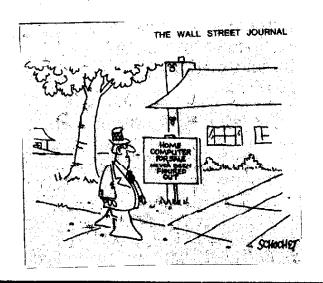## COMMENTARY

Time passes fast when you are having fun! It doesn't seem like any time at all since we last wished you a Happy Thanksgiving.

For our User Group we have accomplished a great deal in the time. We have had some interesting and informative programs and a number of new kinds of hardware have been demonstrated. And all this time the 99/4 has prospered in the orphanage. In November 1983 we lost our parents, TI.

Our User Group has seen some milestones and we are now global. Last month we were quoted in the Bulletin of the Hunter Valley 99'ers. They are located in Tarro,NSW, Austrlia. How's that for circulation A collection of their Newsletters is in the club's circulating library.

LAST MONTH'S BRAIN TEASER

The answer to last month's Teaser is $1.19-a half dollar,a quarter,four dimes,and four pennies.

THE WALL STREET JOURNAL

NOVEMBER BRAIN TEASER

On your bookshelf you lhave three books in a set,Volumes I,II and III, in the usual order from left to right. You have a bookworm who is eating his way through them. The pages of each are a half inch thick. If the book worm starts at the outside of the frint cover of Vol.I and eats through to the last page of Vol III how many inches has he bored through?

MISCELLANY

A housewife while doing her laundry in the basement noticed a grease spot on her housecoat that had passed through to the nightgown underneath. As she had a load in the washing machine she shed these and threw them into the washer. Noticing a leaky pipe in the basement the picked up one of the boy's football helmets and put it on to protect her hair.
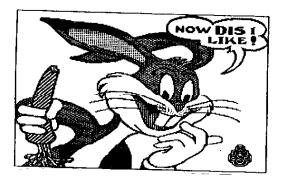
About this time the meterman came in to read the meter and said,"I don't know what game you are playing,lady,but I hope your team Wins!" (Sometimes we have to scratch the bottom of the barrel for jokes)

ANSWER TO NOV BRAIN TEASER

3 and one half inches. If he started at the front cover of Vol.I and ate through to Vol II,he would not have touched Vol I at all". Volume II ,with cover would be another 1/2 inch. (Place three books on a shelf in sequence and see for yourself)

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*                             *
*                             *
*      BITS,BYTES & PIXELS     *
*                             *
*      Published by Lima       *
*                             *
*      99/4A User Group        *
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COMMENTS MADE BY JIM PETERSON

     On October 18, 1986 the Lima
U.G. had Jim Peterson as our guest.
In addition to demonstration some of
his TIGERCUB software Jim made the
following observations and
comments.

"When I baught my first TI I didn't
know anything about computers. I
read the blue book that came with
the computer and that started my
interest in BASIC."

"I don't think anybody can actually
make a living writing software for
the TI anymore. TI users are
spoiled. They have gotten used to
very cheap commercial software,
almost free "fairware" or whatever
you want to call it, free public
domain software, and other "sources"
of software."

"You probably think that the best
software for the TI has been written
since Texas Instruments withdrew
from the market. There is alot of
good stuff out there as fairware but
you wouldn't believe the stuff that
hasn't been released and maybe never
will be. Very very few fairware
authors ever release a second
program because they get such a poor
return. Several authors have sent
me absolutely fantastic programs and
asked my advice on how to market the
software. There is very little I
can suggest to these authors, and
you will probably never see their
programs."

"I am only going to write two more
TIPS columns and then there will be
no more. Writing them takes alot of
time, and I just don't have the time
anymore. I do, however, intend to
stay in the business of selling my
software."

"There are many lists of user groups
floating around. I probably have
the best list of all. I send my
TIPS out to well over 100 groups
each month. I only send TIPS to
active groups who are willing to
send me newsletters in return. My
list of addresses is probably
accurate, since TIPS is returned by
the post office if undeliverable."

"I try not to write programs that
are similar to other's. I always
try to incorperate new ideas in my
programs. I have never written a
game with a frog crossing a highway
or a Qbert falling down a pyramid of
cubes."   *DONE*

CHICAGO TI FAIRE REPORT

I attended the Chicago TI Faire (yes, thats how they spell it) on Nov 1 and it was like nothing I have ever seen. Dealers from all over the U.S. and Canada were present in the first floor exhibit area. Almost any hardware or software product you have ever heard of for the TI was offered for sale, often at substantial discounts. The only excpetion was the GRAM KRACKER, which must still be ordered in advance of its manufacture. Used TI modules were available for as little as $1.50. Indivduals carried briefcases with signs taped to the side offering private sales. The whole atmosphere was similar to shopping the blue light specials at K-Mart. Every now and then a loud speaker would announce that such and such a dealer had a limited special. You could buy Megatronics 256K Gram cards for $200, Star SG10 printers for $185, a TI Logo 1 package for $20, and some used "how to" TI books for under $1.

In addition to dealer displays there were interesting seminars and demonstrations going on almost continuously in the large second floor fireside lounge. Those that I attended are described in the paragraphs below.

Asgard Software deomostrated "Print Font Writer" which may even be better than "Print Shop" on the Commodore. "Print Font Writer" allows you to create fonts, or use those fonts or prctures made with TI-Artist, and mix them in with standard TI-Writer text files. It is a page design program that can work with any printer from within the program. This program really impressed me.

One of the most important presenations was by Lou Phillips on the TI994A compatable 9640 Computer (the Geneve), all on one card that fits in the PE box. Lou had a working computer running 80 column TI-Writer on the exhibit floor. Some details of the 9640 are as follows:

-640K RAM standard with 2 megs addressable.
-Suggested retail price of $495, although no sales are made directly to the public and dealers can charge what they wish.
-Shipping to dealers will (hopefully) begin in about 1 month.
-Includes real time clock that can give files a date & time when saved.
-Can use TI composite or an RGB monitor.
-TI (not Atari) joystick supported.
-Cassette is NOT supported.
-Amega mouse is supported. We saw a nice mouse demo.
-Resolution of 512 x 425 pixels in 16 colors, or 256 x 212 pixels in 256 colors!! The mouse demo we saw had 256 colors.
-Uses GRAM KRACKER format to save modules to disk.
-Software (bundled with the 9640 computer?) will include a disk based DOS "similar to" MS-DOS 2.1; a PASCAL compiler that can compile FORTRAN, COBAL, and BASIC as well; 80 column TI-Writer that will add additional useful features; an 80 column patch to the TI version of MULTIPLAN (you still have to have the original MULTIPLAN to make this work); Specific TI cartridges will be modified to work with 80 columns. -No IBM compatability because the basic chips in the two computers differ. You will never be able to load and run an IBM program in the 9640, but there will in the future be a Lotus 1-2-3 and a D-Base clone that will be able to use data files created on an IBM PC.
-Any existing TI assembly program that uses its own keyscan routine instead of that built into the 99/4A will not work. Thus the 9640 computer is compatable with "only" 95% of current 99/4A assembly programs.
-Since the new computer has its own

cable and bypasses the 4A's "firehose" cable, the only way to access speech is to have the Triple Tech card with speech inside the PE box.

After considering the above details, you need to ask yourself this important question: "What can this new computer do that my current TI99/4A can't? Are the differences worth $495?"

Al Stump of the sponsoring Chicago User Group gave a seminar on cleaning and repair of the console. Al recommends using 90% isopropyl alcohol to clean contacts as this leaves no residue. A straw is recommended instead of a brush to clean the cartridge port. Blow the dirt away. Radio Shack part #2771016 is a switching power supply that runs cooler than many found in silver consoles. This later model TI power supply doesn't continuously pass current as does the older original power supply. Al also showed how to build a SUPER CART.

Peter Hoddie of the Boston Computer Society showed how to push the power of TI's sound chip to the limit. He connected two computers together via the joystick port and a custom cable with one computer controling the other as master and slave. The sound chips of these two computers played coordinated music together in supurb sterio. Peter than had a computer play music for him as he accompanied the computer with his chello. Bravo!

The last demonstration was by T.A.P.E. products. The Mechatronic GRAMCARD recently reviewed in Micropendium was demonstrated. A completely new DOS that supports a Mechatronic's mouse was demonstrated using this card. Samples of the Mechatronic 80 column card were on hand, but no documentation on how to run the

card was available. The manual has not been translated from German yet. And now for something REALLY INTERESTING. In May of 1987 Mechatronic is planning to release "an IBM clone that is TI compatable for under $1000."

Charles Good
DONE

PERIODICALS THAT SUPPORT THE TI99/4A

We published an article on this topic about a year ago, but the market has changed since then. COMPUTE is no longer publishing a TI column and HOME COMPUTER MAGAZINE has ceased all publication, at least under that name. On the other hand, some new support periodicals publish regularly. The list below is in the order of our estimated overall value.

MICROPENDIUM- "Covering the TI/994A exclusively" This is probably the best single source of 99/4A information. In addition to reviews of both commerical products and freeware, this monthly includes news items and short type in BASIC, XBASIC, ASSEMBLY, and FORTH routines reprinted from user group newsletters. Most importantly, this is the best source of advertisments for both hardware and software. There are lots and lots of ads. We highly recommend this magazine. 12 issues cost $17 via 3rd class mail or $20.50 via first class mail. Back issues since April 84 are available to subscribers only. The address is P.O. Box 1343 Round Rock TX 78680.

THE SMART PROGRAMMER was for a couple of years published very irregularly by Miller Graphics. It has now been taken over by Bytmaster Computer Services and appears regularly each month. This magazine also deals exclusively with the 99/4A. Memory maps, assembly language, and forth language routines take up a good portion of pages, although there are also tips on using extended basic and TI-Writer. Lately there have been alot of tips on how to modify things using the GRAM KRACKER. There are no advertisments. Although articles in SMART PROGRAMMER are mainly geared to the advanced programmer, anyone owning a GRAM KRACKER will benefit even if the owner isn't an advanced programmer. 12 issues cost $15 via third class mail or $18 via first class mail. Since there aren't any hot "news" items here, as there sometimes is in MICROPENDIUM, we see no reason to pay for first class delivery of SMART PROGRAMMER. Bytmaster's address is 171 Mustang St., Sulphur LA 70663.

COMPUTER SHOPPER is the only periodical supporting our comuter that you can pick up at grocery store or book store magazine display. It appears monthly and sells for $2.50 per single issue. COMPUTER SHOPPER supports all computers and has lots and lots of ads for printers, disks, cables, do-it-yourself goodies, and disk drives. The November 86 issue has ads from 3 different dealers who will sell you 100 DS/DD disks with sleeves for $29 + <$4 postage. Thats only $0.33 per disk!! There is a regular TI column which includes reviews of new products. There are also classified ads for hardware and software from commerical and private sources. One of the 39 TI99/4A classified ads in the Nov. 86 issue offers for sale by a private individual a complete system with PE box for $150. I am not sure I believe it, but thats what it says. COMPUTER SHOPPER is often difficult to find in stores. Each issue sells out quickly, since prices in their advertisments are often quite low. Subscriptions are normally $21 for 12 issues, but they have a Christmas special of one subscription for $14.97 and each additional gift subscriptions for $12.97. Their address is P.O. Box 1419 Titusville FL 32781-9988.

GENIAL TRAVELER is a magazine on disk. You must have at least one single sided disk drive to use GENIIAL TRAVELER. There are text commentaries as well as programs and subroutines in various languages. From what we have seen many of the XBASIC programs and subroutines are quite useful, on a par with the NUTS & BOLTS and TIPS disks sold by Jim Peterson. Each "diskazine" consists of one flippy disk with both sides filled with goodies. Currently 4 issues are published each year. A 6 issue subscription is available for $30 from Genial Computerware, 835 Green Valley Drive, Philadelphia PA 19128.

R/D COMPUTING NEWSLETTER- "dedicated to 99/4A and 9900 computer systems." In many respects this is similar to a user group newsletter, except that it is published by RYTE DATA, Canada's largest dealer in 99/4A hardware and software. Special attention is given to articles on upgrading and modifying the 4A console and system. Articles are also published about the products sold by RYTE DATA. There are display ads similar to those in MICROPENDIUM, and some classified ads. The August 86 issue has articles about the 9938 video chip, a PE box 8K RAM cartridge project. C99 and a type in program in this language, a new BASIC compiler, how to directly modify an Atari joystick for use by the TI, and "Confessions of an ex-pirate." The R/D COMPUTING NEWSLETTER is published monthly. A 12 issue subscription delivered by first class mail is $14 US funds from Ryte

Data, Box 210 Mountain Street, Haliburton Ontario, KOM 1SO, Canada.

CHICAGO TI-MES is the newsletter of the Chicago-Area TI99/4A User Group. This group has placed ads in MICROPENDIUM seeking members from outside the Chicago area. For a yearly fee of $21 you get 11 issues o the newsletter, a library catalog and access by mail to the Chicago U.G's library, a flippy disk or a tape full of public domain software (all or most of which is probably already in our own U.G. library), and a password to the Chicago U.G. bulletin board system (which you most call long distance). It may be worth the $21 cost just to receive th newsletter. Some items dealing with local events and personalities may not be of interest to those not living in Chicago. There are however alot of useful reviews type in programs, and technical articles, some at a BASIC level. The goodies listed above and a 1 year membership are available for $21 from Don Jones, P.O. Box 578341, Chicago IL 60657.

OTHER USER GROUP NEWSLETTERS- Although they don't place ads in MICROPENDIUM, almost any TI user group will be glad to accept you as a dues paying out of town member and send you their newsletter. Our club library has files of some other clubs' newsletters we recieve in exchange for sending ours. Check them out and if you like what you see become a member of some additional user groups. Frequently the best technical articles and type in programs appear first in user group newsletters.

HOME COMPUTING JOURNAL is last and definately least on this list of support publications. H.C.J. is published by the very same people who used to publish 99er Home Computer Magazine, and who left numerous prepaid subscribers holding the bag with unfulfilled

subscriptions. The publishing company name has changed, the magazine name has changed (4 times), but the same people run the "new" magazine. Contrary to what is suggested in an editorial in the October 86 MICROPENDIUM, H.C.J. still officially supports the TI as well as other types of home computers. This is varified by the phone call detailed below and by a circular recently mailed to former subscribers. Each issue of this "new" quarterly (They have to date only published once, in June 86, although the above mentioned circular states that a second issue is in the works) includes a disk of software for your particular brand of computer and a written description of the software. A single issue is $25, two issues are $45, and four issues can be had for the "special" price of only $75. The software is no better than some of the better quality public domain programs already in our library. A phone call placed on Oct 21 got their standard recorded message. No matter when you call you get this message. You don't get to talk to a live person and you don't get to leave a message after the tone sounds. The message at least proves that the outfit is still paying their phone bill. Past history suggests that if you send any money you may not get what you pay for before the owners decide to change names again. The address of H.C.J. is P.O. Box 70248, Eugene OR.

DONE

FREE MICROPENDIUM

A free sample issue of MICROPENDIUM (reviewed elsewhere in this newsletter) will be sent to anyone who requests. This not one of those "We'll bill you for a year subscription but you can write CANCEL on the bill and return it to us if you don't like the first issue." offers. There are no strings attached! They want more TI users to become familiar with their publication and to become subscribers. Just give them a call at 512-2255-1512 (during business hours in Texas) or send a postcard to P.O. Box 1343, Round Rock TX 78680 to request your free issue.

DONE

CHARLIE SAYS:

I was very impressed with the software Jim Peterson demonstrated, particularly his $3 programs. These are the ones that don't appear in TIPS, are for sale not for free, and bear TIGERCUB's copyright. Several of these BASIC and EXTENDED BASIC programs rival some released by TI in cartridge format.

For example, SPEEDER READER and SPEEDER READER JR. are speed reading programs that do not have text in data statements that you can eventually memorize. Instead an extensive list of nouns, verbs, adjectives and adverbs generates random sentences that are grammaticaly correct and usually quite funny. These sentences are flashed for a duration specified by the user. Then a question is asked which can be answered by one word. It is not necessary to type back the entire sentence exactly, and there is no chance of memorization. This is different from any other speed reading program I have seen.

Jim has about 130 of these long BASIC and EXTENDED BASIC programs and sells very few of them. Most of his business, from which he makes a few thousand dollars per year, comes from selling disks that have his TIGERCUB TIPS already typed in, and from his NUTS & BOLTS disks. Some of the large programs have been sold less than ten times. These programs probably represent a real gold mine of goodies that few TI users have seen (they should not be in the libraries of User Groups since they are not public domain). From what I personally have seen I recommend that TI users spend a few bucks on some of these programs. A catalog can be obtained from TIGERCUB software, or from the Lima U.G. library.

While experimenting with my GRAM KRACKER and FUNLWRITER I discovered that CALL CLOCK which can be executed from the GK is not compatable with FUNLWRITER. If you do a CALL CLOCK and then load FUNLWRITER, you cannot get into the TI-Writer portion of FUNLWRITER. Apparently the same memory is used by both routines.

Here are two ways you can send payment to overseas fairware authors (such as the authors of BA-WRITER or FUNLWRITER) without the extra expense of purchasing an international money order. One method is to send cash, securely hidden in an envelope so that the cash cannot be seen by holding the envelope up to the light. This is risky, since it invites theft, but United States currency is readily acceptable and convertable almost anywhere in the world.

The second method of sending money overseas without additional cost is to send a travelers cheque. Most banks will sell their own customers travelers cheques at no charge (I once asked a teller at my bank, "Do you have free travelers cheques for regular customers?" The

teller looked at me rather strangely and replied, "Sir, what we have is no service charge travelers cheques."). Usually you have to get a minimum of $100 in cheques at a time. This is no problem. Simply endorse all the checks and deposit all the unneeded cheques in your own account. On the check you are sending to the overseas fairware author put the author's name next to the words "This cheque is payable to:" making it impossible for anybody else to cash the check.

DONE

AN "OFFICIAL" TI-WRITER VERSION 2.0

The information below is from the September 86 issue of the newsletter of the Hunter Valley (Australia) User Group. The author is Tony McGovern, one of the authors of FUNLWRITER.

We have received from France a copy of the TI-Writer disk sold there by TI. This is comes up as Version 2.0 on the Editor's end of file message and the Formatter is dated 1983. The disk fully supports the foreign language capabilities. With the version sold here selecting one of the module's language entries would bring up the GROM resident parts

(selection screen and SD) in the language selected, but the Editor and Formatter internally were still in English, or what passes for it in word processor prompt lines. In the continental version there are three extra sets of files, a character file for each language with true lower case CHARA1-CHARG1, and a set for each of the Editor and Formatter which contain the commands and prompts in each language. The bug in Recover Edit that was introduced with the *fix 1 update of Vn 1.0 issued to User Groups by TI has been repaired. I'm not sure what the copyright status of Vn 2.0 is. I have that feeling that if TI had ever imagined that something like F'Wr was possible, which they clearly didn't, that they might never have released *fix 1 of Vn 1.0 to the public domain. I suspect TI don't ever want to be reminded of the existence of the 99/4a but they are a large corporation, from the land of litigation, that can afford lots of lawyers.

There is an incompatibility between the Editor versions also in that tab records written by Vn 1.0 are not recognised as such by Vn 2.0 but print as a line of special characters. The character files have an extra set of entries above #128 for extra screen characters eg for French small characters with accent marks. I don't know whether they cater for Canadian French. In the absence of a manual I'm not sure how these are entered from the keyboard. That all can be lived with but the reverse problem is more serious - the tab record written by Vn 2.0 locks up Vn 1.0 on the way in. I temporarily lost this file until I went back to TI-Writer and Vn 2.0 and used PF to rewrite the file again without a tab record. As a curiosity the English language version is British rather than American. Seeing as we use # often and pounds sterling but rarely, the American version is more appropriate here in Australia.

DONE

TIPS FROM THE TIGERCUB

#40

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156 Collingwood Ave.
Columbus, OH 43213

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Over 130 original programs in Basic and Extended Basic, available on cassette or disk, only $3.00 each plus $1.50 per order for PPM. Entertainment, education, programmer's utilities.

Descriptive catalog $1.00, deductable from your first order.

Tips from The Tigercub, a full disk containing the complete contents of this newsletter Nos. 1 through 14, 50 original programs and files, just $15 postpaid.

Tips from the Tigercub Vol. 2, another diskfull, complete contents of Nos. 15 through 24, over 60 files and programs, also just $15 postpaid.

****
*   *
* Tips from the Tigercub   *
* Vol. 3 is now ready.   *
* Another 62 programs,   *
* routines, tips, tricks.   *
* from Nos. 25 thru 32.   *
* Also $15 postpaid. Any   *
* two Tips disks $27 or   *
* all 3 for $35 postpaid.   *
*   *
****

Nuts & Bolts (No. 1), a full disk of 100 Extended Basic utility subprograms in merge format, ready to merge into your own programs. Plus the Tigercub Menuloader, a tutorial on using subprograms,

and 5 pages of documentation with an example of the use of each subprogram. All for just $19.95 postpaid.

Nuts & Bolts No. 2, another full disk of 100 utility subprograms in merge format, all new and fully compatible with the last, and with 10 pages of documentation and examples. Also $19.95 postpaid, or both Nuts Bolts disks for $37 postpaid.

Tigercub Full Disk Collections, just $12 postpaid! Each of these contains either 5 or 6 of my regular $3 catalog programs, and the remaining disk space has been filled with some of the best public domain programs of the same category. I am NOT selling public domain programs - my own programs on these disks are greatly discounted from their usual price, and the public domain is a FREE bonus!

TIGERCUB'S BEST, PROGRAMMING TUTOR, PROGRAMMER'S UTILITIES, BRAIN GAMES, BRAIN TEASERS, BRAIN BUSTERS!, MANEUVERING GAMES, ACTION REFLEX AND CONCENTRATION, TWO-PLAYER GAMES, KID'S GAMES, MORE GAMES, WORD GAMES, ELEMENTARY MATH, MIDDLE/HIGH SCHOOL MATH, VOCABULARY AND READING, MUSICAL EDUCATION, KALEIDOSCOPES AND DISPLAYS

For descriptions, send a dollar for my catalog!

The READFILE subprogram on my Nuts & Bolts #2 disk has a backward parentheses in line 21161. This is the corrected line -

```
21161 DISPLAY AT(17,1):"OPEN
 PRINTER #":"NAME? " :: ACCE
PT AT(17,15)VALIDATE(DIGIT)S
IZE(-3):P :: ACCEPT AT(18,7)
:P$ :: OPEN #P:P$ :: GOTO 21
163
```

When Texas Instruments developed Extended Basic, they took away the ability of Basic to redefine or color the characters in sets

15 and 16, ASCII 144 to 159, in order to make room in memory for sprites (they did let us have color set 0 instead. That is why Basic programs which use sets 15 and 16 will crash if you try to run them in XBasic.

Finally, John Behnke published in the Chicago Times newsletter an amazing routine which gave us back those missing sets. His routine was 13 sectors long. Recently, Richard Heath published in the L.A. newsletter a shortened version. And, without having any idea how it works, I have managed to scrunch it down to only 4 sectors -

```
1 CALL BXB
29999 !BXB by Jim Peterson,
adapted from VDPUTIL2 by Joh
n Behnke/Richard Heath
30000 SUB BXB :: CALL INIT :
: CALL LOAD(8194,37,194,63,2
40)
30001 CALL LOAD(16368,80,79,
67,72,65,82,37,58,80,79,75,6
9,86,32,37,168)
30002 !
30003 FOR J=1 TO 136 :: CALL
 LOAD(9529+J,ASC(SEG$(][\[]$
,J,1))):: NEXT J :: SUBEND
30004 SUB CHAR(A,A$):: CALL
LOAD(9500,A):: CALL LINK("PO
CHAR",A$):: SUBEND
30005 SUB COLOR(A,B,C):: CAL
L LOAD(9492,8,15+A,(B-1)*16+
C-1)
30006 CALL LINK("POKEV"):: S
UBEND
```

Note than line 30002 is missing. That's because there is no way to key it in. Once again we need a program that writes a program -

```
100 FOR J=1 TO 136 :: READ A
 :: M$=M$&CHR$(A):: NEXT J
110 OPEN #1:"DSK1.BXBDATA",V
ARIABLE 163,OUTPUT :: PRINT
#1:CHR$(125)&CHR$(0)&"][\[]$
"&CHR$(190)&CHR$(199)&CHR$(1
36)&M$&CHR$(0)
120 PRINT #1:CHR$(255)&CHR$(
255):: CLOSE #1
130 DATA 2,224,37,20,3,0,0,0
```

,2,5,48,48,2,6,37,2,205,133,
2,134,37,17
140 DATA 17,252,4,192,2,1,0,
1,2,2,37,1,2,3,18,0,212,131,
4,32,32,20
150 DATA 208,4,9,80,2,32,3,0
,2,1,37,2,2,2,0,8,2,7,11,0,2
,8,7,0,193
160 DATA 1,192,193,193,180,9
7,133,145,135,21,1,113,136,6
,198,145
170 DATA 135,21,1,113,136,21
0,70,10,198,177,137,220,198,
2,131,37,10
180 DATA 17,240,4,32,32,36,1
6,6,2,224,37,20,3,0,0,0,4,32
,32,32,4
190 DATA 192,216,0,131,124,2
,224,131,224,4,96,0,112

RUN that to create a file BXBDATA on the disk. Then load the BXB program, and enter MERGE DSK1.BXBDATA. The unprintable line will pop into place. SAVE this completed BXB routine in MERGE format, and merge it into any Basic-only program. If you want, the result can be run through a Compactor program and turned into multi-statement program lines for more speed.

Or, you can write an Extended Basic program using all 16 character sets for graphics and color - actually 17, because set 0 is also available. Even the characters 24 through 31 can be redefined! Craig Miller has warned against fooling around in that area of memory, but there seems to be no problem with redefining the cursor (30) or the edge character (31).

Sprites can only use characters between 32 and 143 and their color cannot be changed with CALL COLOR(#_,_). I have not found any other bugs, but have not had time for much experimenting.

Here's an easy Tigercub challenge - run this one in Basic, not Extended Basic.

```
>LIST
100 DISPLAY AT(1,1):0
>RUN
 .0       --
  0
```

Why did it print the zero twice?

    I wrote this next one primarily for blind users. It converts each PRINT or DISPLAY directly to speech output and also provides a speech prompt for INPUTs.

```
100 !PRINT SPEAKER by Jim Pe
terson - to add OPEN #1:"SPE
ECH",OUTPUT and convert PRIN
T and DISPLAY statements to
PRINT #1
110 !Also writes a PRINT #1
for INPUT prompts
120 !Program to be converted
 must first be SAVEd in MERG
E format. Recommend it be RE
Sequenced before SAVEing, to
 make room for INPUT lines
130 PS$=CHR$(156)&CHR$(253)&
CHR$(200)&CHR$(1)&"1"&CHR$(1
81)
140 DISPLAY AT(3,1)ERASE ALL
:"INPUT FILENAME?":"DSK" ::
ACCEPT AT(4,4):IF$ :: OPEN #
1:"DSK"&IF$,INPUT ,VARIABLE
163
150 DISPLAY AT(5,1):"OUTPUT
FILENAME?":"DSK" :: ACCEPT A
T(6,4):OF$ :: OPEN #2:"DSK"&
OF$,OUTPUT,VARIABLE 163
160 PRINT #2:CHR$(0)&CHR$(1)
&CHR$(159)&CHR$(253)&CHR$(20
0)&CHR$(1)&"1"&CHR$(181)&CHR
$(199)&CHR$(6)&"SPEECH"&CHR$
(179)&CHR$(247)&CHR$(0)
170 LINPUT #1:M$ :: P=POS(M$
,CHR$(156),3):: A=POS(M$,CHR
$(162),3):: Z=POS(M$,CHR$(18
1),3)
180 I=POS(M$,CHR$(146),1)::
IF I=0 THEN 210 :: IF Z=0 OR
 Z<I THEN PRINT #2:M$ :: GOT
O 240
190 M2$=SEG$(M$,1,1)&SEG$(M$
,2,1)&PS$&SEG$(M$,I+1,Z-I-1)
&CHR$(0):: PRINT #2:M2$
200 PRINT #2:SEG$(M$,1,1)&CH
R$(ASC(SEG$(M$,2,1))+1)&SEG$
(M$,3,255):: GOTO 240
210 IF P+A=0 THEN PRINT #2:M
$ :: GOTO 240
220 M=MAX(P,A)
230 M$=SEG$(M$,1,2)&PS$&SEG$
(M$,M+1,255):: PRINT #2:M$
240 IF EOF(1)<>1 THEN 170 EL
SE CLOSE #1 :: CLOSE #2
250 DISPLAY AT(12,1)ERASE AL
L:"Type NEW and Enter" :: DI
SPLAY AT(15,1):"Type MERGE D
SK";OF$ :: END
```

############################
         MOLLY DARLING
```
100 CALL CLEAR :: CALL SCREE
N(5):: FOR SE=1 TO 12 :: CAL
L COLOR(SE,16,5):: NEXT SE
110 DISPLAY AT(3,8):"MOLLY D
ARLING": :" Written and perf
ormed by": :TAB(9);"Eddy Arn
old" :: DISPLAY AT(24,1):"Pr
ogrammed by Jim Peterson"
120 FOR D=1 TO 200 :: NEXT D
 :: DISPLAY AT(12,1):"Just a
 moment......." :: :".....look
ing for my music..."
130 DIM N(100),N2(100),A(250
),B(250),C(250):: F=110 :: F
OR J=1 TO 88 :: N(J)=INT(F*1
.059463094^(J-1)+.5):: NEXT
J
140 DATA 16,11,8,16,8,11,16,
4,11,18,11,8
150 DATA 20,16,11,23,11,16,2
5,21,16,28,16,21
160 DATA 23,20,16,23,16,20,2
3,11,16,23,16,11
170 DATA 20,11,16,20,16,11,2
0,8,11,20,11,8
180 DATA 20,11,16,25,16,11,2
3,11,16,20,8,4
190 DATA 18,16,10,18,10,16,1
8,16,10,18,11,16
200 DATA 18,15,11,18,9,15,18
,11,9,18,9,3
210 DATA 28,8,1,28,13,8,28,8
,13,28,13,4
220 DATA 27,20,18,27,18,20,2
0,18,12,20,12,18
230 DATA 25,21,16,25,16,21,2
5,13,16,25,16,13
240 DATA 27,23,21,27,21,23,2
7,23,18,27,18,21
250 DATA 28,23,20,28,20,23,2
0,20,16,27,16,20
260 DATA 30,21,13,28,13,21,2
7,21,13,25,13,21
270 DATA 23,20,16,23,16,20,2
0,11,16,20,16,11
280 DATA 30,23,13,28,13,23,2
3,20,13,20,13,16
290 DATA 25,21,16,25,16,21,2
5,21,16,27,16,21
300 DATA 28,23,20,20,16,11,1
8,15,11,20,11,15
310 DATA 16,11,8,16,8,11,16,
9,1,16,1,9
320 DATA 16,11,8,16,8,11,16,
1,8,16,13,1
330 DATA 25,21,16,25,16,13,2
5,13,9,25,9,4
340 DATA 23,20,16,23,16,11,2
3,11,8,23,8,4
350 DATA 21,18,11,21,11,9,21
,9,6,20,6,3
360 DATA 21,16,11,20,16,11,2
0,11,8,20,8,4
370 DATA 18,13,10,18,10,6,18
,6,1,20,13,10
380 DATA 22,18,13,20,22,18,2
7,18,22,25,22,18
390 DATA 23,18,15,23,15,11,2
3,11,6,23,6,3
400 DATA 23,21,15,23,15,11,2
3,11,9,23,9,6
410 DATA 16,13,8,16,8,13,16,
13,8,18,13,9
420 DATA 20,11,8,21,8,11,20,
11,8,18,11,6
430 RESTORE 140 :: T=16 :: G
OSUB 480 :: RESTORE 140 :: T
=4 :: GOSUB 480 :: RESTORE 1
80 :: T=12 :: GOSUB 480 :: R
ESTORE 140 :: T=16 :: GOSUB
480
440 RESTORE 210 :: T=28 :: G
OSUB 480 :: RESTORE 170 :: T
=4 :: GOSUB 480 :: RESTORE 2
50 :: T=4 :: GOSUB 480 :: RE
STORE 280 :: T=4 :: GOSUB 48
0 :: RESTORE 190 :: T=8
450 GOSUB 480 :: RESTORE 140
 :: T=16 :: GOSUB 480 :: RES
TORE 290 :: T=48 :: GOSUB 48
0 :: RESTORE 140 :: T=16 ::
GOSUB 480 :: RESTORE 410 ::
T=8 :: GOSUB 480
460 RESTORE 310 :: T=8 :: GO
SUB 480 :: GOTO 490
470 GOTO 490
480 FOR J=1 TO T :: X=X+1 ::
 READ A(X),B(X),C(X):: A(X)=
A(X)+12 :: B(X)=B(X)+12 :: C
(X)=C(X)+12 :: NEXT J :: RET
URN
490 DISPLAY AT(10,1):"Contro
l volume of 3 voices";"using
 1, 2 and 3 keys for";"loude
r and Q, W and E for";"softe
r.":""
500 DISPLAY AT(15,1):"Contro
l speed using 'F' for";"fast
er and 'S' for slower."
510 DISPLAY AT(18,1):"Change
 key using 'A' for";"higher
and 'D' for lower."
520 DISPLAY AT(21,1):"Press
'Z' for minor key, 'X'";"for
 major key." :: V1,V2,V3=10
:: F,P,Y=0 :: X=200
530 FOR J=1 TO 192 :: CALL S
OUND(-999,N(A(J)-Y),V1,N(B(J
)-Y),V2,N(C(J)-Y),V3):: FOR
T=1 TO X/50 :: P=1^X :: NEXT
 T
540 CALL KEY(0,K,S):: IF S<1
 THEN 710 :: ON POS("1230WEF
SADZX",CHR$(K),1)+1 GOTO 710
,550,560,570,580,590,600,610
,620,630,650,670,690
550 V1=V1-1-(V1=0):: GOTO 71
0
560 V2=V2-2-(V2=0)*2 :: GOTO
 710
570 V3=V3-2-(V3=0)*2 :: GOTO
 710
580 V1=V1+2+(V1=30)*2 :: GOT
O 710
590 V2=V2+2+(V2=30)*2 :: GOT
O 710
600 V3=V3+2+(V3=30)*2 :: GOT
O 710
610 X=X-20-(X<2)*20 :: GOTO
710
620 X=X+20 :: GOTO 710
630 IF F=1 THEN GOSUB 700
640 Y=Y-1-(Y=-20):: GOTO 710
650 IF F=1 THEN GOSUB 700
660 Y=Y+1+(Y=6):: GOTO 710
670 IF F=1 THEN 710 :: GOSUB
 680 :: GOTO 710
680 F=1 :: Y=0 :: FOR W=3 TO
 27 STEP 12 :: N2(W)=N(W)::
N(W)=N(W-1):: N2(W+5)=N(W+5)
:: N(W+5)=N(W+4):: N2(W+10)=
N(W+10):: N(W+10)=N(W+9):: N
EXT W :: RETURN
690 IF F=0 THEN 710 :: GOSUB
 700 :: GOTO 710
700 F=0 :: FOR W=3 TO 27 STE
P 12 :: N(W)=N2(W):: N(W+5)=
N2(W+5):: N(W+10)=N2(W+10)::
NEXT W :: RETURN
710 NEXT J :: J=192 :: FOR V
=10 TO 30 :: CALL SOUND(-999
,N(A(J)-Y),V,N(B(J)-Y),V,N(C
(J)-Y),V):: NEXT V :: FOR D=
1 TO 500 :: NEXT D :: GOTO 5
30
```

                    MEMORY FULL

                    Jim Peterson