

CRYPTOQUOTE NOW ON GAMES DISKETTE:

Our recently released MMSFORTH GAMES DISKETTE, VOLUME I (see NL 1:5) is now better than ever! We were going to save our latest super game program for Games Diskette Volume II, but it is so good that we just couldn't resist sharing it sooner.

Somewhat more than a game, the new addition is a computerized environment for cryptoquote puzzlers. Cryptoquotes (which sometimes go by other names or slightly different styles) are the newspaper puzzles which encrypt a phrase by trading a false coded alphabet for the true one, then leave you to decode the true phrase by comparing number of occurrences of each letter, likely abbreviations, etc. Jill Miller, a cryptoquote fan, has created our new CRYPTOQUOTE program to help by displaying your guessed letters of the cryptoquote above the coded version, immediately inserting, removing or changing all occurrences of each simultaneously. It also shows an alphabet table in which the new value and the count of each are displayed. The fun and challenge of guessing is still left for you, but the once tedious note taking now is handled automatically.

CRYPTOQUOTE does not stop there. It was so much fun that Dick Miller enhanced it further with the ability to accept inputs in plaintext. This means that you can input your own favorite phrases in English and have them immediately encrypted and stored to disk by the program! Then Dick and Jill implemented a cryptoquote files system on the diskette, so you can save any cryptoquote to the location of your choice. As a final touch we include twenty challenging cryptoquotes on the diskette, enough to keep you guessing until you catch on and start sharing new ones with your family and friends!

MMS plans to move CRYPTOQUOTE over to a Volume II diskette when a few more games are ready. Meanwhile, you can get it on our new improved MMSFORTH GAMES DISKETTE, VOLUME I for the same old \$39.95 plus \$2.00 s/h. It was a good value then; with five great new Forth games plus the original BREAKFORTH aboard, it's a spectacular value now! We like it so much that, until the end of May, we will rewrite any original MMSFORTH GAMES DISKETTE with the new CRYPTOQUOTE program (the V1.9 copy) for only the \$2.00 shipping/handling charge!

GET-TOGETHER

Share your questions and answers with a MMSFORTH User Group, or contact MMS for help to start one in your metropolitan area. Here is our present list of contacts for local MMSFORTH User Groups:

CA: Earl Mortensen, 974 Pleasant Hill Road, Redwood City 94061 (415/367-9882).
CA: Ken Nonomura, 416 Duncan Street, Apt. 5, San Francisco 94131 (415/285-5062).
CA: Morris Herman, 503 Rosario Drive, Santa Barbara 93110 (805/964-7144).
CA: Rich Royea, 6456 Lubau, Woodland Hills 91367 (213/704-6859).
LA: Ed Laughery, 1222 Jason Drive, Denham Springs 70726 (504/665-7537).
MA: Jim Gerow, 1630 Worcester Road, Framingham 01701 (617/443-9521 x3562 days, 872-1882 eves.).
MD: Paul van der Eijk, 5480 Wisconsin Avenue #1128, Chevy Chase 20015 (301/656-2772).
MI: Kim Watt, Box 1013, Berkeley 48072 (313/288-9422).
MI: Bob Zwemer, 6408 South Washington, Lansing 48910 (517/393-9287).
NJ: Paul Zucchini, 148 Bertrand Drive, Princeton 08540 (609/452-3585 days, 921-7629 eves.).
TX: Larry Goforth, 10203-J Golden Meadow, Austin 78758 (512/836-0981).
TX: Jim Shepard, 16210 Arbor Downs Drive, Dallas 75248 (214/661-9702).
TX: Dan Healy, 11511 Katy Freeway, Suite 150, Houston 77079 (713/496-4660 days).
WA: Rod Proctor, 13520 N.E. 29th Place, Bellevue 98005 (206/885-4171 days, 883-1923 eves.). Rod also is on THE SOURCE.
AUSTRALIA: Peter Wragg, 2 Jilba Street, Indooroopilly, Queensland 4068 (07/378-1623).
CANADA: Kalman Fejes, 1149D Meadowlands Drive East, Ottawa, Ontario K2E 6J5 (613/225-2443).
ENGLAND: John Newgas, 1 Philip Court, 89 Hornsey Lane, Highgate, London N6 5LN (01/539-7071 days, 348-6518 eves.).
JAPAN: Akira Akutsu, M.D., 2-176 Issha, Meito, Nagoya, 465.
WEST GERMANY: Nigel Head, Birngartenweg 93, 6100-Darmstadt

NOTE: Program trading is one popular facet of these meetings, but NOT commercial programs and WITHOUT MMSFORTH SYSTEMS aboard! Promote legitimate sharing, discourage pirating, and take care not to jeopardize your own MMSFORTH serial number.

A 2ND-BIRTHDAY PRESENT FOR MMSFORTH! (Editorial)

In this issue, we introduce you to our new MMSFORTH V2.0. We are very proud of it, and expect that most of you also will be enjoying its many new features before long. It's been two full years since we began marketing a new TRS-80 product called MMSFORTH V1.5. Versions 1.0 through 1.4 had occupied MMS for nearly a year before we felt ready to unleash the powerful but unruly new beast on our customers. MMSFORTH Versions 1.5 through 1.9 have been increasingly good, as we continued to find new levels of performance and have listened to your many and valuable user comments. Since Version 1.5, we have not changed the Version 1 kernel. Now we have, making V2.0 different inside as well as out and providing systems for the old TRS-80 Model I and the new TRS-80 Model III. We're not done yet - but MMSFORTH V2.0 will be the best for a while to come!

Changing to a somewhat different vocabulary and operating system imposes some change-over problems. Effective June 1st, MMS WILL SHIP V2.0-COMPATIBLE MMSFORTH AND RELATED SOFTWARE UNLESS YOUR ORDER SPECIFIES FOR V1.9 - so check for new pricing where applicable, and be sure to let us know if you want the earlier version instead! Also, V2.0 incorporates the new 79-STANDARD Forth words as a subset of its far larger vocabulary, so this Newsletter will begin using its vocabulary now to help keep all issues in Volume 2 reading alike. For the time being, though, we'll include appropriate translations for V1.9 because we realize that only a few of you will be up on the latest for the next month or two.

-- A. Richard Miller, Editor 4th Class

DATAHANDLER CUSTOM MODIFICATION TECHNIQUES

Last month we took a first trip through the MMSFORTH source code of THE DATAHANDLER to teach it a few new tricks - and to see how MMS goes about doing such an operation. Now that you're all old hands at this, let's take a look at some of the existing DATAHANDLER words and how to use them from the keyboard. Then we will again roam inside, to see how some custom routines use them for special reports.

THE PROJECT AND THE TOOLS:

Our tools will be MMSFORTH V2.0, its on-board full-screen editor, and THE DATAHANDLER V1.2. (Users of MMSFORTH V1.9 and those following our V1.9 instructions in MMSFORTH NL 1:6 should note that, in addition to the required V2.0 word conversions and much lower-casing of text, all DATAHANDLER blocks have been shifted two blocks higher to accommodate V2.0's larger precompiled Forth.) If you have a printer, we recommend using PCRT, PLISTS and CRT to crank out a hardcopy of Source Blocks 12-49. And if you also have XREF, the powerful cross-referencing utility on the MMSFORTH Utilities Diskette, use it on the same blocks for a truly professional roadmap for the trip ahead.

Boot up an original version of THE DATAHANDLER or the fancy one you whipped up last time, from source or from precompiled. Best of all will be a "small-files" version with the Editor still aboard, as described in NL 1:6. (In V2.0, paren out "FORGET DIRBLK" on Block 18 instead of "FORGET SCR" on Block 16.) Then GET a small file and let's begin to play!

FIELD:

Having studied the STRINGS introduction in Newsletter 1:4, you should be ready to meet DATAHANDLER's FIELD word. Preceded by the record-number and the field-number, it removes them from the stack and replaces them with the address of the appropriate string. Yes, Virginia, DATAHANDLER fields are all kept as strings! Remember, of course, that our internal counts begin with 0 (for the computer) while the external counts begin at 1 (to pacify the non-computer types). So, to print Field 4 of Record 2 to the CRT, enter:
1 3 FIELD \$.

Personally, I tap the Space key once before pressing Enter, to clearly identify the beginning of the output string. Try it both ways, and vary the fields called for each of these new words until you've got the idea down pat!

NFIELD:

Want to change the name of an existing field in the current file? This time the magic word is NFIELD, again preceded by the field number counted from 0. So to see the name of the current Field 4, enter 3 NFIELD \$. To change it, remember that each standard fieldname consists of 8 characters. Use a string literal to redefine all 8 characters, including trailing blanks, like

this:
\$* NEWNAME " 3 NFIELD \$! (\$" was \$L in V1.9.) Now be sure to test your change with FIELDS to display the new story. Remember to SAVE the latest version if the change is a permanent one!

TFIELD:

This array holds the type of field, A or N, and like NFIELD it takes the field number from TOS. But since it only has to contain one character, it holds the ASCII code instead of a string. You can look at the field type in Field 4 by entering 3 TFIELD @ EMIT (EMIT was ECHO in V1.9). To reset it to an A, enter KEY 3 TFIELD ! and then hit the A key.

NAME:

This array holds the filenames index. 0 NAME \$. displays FREE, 1 NAME \$. gives the first user filename in THE DATAHANDLER's files directory, etc. Want to know the name of the current file in RAM? Easy, just enter NINDEX @ NAME \$. to display it on screen! In many of its custom DATAHANDLER projects MMS adds a word, FILE, which prints the current filename, neatly boxed, at the upper right of the screen in such commands as SAVE, KILL, etc.

RECORD-#:

How many records are in the current file? RECORD-# ? will show you, or RECORD-# @ will put it on TOS, ready for DO..LOOP operations!

FIELD-#:

Like the above, for the number of fields.

CUSTOM MODULES:

THE DATAHANDLER contains some excellent examples of modules applying the above routines. Check them out yourself before modifying them and adding some of your own. Pay close attention to the CHECK routine, the LABELS routine, and the MAIL routine because they are really custom report modules which have been included.

In the MAIL routine on Block 44, for instance, first another new word, ?, is defined. ?, looks to see if the string includes a comma. If so, it flips the two parts about that comma - as is done on Field 1 in the MAIL routine. (Here, Field 1's DO..LOOP increment of 0 is cleverly used to toss it to the ELSE side of an IF..THEN conditional branch!) Strings are handled as required, including concatenation of the CITY/STATE and ZIP fields. MAIL is a sophisticated special report routine which also can serve as a good model for one of your own.

Other than the prior notes concerning V2.0's 2-block shift upward of all DATAHANDLER blocks and the new 79-STANDARD word changes, about the only new trick which will affect last issue's V1.9 info on DATAHANDLER modifications is a new way to measure the number of sectors in RAM before recompiling. Once a standard DATAHANDLER V1.2 is loaded under MMSFORTH V2.0, /MOD and / are forgotten. If you have enough RAM, you might add them back in. Or you can calculate the number of complete 256-byte sectors and the number of bytes in the final one for DWTSECS without /:
In V2.0, START-AREA @ 19200 - 0 256 U/MOD . . replaces
V1.9's START-AREA @ 19200 - 256 / 1+ .

Coming: more custom report modules for THE DATAHANDLER, and ways to answer some of its regular queries from program instead of from the keyboard.

PERIPHERAL TALK

RUN A LIGHT-PEN IN MMSFORTH: (by Jim Gerow)

For those of you who have bought a light-pen (the "PHOTOPOINT" from Micro Matrix or another inexpensive one) and want to start making the FORTH connection, the following screens should be quite useful.

The operation of the light-pen is simple. The light-pen connects to a tape recorder which is hooked up to the cassette port of the computer. The user simply aims the light-pen at a selected target point on the video display.

The light-pen acts as a light-activated switch ("on" when it sees light, "off" when it doesn't), the recorder acts as a signal amplifier, and the cassette port inputs the amplified light-pen signal to the CPU. The only "fly in the ointment" is the cassette port. The cassette port is a "pulse catcher", that means once it has been turned on, it has to be reset to turn off.

The software side of light-pen operation is a little more complicated. The program must first display the target areas or light-pen points on the video display. After waiting for the light-pen to detect light, a sequential scan is made to determine which of the points are selected. If the light-pen "tracks" a light-pen point while that point is turned off and on a couple of times, the scan stops and the number of the point is returned as the selected point. The program then tests the point number and branches to the selected routine for further processing.

In order to simplify the software interfacing, I've provided two blocks which boil down to two "user" words. One word, LPPI, to

initialize the light-pen point positions, and the other word, LPSCAN, to wait for a valid light-pen input and return the relative number of the selected point. The only "extra" system word required is ARRAY from Block 42 Line 2 of the MMSFORTH System (Block 28 in V1.9). If your application doesn't need the double-precision and array blocks (39-42), carefully type in the ARRAY definition by itself.

Hopefully, the in-line comments and the demonstration block will provide enough information for you to tailor the light-pen routines to your particular application. In more complex applications than LPDEMO, I find that an NCASE structure after the LPSCAN is a very easy and powerful means of "seeing the light."

BLOCK : 90

```
0 ( light-pen routines 1 of 2 Jim Gerow 10/80 ) DECIMAL
1 150 CONSTANT RATE ( scan rate: 100=fast, 1000=slow )
2 25 CONSTANT LPPMAX ( max # of light-pen points wanted )
3 LPPMAX ARRAY LPP ( light-pen points array )
4 ( CODE routines to input & reset cassette port latch )
5 CODE LPIN 255 IN A L MOV 0 H MVI PSH
6 CODE LPCLR 4 A MVI 255 OUT NEXT
7 : ?BRK ( -> f ) ( true if BREAK pressed ) ?KEY 1 = ;
8 : LPPI ( p1 p2 ... pn n -> ) ( initialize light-pen points )
9 DUP 0 LPP ! 0 DO 0 LPP @ I - LPP ! LOOP ;
10 : LPDLY ( -> ) ( "scan rate" delay loop )
11 10 0 DO LOOP LPCLR RATE 0 DO LOOP ;
12 : LP! ( n c -> ) ( stores c to point n )
13 SWAP LPP @ 15360 + C! ;
14 : LPON ( n -> ) ( turns "on" point n ) 140 LP! LPDLY ;
15 : LPOFF ( n -> ) ( turns "off" point n ) 128 LP! LPDLY ;
```

BLOCK : 91

```
0 ( light-pen routines 2 of 2 Jim Gerow 10/80 )
1 : LPWAIT ( -> ) ( wait til light-pen "sees" light, BREAK quits )
2 BEGIN ?BRK IF QUIT THEN LPIN 130 > UNTIL ;
3 : LPPSET ( -> ) ( turns on all light-pen points )
4 0 LPP @ 1+ 1 DO I 140 LP! LOOP ;
5 : LPDLY1 ( n -> n ) ( equalized delay based upon point # )
6 0 LPP @ OVER - 0 DO LPDLY LPDLY LOOP ;
7 : LPGET ( -> n ) ( returns selected light-pen point )
8 BEGIN LPWAIT 0 0 LPP @ 1+ 1 DO I LPOFF 1
9 3 0 DO LPIN 130 > J LPON IF NOT LEAVE ELSE LPIN
10 130 < IF NOT LEAVE ELSE J LPOFF THEN THEN LOOP
11 IF I 42 LP! LPDLY LPDLY LPDLY LPDLY DROP I LEAVE THEN
12 LOOP ?DUP UNTIL LPDLY1 ;
13
14 : LPSCAN ( -> n ) ( displays points, waits, then returns pt.# )
15 LPCLR LPPSET LPGET ;
```

BLOCK : 92

```
0 ( light-pen demo routine Jim Gerow 12/80 )
1
2 ( initialize LPP array w/ point positions, and # of points )
3 325 453 581 709 837 5 LPPI
4
5 ( Demonstration routine, display 5 points, wait for a selection,
6 then print the selected point. Press BREAK to exit. )
7 : LPDEMO ( -> ) PAGE 6 1 DO 3 I I ++ 7 PTC I . LOOP
8 BEGIN 0 0 PTC ." CHOOSE ANY POINT"
9 LPSCAN ?DUP IF 0 0 PTC ." YOU CHOSE # " . THEN
10 100 0 DO LPDLY LOOP ( delay between inputs )
11 0 UNTIL ;
12
13 LPDEMO
14
15
```

Note: This source code is written for V2.0. For V1.9 use editor to change BEGIN..UNTIL to BEGIN..END (3 times), ?DUP to -DUP (2 times) and PAGE to CLS (1 time).

MMSFORTH MODIFICATIONS

LOWER THAN LOWER-CASE:

What's lower than lower-case, I hear you ask? An omission in our Issue 1:6 article on undoing V1.9's lower-case video driver routine, that's what! The CRT definition near the end of Page 4 is correct, but should have included an additional 'CRT' to the right of the semicolon in order to execute the new word. Our Model I V2.0 is delivered without a lower-case driver, removing the need for this fix; the driver is easily loaded by those with the appropriate keyboard modification.

MMSFORTH QUICKIES

KEYBOARD MONITOR ROUTINE:

This brief routine permits observation of keyboard scan codes. (For V1.9, change PAGE to CLS, and UNTIL to END.):

```
: KEYS PAGE 8 25 PTC " 14400:"
BEGIN 8 35 PTC 14400 C? " " 0 UNTIL ; KEYS
It monitors the status of the 14400 RAM address, which in the TRS-80 reflects the status of the keyboard's non-alphanumeric keys. Do you see why the final quotes are included? If you don't, try it again without them and then hit the space bar.
```


MMSFORTH VERSION 2.0 (MOD.I & MOD.III) EXPECTED IN JUNE:

At MMS, work on MMSFORTH Version 2.0 is nearly complete and draft versions have been reviewed by selected users. Our usual policy is to withhold advertisements of a new product until it is actually in distribution. But this first issue of the second volume of the MMSFORTH Newsletter is a good place to introduce present users to its new words and capabilities, and we want you to be the first to be advised on new product availability.

We expect to be delivering at least the diskette Version 2.0 in early June and are accepting MasterCard and VISA advance orders at this time. The new price for either Model I or Model III will be \$129.95 for disk, \$89.95 for tape, plus shipping/handling. The new shipping/handling price may become as much as \$5.00. To rewrite your present V1.-whatever to V2.0 (Model I only, since it is a single-system, single-user license) will only cost the usual: the price difference plus \$10.00 transfer charge (that's a total of \$75.00 for recent diskette owners, \$55.00 for cassette), plus S/H. It will require our rewriting of the original copy of your V1.-whatever MMSFORTH SYSTEM DISKETTE or CASSETTE, the one with the MMS label. If you send them along, we'll rewrite your original DATAHANDLER, MMSFORTH GAMES or UTILITIES diskette to V2.0 for \$10.00 each.

Now, what's in the new box? First, a looseleaf binder with a fancy new cover. And inside, a few hundred other changes: a new kernel, a new memory map, many new words, each of which now is recognized as a unique word as much as 31 characters long (although it still uses only 4 bytes in the header), general utilization of lower-case text (we ship the Model I copies without the lowercase video display driver loaded, ready for easy conversion by those who have the supporting hardware), new levels of protection and convenience in I/O and editing operations, a new Page mode for editing the entire block as a single line, multiple block buffers, mixed disk drive combinations, even the capability to read, write and run (but not boot) your Model I MMSFORTH diskettes in the Model III under the Model III MMSFORTH system! (Right, you don't have to convert them as in Model III TRSDOS. Instead, you just pop them in and run them!)

In general, the system will remain a familiar one for most of your earlier MMSFORTH operations. But in the interest of compatibility with upcoming Forth books and magazine articles, and to permit you to create and run portable programs, we have converted the appropriate subset of our prior MMSFORTH vocabulary to the FORTH 79-STANDARD wordset MMS helped create. (Note that we have not designed our much more extensive and powerful wordset for portability to other Forth systems, nor does our usual User License Agreement permit it. The 79-STANDARD subset must be used exclusively for such tasks.) We are reviewing manuscripts for a next generation of Forth books, and as they become available I believe you will see the value of this change.

What will these 79-STANDARD words mean to you personally? A few learning-curve hassles at first, naturally. But our manual will help, and V2.0 includes a CONVERT utility which automatically rewrites the new V2.0 synonym definitions onto your V1.9 source blocks, and reports on those changes which require some programmer decision for best implementation. V2.0 also includes a SEARCH utility by Andy Watson, which enables you to pick up all occurrences of that word you want to change. SEARCH is far less powerful than the XREF utility on our Utilities Diskette, but it is at hand at no extra charge and will be appreciated. If you wish to learn the new 79-STANDARD wordset now, we stock the 79-STANDARD Manual for \$10.00 plus S/H; it, plus the V1.9 instructions and four new pages, is all we are using now at our evaluation sites.

V2.0 implements the TRS-80 keyboard's Clear key as a

non-ambiguous Control key. (Radio Shack has delivered many TRS-80 Model I's and Model III's which use Shift-Downarrow as a Control key, and, unfortunately, many of each which do not.) We use our new Control key to type the "extra" ASCII characters not on the normal keyboard, to invoke most editor commands, and with the Shift key to invoke the full-line editing operations.

This new level of keyboard access permits MMSFORTH's full-screen editor to default into Replace mode instead of the old inactive mode, and a control-I toggles back and forth to the optional Insert mode. A control-P toggles into or out of the optional Page mode, from the default Line mode. This new Page mode uses "full-block editing", sliding all following lines of the block on Insert or Delete operations. You will use it to splice extra phrases "between" full lines, to slide whole columns of data at once, and to expand compact, hard to read code into "pretty-printed" blocks for analysis and modification. MMS is preparing a simple letter-writer utility based upon this new feature.

Without leaving the editor mode, one can scan to the next block (with or without rewriting the present one), one can read the present screen number, and one can exchange the other block buffer onto the screen - great for line moves, or for checking for differences in two similar blocks!

Our revised full-screen editor is so smooth that we've removed the last traces of our earlier ones. And since there is no other one, we now invoke it with EDIT instead of EDS.

Would you believe we can edit the keyboard entry line, as well? Loading an optional "extended EXPECT" provides Replace, Insert and Delete capabilities on the line you are keying in. Better yet, you can even recall the last-entered line (after an error, say!), edit it, and try it again.

MMSFORTH V2.0 includes several printer driver options in Forth for custom modification. The regular one includes a MARGIN variable. One use is to enter 10 MARGIN ! so your 67-column PLISTS don't have to begin in column zero where they get 3-hole punched along with the paper! The extended printer driver permits reset of most paper-formatting adjustments, as in a word-processor.

INDEX and PLISTS now expect a starting-block# and a count; like all other spanning words, they use the Range rather than the ending-block#. But if you know the latter, use it followed by :R to convert it to a Range! Looking for Block 40 but the disk is in Drive 1 and you don't remember how many blocks are on Drive 0? Just say 40 :1 EDIT and there you are! Drive 1 was empty after all? You haven't hung the system, just caused an error report. Write-protect-tabbed disks also are painlessly reported, as are wrong-density diskettes for your current Model III configuration.

There's more, lots more. But this should suffice to show that MMSFORTH Version 2.0 is powerful, flexible and very forgiving. You'll like it!

NEW YORK CITY EXHIBIT, MAY 21ST-23RD

If you can, please say hello to MMS in Booth 39 of THE NATIONAL TRS-80 MICROCOMPUTER SHOW at the New York Statler Exposition Hall (across from Madison Square Garden). We'll be demonstrating the new MMSFORTH V2.0 and THE DATAHANDLER on the TRS-80 Model III, along with some items too new to mention yet!

THE LAST WORD: "Terrific! FORTH is to FORTRAN as the Caribbean is to New York City!"

- Howard Berger, Brooklyn Heights, New York

