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MICROpendium

Volume 6 Number 3

April 1989

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for MDOS users

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- TI-Runner Level Editor
- TI-Writer V4.01, Artist Borders I-III,
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- Part II of Modular Programming with
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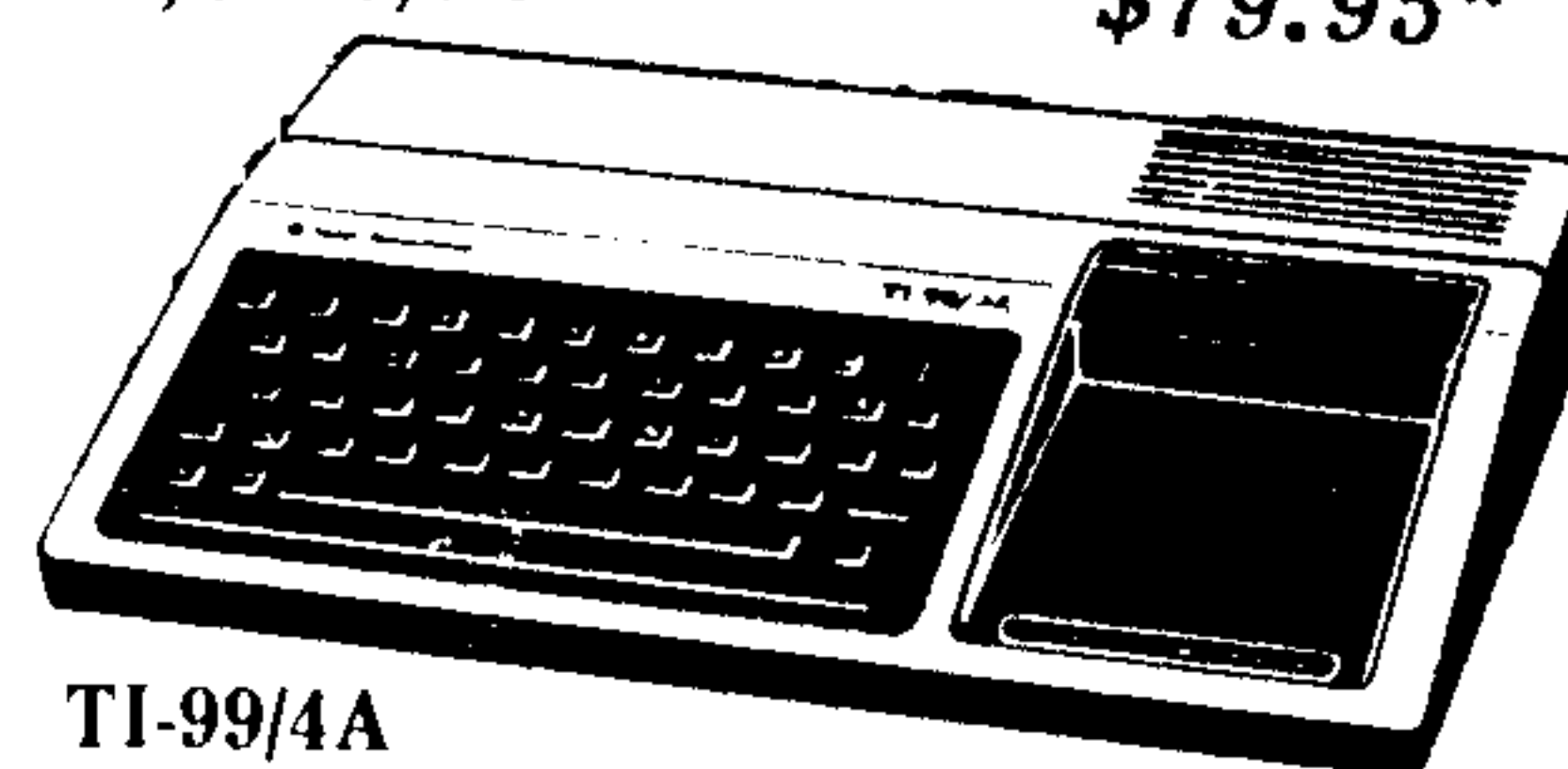
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Regena on BASIC

If you are into knitting, your TI can keep you in stitches (not to mention sweaters).....Page 10

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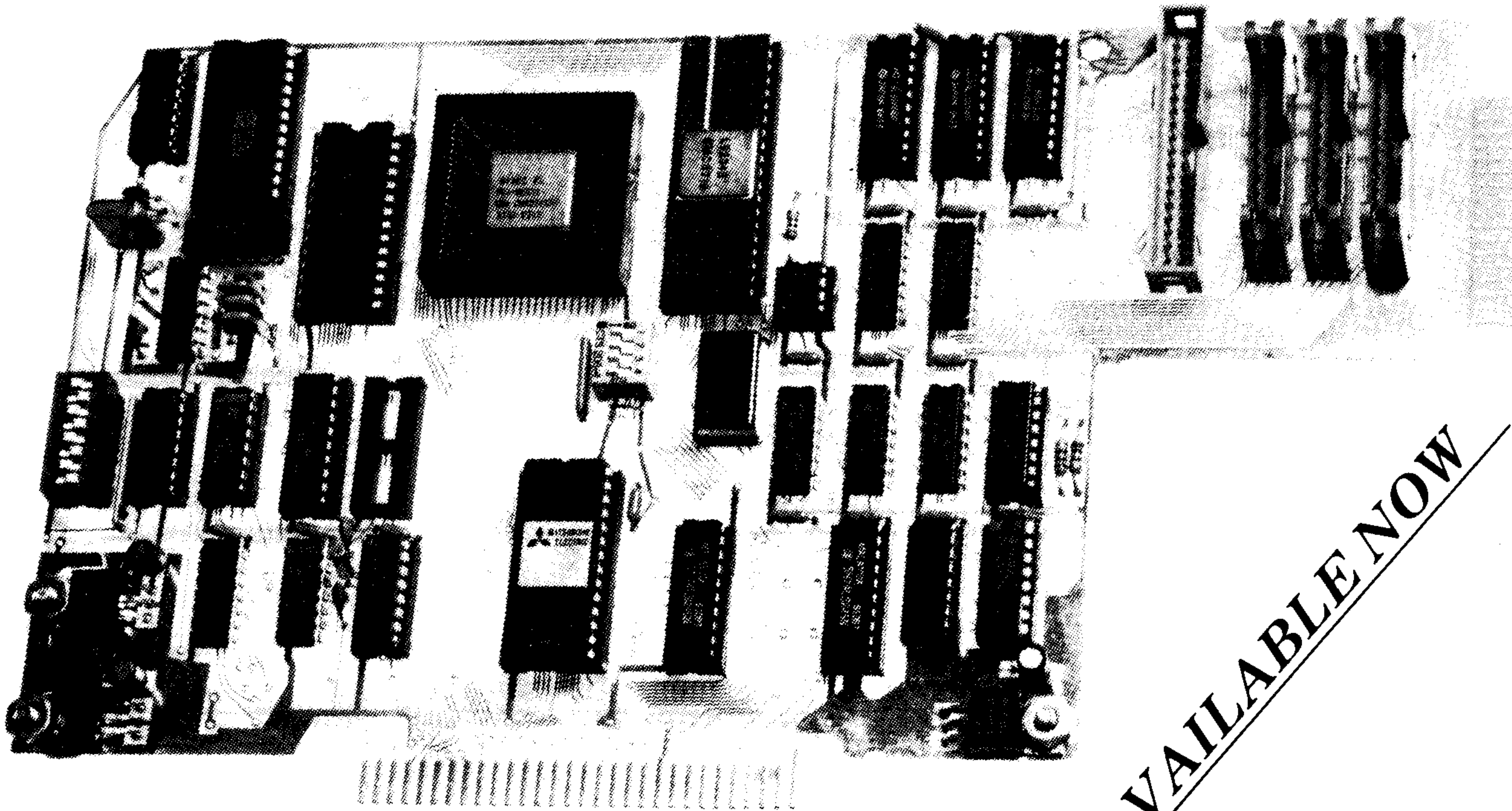
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Programming conventions

Here are some tips to help you when entering programs from MICROpendium:

1. All BASIC and Extended BASIC programs are run through Checksum, the numbers that follow exclamation at the end of each program line. Do not enter these numbers or exclamation points. Checksum was published in the October 1987 edition.
2. Long XBASIC lines are entered by inputting until the screen stops accepting characters, pressing Enter, pressing FCTN REDO, cursoring to the end of the line and continuing input.

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Comments

Lots of little things to catch up on

Let's see, what's going on:

I've seen mention of a new chess program for the TI based on the popular Sargon chess program in the PC and Apple worlds. As soon as I can get a copy, I'll report on it. First thing I'd like to do is to have it play against the TI Chess module. I encourage anyone who has seen this program to drop us a line.

PROGRAMS ON DISK

We are going to start providing disks of the programs that appear in MICROpendium. The cost will be \$4 per issue and include media, mailer and postage and will be on DSSD disks, unless the user specifies SSSD. This is something we've resisted in the past because of the time it takes to handle it and the difficulty in estimating costs. (Anyone want to buy a TI-Forth manual? We printed 400 of them several years ago, sold 300 and have been sitting on the last 100 since. They cost us \$14 apiece. I misjudged the demand for them.) But with the Myarc hard disk controller we think we can get well-enough organized to make this "disk thing" work.

There are a number of reasons to provide this service, one of which is to help those who have difficulty typing or have vision problems. At this point, we will make the disks available only for 1989 and later editions. If there is enough demand, we may be able to pull something together from previous years, and we may be able to reduce the cost.

I don't think this will create any problems as far as copyrights are concerned because the programs will be provided only to subscribers who already have access to the programs. All programs will be exactly as they appear in MICROpendium, which are exactly as we receive them from the authors.

Readers may pay \$40 in advance to receive 12 monthly disks. Annual subscriptions allow us to buy disks and mailers at greater volumes and at lower rates, hence the \$8 savings. (I've got my fingers crossed on this, not wanting to end up with a roomful of unused disks and mailers to go along with my box of Forth manuals.) Readers who want to order disks may send checks, money orders or credit card information (Visa or MasterCard, card number and expiration date), and the issue(s) you want to receive.

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LISTINGS SHOULD BE MORE READABLE

Most of the programs in this issue were outputted using

a 24-pin dot matrix printer. They should be consistently legible, although we won't know for sure until we get them back from the press.

POSTAL PROBLEMS SHOULD BE OVER

I think we've solved the recent late delivery problems that we've had in some regions of the U.S. It's taken 18 months, but it turns out, apparently, that the people who put the magazines in the mail sacks have been placing labels meant for third-class mail on the second-class sacks. Thus, instead of going to the second-class center in Houston, these sacks were shipped to the third-class center in Dallas. It didn't come to anyone's attention until recently.

PROGRAM UPDATES

A hard-disk version of MDOS has appeared on bulletin boards in mid-April. It's not a finished product, so anyone who uses it is essentially doing beta testing. This version is incompatible with the Myarc Disk Manager V. Progress is also being made on Myarc Advanced BASIC. New CALLs include CALL MYART to load a MY-Art picture file, and INVERT and BLINK for use with DISPLAY AT. It's still not ready for distribution, however.

Barry Boone has produced another version of his Archiver III program. This version is number 3.03. Changes from Version 3.0 include screen color changes when functions are finished executing, the ability to quit the program using FCTN QUIT, the ability to list text files to a printer and the ability to designate any floppy or RAMdisk in the range of I-Z. It also seems to load faster. He is working on a version that provides full support for a hard disk.

CREDIT WHERE IT IS DUE

Now we know who wrote last month's batch file for the Geneve. It was Charles A. Nicholas. He writes:

I wrote the file to "help" myself with the MDOS syntax which is similar but not exactly the same as MS-DOS on the PC. I am primarily a UNIX user and miss the on-line manual feature on the other non-UNIX systems I use at work (Macintosh and MS-DOS) and MDOS. The help file came about after wasting time looking up stuff like r/w protection and mode commands and volume labels, and so on. The batch file seemed like a good way to get around this. The successive IF statements were necessary since early versions of MDOS couldn't transfer control to other locations in the file. The "program" evaluates the string to test for the keyword string and performs the ECHO on a match. The IF tests following the successful ECHO are necessary since MDOS just transfers control to the line following it in the file. These tests prevent any additional ECHOes.

—JK

MICROdex

FOR TI BASE

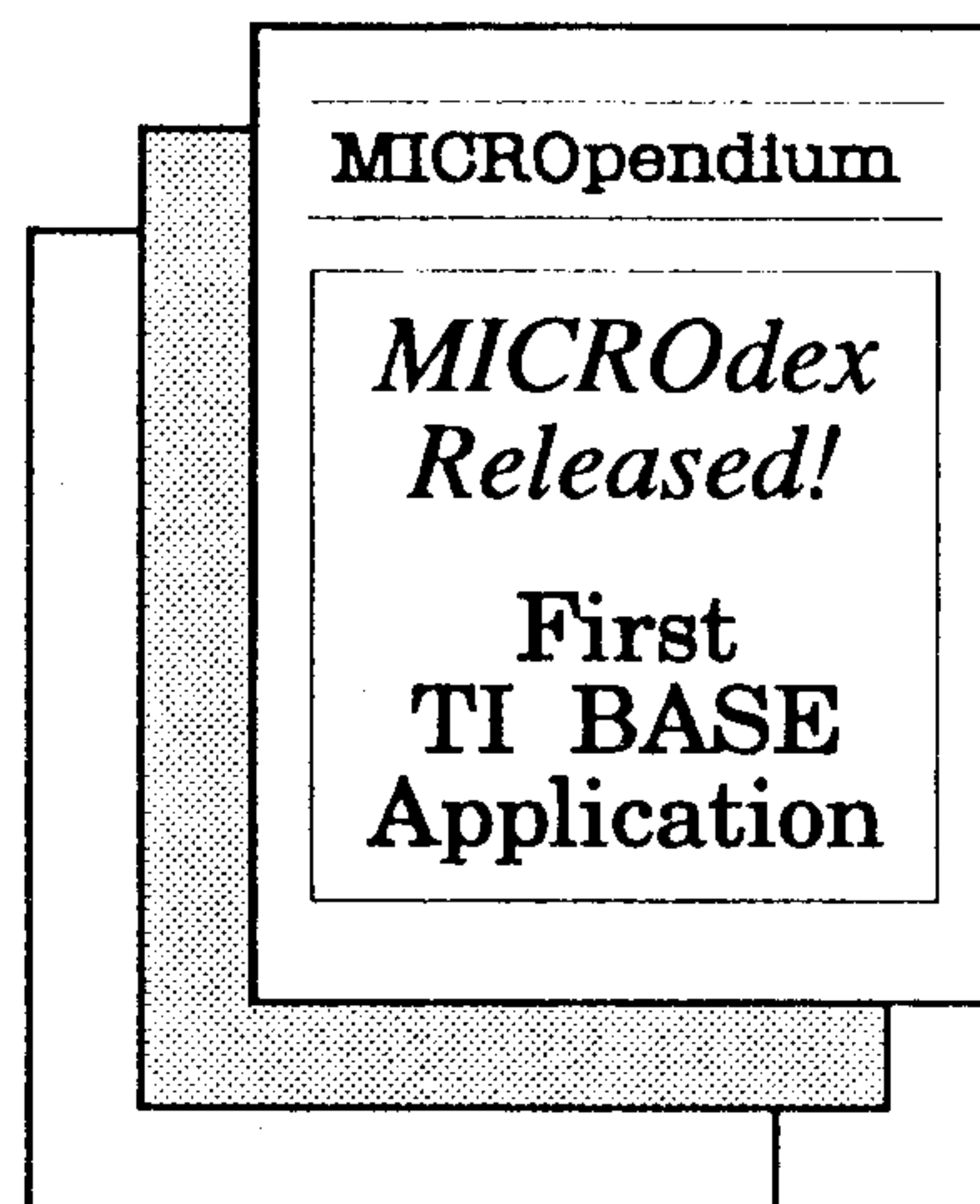
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With MICROdex, you can locate the source of various information printed about the TI-99/4a, and in some cases, the Geneve 9640. Any article, program, review, or editorial, that has appeared in many TI-related publications can be quickly located by subject, source, or type. Printed reports can also be prepared based on different search criteria, including a comprehensive listing of all references. On-line help is even available.

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Feedback

Turbo Copy available?

I wonder if you could poll your readers about a program, Turbo Copy by Know Ware. It is a track copier (TI Controller), that is very fast.

This copier is not marketed nor on any fairware list I have seen. I would like to know if it is now public domain or if someone is controlling distribution rights.

This is a fine program and it should be widely available.

Jim Swedlow
Stanton, California

Keep dreaming

How many of you have TIs that are idle hours when you are at work, and under the same roof sits an elderly, handicapped or limited person?

Why not teach them to use the TI? It amazes me no end here how limited bodies hid eager, enthusiastic minds! The arthritic hands, the ones now shaky with Parkinson and other debilitating diseases can operate the TI easily if you are willing to prepare a few things.

Texas Instruments still modifies consoles for the handicapped so the Function, Control and Shift keys will lock for one-hand use, etc.

Here (Marian Hall), Sisters in their 70s and 80s are eagerly learning. I make letter templates for any who wish to write on the TI using Funnelweb files: AS, AT, CAT, CHARA1, DP, EA, ED, EE, FO, FP, LOAD, MG, MH, QD, UL and Plus! files 1, 2, 3, 4, 5, 6, 7, 8, 9, G1, G2, G3 and L2. For some Funplus disks, I leave out some of the 1-9 disks and add L1 and L3 instead. All that has to be learned then is loading Funnelweb to the editor part and the most commonly used corrections (Function + arrows), the use of Enter, paragraphing (Control 8), saving and using the formatter. Using Jiffy Flyer I have these directions in large print in a binder condensed to the barest essentials.

I am gradually getting other programs that do not have menus menued, with the help of Tiers all over and a young volunteer, so every program will autoloading into Extended BASIC with a key press of 2 twice so what is needed can be selected from a menu. That is the hardest part, be-

cause the character codes get changed in graphics, and end points in programs are not easily seen by non-programmers like me. No one menu/load to date solves all problems, but one of our computer companies offered to tackle some I have not succeeded in doing. The big problem is getting a program to go back to the menu when it is finished, as I try to avoid multiple keys whenever possible. So many other Tiers have helped with specific problems I could not begin to mention lest I miss any!

My point is, it can be done. None of the residents using the TI ever used a computer before, some like me were not typists either. Our median age here is probably still mid-80s although we have two who are 101, one who will be 101 and another who will be 100. My oldest computer novice is 87; of course with women and age, I may not know — some may be older! Labels are the most exciting starting place as results are so immediate.

I can see the same principles applying in many educational situations, young, elderly and handicapped. It is practical, too. It is interesting also to see how this one prefers one label program, another a different one. Perhaps, since we are primarily a teaching order covering every range of education and caring, my computer learners tend to be selective from habit, but it amazes me to see an 87-year-old willing to try a different program when she has learned one she likes, and use one for some labels and yet another for specific people. Many a younger person would be self-satisfied to know and use only one!

I would like to thank all who have made this dream a reality: the individuals, companies, media involved. Hardware, software and donations have made our Activity Room system complete with two SS/SD disk drives on ground floor, a mini system on third for one resident who is becoming especially proficient and my system on fourth. The two expanded systems now have transformers to stabilize power in our hot, humid Iowa summers. To date, perhaps a dozen Sisters have used the computers with guidance. Some have printed out more than a dozen letters, even with graphics on one side. At Christmas, TI labels abounded on outgoing mail (incoming, too)! Easter is seeing a surge in making

labels again, and for newsy letters, computers can handle so much more than fragile bodies.

Thank you for everything, and I hope this inspires you to look at your situation and see if some unborn dreams can be generated and made possible! An impossible dream does not exist, only impossible people who believe and make it happen. Hats off and hearts on to a TI community of impossible people.

Sister Pat Taylor, BVM
Dubuque, Iowa

More on joystick

Additional to review of Expyx 500 XJ joystick (December 1988) — look at the label and you will see it says "By Konix."

Konix is a small Welsh company which has specialized in making joysticks. Here in the UK the 500XJ is sold as the Konix Speedking and is a very popular joystick.

In 1989 Konix has released a new model of hand-held joystick, sold here as the Navigator. The Speedking has a red livery, the Navigator comes in blue. The Navigator is slightly more comfortable to hold, and has the fire button right at the front, making it suitable for left or right hand operation. It also seems more comfortable in a smaller hand.

Konix has not stopped there but has gone on to design the *ultimate* joystick — fully expanded, the new unit would be comprised of a shell chair, driven in three axes by electric motors, foot pedals and a hand control which can be changed from driving wheel to motorbike controls to airplane joystick to helicopter controls. There is a lever which can be a gear lever. The joystick can be made to judder on crashing. A light pistol with recoil action can be converted to an automatic.

Having designed all this, and targeted at a cost so low as to be unreasonable, Konix found a problem — how to connect all this to an existing computer? The answer has been to build a new computer into it, which will use 800K disks selling for 15 pounds or less, and operate so fast that a program can be effectively 800K long. Launch in the UK is targeted for June '89 with main release for Christmas '89. No U.S. launch

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Feedback

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is anticipated for at least 12 months.

Stephen Shaw
Stockport, Cheshire, England

Another monitor

I enjoyed Tom Spillane's article on color monitors in the March 1989 MICROpendium and I'm sure that it will help many individuals who want to upgrade their TI or 9640 systems.

While very high resolution is available (at very high prices!), at least one other reasonably priced analog RGB monitor will work well with the Geneve. I've been using a Tandy CM-8 monitor with my Geneve. Radio Shack lists its resolution as 640 x 192 pixels and it requires a separate horizontal and vertical synch. A built-in speaker and a nice set of controls are on the monitor front. It even matches the off-white color of my keyboard. Radio Shack lists this monitor for \$300 but I've seen it on sale occasionally for \$25-\$50 less.

The CM-8 doesn't represent the "top end" of the monitor line, but it is quite comparable to the low-priced Atari and Sony models listed in Tom's article. It is more than adequate for my purposes and MyArt sure looks nice in color.

Dave Lewis
Norman, Oklahoma

Manual printed now

In reply to W.R. Corker (Feedback, March '89), Mr. H.T. Brashear's review was made using a Proto type card (so stated) and his feedback to us prompted us to print the User Manual (37 pages) which is advertised as such. Full documentation and source code are provided with each P-Gram.

The Editor functions are resident in the P-Gram DSR and do not have to be loaded from disk every time you want to use them, and the Editor also allows you to look at *any* of the other P-Box devices via the CRU addresses.

With all respect for GRAM 0, 1 and 2 which reside in the console and contain the title screen and BASIC, most users who would utilize any changes in the title screen or in BASIC are talented enough to find a better way without accessing those

GROMS.

Bud Mills
Horizon Computer
Toledo, Ohio

Slow pace disappoints

Since January '88 I have bought the Geneve 9640 Card and then Myarc Mouse, and HFDC-Myarc Card with HD-Seagate 251.1, and now I am waiting for the Myarc 512K card.

I have always shipped the warranty sheets to Myarc, but I have never received from Myarc any upgrade of DOS or any other programming language, as Myarc had promised.

I have many Italian friends, old TI99 owners, who come to my house to see how the Geneve works, but nobody decides to buy it, because of the holes of the operating system and above all for the policy of Myarc towards its customers.

Franco Ruffoni
Brescia, Italy

Myarc meets human error

I have to admit I am "human error" personified, a certified computer klutz, and one of the original "black thumbs" of computerdom. Open files close, RAMS self-destruct and hard drives get soft when I merely walk by a machine.

To give me customer support, computer companies must commit massive resources to my account. To be operational, I really need *support!* In my case, Myarc has met the challenge and exceeded my wildest expectations.

I purchased a HFDC Card and hard drive in October 1988. Shrinking at the anticipation of such a complex unit, I put it on my shelf until March 1989. At that point, inspired by my 11-year-old son's mastery of the 9640, I was forced to stop procrastinating and show him "what this thing does."

My first step was to call Myarc. How many companies will do more than ask you how your product is doing after six months? Not many. But Myarc treated the drive and controller as new, and Jack Riley worked extensively with me to get everything working.

More than two weeks of largely my er-

rors and failures in following directions, Jack worked tirelessly, including two Saturday afternoons and Sunday, to get the disk formatted and loaded with programs. He sent updated programs to me by modem, walked me through the physical assembly of my unit, mailed me new cables and supporting software, talked me through endless procedures on the computer and finally personally checked out my drive, cables and disk after my mailing them to Birmingham. Jack's analysis confirmed the position of the HAL 9000 computer in the movie 2001 A Space Odyssey: "It is HUMAN ERROR."

Being a walking example of the "if anything can go wrong it will" axiom, I stayed with it and continued to foil Jack's best efforts. Finally one late evening, having failed to follow Jack's directions by not backing up my hard disk to floppies, I wiped everything out with one magnificent gesture at the keyboard.

At this point of hopelessness, Myarc stuck with me. Jack Riley replaced the entire drive with a new one, formatted and loaded the drive for me, and mailed me two copies of the backed up hard disk along with the drive. I consider this to be "deep protection" for my destructive tendencies, and at this point, even I will have a hard time wrecking my system.

With everything running, having the hard drive is like having a new machine. The speed and response are phenomenal! If you don't have a hard drive with your 9640, you are really missing the full potential of the system!

So thanks, Myarc, may you live long and prosper. But stand warned, I am now learning to develop tree structures for my hard drive and will continue to lean on you heavily. Better staff up! I'm convinced that if you can give me good customer service, the rest of the universe should be a piece of cake.

Dick Hill
Holland, Michigan

The *Feedback* column is a forum for TI99/4A and Geneve users. The editor may condense submissions when necessary. We ask that readers restrict themselves to one subject for the sake of simplicity. Mail *Feedback* to: MICROpendium, P.O. Box 1343, Round Rock, TX 78680.

BASIC

Your TI can keep you in stitches

By REGENA

First, a note about San Diego. I had a super trip to this year's FEST-WEST. It is great to go to a TI-specific convention and learn what is going on with our computer and see all the new hardware and software — and see how much is still being done with our TI. What I really enjoyed, though, was meeting the people behind the names I've heard before plus renewing friendships with those I've met previously.

I did find out from my San Diego friends that I had made a couple of errors in the January issue of MICROpendium. Line 220 should have FRWY 163 (instead of 16). Line 1160 should have 1700-ACRE (instead of 17-ACRE).

Now, answers to a couple of common problems. If you run a program and get an error message BAD VALUE IN —, and the statement involved is a CALL COLOR statement, you could be using TI Extended BASIC instead of TI "console" BASIC. Remember that the color sets 15 and 16 are available in BASIC but not in Extended BASIC.

If you have the disk system and get the error message MEMORY FULL IN —, the program may not be in error. Remember (as standard practice) to use the procedure

CALL FILES(1) <ENTER>

NEW <ENTER>

then OLD DSK1.TITLE (to load the program)

If you are not doing file work with more than two files open at a time (such as printing, saving, retrieving, writing to another disk, etc.), this procedure allows enough memory to run larger programs. Several of my earlier programs require this procedure to run the programs properly.

Now to this month's program. Last November I got a knitting machine, and I'm having about as much fun with it as I have with my computers. I just got a basic beginner's model — none of the fancy computer designing stuff that is available. I have knit several sweaters with it. In my family I have four sons (and my sister-in-law has five sons), so if I knit something for a boy in any size, it is bound to fit one of the boys. However, sometimes a particular boy wants a certain color. In either hand knitting or machine knitting, gauge is important — that is, how many stitches and rows to an inch so the pattern can be followed correctly and the size will turn out right.

In knitting, the sample swatch is usually measured and the gauge given for four inches square — how many stitches across in four

inches and how many rows lengthwise in four inches. I was using a calculator converting all measurements in patterns when I realized a computer would make the process much easier. The program this month shows a pattern for a basic knit sweater and can be used for machine knitting or hand knitting. You can add any pattern stitch (such as lace, cables, or tuck stitching) and just keep track of the pattern at shaping edges.

First, choose a size: 2, 4, 6, 8, 10 or 12. The corresponding finished chest sizes are 25, 27, 29, 31, 33 and 35 inches. Next, enter a gauge, such as 26 stitches per four inches and 40 rows per four

inches (a typical gauge with sport-weight yarn on my standard knitting machine). The computer will draw the back, front and sleeve sections with the number of stitches to cast on, the length of the ribbing and the row counter readings. The computer will calculate drop-shoulder shaping and the number of stitches for the neck on the back and the front. The computer will also calculate the top sleeve width and the number of stitches to be increased along the sleeve edges. Press the ENTER key after each screen to advance to the next pattern section.

Standard knitting abbreviations are used:

CO — Cast On

RIB — Work in ribbing (K1,P1 or K2,P2 or twisted rib)

BO — Bind Off

BO a,a,a,b — (shoulder shaping) Bind Off at the shoulder side a stitches three times, then "b" stitches.

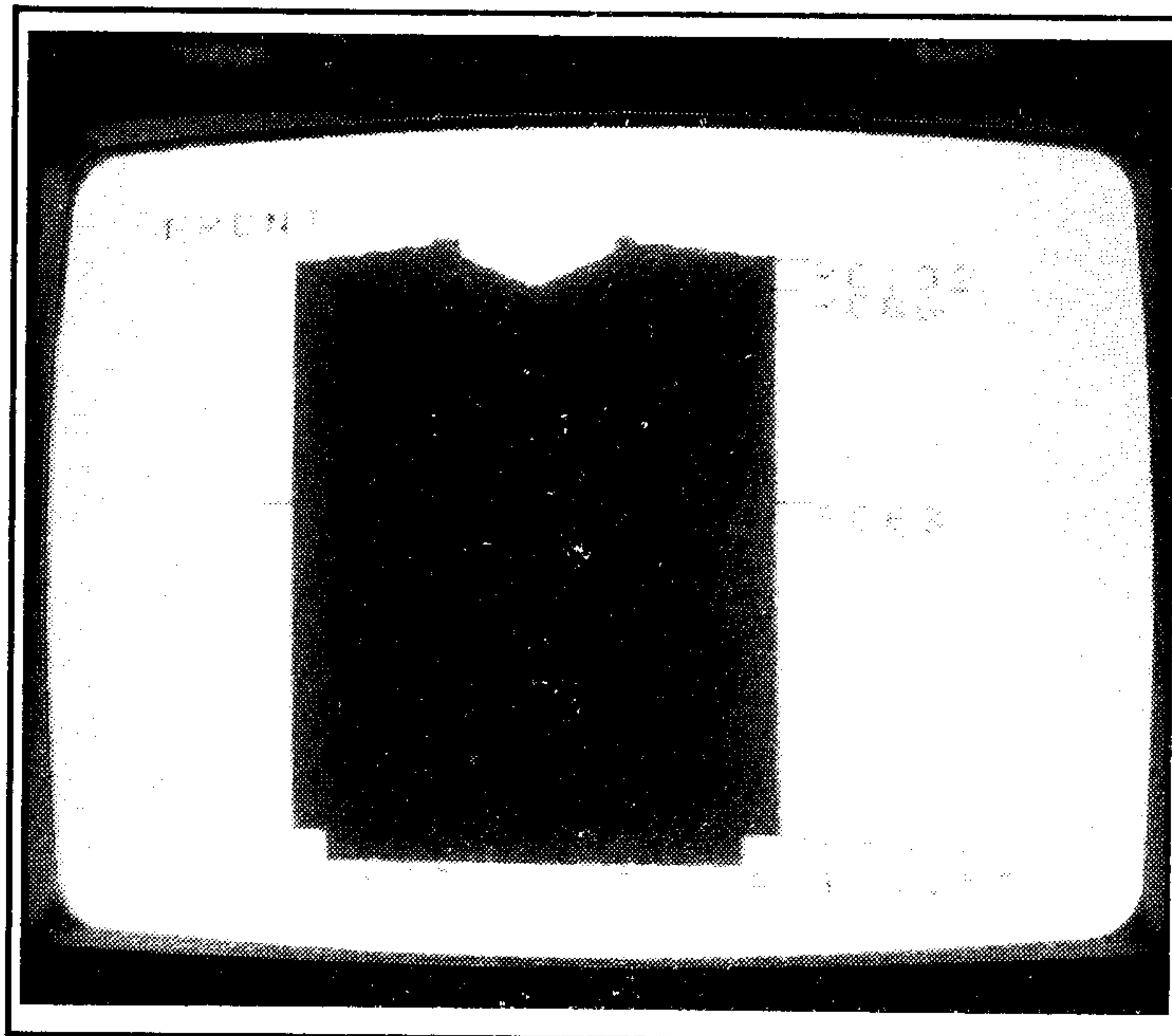
a/b nX — Increase or decrease "a" stitches every "b" rows for "n" times. 1/2 3X would be decrease 1 stitch every two rows three times.

RCXXX — Row Counter starting at 000 and indicating the number of rows knit.

This program allows the option of having the pattern printed on a printer. Be sure to add your own printer configuration in Line 870. If you choose "Y" to have the pattern printed, you will hear the printer after each major section of the sweater. Press ENTER after each screen until the pattern is complete.

This program is an example of a program that might appeal to women, even though many men also knit. Every so often I get asked about computer programs for women, and I didn't realize they (we) had special need. Perhaps this is such a program. This idea for this program can be adapted for other programs or for crocheting. The main idea is that the gauge entered is converted to factors for width

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BASIC—

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and length, then the pattern simply calculates stitches or rows for measurements.

Lines 200-280 define graphics characters used for drawing the sweater sections. Lines 290-470 allow the user to choose a size by pressing the left and right arrow keys to move the arrow symbol under the size. The choice made is SZ (which may be a number from 1 to 6).

Lines 480-650 receive your input for the gauge. W is the number of stitches per four inches, and L is the number of rows for four inches. Lines 660 and 670 calculate the multiplying factors FW and FL using this gauge. Lines 680-700 determine the length of the ribbing depending on the size chosen. Lines 710-790 calculate different measurements. BL1 is the underarm length, and BL12 is the length from the ribbing to the shoulder. BW is the width of the back. SLW and SLL are the sleeve width and sleeve length. Anything starting with RC is a row counter number.

Lines 800-910 offer the option to use a printer for the pattern. Line 920 calls the subroutine to draw the back of the sweater. Lines 930-1030 calculate how many stitches should be allowed for the neck and what the shoulder shaping should be, then label the picture on the screen. All labels are printed using M\$ as a message, specifying the ROW number and the COL number where printing starts, then Subroutine 2880 is called to print the message on the screen.

Lines 1040-1140 print the instructions for the back. Line 1150 waits for the ENTER key to be pressed before continuing. Line 1160 calls the subroutine to draw the front. Lines 1170-1240 calculate the row where neck shaping begins and the number of stitches in the front on each side of the neck. Lines 1250-1400 print the instructions for the front.

Lines 1420-1610 give more detail for the neck shaping, and Lines 1630-1640 print a few more instructions for the other side of the neck.

Lines 1660 draw and label the sleeve. The bottom and top widths are calculated so the number of stitches can be determined. The difference DIF is the number of stitches that need to be increased, and DEC is the number of rows between increases. Lines 1910-1980 print the sleeve instructions. Lines 2000-2130 print the finishing instructions.

Lines 2160-2580 include the subroutine to draw and label parts of the back. Line 2590-2730 are the subroutine for the front, and the subroutine for the back is called for the common sections. Lines 2740-2870 are the subroutine for the sleeve. Lines 2880-2910 are the subroutine to print a message or label. Lines 2920-2940 are the subroutine to wait until the user presses the ENTER key before continuing. Lines 2950-2980 clear the screen, close the printer if used, and END the program.

If you want to save typing effort, you may have a copy of

KNIT SWEATER, SIZE 8

GAUGE: 20 STS = 4 INCHES
24 ROWS = 4 INCHES

BACK
CO 78 STITCHES.
WORK IN RIBBING FOR 2.5 INCHES.
RC000. KNIT STRAIGHT FOR 10.5 INCHES; RC63
PLACE MARKER FOR SLEEVE.
KNIT STRAIGHT TO RC102; 17 INCHES FROM RIBBING.
SHOULDER SHAPING--
BO 6 STS AT BEGINNING OF NEXT 6 ROWS,
THEN 9 STS AT BEG OF NEXT 2 ROWS.
PUT REMAINING 24 STS ON HOLDER FOR NECK.

FRONT
CO 78 STITCHES.
WORK IN RIBBING FOR 2.5 INCHES.
RC000. KNIT STRAIGHT FOR 10.5 INCHES; RC63
PLACE MARKER FOR SLEEVE.
KNIT STRAIGHT TO RC86.
NECK SHAPING--
WORK ON RIGHT 32 STS.
BO 1 ST AT NECK EDGE FOR NEXT 3 ROWS,
THEN BO 1 EVERY OTHER ROW TWICE.
WORK STRAIGHT TO RC102.
WORK SHOULDER SHAPING TO MATCH BACK.

PLACE NEXT 14 STS ON HOLDER FOR NECK.

WORK OTHER SIDE OF NECK TO MATCH.

SLEEVE
CO 38 STITCHES.
WORK IN RIBBING FOR 2.5 INCHES.
RC000. INC 1 ST EACH SIDE
EVERY 5 ROWS TO RC66.
LENGTH OF SLEEVE = 11 INCHES.
PUT STS ON WASTE YARN.

SEW SHOULDER SEAMS.

JOIN SLEEVES TO BODY.

SEW UNDERARM SLEEVE AND SIDE SEAMS.

PICK UP STS AROUND NECK AND
KNIT IN RIBBING FOR 1 INCH.

BIND OFF.

this program by sending \$4 to *REGENA, P.O. Box 1502, Cedar City, UT 84720*. Be sure to specify whether you need cassette or disk and that you want "SWEATER for the TI.

SWEATER

100 REM SWEATER !245
110 REM BY REGENA !071

120 CALL CLEAR !200
130 PRINT " ** KNIT SWEATE

R **" !019

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BASIC—

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(Continued from Page 12)
1190 CALL HCHAR(4,22,37) !002
1200 M$="RC"&STR$(RC3) !035
1210 ROW=4 !179
1220 COL=22 !202
1230 GOSUB 2880 !155
1240 RT=SHS+5 !017
1250 IF PR<>1 THEN 1410 !159
1260 PRINT #1 !147
1270 PRINT #1:"FRONT" !157
1280 PRINT #1:"CO";CO;"STITCHES." !002
1290 PRINT #1:"WORK IN RIBBING FOR";RIB;"INCHES." !059
1300 PRINT #1:"ROW. KNIT STRAIGHT FOR";R1;"INCHES; RC";RC1$ !190
1310 PRINT #1:"PLACE MARKER FOR SLEEVE." !135
1320 PRINT #1:"KNIT STRAIGHT TO RC";STR$(RC3);"." !196
1330 PRINT #1:"NECK SHAPING—" !194
1340 PRINT #1:"WORK ON RIGHT";RT;"STS." !187
1350 PRINT #1:"BO 1 ST AT NECK EDGE FOR NEXT 3 ROWS," !088
1360 PRINT #1:"THEN BO 1 EVEY OTHER ROW TWICE." !143
1370 PRINT #1:"WORK STRAIGHT TO RC";STR$(RC2);"." !203
1380 PRINT #1:"WORK SHOULDER SHAPING TO MATCH BACK." !213
1390 PRINT #1: : "PLACE NEXT";NKS-10;"STS ON HOLDER FOR NECK." !188
1400 PRINT #1: : "WORK OTHER SIDE OF NECK TO MATCH." !131
1410 GOSUB 2920 !195
1420 CALL CLEAR !209
1430 PRINT "NECK SHAPING:" !245
1440 PRINT "WORK ON RIGHT";RT;"STS." !015
1450 PRINT : "BO 1 ST AT NECK EDGE" !225
1460 PRINT "EVERY ROW 3 TIMES," !057
1470 PRINT "THEN EVERY OTHER ROW TWICE." !220
1480 PRINT : "KNIT STRAIGHT TO RC";STR$(RC2);"." !204
1490 PRINT : "BO SHOULDER TO MATCH BACK." : : : !023
1500 PRINT " " : : : : : %
RC";STR$(RC2) !032
1510 PRINT " " : : : : :
!210
1520 PRINT " " : : : : :
!210
1530 PRINT " " : : : : :
!018
1540 PRINT " " : : : : :
!018
1550 PRINT " " : : : : :
1/2 2X" !181
1560 PRINT " " : : : : :
!032
1570 PRINT " " : : : : :
1/1 3X" !245
1580 PRINT " " : : : : :
!210
1590 PRINT " " : : : : :
!018
1600 PRINT " " : : : : : %
RC";STR$(RC3); !071
1610 GOSUB 2920 !195
1620 CALL CLEAR !209
1630 PRINT "PUT ";NKS-10;"STS ON HOLDER": "FOR FRONT NECK." !180
1640 PRINT : "WORK OTHER SIDE OF NECK TO MATCH." : : : !122
1650 GOSUB 2920 !195
1660 GOSUB 2750 !024
1670 SLW2=5.5+.5*SZ !167
1680 COW=INT(SLW2*FW+.5) !089
1690 TOP=INT(SLW*FW+.5) !049
1700 DIF=INT((TOP-COW)/2) !151
1710 RCA=INT(SLL*FL+.5) !241
1720 DEC=INT(RCA/DIF) !038
1730 ROW=22 !228
1740 COL=5 !154
1750 M$="CO "&STR$(COW)&"; RIB "&STR$(RIB)&CHR$(34) !122
1760 GOSUB 2880 !155
1770 ROW=ROW-1 !106
1780 COL=14 !203
1790 M$="%RXX%" !070
1800 GOSUB 2880 !155
1810 ROW=ROW-9 !114
1820 M$="%RC"&STR$(RC4) !124
1830 GOSUB 2880 !155
1840 M$="1/"&STR$(DEC)&"&STR$(SLL)&CHR$(34) !062
1850 ROW=ROW+4 !103
1860 GOSUB 2880 !155
1870 M$=STR$(SLW)&CHR$(34) !1
53
1880 ROW=ROW-5 !110
1890 COL=7 !156
1900 GOSUB 2880 !155
1910 IF PR<>1 THEN 1990 !229
1920 PRINT #1: : "SLEEVE" !142
1930 PRINT #1: "CO";COW;"STITCHES." !039
1940 PRINT #1: "WORK IN RIBBING FOR";RIB;"INCHES." !059
1950 PRINT #1: "ROW. INC 1 ST EACH SIDE" !036
1960 PRINT #1: "EVERY";DEC;"ROWS TO RC";STR$(RC4);"." !214
1970 PRINT #1: "LENGTH OF SLEEVE =" ;SLL;"INCHES." !226
1980 PRINT #1: "PUT STS ON WASTE YARN." !033
1990 GOSUB 2920 !195
2000 CALL CLEAR !209
2010 PRINT "SEW SHOULDER SEAMS." !178
2020 PRINT : "JOIN SLEEVES TO BODY." !211
2030 PRINT : "SEW UNDERARM SLEEVE AND SIDE SEAMS." !015
2040 PRINT : "PICK UP STS ON NECK AND RIB FOR 1 INCH." : : : !026
2050 PRINT : "BIND OFF." !103
2060 IF PR<>1 THEN 2140 !124
2070 PRINT #1 !147
2080 PRINT #1: "SEW SHOULDER SEAMS." !034
2090 PRINT #1: : "JOIN SLEEVES TO BODY." !127
2100 PRINT #1: : "SEW UNDERARM SLEEVE AND SIDE SEAMS." !055
2110 PRINT #1: : "PICK UP STS AROUND NECK AND" !002
2120 PRINT #1: "KNIT IN RIBBING FOR 1 INCH." !252
2130 PRINT #1: : "BIND OFF." !019
2140 GOSUB 2920 !195
2150 GOTO 2950 !224
2160 REM BACK !235
2170 CALL CLEAR !209
2180 M$="BACK" !011
2190 ROW=1 !176
2200 COL=3 !152

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BASIC—

(Continued from Page 13)

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2210 GOSUB 2880 !155
2220 FOR C=8 TO 21 !108
2230 CALL VCHAR(3,C,96,20)!0
08
2240 NEXT C !217
2250 RESTORE 2300 !097
2260 FOR C=8 TO 22 !109
2270 READ N !229
2280 CALL HCHAR(2,C,N)!047
2290 NEXT C !217
2300 DATA 101,100,99,98,97,9
7,97,97,97,97,98,99,100,101,
32 !072.
2310 CALL HCHAR(22,8,32)!001
2320 CALL HCHAR(22,21,32)!04
5
2330 CALL HCHAR(11,7,37)!003
2340 CALL HCHAR(11,22,37)!04
9
2350 CALL HCHAR(22,22,37)!05
1
2360 M$="RO000" !032
2370 ROW=22 !228
2380 COL=22 !202
2390 GOSUB 2880 !155
2400 M$="CAST ON "&STR$(X)&
"; RIB "&STR$(RIB)&CHR$(34)!
126
2410 ROW=23 !229
2420 COL=8 !157
2430 GOSUB 2880 !155
2440 M$="RC"&RC1$ !017
2450 ROW=11 !226
2460 COL=22 !202
2470 GOSUB 2880 !155
2480 CALL HCHAR(3,22,37)!001
2490 M$="RC"&STR$(RC2)!034
2500 ROW=3 !178
2510 GOSUB 2880 !155
2520 RETURN !136
2530 REM SHOULDER !064
2540 M$="BO "&S$&","&S$&","&
S$&","&STR$(SH5)!011
2550 ROW=1 !176
2560 COL=17 !206
2570 GOSUB 2880 !155
2580 RETURN !136
2590 REM FRONT !099
2600 CALL CLEAR !200
2610 M$="FRONT" !132
2620 ROW=1 !176
2630 COL=3 !152
2640 GOSUB 2880 !155
2650 GOSUB 2220 !004
2660 CALL HCHAR(2,12,102)!04
1
2670 CALL HCHAR(2,13,32,4)!1
71
2680 CALL HCHAR(3,13,103)!04
4
2690 CALL HCHAR(3,14,104)!04
6
2700 CALL HCHAR(3,15,105)!04
8
2710 CALL HCHAR(3,16,106)!05
0
2720 CALL HCHAR(2,17,107)!05
1
2730 RETURN !136
2740 REM SLEEVE !254
2750 CALL CLEAR !200
2760 PRINT "SLEEVE": : : : !0
01
2770 PRINT " 1~~~~~q" !0
76
2780 PRINT "  m~~~~~r" !0
78
2790 PRINT "  n~~~~~s" !0
80
2800 PRINT "  o~~~~~t" !0
82
2810 PRINT "  p~~~~~u" !0
84
2820 PRINT "  '1~~~~q" !17
1
2830 PRINT "  m~~~~r" !17
3
2840 PRINT "  n~~~~s" !17
5
2850 PRINT "  o~~~~t" !17
7
2860 PRINT "  p~~~~u": :
: !210
2870 RETURN !136
2880 FOR J=1 TO LEN(M$)!242
2890 CALL HCHAR(ROW,COL+J,AS
C(SEQ$(M$,J,1)))!045
2900 NEXT J !224
2910 RETURN !136
2920 CALL KEY(0,K,S)!187
2930 IF K<>13 THEN 2920 !104
2940 RETURN !136
2950 CALL CLEAR !200
2960 IF PR<>1 THEN 2980 !199
2970 CLOSE #1 !151
2980 END !139

```

EXTENDED BASIC

Good help is hard to find

By JERRY STERN

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You've written a dynamite program for keeping track of kumquat sales at the kumquat agency. But you know that the head kumquat analyst, whose name we had best leave to the imagination, will copy your program to who knows where, lose the instructions you typed for him, and smear your beautifully printed help file with globs of overripe kumquat. A help file as a

separate disk file is something he just won't remember how to print while he is in a state of kumquat-induced slovenliness. Your help file must be entirely inside the program.

There are limits to how much work you are willing to do for his kumquatosity. Rewriting the program to bring help on-line is not worthwhile for a small application that will only be used in the Kumquat Emporium of lower Main Street. Perhaps the help file that you've already typed up for

your kumquat client could be placed within the main program as a series of data statements, and read back to either the screen or a printer by a subprogram as kumquat splashes require.

Using a subprogram to print or view the subprogram is much easier than placing that new function inside the already finished program. The variables of subprograms are stored separately by TI Extended BAS-

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EXTENDED BASIC—

(Continued from Page 14)

IC for each subprogram, and are also distinct from variables in the main program. The variable LOOP in a subprogram is different from a variable of the same name in the other sections of the program. This division of a program into compartments means that repeating variable names accidentally will not cause any problems in executing the program. So when additions need to be made in a finished program, the easiest way to add new functions is by including them in subprograms. The new subprogram can be just merged into the original program at the end of the code, and it will go promptly to work with a minimum of debugging.

Retyping the entire help file into DATA statements could cause some bugs, too. The ideal would be to transfer the help file directly into DATA statements without retyping it. Sounds like we need a utility program that converts a Display/Variable 80 TI-Writer file into a merge format program segment of text data lines.

We already know that our help file will start as a Display/Variable 80 file, and end as a Display/Variable 163 merge file, but the exact format of those lines could still change. To help find the most practical format for these lines, we'll first look at the subprogram that will handle displaying those data lines.

The subprogram HELP will read one screen of the help file at a time, fill the screen, wait for a keystroke, and then go on to the next screen load. Each line of the data should be no longer than the width of the screen, or 28 characters for the 99/4A. The subprogram reads the number of data statements in the total file from the first DATA statement in the group. This is needed to prevent reading past the end of the list, either into data statements intended for another section of the program, or past the end of the program. For the same reason, if the main program that uses this subprogram allows HELP to be called more than once, the RESTORE statement must be used to reset the spot where the program will look for the DATA statements.

```
100 ! main program
300 RESTORE 1000::CALL HELP
400 ! more main program
1000 DATA 2
```

1010 DATA "You call this a help file?"

1020 DATA "Well, good help is hard to find."

29415 SUB HELP

Alternatively, the RESTORE statement in line 300 could be used to direct the help subprogram to one of several different help files. DATA statements starting at line 2000 might contain help on cooking kumquats, and instructions for cleaning up kumquat stains could start at line 2500.

Retyping the entire help file into DATA statements could cause some bugs, too. The ideal would be to transfer the help file directly into DATA statements without retyping it.

By changing the length of the DATA statements, a subprogram could just as simply print out a help file or a quick reference sheet. I've already set this up as the subprogram HELP2. This subprogram is simpler than HELP; it only requires the name of the printer in the CALL statement.

300 RESTORE 1000 :: CALL HELP2 ("PIO")

So far, we have an extremely simple help procedure that uses subprograms to display help or print reference sheets. Next, let's work on a way to convert a TI-Writer text file into a list of DATA statements that can be merged into an application program. The program DATALETTER will do this. For input, the program will need the name of the text file, the name of the merge file it should create, the line number to use for the first line of the file, and an increment to use as the spacing between line numbers in the merge file.

Let's look at the program. The lines 100 to 130 demonstrate another way to provide a help file. The few reminders needed to run the program are included in remark statements. I know some programmers who consistently place a page full of instructions as remarks between lines 10 and 90 of their programs. If they need help, they just type, LIST -100, and the comments are displayed for them. This is adequate when programming for other programmers, but our kum-

quat analyst has only just managed to attain literacy in fruit, so expecting him to remember to LIST the program might be a bit too much.

Line 130 creates our line numbers in "crunch," or internal token format. Crunch format stores all program statements as lists of numbers, from zero to 255. Each number is stored as one byte of information. The line numbers in Extended BASIC are always two bytes long at the beginning of a line, and three bytes long in the middle of a line, as in IF L=5 THEN 400. For example, here is how some line numbers are represented, both at the beginning of a line, and in the middle.

Line	Beginning	Middle
10	0,10	201,0,10
100	0,100	201,0,100
300	1,44	201,1,44
1000	3,232	201,3,232
32767	127,255	201,127,255

The 201 is only a symbol that tells the Extended BASIC interpreter that the two numbers that follow are a line number. The first integer in the line number will never be larger than 127, or two to the 7th power minus one. The second integer will not be larger than 255, or two to the eighth power less one. To convert these bytes of memory back to our own base ten numbers, multiply the first byte by 256, and add the result to the second byte. The largest line number would then be 127, 255, or in base 10: $127 * 256 + 255 = 32767$

Line 130 has to work the other way around, converting base 10 line numbers to crunch format. If S is the line number, then the crunch format line number will be $\text{CHR}\$(\text{INT}(S/256))\&\text{CHR}\$(S-\text{INT}(256)*256)$

Rather than using this awkward formula wherever we need it, line 130 includes it as a definition statement:

```
130 DEF CR$(S)=CHR$(INT(S/256))&CHR$(S-INT(256)*256)
```

Line 140 simply calls a subprogram to create a title screen, keeping the main program uncluttered and easy to read.

Lines 150 to 170 accept the name of the text file from the keyboard and checks to see if it is a legal name. If your system uses a drive number other than one through five,

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EXTENDED BASIC—

(Continued from Page 15)

be sure to change the first VALIDATE string in line 160 to allow for it, and do the same in line 180. Lines 180 to 190 obtain and check the name of the destination, or merge file. Similarly, the lines from 200 to 240 check the line numbers and increments to be used in the new file to see if they are reasonable. If the program rejects any of these names or numbers, it will make a gun sound effect and ask for the input again.

The sound effect of the gunshot is in a subprogram. This makes it easy to change to chimes, buzzes, beeps, or whatever type of sound you may want. Sound effects work particularly well as subprograms since no data needs to be passed back to the main program. This one was just merged into the program, and originated in another project many uses ago.

Finally, starting at line 250, the loop that gets the work done begins. The program checks that there is still data left in the text file, reads in the next line, checks to see if the line is the string "*****" that we have used to flag the end of our data file, and then converts the text string to a data line.

The first line in the file will not use the first line number. That first line number will be left unused for now, because it will be used to store the count of how many data lines were converted. That line, with the lowest line number, will be printed to the file last, even though it will be the first line in the new program segment. When Extended BASIC merges the file into the main

program later on, it will not mind that the first line is in the last position; it will simply merge it into the proper place in the program.

Next, the processing of the line is begun. Line 270 checks to see if the TI-Writer Formatter has left any line feeds or carriage returns at the end of the line, and removes any it finds. Finally, the actual DATA statement is constructed.

In crunch format, a DATA statement containing a text string consists of a two byte line number, followed by the token for DATA, which is 147, and then the token for a string (number 199), the number of characters in the string, the string itself, and the line ending token 0.

1000 DATA "HI" becomes

```
1000 DATA " HI I"
3, 232, 147, 199, 2, 72, 73, 0
```

So, if L is the line number, CR\$ is the line number formula from the DEF statement in line 130, and R\$ contains the data, the new line T\$ must be:

```
T$=CR$(L)&CHR$(147)&CHR$(199)
&CHR$(LEN(R$))&R$&CHR$(0)
```

Once the program has looped around and converted all the data, the count of data lines must be added to the file, but DATA lines containing strings are not the same as DATA lines containing numbers. To place the number in a DATA line as a number and not as a string, some different treatment is needed. Instead of the token 199 for a string, a number is indicated by the token 200. The length of the number as a string is still needed even though Extend-

ed BASIC will read the result as a number. In line 300, the line count is converted from a number to a string, and then is inserted into a formula nearly the same as the one above.

```
T$=STR$(C)
CR$(Z)&CHR$(147)&CHR$(200)&CHR$(LEN(T$))&T$&CHR$(0)
```

Done, right? No. All merge files must end with an "end of file" indicator. That is simply one line that reads 255, 255. Then both the files may be closed and the job is done.

Before you go running off to convert your kumquat calculations, take some time to prepare the text file first. By running the original text file through the TI-Writer Formatter to another text file, you can do any of the fancy formatting to the file on disk that could be done on paper. The text may be filled, adjusted, indented, as you desire. First, insert this Formatter command at the beginning of the file:

```
.PL N;TL 34:34,34 (and the required carriage return.)
```

This will, when N is a larger number than the number of lines in the file, eliminate all page breaks. The TL command will convert single quotation marks into the double quotation marks that Extended BASIC will understand inside a data string. Next, set the right margin at 28 for a file destined to be viewed on screen with the HELP subprogram, or at up to 80 if the file will be printed out with HELP2. Be sure to add "*****" as the last line of the file.

DATALETTER

```
100 ! DATALETTER JLS 1989V
2.0 !215 !242
110 ! SOURCE FILE MUST BE FORMATTED ".PL N;TL 34:34,34"
WHERE N IS GREATER THAN NUMBER OF LINES FOR FILE !118 !147
120 ! SOURCE FILE LAST LINE BEFORE FORMATTING MUST BE "*****" !132 !157
130 DEF CR$(S)=CHR$(INT(S/256))&CHR$(S-INT(S/256)*256)!180 !208
140 CALL TITLE !236 !010
150 DISPLAY AT(10,1):"NAME O
```

```
F SOURCE D/V80 FILE?": "DSK1.";" FILE:""
:"NAME OF NEW MERGED FILE?": "DSK1.";" FILE:""
"" !158 !191
160 ACCEPT AT(11,4)SIZE(-1)VALIDATE("12345"):Z :: ACCEPT AT(11,15)SIZE(10)VALIDATE(UPPER,"_"):S$ !066 !097
170 IF S$="" THEN CALL GUN : GOTO 160 ELSE Y=ASC(SEG$(S$,1,1)): IF Y=95 OR Y<65 THEN CALL GUN :: GOTO 160 ELSE S$="DSK"&STR$(Z)&". "&S$ !08
```

```
2 !111
180 ACCEPT AT(14,4)SIZE(-1)VALIDATE("12345"):Z :: ACCEPT AT(14,15)SIZE(10)VALIDATE(UPPER,"_"):D$ !057 !088
190 IF D$="" THEN CALL GUN : GOTO 180 ELSE Y=ASC(SEG$(D$,1,1)): IF Y=95 OR Y<65 THEN CALL GUN :: GOTO 180 ELSE D$="DSK"&STR$(Z)&". "&D$ !062 !089
200 DISPLAY AT(16,1):"FIRST LINE NUMBER TO USE?": ""
```

(See Page 17)

EXTENDED BASIC—

```

(Continued from Page 16)
**** INCREMENT? **** ***** !15
5 !185
210 ACCEPT AT(17,2)VALIDATE(
DIGIT)SIZE(5):Z :: IF Z=0 OR
Z>32767 THEN CALL GUN :: GO
TO 210 !000 !019
220 ACCEPT AT(17,22)VALIDATE
(DIGIT)SIZE(3):Y :: IF Y=0 T
HEN CALL GUN :: GOTO 220 !14
3 !170
230 L=Z+Y :: OPEN #1:S$,DISP
LAY ,VARIABLE 80,INPUT :: OP
EN #3:D$,DISPLAY ,VARIABLE 1
63,OUTPUT !117 !145
240 C=0 !250 !020
250 IF EOF(1)THEN 300 !091 !
120
260 LINPUT #1:R$ :: IF SEG$(
R$,1,5)="*****" THEN 300 !23
7 !012
270 IF ASC(SEG$(R$,LEN(R$),1
))<32 THEN R$=SEG$(R$,1,LEN(
R$)-1):: GOTO 270 !225 !253
280 T$=CR$(L)&CHR$(147)&CHR$(
199)&CHR$(LEN(R$))&R$&CHR$(
0)!072 !100
290 PRINT #3:T$ :: L=L+Y ::
C=C+1 :: GOTO 250 !000 !019
300 T$=STR$(C):: PRINT #3:CR
$(Z)&CHR$(147)&CHR$(200)&CHR
$(LEN(T$))&T$&CHR$(0)!160 !1
86
310 PRINT #3:CHR$(255)&CHR$(
255):: CLOSE #1 :: CLOSE #3
!138 !169
320 STOP !152 !179
31530 SUB TITLE !240 !009
31540 DISPLAY AT(1,9)ERASE A
LL:"DATALETTER" :: CALL CHAR
(95,"00FF"):: CALL HCHAR(2,1
1,95,10)!115 !141
31545 DISPLAY AT(4,5):"CONVE
RSION UTILITY" !149 !182
31560 SUBEND !168 !202
32575 SUB GUN !086 !119
32580 ! GUN SOUND EFFECT SIN
GLE SHOT:JLS- 12/85 !178 !21
3
32585 CALL SOUND(100,110,0,1
30,5,34000,30,-8,0):: FOR L=
0 TO 30 STEP 15 :: CALL SOUN
D(-100,110,30,110,30,3400,30
,-8,L):: NEXT L :: SUBEND !1
42 !168
SUB HELP
29415 SUB HELP !150
29420 ! READS INTERNAL DATA
FILE FOR HELP JLS 4/89 !086
29425 ! DATA SHOULD BE 28 CH
ARACTERS LONG !045
29430 READ L :: CALL CLEAR !
054
29435 FOR X=1 TO 22 :: L=L-1
:: READ T$ :: DISPLAY AT(X,
1):T$ !083
29440 IF L=0 THEN X=22 !123
29445 NEXT X :: GOSUB 29450
:: CALL CLEAR :: IF L>0 THEN
29435 ELSE 29465 !087.
29450 FOR D=1 TO 100 :: NEXT
D !241
29455 DISPLAY AT(24,2):"PRES
S ANY KEY TO CONTINUE" !088
29460 CALL KEY(0,K,S):: IF S
<1 THEN 29460 ELSE RETURN !2
14
29465 SUBEND !168
SUB HELP2
29380 SUB HELP2(D$)!158
29385 ! PRINTS INTERNAL DATA
FILE FOR HELP JLS 2/89 !197
29390 ! D$ :DESTINATION PRIN
TER !235
29395 OPEN #9:D$,DISPLAY ,VA
RIABLE 136 !027
29400 READ L :: FOR X=1 TO L
:: READ T$ :: PRINT #9:T$ :
: NEXT X !073
29405 CLOSE #9 !159
29410 SUBEND !168

```

TRIALS OF A c99 BEGINNER

Complex arithmetic functions

By CHARLES E. KIRKWOOD JR.

Complex arithmetic will be discussed this month — input, output, addition, subtraction, multiplication, and division.

A complex number in the form $a+bi$ is composed of two components, a real part and an imaginary part. The components, a and bi , may be plus or minus. The i is generally used by the mathematician, while the engineer generally uses j for imaginary; that is, the square root of -1 . Remember that the square root of -1 squared is -1 .

Adding two complex numbers, $a+bi$ and $c+di$ gives $(a+b)+(c+d)i$ and subtracting gives $(a-c)+(b-d)i$. Multiplying is a little more involved. Algebraically, it is:

$$\begin{array}{r}
 a + bi \\
 c + di \\
 \hline
 ac + bci \\
 adi + bdi
 \end{array}$$

$$\frac{(ac-bd) + (bc+ad)i}{(c+di)(c-di) = (c^2 + d^2)}$$

Now, let us algebraically divide $a+bi$ by $c+di$:

$$\frac{a + bi}{c + di} \cdot \frac{c - di}{c - di} = \frac{(a+bi)(c-di)}{(c+di)(c-di)} = \frac{(ac-bd) + (bc+ad)i}{c^2 + d^2}$$

$$\frac{(a+bi)(c-di)}{(c+di)(c-di) = (c^2 + d^2)}$$

Five complex arithmetic functions are written and a sixth function, `strcat()`, renamed, `catstr()`, is included because it is used by one of the functions. The name change is made to prevent having two functions by the same name if the string library is also used in a program. A short program is also included to test the functions and show how the functions are used.

(See Page 22)

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TELCO (57) This program has been rated as one of the best telecommunications programs for the TI-99/4A. A user supported program that contains everything you need to upload and download data with your modem. Supports all baud rates and protocols.

APPLICATIONS

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(continued)

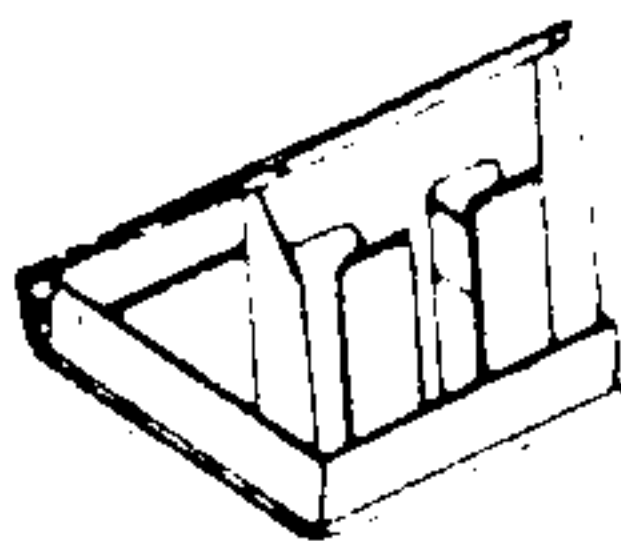
HBBREW TYPEWRITER (66) This program converts your 99/4A from english to hebrew. A great tool for religious studies. Can be combined with a screen dump program to print out the text from the screen. A great way to learn how to do the same with other languages. To get you in the mood, we also included a music/graphics program of "Fiddler" on this disk!

ARTIFICIAL INTELLIGENCE (40) This disk includes the famous computer program "Eliza" where the computer responds to your problems and questions in a manner that is almost human. Save a bundle on what you would pay a shrink for the same services. Also includes one of the better biorhythm programs so you can really take control of your emotional problems at one sitting.

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UTILITIES

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DUMPIT (3) This disk lets you copy a number of TI modules to disk. Editor Assembler module and Vidget (cartridge expander) recommended for best results. Some programming knowledge will be helpful!

TI DIAGNOSTICS (19) This program released by TI loads into the TI Mini Memory module and then lets you test your system. Better than diagnostics on a disk since if your disk system was not working properly, you would not be able to use it. Complete with all documentation on a second disk side.

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TI FORTH DEMO (17) This disk released by TI demonstrates the power of the programming language Forth for music and graphics. Requires 32K and Editor Assembler Module.

FUNNELWEB FARM UTILITY (42) This program from down under puts many of the most often used application and utility programs at your fingertips. Complete with documentation on two disk sides.

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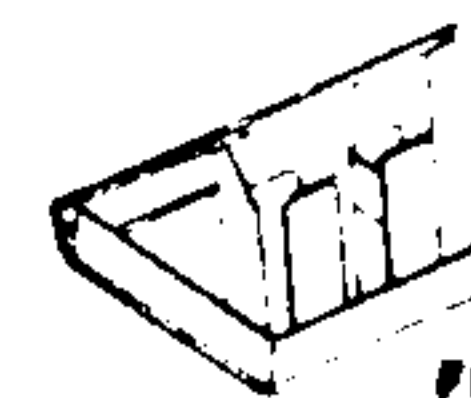
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An exciting game for use with the Tunnels of Doom module. Several Exbasic bonus games are included.

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This screen enhancement utility lets you do 40 columns, windowing, reverse scrolling, clock/alarm, and a whole host of other great tricks in exbasic. Fully documented.

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This classic adventure now available for the 99/4A is what led to the Zork series. Hours of text adventuring.

#103 SORGAN, THE 99/4A ORGAN

This program which is currently selling for big bucks on module turns your 99/4A into a electronic organ. Sound effects, different instruments and voices, chord forms, color graphics with complete control of all. (E/A)

#104 C99 COMPILER AND LIBRARY

This two sided (flippy) disk gets you into C programming with your 99/4A. Comes with a great collection of utilities such as text & graphics. (E/A)

#105 KING'S CASTLE +

A great arcade style assembly game formerly offered on module. Also includes an XB "Trek" game and a collection of sprite & graphics from Tigercub's Jim Peterson.

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One of the best D&D games around! You must destroy the Dark Lord to free your homeland!. Complete with documentation on disk.

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Ken Gilliland's music and graphics version of the TV theme and the three motion pictures (Exbasic)

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This disk prints out a five page TI Writer manual with everything you need to know to use TI Writer or the many clones such as 99Writer II. Additional aids for using this powerful word processor are included

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An excellent invoice preparation and printing program with instructions on how to modify it for your own business.

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(Continued from Page 17)

Briefly, the complex number in the form $a+bi$ is read into a string. The variables a and b are then separated into two floating-point variables. The desired arithmetic is performed. The resulting real component and imaginary components are converted to strings and concatenated to one string for output or other operations.

In order to simplify the operations and use fewer variable names, an array is used to store the real and imaginary components. The arrays x and y are input arrays and the result is z . The real component is stored into the zeroth element and the imaginary component (less i) into the first element. Remember a floating-point number occupies 8 bytes, so actually the two components are in a two-dimensional array.

The following declarations should be made:

```
float x[2][8],y[2][8],z[2][8];
char s[30];
int oper;
```

In writing the program and functions, we need to be concerned with the first dimension only of x , y , and z , for the second one never changes. Using w to represent any two-dimensional array for the two components and $oper$ to represent the operation, the five functions are:

fgetc (s,w)	inputs a complex number in the form, $a+bi$.
fsepxn (s,w)	separates the complex number into its real and its imaginary components.
fcmplx (x,oper,y,z)	adds, subtracts, multiplies, or divides the separated components.
fcbnex (w,s)	combines the two components back into its complex form $a+bi$.
fputc (w,s)	outputs the complex number.

```
/*Example program to test the functions.*/
#include DSK1.FLOAT1
main()
{
    char s[30];
    float x[2][8],y[2][8],z[2][8];
    int oper;
    puts("Release alpha lock.\n\n");
    puts("Enter first complex number*/;
    puts(" in the form  a+bi\n");
    fgetc(s,x);
    puts("\nEnter second complex number:\n");
    fgetc(s,y);
    puts("\nEnter operation:\n");
    oper=getchar();
    putchar(10);
    putchar(10);
    fcplx(x,oper,y,z);
    fputc(z,s);
    putchar(10);
    putchar(10);
}
```

```
fcplx(a,oper,b,c)
float a[][8],b[][8],c[][8];
int oper;
{
    float a0b0[8],a1b1[8],a0b1[8],a1b0[8];
    float b0b0[8],b1b1[8],b0b1[8];
    if(oper=='+')
    {
        fexp(&a[0][0],"",&b[0][0],&c[0][0]);
        fexp(&a[1][0],"",&b[1][0],&c[1][0]);
        return;
    }
    else if(oper=='-')
    {
        fexp(&a[0][0],"-",&b[0][0],&c[0][0]);
        fexp(&a[1][0],"-",&b[1][0],&c[1][0]);
        return;
    }
    else
    {
        fexp(&a[0][0],"*",&b[0][0],a0b0);
        fexp(&a[1][0],"*",&b[1][0],a1b1);
        fexp(&a[0][0],"*",&b[1][0],a0b1);
        fexp(&a[1][0],"*",&b[0][0],a1b0);
        fexp(&b[0][0],"*",&b[0][0],b0b0);
        fexp(&b[1][0],"*",&b[1][0],b1b1);
        if(oper=='*')
        {
            fexp(a0b0,"-",&a1b1,&c[0][0]);
            fexp(a1b0,"+",&a0b1,&c[1][0]);
            return;
        }
        else
        {
            fexp(b0b0,"+",&b1b1,b0b1);
            fexp(a0b0,"+",&a1b1,&c[0][0]);
            fexp(&c[0][0],"",&b0b1,&c[0][0]);
            fexp(a1b0,"-",&a0b1,&c[1][0]);
            fexp(&c[1][0],"",&b0b1,&c[1][0]);
            return;
        }
    }
}

/*Input a complex number*/
fgetc(s,x)
char s[];
float x[][8];
{
    gets(s);
    fsepcx(s,x);
    return;
}
```

(See Page 23)

c99—

(Continued from Page 22)

```

/*Output a complex number*/
fputc(x,s)
char s[];
float x[][8];
{
    fcbncx(x,s);
    puts(s);
    return;
}

/*Separate a+bi into two variables, a and b*/
fsepcx(s,x)
char s[];
float x[][8];
{
    char r[15],im[15];
    int i,j,k;
    i=0;
    j=0;
    while((s[i]!='+')&(s[i]!='-'))
    {
        r[j]=s[i];
        ++i;
        ++j;
    }
    r[j]=0;
    k=0;
    while(s[i]!='i')
    {
        im[k]=s[i];
        ++i;
        ++k;
    }
    im[k]=0;
    stof(r,&x[0][0]);
    stof(im,&x[1][0]);
    return;
}

/*Combine a and b to form a+bi*/
fcbncx(x,s)
float x[][8];
char s[];
{
    char t[15];

```

```

    int i;
    ftos(&x[0][0],s,0,0,0);
    ftos(&x[1][0],t,0,0,0);
    catstr(s,t);
    i=1;
    while(s[i]!=0)
    {
        if(s[i]==' ')
            s[i]='+';
        ++i;
    }
    s[i]='i';
    s[i+1]=0;
    return;
}

/*Concatenate two strings*/
catstr(s,t)
char s[],t[];
{
    int i,j;
    i=0;
    j=0;
    while(s[i]!=0)
        i++;
    while((s[i++]=t[j++])!=0)
        ;
    return;
}

```

Note that array arithmetic was used, pointers could have been used instead. Since these are floating-point functions, you might want to add them to Tom Bentley's library. Add `catstr()` also, since it is used by one of the functions. The following should also be added to FLOATI between `#asm` and `#endasm`:

```
REF FGETCX,FPUTCX,FSEPCX,FCBNCX,FCMPLX
```

The library can now be recompiled and reassembled so that it can be included during the link stage.

When is it that the right hand does not know what the left hand is doing, or vice-versa? There could be many answers to this question, but the one that strikes home is when the left hand types `4` when the right hand should have typed `8`. Floating-point variables use 8 bytes, not 4 as stated in the February c99 article.

For those of you who have both a Horizon RAMdisk and a Cor-Comp disk controller, the normal DSK1 can be accessed by using `dsk1` (TI Forum, The Computer Shopper).

LOADERS, MODULAR PROGRAMS, LINKAGES & OVERLAYS

Modular programs using the E/A system

By MERLE VOGT

This is the second of a five-part series on loaders, linkages and overlays.—Ed.

In this installment I will go into modular programming and linkages.

It is clear that some very large programs

have been created for the 99/4A. Consider "Legends," by Donn Granros. It far ex-

(See Page 24)

LOADERS, MODULAR PROGRAMMING, LINKAGES & OVERLAYS

(Continued from Page 23)

ceeds the RAM capacity of the 4A. So it is clear that it took modular programming to make this work.

Warning: It also required *overlays*, but I will get into that subject in part 4 of this series.

So, we break a large job into a number of smaller parts. Called *modules*, each has certain tasks to perform but is small enough to program without excessive effort.

Let's examine some procedures. I will create code for a *main* module — sometimes called *driver* — and two submodules. Nothing exotic, just short routines to illustrate principles without obscuring learning.

The main module is the master controller. There is a fragmentary example on page 413 of the Editor/Assembler manual. The key elements in this are the REFs and DEFs. Carefully study to understand how they tie together.

DEF means DEFine. In this command you name (DEFine) all the data items in this code block, which will be used in other modules, plus the name of the module. See this example:

```
DEF    MAIN
```

“MAIN” is the name given to the module. The DEF is the first line of the code. It defines “symbols,” each of which will have a RAM address in your code. (See Fig. 1) Note that lines 2 and 3 have a number of REF entries.

In MAIN we have DEFined only the module name.

The REFERENCE has a long list of symbols which are used in this module and are defined elsewhere. If any name is omitted from REF but is used in an instruction, then there will be a symbol hole in the code that the loader cannot resolve and you bomb out. We have REF'd to a utility — VMBW. The rest of the REF names will be defined in the two subroutines — ENTER1 and ENTER2. REF'd symbols appear in lines 13, 13, 16, 18, 19, 20, 21, 26, 27 and 28. At assembly time all these create holes (=0000) in the code. The loader fills these by tracking the REFs back to the matching DEFs. If you REF a symbol and don't have a DEF for it, the loader cannot work.

In the Editor/Assembler, initialization places a REF/DEF table in low RAM at addresses <3F38 through <3FFF. The DEFs that you create are placed into addresses <3F30, <3F28, <3F20, <3F18, etc., downwards, as required. This is where you look if debugging is necessary.

See Fig. 2 for the code for the subroutine ENTER1. Note the DEF and REF lines. See Fig. 3 for the subroutine ENTER2. Note the use of both

(See Page 25)

1		DEF	MAIN
2		REF	ENTER1,ENTER2,DATA1,MESSG
3		REF	WAIT4,VMBW,SCROL,SCROL2
4	FIN	DATA	10
5	ALL	TEXT	'THAT IS ALL - HIT A KEY
6	MYWS	BSS	32
7	MAIN	STWP	R12
8		MOV	R12,@EJ+2
9		B	@M2
10	EJ	LWPI	0
11		B	*R11
12	M2	LWPI	MYWS
13		CLR	@DATA1
14	LOP1	BL	@ENTER1
15		LI	R0,>200
16		LI	R1,MESSG2
17		LI	R2,16
18		BLWP	@VMBW
19		BL	@SCROL
20		BL	@ENTER2
21		C	@DATA1,@FIN
22		JL	LOP1
23		LI	R0,>200
24		LI	R1,ALL
25		LI	R2,24
26		BLWP	@VMBW
27		BL	@SCROL2
28		BL	@WAIT4
29		B	@EJ
30		END	

Fig. 1 — Main

COMMENTS

Line 1	defines the name of this module — MAIN
Lines 2-3	specify all of the REF symbols used in MAIN
Lines 4-6	set up data, text and work space
Lines 7-11	set up the start and end routines
Line 12	assigns main workspace
Line 13	zeroes a counter — DATA1
Line 14	displays the text of MESSG1 by executing module ENTER1
Lines 15-18	displays MESSG2 text
Line 19	uses a GROM scroll routine from ENTER1 (see lines 115-117, Fig. 4)
Line 20	branches to execute module ENTER2
Lines 21-22	tests to see if we are done yet
Lines 23-26	displays the end of job message on screen
Line 27	uses a GROM scroll routine from ENTER2
Line 28	executes a keypress wait routine (see lines 215-220)
Line 29	branches to the exit routine

LOADERS, MODULE PROGRAMS, LINKAGES & OVERLAYS

(Continued from Page 24)

REF and DEF.

These subroutine examples are not fabulous code. Examine the REFs and DEFs carefully. Note how they balance out. Most everything on line 2 in MAIN comes from lines 101 in ENTER1 and 201 in ENTER2. REF DATA1 on line 202 comes from line 101. VMBW and KSCAN come from the system.

Proceeding from here, the next step is to call up the Editor/Assembler editor and create the three *source* modules and save each to disk. Here are some sample names you may use:

DSK1.MAINSRCE

DSK1.ENTERSRCE

DSK1.ENTERSRCE

Then invoke the assembler and make *object* modules for each of the three source modules, saving each to disk. Also, get three listings on the printer. Object module filenames could be:

DSK1.MAINOBJT

DSK1.ENTEROBJT

DSK1.ENTERSOBJT

The next step is to invoke Load and Run, option 3 from the Editor/Assembler main menu screen. At the filename prompt, enter the object file names, one after the other to load all three modules. Then hit enter without entering a filename to proceed to the program name prompt.

Before we actually proceed, there is a big pit waiting for us to fall into. It made no difference in which order you created the source modules with the editor. Nor did it matter what order you assembled them in. But, at Load and Run time, look out! Examine the table below:

ENTER1	DEF	ENTER1,DATA1,SCROL2,SCROL
	REF	VMBW,GPLLNK
ENTER2	DEF	ENTER2,MESSG2,WAIT4
	REF	DATA1,KSCAN,VMBW,SCROL2
MAIN	DEF	MAIN
	REF	ENTER1,ENTER2,DATA1,MESSG2
	REF	WAIT4,VMBW,SCROL,SCROL2

You must load the object modules in the sequence shown, no other way. Look at ENTER2 — it REFs to four names, so you must load module ENTEROBJT first so that a DEF entry is made into the REF/DEF table for all those symbols needed in module ENTER2.

Only then can you load the ENTERSOBJT module. The loader can then resolve the symbol DATA1 that you coded in line 206 of ENTER2. While loading ENTER2, the DEFs of ENTER2, MESSG2 and WAIT4 are put into the REF/DEF table.

Now you can load module MAINOBJT. The loader can now resolve the REFs to symbols

(See Page 26)

```

101          DEF      ENTER1,DATA1,SCROL,SCROL2
102          REF      VMBW,GPLLNK
103  DATA1  DATA    0
104  MESSG1  TEXT    'I AM FROM ENTER1'
105  ENTER1  INC      @DATA1
106          MOV      R11,R9
107          LI       R0,>200
108          LI       R1,MESSG1
109          LI       R2,16
110          BLWP     @VMBW
111          BL       @SCROL
112          B        *R9

113  SCROL2  BLWP     @GPLLNK
114          DATA    >4D00
115  SCROL   BLWP     @GPLLNK
116          DATA    >4D00
117          B        *R11
118          END

```

Fig. 2 — ENTER1

COMMENTS

Line 101	DEFs the module name, a data item name, and two entry point names
Line 102	REFs names we need here
Lines 103-104	data and text items
Lines 105-106	adds 1 to the counter, and saves REG 11
Lines 107-110	displays MESSG1
Line 111	scroll one line up
Line 112	returns to caller
Lines 113-116	use GPLLNK to execute a line scroll routine in GROM #2, and exit
Line 117	exits this subroutine

```

201          DEF      ENTER2,MESSG2,WAIT4
202          REF      DATA1,KSCAN,VMBW,SCROL2
203  MESSG2  TEXT    'I AM FROM ENTER2'
204  WAIT2   TEXT    'READ MESSAGE - THEN HIT A KEY '
205  STAT    EQU      >837C
206  ENTER2  INC      @DATA1
207          MOV      R11,R9
208          LI       R0,>200
209          LI       R1,WAIT2
210          LI       R2,28
211          BLWP     @VMBW
212          BL       @SCROL2
213          BL       @WAIT4
214          B        *R9

215  WAIT4   CLR      @STAT
216          BLWP     @KSCAN
217          CB       @STAT,@STAT
218          JNE      WAIT4
219          CLR      @STAT
220          B        *R11
221          END

```

Fig. 3 — ENTER2

COMMENTS

Line 201	DEFs module name, a text item name, and an entry point name
Line 202	REFs DATA1, KSCAN, VMBW and SCROL2, all used in this module
Lines 203-205	creates two text items, and an equate needed
Line 206	adds 1 to counter DATA1, located in module ENTER1
Line 207	saves a return address in register 9 (see line 214)
Lines 208-211	displays the message WAIT2
Line 212	executes a two-line scroll
Line 213	transfers to keypress wait routine. Read messages, hit a key to proceed
Line 214	exits routine
Lines 215-220	keypress wait routine to allow you to read screen messages

LOADERS MODULAR PROGRAMS, LINKAGES & OVERLAYS

(Continued from Page 25)

ENTER1, ENTER2, DATA1, MESSG2, WAIT4, VMBW, SCROL and SCROL2 as they are found in the main module.

The resulting REF/DEF table should look like this, going downwards from address <3F20:

	TABLE ADDRESS	DEF NAME	TRUE ADDRESS
(ENTER1)	> 3F30	ENTER1	>XXXX
	> 3F28	DATA1	>XXXX
	> 3F20	SCROL2	>XXXX
	> 3F18	SCROL	>XXXX
(ENTER2)	> 3F10	ENTER2	>XXXX
	> 3F08	MESSG2	>XXXX
	> 3F00	WAIT4	
(MAIN)	> 3EF8	MAIN	>XXXX

The DEFs of VMBW and KSCAN were already in the table. I hope I have made this procedure clear.

Note that all of the *end* lines on all modules are "blank" END,S. Auto-start is invoked by having a module entry point name symbol on an *end* line. Here you could have coded "END MAIN." But, as shown, you must proceed to the *run* prompt and type MAIN then press the enter key to start executing. At the conclusion of the program, exit is made back to the Editor/Assembler. The screen is cleared, your message disappears and the message "Press enter

to continue" is displayed. This is why the "Key press wait" routine was included. Without that all you would see is some blinks on the screen and be back into the E/A system.

Let me make an important note. As shown, all three modules use the same workspace, which is allocated in MAIN. For large modules it would be much better to give each module its own workspace. This is easy as instructions to do this are provided. See below for changes to accomplish this.

A. in module MAIN change:

```
line 14      BLWP      @ENTER1
line 20      BLWP      @ENTER2
```

B. in module ENTER1 change:

```
line 104B   WS1       BSS       32
line 104C   ENTER1    DATA     WS1
line 104D           DATA     ENT1
line 105    ENT1      INC       @DATA1
line 106    ( delete )
line 112           RTWP
```

C. in module ENTER2 change:

```
line 205B   WS2       BSS       32
line 205C   ENTER2    DATA     WS2
line 205D           DATA     ENT2
line 206    ENT2      INC       @DATA1
line 207    ( delete )
line 214           RTWP
```

If you have been carefully checking the changes, you should have noted that in lines 19, 27, 28 and 212 the "BL" instruction has been retained. We can do this because the routines SCROL2, SCROL and WAIT4 are in a sense "sexless" in that they do not care which workspace is active when they execute.

I hope I have explained in enough detail and that I have clarified some of this stuff for you. I will be first to admit that it is tedious work. But do not assume that the 99/4A system is imposing a pointless effort upon you. We had to grind through all the exact same steps to build and run programs on the IBM 360/370 computers. I do not know if they have made it easier now in the PC machines. However, I am happily clear of that mess.

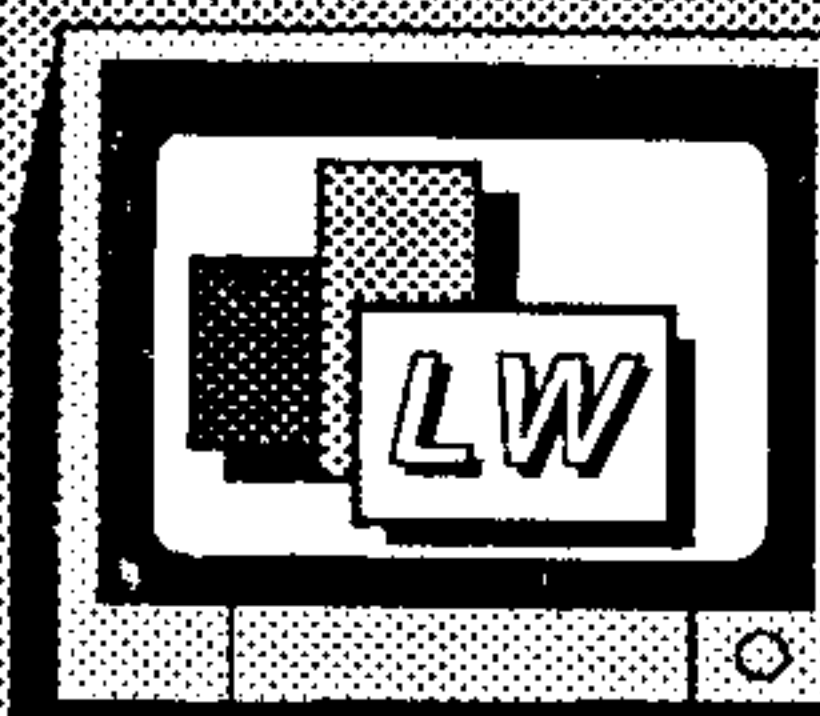
The little examples in ENTER1, ENTER2 and MAIN are not exotic programming. In real work the modules are normally large because we are breaking up some monster into more manageable chunks. But be cautious. Do not let them get so big that you lose control at that level.

Next month's installment is titled *Dynamic modular programming using Extended BASIC*.—Ed.

READER TO READER

Bill Buchanan, 11 South Alabama Rd., Lehigh Acres, FL 33936 would like fellow users in that area to write him, in order to form an informal users group.

Reader to Reader is a column to put TI99/4A and Geneve 9640 users in contact with other users. Anyone with a specific problem or question that may be answered by other readers is encouraged to submit an item. Be sure to address it to Reader to Reader, c/o MICROpendium, P.O. Box 1343, Round Rock, TX 78680.



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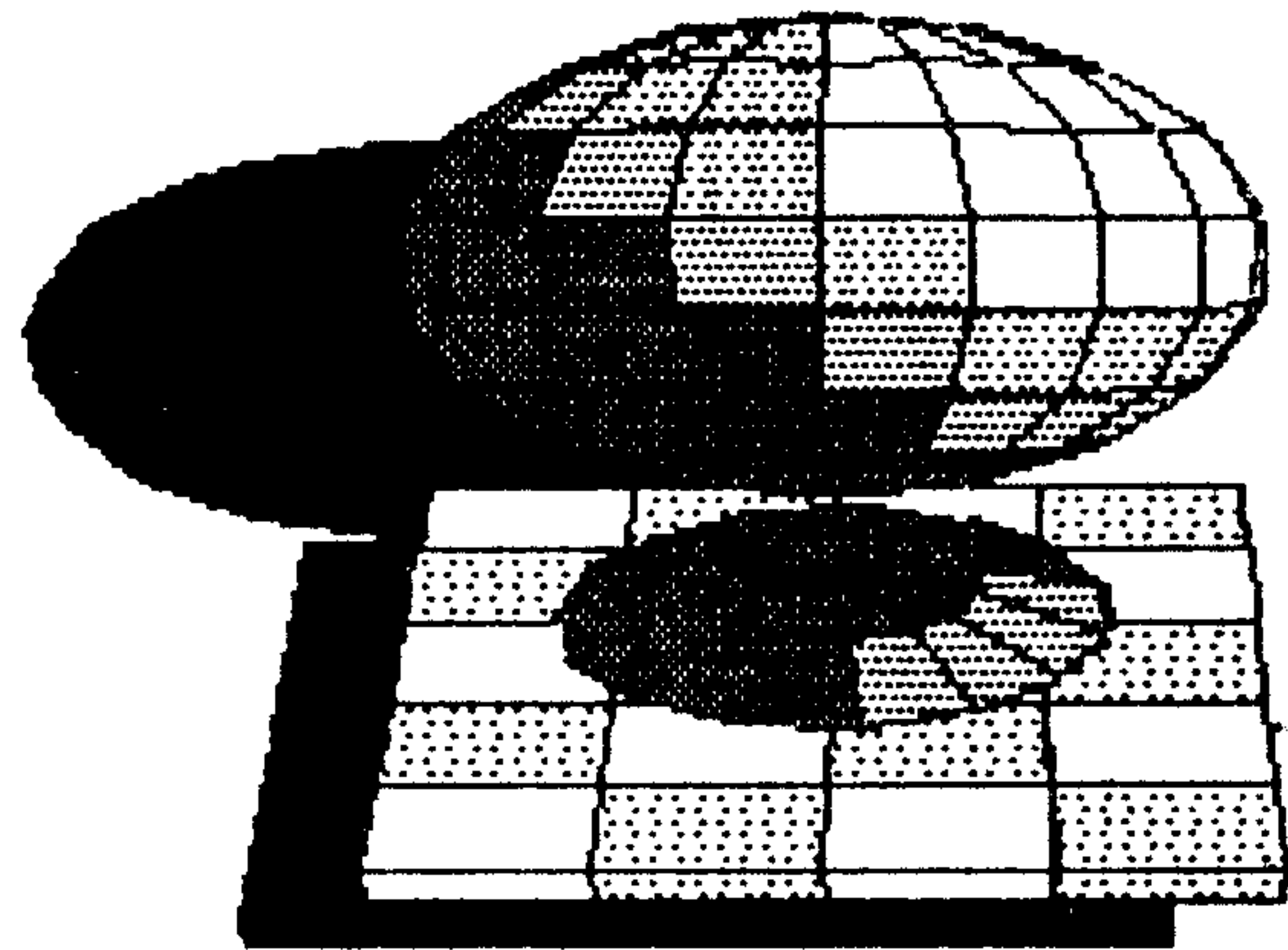
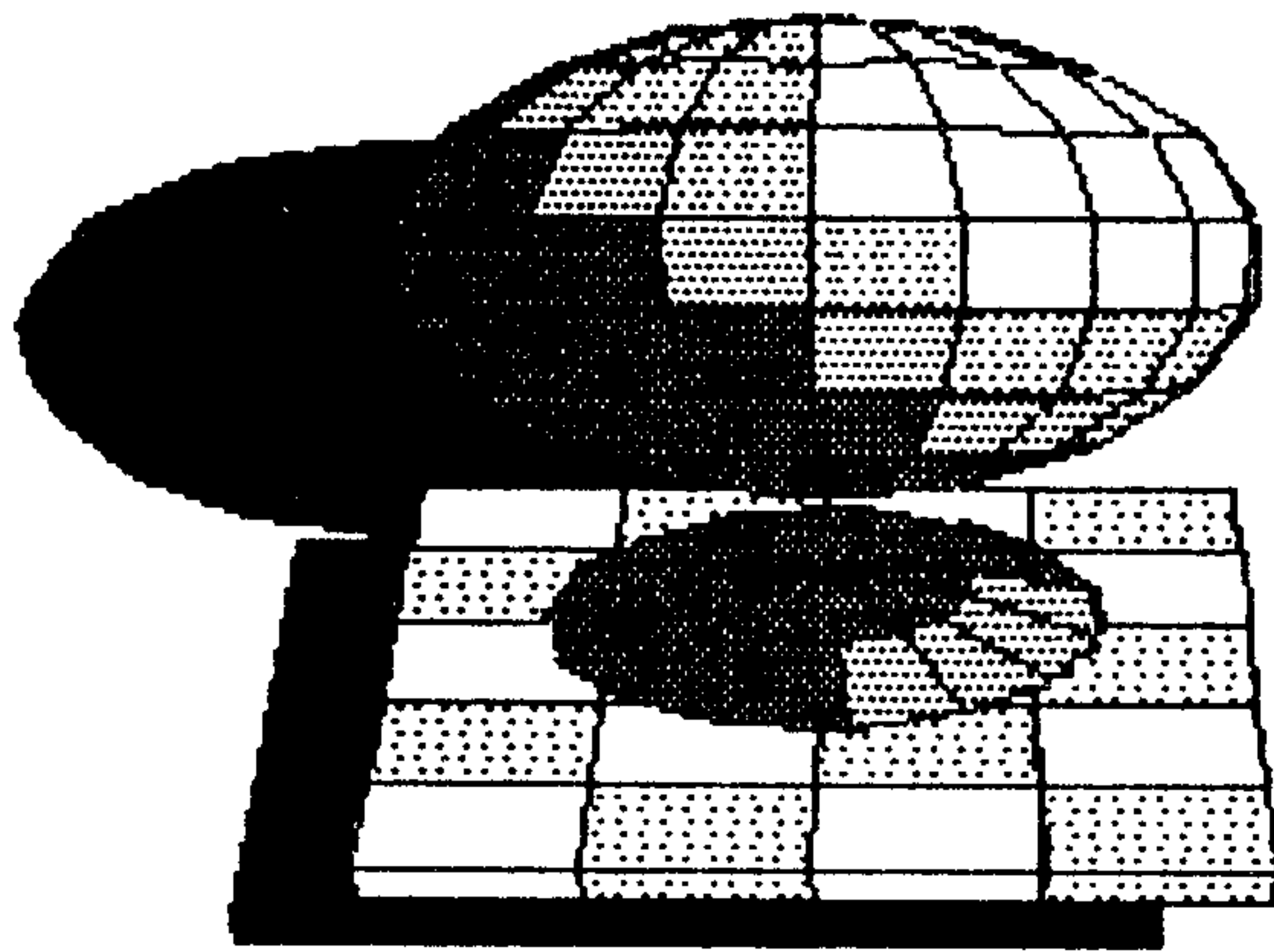
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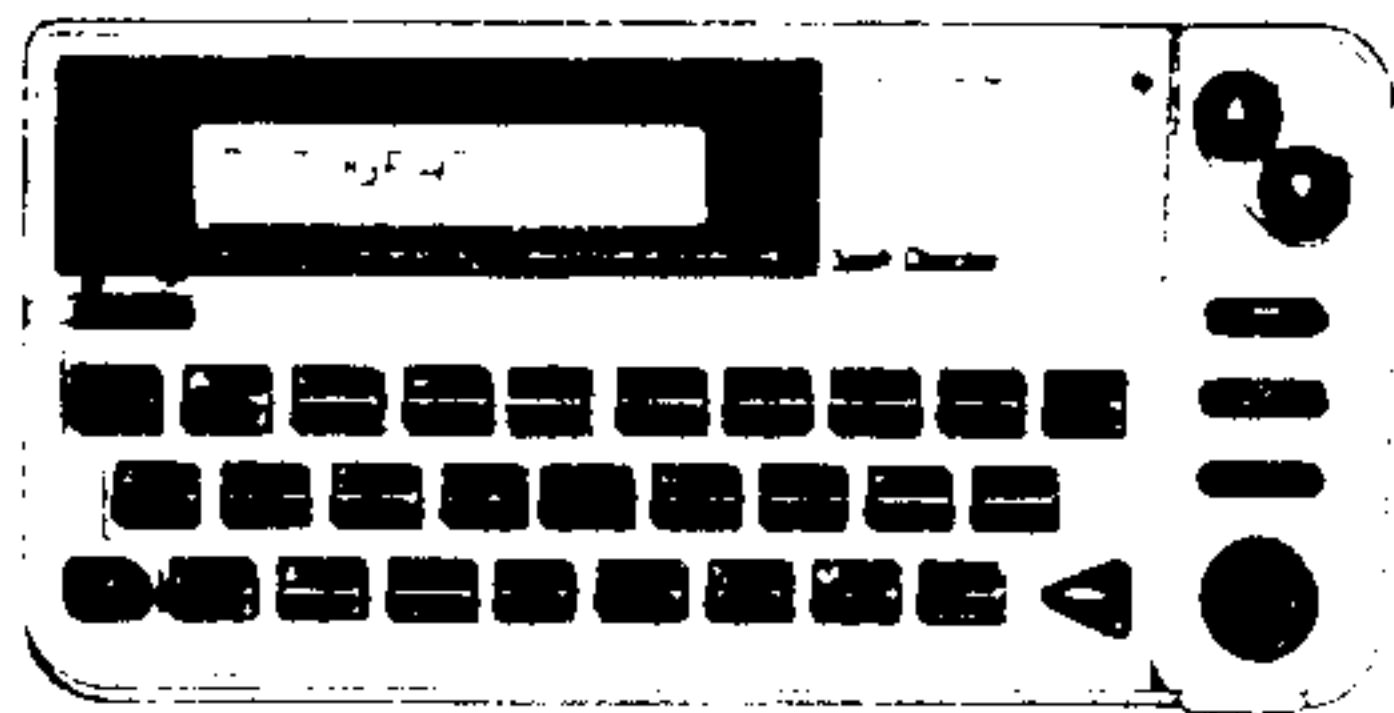
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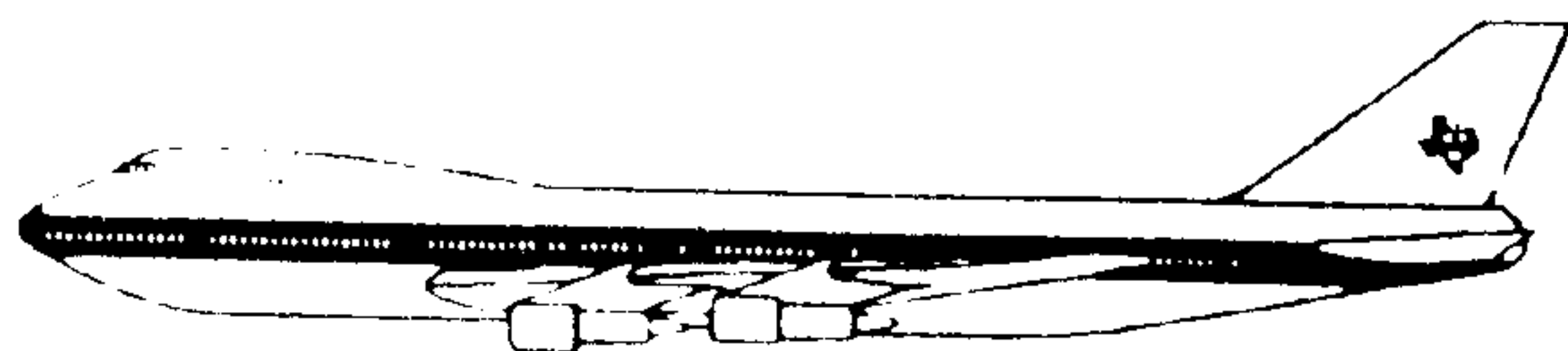
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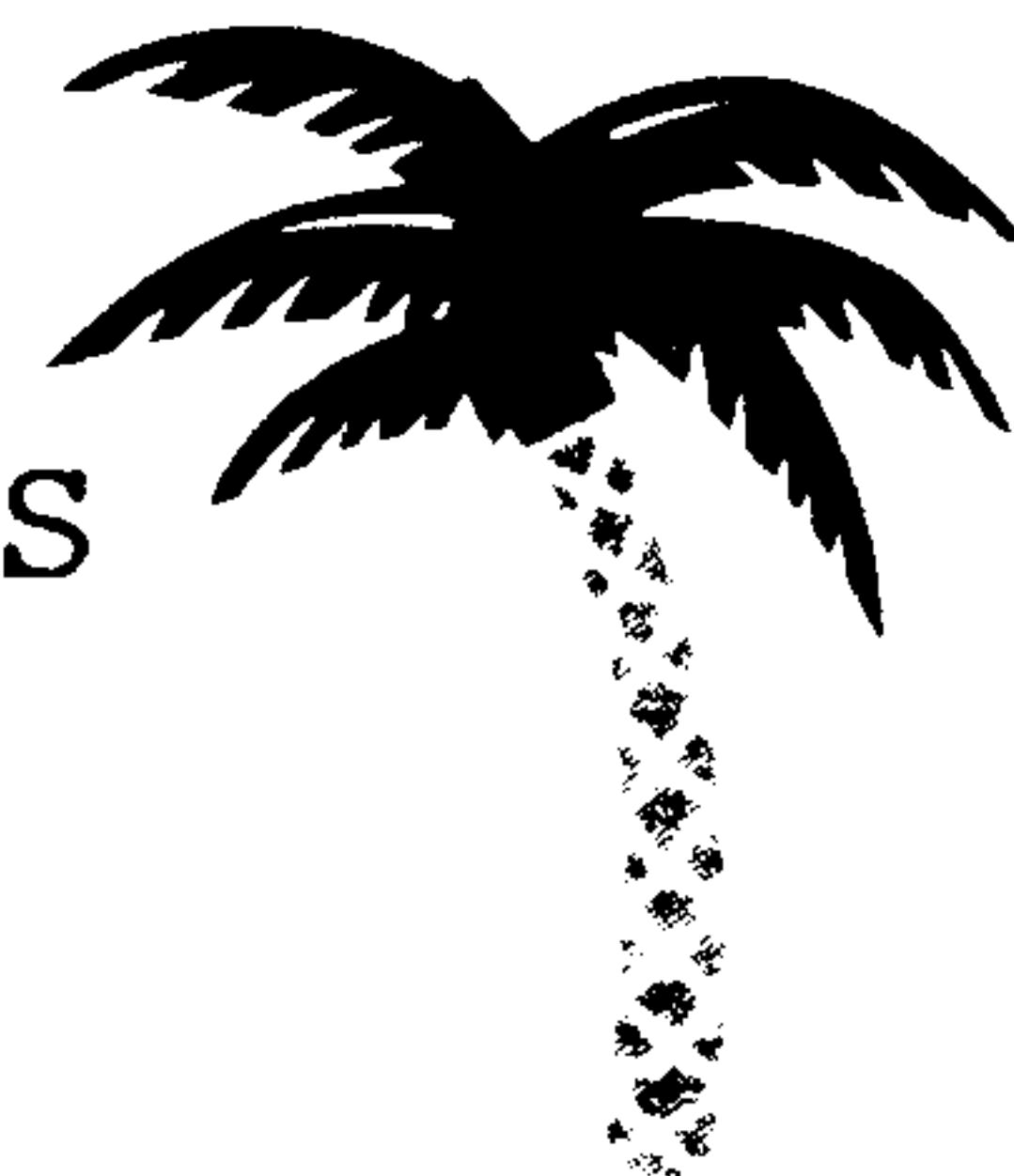
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 ON USNO 12/88/46 !096

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A0AF8C0AF0B02E0C0AD0B04C0B0201B0002B0420B200CB0200B4041B90207F2D1F      0002
A0B0EB834AB1316B06C0B9020B834AB1304B0200B1300B0420B2034B02027F2FBF      0003
A0B24B0064B04C3B04C4BD0E0B834BB06C3B38C2B04C3BD0E0B834CB06C37F254F      0004
A0B3ABA103B1004B04C4BD120B834BB06C4B04CAB04C9BC820C0AF2C00027F270F      0005
A0B50BC804C0004B058AB028AB0000B1602B0460C0C58B060ABC24AB0A197F2AEF      0006
A0B66BC049B0A11BC321C0002BC361C0004BC00CB0201B0001B0202C07D07F2D9F      0007
A0B7CBD820C0AF4C07D0B0420B2014BC3CCBC38DB058EB060EB83CEB133A7F21DF      0008
A0B92BC00EB0201B0001B0202C08D0BD820C0AF4C08D0B0420B2014B02017F2D1F      0009
A0BA8C07D0B0202C08D0B06A0C0C68B0280B0001B1301B10E9BC00FB02017F2B6F      0010
A0BBEB0001B0202C08D0B0420B2010B058FB83CEB131CBC00FB0201B00017F2B3F      0011
A0BD4B0202C09D0BD820C0AF4C09D0B0420B2014B0201C07D0B0202C09D07F2B0F      0012
A0BEAB06A0C0C68B0280B0002B1301B10E9BC00EB0201B0001B0202C09D07F2C3F      0013
A0C00B0420B2010B10C3BC00FB0201B0001B0202C07D0B0420B2010BC04D7F2FEF      0014
A0C16B604FB0281B0002B110BBC24AB0A19BC04FB0581BC089B0A12BC8817F27BF      0015
A0C20C0002BC88DC0004B058ABC04EB604CB0281B0002B110BBC24AB0A197F27EF      0016
A0C42BC089B0A12BC88CC0002BC04EB0601BC881C0004B058AB0460C0B567F286F      0017
A0C58B04C0BC800B837CB02E0B83E0BC2E0C0AF0B045BB04C3BD0D1BC0027F23FF      0018
A0C6EB9452B1401BD0D2B06C3B0581B0582B9452B1A0BB1B0DB0603B15F97F27AF      0019
A0C84BC080B9812C07D0B1A04B1B06B0200B0003B045BB0200B0001B045B7F2DBF      0020
A0C9AB0200B0002B045B7FB76F      0021
50AF6SORT 7FD1FF      0022
:          99/4 AS      0023
    
```

This sort routine may be entered on a word processor or through Editor/Assembler. Enter it exactly as it appears. If even a single character is mis-typed an error message will be generated when it is CALLED from the index program.

If entered on a word processor and saved as a D/V80 file,

it must be loaded into the Editor/Assembler editor and then saved as a D/F80 file. If entered on the E/A editor, save it as a D/F80 file.

This routine was written by John Clulow and David Romer several years ago.

GENEVE

XDIR does directories exceedingly well

Have you ever wanted to run a directory of all DV 80 files on a floppy or hard disk, have it listed 21 lines at a time on the screen and output it simultaneously to a printer?

With XDIR by John Johnson you can do just that. And more, or less, depending on what you want.

XDIR is an extended MDOS utility written in assembly language program that allows you to gain more control over directory operations than is possible with current versions of MDOS. It is thoroughly commented, and runs from the MDOS prompt.

Because of its length — more than 850 lines — we are able to publish only about half of it this month. The remainder will appear next month. Readers will find that most MDOS source code is very long compared to most assembly language programs written for the TI. We hope that no one will feel inconvenienced by having to wait until next month to finish the program.

XDIR is invoked by typing XDIR at the MDOS prompt (it must be located in the disk drive specified by the prompt). Here are the optional arguments that can be used with XDIR:

XDIR [path][afn/ufn][‘filetype’][pmsc?]

Afn stands for ambiguous filename and *ufn* represents unambiguous filename. An example of an ambiguous filename is: TEST??., with the question marks representing the last two characters in the seven-character filename. In addition to a question mark, an asterisk may also be used with *afn*, for example: TE*. This would result in any filename whose first two letters are TE to be included in the directory (of course, only one asterisk may be used in an *afn*. An unambiguous filename (*ufn*) is one that uses no wild-card question marks or asterisks.

Type refers to the file type. They are:

FILE TYPE	SWITCH
Display/Fixed file	'D
Display/Variable file	'd
Internal/Fixed file	'I
Internal/Variable file	'i
Program image file	'P
Subdirectory	'S

File types are specified by using the appropriate *switch*. Here is an example of how to run a directory of a disk in floppy drive A, the drive on which XDIR is placed, of all Display Variable files: XDIR 'd

To run a directory of all Display Variable files on a particular subdirectory on a hard disk, use this syntax:

XDIR C:\LETTERS'd

Beyond these file switches, which are supported by MDOS V. 1.14, XDIR supports several options, including:

OPTION	FUNCTION
/M	More
/P	Print
/S	Single directory
/C	Confirm
/?	Reminder of correct command syntax

Let's suppose you want to view the root directory one screen

at a time, output it simultaneously to a printer. Here is how the switches would be used:

XDIR /PM

Briefly, here is what the options do:

/P — outputs to screen. Can be stopped by pressing the P key.

/M — pauses directory after 21 lines are scrolled. Can be stopped by pressing M.

/S — reads the specified directory but not its subdirectories.

/C — prompts for confirmation of operation (no point in using it with XDIR but has applications with other extended utilities such as XDEL (planned for publication in future)

/? — brings up a description of the command syntax you are using

Pressing CTRL X will skip the next subdirectory when examining more than one directory.

The code follows. Use a word processor or the Editor/Assembler to input it.

XDIR

```

*      Title: XDIR II
*      Author: John A. Johnson
*      Date: 22 February 1989
*      Description: does an involved directory of a drive
*
WS      EQU  >F000      my workspace
UTILWS EQU  WS+32      another ws for routines
WORK    EQU  >F142      just a buffer for parsing etc
CR      EQU  13         a carriage return
LF      EQU  10         a linefeed
DXOP    CALL,0         define CALL as meaning XOP 0
*
LWPI    WS              use a fast workspace
LI      R0,1            get memory pages
LI      R1,7            i need a new computer to store directory names
LI      R2,1            local page 1
SETO    R3              if you got it, flaunt it
CALL    @MEM            request the ram from mdos
ABS     R0              check for errors
JEQ     GOTMEM          if none
BL      @TTYOUT         else paint message
DATA   NOMEM,0         'not enough memory'
B       @NOPRN3        then exit to mdos
*
GOTMEM  LI      R0,4     get address map
LI      R1,MAP         execution address of map
LI      R2,10          map is 10 bytes big
CALL    @MEM           get the info from mdos
LI      R1,MAP+1       now bank in the new ram pages
MOVB   *R1,@>F111     new ram for >2000 - >3FFF
MOV     *R1,@>F112     new ram for >4000 - >7FFF
MOV     *R1,@>F114     new ram for >8000 - >BFFF
MOV     *R1,@>F116     new ram for >C000 - >FFFF
*
CLR     @PRINT
CLR     @MORE
CLR     @SINGLE
CLR     @CONFRM
SB      @TYPES,@TYPES
SB      @TYPE,@TYPE
LI      R0,>2800        40 bytes for WORK length
LI      R1,WORK-1      patch it
MOVB   R0,*R1+         crunch command line and move it to WORK
MOV     @>0128,R2       get command line argument address
JEQ     NOGOT          if no arguments
CB      @2(R2),@-1(R1) see if command line is too long
JHE     NOGOT          if too long
MOV     R1,R5          else save address of WORK to R5
DEC     R5              to length pointer
MOVB   @2(R2),R6       argument length
SRL     R6,8           make it a word
INCT   R6              add two
NXTNOD MOV     R2,R3     save command address
INCT   R3              add 2

```

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XDIR—

(Continued from Page 33)

```

MOV R2,R4
AI R4,8
GETNOD MOV B *R3+,*R5+      start moving the data
DEC R6                      till count is done
JEQ GOTCMD
C R3,R4                    r3 holds node count
JL GETNOD                  if done this node, go get some more
MOV *R2,R2                 get next node
JMP NXTNOD
*
GOTCMD MOV B @WORK-1,R1    length of argument
JEQ NOGOT                  if no arg
SRL R1,8                   else make it a word
INC R1                     and add 1 for the loop conter
LI R2,50                   largest argument possible
LI R4,WORK                 address of command line text
*
* lets look for a slash
*
NOQ MOV R4,R5              save buffer start address
MOV R1,R6                  save arg length
CLR R7                     flag for passes
LI R11,5                   5 possible switches, p s, m, c or ?
FINDSL MOV R5,@NOPMS+2    save the slash address
CB *R5+,@SLASH            look for a slash
JEQ GOTSL                  if we have one
DEC R6                     else decrement total arg count
JNE FINDSL                and if we're not done, look some more
JMP GETFIL                if we are done, blow this routine off
GOTSL CB *R5,@P            we found a /, now look for a 'P'
JEQ YESP
CB *R5,@LILP              a little p?
JEQ YESP
CB *R5,@M                 more?
JEQ YESM
CB *R5,@LILM
JEQ YESM
CB *R5,@S                 s?
JEQ YES
CB *R5,@LILS
JEQ YES
CB *R5,@C
JEQ YESC
CB *R5,@LILC
JEQ YESC
CB *R5,@QMARK
JNE NOPMS
BL @TTYOUT
DATA HELP,0
B @NOPRN3
YESC SETO @CONFIRM
JMP SWAGN
YESM LI R12,21
MOV R12,@MORE
JMP SWAGN
YESP SETO @PRINT
JMP SWAGN
YES SETO @SINGLE
SWAGN INC R5                over the found arg
DEC R11                   arg counter
JNE GOTSL
*
NOPMS LI R5,0              back to the /
MOV B @H32,*R5            and patch over it with a space
*
GETFIL CB *R4+,@H32       look for a space in the command line (filename)
JLE GOTFIL                if ASCII 0-32, we have the filename
DEC R1                     don't have it yet, count down
JEQ NOGOT                 we done with arguments?
DEC R2                     we done with the 40 possible bytes of filename?
JNE GETFIL                if not yet
NOGOT LI R4,WORK+1
GOTFIL DEC R4              back to the previous byte
MOV B @NULL,*R4+         put a null after filename
*
LI R0,8                   parse the filename
LI R1,WORK                get logical filename from here
LI R2,LEN+1               and put hardware name in the pab
CLP R3                    what the hell is an alias prefix?
CALL @UTIL                go do the parse
*
* see if a filename exists in the command line
*
OKPTH CLR @STLEN           no string length yet
MOV @LEN,R1               get length of total filename
CLR R2                    counter for bytes after the '.'
FNDDOT CB @FNAME-1(R1),@DECIMAL
JEQ GOTDOT                if we have a dot
INC R2                    bytes in the filename
DEC R1                    original bytes to device.filename
GOTDOT JNE FNDDOT         is filename too big?
CI R2,10
JLE OKLEN                 yes, exit to mdos
B @EXIT
OKLEN MOV R1,@LEN         patch name length to show path only
MOV R2,@STLEN            do we have anything?
JEQ NOSRCH                if not, no search involved
*
* r2 contains the byte count of the string to search for
* r1 contains the offset of the string from FNAME
*
LI R0,STRING
MOV R2,R4                 save length of string
GETST MOV B @FNAME(R1),*R0+ Put filename in string buffer
INC R1
DEC R2
JNE GETST
*
* now look for a tick
*
FTICK CB @STRING-1(R4),@TICK
JEQ YETICK
DEC R4
JNE FTICK
JMP NOSRCH
YETICK MOV B @STRING(R4),R5
DEC R4
MOV R4,@STLEN            save new filename length
CB R5,@LILP
JNE NOLP
LI R5,'P'
JMP NOLILS
NOLP CB R5,@S
JEQ PUTANG
CB R5,@LILS
JNE NOLILS
PUTANG LI R5,'<'         if an S, then an angle
NOLILS LI R6,6            will hold the type number
FTYPE CB R5,@TYPES(R6)  is it a match?
JEQ TMATCH
DEC R6
JNE FTYPE
JMP NOSRCH
TMATCH SWPB R6
MOV B @R6,@TYPES        show the type of file to search for
*
NOSRCH MOV B @NULL,@DIRTBL show no sub-directories yet
CLR @HITDIR
ABS @PRINT
JEQ OPENIT
LI R0,PRN
CALL @IO                 open printer
BL @PRNCR                and do a crlf
LI R0,60
MOV R0,@PLINES          initialize lines per page
*
OPENIT ABS @CONFIRM       we confirming?
JEQ NOCF1
BL @TTYOUT
DATA CMSG1,0            view the dir....
MOV @FNAME-2,@NOCF2
BL @TTYOUT
DATA FNAME
NOCF2 DATA 0
BL @TTYOUT
DATA YNA,0
NOYNA BL @GETKEY
ANDI R1,>DF00           make uppercase
CB R1,@Y
JNE NOCFY
BL @TTYOUT
DATA Y,3
JMP NOCF1
NOCFY CB R1,@N
JNE NOCFN
BL @TTYOUT
DATA N,3
LI R0,30000
DELAY DEC R0
JNE DELAY
JMP NOCF3
NOCFN CB R1,@A
JNE NOYNA
BL @TTYOUT
DATA A,3
CLR @CONFIRM
NOCF1 LI R0,FILE          point to the file pab
MOV B @NULL,*R0         patch for an open
CALL @IO                 go open it
MOV B @ERBYTE,R1        do we have an error?

```

(See Page 35)

XDIR—

(Continued from Page 34)

```

*
JNE EXIT          if something is in ERBYTE we do
*
FIRSTR LI R0,FILE
MOV B @READ,*R0  throw away the first record
CALL @IO
*
READIT BL @GETKEY  check for a key
CB R1,@CTRLS    wanna pause?
JEQ PAUSED
CB R1,@CTRLX
JEQ MORDIR      if ^x, go check next dire
ANDI R1,>DF00
CB R1,@M
JNE NORM
CLR @MORE
JMP CONTIN
NORM CB R1,@P
JNE CONTIN
CLR @PRINT
BL @PCLS
JMP CONTIN
PAUSED BL @GETKEY
CB R1,@CTRLQ
JNE PAUSED
*
CONTIN LI R0,FILE  point to the pab
MOV B @READ,*R0  configure pab for a read
CALL @IO        do a read
MOV B @ERBYTE,R0 get the error
JEQ READIN     if no error
*
MORDIR LI R0,FILE
MOV B @CLOSE,*R0
CALL @IO      go close present file
*
* look to see if any more dirs need displaying
*
NOCF3 CLR @HITDIR
MOV @NXDIR,R0  get next directory name location
MOV B *R0,R1  do we have more?
JEQ CLOSIT    guess not
LI R1,FNAME
CLR @LEN
GETDIR MOV B *R0+,*R1+  filename length in pab
JNE OKDIR    move this directory name to pab
MOV R0,@NXDIR  if it's not a null keep processing it
JMP OPENIT   else show next dirname location
OKDIR INC @LEN
JMP GETDIR
*
CLOSIT LI R0,FILE  else close file
MOV B @CLOSE,*R0  put close opcode in the pab
CALL @IO        do the close
ABS @PRINT      we printing?
JEQ NOPRN3     if not
BL @PCLS
NOPRN3 BL @TTYOUT  else...
DATA NOMEM,2  ...print a CRLF
EXIT BLWP @0    and return back to mdos
PCLS LI R0,PRN
MOV B @CLOSE,*R0  patch for a close
CALL @IO        close the printer
RT
*
* ok, let's look at the record just read into RECBUF
*
READIN LI R0,>2020  first space over the line buffer
LI R1,LINE
LI R2,40          with 80 spaces
CLRLIN MOV R0,*R1+
DEC R2
JNE CLRLIN
*
OKREAD CLR R8
LI R10,RECBUF  point to the i/o buffer
MOV B *R10+,*R8  see if we have a filename
JEQ MORDIR     if there are no more filenames
SRL R8,8       make filename length a word
MOV R8,@PTHNAM
LI R9,NAME     point to destination for move
MOVFIL MOV B *R10+,*R9+  move the filename into the screen buffer
DEC R8
JNE MOVFIL
*
* get the file type
*
GFT CLR @DORT
BL @GETFPT    go get the floating point number
MOV R1,@ATTR1  save for protected check
ABS R1        absolute value of whatever is in r1, will be 1-6

```

```

MOV R1,@ATTR2
SWPB R1
MOV B R1,@TYPE
SWPB R1
LI R9,DECPLC
MOV B @DECIMAL,*R9+  put a '.' in the buffer
MOV B @TYPES(R1),*R9
CB @ANGLE,*R9+
JNE NODIR          if it was a 0, it was a dir
DEC R9            back to the null
MOV R9,R1
LI R0,ANGLE
LI R6,11
PMSG MOV B *R0+,*R1+  <directory>
DEC R6
JNE PMSG
*
* we have a sub-directory - save the whole pathname
* unless we are doing single level processing
*
ABS @SINGLE
JNE ONEDIR
MOV @DIRLOC,R6  get present dir-name location (DIRTBL)
LI R7,FNAME    get present pathname
MOV @LEN,R8    and it's length
MOVPP1 MOV B *R7+,*R6+  move pathname to table
DEC R8        the present pathname length
JNE MOVPP1   if not done, continue moving present path
LI R7,NAME   now get dir name and add it to table name
PTHNAM EQU $+2
LI R8,0     for this length
MOVPP2 MOV B *R7+,*R6+  into the path buffer
DEC R8
JNE MOVPP2
MOV B @DECIMAL,*R6+  put the dot at the end of dir name
MOV B @NULL,*R6+   patch buffer to show end of path
MOV B @NULL,*R6   and one more to show no more dirs
MOV R6,@DIRLOC   show next available dirname location

```

The remainder of this program will appear in the May MICROpendium.—Ed.

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Checkbook Manager III

It's almost too good to be true

By HARRY BRASHEAR

I told you in MicroReviews I had found a checking account program that I felt was very good. While I had not yet fully checked the program out, based on what I had seen, I thought I had stumbled onto something special. I truly believe now that I have.

How would you feel if somebody handed you a checkbook program with four main menus, consisting of 31 functions? Those 31 functions break down into more than 50 sub-functions, and they *all* operate slick as a whistle. To further boggle your mind ... suppose the program was loaded with more than 300 account entries, just so you could have something to practice with.

I don't know about you, but I would want to take a look at it just for the experience.

The program I am describing is Checkbook Manager III, by Irving Crowley. Mr. Crowley is very much into the mainstream of computer technology, particularly in the medical field. He has a real love for the TI and wrote this program primarily for himself some time ago. A few people liked it, so he put it into the fairware net. It

is now up to version 5.4 and, I would assume, still going. Although there have been a few bugs to clean up along the way, an update usually represents a added application.

Before I get into the specific menus, I'm going to give you a quick, general idea of what the program will do for you.

Obviously, it's a program to handle your personal checking account, but it will just as likely handle your business too. I'm giving consideration to changing my own business accounts over to CBMIII. The one I have been using for eight years that I made myself, is nice, but I think this is better.

Assuming that you keep one year on a floppy, you could put more than 4,000 transactions on a DSSD disk. That's enough for any small business, and in reality, I think about 10-20 percent of that is all you would need.

The one feature that makes the program so valuable is that you may categorize every check you put in. You are allowed 40 categories/accounts, each with a alpha designation, and you should use these as you enter your checks. In another area of the program, you can search for, and load in all of a given category. You can do the same thing by month or payee too. The category files can be printed with totals, saved to a file, or, and get this, changed

to a D/V80 file for TI-Writer compatibility. This guy has thought of everything! Oh yes, and when you enter the categories into the log, you can also enter a budget amount that you can keep track of.

Here's a sampling of the screens you will be involved with. Please note that 95 percent of the program is in 40-column mode.

DATE	C	NUMB	PAYEES (PAGE 1)	*	AMOUNT
0101	D	0001	CREDIT	*	232.59
0101		5589	PACE CAR	*	29.00
0102	L	5590	GAYFERS	*	21.92
0102		5591	GAYFERS	*	13.89
0105		5592	KOHNS GROCERY	*	31.73
0105	F	5593	PONDEROSA RESTAUR	*	7.90
0106	P	5594	HAROO DRUG CO.	*	42.32
0106		5595	KOHNS GROCERY	*	41.44
0107	E	5596	CASH	*	15.00
0107	D	1418	DEPOSIT	*	813.19
0107	D	1419	CREDIT	*	300.00
0107	E	1420	ATM WITHDRAWAL	*	55.00
0107	F	5597	FAMILY MART	*	176.49
0107	H	5598	HAROLD L SMITH	*	227.18
0107	H	5599	MID-STATE HOMES	*	127.80
0108		5602	KOHNS GROCERY	*	15.20
0108	M	5603	DR PORTERFIELD	*	145.00
0109	D	1443	DEPOSIT	*	539.90
0109	E	1444	ATM WITHDRAWAL	*	20.00
0109		5604	KOHNS GROCERY	*	5.70

Press: <DEL INS PROCD AID REDO ESC P>

The screen above is from an area where you can delete, insert or just view the transaction records. The letters in the second column are for the categories, and the asterisks indicate that the check has been reconciled. As in most areas of the program, pressing "P" will allow a screen dump.

MEMOS - PAGE 1

1987 W.I. & C.A. CROWLEY MEMOS		
01/01/87	RPR COMMISSIONS	106.00
02/14/87	SYS-3 PAYMENT	10.00
02/19/87	SYS-3 PAYMENT	8.00
02/10/87	RPR COMMISSIONS	50.00
05/16/87	FED IRS REFUND	1825.65
05/31/87	RPR COMMISSIONS	92.00
06/15/87	REBATE FOR TRIP TO WILMINGTON, DE	571.50
06/22/87	ALA IRS REFUND	285.35
06/30/87	RPR COMMISSIONS	70.00
.....ETC....		

Press: <DEL INS PROCD AID REDO ESC P>

Above is a screen dump of the Memos editing function. This is a separate area where you can write memos on certain transac-

(See Page 37)

Review

Report Card

Performance.....A+
 Ease of Use.....A
 Documentation.....B
 Value.....A+
 Final Grade.....A

Cost: \$10

Manufacturer: W. Irving Crowley, Lost Canyon Road, Pine Level, Alabama 36065

Requirements: Console, disk drive, memory expansion, Extended BASIC

CHECKBOOK MANAGER—

(Continued from Page 37)

tions if the Payee space is not enough.

SYSTEM-III: Reconcile Account

```

=====
Enter date ..... 01/25/89
Enter last statement balance . 223.00

```

Account To Date Summary

```

Outstanding checks ..... 0.00
Uncredited deposits ..... 0.00
Files balance ..... 258.08
Reconciled balance ..... 223.00

Error correction ..... -35.08

```

```

=====

```

Press <REDO>, <P> to print, else <ESC>

The Reconciliation screen is shown above. The numbers I used were arbitrary, so the bottom line shows that a correction is needed. (Sorry 'bout that folks, but I don't have the time to get too perfect here.)

I need to tell you that one of the functions, Brute Balance, apparently starts at the top of your entries and works its way to the bottom. I started this function up and stared at drive No. 1 until my wife, with a gleam in her eye, called the mortician. Don't be fool enough to try this with 300 plus entries in the program ... unless of course you want to go to supper or something.

The next example you see is the result of a two pass collation. This is the result of an organized breakdown on a given month. The program searches for everything that takes place in Jan (the month I requested), separates all of the categories, then sorts them according to check number. This goes into a separate file, and again can be printed out. I took this opportunity to check out the D/V80 conversion function, then I loaded the resulting file into this review. Everything obviously worked like a charm.

```

=====

```

```

0101 0001 CREDIT * 5051.68
0103 B 4406 Jerry Robertson * 271.80
0110 B 4412 Jerry Robertson * 271.80
0117 B 4424 Jerry Robertson * 271.80
0124 B 4427 Jerry Robertson * 271.80
0131 B 4432 Jerry Robertson * 271.80
0104 D 0002 DEPOSIT * 1185.63
0111 D 0003 DEPOSIT * 707.58
0114 D 0004 DEPOSIT * 160.00
0116 D 0006 DEPOSIT interest * 22.81
0118 D 0005 DEPOSIT * 1127.42
0125 D 0007 DEPOSIT * 1030.52
0105 F 4407 Etowah Florist * 60.00
0105 F 4408 Blair's Bo-Kay * 47.50
0111 H 4415 Meadowbrook c.wee * 85.16

```

```

0113 H 4416 Torbett L.Call ut * 84.63
0113 H 4417 Arron Crumley car * 200.00
0113 H 4418 Jimmy Gordon * 200.00
0120 H 4425 Spencer's xmasbak * 595.08
0121 H 4426 West.Auto Newman * 81.70
0110 J 4413 Barbara Armons * 50.00
0117 J 4423 Barbara Armons * 50.00
0124 J 4428 Barbara Armons * 50.00
0131 J 4431 Barbara Armons * 50.00
0131 L 4429 WORLD CHRIST BROA * 150.00
0117 P 4422 S.C.Bell * 30.04
0105 R 4409 BVACK Broadcast * 115.00
0105 T 4411 20 cent. Christia * 3.18
0110 T 4414 Rule Furn. tapes * 13.90
0113 T 4419 Hurt Pub.posters * 39.84
0117 U 4420 Et.Utilities * 280.05
0101 V 4405 State Farm Ins. * 127.50
0117 W 4421 Conoco gas * 22.01
0101 b 4401 Garren Realty ren * 225.00
0101 b 4402 Jerry Robertson * 268.70
0105 c 4410 U.S.Post Off fee * 50.00
0131 h 4430 chat.child home * 96.15

```

```

Subtotal this file: 13620.08

```

I want to note just a couple of other operation features before we go into the menus. When you put money into the bank, DEPOSIT must be the first word used in the memos column. CREDIT can be used to indicate interest on one of that type of account. The program looks at these words for instructions, so they must be used. Anything else is considered a check and the amount is deducted. Also, when entering the check numbers, you put in the number of the first one and the program automatically increments from there. A nice feature.

Now, here's a quick rundown of the entire menu.

1. System Documentation: This will print the full docs to your printer or to the screen.
2. Log/Review Transactions: Enter new account transactions or review past entries.
3. Files Editor: Insert or delete transactions. The program rebalances the full account on completion.
4. Reconcile Account: This is where you check off your returned checks and make sure everything is shipshape.
5. Re-number Records: You might want to renumber the records after deletions or whatnot. Record numbers are often required for searches.
6. Backup files: This section will backup/copy the records of the four major files. It does it by loading the records into an array and then reading them out to a new file. This is assumed to be more accurate than "file copying."
7. Write/Review Memos: This is where you can enter additional information and notes on your finances.
8. Printer Addressing: Change the printer designation, which reads out to a small file for future reference.

(See Page 41)

TI-Runner Level Editor

Put the excitement back into the race

By BOB CARMANY

Okay, you have just finished yet another round of TI-Runner and once again it was a bit less of a challenge than the last time you played it. It seems that once you figure out the screen patterns, games become a bit boring, don't they? In fact, they usually end up at the back of the disk box and are relegated to the "once every six months" playing cycle. There must be some way to put some life into playing an old favorite. Well, there is!

The TI-Runner Level Editor will allow you to program an unlimited number of new and different screens and "juice up" the well-worn TI-Runner game.

Once you have decided you should get a TI-Runner editor program, the next question is: "Why should I get a commercial software program?" After all, there are a couple of "fairware" versions floating around that do the very same thing — or do they? Let's take a look and see!

Performance: Who said, "I have some good news and some bad news?" This software package is sort of like that and we will start with the "good news" first. The program actually works well. Everything does what it is supposed to (with a few exceptions to be noted later). Since it is an XB program with some Assembly routines tied in, everything moves quickly and smoothly.

The program is broken down into three basic segments. There is a Level Management portion with a sub-menu that allows the user to manipulate both the 50 original TI-Runner levels plus an additional 44 advanced levels. You can change any of them at will or create new files. There are extensive instructions in the documentation for creating your own levels. There are even some rather nasty hints for the devious mind — transparent ladders, anyone? In fact, you can change colors of the screen itself as well as the treasures and ladders that appear on it. One of the features I enjoyed the most was the ability to delete or copy individual levels without having to redo an entire file.

The second segment is the File Management section. This is something that the more rudimentary editors lack. Basically a disk manager program, it lets you disk

Review

Report Card

Performance	B
Ease of Use	A+
Documentation	A+
Value	B
FinalGrade	B+

Cost: \$18.75

Manufacturer: EB Software, 12912 Villa Rose Dr., Santa Anna, CA 92705

Requirements: Console, Monitor or TV, Disk System, memory expansion, Extended BASIC, TI-Runner (to play the finished screens)

drives, create filenames, delete files or select the current file as your working file. It is nice to be able to manipulate the files you have worked on without having to exit from the program and crank up another program just to do some elementary disk maintenance.

The third segment of the program is a bit unusual. TI-Runner uses a screen file called "LEVEL28" to store the various difficulty levels. Prepare a Screen File for Play is an easy way rename the file appropriately without having to exit from the program. Just make sure you send it to the right disk drive!

All of these options perform well. Why the "B"? Well, I would expect some errors (as opposed to "bugs") in a non-commercial program but not in something produced commercially. Background becomes "background" in the Level Management portion of the program. Inserting a space between the last character in each of the input prompts and the default choice would make the program much more pleasing to the eye. After all, we are expecting people to spend money on the program!

In addition, the menu options in the documentation don't match those on-screen in the File Management part of the program. Change Drive becomes Change Disk on-screen and Pick Current Screen File becomes Pick Default Screen File. I know,

these are all minor points but the program should have been more closely proofread before it was released. Those are just the minor annoyances.

I also question whether the Prepare File option wouldn't be more logically included in the File Management part of the program than as a separate main menu option. Again, that is another relatively minor point.

The most serious shortcoming in the program is the error handling. For example, if you try to save a file too big for the available disk space, the program saves as much of the file as possible and then BREAKs with an ungracious "burp." A couple of ways exist to solve this problem and allow a more elegant and graceful exit.

Ease Of Use: The TI-Runner Level Editor is, on the other hand, a very easy program to use. Everything is menu-driven from selecting the options within the various program segments to selecting color changes for the ladders and treasures. You don't have to wade through reams and reams of documentation or experiment for hours on end to get the program to do what you want it to do. It is "bug-free" and with little preparation anyone can be creating his own TI-Runner screens within a few minutes of unwrapping the package. A resounding "A+!"

Documentation: The program comes with a booklet of some four double-sided pages. The instructions are concise and to the point. System requirements, introduction and descriptions of the program segments follow. The customary caution about backing up the program and "operating" on a copy is sound advice.

Each menu and sub-menu option is explained with a line or two of text. There is usually no need to go into more detail since you should be looking at the computer screen while reading the docs — the first time at least. There are a couple of pages of explanation about creating your own screens and, once again, the instructions are simple and to the point. There is no confusing jargon and everything is more than adequately explained. There are even a few hints to make your TI-Runner screen

(See Page 41)

MICROreviews

A serious formatter for TI-Writer and a utility to control Multiplan printouts

By HARRY BRASHEAR

Ratings for the software reviewed in this column are based on a star system as follows:

- ★ Leave it alone, back to the drawing board.
- ★★ Needs improvements, but workable.
- ★★★ A good program, worth trying.
- ★★★★ Send your money and buy it.

★★★★
TI-WRITER V4.01

Well, finally, someone has stepped on the hallowed ground of the TI-Writer Formatter. Other people have done work on the Editor, most importantly Funnelweb from Australia and BA-Writer from Italy. To the best of my knowledge, however, no one up to now has actually added to, or upgraded the Formatter dot commands.

I was thrilled when I heard that RAG Software was working on the program that I spend most of my time with. I sent my \$10 (the fairware fee) and had it in hand within 10 days. Great service!

Here is a listing of the major improvements:

1. *PC n1 n2 n3..*: Printer Control — This command will allow you to send printer control codes without using transliteration.

2. *DU n, DB n, DM n, DR n*: Define Underscore, Define Boldface, Define Mail list, Define Required space — All of these will allow you to use other characters for the titled functions. Ordinarily they would be the ampersand, the "at" sign, the asterisk, and the caret, respectively. The formatter will still default to these signs if you don't use the above commands, but the option is, at least, open to change them now.

3. *AI*: As Is text — This is the same as the NF command except that it leaves the left margin alone. You can reinstate the normal formatting with FI.

4. *CP n*: Conditional Page eject — This one is really neat. If you only have a line or two left on the page it will hold back on the page-break.

5. *CF filename*: Chain Files — When this command is encountered, the formatter stops and waits for you to enter another disk. This will allow unlimited text length.

6. *QQ*: This command after FCTN 9 allows you to just Quit. You will not have to go through a verification key press.

7. *CTRL comma and period*: Shows line one and (E)nd line, respectively.

There is a general speed up of all functions, particularly in the Move, Copy, and Delete commands. I found a vast improvement in the cursor speed as well.

A very nice feature is the incorporation of installation programs for both the Editor and Formatter. For instance, in the Editor you can set your, column width, tabs, colors, character file and printer

designation. This information is then saved to the Editor program and becomes your defaults. Very handy! It's also interesting to note that the CHARA file is loaded *into* the program and is no longer needed on the disk.

If you have a SuperCart, you can use it as a menu to dump back and forth between the Editor and Formatter. There are also three additional menu items (UTIL1 to UTIL3) for your use.

By the way, (I'm sorry for the interruption) if you don't own a SuperCart yet, get one! I find that more and more, software people are making use of the extra memory in these things. They are no longer a mystery to the novice user, and can be handled very easily.

A couple of bugs that were found in the original TI-Writer have been cleaned up, such as the use of double "at" signs and ampersands, and a problem with asterisks when not in MailMerge.

One final notable change is in the Formatter: If you enter "L" at the "Pause At End Of Page" prompt, the Formatter will not execute any line spaces at the top of the page. Very handy for let-

(See Page 40)

Calendar Maker Utilities

**At long last!
For owners of
Calendar Maker 99,
the companion that
lets you customize
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\$12.95 + \$.75 S&H

- Create and edit all fonts
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MICROREVIEWS—

(Continued from Page 39)

ter head paper in single sheets.

All in all, this is a super effort by RAG. The version I have is 4.2 and I am hoping that the effort goes forward from here. Mr. Green seems quite concerned about the size of the files, (trying to make them smaller) but I would rather see features added and lose a few hundred bytes of text space. Also, I had trouble with the AI command — couldn't make it work right on my NX1000. It could have been me though, so I'll just mention it and forget it. (But I want it!)

Send \$10 to RAG Software, R. A. Green, 1032 Chantenay Dr., Gloucester Ontario, Canada, K1C 2K9

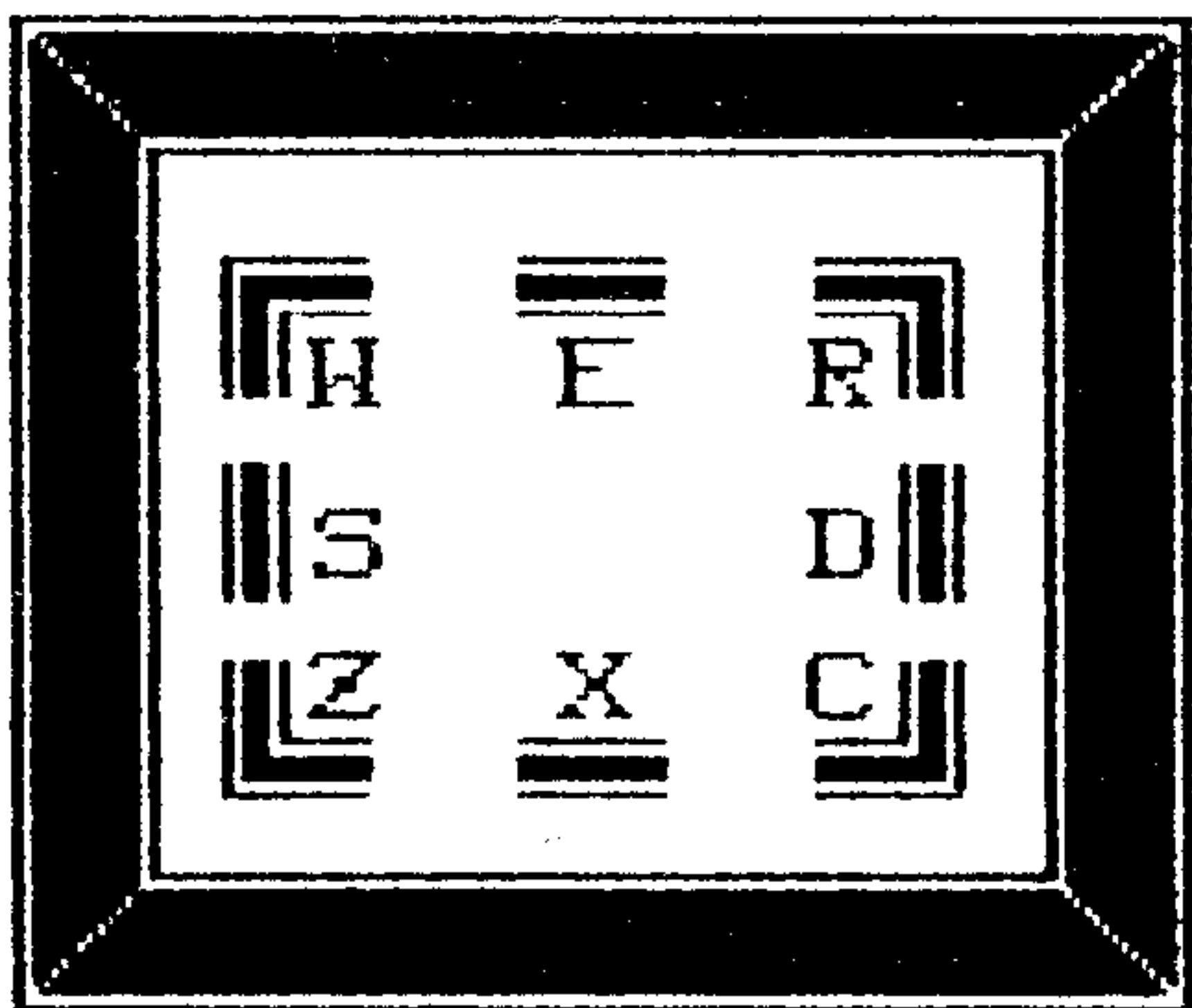
★★★★

ARTIST BORDERS I, II, III

I don't know how many of you have discovered the utility of these three disks yet, but, I thought I would mention them in passing.

Borders were the brainchild of Robert Coffey of the WNY 99ers originally, and he was responsible for the first disk full of them from Asgard. The concept was then picked up by Paul Scheidemantle of the Great LaKes group and he created the next two disks.

Borders are handled the same way as fonts are in TI-Artist. They are loaded in as a font into the enhancement section, and then typed in as text. (See the key presses for the segments below.) Each segment of the border is then put into place with the



joystick/keys, and checked for alignment with "T" before it is dropped.

There is no loss for styles of borders as they run from the simple to the super elaborate, including many special interest items, such as sports. There are at least 30 different ones on each Artist disk, and, as I recall, about 75 on the Picasso Borders disk. (You must have Picasso V2.0 to use these.)

These disks are real time savers and will really jazz up your graphic creations. The cost is \$7.95 per disk for Borders I, II, or III, plus .75 shipping. Picasso borders cost is to be announced.

Send to Asgard Software, P.O. Box 10306, Rockville MD, 20850

★★★★

MULTIPLAN PRINTER CODES

Wow, talk about researching your product! ...and I think this one is unique too. (I don't think I've seen anything like it before.)

How do you feel about creative Multiplan printouts? It could be the best thing to happen to Multiplan since creative bookkeeping.

Using this program, you can now cure the humdrum spreadsheet printout. It will allow you to enter printer codes, suitable to your own printer, into a blank cell in your template. For instance, if you would like a double-wide title, just enter the code for double wide in a cell right before it, and presto, you will have your hearts desire. If you have a large spreadsheet, you could kill the perf skip, enter subscript codes, special line feeds, and get one heck of a lot of information on a single page.

The author of this programming went all out for everyone in the community. There are files included for 13 printers, so I guarantee, whatever you've got, they have you covered. There are eight pages of docs to tell what codes to use for the various printers, and how to use them. (I do wish they had put just one example template on the disk though, to give people a visual idea of what they would get.)

I tried the system out, and even though I'm not too good at Multiplan, I was able to use the codes easily. If you are like me and keep a template for a specific sheet, you can set up a few cells just for the codes

and then resave it. I think this is a dynamite idea, and I think anyone that uses Multiplan should have it around.

Send \$10 to Jack Mathis, 5941 E. 26 St., Tucson AZ, 85711

I want to thank all of the folks that are sending me homebrew software. I am getting to it as I can, but be advised, that I do try to avoid repetition. I have received many checking account programs for instance that are quite nice, and I will be reviewing a couple of them. (At some point I may sit down and compare them all.) The problem is that I want to give the column variety, so some of these will have to wait a while. I would like to see some more games, music collections, and maybe some picture collections for TI-Artist. What ever you have done, send it along, I promise, I will not embarrass a homebrew author.

Finally, I am having a problem concerning my Home Publishing Manual. Many of you have purchased it through groups or fairs and haven't sent your registrations to me yet. You are supposed to get two supplements to the manual, but if I don't know where to send them, you're out of luck. The first supplement has gone out, so if you don't have it yet, you'd better let me know what your manual number and address is. Until next time... HTB

Anyone who would like his software considered for review in this column may send it to the following address. Include a SASE if you would like it returned: Harry T. Brashear, 2753 Main St., Newfane NY, 14108

Miller to speak in LA

Craig Miller of MG will address the LA 99ers' meeting at 7:30 p.m. June 28 in the Torrance Public Library meeting room, 3031 Torrance Blvd., Torrance, California.

Miller will demonstrate a professional desktop publishing system run on an IBM AT. MG's releases include Advanced Diagnostics, Explorer, Diskassembler, The Smart Programming Guide for Sprites, The Smart Programmer, *The Orphan Chronicles*, Night Mission, GRAM Kracker, Turbo XT and Super Extended BASIC.

Steve Mehr, program chairman, said the purpose is to help provide ideas for TI programmers. For further information, contact Mehr at (805) 379-2937.

CHECKBOOK MANAGER—

(Continued from Page 37)

9. Collate/Edit Files: Collates by category, date or payee. Then you can save, load, display or edit the collated files.

10. Collated Files Printer: Print out a report on said files, including totals.

11. Print Transactions: You may print out the entire file or a selected block.

12. Initialize All Files: This is what you use to begin working with the program on your own, or to start a new year. This function includes password entry.

13. Household Budget: Create, save, load, review, or print your budget.

14. Disk Directory: Check the files on your disk.

15. Print Amortization: A super program that includes total interest paid for each year.

16. Annuity/IRA Calculation: As the name implies, this is a calculation device for these types of accounts. Very handy.

17. Convert to DV80: Convert any of your record files to text format. This is super handy for various reports or whatever reason you might have to include them into a document.

18. Compound Interest: Calculates compound interest function for savings or loans.

19. Copy Transactions: This function, unlike "Backup Files", will copy only the transactions file.

20. Brute Balance: Recalculates your account from scratch. This was added in case of any minor bugs between the program segments. It's probably not necessary any more, but may be handy if you happen to mess up one of your files.

21. Modify File Records: Unlike the preceding editor that recalculates automatically, this function allows you to edit everything as a string. If you make a change in the amount column though, you will have to go back and pass through the Brute Balance.

22. Display Transactions: This is just a viewing mechanism for the transactions file. No editing is allowed.

23. Log Codes and Budget: This again allows you to do editing chores and print-out your budget and codes.

24. Two Cycle Collation: As explained above, this pulls out a month and collates the codes within the month by check number.

25. Sorted Files Printer: This function will take the two cycle collation and print out each separate account with its individual total, plus the gross total for the entire file. Super function!

26. Year-To-Date Budget: Here's another beautiful function that set's this program apart. Remember the budget you set up? This will look at as many months as you want and print out the budgeted amount, actual, and year-to-date.

27. Un-Clear Transactions: This is a desperation function. It will un-clear all transactions so that you can go back through all of your checks and replace the asterisk.

28. Find Variables: This is a very handy tool. If you would like to put this program on your RAM disk, this program will go through a "listed" program and locate a string like "DSK." It will tell you all of the lines the string can be found on so that you can change them to "DSK5."

A couple of other items were too simple to get into, but handy just the same. The bottom line is that I have never seen anything quite like it. Having gone through the entire program by now, I am convinced that I am going to use it myself.

It is a huge program and requires many segments. Each item you select from the menu is a separate entity, and must be loaded in, but there is good reason for this. The arrays are quite large and really use the TI's memory to it's limit. Also, to make the entire program as user friendly as possible, and, to give the maximum accuracy, each segment is fairly good-sized. The whole thing is done in Extended BASIC, using assembly subroutines where it can. (i.e. The 40-column mode.) This should not detract from the program however. In the hands of a master, Extended BASIC is as good as any.

If there is a down side at all, it's probably the docs. I felt that Mr. Crowley's intellect was dribbling over into them a bit, and some of his words could have stood a little definition. Also, some of the newer functions were not made clear in the hardcopy. However, these new functions had a help screen and I would like to see these carried back to the beginning. Since there are so many functions, the new user would find these helpful. Doc referral on a cluttered computer desk can be a pain. The more you

can put in the program the better. I guess that's my only complaint about this package ... and it's more of an observation than a complaint.

CBM III SHOULD cost \$99.95, but it can be had for a paltry \$10 direct from the author. When you send your money, tell him what disk format you want as he can accommodate most anything. If you have the need for a program of this type, buy it! If it doesn't cover your needs, you'd better look into a mainframe.

EDITOR—

(Continued from Page 36)

more pleasing (or more difficult).

The final segment of the documentation describes the File Management section of the program. Once again it is succinct and straightforward. The only anomaly was the mismatch between the on-screen menu selections and the documentation, pointed out previously. The descriptions of the various functions, however, were excellent.

Value: The value of a program is ultimately how much you use it. In this case, if you are one who enjoys playing TI-Runner, this program will be well worth the asking price. It has functions that the "fairware" editors for TI-Runner don't have and is easier to use than any of them I have seen to date. Quite frankly, I find the price just a bit high for the rather specific niche that this program occupies. But, then, it all depends on your perspective.

Final Grade: Documentation, simplicity, and ease of use are the strongest points of the EB Software TI-Runner Level Editor. It can be mastered with a minimum of preparation and the fruits of your labors can give you many hours of entertainment. On the downside, the errors in the program shouldn't have escaped into a commercially released program. It is still a good piece of programming — remember "C" is average.

Note: The shortcomings in the program can all be corrected by anyone with a bit of Extended BASIC programming expertise. The XB portion of the program can be listed and the necessary changes made. Just make sure that you make the changes on a COPY of the original program and test everything thoroughly when you are finished. The point is, though, you shouldn't have to.

Newsbytes

Tenex remains with TI market

Despite reports published elsewhere, Tenex Computer Express intends to remain in the TI market, according to Roger Dooley of Tenex.

Dooley says the company has eliminated a number of "slow moving" TI products from its TI lineup. These are mainly products "which have not been changed or improved in three or four years," he says.

He says the company "cut a good number of titles," in which the suppliers received small orders from Tenex. Tenex employees "spent a lot of time chasing items" of this type when an order was received for them, Dooley notes.

He says Tenex is still searching for new products for the TI market. He says TI users want products "in line with what people can get for other computers."

He cites interest in TI-Base and the forthcoming Press as examples of this type of product.

He notes that "mainstream developers" feel that it is more profitable to write for other machines. Dooley says that the aftermarket for the TI99/4A reflects the 4A's quality.

"I remember when the 4A's main competition was the Vic-20. The Vic-20 aftermarket died four years ago," he notes. "When they came out, the marketplace didn't recognize the difference between the two machines."

However, he says, the level of development activity for the 4A has declined.

He says one reason for the elimination of a number of titles is the planned move by Tenex into another facility in early May.

Address and phone number will be the same, P.O. Box 6578, South Bend IN 46660, and (219) 259-7051.

Trophy offered by Melbourne group

The TI99/4A Users Group — Melbourne Inc. in Australia is conducting a TIMES Trophy competition, open to all TI99/4A owners who are members of a recognized user group.

The competition is for the best 1989 project developed by qualified entrants. Each

user group will be allowed one entry only and it will be the group's responsibility to choose its entry.

The entry can be a program or a piece of hardware. It must be for the TI99/4A. "If it works on the Geneve all well and good," the contest rules state.

The trophies are valued at approximately \$100. No entry fee is required.

The competition is open to freeware, fairware, commercial ware programs or tutorials; it is also open to hardware modifications to the TI99/4A.

Programs must be submitted on disk readable in TI-Writer or its equivalent. Hardware must be submitted as detailed drawings and instructions for building the hardware, accompanied by details of what it set out to achieve.

Anything published before Jan. 1, 1989, is disqualified from entry. Entry deadline is Sept. 1.

The Melbourne Times newsletter says Melbourne has designated its Oct. 14 meeting as the date of a computer fair to run from 2 to 6 p.m. at its regular meeting place, in the Pavilion at Deepdene Park, Whitehorse Rd., Deepdene. The winner of the trophy will be announced at the fair. It will be presented to the winner or representative of the winners group, if in attendance. Competitors must attend at their own expense.

Address for entry for the competition or information on the fair is TI99/4A Users Group — Melbourne Inc., 88 Main St., Blackburn, Victoria 3130, Australia.

CPUG schedules fair

The Third Annual CPUG Computer Expo is scheduled from 7 a.m. until 2 p.m. Oct. 15 at the Carlisle Fairgrounds on Clay Street in Carlisle, Pennsylvania.

Door prizes, demos, computer vendors, tailgating and user groups are scheduled.

Admission is \$3, with women and children under 12 admitted free. Admission to the tailgating area is \$2.

The event is sponsored by the Central Pennsylvania 99/4A Users Group and co-sponsored by the Cumberland County Amateur Radio Service and the 6th Annual Cumberland County Hamfest.

For further information, contact the Central Pennsylvania 99/4A Users Group, P.O.

Box 14126, Harrisburg, PA 17104-0126, or call the WIZ/TIB BBS, (717) 657-4992 or 657-4997.

Review errs on price

The review of FirstBase, a database by Genial Computerware, published in the January 1989 issue, listed the wrong price for the program. Correct price for the program is \$49.95.

FirstBase is manufactured by Genial Computerware, P.O. Box 183, Grafton, MA 01519.

Italian seeks to form TI users group

Giancarlo Antici asks that any Italian TI and Geneve users who want to form a users group write him at via G. Cardano 170, 00146 Roma, Italy.

Three for two, not one

The article on Quality 99's sale extended to May 20, should have said the company is offering three programs for the price of two (lowest-priced program free), rather than three for the price of one.

Quality 99 Software is at 1884 Columbia Rd. #1021, Washington, DC 20009. Phone is (202) 667-3574.

Newsbytes is a column of general information about products and services relating to TI users. The publisher does not necessarily endorse products listed in this column.

USER GROUP UPDATES

The following are additions and updates to our user group listings, which we began publishing in the May 1987 issue.

California

TI-Riverside User Group, c/o Ed Butcher, President, 7125 Delaware St., Riverside, CA 92504. Phone: (714) 686-0336. (New address.)

Utah

Ogden TI Users Group, 1396 Lincoln Ave. Apt. B, Ogden, UT 84404. (New address.)

Outside U.S.

Australia

TI-Brisbane User Group, P.O. Box 57, Aspley, Queensland 4034, Australia. Garry J. Christensen, president. Meets at 7:30 p.m. last Friday of each month at South Brisbane State School. Membership fee \$22 national, \$35 international. Software and publication library, 11 newsletters per year.

User Notes

The index saga goes on... and on

Once a ball starts rolling down a hill, it just keeps going. And that seems to be the story of the ever-evolving MICROpendium Index. This comes from Elton Schooling, of Sacramento, California, author of the index. He writes:

The MICROpendium indexes sort routine takes almost four times as long as it needs to. Mr. Gasparini, writing in the December 1988 User Notes, says that the long sorting process is "a bit uncomfortable."

I obtained an assembly language sorting routine from the Boston Computer Society TI99/4A User Group, authored by David Romer and John Clulow, and running in Extended BASIC. With this, things go much better. In order to use the faster sort, the assembly language program must be on the same disk, and there are a few changes to be made in the program. The line numbers I inserted in the early part of the program follow: (referring to the index program for 1984 which was published in the June 1988 edition).

```
52 CALL INIT
54 CALL CLEAR
56 CALL LOAD("DSK1.SORT")
```

Of course, you would use whatever drive number you wish in line 56.

Change line 130 to read:

```
130 CALL LINK("SORT",N$( ),XXX)
```

Where XXX is the total number of DATA statements, and agrees with the DIM statement in line 80, DIM N\$(XXX), with the array-loading statement in line 120, FOR I=1 TO XXX, and with lines 190 and 310, both of which read FOR J=1 TO XXX.)

Delete the old sort routine after the last DATA statement, and make appropriate changes in line 30, which should give David Romer and John Clulow their due.

The 1987 index, with 304 entries, required 256 seconds to complete the sort. Using the assembly language routine, the time shrank to 66 seconds. For me, compared to more than four minutes, this is blinding speed. Progress!

The installment in this month's MICROpendium includes the object code

of the sort routine as well as the lines in the program that CALL the routine.—Ed.

Program puts digital clock on the screen

If you've ever needed a timer for your TI, the following program may meet your needs. Written by D.L. Fitchorn of Keller, Texas, it places a digital clock at the top of the screen and records elapsed time. The program remains in memory even after a CALL INIT, QUIT, BYE and NEW, although the counter may reset itself to zero after execution of some commands.

The program requires Extended BASIC and an expansion memory.

After entering the program listing — don't bother typing in the checksums that appear after the exclamation marks at the end of each line — save it and then RUN it. After it has loaded into memory, it takes a minute or so, enter:

```
CALL LINK("START")
```

Use this CALL anytime you want to reset the clock counter to zero.

The clock will continue to operate even after loading and running another program.

```
100 !-----!
!130
110 ! EXTENDED BASIC !
!119
120 ! program to load !
!063
130 ! interrupt driven clock!
!101
140 ! By D.L. Fitchorn !
!136
150 ! 305 Navajo !
!059
160 ! Keller, TX 76248 !
!230
170 !-----!
!130
180 CALL INIT !157
190 CALL LOAD(-31806,16)!107
200 CALL CLEAR !209
210 T=24 :: HH=0 :: MM=0 ::
SS=0 !189
220 R=10240 :: CH=0 !152
230 PRINT "LOADING CLOCK PRO
GRAM" !058
240 HX$="0123456789ABCDEF" !
251
250 READ A$ !252
```

```
260 IF A$="CHEK" THEN 350 !1
01
270 IF A$="END" THEN 370 !05
2
280 IF LEN(A$)<>4 THEN PRINT
"ERROR";A$ :: GOTO 250 !045
290 HI=(POS(HX$,SEG$(A$,1,1)
,1)-1)*16+POS(HX$,SEG$(A$,2,
1),1)-1 !198
300 LO=(POS(HX$,SEG$(A$,3,1)
,1)-1)*16+POS(HX$,SEG$(A$,4,
1),1)-1 !212
310 CALL LOAD(R,HI,LO):: R=R
+2 !122
320 CH=CH+HI :: IF CH>256 TH
EN CH=CH-256 !141
330 CH=CH+LO :: IF CH>256 TH
EN CH=CH-256 !151
340 GOTO 250 !073
350 PRINT "CHECK";CH !005
360 GOTO 250 !073
370 CALL PEEK(8196,H,L)!153
380 LFAL=H*256+L !093
390 NEWL=LFAL-16 !006
400 KH=INT(NEWL/256)!239
410 KL=NEWL-KH*256 !011
420 CALL LOAD(8196,KH,KL)!04
2
430 CALL LOAD(NEWL,83,84,65,
82,84,32,40,0)!036
440 CALL LOAD(NEWL+8,83,84,7
9,80,32,32,40,40)!023
450 CALL LINK("START")!094
460 CALL LOAD(10543,T,0,HR,0
,KH,0,SC)!167
470 CALL CLEAR !209
480 END !139
490 DATA C820,28EA,292C !010
500 DATA C820,28E8,2928 !246
510 DATA C820,28E6,292E !001
520 DATA 04E0,2930 !133
530 DATA 04E0,2932 !135
540 DATA 04E0,2934 !137
550 DATA 0200,282E !129
560 DATA C800,83C4 !155
570 DATA 0458 !058
580 DATA 04E0,83C4 !153
590 DATA 045B !058
600 DATA CHEK !122
610 DATA 0300,0000 !097
620 DATA 02E0,2928 !138
630 DATA 0602 !039
640 DATA 1652 !045
650 DATA C0A0,28EA !178
(See Page 44)
```


User Notes

(Continued from Page 43)

```

660 DATA 0586 !050
670 DATA 0286,003C !132
680 DATA 160E !059
690 DATA 04C6 !060
700 DATA 0585 !049
710 DATA 0285,003C !131
720 DATA 1609 !047
730 DATA 04C5 !059
740 DATA 0584 !048
750 DATA 80C4 !062
760 DATA 1605 !043
770 DATA 04C4 !058
780 DATA 0283,0018 !116
790 DATA 1301 !036
800 DATA 0584 !048
810 DATA CHEK !122
820 DATA 06C0 !056
830 DATA D800,8C02 !151
840 DATA 06C0 !056
850 DATA E020,28E4 !152
860 DATA D800,8C02 !151
870 DATA 4020,28E4 !145
880 DATA D064,28EC !174
890 DATA 0941 !045
900 DATA 0221,9000 !108
910 DATA D801,8C00 !150
920 DATA 0A41 !053
930 DATA 0241,0F00 !123
940 DATA 0221,9000 !108
950 DATA D801,8C00 !150
960 DATA 0201,9A00 !123
970 DATA D801,8C00 !150
980 DATA D065,28EC !175
990 DATA 0941 !045
1000 DATA 0221,9000 !108
1010 DATA D801,8C00 !150
1020 DATA 0A41 !053
1030 DATA 0241,0F00 !123
1040 DATA 0221,9000 !108
1050 DATA D801,8C00 !150
1060 DATA 0201,9A00 !123
1070 DATA D801,8C00 !150
1080 DATA D066,28EC !176
1090 DATA 0941 !045
1100 DATA 0221,9000 !108
1110 DATA D801,8C00 !150
1120 DATA 0A41 !053
1130 DATA 0241,0F00 !123
1140 DATA 0221,9000 !108
1150 DATA D801,8C00 !150
1160 DATA 0720,83D6 !140
1170 DATA CHEK !122
1180 DATA 02E0,83E0 !149
1190 DATA 045B !058

```

```

1200 DATA 4000 !035
1210 DATA 000D !051
1220 DATA 0017 !039
1230 DATA 003B !052
1240 DATA 0001,0203,0405 !17
2
1250 DATA 0607,0809,1011 !19
0
1260 DATA 1213,1415,1617 !19
0
1270 DATA 1819,2021,2223 !19
0
1280 DATA 2425,2627,2829 !20
8
1290 DATA 3031,3233,3435 !19
0
1300 DATA 3637,3839,4041 !20
8
1310 DATA 4243,4445,4647 !20
8
1320 DATA 4849,5051,5253 !20
8
1330 DATA 5455,5657,5859 !22
6
1340 DATA DATA CHEK !185
1350 DATA END !053

```

A modification to the SXB mod

This comes from John McKechnie of Vancouver. He writes:

I did the modification to my Super Extended BASIC as described in the February 1998 issue (*Making SEB work with the Widget cartridge expander*). However, with a very slight modification to the points where you attach the resistor leads to pins 19 and 29, you won't have to cut the cartridge shell. The trace for pin 19 goes straight back to a solder point while the trace for pin 29 goes back to a plate through hole on the board. The resistor leads can be soldered to these points, which are behind the part of the shell that would interfere with the resistors.

HAVE A GOOD TIME

Attend a TI fair this year
and find out what's
hot and what's not.

(See Page 46 in this edition for a listing of 1989 fairs)

MORTCOMP bugs

This comes from Enrico Gasperini, of Towaco, New Jersey. He writes:

This is in regard to the MORTCOMP program in the March 1989 issue. There are a few errors in the variables that will cause the program to calculate the wrong answers. In lines 280, 290 and 690 the variable should be PPI not PI as printed. This variable is established in lines 150 and 160. The variable PI is a reserved word in the TI99/4A and will always return a value of 3.141592654 in Extended BASIC. Also, in line 270, the CALL KEY statement should be (IF S<1 THEN 270), not S>1. This will stop the scroll and wait for the next key press.

As for the printing format of this program, the type style is more readable than the computer printout that you have been using but I still prefer the type style you used, for the last time, in the August 1989 issue in 28 columns. This is the standard dot matrix draft mode and in my opinion much more legible.

The errors above were due to the translation process between the computer and the typesetter. Starting with most of the programs in this issue, we are using a 24-pin dot matrix printer for program listings using a san serif font. BASIC and XBASIC listings, as always, are in 28-column format. We're hoping that these listings make better reading.—Ed.

Advice on using Smith Corona module

This comes from Richard Ohi, of Derry, Pennsylvania. It is in response to a question posed by a reader in the March 1989 issue. He writes:

I have the Smith Corona Messenger Module and a Smith Corona Memory Correct III typewriter and have been using it as a printer with both the TI RS232 card and the CorComp RS232 card. I would suggest to first check the parallel cable. The pins should be connected as follows:

TI99/4A parallel port	Centronics 36-pin connector
1	1
1	2

(See Page 44)

User Notes

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4A port	typewriter port
3	3
4	4
5	5
6	6
7	7
8	8
9	9
10	11
11	19
12	
13	
14	
15	
16	16

Connect the parallel cable to the Messenger Module (only one cable should be plugged into the module). Turn the typewriter power switch and the keyboard switch on. Press and hold the typewriter "CODE" key and press the typewriter "P" key. The Preset and Programmed LED lights on the typewriter and the power light on the module should be on. The typewriter should now act as a printer for the computer.

Routine works like NEW in XB programs

This comes from Denver Earl Sullivan, of Osgood, Indiana. He writes:

Extended BASIC (TI version 110) will not permit NEW as a program statement. The following is an equivalent way of producing the NEW function:

```
CALL INIT::CALL CLEAR::CALL LOAD(-31592,255,231,255,231)::END
```

Revisiting retirement calculations

This comes from Owen Mayer, of Hoffman Estates, Illinois. He writes:

I have run the program *Computing retirement income* in the December 1988 issue and although my retirement situation may be lousy, there are two errors in line 260 that make it needlessly grave. I am listing a correction to this line below and I have checked the results and believe they are more accurate.

```
260 FUTURE=INT(((B*(1+RATE)^YEARS+(ADD*((1+RATE)^YEARS-1)/R
```

```
ATE))*RATE)/12+.5)
```

MULTICOL changes

This comes from Ralph Mills, of Selkirk, Manitoba. He writes:

Since writing to you about the problems I had experienced with the MULTICOL program (Jan., Feb. 1988), necessity demanded that I make the whole program work properly. After my suggested changes (User Notes, June 1988), the program still would not repeat a page properly: It reloaded the file, mixing the first and second readings in the array B\$(I). In addition, the pagination was messed up.

The latest changes, I think, achieve what the program was intended to accomplish. The changes are listed below.

```
840 IF S$="Y" THEN 850 ELSE 600
```

Change statement 780 to:

```
780 IF S$="N" THEN 782 ELSE 786
```

And add statements 355, 782, 784 and 786:

```
355 S$="N"
```

```
782 IF C$="Y" THEN PRINT #1:TAB(YY);"PAGE ";A ::PRINT #1: : :
```

```
784 GOTO 790
```

```
786 IF C$="Y" THEN PRINT #1:TAB(YY);"PAGE ";A+1::A=A+1::PRINT #1: : :
```

While the above changes may be less than elegant, they work and accomplish what I think the program is intended to do. I hope this additional information will prove useful to other readers.

Garbled output from the formatter

This comes from Jim Peterson, of Tiger-cub software in Columbus, Ohio. He writes:

In reference to the asterisk problem discussed in the February Feedback, the asterisk is not the only reason why so many program listings published in newsletters are garbled as a result of having been printed through the TI-Writer Formatter.

Try printing this routine through the formatter and see why:

```
100 A=A*264 : @=1
```

```
110 PRINT "1 . . . 2 . . . 3 . . . 4 .
```

```
. . . 5 . . . 6" (this line must begin with a period)
```

```
120 M$=M$&A$&B$&C$ :: K=K^3
```

The 26 will disappear, the @ will disappear, the =1 will be double-struck, the second line of the print statement will disappear, the ampersands will disappear, A\$B\$C\$ will be underlined, and the caret will disappear! See the example below:

```
100 A=A4 :: =1
```

```
110 PRINT "1 . . . 2 . . . 3
```

```
120 M$=M$A$B$C$ :: K=K^3
```

Here is how to avoid such errors. Before merging a listed program into a file, load it into the Editor. Position the cursor at the beginning of the first line, hit FCTN 9, type RS and Enter, then /&/ and Enter. At the prompt, type A. When finished, get the cursor back to the beginning, and repeat the above with /*/, then /./ and then /^^/.

Now, use FCTN 8 to open 5 lines at the beginning and add this transliteration:

```
.TL 92:46
```

```
.TL 123:64
```

```
.TL 124:42
```

```
.TL 125:38
```

```
.TL 126:94
```

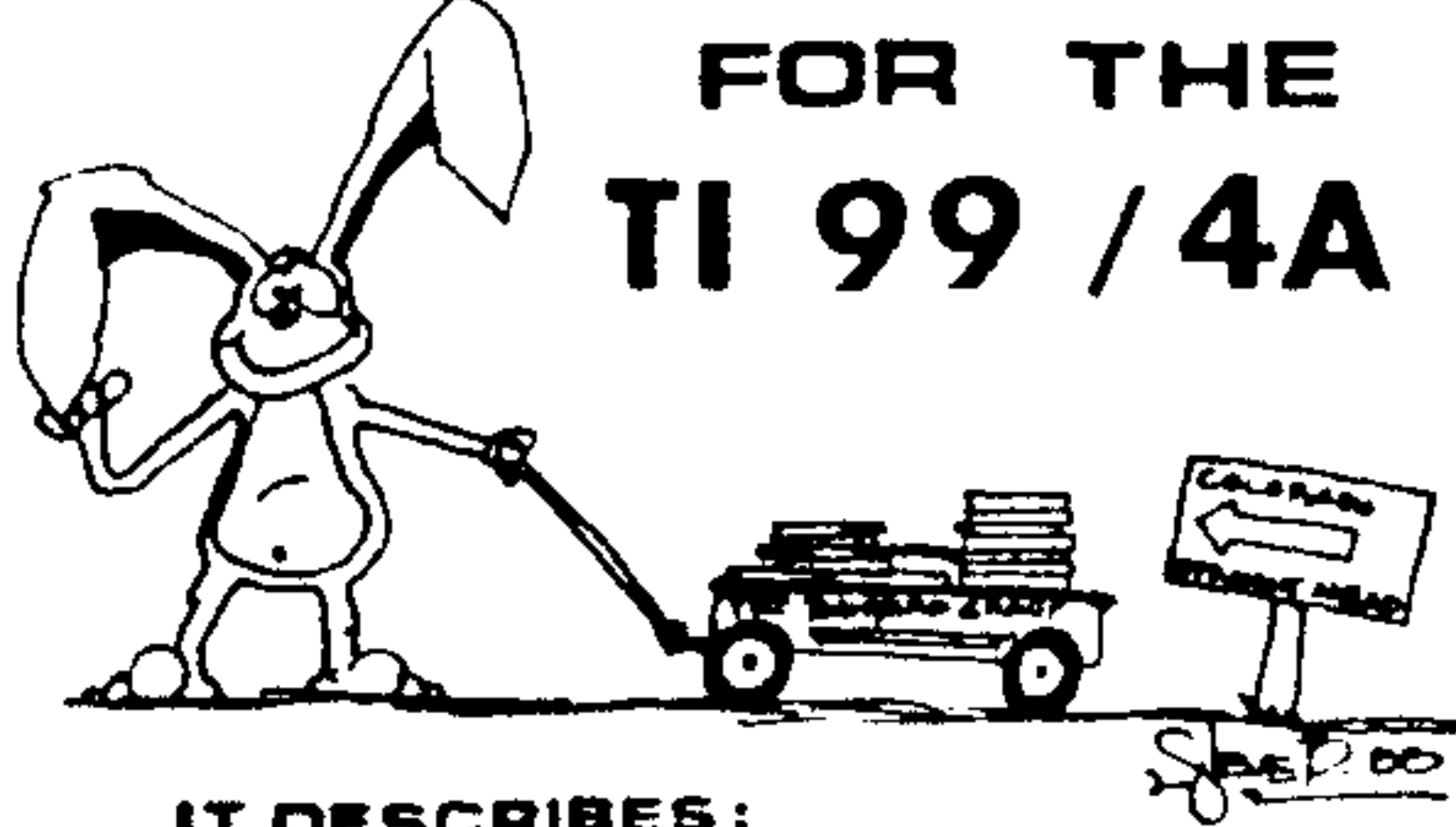
Save the result, go back to the Formatter and try it again.

TI Base autoloader

This comes from Andrew Bender, of Austin, Texas. He writes:

TI Base has an annoying habit of making... (See Page 46)

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User Notes

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ing you type in the name of the program to load it. With this simple modification, TI Base can now be loaded into Editor/Assembler while pressing only two keys: 5 (for option 5) and Enter at the filename prompt (in other words, UTIL1).

The steps are easy to follow:

1. On a backup copy of TI Base, copy TIBASEP onto the disk, giving it the name UTIL1.

2. Using a sector editor, find the third sector of UTIL1.

3. Look for the string TIBASE on the sector. It will occur after the string "enter Drive #."

4. Change TIBASE to UTIL1 and space over the E that remains from TIBASE.

5. Save the sector to the disk.

Now, all you need do to load TI Base is to select Option 5 and press enter from the Editor/Assembler menu. The computer will automatically load it from there.

Spice up prompts

This program has appeared in several user group newsletters. It is by Ollie Hebert.

Users of this program can incorporate it

into their menus to add a little spice to the input prompt. As outputted below, it will cause the question mark prompt used in this program to "bounce" while waiting for input.

```
150 DISPLAY ERASE ALL :: CAL
L CHARPAT(63,C$):: CALL CHAR
(64,SEG$(C$,3,14))!194
300 DISPLAY AT(4,3):"SELECT
FROM THESE ITEMS:" :: FOR I=
1 TO 4 :: DISPLAY AT(I*2+7,8
):CHR$(I+64);": PROCESS #";
CHR$(I+48):: NEXT I !179
310 DISPLAY AT(17,8)BEEP:"E:
QUIT": : : " YOUR CHOI
CE (A-E) ?" :: GOSUB 10000
:: ON X-64 GOTO 1000,2000,30
00,4000,5000 !203
1000 PRINT X-64 :: GOTO 5000
!086
2000 PRINT X-64 :: GOTO 5000
!086
3000 PRINT X-64 :: GOTO 5000
!086
4000 PRINT X-64 :: GOTO 5000
!086
5000 END !139
10000 Z=64+(Z=64):: DISPLAY
AT(21,24):CHR$(Z):: CALL KEY
(3,X,Y):: IF Y=0 THEN 10000
```

!194

```
10010 IF X<65 OR X>69 THEN C
ALL SOUND(200,220,0):: GOTO
10000 ELSE CALL SOUND(200,14
00,0):: DISPLAY AT(21,24):CH
R$(X):: RETURN !039
```

If you'd rather use color to enhance the effect, substitute the lines below for 150 and 10000.

```
150 DISPLAY ERASE ALL :: CAL
L CHARPAT(63,C$):: CALL COLO
R(14,12,1):: CALL CHAR(143,C
$)!175
10000 Z=143+80*(Z=143):: DIS
PLAY AT(21,24):CHR$(Z):: CAL
L KEY(3,X,Y):: IF Y=0 THEN 1
0000 !021
```

User Notes are a column of tips and ideas designed to help readers put their computers to better use. The information provided here comes from many sources, including TI user group newsletters, bulletin board services and MICROpendium readers. MICROpendium pays \$10 for any item sent in by readers that appears in this column. Mail *User Notes* to: MICROpendium, P.O. Box 1343, Round Rock, TX 78680.

1989 TI FAIRS

FEBRUARY

TI-Fest West '89, Feb. 18-19, Clarion Hotel at Balboa Park, San Diego, California. For information, write TI-Fest West c/o Southern California Computer Group, P.O. Box 21181, El Cajon, CA 92021 or call the SCCG BBS, (619) 278-7155, and leave a private message to the sysop with your full name and address.

MARCH

West Coast Computer Fair, March 17-19, Brooks Hall, San Francisco. San Francisco 99ers to be at Booth 733. For further information, write San Francisco 99ers, 24816 Mango St., Hayward CA 94545.

TICOFF (TI Computer Owners Fun Faire), March 18, Roselle Park High School, Roselle Park, New Jersey. For information, write TICOFF'89 c/o Roselle Park High School, 185 West Webster Ave., Roselle Park, NJ 07204, or call Robert Guellnitz at (201) 241-4550 or (201) 382-5963 or the TICOFF BBS, (201) 241-8902.

APRIL

Fourth Annual New England TI Fayuh, 10 a.m.-5 p.m. April 1, Ramada Inn of IH95 in Woburn, Massachusetts. For information, contact the Boston Computer Society/TI99/4A User Group, One Center Plaza, Boston MA 02108.

Alberta TI-Orphan Reunion, April 29 at Innisfail Country Lodge, Innisfail, Alberta, Canada. For information, contact Fred Kessler, Box 20, Sundre, Alberta, Canada T0M 1X0 or (403) 638-3916.

4th Annual Ottawa TI-FEST, April 29 at Merivale High School in Nepean, Ontario, Canada. For information, contact Jane Laflamme, 5480 Canotek Rd. Unit #10, Gloucester, Ontario, Canada K1J 9H6 or (613) 745-2225.

MAY

Multi User Group Conference May 20, Reed Hall/Student Activities Building,

Ohio State University, Lima, Ohio. For further information write Lima Users Group, P.O. Box 647, Venedocia, OH 45894, or call Dave Szippel evenings at (419) 228-7109.

JUNE

TI99/4A Users Group (U.K.) Annual Meeting June 17 in Romley, England. For information, contact Stephen Shaw, 10 Alstone Rd., Stockport, Cheshire, England SK4 5AH.

OCTOBER

Australia TI Fair, 2-6 p.m. Oct. 14, Pavilion, Deepdene Park, Whitehorse Rd., Deepdene, Australia. For information contact TI99/4A Users Group — Melbourne Inc., 88 Main St., Blackburn, Victoria 3130, Australia.

3rd International TI-Users Meeting, 10 a.m.-6 p.m. Oct. 15 at Jugenderherberge Duisberg Wedau, Kalkweg 148, 4100 Duisberg 48, West Germany. For information contact TI-99er Workshop Rheinland, Dept. Allgemein & Software, c/o Mike Heuser, Karl-Marx-Allee 18, 5000 Cologne 71, West Germany, or the organizing committee at PCC, TI-Service, c/o Hans Greiffenberg, Großglocknerstr. 45, D-4100 Duisberg 28., West Germany.

Third Annual CPUG Computer Expo, 7 a.m.-2 p.m. Oct. 15 at Carlisle Fairgrounds on Clay Street in Carlisle, Pennsylvania. Sponsored by Central Pennsylvania 99/4A Users Group, co-sponsored by Cumberland County Amateur Radio Service and 6th Annual Cumberland County Hamfest. For information, contact Central Pennsylvania 99/4A Users Group, P.O. Box 14126, Harrisburg, PA 17104-0126 or the WIZ/TIB BBS, (717) 657-4992 or 657-4997.

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