting letters, etc.
- SPELLING(3)**
A good spelling program tutor and drill.
- SPELUNKER**
- STORY PROBLEMS** Flee
Student inputs favorite animals, foods and friends, which are incorporated into arithmetic problems.
- SWAP NEW ROM** Lewis, J.
Exchange words on a list until they are arranged alphabetically.
- SWAP OLD ROM** Lewis, J.
Student must swap word positions on a list until the words are arranged alphabetically.
- SYMBOL** Mcguire, P.
This is a reading readiness visual discrimination game, using alphabet letters, symbols, or both.
- T-HYPHEN** Braun AND COMITO
This program creates test to be used with shyphen.
- T-PUNC** Comito, J.
This program creates a list of sentences to be used with spunc.

T-SPELL Cornito, J.
Creates file for testing with sspell. Need a tape.

TACHISTOSCOPE Rugg, TOM
Increasing reading speed by flashing short phrases on the screen for measured length of time.

THE WORD MARKET Barnes, D.
Spelling a word correctly will get you a reward.

UNIT 5A
This program prints part of a poem for the student to analyze. Unit 5b prints the second part.

UNIT 5B
This program prints part of a poem for the student to analyze. Unit 5a prints the first part.

VOWEL MAGIC Burt, J.

A game in which the student types a word and then must tell the computer the number of vowels in it.

VOWELCONC

WORD
Word guessing game.

WORD DEMO Zinn K.

WORD HUNT Schreiber, L.
The student is given clues and must identify the mystery word.

WORD LADDER Finzer, B.
User changes one letter at a time to move from the original given word to the target word assigned.

WORD MACHINE Batcher, B.
Student must recognize the same word properly spelled as it goes across the screen and 'grab' it.

WORD PROCESSOR Richter M.
User can edit text, input from tape, output to tape, print the output, read to screen or write new material

WORD SEARCH
Program contains word search puzzles like anagrams, some constructed by player. Needs a printer.

WORDPREFIX

Catalogue Francais

FRENCH SENTENCES

Sentences given in french and blanks are to be filled in with verbs by the student.

FRENCH VERBS

Games Catalogue

1000 MILES Covitz F.H.
This program is a version of the french card game 'mille bornes'. Object is to reach 1000 miles.

12 INCH INVADERS
Space invaders game adapted for 12 inch screen. Soundeffects can be used, but are not necessary.

200BLACKJACK

3D TIC-TAC-TOE Buckeye, D.
Threedimensional tictactoe.

8-QUEEN. SOLN. Smith, T.
This program provides solutions to the chess related puzzle called 'eight queens.'

A BLOCKS

A-MAZING
User inputs dimensions and the pet constructs a maze.

ABACUS
User must guess how long it will take before all the beads are on the right side of the abacus.

ABSTRACT

ACROBAT 4.0 Commodore JAPAN
User must move the acrobats' springboard properly so that they can reach the balloons and score points.

ADVENTURE GAME Bonnycastle, M.
User is supposedly in a set of caves and must try various directions to get to the treasure.

AFO WITH SOUND

User must try to hit the 'afo' with the balloon. 'afo' shoots back. Same game as 'afo', but with sound.

ANIMAL

User thinks of an animal and the computer attempts to guess it.

ANTI-AIRCRAFT Dien J.

ARROW ! Butterfield, J.

A simulation game in which you guide the 'snake'. Try not to hit boundaries. Hit the boxes i.E. Targets.

ARTILLERY Jessee, J.

Two players shoot at each other across a mountain, by entering the angle to fire and no. Of bags of powder

ATARI II Cannata, J.

The object is to destroy as many spaceships as possible.

AWARI

AWARI 2 Jessee, J.

A computer game.

BACKGAMMON

Simulates a game of backgammon.

BAGELS Mills, VINCE

User tries to guess a 3digit number. Computer gives hints re:correct/incorrect digit or position.

BATNUM Cox J.

A numbers battle. Player and computer take turns subtracting 17 from a number; last one to move loses.

BATTLESHIP Butterfield, J.

User plays against computer. Each has 5 invisible ships on the grid. Winner sinks other's ships first.

BATTLESHIP.ALT2 Richter, M.

Game played on grid. Player tries to guess location of computer's battleships and destroy them.

BETWEEN Drake R.

Player sets upper and lower numerical limits; pet chooses a number between them that must be guessed.

BIOCOMPATIBILITY Cannata, J.

User inputs birthdate of 2 people and the computer tells physical,emotional,intellectual compatibility.

BIORHYTHM Ngan C.

Program gives a graphic illustration of player's physical/emotional/intellectual level for any month & year

BLACKJACK

This program simulates a card game of blackjack.

BLACKJACK 2 Butterfield, J.

Another simulation of blackjack, except in this one the dealer drinks, makes amusing comments, etc.

BLACKJACK JB Butterfield J.

A game of blackjack with the pet as dealer.

BLKJACK

Blackjack game with graphic illustrations of the cards which are dealt to the player.

BOMBER

A simulation game in which the player uses keyboard controls to shoot down bombers.

BOMBER.ALT**BOWLING**

Good simulation of bowling, but players do not have keyboard control. Scores are result of chance not skill.

BOWLING AVERAGES Farquharson D.

Computes bowling averages.

BOWLING.ALT!**BRAIN STRAIN**

The object of the game is to get 8 white squares surrounding one black one.

BREAKOUT Butterfield, J.

A simulation game like handball. User moves paddle to deflect ball into targets.

BREAKOUT 4.0

A simulation game like handball, in which user hits targets.

BRIDGE Duisman, G.

Game that simulates card game of bridge.

C.C.STARWAR

C.C.STARWAR.INS Ronayne T.N.

CHASE Sommers, C.

User must try to escape from the security robots. Four levels of difficulty.

CIVIL BATTLES

Civil war simulation. Player responds to computer questions and tries to win as many battles as possible.

CIVIL WAR

A civil war simulation. Object is to win as many battles as possible. Facts & figures historically based.

CLUE

Carlson, R.

A detective game in which the player must investigate and solve a murder case.

CONCENTRATION

Alpert, M.

The object of this challenging memory game is to find pairs of matching patterns under the numbered squares

CRACK THE SAFE

Mark & Jeff

The object of the game is to crack the safe, by typing in 4 numbers in the correct sequence.

CRAPS

This program is a simulation of the dice rolling game called 'shooting craps.'

CRYPTOGRAM AID

Butterfield, J.

This program helps you to solve simple substitution cryptograms. However, user inputs cryptograms.

CYCLON BATTLE

Player attempts to get cyclon fighters in his sights and shoot them down.

DAM BUSTER

Williams, E. :

User must try to bust the dam with bombs, and avoid enemy fire. (speed of aircraft not adjustable.)

DARTH VADER PIC

Holt, R.

This program simply projects a picture of darth vader on the screen or makes a picture printout of him.

DARTH.VADER.PIC

Holt R. JR.

DEFLECTION

Dunlap, F.

The object of the game is to deflect the balls into the targets.

DEPTH CHARGE

Morley K.

DICTATOR

Player is dictator of foreign country and must manage the affairs of state. Can be good or bad dictator.

DOG STAR ADVEN.

Miklus, L.

An adventure game in which the player must go on a mission. Player gives the 'pet' 1 or 2 word commands.

DOG.STAR.ADVEN

Miklus L.

DOMINOES

Richter, M.

A simulation of the game of dominoes, in which player vs computer. Three levels of difficulty

DONUTS**DRAGON ISLAND**

Hutchinson, W.

You must hunt the dragon in his 10 caves, by choosing the correct cave into which to throw your spear.

DRAGON MAZE

A maze is created and then made invisible. The player must get out of the maze using keyboard controls.

DRAGON.MAZE**DRAW POKER**

Howe, D.

This program simulates a game of draw poker.

DRAW POKER

Wuchter, E.

A simulation of the card game of 'draw poker'.

DRAW.POKER

Wuchter E.

DRAWCAV

A maze game.

DUCKSHOOT

User must shoot as many ducks as possible. Rifle is fired by pressing letter 'f' on keyboard.

DUNGEON 1.4

Pimper J.

DUNGEON ADVEN.

Pimper, J.

An adventure game in which the player must find his way out of the dungeon.

FAWLTY TOWERS

User must search through the rooms at 'fawly towers' to find the body.

FISHING

Stewart, M.

Player aims to hit the fish in the eye with the spear primary children are able to play as well as older.

FLEA RACE Johnson, J.K.
Players place bets on fleas in flea race.

FLIGHT SIMULATOR Panofsky, J.
Program simulates an air flight. The object is to take off, make a turn and land safely.

FOOTBALL! Leabo, P.
Simulation game of football. Can be used with sound if desired.

FOREST FIRE
The object of this game is to put out a forest fire on the grid, using chemical or backfire methods.

FOX AND HOUNDS
Player represents hounds and computer represents fox. Hounds must trap the fox. Involves checkerlike moves

FROG RACE
User bets on frog races.

GEOGRAPHY Gamble, A.
Name a geographical location whose first letter is the same as the last letter of the word before.

GOLIWOG Cox J.
Player attempts to locate the goliwog which is hiding in a coordinate grid. Ten guesses are allowed.

GRIBBET Finzer, B.
User tries to catch the invisible gribbet by moving the cursor. Cursor flashes quickly when user is close

GRUNGY TOWERS Butterfield, J.
A murder has been committed at grungy towers. You must discover who the murderer is.

GUNNER 1(E) Cox J.

GUNNER 2(E) Cox J.

GUNNER 3(E) Cox J.

GUNNER RETRIEVAL Cox J.

HAMLET
Player tries to outflank computer's pieces on a 8 x 8 board and capture as many of them as possible.

HAMMURABI Gamble, A.
User is king hammurabi and must make decisions re: the welfare of the people of the kingdom.

HAMURABI2 John

HANG MAN
Traditional wordguessing game. Ten guesses are allowed before 'hanging'.

HANGMAN Toy R.
Traditional wordguessing game. Ten wrong guesses allowed before player is 'hanged'.

HANGMAN 2 Sommers C.
Traditional wordguessing game. Choice of five categories before 'hanging'.

HARD INVADERS Stewart, M.
A harder version of the simulation space game called 'space invaders'.

HELLO Holt R.
The computer has a conversation with the user re: problems concerning money, job, health and sex.

HEXAPAWN
Object of game is to move a pawn to the other side of the board or to block all the computer's moves.

HI-Q Lund, C.
Simulation of the game hiq. Object is to remove as many pegs as possible by jumping into empty holes.

HORSE RACE
User can bet on the horse races.

HOUSE OF 7 GABLE Hassett, G.
Player gets trapped inside house with 7 gables, and must get out. Directions are not at all clear!

IN-BETWEEN
Player bets according to whether or not he feels a third card's value is between that of two dealt faceup.

IN-ORDER Buckeye D.
Pet thinks of a 3digit number and player tries to guess it with the aid of clues supplied by the computer.

INSULT
A list of wacky insults.

INVADER II
Space invaders game, with sound.

INVADER III

Space invaders game, with sound.

INVADERS**INVISIBLE MAZE** Butterfield, J.

User must find way through maze. When user bumps into a wall, it becomes visible but points are lost.

JOTTO Stovel L.

Pet thinks of a word and player must guess it. Computer tells how many letters are correct in each guess.

JOTTO JB Butterfield J.

Player tries to guess computer's 5letter word. Pet tells number of correct letters ('jots') in each guess.

JULIAN CALENDER Rossum J.

Program generates calendar for any month since the birth of christ, given the four digits of desired year.

KENO

Game of chance. User picks up to 15 numbers. Computer picks 20 numbers. Matching numbers are user's wins.

KENTUCKY DERBY Baker J.**KING****KINGDOM/PICS**

As ruler of the picture kingdom, player is faced with various economic decisions.

KLINGON CAPTURE Turner M.**LABYRINTH****LAST BOTTLECAP** Buckeye, D.

Player takes turns with computer at taking bottle caps. Object of game is not to take last bottle cap.

LEMONADE

Player runs a lemonade stand, setting prices and managing assets in order to buy supplies and signs.

LETTER 15 Richter, M.

The object is to move the letters into ascending or descending order by sliding them across or down.

LETTER.15 Richter M.**LIFE II** Finzer B.**LOST DUTCH GOLD**

Player is to search for lost gold. The directions to this game are not made clear to the user.

LUNAR LANDER Freeman, R.

The object is to land on the surface of the moon with the lowest possible velocity.

LUNAR LANDER III

Simulation of a spaceship landing on the moon. Player must control thrust and therefore velocity, fuel, etc.

M.B.INSTRUCTIONS Cobitz F.H.**MADLIB** Zinn, D.

Student supplies the computer with nouns, adjectives, verbs, and the computer makes up a story.

MAGIC SQUARE

Object of the game is to light up all the squares in a 9square block, except the middle one.

MAGIC.SQUARE Cobitz F.H.

Simulation of the game 'mastermind.' a five colour code is created that the player must guess.

MASTERMIND ALT! Arsenault, H.H.

Player has choice of making or breaking a 5colour code. Program can be used with sound if desired.

MASTERMIND.ALT! Arsenault H.H.**MATCHES** Mills, V.

Player and computer take turns removing matches from the pile. Person left with last match loses game.

MAZE Butterfield, J.

This program creates small, medium, or large mazes. User can watch it being constructed if desired.

METEOR Finzer, B.

User must watch for falling stars and press any key as soon as possible. Computer records reaction time.

MIMIC

Player must repeat the sequence in which pictures were displayed. Choice of 5 levels of difficulty.

MISSION IMPOSSIB

Walker must get safely to the money (wallets), as bombs drop. Game also known as 'saifu hiroi'.

MOUSEMAZE

User must move the mouse (symbol) through the maze to reach the piece of cheese.

MUGWUMP

The mugwump is hiding on a coordinate grid and the player gets 10 guesses to try and locate him.

MULTI-LANDER

The player must successfully land a spacecraft on one of four planets.

NERVES

This is a simple game that tests the user's ability to judge short intervals of time.

NIM

Butterfield, J.

User picks sticks from different piles. Play against computer. One who gets last stick wins.

NUMBER-TOE

Suid & GUTIERREZ

A tictactoe number game. Object is to make 2 numbers add up to the third in a row, column or diagonal.

O'HARE'S #1

O'hare, J.

Program takes the player on an adventure.

O.S.U. VS U.O.F M

Buckeye, D.

A game of football for two teams. Information re:plays is input by players. No keyboard controlled graphics

OBJECT

Rothman J.

Program tests ability to identify shapes in groups.

OHARE'S #2

O'hare J.

An adventure program. Player searches for lost treasure in the great pyramid.

OSERO

User tries to place pieces so that they outflank the computer's, creating a horizontal, vertical,(etc.)run

OTHELLO

Mendenhall, J.

This is a game in which you try to capture your opponents tokens, by enclosing them.

OTHELLO FOR TWO

Buckeye, D.

Game in which you try to capture your opponent's tokens by enclosing them. Requires 2 players.

PET DRAWING PRG.

Player can use numbers on keyboard to draw pictures.

PETALS AND ROSE

A dice throwing game.

PICTURE KINGDOM Cue LIBRARY

User is ruler of a kingdom and must make decisions regarding agriculture, welfare of people, etc.

PIGS

Wakely, W.

User must try to move pigs to the other row. User discovers rules as he attempt to move each pig.

PINBALL

Jaeger B.

A typical pinball game, complete with sound.

PIRATE ADVENTURE Adams S.**PLANET PROBE**

User must try to fly spaceship close enough to planet to get good picture without being pulled by gravity.

POSTAL ROUTES

Finzer, B.

Program simulates the job of a mail carrier. User must cover all streets without repeating any.(puzzle)

PPONG

Rowe, P.

A variation of the game 'deflection'. User must press keys to deflect balls to hit targets.

PREMIER

As premier of a small island the player must make decisions re:agriculture, industry, tourism, etc.

PRISONER'S DIL.

Nda

RACETRACK

A race car driving game. User uses the cursor control to move around.

RAGING ROBOTS

Player must escape from raging robots using keyboard controls. Cb2 sound, if desired.

RALLY

Player pretends to be driving in the road race. Player must input information re: acceleration.

REACT

Gauges player's reaction time to appearance of a '*' on screen. Random spacing and/or placement option.

REAL TIME SNAP

Computer draws 2 cards. If they match, user must press any key fast enough to beat computer.

RETURN

Finkel, A.

User hits 'return' key as fast as possible. Computer tallies score after each round.

REVERSE

To win, player must arrange a list of numbers in numerical order from left to right by reversing them.

REVERSE2

To win, player must rearrange a random sequence of 9 numbers by reversing them in groups from one end.

ROAD

Race track game for 1 or 2 players. Track may be altered before race; players control vehicle acceleration.

ROADRACE

Player attempts to negotiate track without hitting anywalls. Rate of speed is variable.

ROADRACE!

Same as 'roadrace', except with sound. Try to negotiate the racetrack without hitting the walls.

ROBOT

Player must avoid electrified posts and guard robots in a compound bordered by an electric fence.

ROTATE

Object of the game is to order the letters on a board by rotating any four letters clockwise one position.

ROULETTE

Jeffrey, N. J.

Simulates a game of roulette. Advanced junior grade students may be able to play this game.

SAFE

Mark & JEFF

Player attempts to 'crack the safe' by guessing the correct 4number sequence.

SAIFU HIROI

Walker must get safely to the money (wallets) , as the bombs drop.Game also known as 'mission impossible

SCRAMBLE

User types in sentences. They will appear scrambled. After last line,letters will unscramble themselves.

SEABATTLE**SEABATTLE INST.****SIMON!**

When 'simon' sounds a tone, user presses the corresponding number key; then 3 or 4 in sequence.

SLOT MACHINE

This program simulates playing a slot machine.

SMOG SIMULATION

User specifies certain conditions for a model city. Excars per mile. Computer prints smog patterns.

SNAKE

Rowe, P.

Player controls the movement of his snake, making sure that it does not run into walls or other snake.

SNAKE ALT.

Rowe, P.

Player controls movement of snake.Same as game 'snake'but with option of using blasters.

SNAKEALT

Rowe P.

SNAKES

Program draws 2 'snakes', their size and speed determined by the player.

SNARK

Mills, V.

The snark is hiding somewhere under the grid. The user's job is to pinpoint its exact location.

SPACE INVADERS 4

User tries to destroy alien spaceships. Sound effects can be used with game, but are not necessary.

SPACE PILOT

Player attempts to destroy arms warehouses of an evil magician by means of aerial bombardment.

SPACE RACE**SPACE SHOOTER**

Howe D.

Another space fighter game, in which the player manoeuvres the enemy into his sights before firing.

SPACE WEIGHTS

Walters G.

Gives personal weight, jumping ability and distance a ball be thrown on planet of player's choice.

SPACESHIP Cannata J.

SPACEWAR PART 1 Ronayne, T.N.
Player must read alot of information and give instructions. Player is the pilot of the millenium falcon.

SPACEWAR PART 2
A spacewar game in which the player can battle with computer. User inputs commands.(no space grahics)

STAR TREK Butterfield, J.
A space game in which computer assigns a mission for the user.

STAR TREK 2 Butterfield, J.
A simulation game in which the computer assigns a space mission to the user.

STAR TREK IV Chambers F.
Player directs 'enterprise' to pursue & attack klingons by using various commands. (see 'star trek rules'.)

STAR TREK RULES Chambers F.
Instructions for 'star trek iv'.

STAR WARS Butterfield, JIM
Player must destroy as many of the enemy fighters as possible. This game has three levels.

STARFORCE/80
Nda

STARS

STARTREKALT1

STATES/CAPITALS
Match up proper states and capitals. Two types of questions available: multiple choice & fillintheblanks

STOCK
A game in which one or more players must buy and sell stock in silver, grain, oil, gold, bonds, etc.

STOCK 80 COL
A game in which one or more players must buy and sell stock in silver, grain, oil, gold, bonds, etc.

SUBMARINE
The object of the game is to torpedo as many ships as possible.

SUPERLANDER Laws K.

SUPERMASTERMIND
A 5digit number code is created that the player must guess.

SWAT
Player directs a moving point about the screen, trying to get get close enough to a '*' to swat it.

TEASER Cox J.
Player attempts to rearrange a group of 1's and 0's so that the middle position is a 0 and the rest 1's.

TIC TAC TOE
Another version of tictactoe.

TIC TAC TOE 3D
A more challenging tictactoe game, with three levels of difficulty.

TIC-TAC-TOE
A simple tictactoe game.

TORPEDO Briggs J.
Player is pilot of a b29 submarine hunter and must bomb the submarines in the water below.

TORPEDO.BOMBER Briggs J.

TOWER OF HANOI Buckeye, D.
Object of game is to move rings from the first pole to the second or third, according to the rules.

TRIAL
Accused challenges members of jury on basis of background data. Jury makeup, 1st vote & final verdict given

WAREHOUSE Castlewitz, D.
As supervisor, the player must manage the filling of orders,storing shipments, etc.

WEIGH
The challenge is to find the odd cube out of 12 in only three weighings on a balance scale.

WESTWARD HO
Prepare budget for provisions for pioneer trip west Take trip and cope with situations that arise.

WILL O' WISP Capella M.

WORD MACHINE Batcher B.
Word recognition game for primary. Assumes adult supervision.

WORLD CONQUEST

Player tries to conquer 10 countries by various manoeuvres and defense tactics.

WUMPUS 20

Yob G.

Player hunts the wumpus through a series of imaginary tunnels and rooms, while avoiding various hazards.

YAHTZEE

Rowe, P.

A dice rolling game in which the object is to get as many points as possible.

YELLOW LIGHT

Reese P.

Game tests player's reaction time to a yellow traffic light.

ZONE X

Finzer, B.

A plotting game. Computer draws two invisible lines on the grid. Student uses clues to find intersection.

DISTANCE CALCUL. Butterfield, J.

This program calculates airline distances from input of latitude and longitude of locations.

GEOG

Roulet G.

MAP

Drill on the capital cities of the u.S.A. A map with the state flashing is shown as questions are asked.

MILEAGE

Butterfield J.

STATE & CAPITAL Alverson D.**STATES & REGIONS****STATES& CAPITALS** Cue LIBRARY

User must match up states and capitals. Multiple choice questions or fill in the blanks.

U.S. CAPITALS

Cooper D.

Drill on capitals of the states in the u.S.A.

Geography Catalogue**AFRICAN CAPITALS** Cooper D.

Drill on the capital cities of countries in africa.

ASIAN CAPITALS Cooper D.

Drill on the capital cities of the countries in asia.

C-C'S AUST & AME Cooper D.

Drill on the capital cities of the countries in south america, central america and the states of australia.

C-C'S CAN & EUR Cooper D.

Program drills students on the capital cities of the provinces of canada and the countries of europe.

CAPITAL CITIES Cooper D.

Drill on capital cities. Choice of countries. Could be used for j grades, but is mainly for i and s grades.

CAPITALS**CAPITALS**

Drill on world capital cities.

History Catalogue**ELECTION**

Simulates results of 19th century american elections based on strategy input.

PRESIDENT'S QUIZ Downer J.

Drills students on u.S. Presidents by their term of office.

Language Catalogue**AFO****BILINGUAL SPELL** Hosmon J**FINGERSPELLING** Rothman J**LATIN 1**

Drills latin words. Student has choice of latin to english or english to latin.

LATIN 2
This program drills latin words. Student has choice of latin to english or english to latin.

LATIN 3

VOCABULARY Lumpkin, E.
Program is a review of common latin words. Can be adapted for any language, by changing data lines.

Man is Society Catalogue

EXPECTANCY Gamble A.

KINGDOM

LISTENER

Mathematics Catalogue

'PERCENT' DRILL Cooper D.
Drills decimal and percent conversions.

+,-,*/FRACTIONS Hungate, H.
Sets of 10 problems in +,*,/,fractions at choice of difficulty level.

12-CUBES
Simulation involving balance scale. Find the cube of different weight using only three weighings.

ADD & SUB Samorodny, M.
Teaches student how to add and subtract integers.

ADD FAST Dunlap F.
Student must add 2 place problems, sometimes regrouping mentally.

ADDITION Mac NAUGHTON J.
This exercise gives a series of questions which are done right to left.

ADDITION GAME Dunlap F.
The student is given addition problems. There are five levels of difficulty.

ADDITION OF INT. Dancy, N.
The primary student is given some addition problems involving both positive and negative numbers.

ALGEBRAIC INPUT Whitewood, J.
Input any expression and the value of each variable. This program will solve the expression.

ALGEBRAIC VECTOR Cooper, D. S.
Drill: dot products, cross products, addition, subtraction, scalar mult, triple products, area of a triangle.

AMORT/N TABLES
The user inputs information regarding a loan and the amortization table is output.

AMORTIZATION HEL Drake, R.
Amortization table calculator.

ANALYSIS
The student enters a number of points and then may choose to differentiate or integrate using them.

ANDROID NIM
This is a variation of nim. The last player to execute an android wins.

ANKOVA Berger C.

ANOVA Berger C.

ARITHMETIC
Drill in addition, subtraction, & multiplication
Student has choice of three levels of difficulty.

ARITHMETIC Mallon, M.
The student chooses questions on +,*,/. He also inputs how large the numbers are to be.

ASIN BX+CCOS DX Hayhoe, D.
The student inputs a,b,c,d and this program draws the corresponding graph.

ATTRIBUTE BLOCKS
An attribute block game. The format of this program makes its operation much too difficult for primary.

BAGELS Lewis, J.
Student logically guesses at 3digit numbers using word clues.

BAIRSTOW NTH EQS Hawes, W.
Solves n'th order polynomials.

BASEBALL MATH
Math drill.

- BASIC STATISTICS** Wink, R. D.
Solves standard error, mean, and standard deviation.
- BEADS** Gamble, A.
Simulates sampling from a binomial distribution. This prg. Has been revised to 'beads in a jar.'
- BEADS IN A JAR** Gamble, A.
This program simulates sampling from a binomial distribution using beads.
- BEST FIT (LEAST)**
Computes linear least square fit.
- BETWEEN** Drake, R.
Try to guess a number between two others.
- BIG ADD** Mac NAUGHTON, R.
This program drills addition using large graphic numbers.
- BIG BINARY** Drake, R.
Shows graphic conversions from decimal to binary. Good start for binary theory.
- BIG DIVIDE** Mac NAUGHTON, R.
This program drills division using large graphic numbers.
- BIG MATH** Lynn R.
Student has choice of operations (+,*,/,) and works 5 problems. Upper case letters required.
- BIG MULTIPLY** Mac NAUGHTON, R.
This program drills multiplication using large graphic numbers.
- BIG SUBTRACT** Mac NAUGHTON, R.
This program drills subtraction using large graphic numbers.
- BINARY**
This program presents binary numbers which the student converts to decimal .
- BINARY MULT.** Nicholson, J.B.
This program teaches the student the foil method of multiplying binomials.
- BINARY SQUARE** Nicholson, J.B.
This program explains the squaring of binomials and gives the student some practice questions.
- BONDS** Drake, ROBERT
Savings bond present value calculator.
- BOWLING AVERAGES** Farquharson, D.
A program that teaches how to find averages.
- BOYLE'S LAW** Mac NAUGHTON, R.
This program illustrates boyle's law using a piston and varying gas pressure.
- BUGGY** Finzer, B.
Practice in debugging errors in computer generated math problems.
- CAI PROJECTILE** Rosen, A. I.
Projectile motion analysis.
- CASH REGISTER** Victor J.
User counts out correct change after a purchase.
- CENTRAL CONICS** Cooper, D. S.
Conic math and geometry drill.
- CHANGE**
The student purchases items from the computer and it gives back change.
- CHANGE MAKER** Walters, G. M.
Program simulates buying items in store. Computer totals , adds sales tax and shows how to make change.
- CHART 100**
Counting charts. A program to display 4 variations of the arrangement of the numerals 0 to 100, or 1 to 10
- CHEMIST** Contreras, V.
Practice in doing the equivalent fractions involved in ratio questions.(simulated chemistry experiment.)
- CHOICES** Tattersall, P.
Calculates the number of choices resulting from a selection of distinguishable balls from a bag.
- CLOCK (MATH)**
- COFFEE**
- COLLECT TERMS** Nicholson, J.B.
This is an exercise in collecting like terms. There are three levels of difficulty.
- COLLECT TERMS II** Nicholson, J.B.
This is an exercise in collecting like terms. The variables are degree greater than three.
- COMBINATION WARS** Guttebo G.
Student tries to beat alien enemy by answering multiplication facts. Needs forty column screen.

- COMPARE** Finzer, B.
Draws zigzag line representing the first and then the second of two numbers, comparing the two sizes.
- COMPUTER DESIGNS**
The student chooses computer generated designs. There are 16 design equations to choose from.
- COUNT ONE TO ONE** Moont S.
- COUNT TEN S/C**
The numbers 110 are displayed with the corresponding number of objects.
- COUNTDOWN**
Defuse the bomb by typing in the correct number between 1 and 10. A hint is given after each guess.
- COUNTER**
- COUNTFIVE** Moont S.
Type a numeral from 1 to 5 and the numeral and a corresponding number of objects will appear.
- COUNTING** Finzer, B.
Computer acts as a counting machine.
- CURVE-FIT** Wong, H.
This program demonstrates curve fitting by the least squares method.
- CURVE-FIT 2** Wong, H.
Merge of curvefit and numint.(estimation of a function, plotting functions,integral of a function, etc.)
- DART** Compton, B.
Checks speed & accuracy at +,*,/. Scores on a dart board. For one or two players.
- DART 2** Compton, B.
Upgraded version of dart. Game involving four basic arithmetic operations+,-,x,./.
- DAY OF THE WEEK** Ailles, D.
Type in any date and this program will state on which day of the week it falls.
- DECIMAL DIVISION** Cue LIBRARY
Checks student answers for problems in division with decimals. Can be used by most levels.
- DECIMALS**
This program teaches how fractions can be shown in decimal form . Explains place value in decimals.
- DECIMALS** Cooper, D. S.
Drill on decimals addition, subtraction,multiplicaion and division.
- DECOMPOSITION** Nicholson, J.B.
This program teaches the student to factor by decomposition and also gives some practice questions.
- DEFUSE**
There's a bomb in a 100 x 100 x 100 room building. You must find it to defuse it. Clues are given.
- DERIV POLY** Mac NAUGHTON, P.
The user inputs a polynomial and x value, and the pet solves the equation for that value.
- DERIVATIVE** Downer J.
This program gives the derivative of a formula which you insert in line 1000 of the program.
- DICE MATH** Finzer B.
- DICE PIG** Downer J.
A dice game played against the computer. The object of the game is to get 100 points from rolling the dice.
- DICE THROW** Finzer, BILL
Program keeps track of the sums of dice in graph form.
- DIFF 1**
This program solves first order equations of type: $dy/dx = 0$
- DIFF 2**
This program solves second order equations of type: $a * (d^2y/dx^2) + b * (dy/dx) + y = c$
- DIFF 3**
This program solves third order equations of type: $a*(d^3y/dx^3)+ b*(d^2y/dx^2)+ c*(dy/dx)+ d*y+c = 0$
- DIV DRILL 2** Mc GUIRE, P.
A drill of all the division tables from 1 to 12.
- DIVIDE**
This program teaches the process of long division step by step.
- DIVIS-POST TEST** Hughes & ISAACSON
Test on division.
- DIVISION** Cooper, D. S.
Simulated long division of whole numbers. Answers may or may not have remainders.

- DIVISION DRILL**
Division drill with choice of number of digits in divisor from 1 to 3.
- DIVISION DRILL** Fisher G.
Drill on simple division facts.
- DIVISION-DRILL** Hughes & ISAACSON
Drill on division.
- DIVISION-PRETEST** Hughes & ISAACSON
Test on division.
- DRILL** Contreras V.
Choice of +, *, /, problems with simple one and two digit numbers.
- DRILLS**
- DRUNKARD** Gamble, A.
This program simulates a drunkard's walk to introduce students to random movement.
- EQUATIONS** Anderson, C. G.
A tutorial type program in which the user must determine the value for x that makes the equation true.
- EQUATIONS** Langford, G.
Instructions on the various techniques used to solve equations.
- EQUATIONS** Mills, V.
Math drill and practice. 40 column screen.
- EXPONENT MULT.** Nicholson, J.B.
The student solves questions involving the multiplication of exponents.
- FACTOR FINDER** Butterfield, J.
This program breaks down any integer (up to 9 digits) into its prime factors.
- FACTOR TRI.** Nicholson, J.B.
This program gives the student practice in factoring trinomials.
- FACTOR/TRIAL** Nicholson, J.B.
Factoring by trial and error is shown. This program may be loaded from tape, but it takes a while to load
- FACTORING DRILL** Cooper, D.S.
Factoring of polynomial equations up to the sixth degree.
- FACTORING WHOLE** Cooper, D. S.
Prime factoring of whole numbers.
- FACTORS**
Players move down a race track at a speed dependent upon their factoring ability.
- FACTORS RACE**
Players move down a race track at a speed dependent upon their factoring ability.
- FDM2** Waley C.
- FIND COLOUR** Madaheim J.
There are four colour areas on a grid. By looking at one point at a time, find the four areas on the screen.
- FINDING PI**
- FISH**
Player tries to estimate the number of trout in each of several lakes by catching, marking & returning fish.
- FLASHCARDS**
- FLIP PROBLEM**
This program does an experiment flipping coins and outputs information concerning it.
- FN MACHINE**
- FOIL PRACTICE** Nicholson, J.B.
This program gives the student questions to solve using the foil method.
- FRACTION DRILL** Cooper, D. S.
Fraction arithmetic drill.
- FRACTION DRILL** Hungate, H.
Students answer +, -, *, / fraction problems with 5 levels of difficulty.
- FRACTION GAME** Johnson, D.
Shoot darts at a target by giving the fraction that best represents the position of target on a scale.
- FRACTION GAME 2** Johnson, D.
A target appears on number line from 0 to 1. Guess the fraction that the target represents.
- FRACTION LINE** Johnston D.
Practice in estimating fractions between 0 and 1.
- FRACTION PRACTIC** Finzer, B.
Math drill and practice.
- FRACTIONS**
Practice in the addition of fractions and whole numbers. Directions on how to answer are not clear.

- FRACTIONS 2** Micro LEARN,WARE
Program shows fractions of wholes, fractions of a number of items and gives problems involving fractions.
- FUNCTION GRAPH**
Draws a graph of any function.
- FUNCTION MACHINE** Rowe, P.
Input a number to the function machine and another is output. Try to discover what function was used.
- FUNCTION MACHINE** Rowe, P.
User inputs number & must deduce what function the machine performed on it, and do likewise to other number
- FUNCTION PLOT**
The student may choose from a number of functions to be graphed. He must also input some specifics.
- FUZZYDECISION** Waley C.
- FWCI INTEGER TTT** Eisler, C.
Tictactoe with addition and subtraction of integers
- GET A NUMBER** Skinner G.
- GRAPH PLOTTER** Wink, R. D.
Plots the graph of a user defined function.
- GRAPH SUBROUTINE** Butterfield, J.
Draws different graphs. Ex: sine wave, circle.
- GRAPH SUBS** Butterfield J.
- GRAPH-IT** Wilkinson, R. M.
Plots different graphs.
- GROSS PAY** Hatton R.
Generates problems with random amounts to provide practice in computing gross pay with overtime.
- GROUP DATA**
- GUESS** Fisher, G.
A game in which you must guess a number between 1 and 100. Clues are given after each guess.
- GUESS A NUMBER** Waslynychuk L.
The pet picks a number and you guess it. The pet tells you whether your guess was too high or too low.
- GUESS MY FRACTION** Finzer, B.
Strategy game in which the player guesses the size of the fraction with hints from the computer.
- GUESS MY MEAN** Finzer, B.
Math strategy b game.
- GUESS-A-GRAF** Yeo, M.
A guessing game.
- GUESS-A-NUMBER** Edwards C.
Guessing game for numbers between 0 and 9.
- GUNNER** Cox J.
- HAMURABI 2** John's WORKSHOP
Player is hamurabi, governor of ancient sumeria, and must make decisions re: agriculture & people's welfare
- HANGMATH** Feldman & RUGG
Guess the digits in a multiplication problem. This program is the math equivalent of hangman.
- HEADSTART**
The student is given one equation and asked what restriction will produce a vertical line.
- HELP!** Resek, D.
Uses inout machine to evaluate algebraic expressions
- HEX DEMO** Drake, R. E.
Converts decimal to hexadecimal.
- HEXDEC** Butterfield, J.
Converts hexadecimal to decimal and vice versa.
- HI-CALC** Comito, J.
Given algebraic expressions, must find missing coefficients.
- HI-LO** Contreras V.
Computer guesses number between 1 and 1,000,000.
- HIST** Columbia COLLEGE
Draws histograms .
- HISTO**
- HISTOGRAM** Mac NAUGHTON, R.
This program will create a histogram as specified by the user.

- HOW MANY** De JONGHE, M.
Student counts 1 to 10 squares that are displayed on the screen.
- HOW MANY BOXES** De JONGHE, M.
Count the boxes from 1 12. Need 40 column screen and upper case letters.
- HURKLE** Comito, J.
Game must find hurkle on a 9x9 grid.
- I.Q. 104** M. D. & C. C.
Tests multiplication skills. (incomplete)
- INT. LINES** Chong, L.
The student inputs the coefficients of two equations and the program gives their point of intersection.
- INTEGER ADDITION**
- INTEGER ARITH.** Nicholson, J. B.
The student does simple +, -, *, / problems. This program can be loaded from tape but it takes a while.
- INTEGER PYRAMID** Brett, P.
Build a pyramid by answering simple addition and subtraction questions correctly.
- INTEGERS** Cooper, D. S.
Integer math drill. Optional difficulty levels.
- INTERMOD** Stinson W.
This program calculates im products for all combinations of frequency you wish.
- JOHN GRAPH** Follen, J.
Shows how screen density can be increased by using quarter squares and * to produce good sine waves, etc
- LASER GALLERY**
User locks laser gun on target by correctly estimating its numerical position between two given figures.
- LATIN SQUARES** Downer J.
This program gives an analysis of variance in graecolatin squares design.
- LIMIT OF SERIES**
- LIMITS-SHEPHERD** Shepherd, B.
The student practices limits of sequences.
- LIN-PRO** Wink, R. D.
2dimensional linear solutions program.
- LINEAR EQUATIONS** Hatton, R.
Plots linear equations. $Ax+by=c$
- LINEAR SYSTEMS** Cooper, D. S.
Solve linear systems. 1 to 9 variables.
- LISSAJOUS** Gamble, A.
Draws lissajous figures (slowly).
- LONG DIVISION** Lichten, E.
Teaches division using the long division technique.
- LOOPS** Wilson J.
The student types in any number >4 and the pet shows how it will eventually get into a 421 loop.
- LUNAR LANDER**
- MARBLESTAT** Oglesby, M.
Drops marbles into slots. Player selects number of slots and displays results as a bar graph.
- MAT 250 MLA** Cooper, D. S.
Drill in straight line analytic geometry.
- MATCH THE NUMBER** Tubbs, P.
Match the numbers to the number of objects displayed. Upper case letters required.
- MATH DICE**
Students count the dots on dice and adds them to give correct response. Upper case letters required.
- MATH DRILL** Anderson, W.
Drill on addition, subtraction, multiplication, and division.
- MATH FACTS DRILL** Cue LIBRARY
Drill on math facts. User selects operation +, -, *, /. Upper case letters required.
- MATH QUIZ** Erlewine, S.
Test on addition and subtraction.
- MATH QUIZ** Strasma J.
Quiz of variable difficulty on addition, subtraction, or multiplication.
- MATH TEST** Donahue, M.
Timed drill with sets of ten problems +, -, *, /, or any combination of these.
- MATH TEST** Donahue, M.
Test with +, -, *, /.
- MATH TUTOR**
Simple questions on addition, subtraction, multiplication and division.

MATHPACK

Computer performs different math functions.

MATRIX I

This program allows the student to experiment and to learn matrix math.

MATRIX II

This program continues the work on matrix math started in matrix I.

MATRIX SOLUTION Whitewood, J.

Using matrix to solve linear equations.

MAZE GENERATOR

This program prints a different maze, with only one path through, every time it runs.

MECHANICS Cooper, D. S.

Drill on velocity, acceleration, etc. For time displacement equations.

METCONV Saeed

This program helps the student convert metric to nonmetric.

METRIC Whitewood, D.

Drill on the metric system.

METRIC (ECCO) Smythe R.

Drills student in metric conversions (within metric).

METRIC CONVER'TN Butterfield J.

Metric conversions (temperature, length, weight, area and volume) are performed by this program.

METRIC DRILL Wilton J.

This program lets the student try some metric conversions.

MICRO MATH + -

Teaches and drills addition and subtraction of integers.

MICROMATH

Teaches the finding of the coordinates of a point on a cartesian plane.

MISSING NUMBER De JONGHE, M.

Using numerals from 0 to 10. User types in missing number. Upper case letters required.

MIXED NUMBERS Cue LIBRARY

Student adds from 1 to 5 mixed numbers and reduces the fractions.

MLA—ARITHMETIC

Testing adding and subtracting decimals.

MLR**MONOMIAL MULT** Nicholson JR

This is a drill which lets the student multiply monomials. There are 3 levels of difficulty.

MONTECARLO**MORTGAGE** Butterfield, J.

Computes mortgage payments and prints table of payments, interest, etc.

MUGWUMP Parr P. & J.

You must locate the four 'mugwumps' on a coordinate grid. The pet tells you how far off your guess is.

MULT DRILL Fisher, G.

Timed drill on multiplication facts gives score and average time.

MULT DRILL 2 Mc GUIRE, P.

Drill on all the multiplication tables from 1 to 12.

MULTIPLICATION Mac NAUGHTON R.

Multiplication exercise.

MULTIPLICATION Mc ALEER, L.

Drill of multiplication facts.

MULTIPLLOT Wong, H.

Plots up to three functions on the same graph. Very useful to demonstrate summing of functions.

MULTIPLY Macnaughton R.**MULTIPLYING BY 3** Niesen, I.

This program teaches the 3 times table by showing groups of three on the screen.

MYSTERY Butterfield, J.

Gives list of square roots.

NEWTON'S ZERO Downer J.

This program calculates the zero of a function using newton's method.

NG3 Wills, R.

Game against computer to get highest score on a subtraction problem.

NG4 Wills, R.

Game against computer to get lowest score on a subtraction problem.

NG5 Wills, R.

Start with a number of counters. One who takes the last counter wins.

- NICE TRIG RATIOS** Cooper, D. S.
Practice finding exact trig ratios of nice angles.
- NO.RECOGNITION** Cox J.
- NTH-COR**
- NUMBER GAMES**
A series of programs involving the knight's tour, prime numbers, chinese remainder theorem, etc.
- Perfect, fibonacci, square and armstrong numbers are generated.
- NUMBER-TOE** Suid, M.
Mathematical tictactoe game. Two players.
- NUMINT** Wong, H.
Numerical integration by simpson's rule.
- OAIPITEMS**
- OPERATIONS** Mills, V.
Math drill and practice.
- PASCALS TRIANGLE** Tattersall, P.
Displays part of pascal's triangle on the screen.
- PERCENT** Brochmann, H.
Drill on calculating percents.
- PERCENT** Cooper, D. S.
Find percent to decimal, decimal to percent and indirect percentages.
- PERIMETERS**
Drill & practice on the perimeter of rectangles.
- PIZZA** Erlewine, S.
Logic game to teach coordinates and position. Uppercase letters required.
- PIZZA-3** Erlewine, S.
Logic game to teach coordinates and position.
- PLACE VALUE** Micro LEARN.WARE
A tutorial program teaching place valuesones, tens hundreds,and thousands.
- PLANES** Cooper, D. S.
Geometry planes drill.
- PLOT**
Draws graphs of either functions, derivatives or integrals.
- PLOT 1** Mac NAUGHTON, R.
This program plots points using the print statement.
- PLOT 2** Mac NAUGHTON
This program plots points using the poke statement.
- PLOT 3** Mac NAUGHTON, R.
This program plots points using hiresolution pet graphics.
- PLOTTER**
Plotting exercises.
- PLOTTING**
Plotting exercise.
- POINTS** Comito, J.
Drill on graphing points.
- POLAR** Wong, H.
Plots polar coordinate graphs.
- POLY PLOT BASIC** Mac NAUGHTON, R.
The student inputs the roots of a polynomial and this program will draw the curve.
- POLYFIT** Times LIBRARY
Least squares polyfit.
- POLYGON SECTION**
The student inputs the vertices of a polygonal section and the pet gives the properties of that section.
- POTPOURRI** West R.
Student answers several questions dealing with everyday knowledge.
- POWER FACT.**
This program calculates powers and factorials up to 250 digits in length.
- POWERS AND ROOTS** Cooper, D. S.
Find squares, square roots, cubes and cube roots of whole numbers.
- PRESSURE CURVE** Wright J.
This program provides data and draws pressure curves for students to analyze.
- PRIME # SIEVE** Cox J.
- PRIME FACTORS**
- PRIME NUMBER 16K** Whitewood, J.
Computer finds prime numbers.

- PRIMES** Finzer, BILL
Searches for primes, beginning with any number; factors any number.
- PROB/SOLV MATRIX**
Shows how to use a matrix to solve complex problems with many facts. Shows how facts relate to each other.
- PROBABILITY MACH** Comito, J.
Shows probability of marbles dropping into slot.
- PROGRAMMER RPN**
Performs reverse polish notation calculations.
- PROJ-PLOT** Wong, H.
Plots projectile motion.
- QUADRATIC** Downer J.
This program solves a quadratic equation with three variables: a, b, and c.
- QUEUE** Gamble A.
This program simulates queuing, as at a bank that has 5 tellers' windows.
- R-PLOT**
- REDUCING FRACT.** Heinlen, D.
Drill in reducing fractions.
- REDUCTION** White E.
This program demonstrates gaussian reduction.
- RELATION GRAPH**
Graphs simple mathematical relations.
- REMOVE BRACK.** Nicholson, J.B.
The student solves problems in which he must remove the brackets.
- RESULTANT** Gamble, A. > Resolves vectors on a cartesian or polar coordinate grid.
- REVERSE**
Arrange digits 19 in correct order sequence by reversing. 40 column screen.
- ROLLS TIL ONE**
This program rolls six dice and counts how many rolls are made until 'one' appears.
- ROOT FINDER** Dehlawi, F.
Root finding program.
- ROOTS**
This program solves equations by searching for zero values in ranges set by the student.
- SIGNIF DIGITS** Contino, M.
Drill on recognizing number of significant digits in a randomly selected decimal number.
- SIGNIFICANT DIGI** Contino M.
Drills student on recognition of number of significant digits.
- SIMEQ. SOLVER** Conragran, J.
Solves simultaneous equations.
- SIMPLE INTEREST** Twynam, B.
This program gives the student some simple interest problems.
- SIMPLE SUBST.** Nicholson, J.B.
The student solves questions involving simple variable substitution.
- SINE GRAPH** Hamilton, B.
This program will draw sine curves with student input variables.
- SIX DICE**
This program rolls six dice and counts how many times the number one comes up.
- SLOPE AND INT.** Dehn, C. E.
This program presents the student with a number of equations for which he solves slope and intersects.
- SMALL MATH** Whitewood, J.
Drill on addition or subtraction of big or small numbers.
- SNOOPY**
This game drills the student's knowledge of the number line.
- SORT**
- SPHERE GEOMETRY**
This program gives the area of spherical triangles. The student inputs the required variables.
- ST LINE PLOT** Mac NAUGHTON, R.
The student inputs coordinates for a straight line and is given a complete analysis of it.
- STARS**
Player guesses a number from 1 to 100. Computer hints how close the guess is, by number of stars printed.
- STORYMATH** Flee, K.
This program constructs word problems using names, animals and foods which the student inputs.

- STRAIGHT LINE** Cooper, D. S.
Finding distances between lines and points.
- SUBT 1 & 2** Skinner G.
This program tests grade 1 and 2 subtraction facts.
- SUBTRACT NNN-NNN** Batcher B.
- SUBTRACTION** Mac NAUGHTON, R.
Subtraction exercise.
- T-SIG**
- T-TEST**
- TAX** Butterfield J.
- TAX COLLECTOR** Cue LIBRARY
Drill in factoring whole numbers.
- TENS**
Practice with groups of tens and ones.
Concept demonstrated with visual arrays.
- TIC TAC MATH**
Two players take turns solving math problems (+,*) in order to win squares on a tictactoe board.
- TIC TAC MATH**
- TIC-TAC-PET** Comito, J.
Game of tictactoe solving equations in order to get a square.
- TIC-TAC-PET 2** Comito, J.
A tictactoe game. Students must solve an equation in order to win a square.
- TICTACARITH** Comito, J.
This is a version of tictac toe with players having to solve a math problem to win each square.
- TICTACPET!** Comito J.
Player wins each box by solving an equation in the box. This is the revised version of 'tictacpet'.
- TRAP** Gamble, A.
This is a game in which you try to guess a number between 1 and 100, given a clue after each guess.
- TREND LINE** Butterfield J.
- TRIANGLE**
This program will solve for all parts of any plane triangle given one side and any two other parts.
- TRIANGLE 2** Butterfield, J.
This program solves triangles given any combination of angles and sides.
- TRIANGLE SOLVING**
Solves triangles given any three conditions.
- TRIGO** Reynolds, R. J.
The program gives a trigonometry quiz at the beginner level.
- TRINOMIAL FACT.**
This program gives the student practice in factoring trinomials.
- UNIT 12**
Input a group of numbers and the pet tells you which one of them is the largest.
- UNIT 1A**
The student must guess a number between 1 and 100. This is one of a series of 12 programs called unit #.
- UNIT 1B**
This program simply asks the student questions about the use of program unit 1a.
- UNIT 3**
This is a simple math drill which gives questions on all four major operations.
- UP THE LADDER** Christie, FRED
Each time you answer a math question correctly you move up a rung on the ladder.
- V1 LONG DIVISION** Whitewood D.
- VECTOR**
This program allows the student to experiment and learn using vector algebra.
- VECTORS DRILL** Cooper D.
Drills manipulation of algebraic vectors.
- VERT.BINOM.DIST.**
This program displays the binomial distribution in a vertical format.
- WHOLE NUMBERS** Cooper, D. S.
Addition, subtraction, and multiplication of whole numbers.
- WHOLE** Cooper, D. S.
Math drill using whole numbers. (+,-,*,/) nine levels of difficulty.

X-SQR

X-Y INTERCEPT

This program gives a function for which the student gives the x and y intercepts.

Y

Hayhoe, D.
Input slope and yintercept and the pet will draw the corresponding graph.

Z-SCORE

Scalzo & H.
Computes zscores and gives instructions for the normal curve computations.

ZERO IN

Christie, F.
The pet chooses a number between 1 and 1000. With the help of hints, guess the number.

Music Catalog

COMPOSE

KEYBOARD RECORD Harris N.

User can compose tune using computer keyboard, record it and play it back. Needs sound equipment.

Physical and Health Education Catalogue

DIET EXAM

Gamble & EMOND
A dietary exam simulation. User enters food & quantity for a day & computer does analysis re: protein, etc.

DRIVING TEST

Downer J.
California driving test quiz. Multiple choice answers. Most regulations same as ontario driving laws.

LIFE EXPECTANCY

User inputs information re: exercise, type of job, personality, etc. And pet tells life expectancy.

LIFESTYLE

Wink R.
User inputs information about lifestyle and the computer assesses it, as it relates to user's health.

WEIGHT WATCHER Hutchings R.

This program enables you to keep track of your dieting efforts and your progress.

Science Catalogue

20 QUESTIONS

A, V, OR MINERAL Whitewood J.

Student must label the named object as animal, mineral or vegetable.

ANIMAL

This learning program maintains a data file of animals & will try to identify any animal you think of.

ASTRO

Morganstein J.

BALANCING EQU

Drill on balancing chemical equations.

BIGTIME

Maucus S.

BIOCAT

Cannata J.

BIORHYTHM

Ngan, C.
Given user's birthdate, computer will chart user's biorhythmic cycles i.E.Physical,emotional,intellectua

BRILLE

Rothman J.

BROWNIAN

Simulation of molecular movement.

CAI MOMENTUM Rosen, A. I.

Drill on momentum problems.

CASCADE

CHARGE

Braun L.

CHEM NOMENCLATUR Woroszczuk, S.

Drill on naming chemical elements and their valences.

CHEMIST

Contreras V.

CHICK

Simulation of experiment in which different diets are fed to different batches of chicks.

CHICK RESULTS

This program allows students to check their results for the chick experiment.

- DENSITY** Cue LIBRARY
Computes density upon input of volume and mass.
- DIET** Hunntington
- DYNALOGIC**
Teaching aid to digital electronics. User can draw digital systems, different gates on the screen.
- E. PROFILE** Berger & COX
User prioritizes responses to environmental problems. Computer assesses environmental responsibility .
- EARTHQUAKE** Acton DIS. H. S.
Drill on calculating distance travelled by primary and secondary waves and locating earthquakes.
- EDISON**
- ELEMENT DRILL** Larson, R.
Drill on elements of periodic table.
- ELEMENTS** Symons, WILLIAM
Drill on elements' symbols.
- EMT**
- ENVIR. PROFILE** Berger & COX
- ENZYMIC** Gamble A.
- ENZYME** Gamble, A.
Designed to show that enzyme action is related to certain limiting factors.
- FFT** Hutchings, R. E.
This program demonstrates fast fourier transformation calculations for various wave types.
- FISHERY** Zinn & MCFADDEN
- FOURIER PLOT** Levinson F.
Fourier plot demo.
- GEIGER COUNTER** Tattersall, P.
Simulation of a geiger counter.
- GRAVITY QUIZ** Smythe, R. M.
Thirty questions re:gravity.
- HARMONIC DISPLAY** Hofheinz, M. C.
Displays combined frequencies or harmonics.
- HEAT SOLVER 16K** Mcewen&whitewood
Specific heat and heat of fusion problem solver.
- HEAT SOLVER 8K** Mcewen&whitewood
Specific heat and heat of fusion problem solver.
- II MOMENTUM** Rosen, A. I.
Solve momentum problem and check answer with computer.
- ION NAME** O'neill, R. T.
Drill on 'ion' nomenclature.
- LEVER**
Student tries to balance the lever by placing the box the correct distance from the fulcrum.
- LOCKEY** Acton DIS. H. S.
Competitive inhibition study of enzyme acetylcholinesterase featuring the lock and key hypothesis.
- MALARIA**
- MARBLESTAT** Oglesby M.
- METER READINGS**
- MICROSCOPY** Acton DIS. H. S.
Drill on measuring using a microscope.
- MINI-EDISON**
- MOTORCYCLE JUMP**
- MULTI-PLAN LAND**
- NICHE** Lehman J.
- OSC LUNAR**
Simulation of the landing of a spacecraft above the lunar surface.
- PALKO'S AUDIT**
This program calculates energy consumption in a home.
- PERIODIC TABLE** Woroszczuk, S.
A program designed to assist the student in learning the periodic table: (elements, symbols & valences).
- PET NCL REACTOR** Berggren S.

PHOSYN Gamble, A. > Allows user to conduct photosynthesis experiments which would not be practical in class time.

POLLUTION Comito, J.
Simulates waste and oxygen content of a body of water

POLUT Comito J.

POP Comito J.

POWER GENERATION

POWER INSTRUCT

POWER SIMULATION

PROBABILITY MACH Oglesby M.

RADIOACTIVEDECAY Hatton, R.
Calculates radioactive decay or population growth using a formula.

REACTION TEST
Tests users's reaction time.

REFLEX TIMER

REG'D PWR SUP DE
Design regulated power supplies with this program. Good graphics.

SIMPLE PENDULUM
Simple pendulum program using pendulum equations.

TITRATE Flynn, G. J.
Simulation of titratio

TOMATO Mills V.
Simulation of 2year experiment growing greenhouse tomatoes, using variations of heat, light & variety.

TOMATO RESULTS Mills V.
The computer plans which varieties of tomatoes and combinations of heat and light will produce max. Yields.

USPOP

WATER Gilbert & FRIED.

WATER II

This program is based on water resource management. Student must make decisions regarding irrigation.

WEATHERMAN Prescott, G.
Program finds humidity index, wind chill factor, relative humidity, and/or temperature conversion.

WEIGH Herstein, E.

Technical Studies Catalogue

MORSE

MORSE CODE
This program drills the student in morse code. The student has three chances to identify the letter.

MORSE DECODER

MORSE TUTOR

TELEPH1 #'S

Utilities Catalogue

11 WEDGE 4.0

AID EXPLANATION

AID2 Seiler B.

AID4 Seiler B.

ALPHA

Sorts items (from keyboard or data statements) into alphabetical order.

ALPHA-LIST

APPEND

BACKUP 2031	Law & HOPE	COPY DISK FILES	
BAM MAP	Creates block availability map for disks.	COPYFILE	Butterfield J.
BASIC AID2		COPYPROG	Butterfield, J. Copies a program or file. Floppy disc maintenance.
BASIC AID4		COPYPROG2	Butterfield J.
BORDERS	Isaacson D.	COPYPROG4	Butterfield J.
BUILD HELLO		CROSSREF	Butterfield J.
CASE CONVERT	Switches upper and lower case in programs. For converting original rom programs to upgrade/4.0.	DATAMAHER	Creates data statements from memory contents. Useful for machine language programs.
CASE CONVERT 8K	Switches upper and lower case in programs. For converting original rom programs to upgrade/4.0. Orig. Rom	DEMO SORT	Butterfield J.
CATALOG	Butterfield J.	DIAGNOSTIC BOOT	
CBM 4032		DIRECTORY	
CBM 8010	Butterfield J.	DISK APPEND	Bonnycastle M. Merges two programs on disk.
CHANGE DISK	Butterfield J. Changes device number on 1540, 2031, 2040, 4040, and 8050.	DISK CHECKER	Butterfield J.
CHECK DISK		DISK LISTER	This program will update master directory, display selected directory or delete disk entry from master.
CLASS LIST	Mac NAUGHTON, R. This program allows you to create a class list.	DISK LOGGER	
COMING		DISK MOD	Butterfield J. Shows and modifies contents of disks.
COMMANDS	Walters	DISK MOD V/1	
CONV TO ASCII		DISK PROGRAM	Writes to, and then reads from a sequential file on disk.
COPY ALL	Butterfield J. Copies disk files between units or on the same unit.	DISK VIEW	Butterfield J. Shows contents of disks by sectors.
		DOS SUPPORT 4.0	

DUM 5.0	Leon R.	MARKS	Butterfield, J. Teacher enters pupils' names and marks. Computer calculates averages, etc. Stores on tape. Can be added to
ENTER MARKS	Mac NAUGHTON, R. This program lets you enter marks for a class.	MEMSEE DEMO	Trahan C.
FRNIE		MICROMON.INS+	Seiler B.
FEATURES	Walters	MICROMONB9@1	Butterfield J.
FLASH SCREEN SR	Reverses entire screen.	MODEM MICRONET	
FUNCTION KEY		MODEM PET/PET	
GRADES	Donn E. Program calculates the marks(grades) for up to 35 students & 10 tests. Orders results by alphabet or scores	MODEM PET/PRINT	
HEXDEC	Butterfield J.	MODEM PRG	
KEYMAKE	Butterfield J.	MODEM PRG2	
KEYWRITE	Butterfield J.	MODEM PRINTER/PR	
LEADER WRITER	Butterfield J.	MODEM TEST REC	
LESSON COPY	This program copies a lesson off of a tape.	MODEM TEST SEND	
LESSON EDIT	This program allows user to edit a lesson that has been saved on tape.	MODEM THE SOURCE	
LESSON PLAYBACK	This program plays back a copied lesson on tape.	NEWMON 1&0	Extension to builtin machine language monitor.
LESSON WRITER	This program allows user to enter a lesson to be used on computer, with disk or tape.	PET DATA COPIER	Straley R.
LIBRARY CARDS	Program allows the user to enter same information as found on library cards.	PET DISK	
LISTER		PILOT	
LU MODEM		PORTFOLIO/D	Butterfield J.
LU MODEM2		PRINT PRGM LIST	

PROGRAM LISTER

RAM TEST

RANDOM 1.00

RANDOM LIST Moont S.

RELREAD

RENUMBER

REPEAT KEY

ROM TEST Butterfield, J.
Test for 'read only memory' of computer.

SCREEN DUMP

SEARCH Butterfield J.

SELECTERM Richter M.

SELECTERM PROC Richter M.

SORT Butterfield, J.
This program quickly sorts items that user
inputs, by one or two fields.SORT DEMO Butterfield, J.
This program demonstrates a very fast sort
called selective replacement.

SORTDEMO

STACK SNIFFER Butterfield J.

SUPERMON 2.REL

SUPERMON 4.REL

SUPERMON INST

SUPERMON.REL

SUPERMON1.REL

TAPE FILES Macnaughton R.
Writes tape files.TAPE TEST # Butterfield, J.
Tests tape for data, errors, etc.TAPE WRITE (#) Butterfield, J.
This program writes a cassette tape with
'leader signal', which may be used with the
'tape test' program.

TERM.IEEE

TERM.RS232

TERMINAL.IEEE

TERMINALRS232

TEST PART I Cox J.

TEST PART II Cox J.

TRACE(ECCO)
Locates trace program in original or upgrade
computers.

TRACE.REL

TREND LINE Butterfield, J.
User enters historical data and program does
analysis and forecasting.UN-NEW
Resets pointers to make newed program
usable again.

UNASSEMBLER.CBM

UNASSEMBLER.MAE Seiler B.

UNIVERSAL WEDGE
Enables easier disk commands.WORD PRO PRINTER Baker R.
Prints wordpro files.WORD PROCESSOR Richter M.
Program allows user to edit the text, input
from tape, output to tape, print output, read
to screen, etc.

WPRO BUSTER Butterfield J.

TPUG GAME REVIEWS

The following pages (234 to 243) are the TPUG game disk reviews that were done by the TPUG review committee co-ordinated by Dave Goff.

While the review information shown here should be quite useful to the reader the committee, and particularly Dave, did a lot of work that isn't reflected here, due to a fluke in the computer typesetting process.

The files that we were sent actually have on them a lot more useful information such as the size of the programs, the size of the machine required to run them, their location in memory, whether or not they require disk or printer, whether or not they contain machine language code, and what version operating system they require.

We still have the files and hopefully this information will be printed in either some future edition of the TORPET or in some future edition of **The Whole PET Catalog**.

Actually, this editor's grandiose plans are to eventually create one gigantic directory of all the programs in alphabetic order with the reviews, the above information, and the location where the program is to be found, all together in one spot. There would then be subsidiary lists by category such as the education groupings that start on page 202. Only there would be many, many, more categories. Games by type, and by age group. Programs for particular machine models and sizes. Best of listings, and programming example lists. And... and... and.

It is too early to say whether all or any of this will ever actually come about. All of your editors are very busy people and the Strasmas say they don't know when they will be able to tackle still another book. There is so much material I am beginning to think that perhaps we need two books. One for the PET and one for the VIC (and then how about the MAX?)

Anyway, we all have our dreams. If this one comes about it is going to take even more input than we have had from the many reviewers listed in the front of this book. So start thinking now about what contribution you are going to make. If you are willing to help with some of the reviews, please write now. And, of course, we must all keep contributing programs to keep the library growing. More about that in the next section.

tpug-space game I
g1

- C.C.STARWAR** G1 P 27 0401-1E32
There are plenty of instructions with this game. You have to defeat Darth Vader to be successful on this mission. If you let the on-board computers battle each other, the game lasts about 15 seconds. No graphics.
- C.C.STARWAR.INS** G1 P 22 0401-18F3
- DEEPSPACE 1.0** G1 P 24 0401-1BA2
Encounter alien spaceships in your area of the Star Empire. First choose your own ship and weapons, and your patrol area. Commands are entered by number - needs a good memory or a list of them on paper. No graphics.
- EASY.DUNGEON!** G1 P 25 0401-1CC0
Easy. Dungeon isn't. Also called Devil's Dungeon. Try to get the Holy Grail from the midst of assorted witches, magicians, monsters etc. Needs instructions. Has sound. 'F' means 'fight' or 'found' if there is gold. Typing the wrong letter causes the screen to clear and all action to stop. 'Trade' causes the program to go into a 'do-nothing' loop. Has screen-blanking poke59409 which takes effect only on old machines. (Not a space game.)
- ELIZA** G1 P 25 0401-1C1F
Question and answer period with the PET. You won't stump the PET for an answer but you may be at a loss for a reply. No graphics. (Not a space game.)
- HUNTER.SATELLITE** G1 P 13 0401-1090
Guide your satellite via the number pad to detonate an enemy satellite wandering around above the city. There are a few space-mines thrown in for good measure. Some skill and a lot of luck required.
- KLINGON CAPTURE** G1 P 25 0401-1C43
Try to surround the Klingon vessel with shots on an 8x8 grid. Stupid Klingon sometimes moves into space at which you are shooting. You are not supposed to zap him. Try explaining that to Headquarters.
- LUNAR LANDER 1** G1 P 11 0401-OE7F
Similar to OSC LUNAR, without gauge on rhs. OSC is better.
- LUNAR LANDER-BFD** G1 P 9 0401-OC74
Moon lander game by Butterfield that takes the hurt out of crash landing. All moon lander games allow you to control the rate of descent and you try not to land too fast or run out of fuel before landing. None let you take off again.
- OSC LUNAR** G1 P 27 0401-1E6C
Moon lander program with good graphics. Has altitude gauge on right side of screen. You input power to control your descent onto the Moon's surface.
- PLANET.PROBE** G1 P 17 0401-146E
Control the flight of a space ship near enough to the planet to get a picture without letting the pull of gravity do you in. Good graphics.
- SPACESHOOTRALT!** G1 P 22 0401-1999
Also titled 'S WARS 3.0'. With sound. Use the number pad to centre the fighter in your sights and fire with the #5 key. Easy game.
- STAR TREK** G1 P 23 0401-1ACB
Neutralize enemy craft in a specified time. By J. Butterfield. If you like a game that you have to figure out what to do, you will love this one! What you do beats me.
- STAR WARS 2!** G1 P 25 0401-1C8A
With sound. This sound is worth connecting your CB2 to hear it. You are a space patrol and are warned by a siren when a battle is about to start. Excellent graphics. Fast game. Uses fast-screen poke in line 4, which we disabled - reinstate it at your own risk.
- STAR WARS!** G1 P 15 0401-1247
With sound. Line up X-wing fighters in sights and let computer fire or fire yourself. Ten shots per game. Controls for sights are very sluggish.
- STARBASE&UFO!** G1 P 26 0401-1CF4
With sound. Destroy 9 UFO's which travel around the perimeter of the screen. Shots from your starbase have to be timed to reach a point at the same time as the UFO. By F. Covitz.
- STARTREK V18** G1 P 26 0401-1D1D
Another kill-the-Klingons game with no instructions about how to do it. You will probably enjoy trying to find out how this game works. See STARTREK.ALT4.

- STARTREKALT4** G1 P 25 0401-1C82
Similar to STARTREK V18 but in this one, while you are trying to figure out what to do, the Klingons are moving in on you. Learn fast how to fire your torpedoes and you will have some spare time to figure out the rest of the game.
- STARWAR TRANINE!** G1 P 16 0401-1381
Called 'SPACESHOOTER' in the listing. With sound. Manoeuvre the fighter into your sights with the number pad and fire. You have 60 seconds to hit the fighter, or you get yours. Not too difficult.
- SUPER STAR TREK** G1 P 78 0401-5123
This is a game to settle down with and spend some time. Uses Enterprise vs. Klingons etc. Game is satisfying enough to justify learning all the rules and requirements.
- SUPERLANDER** G1 P 21 0401-186D
Also called Lunar Lander 3. Another version of Moon Lander. Has poke 59409 for blanking screen which takes effect only on old machines.
- tpug-games 1**
g2
- AIRPLANE** G2 P 23 0401-1AB4
Bomb towns & waterplants while avoiding anti-aircraft fire. Uses screen speed-up (disabled - use at your own risk). With sound. Fast. Works only with new roms.
- ARROW-BTRFLD** G2 P 7 0401-0A48
From Club 2001 tape. Guide snake to gain points by hitting numbered squares. With sound! See also 'ARROW' and 'SNAKE2' on disk G3.
- AWARI** G2 P 14 0401-1180
From original Club tape. Modified by Lyman Duggan. Ok if you like Awari.
- BATTLESHIPS** G2 P 14 0401-1198
You vs. the PET - one shot each until all ships are sunk.
- BL JACK-PUNTER** G2 P 15 0401-1240
Good graphics. Easy entry of commands. I think the PET looks at your cards because it sure is tough to beat.
- BLACK BOX!** G2 P 22 0401-191F
With sound. Try to determine the locations of 5 balls hidden in the box by observing the reactions of probes from the sides. The lower your score, the better you are.
- BLACK JACK 4.1** G2 P 20 033A-166D
Excellent card graphics. Standard Blackjack game with provision for insurance. Uses second cassette buffer for m.l. routine.
- BLACKJACK!#** G2 P 18 0401-1582
Called 'DRUNK BLACKJACK' on Club 2001 tape. By Butterfield. Clever and fun. Catches you by surprise each time you play. Good graphic display.
- BOMBER** G2 P 13 0401-1008
Use number pad to bomb barges, hydro plants and ammunition factories.
- BOWLING** G2 P 10 0401-ODD5
Does not total score. Get other bowling game if you can. This one is boring anyway.
- BREAKOUT** G2 P 7 0401-0AAB
With sound. As you become more successful at breaking through the top layers your paddle becomes smaller, making it more difficult to hit the ball. BREAKOUT on disk G3 is even better.
- CHASE/ROBOT** G2 P 10 0401-ODB5
A slow game. Get 'ROBOT CHASE!' if you can. It is much better and faster.
- CHECKERS 1** G2 P 12 0401-OEF0
Graphics good. Play slow. Easy to beat. Shows board and co-ordinates on screen for easier entry of moves.
- CHECKERS 2** G2 P 10 0401-OD4F
Board co-ordinates not shown on screen. Get CHECKERS 1 instead.
- DAMBUSTERS** G2 P 25 0401-1C22
You have three aircraft with which to try and bomb the dam while trying to avoid anti-aircraft fire. As few as four well placed (and lucky) bombs can win but it usually takes quite a few more. Good graphics.
- DEFLECTION** G2 P 9 0401-OC9D
Guide ball with slash keys to wipe out targets. From Club 2001 tape.
- DUCKSHOOT** G2 P 14 0401-111E
Beastly clever graphics. Waiter the retriever?? Well done. Five shots to try and bag as many ducks. British you know.
- FLIGHT SIMULATOR** G2 P 17 0401-14A7
Try to take off, circle and land while the PET screen displays speed, altitude, etc. A non-violent exercise in aircraft flying. Now if they can just do this with cars will it bring down your insurance rates?

- GO-MOKU** G2 P 14 0401-1176
Plays Go-moku on a 9x9 grid. Very slow.
- HORSE RACE** G2 P 19 0401-16D8
Bet on 5 horses; excellent graphics; from early Club tape. Pays off for win, place or show.
- INSP. CLEW-SO** G2 P 22 0401-19C2
Prints house plan and fact sheet if you wish to use it while trying to determine who killed the host. Machine-language screen print routine stored in second cassette buffer. Determine guilty party by questioning who was where and when.
- KENTUCKY DERBY** G2 P 14 0401-11CC
Good graphics; pays off only if horse finishes first; rider #1 loses his head.
- LABYRINTH** G2 P 1 0401-046D
Builds labyrinth to size you specify, and lets you see it for a time based upon the degree of difficulty. 'H' will show you where you are at any time. Superb graphics. Try and get through based on what you see.
- LIFE WAR** G2 P 6 0401-0999
Game does not have any instructions. It needs them!
- MOTORCYCLE** G2 P 10 0401-0D60
Set your speed and ramp angle to jump any number of buses. You will probably be seriously injured many times before you are successful. It doesn't hurt.
- OTHELLO** G2 P 25 0401-1C61
Excellent game. Good graphic display. See also Othello on Disk G3. Medium difficulty.
- PETALS ARND ROSE** G2 P 17 0401-14D5
You are given everything you need to know about this guessing game except the answer. A bit of logical thought will lead you to the correct conclusion. Maybe.
- PINBALL** G2 P 24 0401-1B22
Good graphics. Interesting sound effects. Ball can get stuck bouncing back and forth in the middle and go on forever.
- POKER-PUNTER** G2 P 25 0401-1C45
Play Poker against the PET. PET bluffs like a maniac. From Club 2001 tape.
- PRO FOOTBALL** G2 P 27 0401-1DDD
American rules. No graphics. You enter the number of the play you want to make.
- RACETRACK** G2 P 11 0401-OED8
Use the number pad to guide the ball around the racetrack. Pick your own speed. Not as easy as it first seems.
- ROBOT CHASE!** G2 P 24 0401-1BC7
Robot chase with sound. From Club 2001 tape. The more successful you are at eluding the robots, the more there are after you. Try to sucker them into an electric fence or post while avoiding these hazards yourself.
- ROULETTE** G2 P 6 0401-099C
Name your number and the amount of money you have to bet. The PET bets \$1 for each turn of the wheel and calculates how long you would have lasted in Vegas with your wins and losses.
- SKI** G2 P 4 0401-076B
Ski down the hill without veering into the trees. Very fast. To. gh.
- SNAKES!** G2 P 8 0401-0B3F
Basic sound. Two-person game. From Club tape. Try to zap the other person's snake before he gets you.
- SOLITAIRE-PUNTER** G2 P 25 0401-1C8B
Excellent card game with good graphic display. Three versions of the game of patience. You cannot cheat.
- TARGET-BUTTRFLD** G2 P 11 0401-OE52
Line up targets in your sights and fire. Fast moving and tough game.
- TOKER** G2 P 27 0401-1E23
Good graphics. If you know what 'toking' is all about, you might enjoy this.
- tpug-games 3
g3**
- ANTI-AIR/BUS** G3 P 13 0401-100E
Shoot at aircraft as they try to bomb your position at random. In spite of what the instructions say, you cannot dodge the bombs (missiles). Medium difficulty.
- ARROW** G3 P 7 0401-OAEF
Sound. Same as ARROW-BTTRFLD from Games 1
- BATTLESHIP. ALT2** G3 P 18 0401-151E
Ships are only three units long. One shot per turn for you and PET. Fast. With sound you have multiple submarines to depts-charge while trying to avoid being torpedoed. Game is time limited. Good graphics. BASIC 4.0 Change 'DS' to 'D1' in lines 1150, 6200, 10110, 10120, 10135 and 10140.
- BILLIARDS!** G3 P 25 0401-1BED
With sound. Score points by banking the cue ball off the cushion onto two object balls. You input the angle of your cue ball shot. Three levels (tables) of difficulty. Tough.

- BREAKOUT** G3 P 16 0401-1332
With sound. A moderate challenging game of BREAKOUT. You may breakout of the playing area completely and have the ball disappear while your score continues on to infinity. This is not considered a win.
- CARD SNAP** G3 P 22 0401-19BF
The game of SNAP against the PET. Excellent card graphics. If you are too late to hit a key on a snap the PET collects another point and calls you a cheat. Fast.
- CARDS UTILITY** G3 P 11 0401-ODF5
Playing-card screen display and shuffling utility program by D Hook. Not a game.
- CLOUZOT!** G3 P 21 0401-17F5
You try to deduce the killer from clues given by six suspects. With sound.
- CLUE** G3 P 23 0401-19DC
A murder to be solved by correctly interpreting information provided by five suspects. If this program hangs up, lines 2148 and 2199 may need fixing. Change to - 2148 GET JUS:IF JUSCHR\$(32)THEN 2148 2198 (same as 2148 except) ... CHR\$(32) THEN 2198 2199 RETURN
- CONCENTRATION** G3 P 24 0401-1B96
A good version of the game of CONCENTRATION. Up to seven players can play at one time.
- DEPTH CHARGE** G3 P 18 0401-155E
With sound. Drop off depth charges on submarines. If you like this you will like SUBMARINE even more.
- DICE.PIG** G3 P 13 0401-10CC
Roll the dice as many times as you like, but if you roll a one you lose the points you have accumulated on that roll. You vs. PET. First to reach 100 wins.
- DOMINOES** G3 P 19 0401-15F6
Another game that teaches you how to play. Fast and reasonably tough.
- DRAGON.MAZE!** G3 P 21 0401-1876
With sound. You are allowed to see the maze temporarily and then the walls are blanked out and only appear if you run into them. You have to escape before the Dragon gets you. Fat chance.
- DRAW.POKER** G3 P 23 0401-1A77
Five card Draw Poker. Plays accurate game.
- FAWLTY** G3 P 14 0401-1198
You hunt through the castle to find a body. Go through as few rooms as possible. The butler didn't do it and he is also no help.
- FIND.COLOR** G3 P 11 0401-0E6D
- GRUNGY TOWERS** G3 P 20 0401-177E
Detective game by J Butterfield. You are the sleuth and have to determine the murderer from information obtained from the 12 inhabitants. Try and do it before you are kicked off the force. (ie. the Force is not with you.)
- GUNNER** G3 P 24 0401-1B15
You are given 5 shots to try to find the range and to sink the enemy ship before it gets you.
- KILLER BUNNIES** G3 P 29 0401-1FF0
With sound. You try to shoot the killer bunny before it can catch you or before your strength runs out. Spelling is atrocious.
- M.B.INSTRUCTIONS** G3 P 15 0401-1202
- MADMAN.RACE** G3 P 23 0401-1A2D
Race around a four lane track. The Madman is also racing in the opposite direction. Try to avoid him. Can use joysticks or keyboard.
- MILLE BOURNE** G3 P 25 0401-1C90
5000 Mile Race card game, you vs. PET. Run in 1000 mile laps. Excellent. Luck and skill required.
- MOUSEMAZE** G3 P 13 0401-1076
Lead the mouse through the maze to the cheese using the number pad to control the direction of the mouse. For directions list 10-40. Difficult.
- MOVMAZE1** G3 P 6 0401-0922
While you try to find your way out of the maze, the walls keep changing positions. You can spend a lot of time dancing back and forth waiting for a wall to move. By J. Butterfield. Fiendish & diabolical.
- MOVMAZE2** G3 P 8 0401-0BB2
Like MOVMAZE1 but for ten points you can bash your way through a wall. Minimum 22 moves to get out. It will probably take you around 70 moves. Plus foaming at the mouth.
- OSERO** G3 P 20 0401-175F
A similar game to OTHELLO. Board is rectangular with hard to follow diagonals.
- OTHELLO** G3 P 29 0401-2000
Displays game board and its own (PET's) work board so you can see it work out its next move (if you are very fast). Plays a good game. See also OTHELLO on Games 1. Very fast game.

- QUANDRY** G3 P 25 0401-1C9A
- QUBICALT** G3 P 16 0401-1384
Like three-dimensional tic tac toe. Get four in a row before the PET does while blocking the PET from doing the same; Tricky to follow 3-d effect as shown on the screen;
- SIMON** G3 P 6 0401-0953
With sound. Follow pattern set out by SIMON starting with one not to as many as you can remember.
- SNAKE 2** G3 P 18 0401-159D
Similar to ARROW, but for one or two players. Try to zap your opponent's snake before he gets you.
- SNAKEALT** G3 P 18 0401-159D
Identical to SNAKE 2 on this disk.
- SPADE.INSTRUCTS** G3 P 9 0401-0C03
- SPADES** G3 P 24 0401-1B74
The card game of Spades - you vs. PET. The PET is a methodical player and excellent bidder. If you are too cautious you will lose. There is enough skill and luck required that you may win or you may be thoroughly trounced.
- SUBMARINE!** G3 P 25 0401-1C6D
- TARGET** G3 P 11 0401-ODF6
From a fixed point you shoot at targets moving across the screen. Medium to easy. Totally different from Target-Buttrfid on games 1 disk.
- tpug-games 4**
g4
- ARTILLARY TRAP** G4 P 11 0401-OEA9
Try to shoot at a target overhead using X-Y co-ordinates. Poor, boring game.
- AWARI** G4 P 17 0401-1420
A good logic game for one player. Good graphics.
- BASKETBALL** G4 P 16 0401-13C0
Terrible basketball simulation for two players. Avoid this one.
- BILLIARDS** G4 P 10 0401-OD93
Good simulation of cushion billiards for one or two players. No instructions.
- BLACKBOX** G4 P 26 0401-1D4D
An excellent logic game that also has good graphics.
- BLACKJACKALT** G4 P 20 0401-170E
Typical blackjack game, no splitting or anything new. Good cards.
- BOGGLE** G4 P 9 0401-0CBB
Bets on board and times a game of Boggle. A dice-letter game.
- BOMBERALT** G4 P 13 0401-10AA
Nice graphics of plane, but easy. Boring game after 30seconds.
- BOWLING** G4 P 26 0401-1D03
Very good bowling game. Comes from Japan, with nice graphics and cute animation.
- BOXING** G4 P 12 0401-0F05
Looks as if copied straight out of Creative Computing. Lousy two-player game.
- BREAKOUT 3.1** G4 P 7 0401-0A06
A decent Breakout game, but much better ones exist and are available.
- BRIDGE BID TRAIN** G4 P 23 0401-1A60
Does not seem to work very well. It is supposed to teach you Bridge.
- CHECKERSALT** G4 P 25 0401-1C59
A good checkers game. Nice graphics, but too slow and easy to beat.
- DOT RACER** G4 P 14 0401-1134
Good racing game with 3 tracks to choose from. When you crash, it goes forever.
- GOLF** G4 P 20 0401-1712
Good golf game with some graphics of the course. Gets boring fast.
- HORSERACE** G4 P 23 0401-1A95
Excellent graphics make this a great program. Up to 6 people make bets in a race.
- HORSES** G4 P 12 0401-0FAE
Good betting system, but other programs have better graphics.
- HURKLE** G4 P 6 0401-09F1
Primitive grid game in which you have to find a hidden Hurkle.
- IAN'S RACE (N)** G4 P 17 0401-1477
Good racing car game. Good graphics. Uses keyboard or steering wheel plugged into user's port.
- KNIGHT.TOUR.SOL** G4 P 19 0401-163D
Good program. A graphical solution to an old chess problem.

- MUGWUMP** G4 P 24 0401-1B0E
Classic computer game. Try to get 4 mugwumps on a grid. Good version with some graphics.
- PONG** G4 P 6 0401-09B9
Bad version of the video game of the same name.
- POP SHOT!** G4 P 9 0401-0C82
Very good game with sound. Try to shoot balls in holes while you move.
- QUBIC** G4 P 17 0401-13E9
3-D Tic-tac-toe game versus the computer. A little slow but quite good.
- REFLECTIONS** G4 P 9 0401-0C53
Good game. Try to hit targets by setting up angle for your ball to bounce off.
- ROAD RALLY** G4 P 14 0401-1177
Poor race car game with no graphics.
- SINNERS** G4 P 16 0401-13AD
Good logic game against the computer. Good graphics as well.
- SLOTS/JACKPOT** G4 P 20 0401-17C9
Decent slot machine game, but better ones exist.
- SNOWFLAKE** G4 P 11 0401-0EE3
Very good strategy game. Up to 3 can play or you can play against the PET. Nice graphics effects.
- SOLITAIRE POKER** G4 P 22 0401-19AA
Great Poker game with wonderful cards and good betting system.
- SUBMARINE!** G4 P 25 0401-1C58
Great game in which you sink subs and avoid their shots. Good graphics and minimal sound.
- T.TENNIS** G4 P 14 0401-11C8
Bad Pong game - there are better ones that exist.
- TAG** G4 P 15 0401-1214
Good two-player tag game. Move using keyboard and try to tag other player.
- TANK.BATTLE** G4 P 21 0401-187F
The worst of many tank games. Poor set-up and limited graphics.
- TANK.WARALT** G4 P 21 0401-17E4
A good two-player tank game. Move around barriers and try to destroy the other player. It is a bit slow. Two options exist - you have the option of which to play.
- TORPEDO.BOMBER!** G4 P 7 0401-0A13
Difficult hand/eye game. Not fun for long - too simple to be interesting.
- TREES** G4 P 24 0401-1B63
Nice game where you must plant trees and make them grow with water, love, and mud. Gets boring quickly.
- UNIVERSAL WEDGE** G4 P 5 0401-08B0
- WEIGH** G4 P 17 0401-1449
Good logic puzzler with nice graphics. Guess which weight is different in 3 turns.
- WUMPUSALT** G4 P 19 0401-168B
As Wumpus goes, this one is well done. Try to find the Wumpus before he finds you.
- YAHTZEE** G4 P 22 0401-196E
Good one-player simulation of the popular game Yahtzee.
- tpug-word/numb1**
g5
- 3D TIC-TAC-TOE** G5 P 17 0401-1497
Three levels of skill. You against the computer. Program plays well, but slow.
- ANDROID NIM!** G5 P 23 0401-19F9
This program is excellent!!!! A fantastic graphically illustrated version of the popular NIM program. Great CB2 sound, too. If you don't have this, whether you like NIM games or not, get this one.
- BAGELS-BUTTRFLD** G5 P 3 0401-06E9
This program isn't all that bad; but after a couple of guesses the program starts to go very slowly (VERY slowly). There are so many games around that I don't really recommend this one.
- BAGELSX2-BTRFLD** G5 P 12 0401-0F9E
- BINGO** G5 P 11 0401-0E45
You don't really play this, you just watch it. Not much fun.
- BRAIN STRAIN** G5 P 5 0401-08AC
A good puzzle.
- CONCENTRATION.7** G5 P 24 0401-1B89
Try to find symbols hidden behind the numbered squares.
- CRAPS.ODDS** G5 P 16 0401-1327
This program has nice graphics. You can roll the dice or the computer will roll for you. A list of vital statistics is always displayed and updated as you play.

- CRYPTO-BTTRFLD** G5 P 6 0401-09E1
Well, yet another guessing program! There are so many of these that I can't recommend this one.
- FAMOUS PHRASES** G5 P 13 0401-105D
Each letter of a famous quote is hidden behind a spot on the screen.
- GUESS IT** G5 P 14 0401-11B7
Computer guesses a number which you choose. Not interesting for very long.
- HANGMAN** G5 P 27 0401-1E83
Well done, graphically illustrated version of the popular game of Hangman. I found this one to be very humorous. Recommended.
- HANGMANALT** G5 P 16 0401-13B8
Average game. Either you or the computer can guess. No graphics.
- HANGMATH** G5 P 21 0401-1800
I really enjoyed playing this one. Very difficult and a good game.
- JOTTO-BTTRFLD** G5 P 7 0401-0AEA
As I've said in earlier reviews, there are too many guessing games, and this one just adds to the pile!!!!
- KENO** G5 P 26 0401-1D33
This is a fun way to gamble if you have real money, but isn't much fun on a computer.
- LETTER.15** G5 P 9 0401-0C85
The computer version of the puzzle I had when I was a kid, where you arrange the letters into order, by moving one at a time. I found it fun to play this again.
- MAGIC.SQUARE** G5 P 9 0401-0C1A
Same as Brain Strain, but has instructions so you know what you're doing. Object is to light all of the nine squares except the centre one. Requires thought. If you want to strain your brain, try this one.
- MASTERMIND** G5 P 23 0401-1A09
Good version of Mastermind. Very flexible - allows you to choose how many symbols, etc.
- MATH IQ** G5 P 26 0401-1DC0
Boring; not very well done; not recommended.
- NIM-BUTTRFLD** G5 P 5 0401-085D
This isn't too good ...no graphics, nothing. I don't recommend it at all. P.S. If you like NIM, go for the ANDROIDNIM program on the same disk as this NIM.
- PIGS** G5 P 4 0401-07E0
A very-hard-to-figure-out puzzle. I've had this one since it was distributed by TPUG one year ago, and I still haven't managed to solve it.
- REVERSE-PUNTER** G5 P 9 0401-0C62
At first, this game is fun and challenging. But it's like Adventure games in the sense that once you have figured out a certain way to win, that way always works. This program isn't that bad, and I'd say that it would be worth having.
- REVERSE.#S** G5 P 9 0401-0CDD
Good game; displays large numbers, but doesn't let you set up the order you want as another version does. This one is better for young players.
- SIMON!** G5 P 14 0401-1177
This is a super game for teaching kids tones. It plays a sequence and you try to repeat it. For 4.0 ROM's change TPPEEK(50003) in line 105 to PT1
- STARS** G5 P 4 0401-07A1
You guess a number from 1 to 100, and the closer you are the more stars you get. Should be fun for little kids.
- TIC-TAC-TOE 20** G5 P 13 0401-100F
Two can play against each other or against the PET. Ok for kids.
- tpug-simulatn 1
g6
- ADV30 GAME** G6 P 26 0401-1D64
Another of Michael Bonnycastle's adventure games. This one takes you through a different set of caves. Still after the treasure.
- ADV30 INTRO** G6 P 6 0401-0909
- ADVBOOT** G6 P 1 0401-0456
- ADVENTURE** G6 P 49 0401-33D6
The first 31 titles on this disk (g6)deal with the game'Adventure'. Prepared for the PET by J. Butterfield. This is 'THE' Adventure game of them all. A perfect score is 300 points. HA HA HA HA.
- ADVENTURE GAME** G6 P 26 0401-1D64
Similar to ADV 30 except is loaded from disk by the extra part ADVENTURE-M-B.
- ADVENTURE-M.B.** G6 P 9 0401-0C94
This is the intro. and loader for 'Adventure Game'.

- DOG.STAR.ADVEN** G6 P 71 0401-49F3
A Darth Vader/Princess Leia Adventure. Try to free Leia etc. A partial game can be saved on tape and loaded again at a later date to continue playing. Not easy.
- DUNGEON 1.4** G6 P 26 0401-1D82
Allows single-letter commands using get statements which speeds the game up considerably. This program is no relation to Dungeon. Alt.3. Needs flipping.
- DUNGEON.ALT3** G6 P 22 0401-19A4
Find gold and other treasures while avoiding the clutches of ogres, dragons etc.
- EXPLORE-BTTRFLD** G6 P 22 0401-19A4
Explore underground caves while collecting treasure and fighting off ogres. Single-key commands. Good.
- FISHERY** G6 P 20 0401-1771
A simulation fish hatchery management program. If you have trouble running a power plant, or controlling pollution or maintaining a kingdom, then your last chance to be a success may be running a fishery. Don't get hooked on it.
- HAMMURABI** G6 P 12 0401-0FA4
Management simulation similar to KINGDOM/PICS. Average type of game.
- HAMURABI** G6 P 14 0401-1159
- KINGDOM/PICS** G6 P 27 0401-1E9D
Lists as 'Picture Kingdom'. You determine the distribution of food for planting etc., and PET records the results of your endeavours. You will rule well and your kingdom will increase, or you won't and it won't. A few natural disasters are thrown in for good measure. Needs instructions.
- LIFE** G6 P 11 0401-0E9D
Another version life. Hitting the '*' will stop the program and allow re-entry of data.
- POLUT** G6 P 25 0401-1C45
Chart effects on varying bodies of water caused by change in temperature, type and amount of waste dumped into the water.
- POWER INSTRUCT** G6 P 21 0401-1873
- POWER SIMULATION** G6 P 22 0401-195C
Run a power plant and try to make money while controlling the effects on the ecology and paying for repairs and strikes.
- QUEST 3.0** G6 P 39 0401-2AA7
A search through caves and tunnels to find gold and other treasure.
- TOMBS A-BNNYCSTL** G6 P 12 0401-0F1D
Tombs by M. Bonnycastle. Part A is instructions and part B is the game. Uses single-key input. Your quest involves traveling through a maze of caves looking for treasure.
- TOMBS B-BNNYCSTL** G6 P 25 0401-1CC6
- tpug-simltn 2
g7
- ADVENTURE80** G7 P 49 0401-33F9
Exceptionally good adventure game. Uses a few one or two word commands and understands most of what you say. You could play this game for weeks. It is a classic.
- AFRICAN ADV-32K** G7 P 91 0401-5D75
This game is hour after hour of unsolvable fun. Same data can be saved on tape or disk so you can continue another time. I have never found Dr. Livingston.
- BABY CARE** G7 P 12 0401-0F79
Try to keep the baby happy without running out of sanity or time. Well animated graphs. This a good game.
- HS.OF.7.GABLES** G7 P 47 0401-323B
An adventure in a haunted house. Progress is slow.
- LOST DUTCH GOLD** G7 P 50 0401-356C
You are on a search for the gold while being guided by the ghost.
- NEW ROM WARLORDS** G7 P 22
0401-1979
Compete with other warlords for towns on a grid.
- NEW WARLORDS INS** G7 P 25 0401-1C11
- NEW WATER** G7 P 27 0401-1DE9
A human ecology game - good example of water usage in a town. You allocate the water to agriculture, industry, and consumers.
- NICHE** G7 P 25 0401-1C41
An ecology game that lets you choose a population area and predators. Try to help the community survive.
- OLD ROM WARLORDSG7** P 22 0401-1993
- OLD WARLORDS INS** G7 P 25 0401-1C11
See NEW ROM WARLORDS.

SPELUNKER G7 P 38 0401-2983
Sounds like a cave to me. If you make the trip and get back let me know.

SWORDS & SORCERY G7 P 28 0401-1ED4
In this game you answer with numbers or yes or no. It is easy to find sacks of gold, and you can take as many as you want. Lots of chance to fight satyrs and trolls.

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g8

BREAK80 G8 P 7 0401-0A7C
See Breakout. This one is the 80 column version.

BREAKOUT G8 P 7 0401-0A71
This is a hard game to master. It takes a quick mind to play, but it's lots of fun once you get the hang of it. This one is faster than other breakouts that I've seen.

CAR RACE 4.0 G8 P 20 033A-1680
This is much like Digital Derby, but with more tracks and it's faster. It's easy to get hooked on this because it's such a great game after becoming familiar with it.

CRAZY 8'S G8 P 16 0401-133C
Play Crazy 8's against the computer. Just like the card game. Limited to one player. Works on BASIC 2 and 4.

MISSION IMP G8 P 24 0401-1B37
A game full of fun and excitement. The idea of this game is to reach the wallet and then take it back to where you started.

MONOPOLY G8 P 93 0401-5FB2
Has excellent graphics of board. Has everything the board game has except limited to two players.

ROULETTE G8 P 58 027A-3B26
Good graphic roulette wheel. Limit of four players.

STOCK G8 P 23 0401-1A96
Play the stock market. Buy, sell, and watch your fortunes on a moving bar graph.

STOCK 80 COL G8 P 23 0401-1AA7
This is an 80 column version.

tpug-simltn 3
g9

CASTLE ADV-32K G9 P 75 0401-4D92
Another adventure which you can play for days and which you can save on tape or disk for returning to later.

KING.TUT G9 P 60 0401-3EA5
Explore King Tut's tomb. More humorous than some with attacking mummies slipping on banana peels, etc. Don't ask for help too soon - its against company policy. Can be saved on tape to continue later.

OHARE'S #1 G9 P 67 0401-4666
An adventure game - you are after twelve treasures. Uses one and two word commands. Has some helpful hints, and you discover more words to use as you go. You can save the game status on tape and continue later. This is one of a series.

OHARE'S #2 G9 P 66 0401-4570
This adventure takes you to the great pyramid. In the same style as Ohare's other adventures.

OHARE'S #3 G9 P 86 0401-5940
In this adventure you are in a haunted mansion, this time after twenty treasures and you find them and return them to their proper place. Game can be saved and continued later as with John Ohare's other games.

SORCERERS.CASTLE G9 P 55 0401-39A4
I found the castle but the door was locked. Now where can I find a key? I spent most of my time lost in the forest - maybe you will do better.

TRIP TO ATLANTIS G9 P 58 0401-3D74
On your exploration of Atlantis, you can't just say 'find' the treasure but you can try anything you can think of. Game can be saved on tape or disk.

UNIVERSAL WEDGE G9 P 5 0401-08B0

WIZARD'S.CASTLE G9 P 60 0401-3EC9
This is a dungeon style game. You have characteristics such as strength and intelligence, and you can be an elf, dwarf, or hobbit. You also choose your weapons and then go on your quest.

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ga

ASTEROIDS GA P 22 0401-1980
Good simulation of real arcade game.

BASEBALL 7.3 GA P 26 0401-1D1B
Neat. Really good. Between Atari and Intellivision as to quality. Play against another person.

BLACKJACK 80 COL GA P 13 0401-OFF2
Same as BLACKJACK but for 80 column.

- BLOCKADE** GA P 26 0401-1D22
Try to escape out of a maximum security prison.
- CONNECT 4** GA P 27 0401-1DF8
Same as the board game. Try to get four men in a row against an opponent.
- CYCLE JMP 80 COL** GA P 9 0401-0C64
Same as cycle jump for 40 column.
- DRAG RACE 80 COL** GA P 15 0401-122A
Same as drag race for 40 column.
- MONOPOLY** GA P 51 0401-3693
For several players or you can play by yourself. Not especially elaborate but game goes much faster since computer keeps the bank. Fun if you like monopoly.
- PET NUC PWR PLNT** GA P 60 0401-3F46
32k game that simulates the operation of a nuclear power reactor. The object is to produce as much power as possible without a meltdown.
- PETMAN 5** GA P 23 0401-1A0B
If you have seen one PETMAN you have seen them all.
- PI HUNT** GA P 17 0401-1408
Hunt the pi thief. Like a robot game.
- PINBALL** GA P 24 0401-1B64
Boring. Has sound. You hardly ever get to use the paddles.
- PIRATE ADVENTURE** GA P 69 0401-47C2
Exceptionally good adventure game by Scott Adams. You get to build a ship and sail to an island, among other things.
- SEABATTLE** GA P 47 0401-3240
A good game from creative computing. You shoot the dragons and avoid the seamonsters and other obstacles. I like this game but it is slow.
- SEABATTLE INST** GA P 23 0401-1A5E
Instructions for SEABATTLE.
- SLOT MACH 80 COL** GA P 6 0401-09E3
Same as forty column slot. Boring. Very boring. No graphics.
- SUPERTREK/16KNR** GA P 51 0401-35FB
Good graphics. Really nice display. Instructions always displayed. I like it.
- WILL O' WISP** GA P 114 0401-7441
32k. You are a poor country boy on a high adventure trip through the forest. Long explanations. Have fun.
- BATTLESHIP** GB P 16 0401-1393
Same as real game. Play against the computer.
- BIG LETTER BOGGL** GB P 17 0401-14AB
Presents a matrix of letters for players to find words. Large size letters. Doesn't keep score.
- CONCORD LANDER** GB P 27 0401-1E39
You will have to fly this one blind. We never received a review. Please file your report when you land.
- CROSS WORD** GB P 34 0401-24C1
You can make a crossword puzzle and then have a friend decode it.
- DRAGSTER** GB P 12 0401-0F4F
A race against the computer or a friend. You can select your own gear ratio, horsepower, tire width and tire diameter.
- HANGMAN 7** GB P 19 0401-1678
Elaborate hangman game. Nicely done.
- JUMBO JET LANDER** GB P 24 0401-1B38
See CONCORD.
- QUBIC 4** GB P 20 0401-17B7
A 3D tic tac toe game.
- RAGING ROBOTS 4** GB P 13 0401-109A
A robot chase game where you take turns with the robots rather than continuous action.
- SLEUTH** GB P 26 0401-1D39
Similar to CLUE game that you buy in the store.
- STOCK MARKET!** GB P 62 0401-4163
Your chance to become a millionaire by investing in stocks. Its only a game.
- SUPER 9X9** GB P 19 0401-1684
Try to beat the super computer ... get 5 adjacent squares in a line.
- WUMPUS II** GB P 31 0401-222A
The choice of many networks of rooms or tunnels in which to look for the hiding wumpus.
- YAHTZEE IV** GB P 23 0401-1AA6
It is played by the regular YAHTZEE rules. Good.
- YOTE** GB P 19 0401-167B
A 'simple?' board game. Some devotee to yote should review this one for us.

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gb

COMPLETE TPUG ALPHABETIC LIST

The following pages (244 to 258) is an alphabetic list of all the programs in the TPUG library. This was compiled by our librarian, Dave Hook.

As mentioned earlier, the editor feels that a complete annotated alphabetic index would be very beneficial. Such an index to be used in combination with category listings is my goal. But anyway, we certainly owe Dave a vote of thanks for taking us this step in the right direction.

Each of the entries contains an indication of the type of file, the number of sectors involved, and the disk where it is to be found. The following is a directory of the disk IDs, so that you may know what is being referenced.

A complete listing of each disks contents is found in the next section.

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ID	DISK NAME		
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B2	TPUG-BUSINESS 2	N3	TPUG-MATH/SCI 3
B3	TPUG-BUSINESS 3	S1	TPUG-MUSIC 1
C1	TPUG-COMMUNCTN 1	U1	TPUG-UTILITY 1
C2	TPUG-COMMUNIC 2	U2	TPUG-UTILITY 2
E1	TPUG-EDUCATION 1	U3	TPUG-UTILITY 3
E2	TPUG-CEAB 1	U4	TPUG-UTILITY 4
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E7	TPUG-CEAB 7	V3	TPUG-VIC DEMO 1
E8	TPUG-EDUC 2	X1	TPUG BEST-UTIL 1
E9	TPUG-EDUCATION 9	X2	TPUG BEST-UTIL 2
G1	TPUG-SIMULATN 1	X3	TPUG BEST-GAME 1
G2	TPUG-SPACE GAME1	X4	TPUG BEST-GAME 2
G3	TPUG-WORD/NUM 1	X5	TPUG BEST-GAME 3
G4	TPUG-GAMES 1	X6	TPUG BEST-MISC 1
G5	TPUG-GAMES 2	Z1	TPUG-MISCELL. 1
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'PERCENT' DRILL	E7 P	24	TPUG-CEAB 7	ADV9 23	X5 S	5	TPUG BEST-GAME 3
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-- BASIC 4.0 --	X4 P	1	TPUG BEST-GAME 2	ADV9 25	G7 S	7	TPUG-SIMLTN 2
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3D PLOT	N1 P	27	TPUG-MTH/SCI1	ADV9 27	G7 S	6	TPUG-SIMLTN 2
3D TIC-TAC-TOE	G3 P	17	TPUG-WRD/NUM1	ADV9 27	X5 S	6	TPUG BEST-GAME 3
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8010 MODEM DRIVR	E6 P	47	TPUG-CAEB 6	ADV9 6	G7 S	6	TPUG-SIMLTN 2
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8050 FORMAT	X6 P	6	TPUG BEST-MISC 1	ADV9 7	X5 S	3	TPUG BEST-GAME 3
8050 MENU	B2 P	3	TPUG-BUSNSS 2	ADV9 8	G7 S	4	TPUG-SIMLTN 2
8050 MENU	X6 P	3	TPUG BEST-MISC 1	ADV9 8	X5 S	4	TPUG BEST-GAME 3
8050 PRINT	B2 P	25	TPUG-BUSNSS 2	ADV9 9	G7 S	4	TPUG-SIMLTN 2
8050 PRINT	X6 P	25	TPUG BEST-MISC 1	ADV9 9	X5 S	4	TPUG BEST-GAME 3
8050 UPDATE	B2 P	42	TPUG-BUSNSS 2	ADVBOOT	G1 P	1	TPUG-SIMLTN 1
8050 UPDATE	X6 P	42	TPUG BEST-MISC 1	ADVBOOT	X5 P	1	TPUG BEST-GAME 3
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8K	U3 P	24	UTILITIES #3	ADVENTURE GAME	G1 P	26	TPUG-SIMLTN 1
8K	X2 P	24	TPUG BEST-UTIL 2	ADVENTURE-M.B.	G1 P	9	TPUG-SIMLTN 1
A STORY	E4 P	5	TPUG-CEAB 4	ADVENTURE80	G7 P	49	TPUG-SIMLTN 2
A V OR MINERAL	E2 P	10	TPUG-CEAB 1	ADVENTURE80	X5 P	49	TPUG BEST-GAME 3
ABACUS	Z1 P	6	TPUG-MISC. 1	ADV F 0	G1 S	9	TPUG-SIMLTN 1
ACROBAT 2.0	X3 P	23	TPUG BEST-GAME 1	ADV F 0	X5 S	9	TPUG BEST-GAME 3
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ADV30 INTRO	G1 P	6	TPUG-SIMLTN 1	ADV F 12	G1 S	2	TPUG-SIMLTN 1
ADV9 0	G7 S	9	TPUG-SIMLTN 2	ADV F 12	X5 S	2	TPUG BEST-GAME 3
ADV9 0	X5 S	9	TPUG BEST-GAME 3	ADV F 13	G1 S	2	TPUG-SIMLTN 1
ADV9 1	G7 S	5	TPUG-SIMLTN 2	ADV F 13	X5 S	2	TPUG BEST-GAME 3
ADV9 1	X5 S	5	TPUG BEST-GAME 3	ADV F 2	G1 S	5	TPUG-SIMLTN 1
ADV9 10	G7 S	2	TPUG-SIMLTN 2	ADV F 2	X5 S	5	TPUG BEST-GAME 3
ADV9 10	X5 S	2	TPUG BEST-GAME 3	ADV F 20	G1 S	3	TPUG-SIMLTN 1
ADV9 11	G7 S	2	TPUG-SIMLTN 2	ADV F 20	X5 S	3	TPUG BEST-GAME 3
ADV9 11	X5 S	2	TPUG BEST-GAME 3	ADV F 21	G1 S	7	TPUG-SIMLTN 1
ADV9 12	G7 S	2	TPUG-SIMLTN 2	ADV F 21	X5 S	7	TPUG BEST-GAME 3
ADV9 12	X5 S	2	TPUG BEST-GAME 3	ADV F 22	G1 S	6	TPUG-SIMLTN 1
ADV9 13	G7 S	2	TPUG-SIMLTN 2	ADV F 22	X5 S	6	TPUG BEST-GAME 3
ADV9 13	X5 S	2	TPUG BEST-GAME 3	ADV F 23	G1 S	5	TPUG-SIMLTN 1
ADV9 2	G7 S	5	TPUG-SIMLTN 2	ADV F 23	X5 S	5	TPUG BEST-GAME 3
ADV9 2	X5 S	5	TPUG BEST-GAME 3	ADV F 24	G1 S	6	TPUG-SIMLTN 1
ADV9 20	G7 S	3	TPUG-SIMLTN 2	ADV F 24	X5 S	6	TPUG BEST-GAME 3
ADV9 20	X5 S	3	TPUG BEST-GAME 3	ADV F 25	G1 S	7	TPUG-SIMLTN 1
ADV9 21	G7 S	7	TPUG-SIMLTN 2	ADV F 25	X5 S	7	TPUG BEST-GAME 3
ADV9 21	X5 S	7	TPUG BEST-GAME 3	ADV F 26	G1 S	11	TPUG-SIMLTN 1
ADV9 22	G7 S	6	TPUG-SIMLTN 2	ADV F 26	X5 S	11	TPUG BEST-GAME 3

ADVF 27	G1 S	6	TPUG-SIMLTN 1	APPEND/RENUM.REL	U1 P	14	UTILITIES #1
ADVF 27	X5 S	6	TPUG BEST-GAME 3	APPLE.LOADER.ASM	A2 P	36	TPUG-ASSM 2
ADVF 28	G1 S	5	TPUG-SIMLTN 1	APPLESOFT LOADER	U3 P	5	UTILITIES #3
ADVF 28	X5 S	5	TPUG BEST-GAME 3	APR 80	B1 S	2	TPUG-BUSNSS 1
ADVF 29	G1 S	1	TPUG-SIMLTN 1	ARROW	G5 P	7	TPUG-GAMES 2
ADVF 29	X5 S	1	TPUG BEST-GAME 3	ARROW	V1 P	8	TPUG-VIC GAME 1
ADVF 3	G1 S	4	TPUG-SIMLTN 1	ARROW	X3 P	7	TPUG BEST-GAME 1
ADVF 3	X5 S	4	TPUG BEST-GAME 3	ARROW	X4 P	7	TPUG BEST-GAME 2
ADVF 31	G1 S	7	TPUG-SIMLTN 1	ARROW 2	V1 P	9	TPUG-VIC GAME 1
ADVF 31	X5 S	7	TPUG BEST-GAME 3	ARROW-BTTRFLD	G4 P	7	TPUG-GAMES 1
ADVF 4	G1 S	3	TPUG-SIMLTN 1	ARTILLERY	V1 P	13	TPUG-VIC GAME 1
ADVF 4	X5 S	3	TPUG BEST-GAME 3	ARTILLERY TRAP	G6 P	11	TPUG-GAMES 3
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ADVF 7	G1 S	3	TPUG-SIMLTN 1	ASTERIODS	X3 P	22	TPUG BEST-GAME 1
ADVF 7	X5 S	3	TPUG BEST-GAME 3	ASTERIODS	X4 P	22	TPUG BEST-GAME 2
ADVF 8	G1 S	4	TPUG-SIMLTN 1	ATARI II	G2 P	14	TPUG-SPACE 1
ADVF 8	X5 S	4	TPUG BEST-GAME 3	AUDIO DESIGNER	N2 P	17	TPUG-MTH/SCI2
ADVF 9	G1 S	4	TPUG-SIMLTN 1	AUNTIE	L1 P	14	TPUG-LANGUAGE 1
ADVF 9	X5 S	4	TPUG BEST-GAME 3	AUTO FILE WRITER	E5 P	6	TPUG-CEAB 5
ADVITM	G1 S	9	TPUG-SIMLTN 1	AWARI	G4 P	14	TPUG-GAMES 1
ADVITM	G7 S	9	TPUG-SIMLTN 2	AWARI	G6 P	17	TPUG-GAMES 3
ADVITM	X5 S	9	TPUG BEST-GAME 3	AX-REF/SYS24576	U3 P	4	UTILITIES #3
ADVKEYS	G1 S	8	TPUG-SIMLTN 1	BABY CARE	G7 P	12	TPUG-SIMLTN 2
ADVKEYS	G7 S	8	TPUG-SIMLTN 2	BACKGAMMON 2.0	X3 P	30	TPUG BEST-GAME 1
ADVKEYS	X5 S	8	TPUG BEST-GAME 3	BACKGAMMON 4.0	X4 P	30	TPUG BEST-GAME 2
ADVMAP	G1 S	21	TPUG-SIMLTN 1	BACKUP 2031 1.0	U5 P	15	TPUG-UTILITIES 5
ADVMAP	G7 S	21	TPUG-SIMLTN 2	BACKUP 2031 1.0	X1 P	15	TPUG BEST-UTIL 1
ADVMAP	X5 S	21	TPUG BEST-GAME 3	BAGELS-BUTTRFLD	G3 P	3	TPUG-WRD/NUM1
ADVSH8	G7 S	18	TPUG-SIMLTN 2	BAGELSX2-BTTRFLD	G3 P	12	TPUG-WRD/NUM1
ADVSH8	X5 S	18	TPUG BEST-GAME 3	BAID INST	U4 P	11	UTILITIES #4
ADVSH9	G7 S	18	TPUG-SIMLTN 2	BAID.X\$9000@2000	U2 P	17	UTILITIES #2
ADVSHOR	G1 S	18	TPUG-SIMLTN 1	BAID240A	U5 P	17	TPUG-UTILITIES 5
ADVSHOR	X5 S	18	TPUG BEST-GAME 3	BAID240A	X1 P	17	TPUG BEST-UTIL 1
AFO WITH SOUND	G2 P	25	TPUG-SPACE 1	BAID240AB	U4 P	17	UTILITIES #4
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AFRICAN ADV-32K	G7 P	91	TPUG-SIMLTN 2	BAID240C	X1 P	17	TPUG BEST-UTIL 1
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AID4	E6 P	8	TPUG-CAEB 6	BAID440A	U5 P	17	TPUG-UTILITIES 5
AID4	U1 P	8	UTILITIES #1	BAID440A	X1 P	17	TPUG BEST-UTIL 1
AID4	X1 P	8	TPUG BEST-UTIL 1	BAID440AB	U4 P	17	UTILITIES #4
AID4.ASM	A3 P	31	TPUG-ASSM 3	BAID440C	U5 P	17	TPUG-UTILITIES 5
AIRPLANE	G4 P	23	TPUG-GAMES 1	BAID440C	X1 P	17	TPUG BEST-UTIL 1
ALLELUJAH!	S1 P	9	TPUG-MUSIC 1	BAID440CB	U4 P	14	UTILITIES #4
ALPHA-LIST	E6 P	4	TPUG-CAEB 6	BAID480A	U5 P	17	TPUG-UTILITIES 5
AMORT'N TABLES	E2 P	13	TPUG-CEAB 1	BAID480A	X1 P	17	TPUG BEST-UTIL 1
AMORTIZATION HEL	E5 P	9	TPUG-CEAB 5	BAID480AB	U4 P	17	UTILITIES #4
ANDROID NIM!	G3 P	23	TPUG-WRD/NUM1	BAID480C	U5 P	17	TPUG-UTILITIES 5
ANIMAL	E1 P	13	TPUG-EDUC 1	BAID480C	X1 P	17	TPUG BEST-UTIL 1
ANIMAL.DATA	E1 S	10	TPUG-EDUC 1	BAID480CB	U4 P	17	UTILITIES #4
ANTI-AIR/BUS	G5 P	13	TPUG-GAMES 2	BAID4B@S7000	U2 P	17	UTILITIES #2
ANTONYMS!	E8 P	17	TPUG-EDUC 2	BAID4F40A	U5 P	17	TPUG-UTILITIES 5
APARTMENT.INCOME	B1 P	24	TPUG-BUSNSS 1	BAID4F40A	X1 P	17	TPUG BEST-UTIL 1
APP LOAD SOURCE	A3 P	49	TPUG-ASSM 3	BAID4F40C	U5 P	17	TPUG-UTILITIES 5
APP/REN24.REL	X1 P	22	TPUG BEST-UTIL 1	BAID4F40C	X1 P	17	TPUG BEST-UTIL 1
APPEND.ASM	A2 P	8	TPUG-ASSM 2	BAIRSTOW NTH EQS	E4 P	6	TPUG-CEAB 4

BALANCING EQU	E5 P	46 TPUG-CEAB 5	BLACK JACK 4.1	G4 P	20 TPUG-GAMES 1
BALANCING EQU	E8 P	46 TPUG-EDUC 2	BLACKBOX	G6 P	26 TPUG-GAMES 3
BAM MAP	X1 P	16 TPUG BEST-UTIL 1	BLACKJACK	V1 P	9 TPUG-VIC GAME 1
BAM MAP CBMSDK	U2 P	16 UTILITIES #2	BLACKJACK 80 COL	GAP	13 TPUG - GAMES 5
BANDIT 1	V1 P	11 TPUG-VIC GAME 1	BLACKJACK!!	G4 P	18 TPUG-GAMES 1
BANNER/R	Z2 P	36 TPUG-MISCELLAN 2	BLACKJACK.ALT	G6 P	20 TPUG-GAMES 3
BAR GRAPH	V3 P	2 TPUG-VIC DEMO 1	BLOCK GET 1.0	U1 P	2 UTILITIES #1
BAR GRAPH 24	N2 P	21 TPUG-MTH/SCI2	BLOCKADE	GAP	26 TPUG - GAMES 5
BAR.GRAPH.ALT	Z1 P	9 TPUG-MISC. 1	BLOCKADE	X3 P	26 TPUG BEST-GAME 1
BAROQUE FANFARE!	S1 P	4 TPUG-MUSIC 1	BLOCKADE	X4 P	26 TPUG BEST-GAME 2
BARRICADE	V1 P	5 TPUG-VIC GAME 1	BMBSTRINGTHING	A2 S	14 TPUG-ASSM 2
BASE CONV.ALT	E8 P	23 TPUG-EDUC 2	BOGGLE	G6 P	9 TPUG-GAMES 3
BASEBALL 7.3	GAP	26 TPUG - GAMES 5	BOMBER	G4 P	13 TPUG-GAMES 1
BASEBALL 7.3	X3 P	26 TPUG BEST-GAME 1	BOMBER	X3 P	13 TPUG BEST-GAME 1
BASEBALL 7.3	X4 P	26 TPUG BEST-GAME 2	BOMBER	X4 P	13 TPUG BEST-GAME 2
BASIC AID 4	U2 P	11 UTILITIES #2	BOMBER.ALT	G6 P	13 TPUG-GAMES 3
BASIC STATISTICS	E4 P	3 TPUG-CEAB 4	BONDS	E5 P	9 TPUG-CEAB 5
BASIC-AID.ASM	A5 P	2 TPUG-ASSEMBLER 5	BCNE TUMOR DIAGN	N2 P	17 TPUG-MTH/SCI2
BASIC-AID.CT	A5 P	3 TPUG-ASSEMBLER 5	BOWLING	G4 P	10 TPUG-GAMES 1
BASIC-AID.DOS	A5 P	11 TPUG-ASSEMBLER 5	BOWLING	G6 P	25 TPUG-GAMES 3
BASIC-AID.INST1	U5 P	29 TPUG-UTILITIES 5	BOXING	G6 P	11 TPUG-GAMES 3
BASIC-AID.INST1	X1 P	29 TPUG BEST-UTIL 1	BRAIN STRAIN	G3 P	5 TPUG-WRD/NUM1
BASIC-AID.INST2	U5 P	35 TPUG-UTILITIES 5	BRASS POUNDER 2	C2 P	19 TPUG-COMMUNIC 2
BASIC-AID.INST2	X1 P	34 TPUG BEST-UTIL 1	BREAK80	G8 P	7 TPUG-GAMES 4
BASIC-AID.M1A	A5 P	19 TPUG-ASSEMBLER 5	BREAKOUT	G4 P	7 TPUG-GAMES 1
BASIC-AID.M1B	A5 P	17 TPUG-ASSEMBLER 5	BREAKOUT	G5 P	16 TPUG-GAMES 2
BASIC-AID.M2A	A5 P	16 TPUG-ASSEMBLER 5	BREAKOUT	G8 P	7 TPUG-GAMES 4
BASIC-AID.M2B	A5 P	14 TPUG-ASSEMBLER 5	BREAKOUT	V1 P	6 TPUG-VIC GAME 1
BASIC-AID.M3A	A5 P	16 TPUG-ASSEMBLER 5	BREAKOUT	X3 P	7 TPUG BEST-GAME 1
BASIC-AID.M3B	A5 P	28 TPUG-ASSEMBLER 5	BREAKOUT	X4 P	7 TPUG BEST-GAME 2
BASIC-AID.M3C	A5 P	21 TPUG-ASSEMBLER 5	BREAKOUT 3.1	G6 P	6 TPUG-GAMES 3
BASIC-AID.M4	A5 P	29 TPUG-ASSEMBLER 5	BRIDGE BID TRAIN	G6 P	23 TPUG-GAMES 3
BASIC-AID.ROLLA	A5 P	19 TPUG-ASSEMBLER 5	BUILD HELLO	U3 P	4 UTILITIES #3
BASIC-AID.ROLLB	A5 P	17 TPUG-ASSEMBLER 5	BUMBLE BEE!	S1 P	12 TPUG-MUSIC 1
BASIC.AID.EXE	A2 P	11 TPUG-ASSM 2	BUMBLEBEE	V3 P	11 TPUG-VIC DEMO 1
BASIC.AID.EXE	U1 P	11 UTILITIES #1	BUS.PR\CASH\ROI	B1 P	12 TPUG-BUSNSS 1
BASIC.AID.INS	A2 P	31 TPUG-ASSM 2	BUSH TRAIL	V1 P	12 TPUG-VIC GAME 1
BASIC.HUMOROUS	Z1 P	14 TPUG-MISC. 1	BUTTERFIELD DEMO	V2 P	3 TPUG-VIC UTIL 1
BASICODE READ	V2 P	6 TPUG-VIC UTIL 1	C-C'S AUST & AME	E7 P	21 TPUG-CEAB 7
BASICODE SEND	V2 P	7 TPUG-VIC UTIL 1	C-C'S CAN & EUR	E7 P	21 TPUG-CEAB 7
BASKETBALL	G6 P	16 TPUG-GAMES 3	C.C.STARWAR	G2 P	27 TPUG-SPACE 1
BATTLESHIP	GBP	16 TPUG - GAMES 6	C.C.STARWAR.INS	G2 P	22 TPUG-SPACE 1
BATTLESHIP.ALT2	G5 P	18 TPUG-GAMES 2	C2 WATER/ZEBRA L	E9 P	44 TPUG-EDUCATION 9
BATTLESHIPS	G4 P	14 TPUG-GAMES 1	CALCULART	V3 P	11 TPUG-VIC DEMO 1
BBS PROGRAM	C1 P	47 TPUG-COMMUN 1	CALENDAR	E3 P	16 TPUG-CEAB 2/3
BEADS	E3 P	4 TPUG-CEAB 2/3	CALENDAR-LOWNDES	Z1 P	11 TPUG-MISC. 1
BEST FIT(LEAST)	E4 P	3 TPUG-CEAB 4	CALENDAR.ALT	Z1 P	7 TPUG-MISC. 1
BIG BINARY	E5 P	3 TPUG-CEAB 5	CANADIAN FLAG	V3 P	3 TPUG-VIC DEMO 1
BIG LETTER ADS	Z1 P	21 TPUG-MISC. 1	CANARY	Z1 P	3 TPUG-MISC. 1
BIG LETTER BOGGL	GBP	17 TPUG - GAMES 6	CANBAL&MISSY.SOL	Z1 P	10 TPUG-MISC. 1
BIG MATH 1.1	E1 P	11 TPUG-EDUC 1	CANNATA	Z1 P	7 TPUG-MISC. 1
BILLIARDS	G6 P	10 TPUG-GAMES 3	CAPITAL CITIES	E7 P	46 TPUG-CEAB 7
BILLIARDS!	G5 P	25 TPUG-GAMES 2	CAPITALS	E2 P	13 TPUG-CEAB 1
BINGO	G3 P	11 TPUG-WRD/NUM1	CAR RACE	V1 P	13 TPUG-VIC GAME 1
BINSEARCH	L1 P	2 TPUG-LANGUAGE 1	CAR RACE 2.0	X3 P	20 TPUG BEST-GAME 1
BIOPRINTER 6.3	N1 P	17 TPUG-MTH/SCI1	CAR RACE 4.0	G8 P	20 TPUG-GAMES 4
BIORHYTHM	V1 P	12 TPUG-VIC GAME 1	CAR RACE 4.0	X4 P	20 TPUG BEST-GAME 2
BIORHYTHM 1.5	N1 P	8 TPUG-MTH/SCI1	CAR.COST\MILE	B1 P	25 TPUG-BUSNSS 1
BIRDS DEMO	V3 P	12 TPUG-VIC DEMO 1	CARD SNAP	G5 P	22 TPUG-GAMES 2
BKEEPING.ALT	B3 P	21 TPUG-BUSINESS 3	CARDS UTILITY	G5 P	11 TPUG-GAMES 2
BL GET @\$033A	U1 P	1 UTILITIES #1	CARTOON!	Z1 P	20 TPUG-MISC. 1
BL JACK-PUNTER	G4 P	15 TPUG-GAMES 1	CASCADE	Z1 P	6 TPUG-MISC. 1
BLACK BOX!	G4 P	22 TPUG-GAMES 1	CASH REGISTER	E1 P	9 TPUG-EDUC 1
BLACK BOX!	X3 P	22 TPUG BEST-GAME 1	CASS.LABELER	U4 P	15 UTILITIES #4
BLACK BOX!	X4 P	22 TPUG BEST-GAME 2	CASS.LABELER	X1 P	15 TPUG BEST-UTIL 1
BLACK JACK	X3 P	19 TPUG BEST-GAME 1	CASSETTE.TO.DISK	U1 P	7 UTILITIES #1
BLACK JACK	X4 P	19 TPUG BEST-GAME 2	CASTLE ADV-32K	G9 P	75 TPUG-SIMLTN 3

CATALOG	U1 P	8 UTILITIES #1	COPYCAT'SYS934	U1 P	1 UTILITIES #1
CATALOG+6	U3 P	12 UTILITIES #3	COPYCAT'SYS934	X1 P	1 TPUG BEST-UTIL 1
CBM 4032	U2 P	4 UTILITIES #2	COPYDISK/SYS973	U1 P	1 UTILITIES #1
CBM 4032 V2	U4 P	4 UTILITIES #4	COPYPROG	U1 P	3 UTILITIES #1
CBM 4032 V2	U5 P	4 TPUG-UTILITIES 5	CORESEND	C2 P	11 TPUG-COMMUNIC 2
CBM 4032 V2.1	U6 P	4 TPUG-UTILITIES 6	CORRECTIONS	L1 P	13 TPUG-LANGUAGE 1
CBM 4032 V2.1	X1 P	4 TPUG BEST-UTIL 1	CRAPS.ODDS	G3 P	16 TPUG-WRD/NUM1
CBM 8010	C1 P	6 TPUG-COMMUN 1	CRAZY 8'S	G8 P	16 TPUG-GAMES 4
CBM 8010	E6 P	6 TPUG-CAEB 6	CRITICAL PATH	B3 P	46 TPUG-BUSINESS 3
CBM.TO.MAE	A1 P	5 TPUG-ASSM 1	CRITICAL PATH 2A	N1 P	5 TPUG-MTH/SCI1
CENTRAL CONICS	E7 P	26 TPUG-CEAB 7	CROSS REF	U3 P	8 UTILITIES #3
CHANGE DISK	U6 P	4 TPUG-UTILITIES 6	CROSS WORD	GBP	34 TPUG - GAMES 6
CHANGE DISK	X1 P	4 TPUG BEST-UTIL 1	CROSS-REF	U1 P	7 UTILITIES #1
CHANGE/LADR.BAS	U3 P	5 UTILITIES #3	CROSS-REF	X1 P	7 TPUG BEST-UTIL 1
CHAR.SET.DEFN	U6 P	13 TPUG-UTILITIES 6	CROUT ALGORITHM	N1 P	5 TPUG-MTH/SCI1
CHASE/ROBOT	G4 P	10 TPUG-GAMES 1	CRUNCH	U3 P	11 UTILITIES #3
CHECK DISK	V2 P	4 TPUG-VIC UTIL 1	CRUNCH2	U3 P	11 UTILITIES #3
CHECKERS	V1 P	12 TPUG-VIC GAME 1	CRUNCH4.0	U3 P	11 UTILITIES #3
CHECKERS 1	G4 P	12 TPUG-GAMES 1	CRYPTARITHMETIC	N2 P	10 TPUG-MTH/SCI2
CHECKERS 2	G4 P	10 TPUG-GAMES 1	CRYPTO-BTTRFLD	G3 P	6 TPUG-WRD/NUM1
CHECKERS.ALT	G6 P	25 TPUG-GAMES 3	CRYPTOGRAM	E1 P	5 TPUG-EDUC 1
CHEEP PRINT	U6 P	12 TPUG-UTILITIES 6	CURFIT-BTTRFLD	N1 P	8 TPUG-MTH/SCI1
CHEM NOMINCLATUR	E6 P	12 TPUG-CAEB 6	CURRENCY.CONV	B1 P	6 TPUG-BUSNSS 1
CHEMIST	E9 P	11 TPUG-EDUCATION 9	CURVE-FIT	E3 P	30 TPUG-CEAB 2/3
CHEMISTRY CALC	E8 P	12 TPUG-EDUC 2	CURVE-FIT 2	E3 P	22 TPUG-CEAB 2/3
CHI SQUARE	N1 P	3 TPUG-MTH/SCI1	CYCLE JMP 80 COL	GAP	9 TPUG - GAMES 5
CHICK	E8 P	26 TPUG-EDUC 2	DAM BUSTERS	V1 P	12 TPUG-VIC GAME 1
CHICK RESULTS	E8 P	24 TPUG-EDUC 2	DAMBUSTERS	G4 P	25 TPUG-GAMES 1
CIRKELDEMO	V3 P	3 TPUG-VIC DEMO 1	DANSE CAPRICE	S1 P	4 TPUG-MUSIC 1
CLOCK	Z2 P	2 TPUG-MISCELLAN 2	DART	E2 P	14 TPUG-CEAB 1
CLOCK 8032	Z2 P	2 TPUG-MISCELLAN 2	DARTH.VADER.PIC	Z1 P	6 TPUG-MISC. 1
CLOSED-3	E3 P	5 TPUG-CEAB 2/3	DATA WRITER	U6 P	3 TPUG-UTILITIES 6
CLOUZOT!	G5 P	21 TPUG-GAMES 2	DATA WRITER	X1 P	3 TPUG BEST-UTIL 1
CLUE	G5 P	23 TPUG-GAMES 2	DATA WRITER	X2 P	3 TPUG BEST-UTIL 2
COLOUR BARS	V3 P	1 TPUG-VIC DEMO 1	DATABASE20/4.0	U6 P	15 TPUG-UTILITIES 6
COMAL EXPLAIN	L1 P	31 TPUG-LANGUAGE 1	DATAMAKER	U1 P	2 UTILITIES #1
COMAL80	L1 P	106 TPUG-LANGUAGE 1	DATES	E6 P	18 TPUG-CAEB 6
COMAL80+	L1 P	109 TPUG-LANGUAGE 1	DATES-BTTRFLD	B1 P	7 TPUG-BUSNSS 1
COMALERRORS	L1 S	4 TPUG-LANGUAGE 1	DAY OF THE WEEK	B1 P	4 TPUG-BUSNSS 1
COMBINATION WAR!	E9 P	33 TPUG-EDUCATION 9	DDR	E5 P	13 TPUG-CEAB 5
COMBINATION WARS	E4 P	28 TPUG-CEAB 4	DEC->FLOATING PT	U3 P	4 UTILITIES #3
COMMODORE SYMBOL	V3 P	2 TPUG-VIC DEMO 1	DECIMALS	E7 P	17 TPUG-CEAB 7
COMMUNICATE TEST	C1 P	5 TPUG-COMMUN 1	DECISION.MAKER	B1 P	14 TPUG-BUSNSS 1
COMPACTOR	U1 P	24 UTILITIES #1	DEEPSPACE 1.0	G2 P	24 TPUG-SPACE 1
COMPACTOR	X1 P	24 TPUG BEST-UTIL 1	DEFINE PTR. CHAR	U3 P	8 UTILITIES #3
COMPLEX NUMBERS	N2 P	9 TPUG-MTH/SCI2	DEFLECTION	G4 P	9 TPUG-GAMES 1
COMPOSE	E6 P	18 TPUG-CAEB 6	DEFLECTION	V1 P	5 TPUG-VIC GAME 1
CONCENTRATION	G5 P	24 TPUG-GAMES 2	DELETE	L1 P	13 TPUG-LANGUAGE 1
CONCENTRATION.7	G3 P	24 TPUG-WRD/NUM1	DELETE ALL	U4 P	7 UTILITIES #4
CONCORD LANDER	GBP	27 TPUG - GAMES 6	DELETE ALL	U5 P	7 TPUG-UTILITIES 5
CONNECT 4	GAP	27 TPUG - GAMES 5	DELETE ALL	X1 P	7 TPUG BEST-UTIL 1
CONTENTS	U3 P	14 UTILITIES #3	DELREC	L1 P	13 TPUG-LANGUAGE 1
CONVERSIONS A	N3 P	45 TPUG-MATH/SCI 3	DEMO	U1 P	20 UTILITIES #1
CONVERSIONS B	N3 P	43 TPUG-MATH/SCI 3	DEMO	V3 P	11 TPUG-VIC DEMO 1
COPY ALL	S1 P	8 TPUG-MUSIC 1	DEMO	X1 P	20 TPUG BEST-UTIL 1
COPY ALL	U1 P	8 UTILITIES #1	DEMO 8032	B1 P	71 TPUG-BUSNSS 1
COPY ALL	U2 P	8 UTILITIES #2	DEMO SORT	N1 P	9 TPUG-MTH/SCI1
COPY ALL	U3 P	8 UTILITIES #3	DEPRECIATE	E5 P	5 TPUG-CEAB 5
COPY ALL	U4 P	8 UTILITIES #4	DEPTH CHARGE	G5 P	18 TPUG-GAMES 2
COPY ALL	U5 P	8 TPUG-UTILITIES 5	DEPTH CHARGE	V1 P	10 TPUG-VIC GAME 1
COPY ALL	X1 P	8 TPUG BEST-UTIL 1	DERIVATIVE	N1 P	2 TPUG-MTH/SCI1
COPY DISK FILES	E4 P	10 TPUG-CEAB 4	DESCENDERS/2022	U1 P	4 UTILITIES #1
COPY/ALL	U4 P	10 UTILITIES #4	DICE.PIG	G5 P	13 TPUG-GAMES 2
COPY/ALL	U5 P	10 TPUG-UTILITIES 5	DIET	E5 P	18 TPUG-CEAB 5
COPY/ALL	X1 P	10 TPUG BEST-UTIL 1	DIR	V2 P	4 TPUG-VIC UTIL 1
COPYCAT!SYS934	U1 P	1 UTILITIES #1	DIR CATALOG	U4 P	14 UTILITIES #4
COPYCAT!SYS934	X1 P	1 TPUG BEST-UTIL 1	DIR CATALOG	U5 P	14 TPUG-UTILITIES 5

DIR LOADER 2.0	U4 P	18 UTILITIES #4	DUMP4	U2 P	1 UTILITIES #2
DIR LOADER 2.0	U5 P	18 TPUG-UTILITIES 5	DUMP4/SYS826	X1 P	1 TPUG BEST-UTIL 1
DIR LOADER 4.0	U4 P	21 UTILITIES #4	DUNGEON 1.4	G1 P	26 TPUG-SIMLTN 1
DIR LOADER 4.0	U5 P	21 TPUG-UTILITIES 5	DUNGEON.AL.T3	G1 P	22 TPUG-SIMLTN 1
DIR MERGE	U4 P	6 UTILITIES #4	DYNALOGIC	E6 P	30 TPUG-CAEB 6
DIR MERGE	U5 P	6 TPUG-UTILITIES 5	DYNATEXT	B1 P	43 TPUG-BUSNSS 1
DIR PRINT	U4 P	9 UTILITIES #4	DYNATEXT.INS	B1 S	45 TPUG-BUSNSS 1
DIR PRINT	U5 P	9 TPUG-UTILITIES 5	E-ROM DEMO	Z2 P	6 TPUG-MISCELLAN 2
DIR UPDATE	U4 P	18 UTILITIES #4	E.G SET-UP 80COL	B1 P	12 TPUG-BUSNSS 1
DIR UPDATE	U5 P	18 TPUG-UTILITIES 5	E.G SET-UP 80COL	X6 P	12 TPUG BEST-MISC 1
DIR.ACCESS.S/R'S	U1 P	7 UTILITIES #1	EARTHQUAKE	E5 P	25 TPUG-CEAB 5
DISASM	V2 P	11 TPUG-VIC UTIL 1	EASY ADD & SUBTR	E1 P	12 TPUG-EDUC 1
DISC MERGE/BASIC	U2 P	10 UTILITIES #2	EASY EDIT	E5 P	16 TPUG-CEAB 5
DISK	L1 P	6 TPUG-LANGUAGE 1	EASY EDIT/C	U3 P	14 UTILITIES #3
DISK APPEND	U1 P	1 UTILITIES #1	EASY EDIT/C	X6 P	14 TPUG BEST-MISC 1
DISK APPEND-M.B.	U1 P	7 UTILITIES #1	EASY EDIT/DISK	U3 P	16 UTILITIES #3
DISK APPEND-M.B.	X1 P	7 TPUG BEST-UTIL 1	EASY EDIT/DISK	X6 P	16 TPUG BEST-MISC 1
DISK CHECK	U6 P	15 TPUG-UTILITIES 6	EASY EDIT/MX-80	U6 P	18 TPUG-UTILITIES 6
DISK CHECK	X1 P	15 TPUG BEST-UTIL 1	EASY EDIT/MX-80	X6 P	18 TPUG BEST-MISC 1
DISK DATA	E2 S	1 TPUG-CEAB 1	EASY EDIT/TAPE	U3 P	15 UTILITIES #3
DISK DOCTOR	U3 P	14 UTILITIES #3	EASY EDIT/TAPE	X6 P	15 TPUG BEST-MISC 1
DISK DOCUMENTER	U3 P	9 UTILITIES #3	EASY.DUNGEON!	G2 P	25 TPUG-SPACE 1
DISK FILE RECVRY	X1 P	39 TPUG BEST-UTIL 1	EASY.EDIT.MX-82	U6 P	17 TPUG-UTILITIES 6
DISK ID CORRCTOR	U1 P	5 UTILITIES #1	EASY.EDIT.MX-82	X6 P	17 TPUG BEST-MISC 1
DISK ID CORRCTOR	X1 P	5 TPUG BEST-UTIL 1	ED-TERM	C1 P	30 TPUG-COMMUN 1
DISK LOGGER	U1 P	7 UTILITIES #1	ED-TERM	C2 P	30 TPUG-COMMUNIC 2
DISK LOGGER	U2 P	9 UTILITIES #2	EDU-TILITIES	E1 P	27 TPUG-EDUC 1
DISK MASTER V2	X1 P	30 TPUG BEST-UTIL 1	EDU-TILITIES	N1 P	27 TPUG-MTH/SCI1
DISK MOD	U6 P	7 TPUG-UTILITIES 6	ELEANOR RIGBY	S1 P	15 TPUG-MUSIC 1
DISK MOD	X1 P	7 TPUG BEST-UTIL 1	ELECTRONICS.CALC	N1 P	15 TPUG-MTH/SCI1
DISK MOD/V1	U1 P	6 UTILITIES #1	ELEMENT DRILL	E4 P	13 TPUG-CEAB 4
DISK NAME (R)	U1 P	7 UTILITIES #1	ELEMENT QUIZZER	E9 P	21 TPUG-EDUCATION 9
DISK NAME (R)	X1 P	7 TPUG BEST-UTIL 1	ELEMENT QZ 80COL	E9 P	22 TPUG-EDUCATION 9
DISK PEEK	U1 P	5 UTILITIES #1	ELEPHANT	S1 P	16 TPUG-MUSIC 1
DISK PEEK	X1 P	5 TPUG BEST-UTIL 1	ELIZA	E1 P	24 TPUG-EDUC 1
DISK VIEW	U1 P	5 UTILITIES #1	ELIZA	G2 P	25 TPUG-SPACE 1
DISK VIEW	U6 P	7 TPUG-UTILITIES 6	ENCHANTED HOUSE!	E9 P	81 TPUG-EDUCATION 9
DISK VIEW	X1 P	7 TPUG BEST-UTIL 1	ENGLISH GRAMMAR	E8 P	25 TPUG-EDUC 2
DISPLAY	E1 P	23 TPUG-EDUC 1	ENROLL	L1 P	12 TPUG-LANGUAGE 1
DISPLAY LETTERS	Z1 P	23 TPUG-MISC. 1	ENTERMARKS	L1 P	12 TPUG-LANGUAGE 1
DISPLAY T&S	V2 P	14 TPUG-VIC UTIL 1	ENZYMIC	E5 P	10 TPUG-CEAB 5
DIVISION	E7 P	17 TPUG-CEAB 7	EP4 SYS32000/1	U4 P	2 UTILITIES #4
DLOAD EASIER	U6 P	3 TPUG-UTILITIES 6	EP4 SYS32000/1	U5 P	2 TPUG-UTILITIES 5
DOC-SCARDIAC 7B	E8 P	29 TPUG-EDUC 2	EP4 SYS32000/1	X1 P	2 TPUG BEST-UTIL 1
DOG BITE	E9 P	28 TPUG-EDUCATION 9	EP4XSYS32000/1	U4 P	3 UTILITIES #4
DOG.STAR.ADVEN	G1 P	71 TPUG-SIMLTN 1	EP4XSYS32000/1	U5 P	3 TPUG-UTILITIES 5
DOMINOES	G5 P	19 TPUG-GAMES 2	EP4XSYS32000/1	X1 P	3 TPUG BEST-UTIL 1
DONUTS	E1 P	8 TPUG-EDUC 1	EPROM.PRGM.ASM	A1 P	32 TPUG-ASSM 1
DOS.ASM	A1 P	30 TPUG-ASSM 1	EPROM.PRGM.EXE	A1 P	3 TPUG-ASSM 1
DOT RACER	G6 P	14 TPUG-GAMES 3	EPROM.PRGM.INS	A1 P	6 TPUG-ASSM 1
DOUBLE	L1 P	2 TPUG-LANGUAGE 1	ERIC ASSM	A4 P	25 TPUG-ASSM 4
DRAG RACE 80 COL	GAP	15 TPUG - GAMES 5	ERIC ASSM	U2 P	25 UTILITIES #2
DRAGON	V3 P	5 TPUG-VIC DEMO 1	ERIC ASSM	U3 P	25 UTILITIES #3
DRAGON	Z1 P	10 TPUG-MISC. 1	ERIC ASSM	X2 P	25 TPUG BEST-UTIL 2
DRAGON MAZE	V1 P	12 TPUG-VIC GAME 1	ESP	Z2 P	37 TPUG-MISCELLAN 2
DRAGON.MAZE!	G5 P	21 TPUG-GAMES 2	ESPANA	S1 P	4 TPUG-MUSIC 1
DRAGSTER	GBP	12 TPUG - GAMES 6	ETCH-A-SKETCH	Z1 P	19 TPUG-MISC. 1
DRAW.POKER	G5 P	23 TPUG-GAMES 2	EUCLID	L1 P	3 TPUG-LANGUAGE 1
DRIVING TEST	E4 P	27 TPUG-CEAB 4	EUROPE	E1 P	10 TPUG-EDUC 1
DRM BREAKOUT	V1 P	7 TPUG-VIC GAME 1	EUROPEAN CAPITOL	E1 P	10 TPUG-EDUC 1
DRUNKARD	E3 P	5 TPUG-CEAB 2/3	EXEC HELLO	U3 P	2 UTILITIES #3
DUCKSHOOT	G4 P	14 TPUG-GAMES 1	EXMON.CT	A1 P	3 TPUG-ASSM 1
DUELIN' BANJOS	S1 P	12 TPUG-MUSIC 1	EXMON.M01	A1 P	8 TPUG-ASSM 1
DUM 3.2	E2 P	26 TPUG-CEAB 1	EXMON.M02	A1 P	27 TPUG-ASSM 1
DUMP SEQ FILE	U1 P	2 UTILITIES #1	EXMON.M03	A1 P	14 TPUG-ASSM 1
DUMP2	U2 P	1 UTILITIES #2	EXMON.M04	A1 P	14 TPUG-ASSM 1
DUMP2/SYS826	X1 P	1 TPUG BEST-UTIL 1	EXMON.M05	A1 P	13 TPUG-ASSM 1

EXMON.M06	A1 P	16 TPUG-ASSM 1	FORMS.CT	A3 P	8 TPUG-ASSM 3
EXMON.M07	A1 P	12 TPUG-ASSM 1	FORMS.M1	A3 P	41 TPUG-ASSM 3
EXMON.M08	A1 P	8 TPUG-ASSM 1	FORMS.M2	A3 P	39 TPUG-ASSM 3
EXMON.M09	A1 P	8 TPUG-ASSM 1	FORWARD	L1 P	1 TPUG-LANGUAGE 1
EXMON.M0A	A1 P	6 TPUG-ASSM 1	FRACTION GAME20	E4 P	16 TPUG-CEAB 4
EXPECTANCY	E3 P	18 TPUG-CEAB 2/3	FRACTIONS	E1 P	6 TPUG-EDUC 1
EXPLORE-BTTRFLD	G1 P	22 TPUG-SIMLTN 1	FRACTIONS DRILL	E7 P	25 TPUG-CEAB 7
EXTRA INSTR.	U3 P	36 UTILITIES #3	FRENCH	E1 P	10 TPUG-EDUC 1
EXTRA INSTR.	U5 P	36 TPUG-UTILITIES 5	FRENCH VERBS	E1 P	11 TPUG-EDUC 1
EXTRAMON INST	U1 P	33 UTILITIES #1	FRENCH VERBS FWC	E6 P	57 TPUG-CAEB 6
EXTRAMON.4.0B	U1 P	9 UTILITIES #1	FREQ GENERATOR!	N2 P	25 TPUG-MTH/SCI2
EXTRAMON.4.0G	U1 P	9 UTILITIES #1	FREQ.CTR.ASM	A1 P	2 TPUG-ASSM 1
EXTRAMON.EXE9.0B	A1 P	9 TPUG-ASSM 1	FRERE JACQUES	V3 P	3 TPUG-VIC DEMO 1
EXTRAMON.EXE9.0G	A1 P	9 TPUG-ASSM 1	FUGHETTA	S1 P	10 TPUG-MUSIC 1
EXTRAMON.INS9.3	X2 P	33 TPUG BEST-UTIL 2	FUNCTION GRAPH	E6 P	11 TPUG-CAEB 6
EXTRAMON2@S1000	X2 P	9 TPUG BEST-UTIL 2	FUNCTION.MACHINE	N1 P	23 TPUG-MTH/SCI1
EXTRAMON2@S7000	X2 P	9 TPUG BEST-UTIL 2	FWCI INTEGER TTT	E6 P	17 TPUG-CAEB 6
EXTRAMON4@S1000	X2 P	9 TPUG BEST-UTIL 2	GAVOTTE&MUSETTE	S1 P	12 TPUG-MUSIC 1
EXTRAMON4@S7000	X2 P	9 TPUG BEST-UTIL 2	GEIGER COUNTER	E2 P	11 TPUG-CEAB 1
EXTRAMON9.3B	A2 P	8 TPUG-ASSM 2	GENERAL ANOVA	E5 P	17 TPUG-CEAB 5
EXTRAMON9.3G	A2 P	8 TPUG-ASSM 2	GENERAL DEMO	V3 P	13 TPUG-VIC DEMO 1
EXTRAMON9B(2)	U3 P	9 UTILITIES #3	GENERRORS-D	L1 P	7 TPUG-LANGUAGE 1
EXTRAMON9B(2)	U5 P	9 TPUG-UTILITIES 5	GENERRORS-E	L1 P	6 TPUG-LANGUAGE 1
EXTRAMON9B(4)	U3 P	9 UTILITIES #3	GEOGRAPHY	E3 P	25 TPUG-CEAB 2/3
EXTRAMON9B(4)	U5 P	9 TPUG-UTILITIES 5	GLOBAL	E1 P	6 TPUG-EDUC 1
EXTRAMON9B@S1000	U1 P	9 UTILITIES #1	GLOBAL	N1 P	6 TPUG-MTH/SCI1
EXTRAMON9G(2)	U3 P	9 UTILITIES #3	GO-MOKU	G4 P	14 TPUG-GAMES 1
EXTRAMON9G(2)	U5 P	9 TPUG-UTILITIES 5	GOLF	G6 P	20 TPUG-GAMES 3
EXTRAMON9G(4)	U3 P	9 UTILITIES #3	GRADES	E4 P	9 TPUG-CEAB 4
EXTRAMON9G(4)	U5 P	9 TPUG-UTILITIES 5	GRAMMAR	E1 P	5 TPUG-EDUC 1
EXTRAMON9G@S1000	U1 P	9 UTILITIES #1	GRAND PRIX	V1 P	11 TPUG-VIC GAME 1
F16 WATAID 4	U6 P	17 TPUG-UTILITIES 6	GRAPH PLOTTER	E4 P	5 TPUG-CEAB 4
F32 WATAID 4	U6 P	17 TPUG-UTILITIES 6	GRAPH SNAPSHOT	E2 P	19 TPUG-CEAB 1
FACTOR RACE	E6 P	20 TPUG-CAEB 6	GRAPH SUBROUTINE	E2 P	5 TPUG-CEAB 1
FACTORING DRILL	E7 P	25 TPUG-CEAB 7	GRAPH SUBS	U4 P	5 UTILITIES #4
FACTORING WHOLESE	E7 P	18 TPUG-CEAB 7	GRAPH SUBS	Z2 P	5 TPUG-MISCELLAN 2
FACTORS	E6 P	13 TPUG-CAEB 6	GRAPH.PRINTER	X6 P	12 TPUG BEST-MISC 1
FACTORS-BTTRFLD	N1 P	4 TPUG-MTH/SCI1	GRAPH.PRINTER	Z1 P	12 TPUG-MISC. 1
FAMILY GENES	N3 P	34 TPUG-MATH/SCI 3	GRAPHDEMO	V3 P	1 TPUG-VIC DEMO 1
FAMOUS PHRASES	G3 P	13 TPUG-WRD/NUM1	GRAPHDEM1	V3 P	2 TPUG-VIC DEMO 1
FAST INVADRS 2.0	X3 P	29 TPUG BEST-GAME 1	GRAPHDEM3	V3 P	5 TPUG-VIC DEMO 1
FAST INVADRS 4.0	X4 P	29 TPUG BEST-GAME 2	GRAPHIC DEMO 1	V3 P	3 TPUG-VIC DEMO 1
FAST SKIP 2022	U3 P	4 UTILITIES #3	GRAPHIC EDITOR	U6 P	10 TPUG-UTILITIES 6
FAWLTY	G5 P	14 TPUG-GAMES 2	GRAPHICS	U4 P	8 UTILITIES #4
FEB 80	B1 S	1 TPUG-BUSNSS 1	GRAPHICS	Z2 P	8 TPUG-MISCELLAN 2
FFT	E4 P	13 TPUG-CEAB 4	GRAPHICS+SOUND	V3 P	11 TPUG-VIC DEMO 1
FIFO	E5 P	5 TPUG-CEAB 5	GRAPHICS-DEMO	U2 P	22 UTILITIES #2
FILE MOVER	U4 P	4 UTILITIES #4	GRAPHICS-DEMO	X6 P	22 TPUG BEST-MISC 1
FILTER	N2 P	10 TPUG-MTH/SCI2	GRAPHICS-DEMO	Z1 P	22 TPUG-MISC. 1
FINANCE	B3 P	25 TPUG-BUSINESS 3	GRAPHICS-LOADER	U2 P	21 UTILITIES #2
FINANCIAL CALCS	B1 P	10 TPUG-BUSNSS 1	GRAPHICS-LOADER	X6 P	21 TPUG BEST-MISC 1
FIND.COLOR	G5 P	11 TPUG-GAMES 2	GRAPHICS-LOADER	Z1 P	21 TPUG-MISC. 1
FINE-PLOT DEMO	Z2 P	4 TPUG-MISCELLAN 2	GRAPHICS.DEMOS-G	N1 P	19 TPUG-MTH/SCI1
FIRING TANK	V1 P	11 TPUG-VIC GAME 1	GRAPHIX INSTR	U2 P	17 UTILITIES #2
FISHERY	E1 P	20 TPUG-EDUC 1	GRAPHIX INSTR	X6 P	17 TPUG BEST-MISC 1
FISHERY	G1 P	20 TPUG-SIMLTN 1	GRAPHIX INSTR	Z1 P	17 TPUG-MISC. 1
FIXPERMUT	L1 P	2 TPUG-LANGUAGE 1	GRAPHIX SORT	Z2 P	11 TPUG-MISCELLAN 2
FLASH CARDS	E1 P	8 TPUG-EDUC 1	GRAVITY TIMER	E2 P	12 TPUG-CEAB 1
FLASHER	E7 P	22 TPUG-CEAB 7	GROWSTRING	L1 P	1 TPUG-LANGUAGE 1
FLIGHT SIMULATOR	E4 P	17 TPUG-CEAB 4	GROWTH RATE	B1 P	10 TPUG-BUSNSS 1
FLIGHT SIMULATOR	G4 P	17 TPUG-GAMES 1	GROWTH.CALC	B1 P	4 TPUG-BUSNSS 1
FLOADER	U6 P	5 TPUG-UTILITIES 6	GRUNGY TOWERS	G5 P	20 TPUG-GAMES 2
FLOPPY.DISPLAY	U1 P	26 UTILITIES #1	GUESS IT	G3 P	14 TPUG-WRD/NUM1
FOREST DRIVER	V1 P	7 TPUG-VIC GAME 1	GUNNER	G5 P	24 TPUG-GAMES 2
FOREST FIRE	E4 P	12 TPUG-CEAB 4	HAIKU 5	E1 P	13 TPUG-EDUC 1
FORMAT	B2 P	12 TPUG-BUSNSS 2	HALLOWE'EN	Z1 P	28 TPUG-MISC. 1
FORMAT	Z1 P	5 TPUG-MISC. 1	HALLOWE'EN2	Z1 P	19 TPUG-MISC. 1

HAMMURABI	E3 P	9 TPUG-CEAB 2/3	INTEREST	B2 P	25 TPUG-BUSNSS 2
HAMMURABI	G1 P	12 TPUG-SIMLTN 1	INTEREST	B3 P	27 TPUG-BUSINESS 3
HAMURABI	G1 P	14 TPUG-SIMLTN 1	INTERMOD	N1 P	15 TPUG-MTH/SCI1
HANDIC DEMO3	V3 P	6 TPUG-VIC DEMO 1	INTRO. JACQUES	E5 P	2 TPUG-CEAB 5
HANG MATH	E4 P	9 TPUG-CEAB 4	INTRO. SYLLABLES	E5 P	2 TPUG-CEAB 5
HANGMAN	E1 P	11 TPUG-EDUC 1	INTRO. TO PERCEN	E5 P	3 TPUG-CEAB 5
HANGMAN	E2 P	25 TPUG-CEAB 1	INVADERS	V1 P	10 TPUG-VIC GAME 1
HANGMAN	E3 P	12 TPUG-CEAB 2/3	INVADERS 2.0	X3 P	29 TPUG BEST-GAME 1
HANGMAN	G3 P	27 TPUG-WRD/NUM1	INVADERS 4.0	X4 P	29 TPUG BEST-GAME 2
HANGMAN 2	E1 P	27 TPUG-EDUC 1	INVENTION #11!	S1 P	6 TPUG-MUSIC 1
HANGMAN 3.0	E4 P	24 TPUG-CEAB 4	INVENTION #8!	S1 P	9 TPUG-MUSIC 1
HANGMAN 7	GBP	19 TPUG - GAMES 6	INVENTORY CONTROL	B3 P	11 TPUG-BUSINESS 3
HANGMAN(HJS)	E1 P	11 TPUG-EDUC 1	INVESTMENT.ALT	B1 P	12 TPUG-BUSNSS 1
HANGMAN-2/PETS	G3 P	9 TPUG-WRD/NUM1	IRREG.CASH.FLOW	B1 P	25 TPUG-BUSNSS 1
HANGMAN.ALT	G3 P	16 TPUG-WRD/NUM1	JACQUES A	E5 P	56 TPUG-CEAB 5
HANGMATH	G3 P	21 TPUG-WRD/NUM1	JACQUES B	E5 P	55 TPUG-CEAB 5
HANGMATH/O'H	E8 P	21 TPUG-EDUC 2	JAN 80	B1 S	1 TPUG-BUSNSS 1
HANNIBAL	L1 P	7 TPUG-LANGUAGE 1	JEM SYS4111%	U3 P	24 UTILITIES #3
HARMONIC DISPLAY	E4 P	4 TPUG-CEAB 4	JEM.INS	U3 P	40 UTILITIES #3
HEAPSORT DEMO	N1 P	6 TPUG-MTH/SCI1	JINGLE BELLS!	S1 P	4 TPUG-MUSIC 1
HEART DRIVER	Z1 P	10 TPUG-MISC. 1	JOHN GRAPH	E2 P	5 TPUG-CEAB 1
HEAT SOLVER 16K	E2 P	22 TPUG-CEAB 1	JOPLIN MUSIC	S1 P	7 TPUG-MUSIC 1
HEAT SOLVER 8K	E2 P	22 TPUG-CEAB 1	JOTTO	E4 P	17 TPUG-CEAB 4
HELLO	E4 P	12 TPUG-CEAB 4	JOTTO-BTTRFLD	G3 P	7 TPUG-WRD/NUM1
HELLO	U3 P	1 UTILITIES #3	JOURNAL	B2 P	12 TPUG-BUSNSS 2
HEX DEMO	E5 P	6 TPUG-CEAB 5	JOYSTICK INV 2.0	X3 P	29 TPUG BEST-GAME 1
HI MEMORY106	U5 P	6 TPUG-UTILITIES 5	JOYSTICK INV 4.0	X4 P	29 TPUG BEST-GAME 2
HI MEMORY106	X6 P	6 TPUG BEST-MISC 1	JOYSTICK.CRSRS	U1 P	7 UTILITIES #1
HI-RES CLOCK	V3 P	7 TPUG-VIC DEMO 1	JOYSTICK.CTLR.	U1 P	18 UTILITIES #1
HICALC	E3 P	23 TPUG-CEAB 2/3	JULIAN CALENDER	E4 P	6 TPUG-CEAB 4
HIDDEN.WORDS	E1 P	22 TPUG-EDUC 1	JULIAN CALENDER	Z1 P	6 TPUG-MISC. 1
HIRES DEMO 1	V3 P	5 TPUG-VIC DEMO 1	JUMBO JET LANDER	GBP	24 TPUG - GAMES 6
HIRES PLOT	V3 P	3 TPUG-VIC DEMO 1	JUMP2	A3 P	6 TPUG-ASSM 3
HIST	E3 P	4 TPUG-CEAB 2/3	JUMPTABLE	A3 P	6 TPUG-ASSM 3
HISTOGRAM	E1 P	4 TPUG-EDUC 1	KALEIDOSCOOP	V3 P	3 TPUG-VIC DEMO 1
HISTOGRAM	V2 P	4 TPUG-VIC UTIL 1	KALEIDOSCOPE	V3 P	4 TPUG-VIC DEMO 1
HOME.ACCOUNTS.IN	B1 P	20 TPUG-BUSNSS 1	KALEIDOSCOPE	Z1 P	3 TPUG-MISC. 1
HOME.ACCOUNTS.SU	B1 P	24 TPUG-BUSNSS 1	KENO	G3 P	26 TPUG-WRD/NUM1
HORSE RACE	G4 P	19 TPUG-GAMES 1	KENTUCKY DERBY	G4 P	14 TPUG-GAMES 1
HORSERACE	G6 P	23 TPUG-GAMES 3	KEY.PRINT3&4.ASM	A3 P	14 TPUG-ASSM 3
HORSES	G6 P	12 TPUG-GAMES 3	KEYBOARD DEMO	V3 P	6 TPUG-VIC DEMO 1
HS.OF.7.GABLES	G7 P	47 TPUG-SIMLTN 2	KEYMAKE	U1 P	4 UTILITIES #1
HUNTER.SATELLITE	G2 P	13 TPUG-SPACE 1	KEYPRINT/826	U1 P	1 UTILITIES #1
HURKLE	G6 P	6 TPUG-GAMES 3	KEYPRINT2	U2 P	1 UTILITIES #2
HURKLE!	E3 P	20 TPUG-CEAB 2/3	KEYPRINT2@826	X1 P	1 TPUG BEST-UTIL 1
HYP0 SIMULATOR	E2 P	17 TPUG-CEAB 1	KEYPRINT4@826	U2 P	1 UTILITIES #2
IAN'S RACE (N)	G6 P	17 TPUG-GAMES 3	KEYPRINT4@826	X1 P	1 TPUG BEST-UTIL 1
ICE CREAM PAR	E1 P	23 TPUG-EDUC 1	KEYS	L1 S	1 TPUG-LANGUAGE 1
IEEE VIEW	U5 P	12 TPUG-UTILITIES 5	KEYSORT.ASM	A1 P	52 TPUG-ASSM 1
IEEE.LIB	A1 P	22 TPUG-ASSM 1	KEYSORT.DEMO1	U1 P	3 UTILITIES #1
IFTEST	L1 P	1 TPUG-LANGUAGE 1	KEYSORT.DEMO2	U1 P	6 UTILITIES #1
INS WATAID 4	U6 P	15 TPUG-UTILITIES 6	KEYSORT.EXE16/32	U1 P	4 UTILITIES #1
INS/DEL DEMO	U1 P	14 UTILITIES #1	KEYSORT.EXE8K	U1 P	4 UTILITIES #1
INSIDE.DOS1&2	U3 P	6 UTILITIES #3	KEYSORT2\$1C54	U1 P	4 UTILITIES #1
INSP. CLEW-SO	G4 P	22 TPUG-GAMES 1	KEYSORT2\$7454	U1 P	4 UTILITIES #1
INSTRUCTIONS	A4 P	9 TPUG-ASSM 4	KEYSORT2-1DEMO	U1 P	1 UTILITIES #1
INSTRUCTIONS	E7 P	22 TPUG-CEAB 7	KEYSORT2-2DEMO	U1 P	5 UTILITIES #1
INSTRUCTIONS#7	U5 P	13 TPUG-UTILITIES 5	KILLER BUNNIES	G5 P	29 TPUG-GAMES 2
INSTRUCTIONS#7	X6 P	13 TPUG BEST-MISC 1	KILLER COMET	V1 P	4 TPUG-VIC GAME 1
INSULTER	Z2 P	30 TPUG-MISCELLAN 2	KINETIC ART	V3 P	5 TPUG-VIC DEMO 1
INTEGERS	E7 P	27 TPUG-CEAB 7	KING.TUT	G9 P	60 TPUG-SIMLTN 3
INTELCOM1	C1 P	4 TPUG-COMMUN 1	KINGDOM/PICS	G1 P	27 TPUG-SIMLTN 1
INTELCOM2	C1 P	4 TPUG-COMMUN 1	KLINGON CAPTURE	G2 P	25 TPUG-SPACE 1
INTELCOM3	C1 P	4 TPUG-COMMUN 1	KNIGHT.TOUR.SOL	G6 P	19 TPUG-GAMES 3
INTELCOM3	C2 P	4 TPUG-COMMUNIC 2	KUSTOM KEY	U4 P	3 UTILITIES #4
INTELCOM4	C1 P	5 TPUG-COMMUN 1	L.C.LISTER.ASM	A1 P	16 TPUG-ASSM 1
INTELCOM4	C2 P	5 TPUG-COMMUNIC 2	L.C.LISTER.ASM	A3 P	16 TPUG-ASSM 3

LABYRINTH	G4 P	52	TPUG-GAMES 1	MAE/DOS FOR 4.0	U1 P	7	UTILITIES #1
LAT+LON.DISTANCE	N1 P	6	TPUG-MTH/SCI1	MAE/DOS.ASM	A1 P	41	TPUG-ASSM 1
LC LISTER INST	U3 P	3	UTILITIES #3	MAGIC.SQUARE	G3 P	9	TPUG-WRD/NUM1
LEARNING.AID1	A1 P	27	TPUG-ASSM 1	MAIL BACKUP	B2 S	10	TPUG-BUSNSS 2
LEARNING.AID2	A1 P	20	TPUG-ASSM 1	MAIL LIST 2.0	B2 P	20	TPUG-BUSNSS 2
LEARNING.AID3	A1 P	9	TPUG-ASSM 1	MAIL LIST 4.1	B2 P	23	TPUG-BUSNSS 2
LEARNING.AID4	A1 P	10	TPUG-ASSM 1	MAIL LIST 4040	B2 P	23	TPUG-BUSNSS 2
LEARNING.AID5	A1 P	24	TPUG-ASSM 1	MAIL LIST 4040	X6 P	23	TPUG BEST-MISC 1
LEARNING.AID6	A1 P	10	TPUG-ASSM 1	MAIL LIST 8050	B2 P	23	TPUG-BUSNSS 2
LEARNING.AID7	A1 P	14	TPUG-ASSM 1	MAIL LIST 8050	X6 P	23	TPUG BEST-MISC 1
LEAST SQUARES	N1 P	20	TPUG-MTH/SCI1	MAR 80	B1 S	1	TPUG-BUSNSS 1
LEMONADE!	E9 P	30	TPUG-EDUCATION 9	MARBLESTAT	E4 P	13	TPUG-CEAB 4
LETTER SEQUENCES	E5 P	12	TPUG-CEAB 5	MARCH IN D!	S1 P	5	TPUG-MUSIC 1
LETTER.15	G3 P	9	TPUG-WRD/NUM1	MARCH6	U6 P	8	TPUG-UTILITIES 6
LIBRARY INST	U6 P	12	TPUG-UTILITIES 6	MARCHE MILITAIRE	S1 P	11	TPUG-MUSIC 1
LIFE	G1 P	11	TPUG-SIMLTN 1	MARKET NEW	E9 P	22	TPUG-EDUCATION 9
LIFE EXPECTANCY	E4 P	19	TPUG-CEAB 4	MARKS(GRADING AI	E4 P	8	TPUG-CEAB 4
LIFE EXPECTANCY	N1 P	19	TPUG-MTH/SCI1	MARKS-BTTRFLD	B1 P	8	TPUG-BUSNSS 1
LIFE TABLES	E6 P	10	TPUG-CAEB 6	MARTIAN.HUNT	E8 P	26	TPUG-EDUC 2
LIFE WAR	G4 P	6	TPUG-GAMES 1	MASTER+6	U3 P	11	UTILITIES #3
LIFESTYLE	E4 P	23	TPUG-CEAB 4	MASTER+6d	U3 P	13	UTILITIES #3
LIGHT SHOW	V3 P	1	TPUG-VIC DEMO 1	MASTERMIND	G3 P	23	TPUG-WRD/NUM1
LIMERICKS	E8 P	16	TPUG-EDUC 2	MASTERMIND	V1 P	12	TPUG-VIC GAME 1
LIN-PRO	E4 P	7	TPUG-CEAB 4	MASTERMIND	X3 P	23	TPUG BEST-GAME 1
LINEAR SYSTEMS	E7 P	25	TPUG-CEAB 7	MASTERMIND	X4 P	23	TPUG BEST-GAME 2
LISSAJOUS	E3 P	4	TPUG-CEAB 2/3	MAT 250 MLA	E7 P	18	TPUG-CEAB 7
LIST DUPLICATES	U3 P	12	UTILITIES #3	MATH DICE	E1 P	7	TPUG-EDUC 1
LIST GP2	U1 P	2	UTILITIES #1	MATH IQ	E1 P	26	TPUG-EDUC 1
LIST LP2	U1 P	2	UTILITIES #1	MATH IQ	E8 P	26	TPUG-EDUC 2
LIST LP2X	U1 P	3	UTILITIES #1	MATH IQ	G3 P	26	TPUG-WRD/NUM1
LIST LP4	U1 P	2	UTILITIES #1	MATH QUIZ V2	E9 P	20	TPUG-EDUCATION 9
LIST LT2	U1 P	2	UTILITIES #1	MATH TEST-BTTRFL	N1 P	9	TPUG-MTH/SCI1
LIST LT2X	U1 P	3	UTILITIES #1	MATH TUTOR	E1 P	13	TPUG-EDUC 1
LISTENER	E4 P	10	TPUG-CEAB 4	MATH QUIZ	E1 P	13	TPUG-EDUC 1
LISTENER	N1 P	10	TPUG-MTH/SCI1	MATRIX SOLUTION	E2 P	18	TPUG-CEAB 1
LISTER	U2 P	6	UTILITIES #2	MAX01	L1 P	4	TPUG-LANGUAGE 1
LITTLEMON+.CT	A4 P	8	TPUG-ASSM 4	MAY 80	B1 S	2	TPUG-BUSNSS 1
LITTLEMON.ASM	A3 P	17	TPUG-ASSM 3	MAZE	Z1 P	1	TPUG-MISC. 1
LITTLEMON.INS.WP	U3 P	11	UTILITIES #3	MEAN 14/PET.ASM	A3 P	12	TPUG-ASSM 3
LITTLEMON.M01	A4 P	19	TPUG-ASSM 4	MECHANICS	E7 P	21	TPUG-CEAB 7
LOAN.ALT	B1 P	15	TPUG-BUSNSS 1	MELODY CHANGES	E8 P	17	TPUG-EDUC 2
LOCAL VAR	L1 P	1	TPUG-LANGUAGE 1	MELODY CHANGES	Z1 P	17	TPUG-MISC. 1
LOCKDISK	U6 P	8	TPUG-UTILITIES 6	MEMO CALENDAR	Z1 P	37	TPUG-MISC. 1
LOCKDISK	X1 P	8	TPUG BEST-UTIL 1	MEMOCAL 2.2	Z2 P	41	TPUG-MISCELLAN 2
LOCKKEY	E5 P	16	TPUG-CEAB 5	MEMORY	V1 P	9	TPUG-VIC GAME 1
LOCKSMITH	U2 P	8	UTILITIES #2	MEMORY CALENDAR2	Z1 P	27	TPUG-MISC. 1
LOG & LOGO	V3 P	3	TPUG-VIC DEMO 1	MEMORY MONITOR	Z1 P	16	TPUG-MISC. 1
LONG DIVISION	E4 P	7	TPUG-CEAB 4	MEMSEE.DEMO	U6 P	15	TPUG-UTILITIES 6
LONG DIVISION	V1 P	6	TPUG-VIC GAME 1	MENU	B2 P	3	TPUG-BUSNSS 2
LORDS OF KARMA	X5 P	125	TPUG BEST-GAME 3	MERGE 4.0	U5 P	1	TPUG-UTILITIES 5
LOST DUTCH GOLD	G7 P	50	TPUG-SIMLTN 2	MERGE 4.0 INST	U5 P	3	TPUG-UTILITIES 5
LOVE	Z1 P	7	TPUG-MISC. 1	MERRY VIC-MAS	V3 P	6	TPUG-VIC DEMO 1
LOW CASE LIST	U1 P	1	UTILITIES #1	METCONV	E3 P	13	TPUG-CEAB 2/3
LOWCASE LIST V3	X1 P	9	TPUG BEST-UTIL 1	METRIC	E2 P	11	TPUG-CEAB 1
LOWER CASE LIST	U2 P	8	UTILITIES #2	METRIC CONVER'N	E4 P	7	TPUG-CEAB 4
LP.NEW ROM MUSIC	S1 P	12	TPUG-MUSIC 1	METRIC CONVER'N	N1 P	7	TPUG-MTH/SCI1
LUMP-SUM INV 82	B3 P	38	TPUG-BUSINESS 3	METRIC TEACHER	N1 P	12	TPUG-MTH/SCI1
LUNAR LANDER	V1 P	8	TPUG-VIC GAME 1	METRIC-BTTRFLD	N1 P	6	TPUG-MTH/SCI1
LUNAR LANDER 1	G2 P	11	TPUG-SPACE 1	MIAUW	V3 P	5	TPUG-VIC DEMO 1
LUNAR LANDER-BFDG2P	G2 P	9	TPUG-SPACE 1	MICMON4B9@1	U2 P	17	UTILITIES #2
M.B.INSTRUCTIONS	G5 P	15	TPUG-GAMES 2	MICMON4B@4096	U2 P	17	UTILITIES #2
MAANLANDER	V1 P	9	TPUG-VIC GAME 1	MICROMATH DEMO	E2 P	46	TPUG-CEAB 1
MADMAN.RACE	G5 P	23	TPUG-GAMES 2	MICROMON++@\$5B00	U6 P	22	TPUG-UTILITIES 6
MAE.PAT.ASM	A1 P	5	TPUG-ASSM 1	MICROMON++@\$5B00	X2 P	22	TPUG BEST-UTIL 2
MAE.TO.CBM	A1 P	3	TPUG-ASSM 1	MICROMON.ADD	U6 P	31	TPUG-UTILITIES 6
MAE/DOS	A1 P	7	TPUG-ASSM 1	MICROMON.ADD	X2 P	31	TPUG BEST-UTIL 2
MAE/DOS	A2 P	7	TPUG-ASSM 2	MICROMON.CT+	A5 P	2	TPUG-ASSEMBLER 5

MICROMON.CTB	A3 P	2 TPUG-ASSM 3	MORSE	V3 P	10 TPUG-VIC DEMO 1
MICROMON.CTC	A5 P	2 TPUG-ASSEMBLER 5	MORSE CODE	E4 P	6 TPUG-CEAB 4
MICROMON.INS	U2 P	27 UTILITIES #2	MORSE DECODER	E4 P	12 TPUG-CEAB 4
MICROMON.INS1	U6 P	29 TPUG-UTILITIES 6	MORSE TUTOR	C1 P	14 TPUG-COMMUN 1
MICROMON.INS1	X2 P	29 TPUG BEST-UTIL 2	MORSE-BTTRFLD	C1 P	4 TPUG-COMMUN 1
MICROMON.INS2	U6 P	42 TPUG-UTILITIES 6	MORT CALC	B3 P	6 TPUG-BUSINESS 3
MICROMON.INS2	X2 P	42 TPUG BEST-UTIL 2	MORT SCHED	B3 P	7 TPUG-BUSINESS 3
MICROMON.M01	A3 P	4 TPUG-ASSM 3	MORTGAGE	B3 P	7 TPUG-BUSINESS 3
MICROMON.M01	A5 P	4 TPUG-ASSEMBLER 5	MORTGAGE PRINTERE	E4 P	9 TPUG-CEAB 4
MICROMON.M01+	A5 P	12 TPUG-ASSEMBLER 5	MORTGAGE-BTTRFLD	B1 P	7 TPUG-BUSNSS 1
MICROMON.M02+	A5 P	19 TPUG-ASSEMBLER 5	MOSAIC	V3 P	6 TPUG-VIC DEMO 1
MICROMON.M02B	A3 P	25 TPUG-ASSM 3	MOTORCYCLE	G4 P	10 TPUG-GAMES 1
MICROMON.M02B	A5 P	25 TPUG-ASSEMBLER 5	MOUSEMAZE	G5 P	13 TPUG-GAMES 2
MICROMON.M03	A3 P	15 TPUG-ASSM 3	MOVMAZE1	G5 P	6 TPUG-GAMES 2
MICROMON.M03	A5 P	15 TPUG-ASSEMBLER 5	MOVMAZE2	G5 P	8 TPUG-GAMES 2
MICROMON.M03+	A5 P	24 TPUG-ASSEMBLER 5	MOVMAZE2	X3 P	8 TPUG BEST-GAME 1
MICROMON.M04	A3 P	14 TPUG-ASSM 3	MOVMAZE2	X4 P	8 TPUG BEST-GAME 2
MICROMON.M04	A5 P	14 TPUG-ASSEMBLER 5	MPAK	E9 P	9 TPUG-EDUCATION 9
MICROMON.M04+	A5 P	3 TPUG-ASSEMBLER 5	MUGWUMP	G6 P	23 TPUG-GAMES 3
MICROMON.M05	A3 P	12 TPUG-ASSM 3	MUKADE	V1 P	7 TPUG-VIC GAME 1
MICROMON.M05B	A5 P	12 TPUG-ASSEMBLER 5	MULT DRILL	E8 P	26 TPUG-EDUC 2
MICROMON.M06	A3 P	16 TPUG-ASSM 3	MULTILOT	E3 P	10 TPUG-CEAB 2/3
MICROMON.M06	A5 P	16 TPUG-ASSEMBLER 5	MUSIC BOX DANCER	S1 P	5 TPUG-MUSIC 1
MICROMON.M07A	A3 P	15 TPUG-ASSM 3	MUSIC.ASM	A4 P	4 TPUG-ASSM 4
MICROMON.M07A	A5 P	15 TPUG-ASSEMBLER 5	MUSIC/OLD ROM	S1 P	12 TPUG-MUSIC 1
MICROMON.M08A	A3 P	10 TPUG-ASSM 3	MX-82CHAR.DEFN	U6 P	12 TPUG-UTILITIES 6
MICROMON.M08A	A5 P	10 TPUG-ASSEMBLER 5	MX82.PET.PRNT	U6 P	39 TPUG-UTILITIES 6
MICROMON.M09	A3 P	21 TPUG-ASSM 3	MXCL	U3 P	5 UTILITIES #3
MICROMON.M09.5	A5 P	24 TPUG-ASSEMBLER 5	MXCL.SRCE	A3 P	22 TPUG-ASSM 3
MICROMON.M09B	A5 P	22 TPUG-ASSEMBLER 5	MYSTERY-BUTTRFLD	Z1 P	2 TPUG-MISC. 1
MICROMON.M10	A3 P	18 TPUG-ASSM 3	N1 COINS EXERCIS	E9 P	45 TPUG-EDUCATION 9
MICROMON.M10.5B	A3 P	2 TPUG-ASSM 3	NATAL CHART	N1 P	64 TPUG-MTH/SCI1
MICROMON.M10B	A5 P	19 TPUG-ASSEMBLER 5	NECCL	U3 P	5 UTILITIES #3
MICROMON.M11B	A3 P	9 TPUG-ASSM 3	NECCL.SRCE	A3 P	21 TPUG-ASSM 3
MICROMON.M11B	A5 P	11 TPUG-ASSEMBLER 5	NET1	N2 P	21 TPUG-MTH/SCI2
MICROMON80@\$1000	U5 P	17 TPUG-UTILITIES 5	NEW LOTTARIO	Z2 P	4 TPUG-MISCELLAN 2
MICROMON80@\$7000	U5 P	17 TPUG-UTILITIES 5	NEW ROM WARLORDS	G7 P	22 TPUG-SIMLTN 2
MICROMON@\$1000	U5 P	17 TPUG-UTILITIES 5	NEW WARLORDS INS	G7 P	25 TPUG-SIMLTN 2
MICROMON@\$7000	U5 P	17 TPUG-UTILITIES 5	NEW WATER	G7 P	27 TPUG-SIMLTN 2
MICROMON@4096	U2 P	14 UTILITIES #2	NEWTONS ZERO	N1 P	3 TPUG-MTH/SCI1
MICROMONB.INS+	U3 P	31 UTILITIES #3	NICE TRIG RATIOS	E7 P	19 TPUG-CEAB 7
MICROMONB@\$1	U3 P	14 UTILITIES #3	NICHE	G7 P	25 TPUG-SIMLTN 2
MICROMONC@\$1000	U6 P	17 TPUG-UTILITIES 6	NICHE NEW	E9 P	25 TPUG-EDUCATION 9
MICROMONC@\$1000	X2 P	17 TPUG BEST-UTIL 2	NIGHT DRIVER 2.0	X3 P	21 TPUG BEST-GAME 1
MICROMONC@\$7000	U6 P	17 TPUG-UTILITIES 6	NIGHT DRIVER 4.0	X4 P	21 TPUG BEST-GAME 2
MICROMONC@\$7000	X2 P	17 TPUG BEST-UTIL 2	NIGHTMARE	Z1 P	2 TPUG-MISC. 1
MICROSCOPY	E5 P	47 TPUG-CEAB 5	NIM-BUTTRFLD	G3 P	5 TPUG-WRD/NUM1
MILEAGE-BTTRFLD	B1 P	5 TPUG-BUSNSS 1	NO	E1 P	9 TPUG-EDUC 1
MILLE BOURNE	G5 P	25 TPUG-GAMES 2	NOT.SO.EASY	E1 P	11 TPUG-EDUC 1
MINI-COMPILER	A2 P	23 TPUG-ASSM 2	NUMINT	E3 P	8 TPUG-CEAB 2/3
MINI-COMPILER	U2 P	23 UTILITIES #2	NYKLUB	L1 P	5 TPUG-LANGUAGE 1
MINIWORDPRO	B3 P	12 TPUG-BUSINESS 3	NYLISTMEDL	L1 P	8 TPUG-LANGUAGE 1
MINUET IN G	S1 P	4 TPUG-MUSIC 1	NYOPRET	L1 P	15 TPUG-LANGUAGE 1
MINUTE WALTZ	S1 P	8 TPUG-MUSIC 1	NYRETTE	L1 P	14 TPUG-LANGUAGE 1
MISSING NUMBER	E1 P	7 TPUG-EDUC 1	NYSLETMEDL	L1 P	11 TPUG-LANGUAGE 1
MISSION IMP	G8 P	24 TPUG-GAMES 4	NYVISMEDL	L1 P	9 TPUG-LANGUAGE 1
MISSION IMP 2.0	X3 P	24 TPUG BEST-GAME 1	OHARE'S #1	G9 P	67 TPUG-SIMLTN 3
MISSION IMP 4.0	X4 P	24 TPUG BEST-GAME 2	OHARE'S #2	G9 P	66 TPUG-SIMLTN 3
MLA--ARITHMETIC	E7 P	19 TPUG-CEAB 7	OHARE'S #3	G9 P	86 TPUG-SIMLTN 3
MLMACROS.MLIB	A1 P	14 TPUG-ASSM 1	OHARE'S #3	X5 P	86 TPUG BEST-GAME 3
MLOADER	U6 P	2 TPUG-UTILITIES 6	OHMS LAW	N1 P	17 TPUG-MTH/SCI1
MM1.1 sHERIDAN	E2 P	28 TPUG-CEAB 1	OLD ROM WARLORDS	G7 P	22 TPUG-SIMLTN 2
MM16.1	E2 P	26 TPUG-CEAB 1	OLD WARLORDS INS	G7 P	25 TPUG-SIMLTN 2
MODEM LOG	C1 P	5 TPUG-COMMUN 1	OLSENMAIN	L1 P	3 TPUG-LANGUAGE 1
MONOPOLY	G8 P	93 TPUG-GAMES 4	ONELINE SQUIGGLE	Z1 P	3 TPUG-MISC. 1
MONOPOLY	GAP	51 TPUG - GAMES 5	OPERATIONS	E9 P	24 TPUG-EDUCATION 9
MOONLANDER	V1 P	9 TPUG-VIC GAME 1	OPTICAL ILLUSION	E4 P	8 TPUG-CEAB 4

OSC LUNAR	G2P	27	TPUG-SPACE 1	PINBALL	X4 P	24	TPUG BEST-GAME 2
OSC LUNAR	X3 P	27	TPUG BEST-GAME 1	PING PONG	V1 P	10	TPUG-VIC GAME 1
OSC LUNAR	X4 P	27	TPUG BEST-GAME 2	PIRATE ADVENTURE	GAP	69	TPUG - GAMES 5
OSERO	G5P	20	TPUG-GAMES 2	PISTOLEN PAULTJE	V1 P	6	TPUG-VIC GAME 1
OTHELINSTR	L1 P	6	TPUG-LANGUAGE 1	PLANES	E7 P	19	TPUG-CEAB 7
OTHELLO	G4P	25	TPUG-GAMES 1	PLANET POSITION3	N1 P	69	TPUG-MTH/SCI1
OTHELLO	G5P	29	TPUG-GAMES 2	PLANET.PROBE	G2P	17	TPUG-SPACE 1
OTHELLO	L1 P	17	TPUG-LANGUAGE 1	PLANETS	N3 P	69	TPUG-MATH/SCI 3
OTHELLO	V1 P	11	TPUG-VIC GAME 1	PLEURAL EFFUSION	N2 P	13	TPUG-MTH/SCI2
OTHELLO	X3 P	29	TPUG BEST-GAME 1	PLOTTING	N1 P	9	TPUG-MTH/SCI1
OTHELLO	X4 P	29	TPUG BEST-GAME 2	POGO V7	E8 P	22	TPUG-EDUC 2
PAGE1 EZE EDIT	U3 S	9	UTILITIES #3	POGO.INS.WP	E8 P	44	TPUG-EDUC 2
PAGE1 EZE EDIT	X6 S	9	TPUG BEST-MISC 1	POINTS	E3 P	25	TPUG-CEAB 2/3
PAGE2 EZE EDIT	U3 S	9	UTILITIES #3	POKER-PUNTER	G4P	25	TPUG-GAMES 1
PAGE2 EZE EDIT	X6 S	9	TPUG BEST-MISC 1	POLAR	E3 P	10	TPUG-CEAB 2/3
PAGE3 EZE EDIT	U3 S	9	UTILITIES #3	POLICY	E3 P	26	TPUG-CEAB 2/3
PAGE3 EZE EDIT	X6 S	9	TPUG BEST-MISC 1	POLIFYI	E4 P	11	TPUG-CEAB 4
PAGE4 EZE EDIT	U3 S	10	UTILITIES #3	POLIFYI	N1 P	2	TPUG-MTH/SCI1
PAGE4 EZE EDIT	X6 S	10	TPUG BEST-MISC 1	POLLUTION	E2 P	25	TPUG-CEAB 1
PAGE5 EZE EDIT	U3 S	10	UTILITIES #3	POLONAISE IN BFL	S1 P	4	TPUG-MUSIC 1
PAGE5 EZE EDIT	X6 S	10	TPUG BEST-MISC 1	POLUT	E3 P	25	TPUG-CEAB 2/3
PAGE6 EZE EDIT	U3 S	7	UTILITIES #3	POLUT	G1 P	25	TPUG-SIMLTN 1
PAGE6 EZE EDIT	X6 S	7	TPUG BEST-MISC 1	PONG	G6 P	6	TPUG-GAMES 3
PAK JANA	E9 P	21	TPUG-EDUCATION 9	POP	E3 P	25	TPUG-CEAB 2/3
PALINDROME	S1 P	7	TPUG-MUSIC 1	POP SHOT	G6 P	9	TPUG-GAMES 3
PALKO'S AUDIT	E6 P	24	TPUG-CAEB 6	PORT.DISPLAY	U1 P	11	UTILITIES #1
PATTERN MAKER	Z1 P	4	TPUG-MISC. 1	PORTFOLIO-BTRFLD	B1 P	12	TPUG-BUSNSS 1
PATTERNS	Z1 P	2	TPUG-MISC. 1	POWAID2.RUN	U6 P	10	TPUG-UTILITIES 6
PC.NET.MODEM	C1 P	23	TPUG-COMMUN 1	POWAID4.RUN	U6 P	10	TPUG-UTILITIES 6
PEARL HARBOR	Z2 P	19	TPUG-MISCELLAN 2	POWER INSTRUCT	G1 P	21	TPUG-SIMLTN 1
PEOPLE	Z1 P	6	TPUG-MISC. 1	POWER MOD	U5 P	2	TPUG-UTILITIES 5
PERCENT	E5 P	20	TPUG-CEAB 5	POWER SIMULATION	G1 P	22	TPUG-SIMLTN 1
PERFORMANCE TEST	V2 P	9	TPUG-VIC UTIL 1	POWER SUPPLY	N2 P	22	TPUG-MTH/SCI2
PET CHARACTERS	Z1 P	2	TPUG-MISC. 1	POWERS & ROOTS	E7 P	21	TPUG-CEAB 7
PET NUC PWR PLNTGAP	60	TPUG - GAMES 5		PREL & FUGUE #2	S1 P	15	TPUG-MUSIC 1
PET PCNET	C2 P	23	TPUG-COMMUNIC 2	PRESSURE CURVE	N1 P	9	TPUG-MTH/SCI1
PET.LIB	A1 P	15	TPUG-ASSM 1	PRICE.LIST	B1 P	8	TPUG-BUSNSS 1
PET16.ASM	A1 P	16	TPUG-ASSM 1	PRIME NUMBER 16K	E2 P	3	TPUG-CEAB 1
PET16.MAC	A1 P	9	TPUG-ASSM 1	PRIMES	E4 P	2	TPUG-CEAB 4
PETALS ARND ROSE	G4P	17	TPUG-GAMES 1	PRINT	B2 P	29	TPUG-BUSNSS 2
PETCOM	C2 P	31	TPUG-COMMUNIC 2	PRINT EDIT INFO	U6 P	8	TPUG-UTILITIES 6
PETMAN 5	GAP	23	TPUG - GAMES 5	PRINT TIME.ASM	A3 P	5	TPUG-ASSM 3
PETMAN 5	X3 P	23	TPUG BEST-GAME 1	PRINT USING	U1 P	2	UTILITIES #1
PETMAN 5	X4 P	23	TPUG BEST-GAME 2	PRINTOUT	L1 P	12	TPUG-LANGUAGE 1
PETS	E1 P	15	TPUG-EDUC 1	PRO FOOTBALL	G4P	27	TPUG-GAMES 1
PETSONG	S1 P	13	TPUG-MUSIC 1	PROBABILITY MACH	E3 P	8	TPUG-CEAB 2/3
PETSONG 1	S1 P	13	TPUG-MUSIC 1	PROGRAMBLE CHAR	V2 P	7	TPUG-VIC UTIL 1
PETSONG 2	S1 P	10	TPUG-MUSIC 1	PROGRAMMER RPN	E4 P	17	TPUG-CEAB 4
PETSONG-BACH	S1 P	17	TPUG-MUSIC 1	PROGRAMMER RPN	N1 P	17	TPUG-MTH/SCI1
PGMR.UNIV.ASM	A2 P	41	TPUG-ASSM 2	PROJ-PLOI	E3 P	12	TPUG-CEAB 2/3
PGMR.UNIV.ASM	A3 P	41	TPUG-ASSM 3	PUZZLE.BO	E8 P	21	TPUG-EDUC 2
PGMR4.0.EXE	A2 P	3	TPUG-ASSM 2	PUZZLE.ENTE	E8 P	27	TPUG-EDUC 2
PGR05	L1 P	3	TPUG-LANGUAGE 1	Q'S & Z'S	E1 P	14	TPUG-EDUC 1
PHONE SOUNDS	Z2 P	4	TPUG-MISCELLAN 2	QUADRA-PET	U3 P	3	UTILITIES #3
PHOSYN	E5 P	17	TPUG-CEAB 5	QUADRATIC	E4 P	3	TPUG-CEAB 4
PHUZZY & WHUZZY	Z1 P	27	TPUG-MISC. 1	QUADRATIC	N1 P	2	TPUG-MTH/SCI1
PHYSIOLOGIC WT	N2 P	14	TPUG-MTH/SCI2	QUAL INORG ANALY	E9 P	21	TPUG-EDUCATION 9
PI DEMO 8032	Z2 P	1	TPUG-MISCELLAN 2	QUANDRY	G5P	25	TPUG-GAMES 2
PI HUNT	GAP	17	TPUG - GAMES 5	QUARTIC	N1 P	21	TPUG-MTH/SCI1
PI.CALCULATOR	E8 P	9	TPUG-EDUC 2	QUBIC	G6 P	17	TPUG-GAMES 3
PIANO	V3 P	8	TPUG-VIC DEMO 1	QUBIC 4	GBP	20	TPUG - GAMES 6
PICTURES	E8 P	22	TPUG-EDUC 2	QUBIC.ALT	G5 P	16	TPUG-GAMES 2
PIGS	G3 P	4	TPUG-WRD/NUM1	QUEENS	L1 P	3	TPUG-LANGUAGE 1
PINBALL	G4P	24	TPUG-GAMES 1	QUEST 3.0	G1 P	39	TPUG-SIMLTN 1
PINBALL	GAP	24	TPUG - GAMES 5	QUEST 3.0	X5 P	39	TPUG BEST-GAME 3
PINBALL	V1 P	11	TPUG-VIC GAME 1	QUEUE	E3 P	9	TPUG-CEAB 3
				QUICKSORT	L1 P	3	TPUG-UTILITIES 1

RACE	V1 P	10 TPUG-VIC GAME 1	SCHUIFSPEL	V1 P	8 TPUG-VIC GAME 1
RACETRACK	G4 P	11 TPUG-GAMES 1	SCRAMBLE-BTTRFLD	Z1 P	5 TPUG-MISC. 1
RAGING ROBOTS 4	GBP	13 TPUG - GAMES 6	SCRAMBLED.MSG	Z1 P	5 TPUG-MISC. 1
RAMTEST@5500	U1 P	1 UTILITIES #1	SCREEN DUMP	U2 P	4 UTILITIES #2
RANDOM FILE	V2 P	13 TPUG-VIC UTIL 1	SCREEN PRINT	U1 P	1 UTILITIES #1
RANK CORRELATE	N1 P	2 TPUG-MTH/SCI1	SCREENPRINT.ASM	A2 P	13 TPUG-ASSM 2
RATIONAL	E8 P	9 TPUG-EDUC 2	SCREENPRINT.EXE	A2 P	1 TPUG-ASSM 2
REACTION TEST	V1 P	7 TPUG-VIC GAME 1	SCROLL	E4 P	3 TPUG-CEAB 4
READ WP TAPE2040	U5 P	27 TPUG-UTILITIES 5	SCROLL DEMO	Z2 P	9 TPUG-MISCELLAN 2
READ WP TAPE2040	X6 P	27 TPUG BEST-MISC 1	SCUBA ADVENTRUE	Z2 P	20 TPUG-MISCELLAN 2
READ WP2040	U5 P	27 TPUG-UTILITIES 5	SEABATTLE	GAP	47 TPUG - GAMES 5
READ WP2040	X6 P	27 TPUG BEST-MISC 1	SEABATTLE INST	GAP	23 TPUG - GAMES 5
READ-WRITE.S/R'S	U1 P	8 UTILITIES #1	SEARCH	U1 P	3 UTILITIES #1
READ.LINK	U1 P	3 UTILITIES #1	SEARCH+6	U3 P	4 UTILITIES #3
READABILITY	E4 P	20 TPUG-CEAB 4	SECTOR.CTL	A1 P	1 TPUG-ASSM 1
READER	E1 P	27 TPUG-EDUC 1	SECTOR.EXE	A1 P	2 TPUG-ASSM 1
REAL.CT	A3 P	1 TPUG-ASSM 3	SECTOR.PGM	A1 P	8 TPUG-ASSM 1
REAL1	A3 P	23 TPUG-ASSM 3	SEQUENTIAL FILE	V2 P	5 TPUG-VIC UTIL 1
REAL2	A3 P	12 TPUG-ASSM 3	SET-UP	U6 P	7 TPUG-UTILITIES 6
RECIPE	Z2 P	8 TPUG-MISCELLAN 2	SET-UP	X1 P	7 TPUG BEST-UTIL 1
RECIPE.SIZER	B1 P	18 TPUG-BUSNSS 1	SET.KEY.ASM	A3 P	8 TPUG-ASSM 3
REDUCTION	N1 P	4 TPUG-MTH/SCI1	SET/RESET DEMO	U5 P	4 TPUG-UTILITIES 5
REEL	S1 P	10 TPUG-MUSIC 1	SET/RESET.REL	U5 P	7 TPUG-UTILITIES 5
REFLECTIONS	G6 P	9 TPUG-GAMES 3	SHIFT UP-LOW CAS	U2 P	3 UTILITIES #2
REFLEX TIMER	E2 P	4 TPUG-CEAB 1	SHL-MTZ LIB 20	U6 P	22 TPUG-UTILITIES 6
REG'D PWR SUP DE	E4 P	28 TPUG-CEAB 4	SHL-MTZ LIB V2	U6 P	20 TPUG-UTILITIES 6
REG'D PWR SUP DE	N1 P	28 TPUG-MTH/SCI1	SHOW TOKENS	U6 P	5 TPUG-UTILITIES 6
RELATION GRAPH	E6 P	14 TPUG-CAEB 6	SIGNON	U3 P	1 UTILITIES #3
RELATION SKETCH	E6 P	13 TPUG-CAEB 6	SILENCE	S1 P	17 TPUG-MUSIC 1
RELREAD	U1 P	1 UTILITIES #1	SIM INVENTORY	E4 P	7 TPUG-CEAB 4
RELREAD	U2 P	1 UTILITIES #2	SIMEQ SOLVER	E4 P	12 TPUG-CEAB 4
RESULTANT	E3 P	5 TPUG-CEAB 2/3	SIMEQ SOLVER	N1 P	12 TPUG-MTH/SCI1
REVERSE-PUNTER	G3 P	9 TPUG-WRD/NUM1	SIMON	G6 P	6 TPUG-GAMES 3
REVERSE-PUNTER	X3 P	9 TPUG BEST-GAME 1	SIMON!	G3 P	14 TPUG-WRD/NUM1
REVERSE-PUNTER	X4 P	9 TPUG BEST-GAME 2	SIMPLE PENDULUM	E4 P	4 TPUG-CEAB 4
REVERSE.#S	G3 P	9 TPUG-WRD/NUM1	SINFONIA!	S1 P	9 TPUG-MUSIC 1
RIJTEST	V1 P	7 TPUG-VIC GAME 1	SINNERS	G6 P	16 TPUG-GAMES 3
ROAD RALLY	G6 P	14 TPUG-GAMES 3	SKELETON DRILL	E7 P	22 TPUG-CEAB 7
ROBOT CHASE!	G4 P	24 TPUG-GAMES 1	SKI	G4 P	4 TPUG-GAMES 1
ROBOT CHASE!	X3 P	24 TPUG BEST-GAME 1	SLEUTH	GBP	26 TPUG - GAMES 6
ROBOT CHASE!	X4 P	24 TPUG BEST-GAME 2	SLOT MACH 80 COL	GAP	6 TPUG - GAMES 5
ROBOTS	V3 P	6 TPUG-VIC DEMO 1	SLOTS/JACKPOT	G6 P	20 TPUG-GAMES 3
ROCKET COMMAND	V1 P	8 TPUG-VIC GAME 1	SMALL MATH	E2 P	15 TPUG-CEAB 1
ROM TEST--BTFLD	U1 P	4 UTILITIES #1	SMOG SIMULATION	E3 P	7 TPUG-CEAB 2/3
ROOT FINDER	E4 P	10 TPUG-CEAB 4	SNAKE 2	G5 P	18 TPUG-GAMES 2
ROOT FINDER	N1 P	10 TPUG-MTH/SCI1	SNAKE 2	X3 P	18 TPUG BEST-GAME 1
ROULETTE	G4 P	6 TPUG-GAMES 1	SNAKE 2	X4 P	18 TPUG BEST-GAME 2
ROULETTE	G8 P	58 TPUG-GAMES 4	SNAKE.ALT	G5 P	18 TPUG-GAMES 2
ROULETTE.THEORY	N1 P	5 TPUG-MTH/SCI1	SNAKES!	G4 P	8 TPUG-GAMES 1
RS232-1200@4096	C1 P	2 TPUG-COMMUN 1	SNOOPY HIRES	V3 P	7 TPUG-VIC DEMO 1
RS232-300@4096	C1 P	2 TPUG-COMMUN 1	SNOOPY.DANCING	Z1 P	5 TPUG-MISC. 1
RUGBY	V1 P	9 TPUG-VIC GAME 1	SNOWFLAKE	G6 P	11 TPUG-GAMES 3
S-HYPHEN	E3 P	12 TPUG-CEAB 2/3	SOLAR SYSTEM	E8 P	28 TPUG-EDUC 2
S-PUNC	E3 P	19 TPUG-CEAB 2/3	SOLITAIRE POKER	G6 P	22 TPUG-GAMES 3
S-SPELL	E3 P	12 TPUG-CEAB 2/3	SOLITAIRE-PUNTER	G4 P	25 TPUG-GAMES 1
S1 COIN LOGIC PU	E9 P	32 TPUG-EDUCATION 9	SOLVE BY GRAPH	E2 P	18 TPUG-CEAB 1
S16 WATAID 4	U6 P	17 TPUG-UTILITIES 6	SONATA L.82	S1 P	8 TPUG-MUSIC 1
S32 WATAID 4	U6 P	17 TPUG-UTILITIES 6	SORCERERS.CASTLE	G9 P	55 TPUG-SIMLTN 3
SALES.ANAL-OP	B1 P	13 TPUG-BUSNSS 1	SORT	N1 P	3 TPUG-MTH/SCI1
SAMU	V1 P	9 TPUG-VIC GAME 1	SORTING DEMO	N1 P	8 TPUG-MTH/SCI1
SAUCE	Z2 S	2 TPUG-MISCELLAN 2	SOUND DEMO	V3 P	11 TPUG-VIC DEMO 1
SC1.S - OLD	A2 S	76 TPUG-ASSM 2	SOUND.DEMO!	S1 P	19 TPUG-MUSIC 1
SC1.S I/O FIX	A2 S	76 TPUG-ASSM 2	SOUND.INFO!	S1 P	18 TPUG-MUSIC 1
SCAN	Z1 P	1 TPUG-MISC. 1	SOUNDS	V3 P	11 TPUG-VIC DEMO 1
SCARDIAC 7A.INS	E8 P	23 TPUG-EDUC 2	SOUNDS TAPS CB2	S1 P	3 TPUG-MUSIC 1
SCARDIAC V7	E8 P	21 TPUG-EDUC 2	SPACESHOOTER.ALT	G2 P	22 TPUG-SPACE 1
SCHOOL-MARM	E9 P	8 TPUG-EDUCATION 9	SPADE.INSTRUCTS	G5 P	9 TPUG-GAMES 2

SPADES	G5 P	24	TPUG-GAMES 2	SUPERMON2/4 INS	E6 P	24	TPUG-CAEB 6
SPEAK AND SPELL	E2 P	9	TPUG-CEAB 1	SUPERMON4.REL	U1 P	9	UTILITIES #1
SPEED READ	E4 P	9	TPUG-CEAB 4	SUPERMON4.REL	U2 P	9	UTILITIES #2
SPEED.READING	E1 P	5	TPUG-EDUC 1	SUPERMON4.REL	X2 P	9	TPUG BEST-UTIL 2
SPELLING BEE+FIL	E1 P	19	TPUG-EDUC 1	SUPERTREK/16KNR	GAP	51	TPUG - GAMES 5
SPELLING DRILL	E7 P	18	TPUG-CEAB 7	SWORDS & SORCERY	G7 P	28	TPUG-SIMLTN 2
SPELLING.TEST	E1 P	13	TPUG-EDUC 1	SYLLABLES	E5 P	26	TPUG-CEAB 5
SPELUNKER	G7 P	38	TPUG-SIMLTN 2	SYMBOLIC.DISASS	U3 P	16	UTILITIES #3
SPRING SONG	S1 P	15	TPUG-MUSIC 1	T-HYPHEN	E3 P	6	TPUG-CEAB 2/3
SQRT	L1 P	1	TPUG-LANGUAGE 1	T-PUNC	E3 P	19	TPUG-CEAB 2/3
SQUARE ROOT TEST	N1 P	3	TPUG-MTH/SCI1	T-SPELL	E3 P	19	TPUG-CEAB 2/3
SRC.EX HELLO.ASM	A3 P	21	TPUG-ASSM 3	T.TENNIS	G6 P	14	TPUG-GAMES 3
STACK SNIFFER	U3 P	4	UTILITIES #3	TACHISTOSCOPE	E1 P	7	TPUG-EDUC 1
STAIRWAY	S1 P	18	TPUG-MUSIC 1	TAG	G6 P	14	TPUG-GAMES 3
STAR CHASER	V1 P	9	TPUG-VIC GAME 1	TANK VOLUME	N3 P	5	TPUG-MATH/SCI 3
STAR TREK	G2 P	23	TPUG-SPACE 1	TANK-UFO	V1 P	10	TPUG-VIC GAME 1
STAR WAR TRANINE	G2 P	16	TPUG-SPACE 1	TANK.BATTLE	G6 P	21	TPUG-GAMES 3
STAR WARS	G2 P	25	TPUG-SPACE 1	TANK.WAR.ALt	G6 P	20	TPUG-GAMES 3
STAR WARS	V1 P	9	TPUG-VIC GAME 1	TAPE GRAPH 21S	U2 P	6	UTILITIES #2
STAR WARS	X3 P	25	TPUG BEST-GAME 1	TAPE GRAPH# ROM	U2 P	6	UTILITIES #2
STAR WARS	X4 P	25	TPUG BEST-GAME 2	TAPE LABEL	U4 P	10	UTILITIES #4
STAR WARS!	G2 P	15	TPUG-SPACE 1	TAPE TEST #	U1 P	2	UTILITIES #1
STARBASE&UFO!	G2 P	26	TPUG-SPACE 1	TAPE WRITE (#)	U1 P	2	UTILITIES #1
STARS	G3 P	4	TPUG-WRD/NUM1	TAPE-DISK/REL	U5 P	7	TPUG-UTILITIES 5
STARSPGL BANNER!	S1 P	4	TPUG-MUSIC 1	TAPE.TO.DISK	U1 P	8	UTILITIES #1
STARTOHELLO	L1 P	1	TPUG-LANGUAGE 1	TAPE.TO.DISK	X1 P	8	TPUG BEST-UTIL 1
STARTREK V18 #	G2 P	26	TPUG-SPACE 1	TARANTELA	S1 P	5	TPUG-MUSIC 1
STARTREK.ALt4	G2 P	25	TPUG-SPACE 1	TARGET	G5 P	11	TPUG-GAMES 2
STATES&CAPITALS	E1 P	19	TPUG-EDUC 1	TARGET-BUTTRFLD	G4 P	11	TPUG-GAMES 1
STOCK	G8 P	23	TPUG-GAMES 4	TAX 79 ONT V0.2	B1 P	21	TPUG-BUSNSS 1
STOCK 80 COL	G8 P	23	TPUG-GAMES 4	TAX 80 ONT V1.0	B1 P	23	TPUG-BUSNSS 1
STOCK MARKET!	GBP	62	TPUG - GAMES 6	TAX 80 ONT V2.0	E6 P	23	TPUG-CAEB 6
STOCK TICKER	E6 P	28	TPUG-CAEB 6	TAX 80 ONT V3.0	B2 P	23	TPUG-BUSNSS 2
STOCK.LIST	B1 P	11	TPUG-BUSNSS 1	TAX 81 ONT V1.0	B3 P	24	TPUG-BUSINESS 3
STOCK.OPTION.VAL	B1 P	9	TPUG-BUSNSS 1	TAX 81 ONT V1.0	X6 P	24	TPUG BEST-MISC 1
STORY.PROBLEMS	E1 P	14	TPUG-EDUC 1	TAX COLLECTOR NE	E9 P	16	TPUG-EDUCATION 9
STP 488	C2 P	3	TPUG-COMMUNIC 2	TAX ONT 1978 V3	B1 P	20	TPUG-BUSNSS 1
STRAIGHT LINE	E7 P	20	TPUG-CEAB 7	TELE DIALER	C1 P	2	TPUG-COMMUN 1
STRINGTHING.BIN	U3 P	2	UTILITIES #3	TELE DIALER	C2 P	2	TPUG-COMMUNIC 2
STRINGTHING.BIN	X1 P	2	TPUG BEST-UTIL 1	TERM.I12	C2 P	7	TPUG-COMMUNIC 2
STRIPVAR	L1 P	1	TPUG-LANGUAGE 1	TERM.IEEE	C1 P	6	TPUG-COMMUN 1
STRUCTURE BASIC	E9 P	27	TPUG-EDUCATION 9	TERM.IEEE	C2 P	7	TPUG-COMMUNIC 2
STRUCTURE-BASIC	E6 P	24	TPUG-CAEB 6	TERM.R12	C2 P	7	TPUG-COMMUNIC 2
STUFFIT	U6 P	14	TPUG-UTILITIES 6	TERM.RS232	C1 P	6	TPUG-COMMUN 1
SUBMARINE	G6 P	25	TPUG-GAMES 3	TERM.RS232	C2 P	7	TPUG-COMMUNIC 2
SUBMARINE!	G5 P	25	TPUG-GAMES 2	TERMINAL	C1 P	5	TPUG-COMMUN 1
SUNRISE/SUNSET	N3 P	14	TPUG-MATH/SCI 3	TERMINAL.I12	C2 P	14	TPUG-COMMUNIC 2
SUPER 9X9	GBP	19	TPUG - GAMES 6	TERMINAL.IEEE	C1 P	11	TPUG-COMMUN 1
SUPER STAR TREK	G2 P	78	TPUG-SPACE 1	TERMINAL.IEEE	C2 P	13	TPUG-COMMUNIC 2
SUPER STARTREK	X3 P	78	TPUG BEST-GAME 1	TERMINAL.R12	C2 P	15	TPUG-COMMUNIC 2
SUPER STARTREK	X4 P	78	TPUG BEST-GAME 2	TERMINAL.RS232	C1 P	11	TPUG-COMMUN 1
SUPER VICMON2	V2 P	10	TPUG-VIC UTIL 1	TERMINAL.RS232	C2 P	14	TPUG-COMMUNIC 2
SUPER VICMON2	X2 P	10	TPUG BEST-UTIL 2	TEXT	B1 S	2	TPUG-BUSNSS 1
SUPER1 V1.1	U6 P	29	TPUG-UTILITIES 6	TEXT EDITOR	B1 P	7	TPUG-BUSNSS 1
SUPERCAT@32000	U6 P	2	TPUG-UTILITIES 6	TEXTSTAT01	L1 P	7	TPUG-LANGUAGE 1
SUPERLANDER	G2 P	21	TPUG-SPACE 1	TEXTSTAT02	L1 P	7	TPUG-LANGUAGE 1
SUPERMON 2.REL	E6 P	9	TPUG-CAEB 6	THE ENTERTAINER!	S1 P	9	TPUG-MUSIC 1
SUPERMON 4.REL	E6 P	9	TPUG-CAEB 6	THE PROMENADE	S1 P	5	TPUG-MUSIC 1
SUPERMON1.REL	U1 P	13	UTILITIES #1	THREE TUNES	S1 P	13	TPUG-MUSIC 1
SUPERMON1.REL	U2 P	13	UTILITIES #2	TIC-TAC-PET	E2 P	24	TPUG-CEAB 1
SUPERMON1.REL	X2 P	13	TPUG BEST-UTIL 2	TIC-TAC-TOE 2.0	G3 P	13	TPUG-WRD/NUM1
SUPERMON1/2/4INS	U1 P	24	UTILITIES #1	TICTACARITH!	E3 P	26	TPUG-CEAB 2/3
SUPERMON1/2/4INS	U2 P	24	UTILITIES #2	TICTACPET!	E3 P	25	TPUG-CEAB 2/3
SUPERMON1/2/4INS	X2 P	24	TPUG BEST-UTIL 2	TIM.CTL	A3 P	6	TPUG-ASSM 3
SUPERMON2.REL	U1 P	9	UTILITIES #1	TIM.M01	A3 P	21	TPUG-ASSM 3
SUPERMON2.REL	U2 P	9	UTILITIES #2	TIM.M02	A3 P	6	TPUG-ASSM 3
SUPERMON2.REL	X2 P	9	TPUG BEST-UTIL 2	TIMES SQUARE	Z1 P	10	TPUG-MISC. 1

TINY FORTH NOTES	U2 P	25 UTILITIES #2	UNIVERSAL WEDGE	B2 P	5 TPUG-BUSNSS 2
TINY FORTH TCHR	U2 P	27 UTILITIES #2	UNIVERSAL WEDGE	B3 P	5 TPUG-BUSINESS 3
TINY MUSIC	U3 P	15 UTILITIES #3	UNIVERSAL WEDGE	C1 P	5 TPUG-COMMUN 1
TINY.PILOT.ASM	A2 P	67 TPUG-ASSM 2	UNIVERSAL WEDGE	C2 P	5 TPUG-COMMUNIC 2
TINY.PILOT.EXE	A2 P	7 TPUG-ASSM 2	UNIVERSAL WEDGE	E1 P	5 TPUG-EDUC 1
TINY.PILOT.EXE	U2 P	7 UTILITIES #2	UNIVERSAL WEDGE	E2 P	5 TPUG-CEAB 1
TINY.PILOT.INS	A2 P	13 TPUG-ASSM 2	UNIVERSAL WEDGE	E3 P	5 TPUG-CEAB 2/3
TINY.PILOT.INS	U2 P	13 UTILITIES #2	UNIVERSAL WEDGE	E4 P	5 TPUG-CEAB 4
TINYMON INST	V2 P	8 TPUG-VIC UTIL 1	UNIVERSAL WEDGE	E5 P	5 TPUG-CEAB 5
TINYMON INST	X2 P	8 TPUG BEST-UTIL 2	UNIVERSAL WEDGE	E6 P	5 TPUG-CAEB 6
TINYMON1 FOR VIC	V2 P	5 TPUG-VIC UTIL 1	UNIVERSAL WEDGE	E7 P	5 TPUG-CEAB 7
TINYMON1 FOR VIC	X2 P	5 TPUG BEST-UTIL 2	UNIVERSAL WEDGE	E8 P	5 TPUG-EDUC 2
TITRATION	E2 P	25 TPUG-CEAB 1	UNIVERSAL WEDGE	E9 P	5 TPUG-EDUCATION 9
TNW488/103A	C1 P	11 TPUG-COMMUN 1	UNIVERSAL WEDGE	G2 P	5 TPUG-SPACE 1
TOKEN - 32K	C2 P	6 TPUG-COMMUNIC 2	UNIVERSAL WEDGE	G3 P	5 TPUG-WRD/NUM1
TOKEN - SUPERPET	C2 P	7 TPUG-COMMUNIC 2	UNIVERSAL WEDGE	G4 P	5 TPUG-GAMES 1
TOKEN ML SOURCE	A5 P	11 TPUG-ASSEMBLER 5	UNIVERSAL WEDGE	G5 P	5 TPUG-GAMES 2
TOKER	G4 P	27 TPUG-GAMES 1	UNIVERSAL WEDGE	G6 P	5 TPUG-GAMES 3
TOMBS A-BNNYCSTL	G1 P	12 TPUG-SIMLTN 1	UNIVERSAL WEDGE	G7 P	5 TPUG-SIMLTN 2
TOMBS B-BNNYCSTL	G1 P	25 TPUG-SIMLTN 1	UNIVERSAL WEDGE	G8 P	5 TPUG-GAMES 4
TORPEDO.BOMBER	G6 P	6 TPUG-GAMES 3	UNIVERSAL WEDGE	G9 P	5 TPUG-SIMLTN 3
TRACE.A.WORD	E8 P	19 TPUG-EDUC 2	UNIVERSAL WEDGE	GAP	5 TPUG - GAMES 5
TRACE.REL	E2 P	14 TPUG-CEAB 1	UNIVERSAL WEDGE	GBP	5 TPUG - GAMES 6
TRACE.REL	E3 P	14 TPUG-CEAB 2/3	UNIVERSAL WEDGE	L1 P	5 TPUG-LANGUAGE 1
TRACE.REL(BASIC)	U1 P	14 UTILITIES #1	UNIVERSAL WEDGE	N1 P	5 TPUG-MTH/SCI1
TRAP	V1 P	12 TPUG-VIC GAME 1	UNIVERSAL WEDGE	N2 P	5 TPUG-MTH/SCI2
TRAVERSE	N3 P	26 TPUG-MATH/SCI 3	UNIVERSAL WEDGE	N3 P	5 TPUG-MATH/SCI 3
TREES	G6 P	24 TPUG-GAMES 3	UNIVERSAL WEDGE	S1 P	5 TPUG-MUSIC 1
TREND-BTTRFLD	N1 P	10 TPUG-MTH/SCI1	UNIVERSAL WEDGE	U1 P	5 UTILITIES #1
TRIANGLE SOLVING	E2 P	25 TPUG-CEAB 1	UNIVERSAL WEDGE	U2 P	5 UTILITIES #2
TRIANGLE-BTTRFLD	N1 P	9 TPUG-MTH/SCI1	UNIVERSAL WEDGE	U3 P	5 UTILITIES #3
TRIG PLOT	V3 P	2 TPUG-VIC DEMO 1	UNIVERSAL WEDGE	U4 P	5 UTILITIES #4
TRIP TO ATLANTIS	G9 P	58 TPUG-SIMLTN 3	UNIVERSAL WEDGE	U5 P	5 TPUG-UTILITIES 5
TURTLE	E8 P	23 TPUG-EDUC 2	UNIVERSAL WEDGE	U6 P	5 TPUG-UTILITIES 6
TWENTY QUESTIONS	Z2 P	2 TPUG-MISCELLAN 2	UNIVERSAL WEDGE	X1 P	5 TPUG BEST-UTIL 1
TYPER.ALT2	B1 P	9 TPUG-BUSNSS 1	UNIVERSAL WEDGE	Z1 P	5 TPUG-MISC. 1
TYPEWRITER.ALT-O	B1 P	14 TPUG-BUSNSS 1	UNIVERSAL WEDGE	Z2 P	5 TPUG-MISCELLAN 2
TYPING DRILL	E1 P	6 TPUG-EDUC 1	UNLIST	U2 P	5 UTILITIES #2
TYPING TEST	B1 P	3 TPUG-BUSNSS 1	UPDATE	B2 P	43 TPUG-BUSNSS 2
U.S. CAPITALS	E7 P	21 TPUG-CEAB 7	US PRESIDENT QUI	E1 P	12 TPUG-EDUC 1
UART.CT	A1 P	4 TPUG-ASSM 1	USEIZE.ASM	A3 P	15 TPUG-ASSM 3
UART.M01	A1 P	9 TPUG-ASSM 1	USEIZE.WP	U3 P	16 UTILITIES #3
UART.M02	A1 P	4 TPUG-ASSM 1	USER.COOKBOOK	U1 P	8 UTILITIES #1
UART.M03	A1 P	3 TPUG-ASSM 1	USERS.LETTER	A2 P	14 TPUG-ASSM 2
UFO	V1 P	9 TPUG-VIC GAME 1	USPOP	E3 P	22 TPUG-CEAB 2/3
UN-NEW.ASM	A2 P	5 TPUG-ASSM 2	UTILITY 20	U1 P	18 UTILITIES #1
UN-NEW/SYS826	U1 P	1 UTILITIES #1	UTILITY 20	X1 P	18 TPUG BEST-UTIL 1
UN-NEW/SYS826	X1 P	1 TPUG BEST-UTIL 1	UTILITY 4.0	U1 P	20 UTILITIES #1
UNASS.EXE60C	A2 P	32 TPUG-ASSM 2	UTILITY 4.0	X1 P	20 TPUG BEST-UTIL 1
UNASS.INS.WP	A2 P	24 TPUG-ASSM 2	UTINSEL.REL	U1 P	7 UTILITIES #1
UNASSEMBLER	A4 P	62 TPUG-ASSM 4	UTP RS232	C2 P	2 TPUG-COMMUNIC 2
UNASSEMBLER.CBM	A4 P	26 TPUG-ASSM 4	V40.2B	B1 P	5 TPUG-BUSNSS 1
UNASSEMBLER.CBM	U2 P	26 UTILITIES #2	V40.2B	U1 P	5 UTILITIES #1
UNASSEMBLER.CBM3	X2 P	26 TPUG BEST-UTIL 2	V40.2B	X6 P	5 TPUG BEST-MISC 1
UNASSEMBLER.MAE	A4 P	32 TPUG-ASSM 4	V40.2O	A2 S	12 TPUG-ASSM 2
UNASSEMBLER.MAE	U2 P	32 UTILITIES #2	V40.2S	A2 S	5 TPUG-ASSM 2
UNASSEMBLER.MAE	X2 P	32 TPUG BEST-UTIL 2	V40.4B	B1 P	5 TPUG-BUSNSS 1
UNASSEMBLER/C	A4 P	33 TPUG-ASSM 4	V40.4B	U1 P	5 UTILITIES #1
UNASSEMBLER/CBM	A1 P	26 TPUG-ASSM 1	V40.4B	X6 P	5 TPUG BEST-MISC 1
UNASSEMBLER/MAE	A1 P	28 TPUG-ASSM 1	V40.4O	A2 S	12 TPUG-ASSM 2
UNCOMPACTOR	U6 P	8 TPUG-UTILITIES 6	V40.4S	A2 S	5 TPUG-ASSM 2
UNCOMPACTOR	X1 P	8 TPUG BEST-UTIL 1	V80.4B	B1 P	5 TPUG-BUSNSS 1
UNDLOAD EASIER	U6 P	3 TPUG-UTILITIES 6	V80.4B	U1 P	5 UTILITIES #1
UNIVERSAL WEDGE	A3 P	5 TPUG-ASSM 3	V80.4B	X6 P	5 TPUG BEST-MISC 1
UNIVERSAL WEDGE	A4 P	5 TPUG-ASSM 4	V80.4O	A2 S	11 TPUG-ASSM 2
UNIVERSAL WEDGE	A5 P	5 TPUG-ASSEMBLER 5	V80.4S	A2 S	1 TPUG-ASSM 2
UNIVERSAL WEDGE	B1 P	5 TPUG-BUSNSS 1	VARIABLE RANDOM	U4 P	13 UTILITIES #4

VDU	L1 P	1 TPUG-LANGUAGE 1			
VECTORS	E7 P	17 TPUG-CEAB 7	WP LIST/SCREEN	U6 P	14 TPUG-UTILITIES 6
VIA SCANNER	U4 P	12 UTILITIES #4	WP LIST/SCREEN	X1 P	14 TPUG BEST-UTIL 1
VIC CHAR DEMO	V2 P	7 TPUG-VIC UTIL 1	WP LIST/SCREEN	X2 P	14 TPUG BEST-UTIL 2
VIC CHAR GENR	V2 P	9 TPUG-VIC UTIL 1	WP LISTER.SRC	A5 P	30 TPUG-ASSEMBLER 5
VIC CLOCK	V3 P	7 TPUG-VIC DEMO 1	WP TAPE2058	U5 P	27 TPUG-UTILITIES 5
VIC DIS1	V2 P	18 TPUG-VIC UTIL 1	WP TAPE2058	X6 P	27 TPUG BEST-MISC 1
VIC DIS2	V2 P	21 TPUG-VIC UTIL 1	WP TO UPPER	U1 P	1 UTILITIES #1
VIC DIS3	V2 P	21 TPUG-VIC UTIL 1	WP3/4 INST1	B1 P	41 TPUG-BUSNSS 1
VIC FREIGHTER	V1 P	11 TPUG-VIC GAME 1	WP3/4 INST1	X6 P	41 TPUG BEST-MISC 1
VIC KEY	V3 P	10 TPUG-VIC DEMO 1	WP3/4 INST2	B1 P	15 TPUG-BUSNSS 1
VIC LISSAJOUS	V3 P	2 TPUG-VIC DEMO 1	WP3/4 INST2	X6 P	15 TPUG BEST-MISC 1
VIC SIL. NITE	V3 P	3 TPUG-VIC DEMO 1	WPRO BUSTER	U3 P	7 UTILITIES #3
VIC SNAKE	V1 P	11 TPUG-VIC GAME 1	WPRO BUSTER	X1 P	7 TPUG BEST-UTIL 1
VIC SOUND DEMO	V3 P	6 TPUG-VIC DEMO 1	WUMPUS II	GBP	31 TPUG - GAMES 6
VIC WEDGE	V2 P	4 TPUG-VIC UTIL 1	WUMPUS.ALT	G6 P	19 TPUG-GAMES 3
VIC WEDGE	X1 P	4 TPUG BEST-UTIL 1	X-REF 24576.ML	X1 P	4 TPUG BEST-UTIL 1
VIC-DEMO	V3 P	11 TPUG-VIC DEMO 1	YAHTZEE	G6 P	22 TPUG-GAMES 3
VIC-KALEIDOSCOPE	V3 P	4 TPUG-VIC DEMO 1	YAHTZEE	X3 P	22 TPUG BEST-GAME 1
VICBREAK/PADL	V1 P	7 TPUG-VIC GAME 1	YAHTZEE	X4 P	22 TPUG BEST-GAME 2
VICLOAD2.REL	U6 P	4 TPUG-UTILITIES 6	YAHTZEE IV	GBP	23 TPUG - GAMES 6
VICLOAD2.REL	V2 P	4 TPUG-VIC UTIL 1	YELLOW LIGHT	E3 P	26 TPUG-CEAB 2/3
VICLOAD2.REL	X1 P	4 TPUG BEST-UTIL 1	YOTE	GBP	19 TPUG - GAMES 6
VICLOAD4.REL	U6 P	4 TPUG-UTILITIES 6	Z-SCORE	E3 P	8 TPUG-CEAB 2/3
VICLOAD4.REL	V2 P	4 TPUG-VIC UTIL 1			
VICLOAD4.REL	X1 P	4 TPUG BEST-UTIL 1			
VIEW BAM	U1 P	5 UTILITIES #1			
VIEW BAM	V2 P	6 TPUG-VIC UTIL 1			
VOCAB 1	E1 P	18 TPUG-EDUC 1			
VOLCANO INSTR	E9 P	26 TPUG-EDUCATION 9			
VOLCANO SIM V2	E9 P	28 TPUG-EDUCATION 9			
WASHINGTON.POST!	S1 P	9 TPUG-MUSIC 1			
WATER	E3 P	26 TPUG-CEAB 2/3			
WATER MUSIC!	S1 P	4 TPUG-MUSIC 1			
WEATHERCAST	N3 P	25 TPUG-MATH/SCI 3			
WEATHERMAN	N1 P	13 TPUG-MTH/SCI1			
WEDGE/BASIC4.ASM	A3 P	23 TPUG-ASSM 3			
WEIGH	E4 P	17 TPUG-CEAB 4			
WEIGH	G6 P	17 TPUG-GAMES 3			
WEIGHT WATCH 4.0	E4 P	18 TPUG-CEAB 4			
WEIGHT WATCH 4.0	N1 P	18 TPUG-MTH/SCI1			
WELL TEMPERED	S1 P	12 TPUG-MUSIC 1			
WHEN I'M 64!	S1 P	6 TPUG-MUSIC 1			
WHOLE NUMBERS	E7 P	19 TPUG-CEAB 7			
WHOLE	E7 P	26 TPUG-CEAB 7			
WILL O' WISP	GAP	114 TPUG - GAMES 5			
WINDOW	L1 P	11 TPUG-LANGUAGE 1			
WIZARD'S.CASTLE	G9 P	60 TPUG-SIMLTN 3			
WONDERLAND!	S1 P	4 TPUG-MUSIC 1			
WORD COUNT 9	X1 P	4 TPUG BEST-UTIL 1			
WORD COUNT 9.0	U5 P	4 TPUG-UTILITIES 5			
WORD COUNT BASICU	U5 P	6 TPUG-UTILITIES 5			
WORD INVADERS	E9 P	27 TPUG-EDUCATION 9			
WORD INVADERS2	E9 P	33 TPUG-EDUCATION 9			
WORD LADDER	E8 P	25 TPUG-EDUC 2			
WORD P DEMO	U5 P	10 TPUG-UTILITIES 5			
WORD P DEMO	X6 P	10 TPUG BEST-MISC 1			
WORD PRO PRINTERU	U6 P	4 TPUG-UTILITIES 6			
WORD PRO PRINTERX	X1 P	4 TPUG BEST-UTIL 1			
WORD PRO TH2058	U5 P	27 TPUG-UTILITIES 5			
WORD PRO TH2058	X6 P	27 TPUG BEST-MISC 1			
WORD PROCESSOR	B3 P	14 TPUG-BUSINESS 3			
WORD.SEARCH+	E8 P	27 TPUG-EDUC 2			
WORLD 2	E3 P	19 TPUG-CEAB 2/3			
WORLD CAPITAL QU	E1 P	12 TPUG-EDUC 1			
WORLD CLOCK	Z2 P	19 TPUG-MISCELLAN 2			
WOTAG	Z2 P	1 TPUG-MISCELLAN 2			

TPUG

INDIVIDUAL DISKETTE

DIRECTORIES

The following pages (260 to 275) show a complete list of all the programs in the TPUG library by disk. This was compiled by our librarian, Dave Hook.

Submission of new programs to the library is very much appreciated and should be made to Chris Bennett (the club's corresponding secretary) whose address is listed on a card in the back of this book.

Those person's wishing copies of any of these disks may also obtain them through Chris. The requirement is membership in the club plus \$10 per disk. A club membership application card is also to be found in the back of this book.

The programs are public domain programs and members are welcome to share them with others, or to obtain them from other club members.

Members may also obtain new programs without cost at each membership meeting and at the annual copy session. There is also a Copy Tree and tape sources described at the end of this book.

A summary index of the disk names is to be found on page 244. A new disk is issued each month and its contents is listed in the TORPET. Each issue of the TORPET contains a list of all the disks and their contents since the last summary issue.

This is the latest summary issue (current until Sept. 10th, 1982). Until a new summary issue is published in the TORPET the latest issue of the TORPET plus this list will tell you everything that is in the TPUG library. A new summary list will be issued when the current monthly additions are merged into their proper disk categories such as games, utilities, etc. This probably will not happen again until Spring 1983.

TPUG-ASSEMBLER 1

3D.PLOT.ASM	A1 P	20	03AA-16FD
CBM.TO.MAE	A1 P	5	0401-08AD
DOS.ASM	A1 P	30	00AA-1D74
EPROM.PRGM.ASM	A1 P	32	0031-1F75
EPROM.PRGM.EXE	A1 P	3	7000-7220
EPROM.PRGM.INS	A1 P	6	0401-0901
EXMON.CT	A1 P	3	0CAA-0304
EXMON.M01	A1 P	8	0CAA-07B1
EXMON.M02	A1 P	27	0CAA-1B50
EXMON.M03	A1 P	14	0CAA-0DDA
EXMON.M04	A1 P	14	0CAA-0E76
EXMON.M05	A1 P	13	00AA-0D5D
EXMON.M06	A1 P	16	00AA-1079
EXMON.M07	A1 P	12	00AA-0BAF
EXMON.M08	A1 P	8	00AA-0888
EXMON.M09	A1 P	8	00AA-082C
EXMON.M0A	A1 P	6	00AA-05B1
EXTRAMON.EXE9.0B	A1 P	9	1000-17EF
EXTRAMON.EXE9.0G	A1 P	9	1000-1800
FREQ.CTR.ASM	A1 P	2	03AA-0560
IEEE.LIB	A1 P	22	00AA-1590
KEYSORT.ASM	A1 P	52	00AA-335A
L.C.LISTER.ASM	A1 P	16	00AA-1012
LEARNING.AID1	A1 P	27	0CAA-1B1C
LEARNING.AID2	A1 P	20	00AA-13EA
LEARNING.AID3	A1 P	9	00AA-089C
LEARNING.AID4	A1 P	10	00AA-09E3
LEARNING.AID5	A1 P	24	0CAA-17C9
LEARNING.AID6	A1 P	10	00AA-0997
LEARNING.AID7	A1 P	14	0CAA-0E32
MAE.PAT.ASM	A1 P	5	03AA-0809
MAE.TO.CBM	A1 P	3	0401-0688
MAE/DOS	A1 P	7	0401-0AE7
MAE/DOS.ASM	A1 P	41	00AA-2929
MLMACROS.MLIB	A1 P	14	00AA-0DE4
PET.LIB	A1 P	15	00AA-0F4E
PET16.ASM	A1 P	16	00AA-0FED
PET16.MAC	A1 P	9	00AA-098B
SECTOR.CTL	A1 P	1	00AA-0123
SECTOR.EXE	A1 P	2	0800-04BF
SECTOR.PGM	A1 P	8	00AA-0860
UART.CT	A1 P	4	00AA-03ED
UART.M01	A1 P	9	00AA-0BA5
UART.M02	A1 P	4	00AA-03F2
UART.M03	A1 P	3	00AA-02F7
UNASSEMBLER/CBM	A1 P	26	0401-1D54
UNASSEMBLER/MAE	A1 P	28	0401-1F23

TPUG-ASSEMBLER 2

AID.CT	A2 P	1	00AA-012D
AID.M01	A2 P	9	00AA-0899
AID.M02	A2 P	30	00AA-1DBE
AID.M03	A2 P	27	00AA-1E0E
APPEND.ASM	A2 P	8	00AA-0835
APPLE.LOADER.ASM	A2 P	36	00AA-2447
BASIC.AID.EXE	A2 P	11	0400-0E00
BASIC.AID.INS	A2 P	31	0401-224F
BMBSTRINGTHING	A2 S	14	3,332
EXTRAMON9.3B	A2 P	8	1000-17D4
EXTRAMON9.3G	A2 P	8	1000-17D4
MAE/DOS	A2 P	7	0401-0AE7
MINI-COMPILER	A2 P	23	0401-19E2

PGMR.UNIV.ASM	A2 P	41	00AA-2873
PGMR4.0.EXE	A2 P	3	7000-7279
SC1.S - OLD	A2 S	76	19,134
SC1.S I/O FIX	A2 S	76	19,213
SCREENPRINT.ASM	A2 P	13	00AA-0D8D
SCREENPRINT.EXE	A2 P	1	033A-03F2
TINY.PILOT.ASM	A2 P	67	00AA-4280
TINY.PILOT.EXE	A2 P	7	4PFO-5657
TINY.PILOT.INS	A2 P	13	0401-1066
UN-NEW.ASM	A2 P	5	00AA-04EA
UNASS.EXE60C	A2 P	32	0401-2399
UNASS.INS.WP	A2 P	24	24A0-3BC0
USERS.LETTER	A2 P	14	03AA-1098

V40.20	A2 S	12	2,876
V40.2S	A2 S	5	1,198
V40.4.0	A2 S	12	2,876
V40.4.S	A2 S	5	1,198
V80.4.0	A2 S	11	2,676
V80.4.S	A2 S	1	193

TPUG-ASSEMBLER 3

AID4.ASM	A3 P	31	00AA-1F3F
APP LOAD SOURCE	A3 P	49	00AA-311A
ASM CONV MOS_COM	A3 P	4	0401-079A
FORMS.CT	A3 P	8	00AA-084B
FORMS.M1	A3 P	41	00AA-2913
FORMS.M2	A3 P	39	00AA-25E3
JUMP2	A3 P	6	0001-05E8
JUMPTABLE	A3 P	6	0001-05B0
KEY.PRINT3&4.ASM	A3 P	14	00AA-0DD6
L.C.LISTER.ASM	A3 P	16	00AA-1012
LITTLEMON.ASM	A3 P	17	00AA-115F
MEAN 14/PET.ASM	A3 P	12	00AA-0C3B
MICROMON.CTB	A3 P	2	00AA-025F
MICROMON.M01	A3 P	4	00AA-03B9
MICROMON.M02B	A3 P	25	00AA-18B3
MICROMON.M03	A3 P	15	00AA-0EAE
MICROMON.M04	A3 P	14	00AA-0E42
MICROMON.M05	A3 P	12	00AA-0BFB
MICROMON.M06	A3 P	16	00AA-104E
MICROMON.M07A	A3 P	15	00AA-0F4E
MICROMON.M08A	A3 P	10	00AA-0A3E
MICROMON.M09	A3 P	21	00AA-1551
MICROMON.M10	A3 P	18	00AA-11D3
MICROMON.M10.5B	A3 P	2	00AA-01D1
MICROMON.M11B	A3 P	9	00AA-093C
MXCL.SRCE	A3 P	22	00AA-15A6
NECCL.SRCE	A3 P	21	00AA-1536
PGMR.UNIV.ASM	A3 P	41	00AA-2873
PRINT TIME.ASM	A3 P	5	00AA-04B7
REAL.CT	A3 P	1	00AA-00FD
REAL1	A3 P	23	0001-16A4
REAL2	A3 P	12	0001-0B5B
SET.KEY.ASM	A3 P	8	00AA-087D
SRC.EX HELLO.ASM	A3 P	21	00AA-153B
TIM.CTL	A3 P	6	00AA-0602
TIM.M01	A3 P	21	00AA-154D
TIM.M02	A3 P	6	00AA-05F0
UNIVERSAL WEDGE	A3 P	5	0401-08B0
USEIZE.ASM	A3 P	15	00AA-0EE6
WEDGE/BASIC4.ASM	A3 P	23	00AA-16CC

TPUG-ASSEMBLER 4

8K	A4 P	24	0401-1B31
BAID4.CT	A4 P	2	00AA-020F
BAID4.DOS	A4 P	14	00AA-0E10
BAID4.M1	A4 P	9	00AA-0934
BAID4.M2	A4 P	17	00AA-1131
BAID4.M3C	A4 P	22	00AA-1622
BAID4.M4	A4 P	27	00AA-1B06
ERIC ASSM	A4 P	25	0401-1C39
INSTRUCTIONS	A4 P	9	0401-0BF1
LITTLEMON+.CT	A4 P	8	00AA-07D4
LITTLEMON.M01	A4 P	19	00AA-12FD
MUSIC.ASM	A4 P	4	0081-041B
UNASSEMBLER	A4 P	62	0401-40E8
UNASSEMBLER.CBM	A4 P	26	0401-1D75
UNASSEMBLER.MAE	A4 P	32	0401-22DA
UNASSEMBLER/C	A4 P	33	0401-2436
UNIVERSAL WEDGE	A4 P	5	0401-08B0

TPUG-ASSEMBLER 5

ADDCOMS.PAL	A5 P	10	0401-ODD1
BASIC-AID.ASM	A5 P	2	00AA-024D
BASIC-AID.CT	A5 P	3	00AA-0387
BASIC-AID.DOS	A5 P	11	00AA-0B7E
BASIC-AID.M1A	A5 P	19	00AA-1290
BASIC-AID.M1B	A5 P	17	00AA-108D
BASIC-AID.M2A	A5 P	16	00AA-1081
BASIC-AID.M2B	A5 P	14	00AA-0DB2
BASIC-AID.M3A	A5 P	16	00AA-101E
BASIC-AID.M3B	A5 P	28	00AA-1BE6
BASIC-AID.M3C	A5 P	21	00AA-1546
BASIC-AID.M4	A5 P	29	00AA-1CED
BASIC-AID.ROLLA	A5 P	19	00AA-1317
BASIC-AID.ROLLB	A5 P	17	00AA-1142
MICROMON.CT+	A5 P	2	00AA-0278
MICROMON.CTC	A5 P	2	00AA-021B
MICROMON.M01	A5 P	4	00AA-03FD
MICROMON.M01+	A5 P	12	00AA-0BE6
MICROMON.M02+	A5 P	19	00AA-130D
MICROMON.M02B	A5 P	25	00AA-18CE
MICROMON.M03	A5 P	15	00AA-0EAE
MICROMON.M03+	A5 P	24	0008-16E0
MICROMON.M04	A5 P	14	00AA-0E42
MICROMON.M04+	A5 P	3	00AA-036E
MICROMON.M05B	A5 P	12	00AA-0BF8
MICROMON.M06	A5 P	16	00AA-104E
MICROMON.M07A	A5 P	15	00AA-0F4E
MICROMON.M08A	A5 P	10	00AA-0A3E
MICROMON.M09.5	A5 P	24	00AA-17F2
MICROMON.M09B	A5 P	22	00AA-15B7
MICROMON.M10B	A5 P	19	00AA-135E
MICROMON.M11B	A5 P	11	00AA-0AE9
TOKEN ML SOURCE	A5 P	11	00AA-0B84
UNIVERSAL WEDGE	A5 P	5	0401-08B0
WP LISTEN SRC	A5 P	30	00AA-1E57

TPUG-BUSINESS 1

APARTMENT INCOME	B1 P	24	0401-1AD5
APR 80	B1	2	383
BUSINESS CASHFLOW	B1	5	0401-0E77

CARGOCOSTAMILE	B1 P	25	0401-1C3D
CURRENCY.CONV	B1 P	6	0401-09DD
DATES-BTRFLD	B1 P	7	0401-0A5E
DAY OF THE WEEK	B1 P	4	0401-0786
DECISIONMAKER	B1 P	14	0401-10FA
DEMO 8032	B1 P	71	0401-4A2E
DYNATEXT	B1 P	43	0401-2DB0
DYNATEXT.INS	B1 S	45	11, 342
E.G. SET-UP 80COL	B1 P	12	0401-0F1A
FEB 80	B1 S	1	39
FINANCIAL CALCS	B1 P	10	0401-0DA5
GROWTH RATE	B1 P	10	0401-0D82
GROWTH.CALC	B1 P	4	0401-0788
HOME.ACCOUNTS.IN	B1 P	20	0401-177C
HOME.ACCOUNTS.SU	B1 P	24	0401-1B95
INVESTMENT.ALT	B1 P	12	0401-0EF8
IRREG.CASH.FLOW	B1 P	25	0401-1BEA
JAN 80	B1 S	1	36
LOAN.ALT	B1 P	15	0401-1248
MAR 80	B1 S	1	36
MARKS-BTRFLD	B1 P	8	0401-0BA4
MAY 80	B1 S	2	285
MILEAGE-BTRFLD	B1 P	5	0401-08BA
MORTGAGE-BTRFLD	B1 P	7	0401-0AD8
PORTFOLIO-BTRFLD	B1 P	12	0401-0EF8
PRICE.LIST	B1 P	8	0401-0B16
RECIPE.SIZER	B1 P	18	0401-1596
SALES.ANAL-OP	B1 P	13	0401-1017
STOCKLIST	B1 P	11	0401-0E40
STOCK.OPTION.VAL	B1 P	9	0401-0BFF
TAX 79 ONT V0.2	B1 P	21	0401-1849
TAX 80 ONT V1.0	B1 P	23	0401-19FC
TAX ONT 1978 V3	B1 P	20	0401-170D
TEXT	B1 S	2	506
TEXT EDITOR	B1 P	7	0401-0AEB
TYPEFAL2	B1 P	9	0401-0C30
TYPEWRITER.ALT-0	B1 P	14	0401-1174
TYPING TEST	B1 P	3	0401-06BC
UNIVERSAL WEDGE	B1 P	5	0401-08B0
V40.2B	B1 P	5	7B00-7F80
V40.4B	B1 P	5	7B00-7F80
V80.4B	B1 P	5	7B00-7F28
WP3/4 INST1	B1 P	41	50B8-7909
WP3/4 INST2	B1 P	15	50B8-5F69

TPUG-BUSINESS 2

4040 FORMAT	B2 P	5	0401-089B
4040 MENU	B2 P	3	0401-0675
4040 PRINT	B2 P	25	0401-1C08
4040 UPDATE	B2 P	41	0401-2C08
8050 FORMAT	B2 P	6	0401-0911
8050 MENU	B2 P	3	0401-0675
8050 PRINT	B2 P	25	0401-1CB8
8050 UPDATE	B2 P	42	0401-2D6A
FORMAT	B2 P	12	0401-0F0B
INTEREST	B2 P	25	0401-1CA6
JOURNAL	B2 P	12	0401-0EF9
MAIL BACKUP	B2 S	10	2, 448
MAIL LIST 2.0	B2 P	20	0401-16FE
MAIL LIST 3.1	B2 P	23	0401-1A2F
MAIL LIST 4050	B2 P	23	0401-1A34
MAIL LIST 8050	B2 P	23	0401-1A34

MENU	B2 P	3	0401-063F
PRINT	B2 P	29	0401-2099
TAX 80 ONT V3.0	B2 P	23	0401-1A61
UNIVERSAL WEDGE	B2 P	5	0401-08B0
UPDATE	B2 P	43	0401-2E90

TPUG-BUSINESS 3

BKEEPING.ALT	B3 P	21	0401-18A9
CRITICAL PATH	B3 P	46	0401-316C
FINANCE	B3 P	25	0401-1C1F
INTEREST	B3 P	27	0401-1E7D
INVENTORY CONTRO	B3 P	11	0401-0E85
LUMP-SUM INV 82	B3 P	38	0401-2930
MINIWORDPRO	B3 P	12	0401-0FD8
MORT CALC	B3 P	6	0401-095C
MORT SCHED	B3 P	7	0401-0A3A
MORTGAGE	B3 P	7	0401-0AD8
TAX 81 ONT V1.0	B3 P	24	0401-1B63
UNIVERSAL WEDGE	B3 P	5	0401-08B0
WORD PROCESSOR	B3 P	14	0401-11A7

TPUG-COMMUNCTN 1

8010 MODEM DRIVR	C1 P	47	0401-3200
BBS PROGRAM	C1 P	47	0401-3200
CBM 8010	C1 P	6	0401-09A7
COMMUNICATE TEST	C1 P	5	0401-0851
ED-TERM	C1 P	30	033A-2000
INTELCOM1	C1 P	4	3C90-4000
INTELCOM2	C1 P	4	3C90-4000
INTELCOM3	C1 P	4	3C90-4000
INTELCOM4	C1 P	5	3C00-4000
MODEM LOG	C1 P	5	0401-085B
MORSE TUTOR	C1 P	14	0401-1147
MORSE-BTRRFLD	C1 P	4	0401-07C1
PC.NET.MODEM	C1 P	23	0401-1A31
RS232-1200@4096	C1 P	2	0800-09E6
RS232-300@4096	C1 P	2	0800-09E6
TELE DIALER	C1 P	2	0401-05B3
TERM.IEEE	C1 P	6	7A00-7F47
TERM.RS232	C1 P	6	7A00-7F29
TERMINAL	C1 P	5	1200-16E1
TERMINAL.IEEE	C1 P	11	0401-0E07
TERMINAL.RS232	C1 P	11	0401-0E52
TNW488/103A	C1 P	11	0401-0E2A
UNIVERSAL WEDGE	C1 P	5	0401-08B0

TPUG-COMMUNIC 2

300 ANS	C2 P	3	0401-0665
BRASS POUNDER 2	C2 P	19	0401-167E
CORESEND	C2 P	11	0401-0EA6
ED-TERM	C2 P	30	033A-2000
INTELCOM3	C2 P	4	3C90-4000
INTELCOM4	C2 P	5	3C00-4000
PET PCNET	C2 P	23	0401-1A50
PETCOM	C2 P	31	0401-2296
STP 488	C2 P	3	0401-0648
TELE DIALER	C2 P	2	0401-05B3
TERM.I12	C2 P	7	7900-7FD2

TERM.IEEE	C2 P	7	7900-7FB5
TERM.R12	C2 P	7	7900-7FBD
TERM.RS232	C2 P	7	7900-7FA0
TERMINAL.I12	C2 P	14	0401-1150
TERMINAL.IEEE	C2 P	13	0401-107C
TERMINAL.R12	C2 P	15	0401-11E8
TERMINAL.RS232	C2 P	14	0401-1115
TOKEN - 32K	C2 P	6	0401-098D
TOKEN - SUPERPET	C2 P	7	0401-OACA
UNIVERSAL WEDGE	C2 P	5	0401-08B0
UTP RS232	C2 P	2	0401-055F

TPUG-EDUCATION 1

20 QUESTIONS	E1 P	15	0401-1273
ADDITION GAME	E1 P	6	0401-09A9
AFRICA & ASIA	E1 P	20	0401-179E
ANIMAL	E1 P	13	0401-101B
ANIMAL.DATA	E1 S	10	2,350
ASK	E1 P	2	0401-05EF
BIG MATH 1.1	E1 P	11	0401-0E8B
CASH REGISTER	E1 P	9	0401-0CCF
CRYPTOGRAM	E1 P	5	0401-087A
DISPLAY	E1 P	23	0401-1A2C
DONUTS	E1 P	8	0401-0B22
EASY ADD & SUBTR	E1 P	12	0401-0FAE
EDU-TILITIES	E1 P	27	0401-1E0B
ELIZA	E1 P	24	0401-1AD7
EUROPE	E1 P	10	0401-0D5B
EUROPEAN CAPITOL	E1 P	10	0401-0D85
FISHERY	E1 P	20	0401-1771
FLASH CARDS	E1 P	8	0401-0B39
FRACTIONS	E1 P	6	0401-094B
FRENCH	E1 P	10	0401-0DE7
FRENCH VERBS	E1 P	11	0401-0E53
GLOBAL	E1 P	6	0401-09C5
GRAMMAR	E1 P	5	0401-08DF
HAIKU 5	E1 P	13	0401-1076
HANGMAN	E1 P	11	0401-0E46
HANGMAN 2	E1 P	27	0401-1E83
HANGMAN(HJS)	E1 P	11	0401-0E0B
HIDDEN.WORDS	E1 P	22	0401-191B
HISTOGRAM	E1 P	4	0401-0780
ICE CREAM PAR	E1 P	23	0401-1A6B
MATH DICE	E1 P	7	0401-0A0A
MATH IQ	E1 P	26	0401-1DC0
MATH TUTOR	E1 P	13	0401-1001
MATH QUIZ	E1 P	13	0401-101A
MISSING NUMBER	E1 P	7	0401-OAAD
NO	E1 P	9	0401-0C53
NOT.SO.EASY	E1 P	11	0401-0EC3
PETS	E1 P	15	0401-1255
Q'S & Z'S	E1 P	14	0401-1193
READER	E1 P	27	0401-1E11
SPEED.READING	E1 P	5	0401-08B4
SPELLING BEE+FIL	E1 P	19	0401-1634
SPELLING.TEST	E1 P	13	0401-1021
STATES&CAPITALS	E1 P	19	0401-162C
STORY.PROBLEMS	E1 P	14	0401-11BE
TACHISTOSCOPE	E1 P	7	0401-0A85
TYPING DRILL	E1 P	6	0401-09A9
UNIVERSAL WEDGE	E1 P	5	0401-08B0
US PRESIDENT QUI	E1 P	12	0401-0FAL
VOCAB 1	E1 P	18	0401-1587
WORLD CAPITAL QU	E1 P	12	0401-0F64

TPUG-CEAB 1

A V OR MINERAL	E2 P	10	0401-ODAE
AMORT'N TABLES	E2 P	13	0401-10CD
CAPITALS	E2 P	13	0401-10CB
DART	E2 P	14	0401-11B4
DISK DATA	E2 S	1	63
DUM 3.2	E2 P	26	0401-1DB7
GEIGER COUNTER	E2 P	11	0401-OEB4
GRAPH SNAPSHOT	E2 P	19	0401-16C1
GRAPH SUBROUTINE	E2 P	5	0401-08A3
GRAVITY TIMER	E2 P	12	0401-0FAB
HANGMAN	E2 P	25	0401-1BDA
HEAT SOLVER 16K	E2 P	22	0401-19D1
HEAT SOLVER 8K	E2 P	22	0401-198C
HYP0 SIMULATOR	E2 P	17	0401-14C0
JOHN GRAPH	E2 P	5	0401-0812
MATRIX SOLUTION	E2 P	18	0401-15B3
METRIC	E2 P	11	0401-OEBB
MICROMATH DEMO	E2 P	46	0401-313F
MM1.1 sHERIDAN	E2 P	28	0401-1F4E
MM16.1	E2 P	26	0401-1D67
POLLUTION	E2 P	25	0401-1C38
PRIME NUMBER 16K	E2 P	3	0401-061B
REFLEX TIMER	E2 P	4	0401-07BE
SMALL MATH	E2 P	15	0401-12AE
SOLVE BY GRAPH	E2 P	18	0401-15BB
SPEAK AND SPELL	E2 P	9	0401-0BF9
TIC-TAC-PET	E2 P	24	0401-1B2B
TITRATION	E2 P	25	0401-1BD2
TRACE.REL	E2 P	14	0401-11E2
TRIANGLE SOLVING	E2 P	25	0401-1C95
UNIVERSAL WEDGE	E2 P	5	0401-08B0

TPUG-CEAB 2/3

BEADS	E3 P	4	0401-0792
CALENDAR	E3 P	16	0401-1362
CLOSED-3	E3 P	5	0401-08E9
CURVE-FIT	E3 P	30	0401-219A
CURVE-FIT 2	E3 P	22	0401-19AA
DRUNKARD	E3 P	5	0401-085B
EXPECTANCY	E3 P	18	0401-1543
GEOGRAPHY	E3 P	25	0401-1C92
HAMMURABI	E3 P	9	0401-0C8F
HANGMAN	E3 P	12	0401-0F8C
HICALC	E3 P	23	0400-1A4A
HIST	E3 P	4	0401-0780
HURKLE!	E3 P	20	0400-16DA
LISSAJOUS	E3 P	4	0401-079C
METCONV	E3 P	13	0401-1081
MULTILOT	E3 P	10	0401-0D5A
NUMINT	E3 P	8	0401-0BC2
POINTS	E3 P	25	0400-1BFB
POLAR	E3 P	10	0401-0DB5
POLICY	E3 P	26	0400-1CE5
POLUT	E3 P	25	0400-1C33
POP	E3 P	25	0400-1C2D
PROBABILITY MACH	E3 P	8	0400-0B63
PROJ-PLOT	E3 P	12	0401-0F3D
QUEUE	E3 P	9	0401-0C9C
RESULTANT	E3 P	5	0401-0888
S-HYPHEN	E3 P	12	0400-0FDD
S-PUNC	E3 P	19	0400-16B6
S-SPELL	E3 P	12	0400-0FDE
SMOG SIMULATION	E3 P	7	0401-0A1D

T-HYPHEN	E3 P	6	0400-09C6
T-PUNC	E3 P	19	0400-16B6
T-SPELL	E3 P	19	0400-166C
TICTACARITH!	E3 P	26	0400-1D33
TICTACPET!	E3 P	25	0400-1BED
TRACE.REL	E3 P	14	0401-11E2
UNIVERSAL WEDGE	E3 P	5	0401-08B0
USPOP	E3 P	22	0400-1996
WATER	E3 P	26	0400-1D72
WORLD 2	E3 P	19	0401-1619
YELLOW LIGHT	E3 P	26	0400-1D91
Z-SCORE	E3 P	8	0401-0AF7

TPUG-CEAB 4

80 COLUMN DEMO	E4 P	16	0401-1389
A STORY	E4 P	5	0401-0876
BAIRSTOW NTH EQS	E4 P	6	0401-09AF
BASIC STATISTICS	E4 P	3	0401-0608
BEST FIT(LEAST)	E4 P	3	0401-06E0
COMBINATION WARS	E4 P	28	0401-1ECF
COPY DISK FILES	E4 P	10	0401-0D2D
DRIVING TEST	E4 P	27	0401-1E18
ELEMENT DRILL	E4 P	13	0401-108D
FFT	E4 P	13	0401-106F
FLIGHT SIMULATOR	E4 P	17	0401-14C3
FOREST FIRE	E4 P	12	0401-0F11
FRACTION GAME20	E4 P	16	0401-13BE
GRADES	E4 P	9	0401-0C65
GRAPH PLOTTER	E4 P	5	0401-08E0
HANG MATH	E4 P	9	0401-0C30
HANGMAN 3.0	E4 P	24	0401-1AE2
HARMONIC DISPLAY	E4 P	4	0401-073D
HELLO	E4 P	12	0401-0F17
JOTTO	E4 P	17	0401-14D7
JULIAN CALENDER	E4 P	6	0401-09B6
LIFE EXPECTANCY	E4 P	19	0401-15DF
LIFESTYLE	E4 P	23	0401-1AA8
LIN-PRO	E4 P	7	0401-0A74
LISTENER	E4 P	10	0401-0D8B
LONG DIVISION	E4 P	7	0401-0AE5
MARBLESTAT	E4 P	13	0401-1011
MARKS(GRADING AI	E4 P	8	0401-0BE7
METRIC CONVER'N	E4 P	7	0401-0A03
MORSE CODE	E4 P	6	0401-0924
MORSE DECODER	E4 P	12	0401-0F0C
MORTGAGE PRINTERE	E4 P	9	0401-0C5F
OPTICAL ILLUSION	E4 P	8	0401-0BA0
POLIFIY	E4 P	11	0401-0DF9
PRIMES	E4 P	2	0401-05AA
PROGRAMMER RPN	E4 P	17	0401-13FE
QUADRATIC	E4 P	3	0401-0601
READABILTY	E4 P	20	0401-177F
REG'D PWR SUP DE	E4 P	28	0401-1F33
ROOT FINDER	E4 P	10	0401-0CFD
SCROLL	E4 P	3	0401-0607
SIM INVENTORY	E4 P	7	0401-0AAE
SIMEQ SOLVER	E4 P	12	0401-0F5B
SIMPLE PENDULUM	E4 P	4	0401-070A
SPEED READ	E4 P	9	0401-0CCA
UNIVERSAL WEDGE	E4 P	5	0401-08B0
WEIGH	E4 P	17	0401-1409
WEIGHT WATCH 4.0	E4 P	18	0401-158C

TPUG-CEAB 5

AMORTIZATION HEL	E5 P	9	0401-0C6D
AUTO FILE WRITER	E5 P	6	0401-0908
BALANCING EQU	E5 P	46	0401-30B2
BIG BINARY	E5 P	3	0401-062D
BONDS	E5 P	9	0401-0C67
DDR	E5 P	13	0401-1041
DEPRECIATE	E5 P	5	0401-08B8
DIET	E5 P	18	0401-1558
EARTHQUAKE	E5 P	25	0401-1C39
EASY EDIT	E5 P	16	0401-1323
ENZYMIC	E5 P	10	0401-0D52
FIFO	E5 P	5	0401-084A
GENERAL ANOVA	E5 P	17	0401-1432
HEX DEMO	E5 P	6	0401-09D5
INTRO. JACQUES	E5 P	2	0401-05E0
INTRO. SYLLABLES	E5 P	2	0401-056A
INTRO. TO PERCEN	E5 P	3	0401-061D
JACQUES A	E5 P	56	0401-3AA2
JACQUES B	E5 P	55	0401-3A48
LETTER SEQUENCES	E5 P	12	0401-0F98
LOCKEY	E5 P	16	0401-12F4
MICROSCOPY	E5 P	47	0401-3246
PERCENT	E5 P	20	0401-17A0
PHOSYN	E5 P	17	0401-13E8
SYLLABLES	E5 P	26	0401-1CD1
UNIVERSAL WEDGE	E5 P	5	0401-08B0

TPUG-CEAB 6

8010 MODEM DRIVR	E6 P	47	0401-3200
ADD&SUB	E6 P	28	0401-1ED8
AID2	E6 P	8	0401-0B39
AID4	E6 P	8	0401-0B3B
ALPHA-LIST	E6 P	4	0401-07E7
CBM 8010	E6 P	6	0401-09A7
CHEM NOMINCLATUR	E6 P	12	0401-0F32
COMPOSE	E6 P	18	0401-156A
DATES	E6 P	18	0401-153C
DYNALOGIC	E6 P	30	0401-2102
FACTOR RACE	E6 P	20	0401-17A5
FACTORS	E6 P	13	0401-1068
FRENCH VERBS FWC	E6 P	57	0401-3C45
FUNCTION GRAPH	E6 P	11	0401-0E6A
FWCI INTEGER TTT	E6 P	17	0401-1413
LIFE TABLES	E6 P	10	0401-0D44
PALKO'S AUDIT	E6 P	24	0401-1B4F
RELATION GRAPH	E6 P	14	0401-1114
RELATION SKETCH	E6 P	13	0401-101C
STOCK TICKER	E6 P	28	0401-1ED7
STRUCTURE-BASIC	E6 P	24	0401-1BB5
SUPERMON 2REL	E6 P	9	0401-0CCB
SUPERMON 4.REL	E6 P	9	0401-0CCB
SUPERMON2/4 INS	E6 P	24	0401-1AF7
TAX 80 ONT V20	E6 P	23	0401-1A15
UNIVERSAL WEDGE	E6 P	5	0401-08B0

TPUG-CEAB 7

'PERCENT' DRILL	E7 P	24	0401-1AF2
AFRICAN CAPITALS	E7 P	20	0401-1792
ASIAN CAPITALS	E7 P	19	0401-1602
C-C'S AUST & AME	E7 P	21	0401-187A
C-C'S CAN & EUR	E7 P	21	0401-18D0
CAPITAL CITIES	E7 P	46	0401-30BD
CENTRAL CONICS	E7 P	26	0401-1CF8
DECIMALS	E7 P	17	0401-149C
DIVISION	E7 P	17	0401-14AE
FACTORING DRILL	E7 P	25	0401-1BFB
FACTORING WHOLESE	E7 P	18	0401-15A0
FLASHER	E7 P	22	0401-18DF
FRACTIONS DRILL	E7 P	25	0401-1BDF
INSTRUCTIONS	E7 P	22	0401-1921
INTEGERS	E7 P	27	0401-1E21
LINEAR SYSTEMS	E7 P	25	0401-1COD
MAT 250 MLA	E7 P	18	0401-152C
MECHANICS	E7 P	21	0401-18B0
MLA--ARITHMETIC	E7 P	19	0401-16A6
NICE TRIG RATIOS	E7 P	19	0401-1699
PLANES	E7 P	19	0401-1661
POWERS & ROOTS	E7 P	21	0401-18B5
SKELETON DRILL	E7 P	22	0401-18EA
SPELLING DRILL	E7 P	18	0401-156B
STRAIGHT LINE	E7 P	20	0401-1770
U.S. CAPITALS	E7 P	21	0401-180B
UNIVERSAL WEDGE	E7 P	5	0401-08B0
VECTORS	E7 P	17	0401-1426
WHOLE NUMBERS	E7 P	19	0401-1684
WHOLE	E7 P	26	0401-1D77

TPUG-EDUC 2

ANTONYMS!	E8 P	17	0401-14B0
BALANCING EQU	E8 P	46	0401-30B2
BASE CONV.ALT	E8 P	23	0401-19F9
CHEMISTRY CALC	E8 P	12	0401-0F3A
CHICK	E8 P	26	0401-1D1E
CHICK RESULTS	E8 P	24	0401-1B8B
DOC-SCARDIAC 7B	E8 P	29	4C70-6869
ENGLISH GRAMMAR	E8 P	25	0401-1C0C
HANGMATH/O'H	E8 P	21	0401-180A
LIMERICKS	E8 P	16	0401-1362
MARTIAN.HUNT	E8 P	26	0401-1D4E
MATH IQ	E8 P	26	0401-1DC0
MELODY CHANGES	E8 P	17	0401-1486
MULT DRILL	E8 P	26	0401-1CD6
PI.CALCULATOR	E8 P	9	0401-0CC7
PICTURES	E8 P	22	0401-19B3
POGO V7	E8 P	22	0401-193D
POGO.INS.WP	E8 P	44	4E00-78A9
PUZZLE.BOX	E8 P	21	0401-1D78
PUZZLE.ENTER	E8 P	27	0401-1DD7
RATIONAL	E8 P	9	0401-0C5F
SCARDIAC 7A.INS	E8 P	23	4C70-62F1
SCARDIAC V7	E8 P	21	0401-189F
SOLAR SYSTEM	E8 P	28	0401-1EF3
TRACE.A.WORD	E8 P	19	0401-16B7
TURTLE	E8 P	23	0401-1A63
UNIVERSAL WEDGE	E8 P	5	0401-08B0
WORD LADDER	E8 P	25	0401-1C29
WORD.SEARCH+	E8 P	27	0401-1E15

TPUG-EDUCATION 9

C2 WATER/ZEBRA L	E9 P	44	0401-2F76
CHEMIST	E9 P	11	0401-0E31
COMBINATION WAR!	E9 P	33	0401-2497
DOG BITE	E9 P	28	0401-1EDE
ELEMENT QUIZZER	E9 P	21	0401-189A
ELEMENT QZ 80COL	E9 P	22	0401-1968
ENCHANTED HOUSE!	E9 P	81	0401-53B2
LEMONADE!	E9 P	30	0401-20CF
MARKET NEW	E9 P	22	0401-19A3
MATH QUIZ V2	E9 P	20	0401-1794
MPAK	E9 P	9	0401-0C27
N1 COINS EXERCIS	E9 P	45	0401-3063
NICHE NEW	E9 P	25	0401-1C02
OPERATIONS	E9 P	24	0401-1ADD
PAK JANA	E9 P	21	0401-1826
QUAL INORG ANALY	E9 P	21	0401-1878
S1 COIN LOGIC PU	E9 P	32	0401-2393
SCHOOL-MARM	E9 P	8	0401-0B07
STRUCTURE BASIC	E9 P	27	0401-1E3E
TAX COLLECTOR NE	E9 P	16	0401-12EF
UNIVERSAL WEDGE	E9 P	5	0401-08B0
VOLCANO INSTR	E9 P	26	0401-1D4D
VOLCANO SIM V2	E9 P	28	0401-1EDB
WORD INVADERS	E9 P	27	0401-1E2F
WORD INVADERS2	E9 P	33	0401-23FA

TPUG-SIMULATN 1

ADV30 GAME	G1 P	26	0401-1D64
ADV30 INTRO	G1 P	6	0401-0909
ADVBOOT	G1 P	1	0401-0456
ADVENTURE	G1 P	49	0401-33D6
ADVENTURE GAME	G1 P	26	0401-1D64
ADVENTURE-M.B.	G1 P	9	0401-0C94
ADV F 0	G1 S	9	2, 216
ADV F 1	G1 S	5	1, 182
ADV F 10	G1 S	2	371
ADV F 11	G1 S	2	395
ADV F 12	G1 S	2	465
ADV F 13	G1 S	2	319
ADV F 2	G1 S	5	1, 213
ADV F 20	G1 S	3	564
ADV F 21	G1 S	7	1, 563
ADV F 22	G1 S	6	1, 414
ADV F 23	G1 S	5	1, 226
ADV F 24	G1 S	6	1, 512
ADV F 25	G1 S	7	1, 558
ADV F 26	G1 S	11	2, 622
ADV F 27	G1 S	6	1, 303
ADV F 28	G1 S	5	1, 208
ADV F 29	G1 S	1	242
ADV F 3	G1 S	4	894
ADV F 31	G1 S	7	1, 713
ADV F 4	G1 S	3	743
ADV F 5	G1 S	4	819
ADV F 6	G1 S	6	1, 366
ADV F 7	G1 S	3	648
ADV F 8	G1 S	4	807
ADV F 9	G1 S	4	806
ADVITM	G1 S	9	2, 113
ADVKEYS	G1 S	8	1, 883
ADVMAP	G1 S	21	5, 106

ADVSHOR	G1 S	18	4, 463
DOG.STAR.ADVEN	G1 P	71	0401-49F3
DUNGEON 1.4	G1 P	26	0401-1D82
DUNGEON.ALTT3	G1 P	22	0401-19A4
EXPLORE-BTTRFLD	G1 P	22	0401-19A4
FISHERY	G1 P	20	0401-1771
HAMMURABI	G1 P	12	0401-0FA4
HAMURABI	G1 P	14	0401-1159
KINGDOM/PICS	G1 P	27	0401-1E9D
LIFE	G1 P	11	0401-0E9D
POLUT	G1 P	25	0401-1C45
POWER INSTRUCT	G1 P	21	0401-1873
POWER SIMULATION	G1 P	22	0401-195C
QUEST 3.0	G1 P	39	0401-2AA7
TOMBS A-BNNYCSTL	G1 P	12	0401-0F1D
TOMBS B-BNNYCSTL	G1 P	25	0401-1CC6

TPUG-SPACE GAME1

AFO WITH SOUND	G2 P	25	0401-1CC9
ATARI II	G2 P	14	0401-111B
C.C.STARWAR	G2 P	27	0401-1E32
C.C.STARWAR.INS	G2 P	22	0401-18F3
DEEPSPACE 1.0	G2 P	24	0401-1B7E
EASY.DUNGEON!	G2 P	25	0401-1CC0
ELIZA	G2 P	25	0401-1C1F
HUNTER.SATELLITE	G2 P	13	0401-1090
KLINGON CAPTURE	G2 P	25	0401-1C43
LUNAR LANDER 1	G2 P	11	0401-0E7F
LUNAR LANDER-BFDG	G2 P	9	0401-0C74
OSC LUNAR	G2 P	27	0401-1E6C
PLANET.PROBE	G2 P	17	0401-146E
SPACESHOOTER.ALT	G2 P	22	0401-1999
STAR TREK	G2 P	23	0401-1ACB
STAR WAR TRANINE	G2 P	16	0401-1381
STAR WARS	G2 P	25	0401-1C81
STAR WARS!	G2 P	15	0401-1247
STARBASE&UFO!	G2 P	26	0401-1CF4
STARTREK V18 #	G2 P	26	0401-1D1D
STARTREK.ALTT4	G2 P	25	0401-1C82
SUPER STAR TREK	G2 P	78	0401-511D
SUPERLANDER	G2 P	21	0401-186D
UNIVERSAL WEDGE	G2 P	5	0401-08B0

TPUG-WORD/NUM 1

3D TIC-TAC-TOE	G3 P	17	0401-1497
ANDROID NIM!	G3 P	23	0401-19F9
BAGELS-BUTTRFLD	G3 P	3	0401-06E9
BAGELSX2-BTTRFLD	G3 P	12	0401-0F9E
BINGO	G3 P	11	0401-0E45
BRAIN STRAIN	G3 P	5	0401-08AC
CONCENTRATION.7	G3 P	24	0401-1B89
CRAPS.ODDS	G3 P	16	0401-1327
CRYPTO-BTTRFLD	G3 P	6	0401-09E1
FAMOUS PHRASES	G3 P	13	0401-105D
GUESS IT	G3 P	14	0401-11B7
HANGMAN	G3 P	27	0401-1E83
HANGMAN-2/PETS	G3 P	9	0401-0C6B
HANGMAN.ALTT	G3 P	16	0401-13B8
HANGMATH	G3 P	21	0401-1800
JOTTO-BTTRFLD	G3 P	7	0401-0AEA

SLOTS/JACKPOT	G6 P	20	0401-1789
SNOWFLAKE	G6 P	11	0401-0E7B
SOLITAIRE POKER	G6 P	22	0401-196A
SUBMARINE	G6 P	25	0401-1C18
T.TENNIS	G6 P	14	0401-1197
TAG	G6 P	14	0401-11D4
TANK.BATTLE	G6 P	21	0401-183F
TANK.WAR.ALT	G6 P	20	0401-17C6
TORPEDO.BOMBER	G6 P	6	0401-09D2
TREES	G6 P	24	0401-1B24
UNIVERSAL WEDGE	G6 P	5	0401-08B0
WEIGH	G6 P	17	0401-1409
WUMPUS.ALT	G6 P	19	0401-164B
YAHTZEE	G6 P	22	0401-192E

TPUG-GAMES 4

BREAK80	G8 P	7	0401-0A7C
BREAKOUT	G8 P	7	0401-0A71
CAR RACE 4.0	G8 P	20	033A-1680
CRAZY 8'S	G8 P	16	0401-133C
MISSION IMP	G8 P	24	0401-1B37
MONOPOLY	G8 P	93	0401-5FB2
ROULETTE	G8 P	58	027A-3B26
STOCK	G8 P	23	0401-1A96
STOCK 80 COL	G8 P	23	0401-1AA7
UNIVERSAL WEDGE	G8 P	5	0401-08B0

TPUG-SIMULATN 2

ADV9 0	G7 S	9	2,213
ADV9 1	G7 S	5	1,184
ADV9 10	G7 S	2	372
ADV9 11	G7 S	2	396
ADV9 12	G7 S	2	466
ADV9 13	G7 S	2	320
ADV9 2	G7 S	5	1,213
ADV9 20	G7 S	3	566
ADV9 21	G7 S	7	1,567
ADV9 22	G7 S	6	1,415
ADV9 23	G7 S	5	1,226
ADV9 24	G7 S	6	1,514
ADV9 25	G7 S	7	1,561
ADV9 26	G7 S	11	2,612
ADV9 27	G7 S	6	1,303
ADV9 28	G7 S	5	1,211
ADV9 29	G7 S	1	244
ADV9 3	G7 S	4	895
ADV9 31	G7 S	7	1,713
ADV9 4	G7 S	3	745
ADV9 5	G7 S	4	816
ADV9 6	G7 S	6	1,367
ADV9 7	G7 S	3	649
ADV9 8	G7 S	4	808
ADV9 9	G7 S	4	806
ADVENTURE80	G7 P	49	0401-33F9
ADVITM	G7 S	9	2,113
ADVKEYS	G7 S	8	1,883
ADVMAP	G7 S	21	5,106
ADVSH8	G7 S	18	4,408
ADVSH9	G7 S	18	4,463
AFRICAN ADV-32K	G7 P	91	0401-5D75
BABY CARE	G7 P	12	0401-0F79
HS.OF.7.GABLES	G7 P	47	0401-323B
LOST DUTCH GOLD	G7 P	50	0401-356C
NEW ROM WARLORDS	G7 P	22	0401-1979
NEW WARLORDS INS	G7 P	25	0401-1C11
NEW WATER	G7 P	27	0401-1DE9
NICHE	G7 P	25	0401-1C41
OLD ROM WARLORDS	G7 P	22	0401-1993
OLD WARLORDS INS	G7 P	25	0401-1C11
SPELUNKER	G7 P	38	0401-2983
SWORDS & SORCERY	G7 P	28	0401-1ED4
UNIVERSAL WEDGE	G7 P	5	0401-08B0

TPUG-SIMULATN 3

CASTLE ADV-32K	G9 P	75	0401-4D92
KING.TUT	G9 P	60	0401-3EA5
OHARE'S #1	G9 P	67	0401-4666
OHARE'S #2	G9 P	66	0401-4570
OHARE'S #3	G9 P	86	0401-5940
SORCERERS.CASTLE	G9 P	55	0401-39A4
TRIP TO ATLANTIS	G9 P	58	0401-3D74
UNIVERSAL WEDGE	G9 P	5	0401-08B0
WIZARD'S.CASTLE	G9 P	60	0401-3EC9

TPUG - GAMES 5

ASTEROIDS	GAP	22	0401-1980
BASEBALL 7.3	GAP	26	0401-1D1B
BLACKJACK 80 COL	GAP	13	0401-OFF2
BLOCKADE	GAP	26	0401-1D22
CONNECT 4	GAP	27	0401-1DF8
CYCLE JMP 80 COL	GAP	9	0401-0C64
DRAG RACE 80 COL	GAP	15	0401-122A
MONOPOLY	GAP	51	0401-3693
PET NUC PWR PLNT	GAP	60	0401-3F46
PETMAN 5	GAP	23	0401-1A0B
PI HUNT	GAP	17	0401-1408
PINBALL	GAP	24	0401-1B64
PIRATE ADVENTURE	GAP	69	0401-47C2
SEABATTLE	GAP	47	0401-3240
SEABATTLE INST	GAP	23	0401-1A5E
SLOT MACH 80 COL	GAP	6	0401-09E3
SUPERTREK/16KNR	GAP	51	0401-35FB
UNIVERSAL WEDGE	GAP	5	0401-08B0
WILL O' WISP	GAP	114	0401-7441

TPUG - GAMES 6

BATTLESHIP	GBP	16	0401-1393
BIG LETTER BOGGL	GBP	17	0401-14AB
CONCORD LANDER	GBP	27	0401-1E39
CROSS WORD	GBP	34	0401-24C1
DRAGSTER	GBP	12	0401-0F4F
HANGMAN 7	GBP	19	0401-1678
JUMBO JET LANDER	GBP	24	0401-1B38
QUBIC 4	GBP	20	0401-17B7
RAGING ROBOTS 4	GBP	13	0401-109A

SLEUTH	GBP	26	0401-1D39
STOCK MARKET!	GBP	62	0401-4163
SUPER 9X9	GBP	19	0401-1684
UNIVERSAL WEDGE	GBP	5	0401-08B0
WUMPUS II	GBP	31	0401-222A
YAHTZEE IV	GBP	23	0401-1AA6
YOTE	GBP	19	0401-167B

TPUG-LANGUAGE 1

AUNTIE	L1 P	14	093B-1638
BINSEARCH	L1 P	2	0145-02F1
COMAL EXPLAIN	L1 P	31	0401-22AB
COMAL80	L1 P	106	0401-6D00
COMAL80+	L1 P	109	0401-7000
COMALERRORS	L1 S	4	910
CORRECTIONS	L1 P	13	0855-152D
DELETE	L1 P	13	0792-13A7
DELREC	L1 P	13	0792-13A7
DISK	L1 P	6	052C-0AB4
DOUBLE	L1 P	2	0107-0225
ENROLL	L1 P	12	074C-12D1
ENTERMARKS	L1 P	12	06F5-1231
EUCLID	L1 P	3	0290-0577
FIXPERMUT	L1 P	2	0167-02EC
FORWARD	L1 P	1	00DE-01D3
GENERATORS-D	L1 P	7	0401-0A1F
GENERATORS-E	L1 P	6	0401-09DB
GROWSTRING	L1 P	1	00DC-01D4
HANNIBAL	L1 P	7	053E-0BC2
IFTEST	L1 P	1	0086-012B
KEYS	L1 S	1	75
LOCAL VAR	L1 P	1	0059-00DE
MAX01	L1 P	4	02B9-05F7
NYKLUB	L1 P	5	0457-08DB
NYLISTMEDL	L1 P	8	05AB-0D35
NYOPRET	L1 P	15	0C8C-1B41
NYRETTE	L1 P	14	0B6F-194F
NYSLETMEDL	L1 P	11	0838-12EF
NYVISMEDL	L1 P	9	06D1-0F65
OLSENMAIN	L1 P	3	01FE-041A
OTHELINSTR	L1 P	6	04D2-09D5
OTHELLO	L1 P	17	0D36-1D42
PGR05	L1 P	3	0225-04C9
PRINTOUT	L1 P	12	0739-12DA
QUEENS	L1 P	3	0232-04C5
QUICKSORT	L1 P	3	024F-0503
SQRT	L1 P	1	00AD-019B
STARTOTHELLO	L1 P	1	00E6-01D9
STRIPVAR	L1 P	1	3030-30AA
TEXTSTAT01	L1 P	7	057F-0BE6
TEXTSTAT02	L1 P	7	0577-0BE3
UNIVERSAL WEDGE	L1 P	5	0401-08B0
VDU	L1 P	1	0401-045F
WINDOW	L1 P	11	06A1-1189

TPUG-MATH/SCI 1

3D PLOT	N1 P	27	0401-1DE3
BIOPRINTER 6.3	N1 P	17	0401-13FC
BIORHYTHM 1.5	N1 P	8	0401-0BD1
CHI SQUARE	N1 P	3	0401-06B9
CRITICAL PATH 2A	N1 P	5	0401-08C7

CROUT ALGORITHM	N1 P	5	0401-07FD
CURFIT-BTTRFLD	N1 P	8	0401-0BA4
DEMO SORT	N1 P	9	0401-0BF1
DERIVATIVE	N1 P	2	0401-058E
EDU-TILITIES	N1 P	27	0401-1EOB
ELECTRONICS.CALC	N1 P	15	0401-1222
FACTORS-BTTRFLD	N1 P	4	0401-078B
FUNCTION.MACHINE	N1 P	23	0401-1AB3
GLOBAL	N1 P	6	0401-09C5
GRAPHICS.DEMOS-G	N1 P	19	0401-1676
HEAPSORT DEMO	N1 P	6	0401-092E
INTERMOD	N1 P	15	0401-12BC
LAT+LON.DISTANCE	N1 P	6	0401-09C5
LEAST SQUARES	N1 P	20	0401-1724
LIFE EXPECTANCY	N1 P	19	0401-15DF
LISTENER	N1 P	10	0401-0D8B
MATH TEST-BTTRFL	N1 P	9	0401-0C39
METRIC CONVER'N	N1 P	7	0401-0A03
METRIC TEACHER	N1 P	12	0401-0F8C
METRIC-BTTRFLD	N1 P	6	0401-095E
NATAL CHART	N1 P	64	0401-4346
NEWTONS ZERO	N1 P	3	0401-069B
OHMS LAW	N1 P	17	0401-14C8
PLANET POSITION3	N1 P	69	0401-47A9
PLOTTING	N1 P	9	0401-0CEB
POLIFY	N1 P	2	0000-00FD
PRESSURE CURVE	N1 P	9	0401-0C92
PROGRAMMER RPN	N1 P	17	0401-13FE
QUADRATIC	N1 P	2	0401-05F4
QUARTIC	N1 P	21	0401-17E6
RANK CORRELATE	N1 P	2	0401-05EB
REDUCTION	N1 P	4	0401-077F
REG'D PWR SUP DE	N1 P	28	0401-1F33
ROOT FINDER	N1 P	10	0401-0CFD
ROULETTE.THEORY	N1 P	5	0401-0877
SIMEQ SOLVER	N1 P	12	0401-0F5B
SORT	N1 P	3	0401-068D
SORTING DEMO	N1 P	8	0401-0BCC
SQUARE ROOT TEST	N1 P	3	0401-06A2
TREND-BTTRFLD	N1 P	10	0401-0D02
TRIANGLE-BTTRFLD	N1 P	9	0401-0CDA
UNIVERSAL WEDGE	N1 P	5	0401-08B0
WEATHERMAN	N1 P	13	0401-10D0
WEIGHT WATCH 4.0	N1 P	18	0401-158C

TPUG-MATH/SCI 2

AUDIO DESIGNER	N2 P	17	0401-1482
BAR GRAPH 24	N2 P	21	0401-185C
BONE TUMOR DIAGN	N2 P	17	0401-14CB
COMPLEX NUMBERS	N2 P	9	0401-0C2C
CRYPTARITHMETIC	N2 P	10	0401-0D55
FILTER	N2 P	10	0401-0D60
FREQ GENERATOR!	N2 P	25	0401-1C49
NET1	N2 P	21	0401-189B
PHYSIOLOGIC WT	N2 P	14	0401-11B8
PLEURAL EFFUSION	N2 P	13	0401-10C6
POWER SUPPLY	N2 P	22	0401-19BC
UNIVERSAL WEDGE	N2 P	5	0401-08B0

TPUG-MATH/SCI 3

CONVERSIONS A	N3 P	45	0401-2FC5
CONVERSIONS B	N3 P	43	0401-2E07
FAMILY GENES	N3 P	34	0401-254D
PLANETS	N3 P	69	0401-47A8
SUNRISE/SUNSET	N3 P	14	0401-1138
TANK VOLUME	N3 P	5	0401-0808
TRAVERSE	N3 P	26	0401-1DA4
UNIVERSAL WEDGE	N3 P	5	0401-08B0
WEATHERCAST	N3 P	25	0401-1C5E

TPUG-MUSIC 1

1950'S MEDLEY!	S1 P	13	0F00-1BD9
76 TROMBONES!	S1 P	10	0F00-1845
ALLELUJAH!	S1 P	9	0F00-1740
BAROQUE FANFARE!	S1 P	4	0F00-12B0
BUMBLE BEE!	S1 P	12	0F00-1A43
COPY ALL	S1 P	8	0401-0B6D
DANSE CAPRICE	S1 P	4	0F00-12E5
DUELIN' BANJOS	S1 P	12	0F00-1AD3
ELEANOR RIGBY	S1 P	15	0400-1250
ELEPHANT	S1 P	16	0400-1328
ESPANA	S1 P	4	0F00-122B
FUGHETTA	S1 P	10	0F00-1830
GAVOTTE&MUSSETTE	S1 P	12	0F00-1A94
INVENTION #11!	S1 P	6	0F00-14CF
INVENTION #8!	S1 P	9	0F00-179E
JINGLE BELLS!	S1 P	4	0F00-1295
JOPLIN MUSIC	S1 P	7	0401-0A78
LP:NEW ROM MUSIC	S1 P	12	0401-0F00
MARCH IN D!	S1 P	5	0F00-1335
MARCHE MILITAIRE	S1 P	11	0F00-199F
MINUET IN G	S1 P	4	0F00-127C
MINUTE WALTZ	S1 P	8	0F00-161A
MUSIC BOX DANCER	S1 P	5	0F00-1348
MUSIC/OLD ROM	S1 P	12	0401-0F00
PALINDROME	S1 P	7	0F00-15D7
PETSONG	S1 P	13	0401-1094
PETSONG 1	S1 P	13	0401-1011
PETSONG 2	S1 P	10	0401-0D88
PETSONG-BACH	S1 P	17	0401-148D
POLONAISE IN BFL	S1 P	4	0F00-1273
PREL & FUGUE #2	S1 P	15	0F00-1D00
REEL	S1 P	10	0F00-18AE
SILENCE	S1 P	17	0400-14A8
SINFONIA!	S1 P	9	0F00-1709
SONATA L.82	S1 P	8	0F00-163C
SOUND.DEMO!	S1 P	19	0401-1624
SOUND.INFO!	S1 P	18	0401-1536
SOUNDS TAPS CB2	S1 P	3	0401-06AA
SPRING SONG	S1 P	15	0F00-1DD6
STAIRWAY	S1 P	18	0400-14E8
STARSPGL BANNER!	S1 P	4	0F00-11FA
TARANTELA	S1 P	5	0F00-13D9
THE ENTERTAINER!	S1 P	9	0F00-17A8
THE PROMENADE	S1 P	5	0F00-13A3
THREE TUNES	S1 P	13	0F00-1BBC
UNIVERSAL WEDGE	S1 P	5	0401-08B0
WASHINGTON.POST!	S1 P	9	0401-0BFO
WATER MUSIC!	S1 P	4	0F00-1290
WELL TEMPERED	S1 P	12	0F00-1AB0
WHEN I'M 64!	S1 P	6	0F00-1438
WONDERLAND!	S1 P	4	0F00-1240

TPUG-UTILITY 1

(32K)BASIC-AID	U1 P	9	7000-7800
AID 2.1	U1 P	13	7000-7C4F
AID INSTR7.6	U1 P	42	0401-2D6E
AID4	U1 P	8	0401-0B3B
APPEND/RENUM.REL	U1 P	14	0401-11C6
BASIC.AID.EXE	U1 P	11	0400-0E00
BL GET @\$033A	U1 P	1	033A-0393
BLOCK GET 1.0	U1 P	2	0401-05BF
CASSETTE.TO.DISK	U1 P	7	0401-09F7
CATALOG	U1 P	8	0401-0BBC
COMPACTOR	U1 P	24	0401-1B8E
COPY ALL	U1 P	8	0401-0B6D
COPYCAT!SYS934	U1 P	1	0366-0400
COPYCAT'SYS934	U1 P	1	0366-0400
COPYDISK/SYS973	U1 P	1	0349-0400
COPYPROG	U1 P	3	0349-0627
CROSS-REF	U1 P	7	0401-0A60
DATAMAKER	U1 P	2	0401-05A2
DEMO	U1 P	20	0401-1735
DESCENDERS/2022	U1 P	4	0401-07F4
DIR.ACCESS.S/R'S	U1 P	7	0401-09F8
DISK APPEND	U1 P	1	033A-037A
DISK APPEND-M.B.	U1 P	7	0401-0A3F
DISK ID CORRCOR	U1 P	5	0401-08B4
DISK LOGGER	U1 P	7	0401-09FB
DISK MOD/V1	U1 P	6	0401-0926
DISK NAME (R)	U1 P	7	0401-0AA5
DISK PEEK	U1 P	5	0401-08B8
DISK VIEW	U1 P	5	0401-0885
DUMP SEQ FILE	U1 P	2	0401-0592
EXTRAMON INST	U1 P	33	0401-2404
EXTRAMON.4.0B	U1 P	9	1000-1800
EXTRAMON.4.0G	U1 P	9	1000-17FF
EXTRAMON9B@\$1000	U1 P	9	1000-17EF
EXTRAMON9G@\$1000	U1 P	9	1000-1800
FLOPPY.DISPLAY	U1 P	26	0401-1DC6
INS/DEL DEMO	U1 P	14	0401-1176
JOYSTICK.CRSRS	U1 P	7	0401-0A1A
JOYSTICK.CTLR.	U1 P	18	0401-15CD
KEYMAKE	U1 P	4	0401-079B
KEYPRINT/826	U1 P	1	033A-03CB
KEYSORT.DEMO1	U1 P	3	0401-0613
KEYSORT.DEMO2	U1 P	6	0401-09A3
KEYSORT.EXE16/32	U1 P	4	3C54-3FDB
KEYSORT.EXE8K	U1 P	4	1C54-1FDB
KEYSORT2\$1C54	U1 P	4	1C54-2000
KEYSORT2\$7454	U1 P	4	7454-7801
KEYSORT2-1DEMO	U1 P	1	0401-04FA
LIST GP2	U1 P	2	7530-76CF
LIST LP2	U1 P	2	7530-76F0
LIST LP2X	U1 P	3	7530-7740
LIST LP4	U1 P	2	7530-76FF
LIST LT2	U1 P	2	7530-76DF
LIST LT2X	U1 P	3	7530-772F
LOW CASE LIST	U1 P	1	033A-03D6
MAE/DOS FOR 4.0	U1 P	7	0400-0AED
PORT.DISPLAY	U1 P	11	0401-0EDA
PRINT USING	U1 P	2	0401-05E9
RAMTEST@\$500	U1 P	1	0500-05E4
READ-WRITE.S/R'S	U1 P	8	0401-0B84
READ.LINK	U1 P	3	0401-060E
RELREAD	U1 P	1	0401-04A6
ROM TEST--BTFLD	U1 P	4	0401-0798
SCREEN PRINT	U1 P	1	033A-03B4
SEARCH	U1 P	3	0401-06D1

SUPERMON1.REL	U1 P	13	0401-1011		
SUPERMON1/2/4INS	U1 P	24	0401-1AFA		
SUPERMON2.REL	U1 P	9	0401-OCCB		
SUPERMON4.REL	U1 P	9	0401-OCCB		
TAPE TEST #	U1 P	2	0401-05B7		
TAPE WRITE (#)	U1 P	2	0401-05F7		
TAPE.TO.DISK	U1 P	8	0401-0B00		
TRACE.REL(BASIC)	U1 P	14	0401-11E2		
UN-NEW/SYS826	U1 P	1	033A-0378		
UNIVERSAL WEDGE	U1 P	5	0401-08B0		
USER.COOKBOOK	U1 P	8	0401-0B52		
UTILITY 20	U1 P	18	0401-1571		
UTILITY 4.0	U1 P	20	0401-17C3		
UTINSEL.REL	U1 P	7	0401-0A0B		
V40.2B	U1 P	5	7B00-7F80		
V40.4.B	U1 P	5	7B00-7F80		
V80.4.B	U1 P	5	7B00-7F28		
VIEW BAM	U1 P	5	0401-08ED		
WP TO UPPER	U1 P	1	0401-04CB		
TPUG-UTILITY 2					
8K	U2 P	24	0401-1B31		
AID INSTRUCTIONS	U2 P	6	0401-0914		
BAID.X\$9000@2000	U2 P	17	2000-3000		
BAID4.INS	U2 P	10	0401-0D29		
BAID4B@\$7000	U2 P	17	7000-8000		
BAM MAP CBMSDK	U2 P	16	0401-1324		
BASIC AID 4	U2 P	11	7000-7A3A		
CBM 4032	U2 P	4	0400-07A8		
COPY ALL	U2 P	8	0401-0B6D		
DISC MERGE/BASIC	U2 P	10	0401-0D58		
DISK LOGGER	U2 P	9	0401-0C48		
DUMP2	U2 P	1	033A-03C3		
DUMP4	U2 P	1	033A-03C3		
ERIC ASSM	U2 P	25	0401-1C39		
GRAPHICS-DEMO	U2 P	22	0401-19C3		
GRAPHICS-LOADER	U2 P	21	0401-17ED		
GRAPHIX INSTR	U2 P	17	0401-14DC		
KEYPRINT2	U2 P	1	033A-03CC		
KEYPRINT4@826	U2 P	1	033A-03CB		
LISTER	U2 P	6	0401-09BE		
LOCKSMITH	U2 P	8	0100-083A		
LOWER CASE LIST	U2 P	8	0401-0B27		
MICMON4B9@1	U2 P	17	1000-2000		
MICMON4B@4096	U2 P	17	1000-2000		
MICROMON.INS	U2 P	27	0401-1DD3		
MICROMON@4096	U2 P	14	1000-1D43		
MINI-COMPILER	U2 P	23	0401-19E2		
RELREAD	U2 P	1	0401-04A6		
SCREEN DUMP	U2 P	4	0401-071E		
SHIFT UP-LOW CAS	U2 P	3	0401-066A		
SUPERMON1.REL	U2 P	13	0401-1011		
SUPERMON1/2/4INS	U2 P	24	0401-1AFA		
SUPERMON2.REL	U2 P	9	0401-OCCB		
SUPERMON4.REL	U2 P	9	0401-OCCB		
TAPE GRAPH 21S	U2 P	6	0401-0900		
TAPE GRAPH# ROM	U2 P	6	0401-0900		
TINY FORTH NOTES	U2 P	25	0401-1C39		
TINY FORTH TCHR	U2 P	27	0401-1DE3		
TINY.PILOT.EXE	U2 P	7	4FF0-5657		
TINY.PILOT.INS	U2 P	13	0401-1066		
UNASSEMBLER.CBM	U2 P	26	0401-1D75		
UNASSEMBLER.MAE	U2 P	32	0401-22DA		
UNIVERSAL WEDGE	U2 P	5	0401-08B0		
UNLIST	U2 P	5	0401-0885		
TPUG-UTILITY 3					
8K	U3 P	24	0401-1B31		
APPLESOFT LOADER	U3 P	5	0401-0804		
AX-REF/SYS24576	U3 P	4	6000-6330		
BAID4.EXE9@4	U3 P	17	4000-5000		
BAID4.INS	U3 P	10	0401-0D29		
BUILD HELLO	U3 P	4	0401-0734		
CATALOG+6	U3 P	12	0401-0F80		
CHANGE/LADR.BAS	U3 P	5	0401-08BB		
CONTENTS	U3 P	14	0401-11DB		
COPY ALL	U3 P	8	0401-0B6D		
CROSS REF	U3 P	8	0401-0B8E		
CRUNCH	U3 P	11	0401-0E11		
CRUNCH2	U3 P	11	0401-0E11		
CRUNCH4.0	U3 P	11	0401-0E56		
DEC->FLOATING PT	U3 P	4	0401-07A5		
DEFINE PTR. CHAR	U3 P	8	0401-0B20		
DISK DOCTOR	U3 P	14	033A-106B		
DISK DOCUMENTER	U3 P	9	0401-0C07		
EASY EDIT/C	U3 P	14	0401-1146		
EASY EDIT/DISK	U3 P	16	0401-1322		
EASY EDIT/TAPE	U3 P	15	0401-1253		
ERIC ASSM	U3 P	25	0401-1C39		
EXEC HELLO	U3 P	2	6400-659F		
EXTRA INSTR.	U3 P	36	0401-26F1		
EXTRAMON9B(2)	U3 P	9	1000-1800		
EXTRAMON9B(4)	U3 P	9	1000-1800		
EXTRAMON9G(2)	U3 P	9	1000-1800		
EXTRAMON9G(4)	U3 P	9	1000-1800		
FAST SKIP 2022	U3 P	4	0401-0717		
HELLO	U3 P	1	3000-3033		
INSIDE.DOS1&2	U3 P	6	0401-0984		
JEM SYS4111%	U3 P	24	0400-1B01		
JEM.INS	U3 P	40	0401-2B16		
LC LISTER INST	U3 P	3	0401-06F2		
LIST DUPLICATES	U3 P	12	0401-0F2E		
LITTLEMON.INS.WP	U3 P	11	47D0-5271		
MASTER+6	U3 P	11	0401-0E2A		
MASTER+6d	U3 P	13	0401-100A		
MICROMONB.INS+	U3 P	31	0401-21EA		
MICROMONB@\$1	U3 P	14	1000-1D7F		
MXCL	U3 P	5	7800-7C20		
NECCL	U3 P	5	7800-7C1F		
PAGE1 EZE EDIT	U3 S	9	2,086		
PAGE2 EZE EDIT	U3 S	9	2,267		
PAGE3 EZE EDIT	U3 S	9	2,285		
PAGE4 EZE EDIT	U3 S	10	2,375		
PAGE5 EZE EDIT	U3 S	10	2,304		
PAGE6 EZE EDIT	U3 S	7	1,694		
QUADRA-PET	U3 P	3	0401-06B4		
SEARCH+6	U3 P	4	0401-0726		
SIGNON	U3 P	1	0401-04A0		
STACK SNIFFER	U3 P	4	0401-075C		
STRINGTHING.BIN	U3 P	2	7F02-8000		
SYMBOLIC.DISASS	U3 P	16	0401-133F		
TINY MUSIC	U3 P	15	0401-120F		
UNIVERSAL WEDGE	U3 P	5	0401-08B0		
USEIZE.WP	U3 P	16	4D20-5C21		
WPRO BUSTER	U3 P	7	0401-0A0B		

TPUG-UTILITY 4

BAID INST	U4 P	11	0401-0E21
BAID240AB	U4 P	17	0400-14B5
BAID240CB	U4 P	17	0400-14D1
BAID440AB	U4 P	17	0400-14B5
BAID440CB	U4 P	14	0400-11E2
BAID480AB	U4 P	17	0400-14B5
BAID480CB	U4 P	17	0400-14D1
CASS.LABELER	U4 P	15	0401-1275
CBM 4032 V2	U4 P	4	0401-07A8
COPY ALL	U4 P	8	0401-0B6D
COPY/ALL	U4 P	10	0401-0D85
DELETE ALL	U4 P	7	0401-0ABA
DIR CATALOG	U4 P	14	0401-10F6
DIR LOADER 20	U4 P	18	0401-159B
DIR LOADER 40	U4 P	21	0401-18B4
DIR MERGE	U4 P	6	0401-097D
DIR PRINT	U4 P	9	0401-0C04
DIR UPDATE	U4 P	18	0401-14F7
EP4 SYS32000/1	U4 P	2	7D00-7EDF
EP4XSYS32000/1	U4 P	3	7D00-7F3F
FILE MOVER	U4 P	4	0401-079D
GRAPH SUBS	U4 P	5	0401-08A3
GRAPHICS	U4 P	8	0401-0B89
KUSTOM KEY	U4 P	3	0401-0609
TAPE LABEL	U4 P	10	0401-0DB3
UNIVERSAL WEDGE	U4 P	5	0401-08B0
VARIABLE RANDOM	U4 P	13	0401-105B
VIA SCANNER	U4 P	12	0401-0FA9

TPUG-UTILITIES 5

BACKUP 2031 1.0	U5 P	15	0401-1280
BAID240A	U5 P	17	0401-14D8
BAID240C	U5 P	17	0401-14D8
BAID440A	U5 P	17	0401-14D8
BAID440C	U5 P	17	0401-14D8
BAID480A	U5 P	17	0401-14DA
BAID480C	U5 P	17	0401-14DA
BAID4F40A	U5 P	17	0401-14D8
BAID4F40C	U5 P	17	0401-14D8
BASIC-AID.INST1	U5 P	29	53C8-7061
BASIC-AID.INST2	U5 P	35	53C8-75B1
CBM 4032 V2	U5 P	4	0401-07A8
COPY ALL	U5 P	8	0401-0B6D
COPY/ALL	U5 P	10	0401-0D85
DELETE ALL	U5 P	7	0401-0ABA
DIR CATALOG	U5 P	14	0401-10F6
DIR LOADER 20	U5 P	18	0401-159B
DIR LOADER 40	U5 P	21	0401-18B4
DIR MERGE	U5 P	6	0401-097D
DIR PRINT	U5 P	9	0401-0C04
DIR UPDATE	U5 P	18	0401-14F7
EP4 SYS32000/1	U5 P	2	7D00-7EDF
EP4XSYS32000/1	U5 P	3	7D00-7F3F
EXTRA INSTR.	U5 P	36	0401-26F1
EXTRAMON9B(2)	U5 P	9	1000-1800
EXTRAMON9B(4)	U5 P	9	1000-1800
EXTRAMON9G(2)	U5 P	9	1000-1800
EXTRAMON9G(4)	U5 P	9	1000-1800
HI MEMORY106	U5 P	6	7B00-7FFE
IEEE VIEW	U5 P	12	0401-0F01

INSTRUCTIONS#7	U5 P	13	0401-1076
MERGE 4.0	U5 P	1	7D00-7DCB
MERGE 4.0 INST	U5 P	3	0401-0656
MICROMON80@\$1000	U5 P	17	1000-2000
MICROMON80@\$7000	U5 P	17	7000-8000
MICROMON@\$1000	U5 P	17	1000-2000
MICROMON@\$7000	U5 P	17	7000-8000
POWER MOD	U5 P	2	0401-05CC
READ WP TAPE2040	U5 P	27	0401-1DE1
READ WP2040	U5 P	27	0401-1DDA
SET/RESET DEMO	U5 P	4	0401-077F
SET/RESET.REL	U5 P	7	0401-0A68
TAPE-DISK/REL	U5 P	7	0401-0ACA
UNIVERSAL WEDGE	U5 P	5	0401-08B0
WORD COUNT 9.0	U5 P	4	0401-0733
WORD COUNT BASIC	U5 P	6	0401-09B1
WORD P DEMO	U5 P	10	2301-2C51
WORD PRO TH2058	U5 P	27	0401-1DF6
WP TAPE2058	U5 P	27	0401-1E1D

TPUG-UTILITIES 6

AUTO DISK BOOT	U6 P	8	027A-09AE
8032 WATAID 4	U6 P	17	7000-8000
CBM 4032 V21	U6 P	4	0401-0778
CHANGE DISK	U6 P	4	0401-077D
CHAR.SET.DEFN	U6 P	13	0401-1046
CHEEP PRINT	U6 P	12	0401-0FDD
DATA WRITER	U6 P	3	0401-068F
DATABASE20/4.0	U6 P	15	0401-11E5
DISK CHECK	U6 P	15	0401-120B
DISK MOD	U6 P	7	0401-0A05
DISK VIEW	U6 P	7	0401-0A8C
DLOAD EASIER	U6 P	3	0401-06D4
EASY EDIT/MX-80	U6 P	18	0401-14E5
EASY.EDIT.MX-82	U6 P	17	0401-14DC
F16 WATAID 4	U6 P	17	3000-4000
F32 WATAID 4	U6 P	17	7000-8000
FLOADER	U6 P	5	0401-081E
GRAPHIC EDITOR	U6 P	10	0401-0D89
INS WATAID 4	U6 P	15	0401-12B7
LIBRARY INST	U6 P	12	0401-0FAD
LOCKDISK	U6 P	8	0100-0849
MARCH6	U6 P	8	0401-0B02
MEMSEE.DEMO	U6 P	15	0401-12AC
MICROMON++@\$5B00	U6 P	22	5B00-7000
MICROMON.ADD	U6 P	31	53C8-71A1
MICROMON.INS1	U6 P	29	53C8-6FC1
MICROMON.INS2	U6 P	42	53C8-7C91
MICROMONC@\$1000	U6 P	17	1000-2000
MICROMONC@\$7000	U6 P	17	7000-8000
MLOADER	U6 P	2	0401-0506
MX-82CHAR.DEFN	U6 P	12	0401-0F3D
MX82PET.PRNT	U6 P	39	0401-2A2D
POWAID2.RUN	U6 P	10	0401-0CF1
POWAID4.RUN!	U6 P	10	0401-0CF1
PRINT EDIT INFO	U6 P	8	0401-0BA9
S16 WATAID 4	U6 P	17	3000-4000
S32 WATAID 4	U6 P	17	7000-8000
SET-UP	U6 P	7	0401-0A32
SHL-MTZ LIB 20	U6 P	22	0401-195D
SHL-MTZ LIB V2	U6 P	20	0401-17AE
SHOW TOKENS	U6 P	5	0401-0881
STUFFIT	U6 P	14	0401-110D

SUPER1 V1.1	U6 P	29	0401-20A7	TPUG-VIC UTIL 1			
SUPERCAT@32000	U6 P	2	7D00-7E00	ADDRESSES	V2 P	8	0401-0B0E
UNCOMPACTOR	U6 P	8	0401-0B48	BASICODE READ	V2 P	6	0401-0940
UNLOAD EASIER	U6 P	3	0401-061A	BASICODE SEND	V2 P	7	0401-0AB2
UNIVERSAL WEDGE	U6 P	5	0401-08B0	BUTTERFIELD DEMO	V2 P	3	0401-0621
VICLOAD2REL	U6 P	4	0401-07B8	CHECK DISK	V2 P	4	0401-07CF
VICLOAD4.REL	U6 P	4	0401-07B8	DIR	V2 P	4	0401-0765
WORD PRO PRINTER	U6 P	4	0401-070B	DISASM	V2 P	11	0401-0E29
WP LIST/SCREEN	U6 P	14	0401-1153	DISPLAY T&S	V2 P	14	0401-1122
				HISTOGRAM	V2 P	4	0401-0783
				PERFORMANCE TEST	V2 P	9	0401-0C48
TPUG-VIC GAME 1				PROGRAMBLE CHAR	V2 P	7	0401-0A5E
				RANDOM FILE	V2 P	13	0401-1083
ARROW	V1 P	8	0401-0AFE	SEQUENTIAL FILE	V2 P	5	0401-080D
ARROW 2	V1 P	9	0401-0C9B	SUPER VICMON2	V2 P	10	0401-0DDF
ARTILLERY	V1 P	13	0401-1044	TINYMON INST	V2 P	8	0401-0BE4
BANDIT 1	V1 P	11	0401-0EE6	TINYMON1 FOR VIC	V2 P	5	0401-0814
BARRICADE	V1 P	5	0401-08B5	VIC CHAR DEMO	V2 P	7	0401-09F5
BIORHYTHM	V1 P	12	0401-0FC8	VIC CHAR GENR	V2 P	9	0401-0C36
BLACKJACK	V1 P	9	0401-0CAF	VIC DIS1	V2 P	18	0401-157E
BREAKOUT	V1 P	6	0401-09A6	VIC DIS2	V2 P	21	0401-1810
BUSH TRAIL	V1 P	12	0401-0F19	VIC DIS3	V2 P	21	0401-17EE
CAR RACE	V1 P	13	0401-0FEF	VIC WEDGE	V2 P	4	0401-0734
CHECKERS	V1 P	12	0401-0F13	VICLOAD2REL	V2 P	4	0401-07B8
DAM BUSTERS	V1 P	12	0401-0F20	VICLOAD4.REL	V2 P	4	0401-07B8
DEFLECTION	V1 P	5	0401-08A0	VIEW BAM	V2 P	6	0401-0988
DEPTH CHARGE	V1 P	10	0401-0D77				
DRAGON MAZE	V1 P	12	0401-0F03	TPUG-VIC DEMO 1			
DRM BREAKOUT	V1 P	7	0401-0A9F				
FIRING TANK	V1 P	11	0401-0EB9	BAR GRAPH	V3 P	2	0401-05DF
FOREST DRIVER	V1 P	7	0401-0AAB	BIRDS DEMO	V3 P	12	0401-0F50
GRAND PRIX	V1 P	11	0401-0E6E	BUMBLEBEE	V3 P	11	0401-0E67
INVADERS	V1 P	10	0401-0D59	CALCULART	V3 P	11	0401-0E1F
KILLER COMET	V1 P	4	0401-07E2	CANADIAN FLAG	V3 P	3	0401-061B
LONG DIVISION	V1 P	6	0401-09DC	CIRKELDEMO	V3 P	3	0401-063B
LUNAR LANDER	V1 P	8	0401-0B18	COLOUR BARS	V3 P	1	0401-04C6
MAANLANDER	V1 P	9	0401-0C5A	COMMODORE SYMBOL	V3 P	2	0401-0513
MASTERMIND	V1 P	12	0401-0FC2	DEMO	V3 P	11	0401-0EB8
MEMORY	V1 P	9	0401-0C6E	DRAGON	V3 P	5	0401-086C
MOONLANDER	V1 P	9	0401-0C61	FRERE JACQUES	V3 P	3	0401-05FF
MUKADE	V1 P	7	0401-0A4E	GENERAL DEMO	V3 P	13	0401-1039
OTHELLO	V1 P	11	0401-0E4B	GRAPHDEMO	V3 P	1	0401-048B
PINBALL	V1 P	11	0401-0E13	GRAPHDEM1	V3 P	2	0401-05A2
PING PONG	V1 P	10	0401-0D11	GRAPHDEM3	V3 P	5	0401-0881
PISTOLEN PAULTJE	V1 P	6	0401-092E	GRAPHIC DEMO 1	V3 P	3	0401-069D
RACE	V1 P	10	0401-0D15	GRAPHICS+SOUND	V3 P	11	0401-0EE2
REACTION TEST	V1 P	7	0401-0A5F	HANDIC DEMO3	V3 P	6	0401-0937
RIJTEST	V1 P	7	0401-0ACC	HI-RES CLOCK	V3 P	7	0401-0A00
ROCKET COMMAND	V1 P	8	0401-0B6B	HIRES DEMO 1	V3 P	5	0401-08CF
RUGBY	V1 P	9	0401-0CB1	HIRES PLOT	V3 P	3	0401-0694
SAMU	V1 P	9	0401-0C19	KALEIDOSCOPE	V3 P	3	0401-05FC
SCHUIFSPEL	V1 P	8	0401-0B67	KALEIDOSCOPE	V3 P	4	0401-0767
STAR CHASER	V1 P	9	0401-0C53	KEYBOARD DEMO	V3 P	6	0401-0921
STAR WARS	V1 P	9	0401-0C05	KINETIC ART	V3 P	5	0401-08C4
TANK-UFO	V1 P	10	0401-0CF9	LIGHT SHOW	V3 P	1	0401-04D6
TRAP	V1 P	12	0401-0F1E	LOG & LOGO	V3 P	3	0401-0621
UFO	V1 P	9	0401-0C83	MERRY VIC-MAS	V3 P	6	0401-0989
VIC FREIGHTER	V1 P	11	0401-0EBA	MIAUW	V3 P	5	0401-0802
VIC SNAKE	V1 P	11	0401-0E58	MORSE	V3 P	10	0401-0DE2
VICBREAK/PADL	V1 P	7	0401-0A6E	MOAIC	V3 P	6	0401-0920
				PIANO	V3 P	8	0401-0B98
				ROBOTS	V3 P	6	0401-092E
				SNOOPY HIRES	V3 P	7	0401-0A8B

SOUND DEMO	V3 P	11	0401-OED5	UTILITY 20	X1 P	18	0401-1571
SOUNDS	V3 P	11	0401-OE12	UTILITY 4.0	X1 P	20	0401-17C3
TRIG PLOT	V3 P	2	0401-O5B7	VIC WEDGE	X1 P	4	0401-0734
VIC CLOCK	V3 P	7	0401-OAEE	VICLOAD2.REL	X1 P	4	0401-07B8
VIC KEY	V3 P	10	0401-OD49	VICLOAD4.REL	X1 P	4	0401-07B8
VIC LISSAJOUS	V3 P	2	0401-O5E6	WORD COUNT 9	X1 P	4	0401-0733
VIC SIL. NITE	V3 P	3	0401-O65F	WORD PRO PRINTER	X1 P	4	0401-070B
VIC SOUND DEMO	V3 P	6	0401-O95A	WP LIST/SCREEN	X1 P	14	0401-1153
VIC-DEMO	V3 P	11	0401-OEB8	WPRO BUSTER	X1 P	7	0401-OA0B
VIC-KALEIDOSCOPE	V3 P	4	0401-070B	X-REF 24576.ML	X1 P	4	6000-6330

TPUG BEST-UTIL 1

AUTO DISK BOOT	X1 P	8	027A-O9AE
AID2	X1 P	8	0401-OB39
AID4	X1 P	8	0401-OB3B
APP/REN24.REL	X1 P	22	0401-196D
BACKUP 2031 1.0	X1 P	15	0401-1280
BAID240A	X1 P	17	0401-14D8
BAID240C	X1 P	17	0401-14D8
BAID440A	X1 P	17	0401-14D8
BAID440C	X1 P	17	0401-14D8
BAID480A	X1 P	17	0401-14DA
BAID480C	X1 P	17	0401-14DA
BAID4F40A	X1 P	17	0401-14D8
BAID4F40C	X1 P	17	0401-14D8
BAM MAP	X1 P	16	0401-1324
BASIC-AID.INST1	X1 P	29	53C8-7061
BASIC-AID.INST2	X1 P	34	53C8-7561
CASS.LABELER	X1 P	15	0401-1275
CBM 4032 V21	X1 P	4	0401-0778
CHANGE DISK	X1 P	4	0401-077D
COMPACTOR	X1 P	24	0401-1B8E
COPY ALL	X1 P	8	0401-OB6D
COPY/ALL	X1 P	10	0401-OD85
COPYCAT'SYS934	X1 P	1	0366-0400
COPYCAT'SYS934	X1 P	1	0366-0400
CROSS-REF	X1 P	7	0401-OA60
DATA WRITER	X1 P	3	0401-O68F
DELETE ALL	X1 P	7	0401-OABA
DEMO	X1 P	20	0401-1735
DISK APPEND-M.B.	X1 P	7	0401-OA3F
DISK CHECK	X1 P	15	0401-120B
DISK FILE RECVRY	X1 P	39	0401-2A28
DISK ID CORRCOR	X1 P	5	0401-08B4
DISK MASTER V2	X1 P	30	0401-21B9
DISK MOD	X1 P	7	0401-OA05
DISK NAME (R)	X1 P	7	0401-OAA5
DISK PEEK	X1 P	5	0401-08B8
DISK VIEW	X1 P	7	0401-OA8C
DUMP2/SYS826	X1 P	1	033A-O3C3
DUMP4/SYS826	X1 P	1	033A-O3C3
EP4 SYS32000/1	X1 P	2	7D00-7EDF
EP4XSYS32000/1	X1 P	3	7D00-7F3F
KEYPRINT2@826	X1 P	1	033A-O3CB
KEYPRINT4@826	X1 P	1	033A-O3CB
LOCKDISK	X1 P	8	0100-0849
LOWCASE LIST V3	X1 P	9	0401-OCA3
SET-UP	X1 P	7	0401-OA32
STRINGTHING.BIN	X1 P	2	7F02-8000
TAPE.TO.DISK	X1 P	8	0401-OB00
UN-NEW/SYS826	X1 P	1	033A-O378
UNCOMPACTOR	X1 P	8	0401-OB48
UNIVERSAL WEDGE	X1 P	5	0401-08B0

TPUG BEST-UTIL 2

8K	X2 P	24	0401-1B31
DATA WRITER	X2 P	3	0401-068F
ERIC ASSM	X2 P	25	0401-1C39
EXTRAMON.INS9.3	X2 P	33	0401-2407
EXTRAMON2@\$1000	X2 P	9	1000-17FF
EXTRAMON2@\$7000	X2 P	9	7000-77FF
EXTRAMON4@\$1000	X2 P	9	1000-1800
EXTRAMON4@\$7000	X2 P	9	7000-77FF
MICROMON++@\$95B00	X2 P	22	5B00-7000
MICROMON.ADD	X2 P	31	53C8-71A1
MICROMON.INS1	X2 P	29	53C8-6FC1
MICROMON.INS2	X2 P	42	53C8-7C91
MICROMONC@\$1000	X2 P	17	1000-2000
MICROMONC@\$7000	X2 P	17	7000-8000
SUPER VICMON2	X2 P	10	0401-ODDF
SUPERMON1.REL	X2 P	13	0401-1011
SUPERMON1/2/4INS	X2 P	24	0401-1AFA
SUPERMON2.REL	X2 P	9	0401-OCCE
SUPERMON4.REL	X2 P	9	0401-OCCE
TINYMON INST	X2 P	8	0401-OBE4
TINYMON1 FOR VIC	X2 P	5	0401-0814
UNASSEMBLER.CBM3	X2 P	26	0401-1D17
UNASSEMBLER.MAE	X2 P	32	0401-22DA
WP LIST/SCREEN	X2 P	14	0401-1153

TPUG BEST-GAME 1

-- BASIC 20 --	X3 P	1	0401-0419
ACROBAT 20	X3 P	23	033A-19C0
ARROW	X3 P	7	0401-OAEF
ASTEROIDS	X3 P	22	0401-1980
BACKGAMMON 20	X3 P	30	033A-2000
BASEBALL 7.3	X3 P	26	0401-1D1B
BLACK BOX!	X3 P	22	0401-191F
BLACK JACK	X3 P	19	0401-16D4
BLOCKADE	X3 P	26	0401-1D22
BOMBER	X3 P	13	0401-1014
BREAKOUT	X3 P	7	0401-OA71
CAR RACE 20	X3 P	20	033A-1680
FAST INVADRS 20	X3 P	29	0401-1FFF
INVADERS 20	X3 P	29	0401-2000
JOYSTICK INV 20	X3 P	29	0401-2001
MASTERMIND	X3 P	23	0401-1A09
MISSION IMP 20	X3 P	24	0401-1B37
MOVMAZE2	X3 P	8	0401-0BB2
NIGHT DRIVER 20	X3 P	21	0401-1800
OSC LUNAR	X3 P	27	0401-1E6C
OTHELLO	X3 P	29	0401-2000
PETMAN 5	X3 P	23	0401-1A0B

PINBALL	X3 P	24	0401-1B64
REVERSE-PUNTER	X3 P	9	0401-0C62
ROBOT CHASE!	X3 P	24	0401-1BC7
SNAKE 2	X3 P	18	0401-159D
STAR WARS	X3 P	25	0401-1C81
SUPER STARTREK	X3 P	78	0401-50F0
YAHTZEE	X3 P	22	0401-192E

TPUG BEST-GAME 2

-- BASIC 4.0 --	X4 P	1	0401-0419
ACROBAT 4.0	X4 P	24	027A-19C1
ARROW	X4 P	7	0401-0AEF
ASTEROIDS	X4 P	22	0401-1980
BACKGAMMON 4.0	X4 P	30	033A-2000
BASEBALL 7.3	X4 P	26	0401-1D1B
BLACK BOX!	X4 P	22	0401-191F
BLACK JACK	X4 P	19	0401-16D4
BLOCKADE	X4 P	26	0401-1D22
BOMBER	X4 P	13	0401-1014
BREAKOUT	X4 P	7	0401-0A71
CAR RACE 4.0	X4 P	20	033A-1680
FAST INVADRS 4.0	X4 P	29	0401-2001
INVADERS 4.0	X4 P	29	0401-2001
JOYSTICK INV 4.0	X4 P	29	0401-2002
MASTERMIND	X4 P	23	0401-1A09
MISSION IMP 4.0	X4 P	24	0401-1B37
MOVMAZE2	X4 P	8	0401-0BB2
NIGHT DRIVER 4.0	X4 P	21	0401-1801
OSC LUNAR	X4 P	27	0401-1E6C
OTHELLO	X4 P	29	0401-2000
PETMAN 5	X4 P	23	0401-1A0B
PINBALL	X4 P	24	0401-1B64
REVERSE-PUNTER	X4 P	9	0401-0C62
ROBOT CHASE!	X4 P	24	0401-1BC7
SNAKE 2	X4 P	18	0401-159D
STAR WARS	X4 P	25	0401-1C81
SUPER STARTREK	X4 P	78	0401-50F0
YAHTZEE	X4 P	22	0401-192E

ADV9 6	X5 S	6	1,367
ADV9 7	X5 S	3	649
ADV9 8	X5 S	4	808
ADV9 9	X5 S	4	806
ADVBOOT	X5 P	1	0401-0456
ADVENTURE	X5 P	49	0401-3410
ADVENTURE80	X5 P	49	0401-33F9
ADV F 0	X5 S	9	2,216
ADV F 1	X5 S	5	1,182
ADV F 10	X5 S	2	371
ADV F 11	X5 S	2	395
ADV F 12	X5 S	2	465
ADV F 13	X5 S	2	319
ADV F 2	X5 S	5	1,213
ADV F 20	X5 S	3	564
ADV F 21	X5 S	7	1,563
ADV F 22	X5 S	6	1,414
ADV F 23	X5 S	5	1,226
ADV F 24	X5 S	6	1,512
ADV F 25	X5 S	7	1,558
ADV F 26	X5 S	11	2,622
ADV F 27	X5 S	6	1,303
ADV F 28	X5 S	5	1,208
ADV F 29	X5 S	1	242
ADV F 3	X5 S	4	894
ADV F 31	X5 S	7	1,713
ADV F 4	X5 S	3	743
ADV F 5	X5 S	4	819
ADV F 6	X5 S	6	1,366
ADV F 7	X5 S	3	648
ADV F 8	X5 S	4	807
ADV F 9	X5 S	4	806
ADVITM	X5 S	9	2,113
ADVKEYS	X5 S	8	1,883
ADVMAP	X5 S	21	5,106
ADVSH8	X5 S	18	4,408
ADVSHOR	X5 S	18	4,463
LORDS OF KARMA	X5 P	125	0401-7FE0
OHARE'S #3	X5 P	86	0401-5940
QUEST 3.0	X5 P	39	0401-2A9A

TPUG BEST-GAME 3

ADV9 0	X5 S	9	2,213
ADV9 1	X5 S	5	1,184
ADV9 10	X5 S	2	372
ADV9 11	X5 S	2	396
ADV9 12	X5 S	2	466
ADV9 13	X5 S	2	320
ADV9 2	X5 S	5	1,213
ADV9 20	X5 S	3	566
ADV9 21	X5 S	7	1,567
ADV9 22	X5 S	6	1,415
ADV9 23	X5 S	5	1,226
ADV9 24	X5 S	6	1,514
ADV9 25	X5 S	7	1,561
ADV9 26	X5 S	11	2,612
ADV9 27	X5 S	6	1,303
ADV9 28	X5 S	5	1,211
ADV9 29	X5 S	1	244
ADV9 3	X5 S	4	895
ADV9 31	X5 S	7	1,713
ADV9 4	X5 S	3	745
ADV9 5	X5 S	4	816

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4040 FORMAT	X6 P	5	0401-089B
4040 MENU	X6 P	3	0401-0675
4040 PRINT	X6 P	25	0401-1C08
4040 UPDATE	X6 P	41	0401-2C08
8050 FORMAT	X6 P	6	0401-0911
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8050 UPDATE	X6 P	42	0401-2D6A
E.G SET-UP 80COL	X6 P	12	0401-0F1A
EASY EDIT/C	X6 P	14	0401-1146
EASY EDIT/DISK	X6 P	16	0401-1322
EASY EDIT/MX-80	X6 P	18	0401-14E5
EASY EDIT/TAPE	X6 P	15	0401-1253
EASY.EDIT.MX-82	X6 P	17	0401-14DC
GRAPH.PRINTER	X6 P	12	0401-0FA2
GRAPHICS-DEMO	X6 P	22	0401-19C3
GRAPHICS-LOADER	X6 P	21	0401-17ED
GRAPHIX INSTR	X6 P	17	0401-14DC
HI MEMORY106	X6 P	6	7B00-7FFE
INSTRUCTIONS#7	X6 P	13	0401-1076
MAIL LIST 4040	X6 P	23	0401-1A34
MAIL LIST 8050	X6 P	23	0401-1A34

PAGE1 EZE EDIT	X6 S	9	2,086
PAGE2 EZE EDIT	X6 S	9	2,267
PAGE3 EZE EDIT	X6 S	9	2,285
PAGE4 EZE EDIT	X6 S	10	2,375
PAGE5 EZE EDIT	X6 S	10	2,304
PAGE6 EZE EDIT	X6 S	7	1,694
READ WP TAPE2040	X6 P	27	0401-1DE1
READ WP2040	X6 P	27	0401-1DDA
TAX 81 ONT V1.0	X6 P	24	0401-1B63
V40.2B	X6 P	5	7B00-7F80
V40.4B	X6 P	5	7B00-7F80
V80.4B	X6 P	5	7B00-7F28
WORD P DEMO	X6 P	10	2301-2C51
WORD PRO TH2058	X6 P	27	0401-1DF6
WP TAPE2058	X6 P	27	0401-1E1D
WP3/4 INST1	X6 P	41	50B8-7909
WP3/4 INST2	X6 P	15	50B8-5F69

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ABACUS	Z1 P	6	0401-095E
BAR.GRAPH.ALT	Z1 P	9	0401-0C29
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CALENDAR-LOWNDES	Z1 P	11	0401-0EB3
CALENDAR.ALT	Z1 P	7	0401-09FB
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ETCH-A-SKETCH	Z1 P	19	0401-15FF
FORMAT	Z1 P	5	0401-08CC
GRAPH.PRINTER	Z1 P	12	0401-0FA2
GRAPHICS-DEMO	Z1 P	22	0401-19C3
GRAPHICS-LOADER	Z1 P	21	0401-17ED
GRAPHIX INSTR	Z1 P	17	0401-14DC
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HALLOWE'EN2	Z1 P	19	0401-16BE
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MYSTERY-BUTTRFLD	Z1 P	2	0401-04FE
NIGHTMARE	Z1 P	2	0401-0501
ONELINE SQUIGGLE	Z1 P	3	0401-0643
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PATTERNS	Z1 P	2	0401-05D2
PEOPLE	Z1 P	6	0401-099E
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SCRAMBLED.MSG	Z1 P	5	0401-0838
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CLOCK	Z2 P	2	0401-05F6
CLOCK 8032	Z2 P	2	0401-05F6
E-ROM DEMO	Z2 P	6	0401-09DE
ESP	Z2 P	37	0401-282A
FINE-PLOT DEMO	Z2 P	4	0401-0722
GRAPH SUBS	Z2 P	5	0401-08A3
GRAPHICS	Z2 P	8	0401-0B89
GRAPHIX SORT	Z2 P	11	0401-0E10
INSULTER	Z2 P	30	0401-20E1
MEMOCAL 2.2	Z2 P	41	0401-2C34
NEW LOTTARIO	Z2 P	4	0401-0736
PEARL HARBOR	Z2 P	19	0401-16B4
PHONE SOUNDS	Z2 P	4	0401-0711
PI DEMO 8032	Z2 P	1	0401-04C8
RECIPE	Z2 P	8	0401-0B0D
SAUCE	Z2 S	2	458
SCROLL DEMO	Z2 P	9	0401-0C92
SCUBA ADVENTRUE	Z2 P	20	0401-1779
TWENTY QUESTIONS	Z2 P	2	0401-0576

TPUG VIC DISKETTE REVIEWS

The following are some reviews by Gerry Gold for TPUG VIC programs and the latest additions to the TPUG PET library.

TPUG PROGRAMS FOR THE VIC

When the VIC-20 first appeared on the market, hundreds of new computerists took an interest in TPUG. Of course they wanted VIC programs and speakers who would suggest new and exciting ways to 'flick their VIC'. After a year of silence TPUG has produced three VIC release disks and there are more disks scheduled for next fall. There are three categories of programs on the release disks: games (TPUG-VIC GAME 1), utilities (TPUG-VIC UTIL 1), and demonstration programs (TPUG-VIC DEMO 1). There are some good programs on each disk and others that are best left unloaded. Many programs would run better with some modifications.

GAMES

Why not begin with the best? Several people prefer ARTILLERY. Its a limited war. You are fighting an opponent who is positioned on the other side of a mountain. The objective is to calculate the angle of the shot, and the the powder before firing. This is all done with the function keys (take note because there are no instructions). F1 controls angles from 1 to 90 moving upward. F3 controls 1 to 90 degrees moving downward. F5 increases the charge of the powder. F7 decreases the charge of the powder. A dull report will remind you that the cannon has been fired. Hit your opponent and watch him disintegrate.

Second prize will go to the old standby of OTHELLO. Its a venerable game of strategy that I thoroughly enjoy and there is no danger of losing the pieces. In close third (all of us are opinionated when it comes to games) is MASTERMIND, where the capable cryptographer will be the first to crack the code. Instructions for both of these games are very clear.

A fascinating and difficult game is DRAGON MAZE. Find your way through the unfolding maze before the dragon gets you. You can trick the dragon, but I will not tell you how to do it.

DAM BUSTERS is at first frustrating. You have three planes before you are out of commission and until you develop a certain level of skill, your air force will be downed before the dam breaks. Instructions are clear and the graphics are excellent.

COMET (a version that does not run is in the VIC manual). Another space game. VIC FREIGHTER on the May TPUG release disk is somewhat faster, but not very much more interesting. A little extra programming and you could not only avoid hitting stars, but also shoot a few enemy space ships at the same time. Forget about STAR CHASER. STAR WARS has the full musical score. That's its high point, otherwise the game involves putting a spacecraft in the middle of the screen and hitting the fire key. The graphics are not celestial.

For good games, practice your DUTCH. I seem to remember that Luna Lander was once the best game to work on a PET. I expect that next year will be the year of the VIC when club release disks could include programs as good as Snakman, AMOK and Jupiter Lander.

Some NEW TPUG PET Programs

Conversions a and **conversions b**: Two programs from Charles Brown, of San Diego, that carry out most common conversions for measures of weight, volume, length, etc.. These are useful, but probably more useful as subroutines in larger programs unless loading a program to do a volume conversion happens to be convenient.

Planets: provides planetary positions by data and time within 300 years of 1980. After 40 seconds of calculation, the program delivers a table of planetary positions and of relative distances.

Weathercast: predicts tomorrow's weather if you have good data on yesterday and today's weather. **Set-up**: a menu driver for utility programs.

lottario: selects 6 random numbers from 1 to 39. I cannot see how this would assist in winning the real thing.

Shi-mtz lib 2.0: Another version of K. Lowndes' directory program which generates a directory of all your disks. Note that if you break out of the program, the write file remains open. Also, capital letters are not well supported. Otherwise, this is a very useful program.

Critical path: Just what you require to organize a series of tasks or other scheduling problems. It is also well-documented and virtually crash-proof. John Easton donated this program to the club library and he encourages us to let him know of any creative modifications that are made by club members.

march 6: A fail-safe demo by Eric Brandon of a user-friendly method of getting an input of date and year.

Word Invaders: Get the aliens and learn how to spell. Some kids will enjoy this, others will load the next program.

Petman 2: Packman on a PET. Its not as colourful, though I think that the PET version is just as difficult. This 40 col. program runs well on an 80 col. screen

There are at least a dozen good games (in Dutch). I figured some of them out, and for most of them, a Dutch-English dictionary is recommended. Try MAANLANDER first since it resembles LUNAR LANDER on the PET (but not the version on the VIC games disk).

TRAP (uses joystick), VIC SNAKE, and RACE are three games of skill on the keyboard. You may enjoy them and try to adapt them to the VIC joystick.

There is also a version of INVADERS, but do not expect the fast action of the PET versions or of the VIC game cartridges. The same caution applies to KILLER without loading in a 40 col. window

Tax 81 Ont. v1: Jim Butterfield's annual tax program. Its still useful for late filers, or as a base for your own '82 tax program.

Graphic Editor: Edits graphics subroutines from a menu-driven series of choices. At the time of writing, I could not figure out how it operates.



Left-Center Michael Bonnycastle-TPUG President

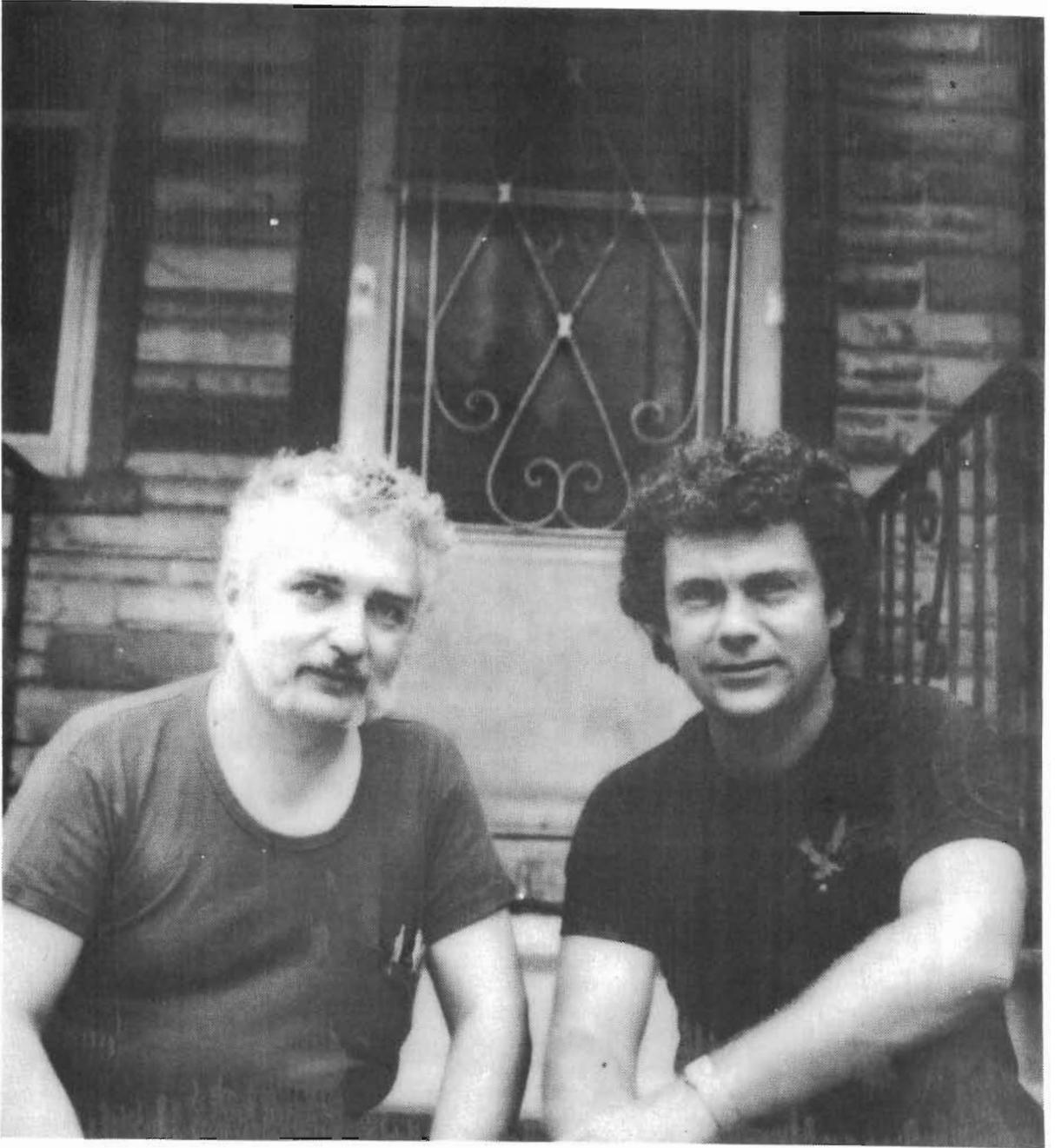
Front-Center Dave Hook-TPUG Librarian



*Left Bonnar Beach Right Bahia Beach
with Jim and Ellen Strasma*



*Left-Bruce Beach
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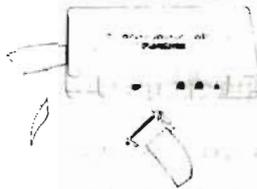
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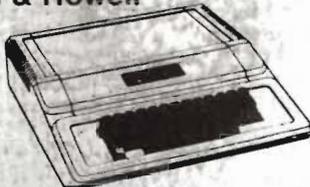


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SuperGraphics 2.0

NEW Version with TURTLE GRAPHICS

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With typical record size of 127 characters, each disk can handle over 1000 records (about 2800 with 8050 drive). Labels may be printed any number wide, and may begin in any column position. There is no limit on the number or order of fields on a label, and two or three fields may be joined together on one line (like first name, last name, and title). A "type of customer" field allows selective printing.

REPORT WRITER

Print any field in any column. For numeric fields, use decimal point justification (and round to any accuracy). Define any column as a series of mathematical functions performed on other columns. These functions include arithmetic operations and various log and trig functions. Pass results of operations such as running total from row to row. At the end of the report, print total and/or average for any column. Complete record selection, including field within range, pattern match, and logical functions can be specified individually or in combination with other parameters.

FLEX-FILE BY Michael Riley

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Color Video Board **\$125**

Up to 8 colors and high resolution graphics (128 x 192 in 2 colors). Generates composite video for use with monitor.

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FORTH for PET

BY L. C. Cargile and Michael Riley

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Features include:
 full FIG FORTH model
 all FORTH 79 STANDARD extensions
 structured 6502 Assembler with nested decision making macros
 full screen editing (same as when programming in BASIC)
 auto repeat key
 sample programs
 standard size screens (16 lines by 64 characters).
 150 screens per diskette on 4040, 480 screens on 8050,
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Runs on any 16K or 32K PET/CBM (including 8032) with ROM 3 or 4, and CBM disk drive. Please specify configuration when ordering.

Available soon

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 by Michael Riley



Paper-Mate is a full-featured word processor for CBM/PET. Paper-Mate incorporates 60 commands to give you full screen editing with graphics for all 16K or 32K machines (including 8032), all printers, and disk or tape drives.

For writing text, Paper-Mate has a definable keyboard so you can use either Business or Graphics machines. Shift lock on letters only, or use keyboard shift lock. All keys repeat.

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The Pet Terminal Emulator is a combination of hardware and software which converts a Commodore computer with 4.0 ROMs into a sophisticated terminal emulator. This system gives you:

- * PC board interface for PET to serial conversion
- * Machine language on PROM to handle communication
- * Communication speed in terminal mode of 150 to 4800 bps
- * Choice of three terminal screen configurations:
ADDS Regent 100, ADM 31, TeleVideo 950
- * Uses almost none of the PET's RAM (only 512 bytes)
- * Permits PET BASIC program residing in RAM during terminal operation with easy switching between host computer, PET BASIC program, and back
- * Automatically relocates itself to operate in conjunction with other machine language programs
- * Permits display of PET graphic characters as well as standard ASCII character set
- * Ability to redefine keys on keyboard for greater flexibility

The Communicator (\$200)

A step beyond the smart terminal

All of the features of the PET Terminal Emulator plus moving files from host computer to Commodore and back.

A program on the host computer and a program on the PET can interact to produce a sophisticated and automatic communication system; up and download programs and ASCII files. For those actively engaged in tele-communication or who want to develop a truly sophisticated communication system.

Sample programs to run communications on host computer and Commodore computer, written in PET BASIC, are provided to illustrate what can be done.

Only the procedures used to establish communication limit how automatic this system can be made to operate.

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PDOS software links directly to the standard BASIC and operates with commands for easy interfacing. A full set of disk utility commands are also provided.



SINGLE 5" DISK SYSTEM (540-1) \$595.00
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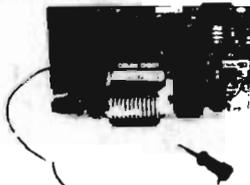
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- SOFTWARE

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PET/CBM display color graphics using COLOR CHART while using the main screen for text.
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 AIM, SYM: a 32 x 16 alphanumeric mode makes a perfect system video display

- ✓ 8 COLORS
- ✓ ALPHANUMERICS
- ✓ HIGH RES. GRAPHICS



COLOR CHART

A 6847 based color video generator board, COLOR CHART provides RS170 video output for any standard monitor or modulator. The board plugs into a 4K ROM socket and appears as 4K of RAM. It offers many modes of operation including a 32 x 16 alphanumeric display and a 128 x 192 full graphics mode. Up to 8 colors are available in the semigraphics mode.

PORTMAKER

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Portmaker provides two serial ports that connect your computer to the many RS232 devices available. An on board ROM socket allows PORTMAKER to be used along with any 2532 type ROM. PORTMAKER plugs into the ROM socket and displaces only the top 16 bytes of the ROM. Baud rate can be jumpered from 300 to 4800 baud.

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full FORTH +

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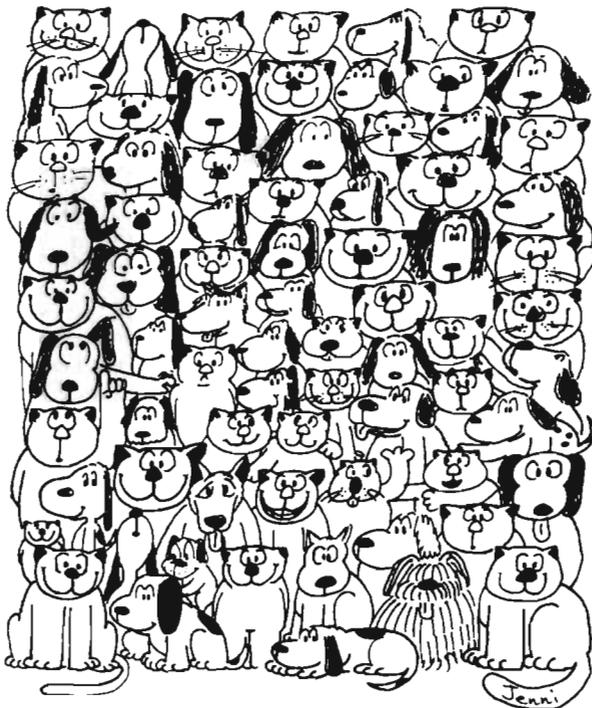
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INTERPRETER - can be executed directly in an interpretive mode to speed testing and debugging.
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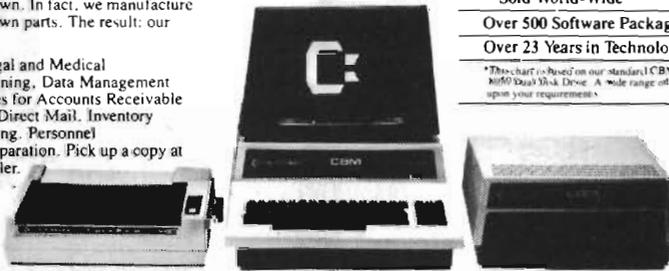
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*This chart is based on our standard CBM 8032 Business Series, plus an 8050 Dual Disk Drive. A wide range of printers are available, depending upon your requirements.



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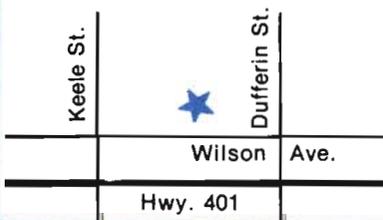
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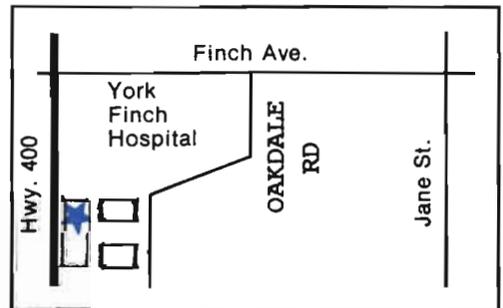
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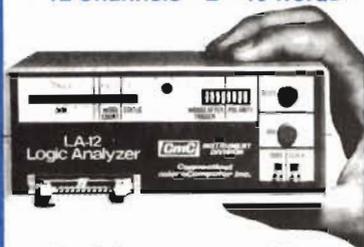
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ntested serial version: 300 baud, mark parity & 1 stop . Changing parity requires changing a couple of minor d rate change takes 2 new components, & an oscilloscope te tester program. Serial version cannot halt output r fills, but has a 400 millisecond delay for carriage levels are true RS232, but you supply +5, +12 & -12 s SADI interface uses only +5 volts, fudging the ting costs.) In short, if you or a friend can solder, rds may save \$50 or more. But you make the of the 2 offered, I'd recommend parallel version.-Jim editor

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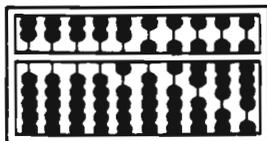
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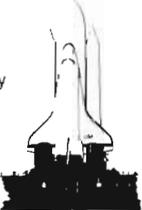


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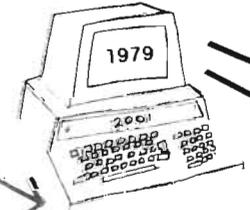
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SYM
1976



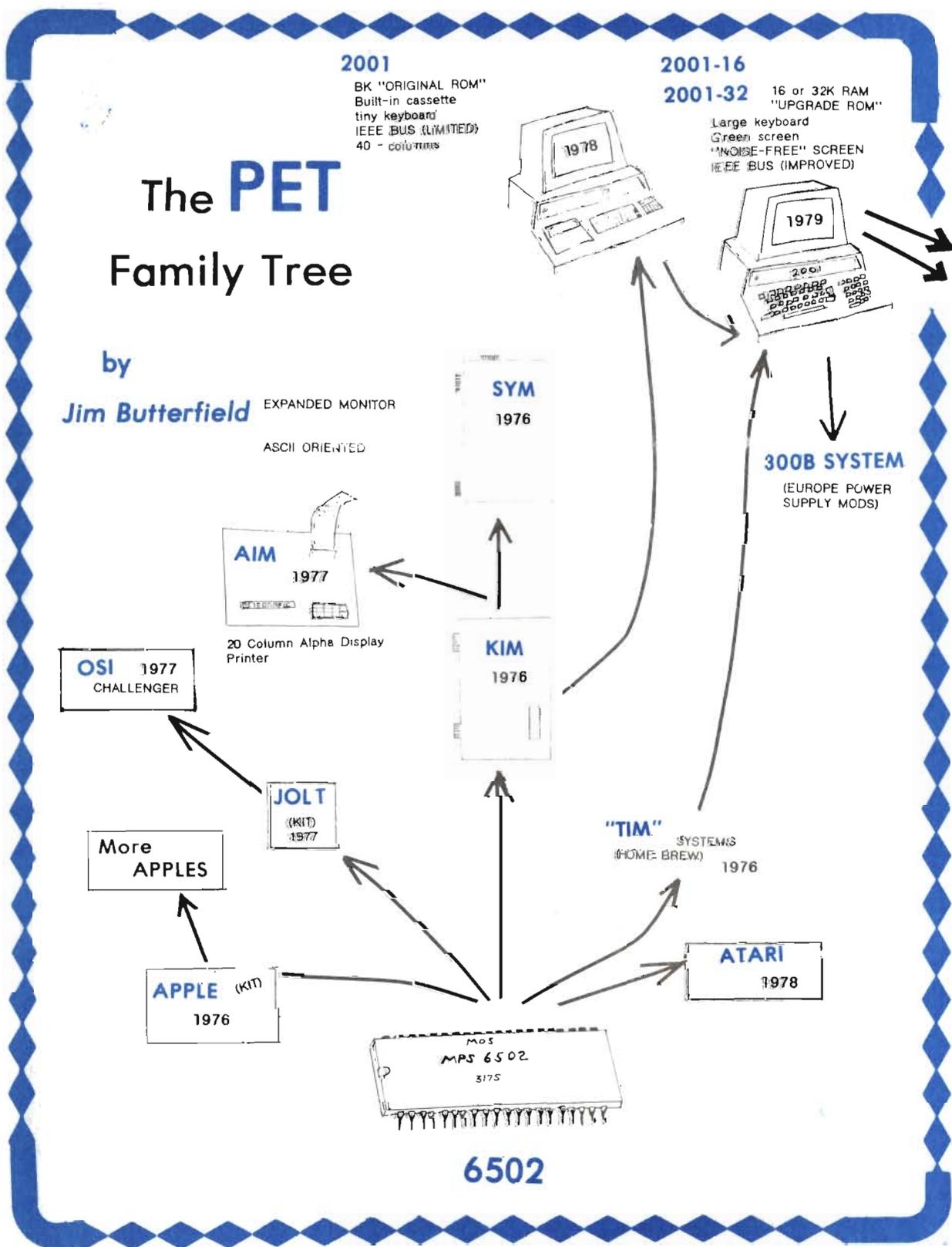
2001-16
2001-32

16 or 32K RAM
"UPGRADE ROM"
Large keyboard
Green screen
"NOISE-FREE" SCREEN
IEEE BUS (IMPROVED)

300B SYSTEM
(EUROPE POWER
SUPPLY MODS)

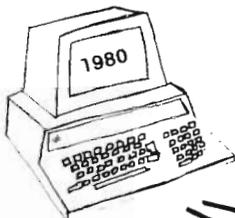
"TIM" SYSTEMS
(HOME BREW)
1976

ATARI
1978



4016 4032

BASIC 4.0" ROM
Business or graphics
keyboard



8032

80 columns
Bell, tabs



FAT 40

40 columns
Graphics keyboard



SUPER PET

EXTRA PROCESS (6809)
Extra memory
Choice of languages



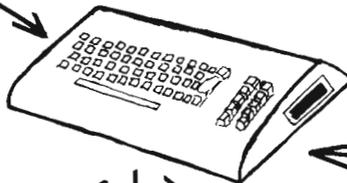
96K PET

Extra memory



COMMODORE 64

64K RAM
6510 Proc.
Advanced
Color/graphic/end
40 columns
Serial bus 1982



1982

VIC

22 columns
5K RAM
Color/graphics/
Sound
TV hookup
Serial bus
RS-232
Inexpensive
Plug-in memory



"P" SERIES

(PET II)
128K RAM
6509 PROC.
40 Columns
Advanced color/graphics/
Sound
IEEE BUS
RS-232



1983

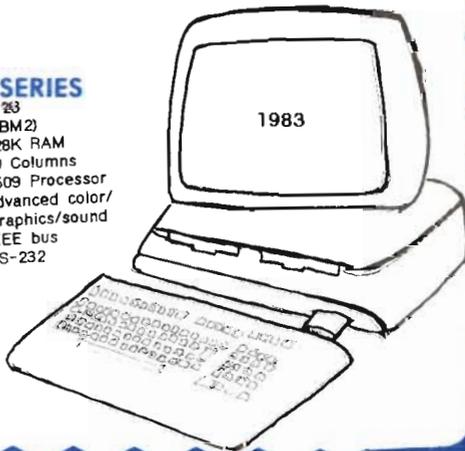
MAX

No ROM 1983
Little RAM
Inexpensive



"B" SERIES

B133
(CBM2)
128K RAM
80 Columns
6509 Processor
Advanced color/
Graphics/sound
IEEE bus
RS-232



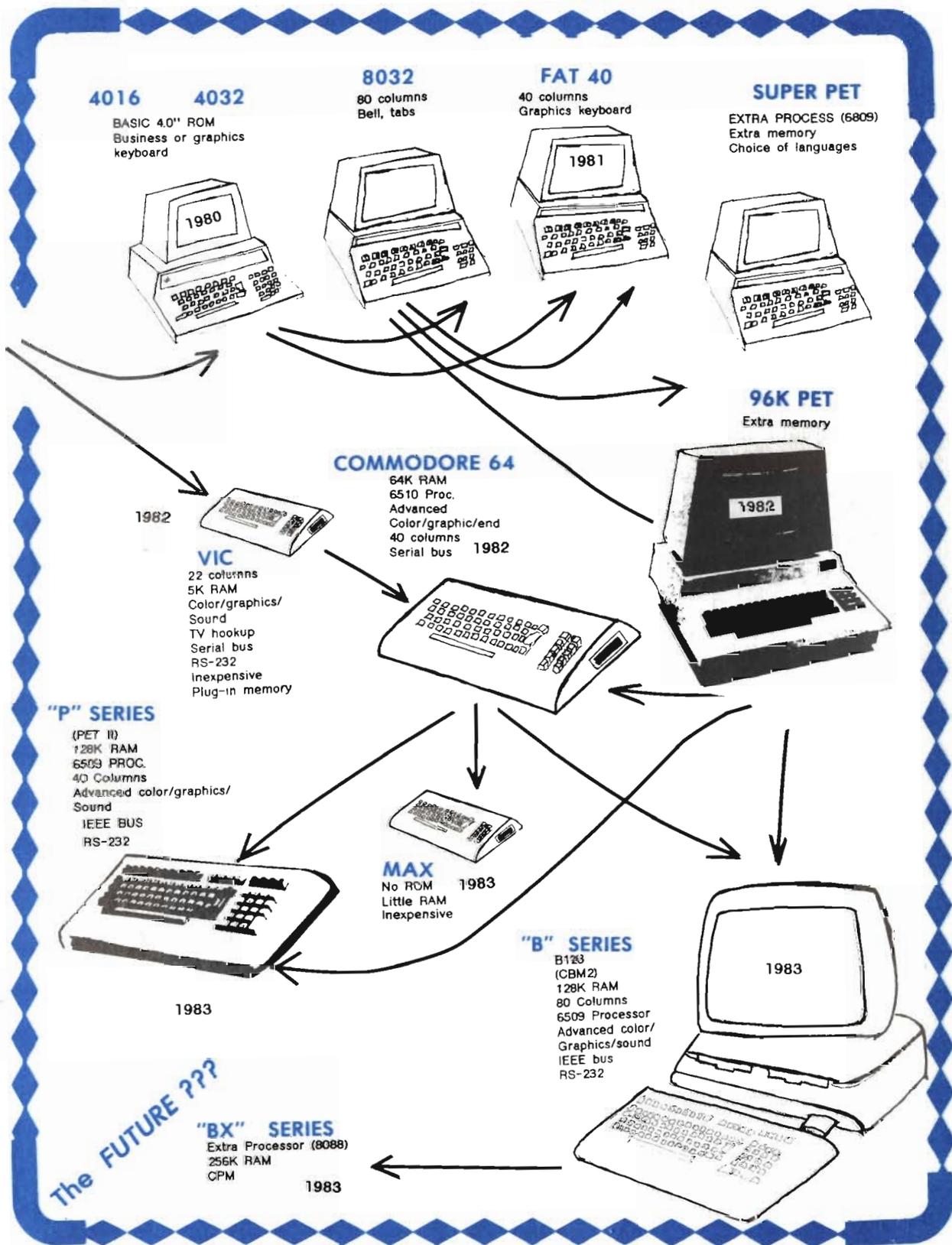
1983

"BX" SERIES

Extra Processor (8088)
256K RAM
CPM 1983



The FUTURE ???



The DISK Copy Tree has continued to grow. It is one more way to obtain the complete library. The other ways are to purchase it at \$10 per disk from the club secretary, or attend each of the club meetings and obtain the disk on the night that it is released, or attend one of the major copy sessions and with some friends co-operatively copy all the disks, and then trade them among yourselves. The DISK COPY TREE is not for everyone because of the time involved (sometimes ten or twelve hours) in copying the entire library, and the cost of the number of diskettes involved. It is possible to reduce this latter cost by using both sides of the diskette.

If you have an 8050 drive you must still maintain the library in the limited number of programs that will fit on the smaller size diskettes for convenience in copying by those who do not have an 8050 drive. In order to actually copy between 8050 and 4040 disk drives it is necessary to have both drives connected to the PET at the same time and to use

the CHANGE 8050 and COPY ALL programs.

The rules are quite simple. In order to become a member you may either go directly to one of the dealer members listed below or inquire from any one of them the name of one of their branches.

If you wish to do the copying right at one of the dealers their only requirement is that you purchase the diskettes from them.

If you wish to copy from one of the branches the rule is that you must also let two other branches copy from you. Some branches will do the copying for you, others will loan you their library to copy, and others will require you to come to their location to do the copying.

A VIC copytree or tape copy tree is not yet available. If anyone starts one please let me know and I will publish the details in the TORPET.

See page 309

Bruce Beach
 Horning's Mills, Ontario
 L0N 1J0 Canada
 (519) 925-5376

COPY TREE

Bruce M. Beach

Professional Computers
 117 Skyway Ave.
 Toronto, Ontario M9W 4Z4
 (416)675-7818

Richvale Telecommunications
 10610 Bayview Plaza Unit #18
 Richvale, Ontario
 (416)884-4165

Electronics 2001
 5529 Yonge St.
 Willowdale, Ontario
 (416) 223-8400

Computer Specialists
 866 Wilson Ave.
 Downsview, Ont.
 (416) 633-5605

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Toronto PET Users Group

Over 1800 members in July 1982 and growing at the rate of several hundred per month!

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Overseas Associate member \$30 U.S.

Student member \$20

Regular member \$30

● Regular and student members have free access to all club branch meetings.

Very large and growing VIC section.

● Largest public domain diskette and tape library in the world

The Largest Micro-computer club in North America

Please fill out card below and send to:

● receive the torpet 10 times a year

● free access to the club library

● annual copy session.

● Remote members can either join the copy tree or order diskettes from the club secretary (prices listed elsewhere).

Chris Bennett, TPUG Secretary
381 Lawrence Ave W.
Toronto, Ont. M5M 1B9
Canada

I wish to join TPUG as: regular member student member associate member overseas member

(please print clearly)

Name _____

Address _____

City _____

State/Province _____ ZIP / Mail Code _____

Country _____

My phone number is () - _____

We use your phone number to sort geographically

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Country _____

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I do want my address given to other Commodore Users in my area.

Mt. Zion, IL 62549 U.S.A.

I do not

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Please fill out and mail to

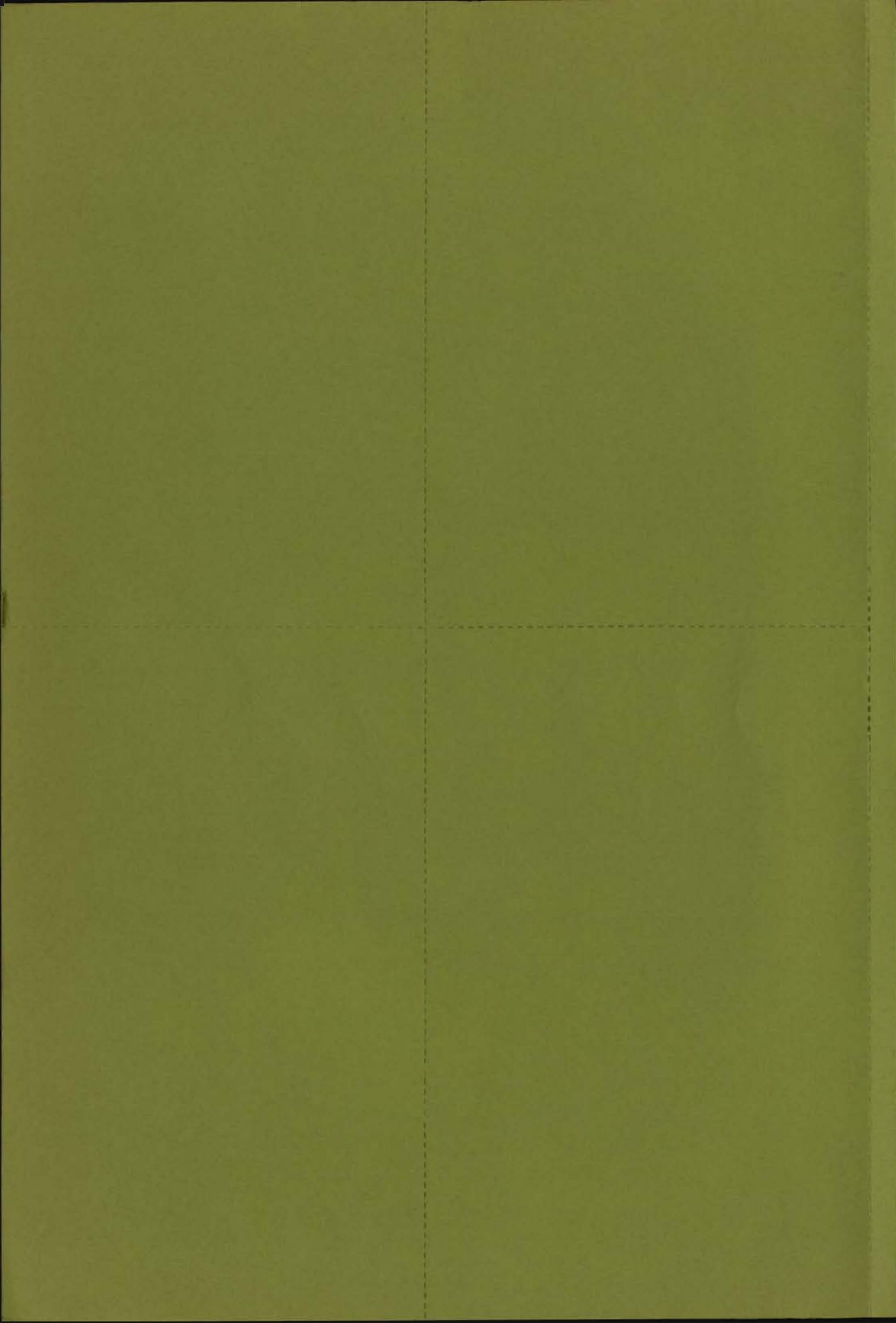
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I do not



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*some of an international nature
that you can join from anywhere*

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