INGRATITUDE?

Last month I appealed to readers for contributions: for problems
from beginners, and for crumbs of wisdom from more sophisticated
programmers. Unfortunately the response has consisted mainly of
problems - unanswerable - from those who know more than I do, and
crumbs of wisdom from beginners. But 'Thank You!' all the same
to those who have written in: and equally to those who intend to,
but have not yet got round to it. The selection of correspondance.
overleaf does not quite exactly represent the actual texts of
letters received.

* * *

Any machine can go wrong. Last month my printer failed. It needed
a minor repair. I made every effort to get this done, even journeying
to SHARP's headquarters in Manchester: and individuals at SHARP,
realising the urgency, made all the efforts they were capable of.
Nevertheless I was without the use of the machine for over a month.
It would seem that PC 1500s are not done by the Computer Service
Department, but by the Calculator Service Department; a PC 1500
arriving at SHARP will take 6 working days before it even reaches
   this department - who will then send it out to be repaired.
I am therefore of the opinion that SHARP are just not organised
to be able to give us the service to which we are entitled.
It may be that my unfortunate experience is unique. So that I can
form a more unbiased opinion, I would be very grateful indeed if
readers,who have had to have repairs done, would write and give
details of how they fared, whether well or badly. (Your letters
on this subject will be treated as strictly confidential).

***

A number of readers have written in because they could not RUN
programs from this magazine. In every case, it was because they
had copied them incorrectly. I am always happy to debug your programs
for you: but you MUST enclose a listing of what you have been trying
to RUN: I cannot do this by remote control.

* * * CONTENTS * * *

Dear Sir,
        The program you printed in the last issue did not look as if it would work, so I altered it. It still did not work, so I altered it some more. Now it is no good at all. Please put it right. I have not enclosed a listing.

                  Yours

Dear Sir,
        I enclose my entry for your competition, which I confidently expect to win. I did not like the Rules, so I have changed them. Please send my prize immediately.

                  Yours

Dear Sir,
        Herewith a little program for testing whether 2 and 2 make 4.

```
10: INPUT "DO YOU WISH TO SEE IF 2 AND 2 MAKE 4?
    ANSWER YES (Y) OR NO (N)"; A$
20  IF A$ = "Y" GOTO 50
30  IF A$ = "N" GOTO 110
50  X - 2
60  Y = 2
70  Z = X+Y
80  IF Z = 2  PRINT "YES"
110 END
```

                  Yours

Dear Sir,
        Please publish the enclosed program for demodulating infuriants, together with the accompanying explanation of how it works, consisting of 38 pages of hastily handwritten notes.

```
45007: READ P,Q,R
45008: P= P*INT (P/LN ( SIN ( Q/ INT (P*R) - ABS EXP (P*
       1/LOG (Q - Q*P)))))))
45009: DATA 1,1,1
```

                  Yours

Dear Sir,
        I find your magazine absolutely fascinating, and only wish that I could understand some of it. Please, what is "BASIC"?

                  Yours

Dear Sir,
        I do not think much of the programs in your magazine. They are not nearly as good as the ones I have written myself, but I am not going to send them to you because I hope to market them myself. Anyway, they are better than your ones.

                  Yours
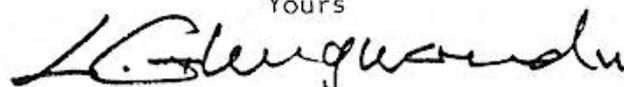
I have been unwell, and exiled from my typewriter, which accounts for
the possible lateness of the magazine, and for the development of the
TEXT-HANDLING program with the aid of which this article is written.
It is still rather verminous, but as soon I can get rid of the bugs
I will print it.
   There are a number of ways in which the PC 1500 helps to produce this
newsletter, as indeed it should do. I will leave out for the moment
all those programs and subroutines designed to examine the MEMORY MAP
and other workings of the computer itself. Since these tend to alter
the material they are intended to examine, using them is rather like
trying to perform brain-surgery on ones own head, without a mirror!

The MAILING-LIST is fully computerised, and I prefer it to most
commercial Database systems. Freedom from Menu-driven tyranny leaves
a lot more space for data: and if I need a particular application it
only takes a few minutes to program it in, and delete afterwards.
We have of course a rather elementary ACCOUNTS program, and a STATISTICS
   program which indicates that by the middle of 1987 the entire population
of the universe will be reading this newsletter, - indeed some of them
will be obliged to read 2 copies! It could of course be possible that
there is an error in the program, or in my data. (While on the subject
of errors, let me take this opportunity to apologise for some unevenness
in the margins of this article - another bug not yet sorted out).

There is an INDEX program, which has worked very smoothly on other
applications, and which will be used for an index to each volume. And
of course there is the TITLE program which is updated each month to
produce the heading on the front page. All these I hope to bring you in due
course. First, the TITLE. Vary the lettering by changing the increments
to X & Y.

```
3: "U"CLEAR :
   GRAPH
5: ROTATE 1:COLOR
   0:X=100:Y=0
6: GOSUB 400:
   GLCURSOR (0, 0)
   : SORGN
7: TEXT :CSIZE 1:
   LF 14:X=0:Y=0:
   GRAPH
10: FOR K=1TO 5
20: ROTATE 1
30: LINE (X, Y)-(X+
    180, Y-480), 0, 0
    , B
35: X=X+5:Y=Y-5
40: NEXT K
49: CSIZE 7 .
50: X=105:Y=-125
60: FOR K=1TO 9
65: GLCURSOR (X, Y)
70: LPRINT "STATUS
    "
80: X=X-1:Y=Y-1
90: NEXT K
100: X=35:Y=-165
110: FOR K=1TO 9
115: GLCURSOR (X, Y)

120: LPRINT "1500"
130: X=X+1:Y=Y-1
140: NEXT K
150: TEXT :LF 11:
     GRAPH
160: ROTATE 1
170: X=100:Y=0
300: FOR F=1TO 4
305: GLCURSOR (X, Y)
306: CSIZE 3
310: LPRINT "    APR
     IL"
311: GLCURSOR (X-40
     , Y)
312: LPRINT "    198
     3"
320: X=X+1:Y=Y-1
330: NEXT F
331: RETURN
400: FOR F=1TO 4
401: GLCURSOR (X, Y)
406: CSIZE 3
410: LPRINT "VOL.1"
411: GLCURSOR (X-40
     , Y)
412: LPRINT "NO. 3"
420: X=X+1:Y=Y-1
430: NEXT F
436: RETURN
```

22

*E.MACMILLAN is developing a program for forecasting Football Pools.
After setting up a set of arrays, A(12), B(12)......Z(12),
he has difficulty in addressing them indirectly.*

The problem is not quite clear, but I imagine it can be solved
by using 2-dimensional arrays, i.e. -   DIM A(26,12)
Try this:

```
10: DIM A(26,12): WAIT 0: CLS
20: FOR J = 1 TO 26
30: FOR K = 1 TO 12
40: CURSOR 2: PRINT J; K
50: CURSOR 9: INPUT A(J,K)
60: CLS
70: NEXT K
80: NEXT J
```

*L.P. GOODHEW (see Distress Signals last month) says "Of course I knew
all the time how to draw a circle! I just wanted to see
if you knew! But how do you draw a spiral?"*

See 'MINDBOGGLE CORNER'

Dr.A.NICHOLSON asks "What exactly is a CHECKSUM ERROR? (ERROR 44)"

This is a safeguard which prevents a program from being CLOADed
incorrectly. Every so often, when you CSAVE, probably every 256
bytes, an extra byte is inserted which contains the sum of the values
of the previous 256 bytes. If a byte is corrupted on CLOADing, the
sum CLOADed will not correspond to the sum CSAVEd, and CLOADing
will be halted.A precaution to prevent two wrongs making a right,is
normally to   multiply each successive byte value by a successive
prime before summing. To circumvent this safeguard see 'SALVAGE?'
on page 25   . *Information supplied by TIM LANDON, who asks......*

*"It seems when you MERGE 2 programs, you cannot edit the first, nor
RUN the second, except by DEF(label). Is there a way round
this?"*

You may sometimes be able to GOTO (label) in the second program
after you have scrolled down to this program. To edit the first
program, execute POKE 30825, PEEK 30821, PEEK 30822
However you will not now probably be able to edit the second
program. To make two separate MERGEd programs into a single
continuous program, see 'SUPERMERGE' on page 25 .

*CHRISTOPHER LEDSAM asks "How can you do 3-dimensional drawings with
PC 1500?"*

Presumably you would make use of the program in the Applications
Manual for converting Polar coordinates to Rectangular ones, and
vice versa. It all depends what exactly you want to do. A good
book on Computer Aided Design   would be helpful: but it is
heavy going, and programs occupy a lot of space in memory.
I recommend

"PRINCIPLES OF INTERACTIVE COMPUTER GRAPHICS" by
W.M.Newman & R.F.Sproull, (McGraw-Hill, £7.95)

particularly chapters 20 to 25, also

"CREATIVE PERSPECTIVE" by Robert Gill (Thames and Hudson, £2.50)

There is one more feature to be examined before we leave the program area for a while. Last month we saw how the first two bytes of each line contain the Line Number. The address immediately following these contains the number of bytes in the line (including itself, but not including the two bytes holding the Line Number, nor the 13 at the end). If you alter this , you will normally tie your program into knots: line numbers will appear as text, and vice versa.

There is one exception to this. If in this address you POKE a figure which is the sum of: a) its contents b) the contents of the corresponding address in the next line c) and 3 , then you will find that the second line has disappeared! Try this:-

```
10   REM A
20   BEEP 5
30   END
```

Now POKE 14535 (or 8391, or 16583) , 11   and you will find that Line 20 has 'disappeared, and cannot be listed. But when you RUN the program it is executed just the same! However it is important to remember that it will only be executed in sequence following the previous line: you cannot GOTO or RETURN to a line concealed in this way. Nor should it form the beginning or end of a FOR-NEXT loop.

You can in fact conceal a number of lines sequentially in this way. Add the contents of the 3rd byte of each line you wish to hide; add the sum to the third byte in the line preceding the lines to be hidden; add 3 for each line to be hidden; POKE the sum (maximum 255, but maximum 80 is safer) into the 3rd byte of the line preceding the lines to be hidden: and your program is now protected against prying eyes. To remove this protection, just restore the original quantity into the address into which you have POKEd. You will find that much of the software you buy commercially makes use of this method of protection. Next month we shall print a program for stripping this protection.

Outside the program area, between addresses 28672 and 32767, are many counters and pointers. Here is a useful one:-
    As you have probably discovered,there is a limit to how far you can Linefeed in reverse. The maxima are:
in TEXT mode, CSIZE 2,   : LF-24
              CSIZE 1,   : LF-50
in GRAPH mode.....   : Y = 510

Try this, from the keyboard
            1) TEXT
            2) CSIZE 2
            3) LF 48
            4) LF -24
            5) POKE 31204, 0,1
            6) LF-24
and you will find you have wound back your whole LF 48 into the machine. This can be useful in programs which are inhibited by the limit on winding back. The addresses 31204 and 31205 hold up to 510 (in 256ary) - maxima 1 in 31204, and 255 in 31205: and you have deceived the machine into thinking that no reverse linefeed has been performed. Use this facility with care, so as not to get a mass of paper tangled up inside. And note that all the addresses from 28672 onwards are outside the program area, and are not changed by what memory add-on you may have inserted.

(to be continued)

SALVAGE

This process is for the purpose of salvaging a program which has partially CLOADed, and then has shown ERROR 44 shortly before the end. It is no use for a program which has not recognised a File-Name, since under this condition it has not begun to CLOAD.

The process takes about 5 or 10 minutes to execute: but this is still quicker than re-writing 5 or 10K . It is quite safe, as long as instructions are followed exactly. It must of course be executed from the keyboard: to enter it in program form would be to destroy the program you have partly CLOADed.

KEY	MODE
1) POKE 30823, 254, 254	RUN
2) Scroll through from start of program to inspect what is in memory.	PRO
3) Find by PEEKing*the address of the 13 at the end of the last uncorrupted line which you wish to preserve. Call this address Z	RUN
4) POKE 30823, PEEK 30821, PEEK 30822	RUN
5) POKE (PEEK 30822 + 256 * PEEK 30821),0	RUN
6) POKE Z+1, 255	RUN
7) POKE 30823, INT ((Z+2)/256)	RUN
8) POKE 30824, Z+2 - 256*PEEK 30823	RUN

This program, as far as it goes, is now perfectly restored, and may be edited or added to in the normal way. It can also be used instead of RESCUE OPERATION (page 5), for which purpose step 6) can be omitted.

*Not as hard as it sounds. Once you have hit a 13 in an address less than the one you are searching for, call this A . PEEK (A+3). This gives the number of bytes in the line. PEEK (A+3+(PEEK (A+3))). This will be 13 again - and so on.

SUPERMERGE

To MERGE 2 programs , so that they become a single continuous program:-

Part 1 a) CLOAD the first program.
        b) add to it a last line---- 65279: REM
        c) find STATUS 2. Call this S

Part 2 a) MERGE the 2nd program
        b) POKE S-1, 13
        c) POKE S-2, 33
        d) POKE 30825, PEEK 30821, PEEK 30822
        e) POKE S-5, 4

Part 3 a) Unless every line number in the first program is smaller than any line number in the 2nd program, MERGE "RENUMBER" (page 17)
        b) RUN "RENUMBER"
        c) delete line 65279, which now reads REM ! (but will have a new line no.)

You.now have one ordinary continuous program.

Of course you do not believe in astrology. The fact that you happen to know
the sign under which you were born (your 'Sun Sign') is entirely accidental.
If you glance at your horoscope in the papers, this is purely for amusement.
Yet although most people know their Birth-Sign, very few know their
Ascendant, or 'Rising Sign'. This is the sign rising on the Eastern horizon
at the time of birth. Astrologers believe that this is very nearly as
important as the Birth-Sign, and sometimes more so. Indeed, you may well
find on occasion that the forecast in the papers for your Ascendant is more
relevant than the one for your Birth-Sign.

*This program will find your Ascendant in a few seconds. Dates should be
entered in figures: times by 24-hour clock, in the form hh.mm .
All times in GREENWICH MEAN TIME: you must correct for Summer Time, Zone
Time, etc. Latitudes and Longtitudes are entered in degrees and minutes –
dd.mm .Longtitude West is entered as plus, and Longtitude East as minus.
(Only valid for Northern Hemisphere, not North of Arctic Circle)*

Note: Since the sign of the Ascendant changes every 2 hours, if your
Ascendant is very near the beginning or end of a Sign, and you are not quite
sure of the time of birth, the Ascendant could possibly be in the neighbouring
sign. There are 30 degrees in a sign, and 1 degree equals 4 minutes of time.

TEST: for a birth in West London (51° 32' North, 00° 07' West) at 12.15 pm
        on April 15, 1923, The Ascendant is 15° LEO .

[program   on next page]

MINDBOGGLE CORNER

Drawing a spiral is only too easy. But an elliptical spiral?
A multi-coloured elliptical spiral? A small prize for the shortest
program which draws this. Each program must start ARUN, and be
entirely self-contained. There must be INPUTs to control the
size of the major axis - INPUT "r1", and the minor axis - INPUT "r2".
Also the density of convolutions must be controlled by INPUT "d".
The very shortest program which does not transgress these rules
will be the winner - closing date   17th April.

MARCH MINDBOGGLER

```
10:DIM A$(99)
20:FOR F=97TO 37
   STEP -3
30:READ A$(F)
40:NEXT F
50:ZZ$=A$(91)+A$(
   97)+A$(43)+A$(
   99)+A$(43)+A$(
   85)+A$(40)+A$(
   37)+A$(85)
60:LPRINT "I CLAI
   M A ";ZZ$
70:LLIST
80:DATA "A","B","
   C","D","E","F"
   ,"G","H","1","
   J","K","L","M"
   ,"N","O","P","
   Q"
90:DATA "R","S","
   T","T","U","U"
   ,"W","X","Y","
   Z"
```

*On the left is the solution. A number
of readers managed to reconstruct the
program, and then spoilt their chances
by making changes other than to xx or nn,
although this was clearly forbidden.
The greatest difficulty was with line 70,
even though the specification "the
solution must include a correct listing"
gives a pretty good hint. Several readers
missed the duplicated "T" and claimed
a "CASSETUE". The GPO will not accept these
beasts, since their byte is poisonous.*

The winner is: JOHN MACK

*Let me know what memory you have, and I'll
put a program or two on the cassette.*

```
  1:TEXT :CLEAR :
    CSIZE 2
 30:E=23.45
 40:INPUT "NAME ";
    N1$:LPRINT N1$
 60:INPUT "LATITUD
    E=";L1,"LONGTI
    TUDE";L:L8=DEG
    L:LC=L8/15
100:GOSUB 2480
110:L2=DEG L1+1E-8
    :S2=DEG S1:R2=
    15*S2+1E-4
130:A2=ATN ((COS R
    2)/(-((SIN E)*
    (TAN L2)+(COS
    E)*(SIN R2))))
140:A2=A2+180
150:IF S1>12AND S1
    <18AND A2<0LET
    A2=A2+180
160:IF (A2>=0)*(S1
    >=18)LET A2=A2
    -180
170:IF A2<0AND S1>
    18LET A2=A2+18
    0
180:K=INT (A2/30)+
    1:A3=A2-30*(K-
    1):GOSUB 700+K
280:LPRINT "LAT.";
    L1:LPRINT "LON
    G";L
300:A3=DMS A3:LF 1
    :USING "###"
309:LPRINT "ASCEND
    ANT=":LF 1
310:LCURSOR 4:
    LPRINT A3;:
    CSIZE 1:LF -1:
    LPRINT "o";:LF
    1:CSIZE 2:
    LPRINT " .";A$
320:LF 3:WAIT 0
330:FOR F=1TO 333
340:PRINT "ASC=";A
    3;:GPRINT "070
    507";:PRINT "
    ";A$
350:NEXT F:END
701:A$="ARIES":
    RETURN
702:A$="TAURUS":
    RETURN
703:A$="GEMINI":
    RETURN
704:A$="CANCER":
    RETURN
705:A$="LEO":
    RETURN
706:A$="VIRGO":
    RETURN
707:A$="LIBRA":
    RETURN
708:A$="SCORPIO":
    RETURN
709:A$="SAGITARIUS
    ":RETURN
710:A$="CAPRICORN"
    :RETURN
711:A$="AQUARIUS":
    RETURN
712:A$="PISCES":
    RETURN
2480:A=3+56.56/60
     :AA=A/60
2490:BT=6.4216:BT
     =DEG BT-AA/2
2500:RS=1950
2510:PAUSE "BIRTH
     DATE"
2520:INPUT "YEAR
     ";U,"MONTH "
     ;U,"DAY ";W
2530:LPRINT W;U;U
2540:IF U<RSLET R
     S=1917
2550:H=RS:G=1:I=1
2560:GOSUB 2640
2570:J=1:H=U:G=V:
     I=W
2600:GOSUB 2640
2610:XX=1-J:USING
     "####.##"
2630:GOTO 2720
2640:IF G-3>=0LET
     Z=-(G-3)*30.
     6-.5:GOSUB 2
     710:I=I-Z:
     GOTO 2670
2660:H=H-1:Z=(-(G
     -3)-12)*30.6
     -.5:GOSUB 27
     10:I=I-Z
2670:Z=H*365.25:
     GOSUB 2710:I
     =I+Z:Z=H/100
2680:GOSUB 2710:I
     =I-Z:Z=H/400
2690:GOSUB 2710:I
     =I+Z-307
2700:RETURN
2710:X=INT ABS Z:
     Z=SGN Z*X:
     RETURN
2720:INPUT "GMT="
     ;G1:G2=DEG G
     1:LPRINT "GM
     T=";G1:LF 1
2730:ST=BT+XX*AA+
     G2+G2/24*AA
2740:CR=1.7/3600*
     (U-RS):ST=ST
     -CR-LC
2750:S1=DMS ((ST/
     24-INT (ST/2
     4))*24):
     RETURN
```

27

230	128	CSIZE
230	129	GRAPH
230	130	GLCURSOR
230	131	LCURSOR
230	132	SORGN
230	133	ROTATE
230	134	TEXT
231	169	RMT
240	132	CURSOR
240	133	USING
240	136	CLS
240	137	CLOAD
240	143	MERGE
240	144	LIST
240	145	INPUT
240	147	GCURSOR
240	149	CSAVE
240	151	PRINT
240	159	GPRINT
240	178	CHAIN
240	181	COLOR
240	182	LF
240	183	LINE
240	184	LLIST
240	185	LPRINT
240	186	RLINE
240	187	TAB
240	188	TEST
241	80	AND
241	81	OR
241	88	MEM
241	91	TIME
241	92	INKEY$
241	93	PI
241	96	ASC
241	97	STR$
241	98	VAL
241	99	CHR$
241	100	LEN
241	101	DEG
241	102	DMS
241	103	STATUS
241	104	POINT
241	107	SQR
241	109	NOT
241	110	PEEK#
241	111	PEEK
241	112	ABS
241	113	INT
241	114	RIGHT$
241	115	ASN

241	116	ACS
241	117	ATN
241	118	LN
241	119	LOG
241	120	EXP
241	121	SGN
241	122	LEFT$
241	123	MID$
241	124	RND
241	125	SIN
241	126	COS
241	127	TAN
241	128	AREAD
241	129	ARUN
241	130	BEEP
241	131	CONT
241	134	GRAD
241	135	CLEAR
241	138	CALL
241	139	DIM
241	140	DEGREE
241	141	DATA
241	142	END
241	146	GOTO
241	148	GOSUB
241	150	IF
241	152	LET
241	153	RETURN
241	154	NEXT
241	155	NEW
241	156	ON
241	157	OPN
241	158	OFF
241	160	POKE#
241	161	POKE
241	162	PAUSE
241	163	P
241	164	RUN
241	165	FOR
241	166	READ
241	167	RESTORE
241	168	RANDOM
241	170	RADIAN
241	171	REM
241	172	STOP
241	173	STEP
241	174	THEN
241	175	TRON
241	176	TROFF
241	177	TO
241	179	WAIT
241	180	ERROR
241	181	LOCK
241	182	UNLOCK

*MAY will contain a review of'EASIFILE' - a new Database program by
Ian Traynor - also ......*

*YET MORE PEEK & POKE - OUTLINE MEMORY MAP -
GOLF - MAILING LIST - SAFECRACKER - and
the usual regular features*

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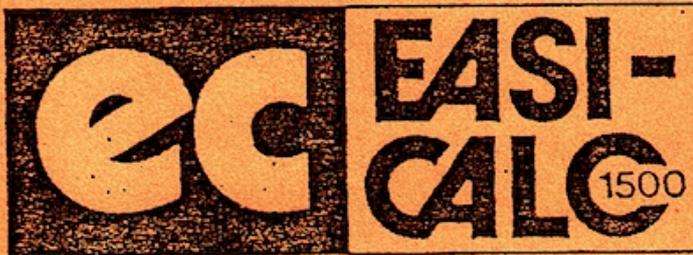
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