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Vol. VI, No. 5 May, 1988
 Editor Jack Zawediuk 821-1043

LEHIGH 99'ER COMPUTER GROUP

Next meeting: 7:30 PM, Monday
 June 20, 1988

Conference Room A-D, Second Floor
 Sacred Heart Hospital
 4th and Chew Streets
 Allentown, Pennsylvania

PRESIDENT

On Saturday March 26 I attended the 3rd annual TICOFF (T.I. COMPUTER OWNERS FUN FESTIVAL), at the Roselle Park, N.J. High School. While this show is no longer exclusively TI, there was PLENTY for the TI owner to examine. The vendor tables were set up in the Gym, while a series of seminars and discussions were held in the auditorium. Light food and snacks were available in the cafeteria and helpful students were around the building in case you had questions or got lost wandering around.

It appeared that about 1/3 of the vendor tables had items for TI users. The rest of the areas were IBM related. We had been given a program upon entering with information about the school, 5 TI users groups in that region, a list of the seminars, a map of the display floor with the names of the vendors and the types of merchandise available from each. Yes, it was quite well organized.

It was most interesting to see all the hardware and excellent prices at which it was available. In addition to lots of used equipment, the prices for new things couldn't be beat either. Many of the mail order companies we are familiar with had tables where you could purchase software, disks, parts, etc, at the same low prices we see advertised in the magazines, but without the shipping and handling costs or even sales tax. (I don't know how they managed that but I wasn't about to ask and didn't hear any complaints either!)

I picked up several things for the club, myself or extras that I felt someone at home could use. Those with advance tickets also received one program from the sponsors collection. We picked up and are adding to the club library "SIDE-PRINT" which will allow you to

print a wide Multi-plan spreadsheet sideways, and "CATALOGING LIBRARY" which is described by it's author elsewhere in this issue.

Just a reminder that the disks we ordered have come in and are available at the meeting for \$3.50 per package of 10 and the TI joysticks also have arrived. There are 2 sets left at \$5 each.

Ira Lieberman

The program disk described below is now in our library for our members use.

 *
 * C A T A L O G I N G L I B R A R Y *
 *

A FAIRWARE PROGRAM BY MARTY KROLL JR

FEATURES

- 1 Catalogs up to 123 disks 900 files
- 2 Saves data for later listings, additions, or deletions
- 3 Reload data files without rebooting
- 4 For single drive systems:
 No need to switch disks until all additions/deletions are made
- 5 For multiple disk systems:
 Catalog from any drive
- 6 When adding disks, catalog is listed on screen
 You have choice to add it or not
- 7 When adding disks, you are informed if diskname is already on file
 If so you can:
 Replace old listing with new
 Give new listing temporary name
- 8 Catalogs these "funny sectored" disks.
 Those that appear not initialized
 Those that appear empty because of sector #1

- 9 Eliminates all non-printable characters from file disk names
Replaces them with a period, since no legal filename uses it
This eliminates sending unwanted control codes to your printer
- 10 Print a standard format catalog of any disk on file, including funny sector'd disks
- 11 Outputs the following to screen or printer:
Summary of disks
Complete listing of files
Conventional catalog listing of any disk in the library
Complete catalog of all disks, disk by disk
- 12 Choose 1-3 columns of printer output

NOTE Memory Expansion Editor/Assembler or MiniMem are required

LEHIGH 99ers COMPUTER GROUP SURVEY

The survey handed out at the last meeting was filled out by 16 members and the results are listed below.

of working condition 99/4A consols
owned - - 1 2 3 4 6 total
members - 2 9 1 2 1 37
% -13% 63% 6% 13% 6% 100%

Rave99 w/IBM type keyboard - 1
Speech synthesizer - - - - - 14
Cartridge expander - - - - - 10
PE BOX - - - - - 13

w/DISK CONTROL DRIVE - - 10
TI - - - 10
MYARC - - - 3

RS232 - - 11
32K - - 11
128K - - 0
512K - - 3

DISK DRIVES 1 2 3
4 5 2

SSSD-7 DSDD-5 QUAD-1
MODEM 8
OTHER EXPANSION SYS 2 - COR COMP
DISK CONTROL/DRIVE 4
32K - - - - 3
RS232 - - - 3
GENEVE SYSTEM - - - - 2
PRINTER 13
DAISY WHEEL 3
DOT MATRIX 10
BRAND NAME__10 DIFFERENT BRANDS
Is it "EPSON COMPATIBLE"? YES - 8

OTHER COMPUTERS__8 DIFFERENT COMPUTERS

OPINION POLL
I PREFER THE L99CG NEWSLETTER IN FULL SIZE (8 1/2 X 11)- 10 71%

FOLDED 1/2 SIZE PAGES - 4 29%

The totals may not seem correct as some members did not answer all questions or may have misunderstood the question. Also some people were answering for multiple systems i.e. one member has 6 disk drives which I assume is for 2 systems.

HACKING

You CAN hook up a 3 1/2 inch drive to your TI.

At T.I.C.O.F.F. on March 26th I picked up a 3 1/2 inch double side drive for \$50.00 and ten pack of disks for \$7.50. At first I had some trouble figuring out the wiring but then I realised It's the same as any other drive only a different plug. I did have one wire different, it may be the NEC brand drive I bought or it may be common to 3 1/2 inch drives. If anyone knows more about them please give me a call or drop me a line. Any way I like the smaller drive and disks, it's quiet and fast. If anyone else is interested in hooking one up I will be glad to help.

The pin out for TI's disk drives are

- Pins 1 to 33 the odd numbers one side of the plug are all GROUND.
- Pins 2,4,6,34 not used on TI
- Pin 8-Index Pulse
- Pin 10-DSK-1
- Pin 12-DSK-2
- Pin 14-DSK-3
- Pin 16-Motor Control
- Pin 18-Stepper Motor Direction
- Pin 20-Step Pulse
- Pin 22-Write Data
- Pin 24-Write Enable
- Pin 26-Track 00
- Pin 28-Write Protect
- Pin 30-Read Data
- Pin 32-Side Select

As you can see only 13 Pins and ground are used out of a 34 conductor plug.

Other disk drive cards use Pin 6 for Drive #4

The odd wire I had to hook up was Pin 4 on the NEC drive to Pin 10,12 or 14 depending which drive I was making my 3 1/2 incher.

Jack Zawediuk

-THESE GROUPS HAVE NOT REPLIED TO OUR MAILINGS. IF YOU KNOW OF A
 -ADDRESS CHANGE OR OTHER GROUPS PLEASE TELL US.-----

NEW JERSEY U.S. / 483 VALLEY RD. / WEST ORANGE, NJ. 07052
 N.M.J. 99'ers U.S. / PO BOX 338 / KENVIL, NJ. 08857
 NEW JERSEY U.S. / 23 CRESSIDA DR. / OLD BRIDGE, NJ. 12401
 HUDSON VALLEY 99 U.S. / RD 61 BOX 359-5 / KINGSTON, NY. 13501
 HUG / 6 TILDEN LANE / UTICA, NY. 14616
 ROCHESTER USERS GROUP / 34 CALIFORNIA DR. / ROCHESTER, NY. 27420
 RIFORD 99'ers U.S. / PO BOX 21691 / GREENSBORO, NC. 28209
 CHARLOTTE 99'ers U.S. / PO BOX 935 / CHARLOTTE, NC. 29463
 CHARLESTON AREA 99ERS / PO BOX 63 / MT. HOLLY, SC. 29150
 SUMTER COMPUTER 99ERS / 675 BAY BLOSSOM AVE. / SUMTER, SC. 28304
 FAYETTEVILLE AREA U.S. / 275 MURRAY DR. / FAYETTEVILLE, NC. 28408
 PIEDMONT 99'ers U.S. / PO BOX 4890 / GREENVILLE, SC. 29841
 AGUSTA 99ERS / 908 PLAZA PL. / N. AGUSTA, SC. 22209
 BROWARD COMPUTER GROUP / 6264 N. ANDREWS ST. LAUDERDALE, FL. 34695
 COUNTRYSIDE TI U.S. / 48 SUGAR BEAR DR. / SAFETY HARBOR, FL. 34221
 MANABOTA 99'ers U.S. / 6625 ROXBURY DR. / SARASOTA, FL. 33594
 BRANDON TI U.S. / 2512 LAURELWOOD AVE. / VALRICO, FL. 35051
 TI-BUSS / 1338 EDWARDS ST. / DOLOMITE, AL. 35652
 SHOALS 99ERS / PO BOX 2928 / MUSCLE SHOALS, AL. 35814
 N. ALABAMA TI U.S. / PO BOX 11204 / HUNTSVILLE, AL. 35103
 CENTRAL ALABAMA 99ERS / 551 LARKWOOD DR. / MONTGOMERY, AL. 37202
 MUSIC CITY 99'ers / PO BOX 24886 / NASHVILLE, TN. 37212
 METRO-JACKSON U.S. / 819 GRANDVIEW CR. / JACKSON, MS. 39201
 MISSISSIPPI TI U.S. / 7782 CABELL ST. / BILOXI, MS. 40233
 KENTUCKY COMPUTER SOCIETY / PO BOX 36248 / LOUISVILLE, KY. 44123
 THE NORTHEAST 99'ers / PO BOX 2283 / EUCLID, OH. 45004
 LIMA AREA TI U.S. / 4241 CAMPUS DR. / LIMA, OH. 46614
 MICHIANA 99/4A U.S. / 911 DOVER DR. / SOUTH BEND, IN. 33082
 SHEBOYGAN AREA U.S. / PO BOX 1151 / SHEBOYGAN, WI. 53190
 ROCK 99 COMP GR. / N2425 CHAPEL DR. / WHITEWATER, WI. 55112
 MSP 99ER U.S. / PO BOX 12351 / ST. PAUL, MN. 55154
 3M 1199/4A U.S. / 3M BLDG 2703B-06 / ST. PAUL, MN. 60441
 TIG OF HILL COUNTY / PO BOX 2186 / KONEOVILLE, IL. 60901
 K3 USERS GROUP / PO BOX 1941 / KANKAKEE, IL. 61701
 MID ILLINOIS U.S. / PO BOX 766 / BLOOMINGTON, IL. 61821
 MW 99ERS / 3 GENEVIEVE LANE / CHAMPAIGN, IL. 62265
 NEW BADEN U.S. / PO BOX 30 / NEW BADEN, IL. 65212
 MIDN AMERICA U.S. / 8726 MARTY LANE / OVERLAND PARK, KS. 68447
 CROSSROADS 99'ER U.S. / PO BOX 233 / YORK, PA. 72015
 BALINE 99'ERS U.S. / 422 S. MAIN ST. / DENTON, AR. 72076
 J.U.S. / PO BOX 91 / JACKSONVILLE, AZ. 75240
 FOREST LANE U.S. / PO BOX 743005 / DALLAS, TX. 75061
 DALLAS TI HOME COMP / 1221 MOSSWOOD PL. / IRVING, TX. 78148
 SAN ANTONIO 99ERS / PO BOX 2509 / UNIVERSAL CITY, TX. 78444
 CORPUS CHRISTI 99'ERS / 334 YACOB ST. / CORPUS CHRISTI, TX. 78720
 CENTRAL TEXAS U.S. / PO BOX 200248 / AUSTIN, TX. 79072
 PASTOR'S USERS GROUP / 105 W. 7TH. / PLAINVIEW, TX. 75418
 LUBBOCK COMPUTER CLUB / 8912 16TH ST. / LUBBOCK, TX. 75908
 SUN CITY 99'ERS U.S. / PO BOX 6966 / EL PASO, TX. 80181
 COLORADO 99'ERS U.S. / PO BOX 3400 / LITTLETON, CO. 80631
 TEXAS INST. CLUB / 2440 25TH AVE. / ARLING, CO. 81001
 PUEBLO 99'ERS U.S. / 809 S. 12TH ST. / PUEBLO, CO. 83703
 BOISE 99'ERS U.S. / 6357 N. PORTSMOUTH AVE. / BOISE, ID. 83204
 POCATELLO TI US / 4990 WILDFLOWER / POCATELLO, ID. 84120
 SLAVE USERS GROUP / 3892 S. 3760 W. / W. VALLEY, UT. 84105
 MISSILE RANGE 99'ERS / 2718 TOPLEY AVE. / LAB CRUCES, NM. 89502
 NORTH NEVADA 99'ERS / 755 COUNT FLEETE CT. / RENO, NV. 891320
 TRI-VALLEY 99'ERS / 289 S. CLERSON DR. / NEWBURY PARK, CA. 92628
 E.T. 99'ERS CLUB / PO BOX 2752 / COSTA MESA, CA. 92620
 KINGB 99'ER U.S. / 289 W. BIRCH AVE. / HANFORD, CA. 93238
 SOUTH BAY USER GROUP / PO BOX 23447 / SAN JOSE, CA. 95153
 NOR-CAL TI U.S. / PO BOX 112 / OCCIDENTAL, CA. 95465
 VALLEY HOUSE / PO BOX 1444 / BONONA, CA. 95476
 CENTRAL VALLEY U.S. / 2419 CLERSON DR. / DAVIS, CA. 95616
 PORTLAND 99'ERS / PO BOX 15057 / PORTLAND, OR. 97202
 PUGET SOUND 99'ERS / PO BOX 6073 / LYNNWOOD, WA. 98036
 KITSAP 99'ERS / PO BOX 418 / BREHERTON, WA. 98310
 TRI-CITIES 99'ER U.S. / 3925 GRANT ST. / WEST RICHLAND, WA. 99336

---OTHER COUNTRIES---
 TICHUG (CANBERRA) / PO BOX 610 / BELCONNEN, ACT AUST. 2616
 TI-CLUB DE BRUXELLES / AVE DEBIOLLEY 79 / BRUXELLES, BELGIUM 1150
 TI/99 GEBRUIKERSCLUB / VLAANDEREN T VRIJE 120 / MEVELSEM, BEL. 8640
 TI NOVA SCOTIA / 321 IONY HILL / LOWER SACKVILLE, NS. CAN. 846 1M6
 HAMILTON TI US / PO BOX 1005 ST. A / HAMILTON, ONTARIO CAN. 036 602
 FREDERICTON U.S. / 170 CANTERBURY DR. / FREDERICTON, NEW BRUN. 038 49
 TI 99/4A ASSOC. / 930 GLEN PARK DR. / SAUNDUCESTER, ONT. CAN. 418 211
 C.I.H. 99'ERS / CP686 STATION C MONTREAL / QUEBEC CANADA H2L 4L3
 WINDSOR-ESSEX U.S. / 2920 ST. PATRICKS / WINDSOR, ONT. CAN. N9E 3B7
 TI-FORT USERS GROUP / MAANEVEJ 24 / HORNBECK, DENMARK 3100
 TI INTERNATIONAL / 96 LANBURY RD. / OXFORD, ENGLAND 0X2 6JT
 FANA 99'ERS U.S. / RESIDENC LE POSEIDON 66750 / ST. CYPRIEN PLAGE FRANC
 TI 99ER RHEINLAND / KARL MARY ALLEE 18 / KOELN, W.GERMANY D-5000

SACRAMENTO U.S. / 6025 SHIRLEY AVE. / CARMICHAEL, CA. 95608
 ALOHA 99'ERS U.S. / 92 863 PALAILAI ST. / HAKAKILO, HI. 96701
 E.U.N.S. / PO BOX 13073 / BALEN, UK. 97205
 EUGENE 99'ERS U.S. / PO BOX 11313 / EUGENE, OR. 97440
 TIC TAC USER GROUP / 812 S. 132ND. ST. / SEATTLE, WA. 98168
 TACOMA 99'ERS U.S. / PO BOX 42362 / TACOMA, WA. 98442
 N.O.V.A. / PO BOX 508 / VANCOUVER, WA. 98666

---OTHER COUNTRIES---
 NORBERTO BETTINELLI / 1427 BUENOS AIRES / ARGENTINA 2016
 TISHUG (SIDNEY) / PO BOX 214 / REDFERN, NSW AUSTRALIA 2322
 HUNTER VALLEY 99'ERS / 6 ARCOY CLOSE / TARRO, NSW AUST. 6050
 TI 99 USERS OF PERTH / PO BOX 246 / MT. LAHLEY, WESTERN AUST. 5109
 ADELAIDE TI COMP CLUB / 26 SUFFOLK AVE. / BRANNA LODGE, S.AUST. 2470
 TEXSOFT CLUB / STRADSPPOORTSTRAAT 24 / HERENTALS, BELGIUM H4V 2A2
 MONTREAL 99'ERS / 3290 W. BROADWAY / MONTREAL QUEBEC CAN. T5J 2L3
 EDMONTON U.S. / PO BOX 11983 / EDMONTON, ALBERTA CAN. 682 1E7
 LE TI-HOT / 2130 LAVIOLETTE / TROIS-RIVIERES, QUEBEC CAN. 94R 4J7
 KANARHA 99'ERS / PO BOX 373 / PETERSBOROUGH, ONTARIO CAN. K9L 1M1
 NINE-T-NINE U.S. / 109-2256 GERRARD ST. / TORONTO, ONT. CAN. M4E 2L2
 OTTAWA 99'ERS U.S. / PO BOX 2144 / OTTAWA, ONTARIO CANADA K1P 5A3
 NORTH BAY 99'ERS / 159 DONALD DR. / NORTH BAY ONTARIO CAN P1A 3H2
 THE 99 CO-OP / 11220 GALLON CT. / RICHMOND, B.C. CANADA V7C 4L3
 SASKATOON TICC / PO BOX 7525 / SASKATOON, SASKATCHEWAN CAN. S7X 4R6
 SUDBURY 99'ERS U.S. / 2530 IDA ST. / SUDBURY, ONTARIO CAN. P3E 4X1
 WINNIPEG 99/4A U.S. / 1105 CHURCH AVE. / WINNIPEG, MANITOBA R2X 1B1
 RYTE DATA / 210 MOUNTAIN ST. / HALIBURTON ONTARIO CANADA K0M 1B0
 TI-HES / 40 BARRHILL PATCHER / BRIGHTON EAST SUSSEX, ENGS. BN1 8UF
 PROGRAMBITEN / WAHLBERGGATEN 6 / TRONDHJØHANSHEGV. SWEDEN S-121 4
 TI-ESR DE SINGAPORE / PO BOX 699 / TIONG BARRU, SINGAPORE 9116

---THESE GROUPS WE EXCHANGED NEWSLETTERS WITH IN 1988. WE TRY TO
 UPGRADE THE ADDRESSES AS SOON AS POSSIBLE. IF YOU KNOW OF ANY
 OTHER ACTIVE GROUPS PLEASE LET US KNOW.-----

PIONEER VALLEY U.S. / 8 OLD FARM CIRCLE / BELCHERTOWN, MA. 01007
 IMPACT 99 / PO BOX 459 / E. DOUGLAS, MA. 01316
 N.U.N.C.N. / 860 LINCOLN ST. / WORCHESTER, MA. 01608
 MAGNETIC / 38 WALNUT PL. / DEONAN, MA. 02026
 BOSTON COMPUTER SOCIETY / 1 CENTER PL. / BOSTON, MA. 02108
 CLUB 99 / 34 FORREST ST. / ABBESBORG, MA. 02703
 NORTH EASTERN 99'ers / 209 4th ST. / PROVIDENCE, RI. 02904
 NUTMEG NINTY NINERS / 10 JOLLY RD. / ELLINGTON, CT. 06029
 NEWJUNORTH 99'ers / PO BOX 84 / DUMONT, NJ. 07628
 NORTHERN NJ 99'ers / 16 JUDITH ANN DR. / RINGWOOD, NJ. 07456
 MID-HUDSON TI U.S. / PO BOX 7298 / NEWBURGH, NY. 12550
 CENTRAL WESTCHESTER / 1261 WILLIAMS DR. / BHRUS OAKS, NY. 10889
 88 99'ers U.S. / QUEENSBORO COMMUNITY COLLEGE / BAYSIDE, NY. 11364
 LONG ISLAND 99'ers U.S. / PO BOX 344 / DEER PARK, NY. 11729
 TITEE USER GROUP / 36 FOX PLACE / HICKSVILLE, NY. 11801
 UPSTATE NY 99/40 U.S. / PO BOX 12323 / ALBANY, NY. 12212
 TWIN TIOVE / R.D. 01 / ROCKSTREAM, NY. 14878
 WESTERN NY 99'ers U.S. / 2733 MAIN ST. / NEWFANE, NY. 14108
 AIRPORT AREA U.S. / PO BOX 710 / CORAOPOLIS, PA. 15108
 PITTSBURGH BOX 9045 / PITTSBURGH, PA. 15205
 WEST PENN 99'ers / RD 91 BOX 73A / JEANNETTE, PA. 15644
 MITTANY USERS OF T.I. / 628 WILTSHIRE DR. / STATE COLLEGE, PA. 16803
 ERIE 99'ers U.S. / 2812 WEST 33rd ST. / ERIE, PA. 16506
 YORK AREA 99'ers U.S. / PO BOX 7140 / YORK, PA. 17404
 SUDBUCHANNA VALLEY U.S. / PO BOX 90 / HUMBLE HURF, PA. 17821
 PENN VALLEY C.S. / RT BOX 2323 / LEHIGH VALLEY, PA. 18001
 PHILADELPHIA 99'ers U.S. / PO BOX 18488 / PHILADELPHIA, PA. 19102
 CHESTER COUNTY TI U.S. / 111 LAKEVIEW DR. / EYTON, PA. 19341
 READING-BERKE 99'ers / RD 92 BOX 2028 / ORNISTOWN, PA. 17961
 DELAWARE VALLEY U.S. / PO BOX 4240 / MILMINTON, DE. 19804
 HANNERS / PO BOX 267 / LEBBURG, VA. 22073
 TIDSWATER 99'ers U.S. / 416 S. MILITARY HWY. / CHESAPEAKE, VA. 22022
 ROANOKE VALLEY U.S. / PO BOX 12322 / ROANOKE, VA. 24024
 99 LINES / PO BOX 296 / PFAFFTOWN, NC. 27040
 COMPUTER SHOPPER MAG. / PO BOX / TITUSVILLE, FL. 32781
 ATLANTA 99'ers U.S. / PO BOX 19841 / ATLANTA, GA. 30323
 MACON 99'ers U.S. / 435 VILLA CREST AVE. / MACON, GA. 31206
 COLUMBUS TI 99'ers / 3738 ARREL DR. / COLUMBUS, GA. 31907
 WEST TAX 99'ers / PO BOX 176 / ORANGE PARK, FL. 32067
 BREVARD USERS GROUP / PO BOX 37211 / BATELLITE BEACH, FL. 32927
 MIAMI USERS GROUP / 19301 NE 19th AVE. / N. MIAMI BEACH, FL. 33179
 MARTIN COUNTY U.S. / 1200 STARRISH LANE / STUART, FL. 32994
 SUN COAST 99'ers U.S. / 8421 WESTRIDGE DR. / TAMPA, FL. 33618
 BRADENTON U.S. / 3815 13th ST E. / BRADENTON, FL. 34203
 UPPER PINELLAS U.S. / 2829 MEADOW HILL DR. / CLEARWATER, FL. 34621
 TIBUS BIRMINGHAM / 728 JEFFERSON BLVD. / TARRANT, AL. 35217
 S.F.A. U.S. 99'ers / RT 94 BOX 23 / BRENTON, AL. 36208
 K-TOWN 99/40 U.S. / 3506 BARDEW DR. / KNOXVILLE, TN. 37918
 MID-SOUTH 99'ers U.S. / PO BOX JED22 / GERMANTOWN, TN. 38133
 BLUEGRASS COMPUTER SOCIETY / PO BOX 11866 / LEXINGTON, KY. 40578
 SPIRIT OF 99 / 8055 BIRFIELD RD. / DUBLIN, OH. 43017
 TIGERCLUB SOFTWARE / 136 COLLINGSWOOD AVE. / COLUMBUS, OH. 43203
 OH-MI-TI (MM OHIO) / 3333 EXECUTIVE PKW. / TOLEDO, OH. 43608
 C.O.M.N.I. / PO BOX 21890 / COLUMBUS, OH. 43221
 HORIZON SERVICES / 168 DARTMOUTH DR. / TOLEDO, OH. 43614
 CLEVELAND AREA 99'ers U.S. / 20311 LAKE ROAD / ROCKY RIVER, OH. 44118
 GREATER AKRON 99'ers / PO BOX 3201 / CUYAMOGA FALLS, OH. 44223
 PENN-OHIO 99'ers U.S. / 71 ELM ST. / STRUTHERS, OH. 44471
 CARNATION CITY 99'ers / 25869 HARTLEY RD. / BLOIT, OH. 44608
 CIN-DAY USERS GROUP / 418 TIMWOOD AVE. / PIGLIA, OH. 45356
 HOOSIER USERS GROUP / PO BOX 3227 / INDIANAPOLIS, IN. 46204
 THE FORT'S USERS GROUP / 5319 TWILIGHT LANE / FT WAYNE, IN. 46833
 MIAMI COUNTY U.S. / PO BOX 1194 / PERU, IN. 46970
 GREAT LAKES COMP-GROUP / PO BOX 7151 / ROSEVILLE, MI. 48305
 GRAND RAPIDS U.S. / 1419 LAUGHLIN DR. NW / GRAND RAPIDS, MI. 49504
 CENTRAL IOWA 99'ers U.S. / PO BOX 3043 / DEB MOINES, IA. 50316
 QUAD CITIES TI U.S. / PO BOX 1124 / BETTENDORF, IA. 52022
 CEDAR VALLEY 99'ers U.S. / 288 MINDSOR DR. / CEDAR RAPIDS, IA. 52402
 MADARCA 99'ers U.S. / 437 W. GORHAM / MADISON, WI. 53703
 LONESTAR COMPUTER CLUB / PO BOX 1422 / RACINE, WI. 53401
 FOX CITIES U.S. / PO BOX 2833 / APPLETON, WI. 54912
 SIOUXLAND 99'ers / 4604 BLUEBERRY CL. / SIOUX FALLS, SD. 57106
 MAD HUNTERS / BOX BEERS RD. / GRAMS FORDS, MD. 58201
 CHICAGO TI U.S. / PO BOX 878341 / CHICAGO, IL. 60657
 PEKIN USERS GROUP / 1904 AMERICAN ST. / PEKIN, IL. 61554
 DECATUR 99ERS U.S. / PO BOX 726 / DECATUR, IL. 62523
 ST. LOUIS 99ERS / PO BOX 280926 / CRESTWOOD, MO. 63126
 JACKSON COUNTY 99'ers / 4711 NORTHERN AVE. / KANSAS CITY, MO. 64133
 KANSAS CITY 99'ers / PO BOX 12391 / KANSAS CITY, MO. 64116
 OZARKS 99'ers / 1342 S. STARFORD / SPRINGFIELD, MO. 65804
 KAN VALLEY U.S. / PO BOX 8424 / TOPEKA, KS. 66608
 GREATER OMAHA TI U.S. / 3224 LINCOLN BLVD. / OMAHA, NE. 68131
 JAYOU 99'ers U.S. / PO BOX 921 / LAKE CHARLES, LA. 70602
 BOONER 99'ers / PO BOX 61061 / OKLAHOMA CITY, OK. 73148
 HOARK 99'ers U.S. / 2806 OSAGE DR. / SPRINGDALE, AR. 72784
 PARIS 99'ers U.S. / 2221 COLLEGE HW. / PARIS, TX. 75460
 NET 99ER MCB / PO BOX 534 / HURST, TX. 76053
 HOUSTON USERS GROUP / 13107 SAFING / HOUSTON, TX. 77099
 BRAZOS VALLEY 99'ers / PO BOX 7053 / WACO, TX. 76714
 MICROPENDIUM / PO BOX 1343 / ROUND ROCK, TX. 78680
 AMARILLO 99'ers U.S. / PO BOX 8421 / AMARILLO, TX. 79114
 ROCKY MOUNTAIN 99'ers / 8248 PEARL ST. / THORNTON, CO. 80229
 FRONT RANGE 99'ers / PO BOX 9373 / CO SPRINGS, CO. 80922
 SALT LAKE 99'ers / 3818 W. 6340 S. / WEST JORDAN, UT. 84084
 VAST 99 USER GROUP / 1425 E. DEL RIO DR. / TEMPE, AZ. 85282
 SOUTHWEST 99'ers / PO BOX 17831 / TUCSON, AZ. 85730
 BERNALILLO U.S. / PO BOX 27571 / ALBUQUERQUE, NM. 87125
 SOUTHERN NEVADA U.S. / PO BOX 26301 / LAS VEGAS, NV. 89126
 L.A. 99'ers COMP SP. / PO BOX 67A79 / LOS ANGELES, CA. 90067
 BEA 99'ers U.S. / 1328 PLACID DR. / WHITTIER, CA. 90608
 SFV 99'ers / 2823 BARNBORN AVE. / LA CRESCENTE, CA. 91214
 POMONA VALLEY 99'ers / 1833 E. PRINCETON HT. / ONTARIO, CA. 91764
 SOUTHERN CA 99/4A U.S. / PO BOX 21181 / EL CAJON, CA. 92021
 NORTH COUNTRY 99'ers / PO BOX 2500 / ESCONCIDO, CA. 92025
 SAN DIEGO COMP SOC. / PO BOX 5263 / SAN DIEGO, CA. 92103
 TI RIVERSIDE U.S. / 2372 ELBINORE RD. / RIVERSIDE, CA. 92508
 99'ER U.S. OF ORANGE / 17901 SANTA ISABEL / FOUNTAIN VAL. CA. 92708
 TRI-VALLEY 99'ers / 326 GLEN WAY / FILLMORE, CA. 93013
 TI CLUB OF OXNARD / 3183 KELP LANE / OXNARD, CA. 93030
 AVTI USER GROUP / PO BOX 4101 / LANCASTER, CA. 93539
 SAN FRANCISCO 99'ers / 24816 HANCO ST. / HAYWARD, CA. 94545

THE GENEVE IS HERE , FINALLY .

Part 7

by Jerry Boyer

Well, this month I've received an assortment of disks for the Geneve 9640 from the TICOFF'88 show. They include: DM1000 ver.3.8 ; TELCO ver.1.3 ; a 9640 demonstration disk ; a MISC. GENEVE disk ; MASS TRANSFER (3.9) ; a FAST-TERM 9640 ; PRBASE (v.2.0/9640) ; and a GIF CONVERTER PROGRAM.

The DM1000 now correctly operates on the GENEVE. They've slowed down the cursor speed so you don't get double key strokes any more. It also takes more advantage of the GENEVE's special features. It now works the way it should, I love it now. The only thing missing is a way to format the new 80 track disks, such as the 3 1/2" disk drives use and some 5 1/4" drives. Fortunately MYARC supplies a DM III program for the GENEVE with a MYARC controller card.

The TELCO program is a wonderful communications program, rivaling the best communication programs for any computer. MicroPendium compares it to the very expensive PROCOMM program for the larger PC computers. They gave it all A's on every category. It has all the best features of other terminal programs and quite a few they don't have. This great program works on either the TI 99/4a or on the GENEVE 9640. It also supports XMODEM and ASCII file transfers plus ANSI, ADM3A, VT100, and D410 files. It will handle any baud rate from 300 to 9600. And it's user friendly.

The 9640 demo disk has some neat little programs like: a box drawing program with the colors and the box sizes varying big to small and then back to big again; a bunch of line drawing programs showing off the GENEVE's power and speed; and a color demo showing the 256 colors available on the GENEVE. This one's a lot of fun to show off to your friends with their Commodores and their Ataries.

The MISC. GENEVE disk has some fun programs and some utility programs on it. They include a variety of clock and time programs, a new loader for MY-WORD, a disk manager, and a cable wiring d/v 80 file. Some are neat, the others are necessary.

MASS-TRANSFER 80 and FAST TERM 9640 are just the same as before but now they are in 80 columns. It would have been nice if they would have taken advantage of the Geneve's large memory along with the 80 columns.

The PRBASE (2.0/9640) is a very good update, using the large memory and the speed of the GENEVE to create an excellent data base program. I haven't had any time to really get involved with this program so I can't tell you any of it's new features as yet. Maybe next month.

The G.I.F. converter by Paul Charlton is a program to convert GIF picture files to a readable file to be loaded into MY-ART program. Then you can edit or save or print them out. It works like a charm. Now I'm looking for some good GIF files to use this baby. Also on this disk is the GIF help file written by Chris Bobbitt, very helpful for beginners like me. There is also the new version of TASS 2001 (TI-ARTIST slide show) ver. 3.0 by Gary Bowser. This program was just released at the Ottawa TI show. You can now read and print all different types of picture files from various drawing programs.

All of the above programs are either public domain or freeware and are readily available on most information BBS sources. If you use them please pay the authors or we will lose the best source of new programs for our orphaned little computer. Most programmers are saying that they will stop writing for the TI if they don't get any response to their freeware disks.

DISK LIBRARY (section A)

Home & Business Utilities
Latest Arrivals:04/20/88

Disk Manager 1000 ver.3.8
from Bruce Caron of the
Ottawa 99'er User Group
latest version fairware
excellant disk manager disk
with new updates and old bugs
removed, a truly excellant
program.

Chart Maker II
from Quality 99 Software
makes & prints vertical,
horizontal & pie charts
can also save charts to disk.
works well & it's very easy
to use.

Funnelweb Utilities ver.4.0
from Funnelweb Farms, Aust.
newest version includes the
most commony used utilities,
like TI-WRITER, EDITOR ASSM,
DMI000,etc. very user friend-
ly program, excellant work.

c99 Language Package (2 disks)
from Clint Pulley
one of the best c99 beginner
packages around. docs are
included on disks.

Exchange Disk #1
from Tony Imbruglia, Aust.
assorted general programs
from Australia,very good &
very interesting work.

York TIUG
from Bob & Don Emmel,
assorted utilities & misc.
programs. some useful, some
are just fun to work.

Swap-U-2#5
from various programmers,
assorted utility programs &
some music programs. an
interesting array of programs
Genial Traveler Disk Magazines
volume 1 #'s 1 thru 6
all flippy disks.

vast assortment of news
articles & very helpful hints
as well as some excellant
utility programs for beginner
and advanced programmers.

CALENDARS
from Jay Leber of the L.I.T.I.
assorted calendars from mini to
maxi, from appointment to memo,
from monthly to yearly. This is
an excellant disk to have fun
with when you're bored.

CATALOGING LIBRARY
by Marty Kroll. includes a very
complete program set for setting
up a file to manage all of your
disks, even sorting them out.

MASSCOPY V3.5+
newest version of Masscopy which
makes use of 128k memory for 1
pass coping. Also included on disk
is a 128k version of Ti-Writer.
This version keeps both the Editor
and the Formatter in memory so you
can switch back and forth.

TI-MORE SYSTEM DISK
This is a fun and games utility
disk for use around the house. It
includes a poetry making program,
a calendar maker, a fortune teller
and much more.

40_UTILILITY
by Brad Snyder of the Lehigh 99'ers
excellant set of programs to get 40
columns on screen. there is also a
massive set of Docs included on the
disk to guide you through any of the
questions that come up while trying
to use this utility. well written.

PLUS
from OHIO UNIVERSITY, Lima Ohio
excellant companion to Funnelweb's
utility disk. Contains a screen
dump, a pig latin program, a label
printer, a three column program and
a set of templates for TI-WRITER

GAMES 2/3
from National 99'er user group
assorted games, some simple, some
get involved. all are fun to play
mostly for younger people and kids

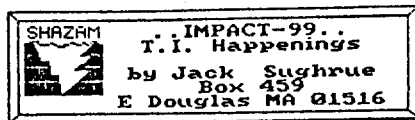
HOME 5/6
from National 99'er user group
assorted little programs that are
very useful around the house, like
inventory, check handling, records,
nutrition, and mailing lists.

EDUC 8/11
from National 99'er user group
assorted educational programs with
some language tutoring such as:
French, Spanish and German helpers.

BUS 16/17
from National 99'er user group
assorted small business programs
including: labelmaker, letterwriter,
employee evaluator, expenses and
records, and inventory.

GENEALOGY HELPER
this is a companion disk for the
GENEALOGY package in our library.
includes display variable 80 files
and templates to help set up your
genealogy files

SPAD XIII Mark 2
from Quality 99 Software, an great
flight simulator program. it allows
you to be in control of an old
style bi-plane. very realistic.



GOOD OLD DAYS

PART II: MIDDLE AGES

Last time we IMPACTed I took you on a personal tour of my early experiences with the 4/A, which were more typical than not.

After I had amassed my 100-plus programs on tape (mostly typed in from "99er" Magazine and some early books), I, like so many others, wanted to expand my computer "mastery." My TI appetite was voracious.

I bought every TI book available, which, in 1983, was a considerable number. These included such masterpieces as Loreto's THE TI-99/4A IN BITS & BITES, Danaost's ELEMENTARY TI-99/4A, Addison-Wesley's TERRIFIC GAMES FOR THE TI99/4A, Que's TI-99/4A FAVORITE PROGRAMS EXPLAINED, Davis's PROGRAMS FOR THE TI HOME COMPUTER, and the books being published by SANS and COMPUTE! Of the latter, PROGRAMMER'S REFERENCE GUIDE TO THE TI-99/4A was always at my side. This was written by Regina (Cheryl Whitelaw) who wrote the best programs "99er" magazine published: HOMEWORK HELPER, NAME THAT BOMB, TYPING FOR ACCURACY, CIVIL ENGINEERING FUNDAMENTALS, HARRIED HOUSEWIFE, DODGE 'EM, MAZE RACE, SAN FRANCISCO TOURIST and so many others. These were already classics. What astounded most of us Regena groupies was the depth of her knowledge. She seemed to know an incredible amount about computers, obviously (and a lot of different KINDS of computers), but she also knew so much about music and children and electrical engineering and geography and art and just about any topic a staff of college professors would know.

That was in 1983. Regina was already in her third year of TI publishing when she moved to COMPUTE! under some mysterious circumstances. So I began a COMPUTE! subscription to continue getting her monthly column. I got lots more out of that magazine, too. Tutorials of all kinds. Programs galore. It was TI's Cloud Nine. In that same year, Regina began writing for ENTHUSIAST 99, too.

Boy, what a year! Mark Leyton began his wonderful UNOFFICIAL 99/4A1 magazine. K-POWER and FAMILY COMPUTING (early supporters of the 4A) had also made their debut. I subscribed to them all: 6 TI magazines a month (7 if one includes the non-monthly SMART PROGRAMMER)! (SUPER 99 MONTHLY and NIMINAG 99 wouldn't be out for another year.)

I find it hard to believe in 1988 that the final 4A classic book - - THE LAST WHOLE TI99/4A BOOK by Paul Garrison - was published within a year of this creative time. Published by Wiley Press in 1984, this still stands as one of the best books ever written for 4A owners. (Do not confuse it with Linda and Allen

Schreiber's THE LAST WORD ON THE TI-99/4A, also published in 1984, which is one of the worst books in my TI library.)

It's even harder to believe that the magazines mentioned above no longer exist (or no longer carry any TI stuff).

As magazines like COMPUTE! and FAMILY COMPUTING dropped TI (which still had the largest home computer ownership of all; more than the Apple, Commodore, and IBM Jr. combined) many of us wrote letters of protest. After all, we were still buying disks and drives and monitors and printers and lots of other advertised things. No good. Even though the ADAM and the PEANUT (Do you remember?) were still carried. I dropped all magazines that dropped the 4A. The only ones left are MICROpendium, the last monthly devoted solely to the TI, which began its life in February of 1984. In that issue (originally called HOME COMPUTER COMPENDIUM) Editor/Publisher John Koloen said this of his new magazine, "It is a conduit, a source of information and a vehicle for the dissemination of information." It has certainly lived up to those criteria. I would find it difficult to be a 4A owner without MICROpendium and user groups. The only other magazine still supporting our community with a very informative monthly column is COMPUTER SHOPPER.

It's sad to look through that first COMPENDIUM. All the advertisers except one are gone: Gadget Software (Megaworld), TJ Software (Kandy Kong), THinc (Colors), C.A.Root (On Gaing), Maple Leaf (Sky Diver), Silicon Valley Software (S.A.T. Verbal Section), Machine Shoppe Software (Cassette Indexer), Larry Vision (Queckers), Programs Software (Personal Enrichment), Microworld (Snac Man), Soft Relations (Super Speller), DCH Software (Home Budget), CALLCAR (Emotional Health), Software Programs (Starship Concord), TI Books and Software.

The one advertiser in that issue who is still with us is TIGERCUB SOFTWARE, owned and operated as a completely one-man venture by Jim Peterson (Mr. T.I.).

And that brings me back to 1983 (before the orphaning) when we were still high on TI and user-group business was booming. For all the other things that were going on for us (and they were numerous: every big department store and book store and software store carried 4A items on their front shelves, for example) - for all those other things, the year will still be known to me as the year of the TIGERCUB.

User-group newsletters/articles, for the most part, were not as sophisticated as they are today. The big exception was the "TIPS from the TIGERCUB" monthly columns by Jim.

Nobody did what he did. His articles (many old ones as well as new ones are still being published worldwide today) opened the door to understanding. One was either a techie or a duddy. But Jim made us all feel intelligent. He pulled us up. His explanations and his "experiments" and his enthusiasms came out in every article. He always stayed far enough ahead of us to challenge us completely, yet he never talked down to us

slow learners.

From his very first article: "Are you tired of that blankety blinking black cursor? This won't work in BASIC but if you're in IB try I CALL COLOR(0,11,1).

I did it. Then I tried it in BASIC (just in case mine worked, which it didn't). Then I fiddled with the numbers until I finally understood what happened.

This is the way Jim taught, for teaching is what he certainly did (and does). His classroom, though, included thousands and thousands of pupils.

He taught me to use Line # and FCIM/I (or E) instead of EDIT and how to use REDD for expanding program lines and how to slash a zero and how to highlight operators. He let me in on lots of secrets: You can type RUN'DSKI.FILE' without any spaces and it'll work; that typing the double colons in IB lines without spaces before or after won't matter, either. Do these sound mundane? Not if you didn't know any of that stuff, and none of us did.

His teachings were so natural, so filled with personal experience, that you couldn't wait to try the thing Jim had just found out. Here's another from that first "tips": "Have you ever been typing in a program, and the computer suddenly jumped back to the title screen, and you were sure that you didn't have a finger anywhere near that infernal QUIT key? But maybe you were drinking coffee with one hand and trying to press FCIM and I simultaneously with the other? So, if you don't have anything valuable in the computer right now, try pressing FCIM, Space Bar, H and N all at the same time. Oops! Another useless bit of info - try FCIM, 5, 6 and 7 all together. Break!"

My vision of him was a young kid (maybe as old as a college student) doing improvisational computing, the way Art Tatum played the piano; somebody with great knowledge and understanding exploring human/machine potential.

I didn't find out until a very long time after that Jim is a grandfather and that he bought the 4A because he liked the keyboard!

It didn't matter. Genius is genius no matter what age.

He used to close off those early columns with Happy Hackin' until hackers got a bad reputation by a few pirates and vandals, then he closed it with Memory Almost Full. Too bad, in a way. I think of Jim as the Ultimate Hacker, in the real, "discovery" sense of that word. I don't know anyone who knows more about BASIC (and IB) than Jim.

Way back in 1983 he did a lot more than give us little "useless" tips. Most of the tips are the most "useful" things I ever learned for any computer. (There is no Jim Peterson for Apple, Commodore, Tandy, or IBM.)

Each article contained at least one original type-in program.

While other programmers and writers were making bundles selling their stuff to commercial magazines and

software houses, Jim GAVE his monthly column away in exchange for the user-group newsletters. (He probably has the largest library of TI written material in existence.) Whenever any item in his column, large or small, came from any other source, Jim always credited the originator.

His generosity is known throughout the entire TI World.

His programs for which he charged \$3 apiece (along with a discount for future purchases) was during a time when programmers were charging \$20 and \$30 for programs nowhere nearly as professional. Jim never sold hoopla. He just sold quality. Now his programs are \$2 or such less in disked batches.

The first batch of four programs I ordered came back with seven programs in the package. Jim always puts "a little extra" in each order. He still does. He has over 3000 Public Domain (not Fairware) programs which he shares by putting them as bonuses on any disk orders. These programs, too, are well done and credited and worth owning.

I was surprised by the bonus, as no clue was given by him that I was going to get more than my money's worth. There was not a single program that I ever got from Tigercub (and that is easy) that did not exceed my expectations. Many I ordered for my 5th-grade class and are still popular (like BAZOO and MECHANICAL APTITUDE TEST). It would be hard for me to pick a favorite because there are so many varieties of programs: educational, music, utilities, games, and so on.

About three hours ago I saved this textfile and loaded up some of Jim's disks. I played the fiendish SQUINCH and the diabolical SCRUM and went through his HANDY DANDYS and SPEEDER READER and - and I noticed it somehow got to be 2:10 AM. I have to go teach tomorrow and Jim Peterson, the fiend, did it to me again!

Next day!

When I reread the above, I got to thinking about all the other TIGERCUB programs I didn't mention. The most important, for me, are the three "NUTS & BOLTS" disks containing over 300 files. When these started coming out a few years ago, it was a "TIPS" maniac's delight. Here was a discovery collection that every TI learner dreams of. These files can be merged into any IB program (including a file that converts BASIC to IB) to produce remarkable results. Because of incremental line numbering, multiple subs can be called into single programs. They are efficient, neat, incredibly easy, and remarkably creative. And lots more. Send Jim \$1 for catalog (worth every penny; refundable with first order): TIGERCUB Software, 156 Collingwood Ave., Columbus, OH, 43213.

[This is 2 of 3 articles traveling down 4A's Memory Lane.]



the CRACKER BARREL

by Chick De Marti

Jan. 1988

2 BITS and PIECES

One of the most confusing things to most novices is converting a binary number into a decimal number. Besides being an important aspect of the machine language programmer, understanding the binary equivalent of decimals is important if you intend to PRINT graphics, where a similar system is used to designate which dots are to be black (turned on) and which are to be clear (turned off). To simplify the converting of a decimal into a binary number, picture a string of eight light bulbs, each with a value assigned to it. By adding up the value of the 'turned on' bulbs (or bits) we can create a code to represent a decimal number.

BITS	0	0	1	0	0	0	1	1
	⬜	⬜	⬜	⬜	⬜	⬜	⬜	⬜
Value	128	64	32	16	8	4	2	1

EXAM. The binary code 0010 0011 can be readily understood to equal 35 by viewing it as a light bulb display. The above diagram shows that light value 32 is on, as is bulb value 2 and bulb value 1. Adding 32+2+1 we = 35.

If you are serious (or curious) about learning the binary equivalent of a decimal number, enter the following program. It will display a set of 8 on and off bits, and you will be asked for it's decimal equivalent. If you are wrong, the correct number will be displayed. With a little practice you will be able to convert binary to decimal and decimal to binary.

```

1 ! SAVE DSK2.BIN/2/DEC
10 CALL CLEAR
20 FOR I=1 TO 8
30 X=INT(RND*2)
40 D(I)=X
50 D$=D$+STR$(D(I))
60 NEXT I
70 FOR I=1 TO 8
80 IF D(I)=1 THEN 90 ELSE 10
90 ON I GOTO 260,250,240,230,220,210,200,190
100 TOTAL=TOTAL+COUNT
110 NEXT I
120 PRINT D$
130 INPUT "Enter decimal val
ue ";DV
    
```

```

140 IF DV=0 THEN END
150 IF DV=TOTAL THEN PRINT
    "Correct!" :: GOTO 180
160 PRINT "Sorry, it was";TO
TAL
170 FOR DELAY=1 TO 600 :: NE
XT DELAY
180 PRINT :: D$="" :: TOTAL=
0 :: GOTO 20
190 COUNT=1 :: GOTO 100
200 COUNT=2 :: GOTO 100
210 COUNT=4 :: GOTO 100
220 COUNT=8 :: GOTO 100
230 COUNT=16 :: GOTO 100
240 COUNT=32 :: GOTO 100
250 COUNT=64 :: GOTO 100
260 COUNT=128 :: GOTO 100
    
```

If you want to cheat a little, until you learn how to count in BINARY, change:

```

100 PRINT ,COUNT :: TOTAL=TO
TAL+COUNT :: COUNT=0
    
```

NOTES on program "BIN/2/DEC"

Line 30: X = a random number either 1 or 0
 Line 40: An array is created so we can record in what order the "BITS" are.
 Line 80: If BIT = 0 there is no count so skip line 90 (add a new count to total).
 Line 140 Enter zero to quit.

Cheater's line 100 prints value of each bit.

When you looked at the "light bulb" diagram, were you curious as to what the total was when all the "bulbs" (bits) were on? If so, did you add each one? Or did you realize that because each number was one number higher than the total of all the numbers before it (ie 4 is 1 higher than the 2 + 1 before it), therefore 128 is one higher than it's predecessor, which must be 127! Thus, just add the last two numbers (128+127) for a total of 255.

Along this same line, there was a story about young Einstein who was in class when the teacher decided to reprimand the entire class by having them "add all the numbers from 1 to 100!" In an instant, Einstein wrote down his answer and proceeded to stare out the window. His teacher was at first, furious, but he later wanted to find the young lad had indeed entered the correct answer on his tablet. "how did you do it?" asked the teacher. Einstein explained, "100 + 1 = 101, and 99 + 2 = 101, then there can only be 50 combinations of 101. Thus, 50 x 101 = 5050".

Don't you hate smart Alex (or Einstein)?

MATH ONE LINERS

by Tony Falco

Many math students encounter difficulties simply because they lack experience. They say they understand a concept and quite likely they do, but they make a great number of careless errors and then begin to think they really did not understand at all. It is possible to "understand" and yet to not have skill. We acquire skill through practice. The one liners listed below provide practice at essential math skills that students in grade 7 and beyond will encounter. They provide practice at adding, subtracting, multiplying and dividing integers. (signed whole numbers.) And each one can be entered by editing the previous one. Each provides a sound when a wrong answer is supplied and each tells how many out of 10 problems were wrong. Computers can be very patient when it comes to drill.

For an uncluttered screen use CALL CLEAR :: RUN.

```
1 RANDOMIZE :: FOR N=1 TO 10 :: PRINT ::
::: A=INT(41*RND)-20 :: B=INT(41*RND)-2
0 :: DISPLAY AT(23,B):A;"+ ";B;"=" :: AC
CEPT AT(23,20):C :: W=W-(C<>A+B):: CALL
SOUND(550,110,-30*(C=A+B)):: NEXT N :: P
RINT W;"WRONG"
```

```
1 RANDOMIZE :: FOR N=1 TO 10 :: PRINT ::
::: A=INT(41*RND)-20 :: B=INT(41*RND)-2
0 :: DISPLAY AT(23,B):A;"- ";B;"=" :: AC
CEPT AT(23,20):C :: W=W-(C<>A-B):: CALL
SOUND(550,110,-30*(C=A-B)):: NEXT N :: P
RINT W;"WRONG"
```

```
1 RANDOMIZE :: FOR N=1 TO 10 :: PRINT ::
::: A=INT(24*RND)-12 :: B=INT(24*RND)-1
2 :: DISPLAY AT(23,B):A;"X ";B;"=" :: AC
CEPT AT(23,20):C :: W=W-(C<>A*B):: CALL
SOUND(550,110,-30*(C=A*B)):: NEXT N :: P
RINT W;"WRONG"
```

```
1 RANDOMIZE :: FOR N=1 TO 10 :: B=INT(13
*RND)-7 :: B=B-(B=0):: A=(INT(25*RND)-12
)*B :: PRINT " " ;A;"/";B;"="::: IN
PUT C :: W=W-(C<>A/B):: CALL SOUND(550,1
10,-30*(C=A/B)):: NEXT N :: PRINT W;"WRO
NG"
```

