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OF THE
INTERNATIONAL
TO USER GROUP



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#### READ THIS FIRST

Another hectic month has passed, and once again events have become entangled more than I could have believed possible — a situation which recurs virtually every month...

As a result of a number of different things (not least of which was the tragic death of an old friend who underwent a heart/lung transplant), I am now around six weeks behind with my affairs, so if you have had some difficulty in contacting me, then my sincere apologies — I don't become unavailable intentionally — and if you have an outstanding postal enquiry, then I will endeavour to respond within a reasonable period of time.

I have received an update to the AIDS disk which I mentioned last issue; it appears that the Surgeon General's office released a "working" copy of their document, which had yet to be proofed, rather than a finished product, and for some unexplained reason, whoever typed up the document and put it in DV80 format for the rest of us arabs actually incorporated every spelling and syntax error in the original. Perhaps they were playing the old "better safe than sorry" game and assuming that there might be special significance in some of the mistakes.

I therefore have the updated files available, although from the list of errors notified, I would guess than any reader with half a brain should be able to make sense of what they read. If you feel you have less than 50% grey matter, or you would like to play safe, I will happily provide the updated files provided you send a disk and appropriate return postage and postal materials.

I always think I've managed to catch all the typos in each issue, and once each issue has hit the streets, I'm (as usual) proved wrong. Did you spot the half dozen in V4.2? Especially the spaced-out line on page 10 - the result of the careless application of my own right justification utility designed especially for use with IT files.

An oddity has been brought to my notice: a few ITUGers who renewed their subscriptions have received V4.2 but not V4.1. As there can be no possibility of omissions as far as posting goes (I use a subscription address file with a custom utility to print the subscribers details onto labels, and the most recent copy of the file is ALWAYS kept on the current IT disk), it falls to our ultra-reliable GPO to explain where the missing issues have gone. Except of course that they never can.

If you have received V4.2 and not V4.1, or neither even, then please let me know as soon as possible, so that I can send you a second copy. It is possible that local postal strikes may have interfered with the

normal delivery of TI-LINES, but I think that in this case the culprit is the usual incompetence which you find from time to time.

ALLEYN LESTER reminded me recently of a fact relating to TV licenses and computer use: if you have a monochrome license for your domestic TV, but for your computer you use a colour TV capable of receiving broadcast signals (I reckon it's more likely to be the other way round, myself) then you MUST have a colour license. As an aside, I wonder what the authorities are going to do when the cost of a license exceeds the cost of the equipment to which the license applies — not very far off now...

I omitted a credit in the last issue - the front panel was modified from an image provided by SCOTT and JO ANN COPELAND.

JIM PETERSON has provided me with working object code files for the source code I published in V3.8 under the generic title SOUNDS GOOD. If you want copies please supply the usual disk plus return postage and materials.

I have had a number of enquiries over the last several months about how you tell which issues of HOME COMPUTER MAGAZINE are which. The esteemed publisher chopped and changed the identification so that at one time an issue was identified by volume and issue number, while at another time a calendar date alone was used. In the course of recent fiddling about I came upon two fairly obvious solutions (well, obvious once you've come across them, cough, cough). Either look at the spine of a given HCM issue — you should see two groups of numbers: 47746 12509 — and then a two digit group which is the calendar month (06 is June, 08 August, and so on); or, find a listing (for whatever machine) and look at the ID code used to identify a given version of a program: the format is Volume period Issue period Version. 4.3.1 is Volume 4, Issue 3, version 1, and the issue number does not relate directly to the month (issue 3 doesn't mean March, for example, but is related to the frequency of publication — something which also causes confusion, as it too changed!!!).

I have a limited number of HCM V4.1, 4.2, and 4.3 available at £2 each plus post and packing, if anyone is interested.

PETER KILLICK has completed a subject index for volumes 1 to 3 of IT, and unless something goes badly wrong it should be included in this issue of TI-LINES. I hope to stick the twelve pages in the centre of this issue so that it can be extracted and used independantly. The index may displace other articles planned for August, but they will appear in due course. I would like to record my gratitude to Peter for having undertaken this mammoth task and hope that the effort of wading through 38 issues of IT has not resulted in too great a degree of brain damage...

The Workshop will take place on SATURDAY, SEPTEMBER 5th. at the SNEYD COMMUNITY SCHOOL, VERNON WAY, (off Sneyd Lane), BLOXWICH, WALSALL.

It will start at 10.00 am, and finish at 6 pm. Exhibitors/Demonstrators may enter and set up at 9.00 am by prior arrangement with BORDON PITT.

Catering will only be available if Gordon receives sufficient demand IN ADVANCE. Otherwise, only beverages will be available.

The following events are planned:

- 1. Demonstration of MECHATRONICS 80 column card, mouse (which can run with TI Artist 2), Super Extended BASIC, and standalone 128K RAMDISK
- 2. Hopefully a demonstration of the European model of the MYARC 9640 PERSONAL COMPUTER, by RICHARD SIERAKOWSKI
- 3. Demonstration of the MYARC 128 Operating System by TREVOR DAVIES
- 4. Demonstration of the NEW HORIZONS RAMDISK by GORDON PITT, with upgrade to 256K and V6.3 Miami Users Operating System (has to be seen to be believed!)
- 5. UCSD PASCAL Interest Group
- 6. TI ODDS & SODDS Clinic with BALDIE BROOKS

Members of the CORTEX USER GROUP will also be attending (the Cortex is a 9900-based micro, a project from Electronics Today International, and its Power BASIC is very similar to TI's).

REMEMBER: the entry charge PER PERSON is 21.50 IF BOOKED BEFOREHAND, or 23.00 AT THE DOOR ON THE DAY. Uncrossed Postal Orders/cash payable to GORDON PITT please.

As before, Gordon has tried to cater for the whole family should you wish to cart them along, and Swimming, Squash, Badminton, Weights, and the Saturday Club (6-16) are available IF ARRANGED IN ADVANCE WITH GORDON.

The nearest station is WOLVERHAMPTON, and there is a bus service between a road near the Community School and the bus station, which is near the Rail Station. The bus is known as the "Bloxwich Bus". You ask the driver to tell you when the CRAB LANE stop is reached (or the stop AFTER the one at "the square at New Invention"). Crab Lane is right at the bottom of the map, and it is a few minutes walk from the Sneyd Community School (which is signposted).

Unfortunately, although the School is within spitting distance of the M6 and there is a junction nearby (10a), there is no connection (the link is to the M54!) and junction 11 is the nearest. Take the WILLENHALL (WALSALL) turning off the roundabout, and follow the road (WARSTONES ROAD) looking for the fourth exit on the left which is SNEYD LANE. This is a small crossroads, and don't be confused by the fact that Warstones Road becomes BURSNIPS ROAD on the way.

About 800 yards along Sneyd Lane is a signpost for the School on the right, opposite the entrance to VERNON WAY on the left.

Find a spot to park the car (there should be plenty of space), and walk round to RECEPTION, where (depending on your arrival time) you will be greeted by GORDON PITT (or someone), OR... you may have to ask at the office, when you will hopefully be guided by a native runner...

If you come by bus from the station (should you be so intrepid), you should head for RECEPTION as above. I am advised that the bus driver may smile happily upon you if you tender the EXACT fare of 32p so he doesn't have to search around for change!

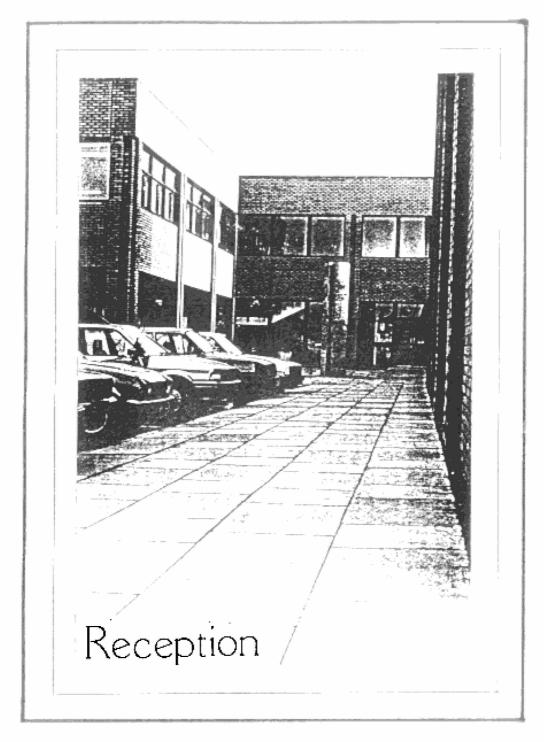


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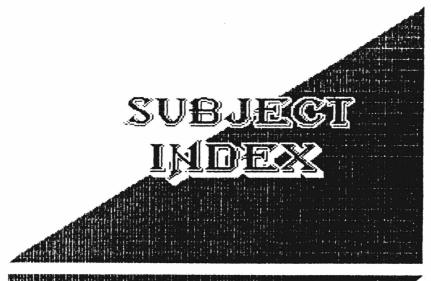
### THE BLOXWICH WORKSHOP

SATURDAY, SEPTEMBER 5th., 1987

10.00 AM TO 6.00 PM

ENTRANCE FEE PER PERSON : £1.50 IF BOOKED AND PAID

£3.00 IF PAID AT THE DOOR



## Subject Lydex



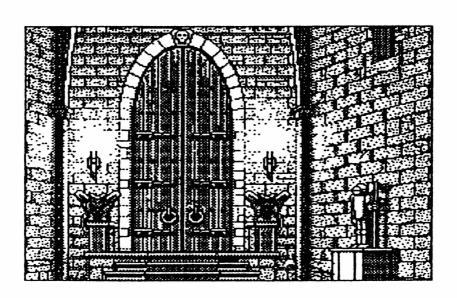
PETER KILLICK has kindly produced a subject index for Volumes 1 to 3 inclusive of INTERNATIONAL TI-LINES.

He has used a simple method of reference for each subject, which provides the Volume number, issue number, and page number in an encoded form.

In any reference, the first digit is the Volume number, the next pair of digits is the issue number, followed by a period, and then the page number.

Thus, 206.9 is: Volume 2, Issue 6, page 9; 310.26 is: Volume 3, Issue 10, page 26.

The index will be expanded as each future volume is produced.



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#### WHAT PEOPLE HAVE SAID ABOUT THIS INDEX

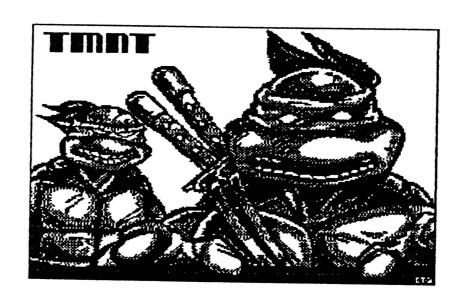
"This index is something I can really get my teeth into!"
Billy Lugholes



"I was enjoying the index until this chopped liver fell on my head..." Rob O'Tech



"Great index! Where is the section on turtle soup ?"
Terry Pinn (Ninja Turtles Association)



"Now that DOES compute"

Dr Spock



#### GRAPHICS REPORT

Peter Brooks

A number of graphics programs/utilities provide facilities for dumping a screen (or larger) image in bit graphics form to a printer.

Recent research for an ITUG graphics project (on the practicalities of using a dot matrix printer to output a signature) has revealed that most — if not all — graphics dump routines do not take full advantage of the bit graphics capabilities available on most impact dot matrix printers.

The specific instance which has come to light recently concerns the use of the so-called QUADRUPLE DENSITY BIT IMAGE MODE.

On my Centronics GLP6 - as on most Epson-compatible printers - the dot graphics capability permits 240 dots per inch (dpi) horizontally, and 216 dpi vertically.

By and large the horizontal dot capability is utilised on most if not all packages, but the vertical dot capability is usually only utilised at one third of the maximum possible.

The reason is fairly straightforward and has to do with the difference between "dot pitch" and "pin pitch" on the print head.

While a single line feed (LF) can be set to 1/216 inch, (giving a dot spacing of 1/216 inch), the gap between two vertically adjacent pins on the print head is 3/216 inch or 1/72 inch. All the software I have seen in operation uses the fixed 3/216 inch pitch of the print head, instead of processing the data to be printed using an "overlapping" technique.

Imagine a rubber stamp in place of the print head, with 7, 8, or 9 tiny rubber rods (depending on your print head) jutting out in a vertical column, and each rod producing an inky dot on paper whenever the stamp is applied. The gap between each rod is twice the diameter of the rod.

If you press the stamp against a sheet of paper, then move it down (but not along) by one rod's diameter and press again, and then down by one diameter and press again, you will have some idea why the dot pitch and the pin pitch can produce such different effects.

Using an 8 pin group, such an overlaying technique (three sets of 8 pins) would result in a total "height" of the equivalent of 9 pins, but be made up of 24 dots. Without overlaying, the height would be equivalent to 24 pins, but still be made up of 24 dots.

The amount of work required (minimum of 48 hours of actual processing time, comprising both manual and computer procedures) precludes my presenting specific examples of the effect of "true" quad density bit images (and I cannot present the signature on which I have been working — for reasons relating to forgery!), and anyway, the effect of photoreduction (used in preparation of IT masters) would render worthless any full—size comparative examples.

The processing required to convert to "true" quad density is (almost) straightforward. You would need to take the required image as three rows of defining characters (for the ESCape sequence) at a time. Each corresponding defining character (first in each row, second in each row, etc.) must be interlaced with its two corresponding companions.

The interlacing is straightforward enough, although it is time-consuming to achieve. It is necessary to convert each character's ASCII code into its binary equivalent. If an 8 bit definition is used, this will produce three groups of 8 bits.

To interlace the three groups, take the first bit from the first group, the first bit from the second group, and the first bit from the third group, to give a three bit sequence. Add onto this sequence the second bit from the first group, the second bit from the second group, and the second bit from the third group, giving a six bit sequence. Continue this process until the three groups have been blended together to form a single 24 bit supergroup.

Divide this into three 8 bit groups again, and convert back into decimal ASCII.

That's the first part of the procedure. Repeat it for every character code in the "triplet" of rows, and then do it in "triplets" for the whole image, adding trailing rows of zeros if necessary.

The second part of the procedure relates to invoking the appropriate line feeds (LF). After each row of the "new" definitions is laid down on the paper by the print head, send a carriage return (CR) and an LF of 1/216 inch. Perform this for the first two new rows, but after the third row perform a CR and an LF of 24/216 inch.

Do this for the whole image.

It sounds horrendously awkward to implement, and it is, but the end result is worth all the effort. With the right kind of printer ribbon, the results are free from any "dottiness" and approach the minimum density required for desktop publishing (DTP) at 240 by 240 dpi.

TI DTP buffs please note: by definition, the minimum requirement for a DTP system is a laser printer and minimum 240 by 240 (more usually 300 by 300) dpi, regardless of the claims made by software producers. Any such DTP software which uses dot matrix printers uses them for proofing purposes only.

No-one in their right mind would attempt to equate the PRK module with MultiPlan or Lotus 1-2-3, so don't equate dot matrix output with true DTP, even at the 216 by 240 dpi level and with the quality discussed here.

If I can manage to do all the work involved in time, I will try to demonstrate the difference between non-interlaced and interlaced graphics at the Bloxwich Workshop in September - no promises!

#### NOTICE BOARD

CALLING ALL OWNERS OF MYARC EQUIPMENT:

RICHARD SIERAKOWSKI has asked me to request ALL Myarc equipment owners to contact him as soon as possible. You may be eligible for FREE upgrades to your equipment.

Find out by supplying Richard with details of your equipment, your name, and address, by writing to:

Richard Sierakowski RUSHOLME Elcot Lane MARLBOROUGH Wiltshire SN8 2BA

#### LETTERS

Last month, JOHN STOCKS sent me an example of his MiniMemory-based Word Processing program's output, and I asked for permission to publish the material - two instruction sheets - in TI-LINES.

Quoting from John's reply:

"I should be very happy for you to publish the WP instruction sheets, but I must stress that it is intended only for non disk-owners and cannot approach the convenience of the "real thing". If anyone is interested, perhaps they would send a cassette plus stamped addressed envelope to me at 11 Stonehill Road, Roxwell, CHELMSFORD, CM1 4PF and I will gladly run off a copy.

In case you think it worth mentioning, I have Just finished a goodie for MiniMemory which may interest your scientifically-minded readers. It is designed as a teaching aid and uses animated bit-map graphics to demonstrate the production of standing waves on high frequency transmission lines. It is particularly effective in showing how the reflected signal affects both the amplitude AND the velocity of the forward travelling wave, the acceleration as it "ducks under" the standing wave minima being clearly visible. This matter is very difficult to get across from blackboard or textbook, so I can see the program being extremely useful! Again, copies gladly supplied in return for cassette and SAE."

#### WORD PROCESSOR - TI BASIC PLUS MINIMEM (REF. 6687)

#### OPERATING INSTRUCTIONS

The RUN command assumes that an RS232 interface for printer is connected and switched on. (LINE 90) If you are preparing text for filing on cassette or just practising, you should command RUN 100.

Text can be entered in blocks of up to four screen lines and each block must start and finish with speech marks "". (This is the only way that spaces at the start or finish of an entry can be retained.) Any speech marks forming part of the text should be typed in twice. If a word is broken it can be continued in the next block, as the blocks are joined together in the final text.

If you make "0" your first entry, a letter heading will be printed automatically and a prompt given for entering the date. (LINE 2690)

If you wish an entry to begin on a new line, use """ as the first character. (This will be deleted from the final print-out.) Any entry which starts with three or more spaces, e.g. titles and main headings, will automatically be placed on a new line. To leave a blank line, just enter a blank.

If text is on cassette, enter "#" and follow on-screen instructions. The cassette will normally run until the end of the text, but the input can be terminated prematurely by pressing any key. A useful time-saver is to remove the motor control plug from the cassette player as soon as the first playback is under way. This will avoid the time-wasting breaks between entries.

When all text has been entered, initiate the formatting process by entering "\*". (This will happen automatically when all the available memory is full.) The entered blocks of text will then be concatenated and divided into printer lines of up to 70 characters, divisions being made only between complete words. If the "justification" option has been chosen, each line will then be padded out to 70 characters by adding extra spaces, these being positioned in pseudo-random manner to minimise visibility.

When the caption "READY FOR CHECKING" appears, the formatted text may be inspected and edited on a line-by-line basis by means of keys 1 to 0, which have the functions listed below. (These functions may conveniently be pencilled in on the white label strip above the keys.) Note that the CTRL and FCTN keys must NOT be used during editing. To CLEAR and begin a new text entry, use FCTN4 in normal manner.

KEY 4: CHECK. Allows the formatted text to be inspected line-by-line in forward sequence. The display takes place without breaking words, so one printer line will occupy about three screen lines. Symbol "~" on screen denotes the start of a printer line.

KEY 9: BACK. As 4, but in reverse sequence.

KEY 7: RETURN. Returns the inspection point to the beginning of the text. This is useful, for example, when you have inspected through to the end and wish to begin printing.

 $\mathsf{KEY}\ 8$ ;  $\mathsf{REDO}$ . Accepts as input an altered or corrected version of the line currently on display.

KEY 0: CORRECTION. This is for rectifying misprints in the displayed text. The printer line will be redisplayed in "direct" form so that it occupies exactly two and a half screen lines of 28 characters each. This makes it possible to estimate the serial number of the misprinted character. As instructed on-screen, enter the location of the faulty character followed by the correction, e.g. 43f, whereupon the line of text will be reprinted using the corrected character. For a deletion, enter e.g. -43, which will remove the 43rd character and move the rest of the line along to fill the gap. To add a character, enter e.g. +43f, which will cause character f to be inserted at position 43. margin justification has been used, however, the line will have been padded to its maximum permissible length, so it will be necessary to delete one of the added spaces before the extra character will be accepted. Note that if the corrected or added character is a space or comma, the "location+character" entry must be enclosed between speech marks. When a line has been fully corrected, enter a blank to return to the normal checking routine.

KEY 2: INSERT. Accepts as input a new line of text and inserts it directly after the line currently on display.

KEY 1: DELETE. This must be followed by a number key from 1 to 9, whereupon the line on display will be deleted together with following lines up to the total specified by the number key. Thus the maximum deletion at one time is 3 lines. The deleted text is not lost but is stored until the DELETE key is next operated, thus providing a TRANSFER facility.

KEY 5: TRANSFER. Reinserts the last block of deleted text immediately after the line currently on display. This reinsertion can take place anywhere in the complete text, but only until the DELETE facility is next used. The TRANSFER key can be can be used as often as required, to give a REPEAT facility.

KEY 6: PRINT. Feeds the formatted text out to a printer via the RS232 interface, starting with the line currently on display. Printing will normally continue to the end of text, but may be interrupted by pressing any key.

KEY 3: FILE. Files the formatted text on cassette for future use, starting with the line currently on display. Each line appears on the screen immediately before it is filed and the filing process can be terminated by pressing any key.

#### EMERGENCY RESCUE FACILITY

It has not been possible to anticipate every possible misoperation during the editing process, so if the wrong key is pressed a lockout may occur. If this should happen, then switch off the computer and reload the program but DO NOT RUN, as this will destroy the entered blocks of text which are stored in Minimem. Enter EDIT 120 and delete the REM information leaving only the GOTO, then do the same with EDIT 170. The program can now be safely run, text being drawn from MINIMEM and reformatted. Any corrections made before the lockout will have been lost however, and must be remade.

#### MULTIPLAN TUTORIAL

MULTIPLAN MANIA by BRENDA J. NOELL

#### CHAPTER 5: WINDOWS, COPYING FORMULAS, and OPTIONS

Reload your MultiPlan by Pressing T, L, and SPENCER.

FIXING TITLES: THE WINDOW SPLIT TITLE COMMAND. It is possible to keep the headings for SALES, COST, etc., in view while looking at the last half of the year. Let's fix the titles in place. Press W(Window). Select S(Split) or ENTER. Now pick titles since you want to fix them in place in column 1. Press T. In the first field type O, because you only want to fix them vertically, by columns. In the second field choose 1 as the number of columns. Press 1. Press ENTER. Try scrolling through the months.

OPENING A WINDOW: THE WINDOW SPLIT COMMAND. You have opened a second window by splitting the one you were working on. Save your work at this point so that you can return to it after experimenting.

Now let's try opening and closing windows by using the Window Split command. Place the cell pointer at R11C2. Press W. Press S. Press H (to Horizontally split the window). Multiplan proposes row 11 to split. The second field shows linking status. When windows are linked they scroll together. Press ENTER. Notice the column numbers at the top of window number 3. Scroll across to C14 and then back to C2.

Window number 2 is unaffected. These are unlinked windows.

LINKING WINDOWS: THE WINDOW LINK COMMAND. Press W. Press L (for Link). Multiplan proposes linking window number 3 (active window) to number 2 (the window which the active window was split from). Press TAB (CTRL A) twice to advance to the next field. Press Y or SPACE BAR. Press ENTER and they are linked. Scroll to C14 and back again.

BORDERING WINDOWS: THE WINDOW BORDERING COMMAND. A bordered window has a line drawn around it to set it off from the rest of the worksheet. Press W, B, ENTER. You should now see a border around the split window. If you split a bordered window, both windows would have borders. Try opening (press W, then S) and closing (press W and then C) windows. Use the NEXT WINDOW key (CTRL W) to move the pointer from window to window until it is split as you want. Reload your worksheet.

BUILDING A FORMULA TO SHOW INCREASING SALES. Information on SPENCER CERAMICS shows that sales have increased 1% a month. To see this in effect place the cell pointer at R3C3, under February, which is the first month to show the increase. Press =. Using January sales as a basis for your formula, type in a formula that will calculate this.

Move the cell pointer to R3C2, under January. To show February's sales as a 1% increase over January's, multiply January's sales by 101%. Press \* (to multiply). Type in 101%. Press ENTER. Use the COPY A FORMULA TO THE RIGHT: THE COPY RIGHT COMMAND to copy the formula into the rest of the months. Place cell pointer at R3C3. Press R or ENTER. Type 10. In the second field type notice the active cell is R3C3.

Press ENTER.

Save your work at this point. (T, Save, Y)

PROTECTING THE WORKSHEET: THE LOCK FORMULAS COMMAND. What if the actual base figures are different from the ones you typed in? You would want to change your base figure but protect the formula. Multiplan has a Lock command to save them from accidental alterations. Press L (Lock). Press F (Formulas). Enter Y (to confirm).

THE NEXT UNLOCK CELL KEY. Press the Home key to go to R1C1. Now press the NEXT UNLOCK CELL key (CTRL 3). The cell pointer moves to R3C2, which is the first cell from the start that contains typed in number rather than a formula or text. Blank cells are also ignored. Type 1800, ENTER, NEXT UNLOCKED CELL (CTRL 3) key. The value in R3C2 changed, and MultiPlan recalculated the figures.

UNLOCKING CELLS. Press L. Press C. Press the HOME (CTRL 1) key.

Press : (to create a range). Press the LOWER RIGHT key (CTRL Z) to place the pointer at the lowermost right cell that contains data or that has been formatted. Press ENTER.

OPTIONS COMMAND. Use the GOTO command to place the cell pointer at R3C2. Type in 30000 to change the January figures. Press ENTER and notice the change in sales and profits. Likewise, if you change the formula in R3C3 to reflect a 2% (\*102%) increase, Multiplan automatically recalculates the worksheet. To speed up entering a number of changes, you can turn off the automatic recalculation option by using the OPTIONS command. Press O. Select N. Press ENTER. Now change January sales to 1000 and press ENTER. During the time recalculate is off, you can do calculations by pressing the RECALC (FCTN 8) key. Press the RECALC key and watch the screen. To change back to recalculating, press O, Y, and ENTER.

Quit or Restore your work if you want to go to Chapter 6, which follows over the page.

#### CHAPTER 6: PRINTING A WORKSHEET

Press P for Printer Options. Set the Margins and Options before trying to print. Margins gives you default settings of:

Left 5 characters
Right 6 lines
Print Width 70 characters
Print Length 54 lines
Page Length 66 lines

PRINT OPTIONS. This lets you choose to print all or part of the worksheet. You can select by columns or rows, formulas instead of values or the worksheet with rows and column numbers.

PRINT PRINTER. Press P or ENTER to send the worksheet to the printer in page-sized sections. To stop the printer press the PRINT CANCEL key (FCTN 4). If the file is too large to fit on one page the PRINT COMMAND will automatically continue on the next page.

PRINT FILE. This lets you store a printable version of the worksheet on a diskette. You can print the worksheet in BASIC at any time. If you do not have a printer, you can take the disk to another TI-99/4A to be printed.

In the PRINT PRINTER section I had my first major problem. I followed the directions but could not get the worksheet to print at all. I found I had to go to PRINT OPTIONS. Press P, then O. Advance to the setup field. Press TAB (CTRL A). Now you can specify the baud rate or specify PIO for a parallel port. Press ENTER, and presto! Magic!

You can also combine MultiPlan files with TI-Writer files. Using the Print File command to save a worksheet produces a file that is compatible with TI-Writer. TI-Writer can merge a text file with a worksheet file. When this merge is printed, you have a report containing text with tabular information where you put it. You can merge the text file and the worksheet file to make a third file, leaving the two originals intact.

Alternatively, you can alter the text file by inserting the worksheet file. For each different worksheet, you will need a separate file to insert into the text file. You can also change the worksheet by inserting the text file. Refer to TI-Writer Word Processor manual or JO ANN COPELAND's column in TI-LINES V3.3, page 18, paragraph 2, line 2. Believe me, it was harder to find any Merging Files in the manual.

Thanks Jo!!!!!!

See you next time for CHAPTER 7: USING MULTIPLE WORKSHEETS.