Hi,
Well, another great night, with a crowd of 62 attending. Apparently, several people have missed the evening, thinking that our meetings are on the fourth Monday of every month. Please note that our meetings are every fourth Monday, not the fourth Monday of every month. Please mark your calendars now, so that you don't miss future meetings.

There will also be a change to all following newsletters. These are very time consuming to produce every month, and very expensive to post. As the Post Office has not seen fit to answer either of my two letters to them about bulk postage, your committee has decided that all future newsletters will be prepared during the four weeks after the meeting, and will then be distributed at the next meeting. This cuts down on postage (which was $25.50 last month for 84 newsletters), and also gives Chris and I, or Ernie and Chris and I, a little more time to prepare the newsletter. Those of you who are unable to attend the meeting will have your newsletter posted to you in the usual way, and of course, our 30 country members will also get theirs as usual.

Olwen opened the meeting a little later than usual, at around 8 oclock. She gave a talk on 'basic for beginners' or rather what sort of things to try, what sort of programs to try converting etc. Then questions were asked that she did her best to answer. A brief synopsis follows:

It is probably best to avoid buying books that are written to specific machines, e.g. BBC, Spectrum, etc. A TRS-80 machine would be fine as long as there are not too many graphics commands in it.

A 'Bad Subscript' error was explained : this means that you have 'used a subscript out of range'. In other words, you have called a I(10) for example, when you have only dimensioned I as I(9). To fix this, change your DIM statement, or put one in if there isn't one already.

Is what you save on tape always exactly the same as what is on the screen? Olwen explained that sometimes during editing you may have inadventently put in a backspace, and this would probably cause your line to be garbage when saved, and reloaded.

Instead of pressing both RESET keys and the R key at the same time, try CALL 0000 or CALL C000. This takes you back to 'Ready'.

If you have reset (pushed both reset buttons) during a machine code game, just type SYSTEM then answer the prompt with / as usual, and you should be back at the start of your program again. Until I learnt this, I always reloaded the program!!

A good range of books for the Colour Genie are Usborne's series. They are available from Foodtown Supermarket, as well as most bookshops, and only cost $4.50 or less, each. (I bought one a week for about eight weeks with my grocery shopping - very handy!!)

Another book that was mentioned was 'Learning to Use the Colour Genie'. This was found on sale at the University Bookshop by Bert and Carol Harris. A 'book review' by Bert follows:-

Learning to Use the Colour Genie
Felix Chapman
Published by Gower
Price $21.50 (pre-devaluation)

Since most Genie owners are familiar with Ian Sinclair's book
'Mastering the Colour Genie', it is inevitable that the earlier
book is used as a basis for comparison.
Chapman's book is a paperback printed on a good quality paper
(essential when one thinks of the number of times these books are
used for reference). It is printed in a good sized clear type
which is easily readable. The program listings are in double
sized type and are excellent. A feature of this book are the
illustrations of the screen content. Many of the program listings
are accompanied by a photograph of the screen layout. This is a
bonus for beginners who may not be able to discern from the
listing what they should be seeing on the screen.
The first chapter supplies some background material on the Genie,
the development of micro-computers, a paragraph or two on
languages and descriptions and uses of the available peripherals.
Nothing too heavy, the book is aimed at the beginner.
Like Sinclair, Chapman starts right at square one with the three
pin wall plug and goes into great detail on how to get started. I
was tempted to skip this, but I found it was worth reading through
At the point where the programming instruction starts I feel the
content gets a bit lightweight compared to Sinclair. The demo
listings are good but I felt the explanations were not in
sufficient detail and there was not the progression from easy to
difficult. There are occasions when one is referred to the
programming manual for more detailed explanation. In fairness to
Chapman I found some of his program explanations helped to clarify
some of Sinclair's and having two separate explanations of a
particular programming feature can help to sort out some of the
confusion.
Summing up, I feel that 'Learning to use the Colour Genie' is a
worthwhile buy. It is a good companion book to 'Mastering the
Colour Genie' but if I had to choose between the two it would have
to be Ian Sinclair winning on content.

I have made some inquiries about both books mentioned above, and have found
that while 'Mastering the Colour Genie' is still available at the
University Book Shop, there will be a 3 month delay for 'Learning to Use
the Colour Genie'. And, if they don't get more orders for it, there will
only be two copies of 'Learning to Use the Colour Genie' coming in, one of
which I have already got my name on!!

Another book - 'Z80 Machine Code for Humans' - Roger Lockerbie has found
this book very handy.

Olwen also explained what a matrix is, and how it works. Lacking a
blackboard, she managed very well with chairs and people, giving us all a
better understanding of how a matrix works.

Ken also went over the new ROMS again, and all first six sets have been
sold, or at least booked, at the meeting. There will be plenty more
available however, but do get in touch with us if you are interested in
purchasing a set. However, one correction needs to be made. Ken said at
the meeting that with the new roms, the screen was one line longer, and one
line wider. However, the screen is only one line longer i.e. 40 x 25
lines.

By the way, I have been talking to Robert Wilson of the Christchurch Group,
and he tells me that 20 members of their group have purchased the new roms.

I also took along a copy of Flying Bytes and put it up on the screen. We now have several orders for this. Please note everyone, that Flying Bytes is now available for old roms too, thanks to Phil Lovegrove at Rakon, who took it home one night and altered mainly the PLOT and PAINT commands.

Disk drives were also discussed once again. David Chambers, in Christchurch, is willing to produce a disk drive for the very reasonable price of $400 to $500. BUT......he has to have 100 orders (throughout New Zealand) before he will go ahead and do this. There was a lot of interest shown at the meeting about these, but the general opinion is that we would be pushing it to get 100 interested people. These drives by the way, would have an extra 16K, and would run CP/M software. The price of $400-$500 is complete with all necessary modifications and software.

David Chambers also has modems available. These range from $275.00 up to a commercial one, at $1000.00. He has a modified #4 Rom that will be sold with any of his modems which will give you instant software for the modem. These are available ex stock however, not per 100! Please get in touch with us if you are interested. (For those who don't know, David Chambers is the person that has made these new roms available to us)

The lack of technical manual was explained by Chris Bishop. Unfortunately, Rank Xerox did not reproduce these to a good standard, and he is having them done again. So, sorry about the delay folks, but you will definitely get one soon. I promise!!

Now for something unusual. One of our members, a Mr David Walker of Feilding (prolific place, Feilding) needs a farming program that produces an output something like:

Date	Cat	Firm	Details	Amount
31Jan	GR	CRN	Groceries	56.23
28Feb	TR	TRC	Brakes	245.67
1Mar	UT	CRN	Tyre	123.56
24Mar	UT	TRC	Petrol	40.00
28Mar	SH	CWS	78 lambs	1632.34
12Apr	TR	CAL	Diesel	245.45

He needs to be able to input data similar to above, and to be able to sort the data, according to category(GR, TR, UT etc). He wants to be able to display it on screen and to be able to send selected categories to the printer. He also needs to get totals, for instance of all the UT items, or all TR items, etc. In other words, he needs both a search facility and a sort facility in this program. Can anyone help him here? If anyone has a program like this, or can modify one, can they get in touch with David? Also, if possible, how about letting us all know the result (if any) David? This could be a great programming exercise for someone!!

Remember, the next meeting night is on:-

         17th of September, 1984 - at 7.30 p.m.

Please mark your calendars now, and while you are at it, please mark every fourth Monday from the 17th September onwards until Christmas.

Remember, that there will not be another newsletter until the night of the 15th of October, 1984, although the country members may get their newsletters a bit earlier.

                                                    - Nola Huggins
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LIST OF FINANCIAL COLOUR GENIE GROUP MEMBERS AS AT 29/8/84

ALVAREZ,Fred	49 Astley Ave, New Lynn	873 120	
ANDREWS,Rhys	18 Bramley Drive,Pakuranga		Student
AUSTIN,Des	Karaka North Rd,R.D.1,Papakura		Country
AVIS,Stephen	12 Ruru Crescent,Putaruru	7750	Country
BARKER,Anne & family	1 Carbery Place,Manurewa	267 4833	
BARR,Stirling	32 Kapuka Rd,Mangere Bridge	668 551	
BERMAN,Robert	16 Asbury Cres,Campbells Bay	478 4022	Student
BISHOP,Chris	6 Jeanne Place, Glenfield	444 5301	
BURROWES,David	86 Wood St,Palmerston North		Country
BURTON,Ron	P O Box 208, Te Aroha	625 Man.	Country
BYRNES,Ces	31 Rosehill Drive,Papakura	298 4107	Country
CAIRNS,Keith	Box 36,Ngongotaha.		Country
CAMERON,Sean	3A Quovadus Place,Red Beach		Student
CARIAN,Craig	42A Comins Cres,Mission Bay	583 061	
	Postal Box 4326,Auckland		
COLSON, Keith	21 Stapleford Cres,Browns Bay		Student
COWEN,J.	Milson Line 5 R.D. Feilding		Country
CRANE,Darrell	64 Ranald Ave,Glenbrook Beach		
CRUMP,S.J.	No. 6 R.D.,Gore		Country
DIX,Keith	21 Adel Place,Weymouth	267 0434	
DONALDSON,David & family	80 Woolfield Rd,Papatoetoe	278 7598	
DRAPER,Mr C.F.	C/- Lakeland TV & Stereo,		
	Box 892, Taupo	88 888	Country
DUNNINGHAM,Neville	5 Kingswood Rd,Papatoetoe	278 3105	
DYER,Ray	5 Browne Street,Kawerau	6199 Kaw.	Country
EDWARDS, D.G.	10 Fairview Ave,Feilding		Country
ELLEY,family	40 Mary Dreaver St,Block,Bay	675 024	
EUSAK,Alex & Kevyn	14 Awakino Place, Manurewa	266 7423	
FISHER,Peter	64 Old Wairoa Rd,Papakura	293 4654	
GEBBIE,George	141 Flanshaw Rd,Te Atatu Sth	83 46028	
GOLDIE,Willie & Andrew	24 Douglas Ave, Mt Albert	867 533	
GORDON,Terry	99 Reeves Rd,Pakuranga	566 564	
GREEN,Gordon & family	62 Rajkot Tce,Khandallah,Wgn4.		Country
GREEN,Mike	49 Astley Ave,New Lynn	873 120	Student
GROVE,Chris & family	4 Salem Place, Torbay		
GRUSNING,H.N.	48 Beatty Rd, Pukekohe	86 712	Country
GURNEY,P.A.	10 Norfolk Rise, Waiuku	59 682	Country
HAMILL,family	26 Ashlynne Ave,Papatoetoe	278 9585	
HARNESS,Justin	18 Wynyard Rd,Mt Eden	602 189	Student
HARRIS,Bert & family	15 Seakens Way, Glen Eden	818 4660	
HILL,Gerrard & family	86 Wallace Rd,Papatoetoe	278 3446	
HOLES,Freda & family	10 Rowan Terrace,Te Atatu Sth	83 45244	
HOLT,Bernie	P.O. Box 23-303,Papatoetoe		
HOYES,Peter	17 Luton Avenue,Pakuranga		
* HUGGINS,Nola	612 Mt Albert Rd,Royal Oak	655 718	
* HYNDS,Ken	13 Ngahue Cres, Whenuapai	416 7404	
IRVINE,Robyn	430 Massey Rd,Mangere East	275 7007	
KANE,Mrs Deidre	31 Momona Rd,Greenlane	542 254	
KAY,Ross	2/9 Longreach Drive,Glen Eden	818 4818	
LAMBOURN,A P & family	32 Mead St,Avondale	886 918	
LANGDON,Mark	6 Trias Road,Glenfield	444 4247	
LEWIS,Stuart	39 Hillcrest Ave,Rotorua		Country
LIDDEL,family	91 Taikata Rd,Te Atatu Nth	834 7129	
LOCKERBIE,Claire & Roger	63 Grampian Road,St Heliers	580 270	
LYALL,R.G.	78 Dimock St,Titahi Bay,Wgn		Country

* Committee members

MacALPINE,Mr E.	45 Mutu St,Te Awamutu		Country
McCREEDY,Bert	16 Walpole St,Ellerslie	597 308	
McFARLANE,Tom	2/14 Catkin Cres,Papatoetoe	278 2366	
McGILL,Keith	15 Manapouri Place,Pakuranga	565 643	
MELLARS,Les	564 Beach Road,Rothesay Bay	.	
METCALFE,E.K.	Box 13031,University of		
	Waikato P.O., Hamilton		Country
MILLAR,Robert	17 Onewa Rd, Northcote	486 504	Student
MILLS,Andrew	59 Blackbeech St,Akatarawa,		
	Lower Hutt.		Country
MITCHELL,Geoff	Box 95,Mangawhai,Northland.	68 175	Country
MULLEN,Peter	54 Park Road,Glenfield	444 9155	
MUZYKA,George	33 Vermont St, Ponsonby	769 176	Student
NICHOL,Bryce	C/- FEPB,Private Bag,Pukekohe	2996203	Student
O'CALLAHAN,Robert	8A Komaru St,Remuera		
PAKES,Robert	3 Russell Crescent,Rotorua		Country
PETERS,D.R.	6 Tane Lane, Whakatane		Country
PHILLIPSEN,Mr H.E.	Box 409,Havelock Nth,Hawkes Bay		Country
PUKU,Joe	33 Balloch Street,Manurewa		
RICHMOND,Bob	181 Browns Bay Rd,Browns Bay	478 4745	
ROBINSON,Ian	4 Kingsley Street,Gisborne		Country
* ROOTS,Ernie	512 Glenfield Rd,Glenfield	444 9669	
* RUSSELL,Andy	2 Takitimu St, Whenuapai	416 6249	
SAUNDERS,A.M.	96 Oriel Ave,Tawa,Wellington		Country
SAVILLE,family	7A Southlynn Rd,Titirangi	817 6491	
SCOTHERN,D.J.	64 Princess Road, Tauranga		Country
SEATON,Michael	56 Compton St,Northcote	481 042	Student
SEYB,Bruce & family	127 Cannongate St,Birkdale	439 746	
SIMPSON,Ron	25 Renata Cres,Te Atatu Nth	834 6987	
SMITH,Barry	23 Eliot St,New Plymouth		Country
SPRATT,Dave	11 Ball Place, Mt Roskill	675 676	
STARKE,Mrs L.M.	Urquhart Rd,Karaka,R.D.1.		
	Papakura		Country
STEPHENS,Frances & family	35 Raurenga Ave,Royal Oak	654 120	
STRANAGHAN,family	29 Haseler Cres,Howick	535 7450	
SWASBROOK,family	43 Pickwick Parade,Howick		
TODD,A.J.	46A Hutton Street,Otahuhu	276 7886	
TRUE,Murray & Anne	4/503 Oliphant Rd,Hastings		Country
TUAVERA,Jeffery	732 Sandringham Rd,Sand.	693 986	
VERMUELEN,Mr D.P.	Strathmore Rd,Reporoa		Country
WALKER,Barry & Irene	20 Ellesmere Cres,Palm.North		Country
WALKER,David	Kiwitea,No 7 R.D,Feilding		Country
WAWMAN,Don	5/53 Bellevue Rd,Mt Eden	797 440 X685(work)	
WESSELING,Ralph	112 Pt View Drive,Papatoetoe	535 6134	
* WILLIAMS,Olwen	3/26A West End Rd,Herne Bay	761 954	
WILTON-JONES,Jason	11 Mountain Rd, Henderson	814 9956	Student

Total - 96 members

* -Committee Members

ASSEMBLY FOR BEGINNERS - PART 2
(from a great height - somewhere over the Pacific)

This month I am giving you a short program which will shift the Colour Genie's keyboard into typewriter mode and instructions on how to turn this into a basic program.

As this series is a 'doing' exercise rather than one of trying to learn by reading, stoke up your Genie, and load your monitor (G-MON or ZEN; I have not yet used ZEN, and I am assuming that its command structure is similar to G-Mon's). Now type in M to enter the Modify mode, and then type in 4040 which is the hex address of where the program will start. Type in the following hex numbers without any breaks:

21 49 40 22 16 40 C3 66 00 CD E3 03 FE 41 D8 FE 5B 38 06 FE 7B D0 FE 61 D8 EE 20 C9

Press X to exit from the Modify mode and then to the critical test. Type in J4040J. Nothing happened? You should have the 'READY' message, and the BASIC prompt '<'. Press any alphabetic key. If it's not in lower case for the unshifted character, you have made a blue somewhere. If so, switch off and start again. You can display your entries by typing in D4040 before doing the jump, J4040J. If you have been successful, you can now play with the keyboard or some of your pet programs (no pun intended) and experience the benefits (and pitfalls) of a typewriter mode keyboard. This is the routine that I have used in the Word Processor. You will note that this program is more or less indestructible until you switch the machine off. More about that later. Some of you may wish to skip the next section, but it has to be done if you want to learn Assembly.

How it works
Back to the reading caper. In the Assembly language, what you have entered is this:

Machine Code	Operation	Operand	Explanation
1. 21 49 40	LD	HL,4049H	Load the HL register pair with the hex number 4049.
2. 22 16 40	LD	(4016H),HL	Load the location 4016 in memory with the number in the HL register.
3. C3 66 00	JP	0066H	Jump to location 0066 in ROM which is the start of BASIC.
4. C3 E3 03	CALL	03E3H	Call the keyboard input routine in ROM at hex 03E3.
5. FE 41	CP	41H	Compare the contents of the A register with hex 41 (the letter 'A')
6. D8	RET	C	Return to ROM if its ASCII code is less than that of 'A'.
7. FE 5B	CP	5BH	Compare the contents of the A register with hex 5B (one higher than 'Z').

8.	38 06*	JR*	C.SWITCH	Jump* to SWITCH routine if its less than hex 5B.
9.	FE 7B	CP	7BH	Compare the contents of the A register with hex 7B (one higher than 'Z')
10.	D0	RET	NC	Return to ROM if it's greater than or equal to hex 7B.
11.	FE 61	CP	61H	Compare the contents of the A register
12.	D8	RET	C	Return to ROM if it's ASCII code is less than that of 'a'
13.	EE20 SWITCH	XOR	20H	Switch bit 5 of contents of A register from 0 to 1 or vice versa
14.	C9	RET		Return to ROM unconditionally

Assembly is called a low-level language because it is only capable of 'simple' operations involving the registers rather than the complex logic operations permitted by a high-level language such as BASIC. The above program illustrates this. The first two lines tell the keyboard driver routine to go to line four of the program first. The operation of loading location 4016H with the number 4049H cannot be done in one go. This operation only needs to be carried out once however. The working part of the program starts at line four. When a key is pressed, the ASCII value of the symbol is put into the A register (also called the Accumulator). Lines 5-12 screen out characters which are not alphabetical and is the most economical way of doing it. If the character is alphabetic and we get to line 13, the XOR (exclusive OR) function (the heart of the program)switches lowercase to uppercase, and vice versa. Hex 20=binary 0010 0000 and the only difference between an uppercase letter and a lowercase one is bit 5 being 0 or 1 (remember that the bit numbers start from bit 0). XOR 20H reverses bit 5. Note that the CP (compare) and XOR (exclusive OR)functions only work on the Accumulator (A register). This is also true for some other Assembly functions and makes the Accumulator a very important register.

* The JR instruction in line 8 is known as a <u>Jump</u> <u>Relative</u>. The program is instructed to jump forward 6 bytes (in this case) past the <u>next</u> location.

<u>Turning Machine Code into a BASIC program</u>
This is the sort of routine which cannot be done speedily or economically in BASIC but is worth having in some BASIC programs. To do this, the machine code is loaded in a different way, and we have to tell the machine where to find the program (the address) and how to do it. The numbers are POKEd into memory in their decimal equivalent and so your first job is to convert all the hex numbers into decimal, thus:
21H = 2 x 16 + 1 = 33
49H = 4 x 16 + 9 = 73
40H = 4 x 16 + 0 = 64
  :
  :
C9H = 4 x 16 + 9 = 201

Remember that the hex numbers A,B,C,D,E and F are 10-15 in ordinary numbers. You can do the rest of the numbers. Do it now! Switch off, then

on and type in these program lines:

```
10 FOR I=0 TO 27:READ N:POKE&H4040+I,N:NEXT
20 DATA 33,73,64,.....201:REM 28 numbers in all
```

To tell the Genie where to find the program, we POKE the information into what is known as a <u>pointer</u>. The pointer for this application is at 16526 and 16527. The low part of the address (LSB) in this case is 40H or 64 decimal. The LSB goes into 16526 and the MSB into 16527. Type in:

```
30 POKE 16526,64:POKE 16527,64
```

To start the program we use the instruction X=USR(0) where the variable X and the value 0 are merely dummies. Type in:

```
40 X=USR(0)
```

RUN the program and the result should be the same as with the monitor method.

If you want to use this routine at the beginning of one of your BASIC programs, you will have to make two small changes. Replace line 3 (JP0066) with C9 RET. Change the second byte, 49H, to 47H in line 1. The return to BASIC (JP0066) will end your BASIC program, whereas the RETurn allows the program to carry on.

Hidden Memory
You may have wondered why we can get away with using part of the RAM which is reserved for the machine's operating system. The trick is that this RAM is reserved for the disk operating system (DOS) and most of us haven't got one. There are 63 bytes starting from 4040H and another 85 bytes starting from 4152H that are reserved for DOS. We can steal these for our own use so that our programs do not clash. The bytes at 4040H are more stable than those at 4152H which are reset by a cold reset.

<div align="right">

– Allan Clarke
(The Video Genie Man)

</div>

I understand that there are a number of you who are Radio Ham Enthusiasts. Goodness knows if that is what you are called, however, there are quite a few programs available for you in England, and I have written to the software supplier over there, and asked for details. I will let you know further through this newsletter, once I hear from England.

Meanwhile, here are a few programs from Neil Grusning, who is 'one of you':

```
5 CLS
10 PRINT"WIND SINGLE LAYER COIL"
20 PRINT
30 PRINT"12SWG","28SWG","14SWG","30SWG","16SWG","32SWG","18SWG","34SWG","20SWG",
"36SWG","22SWG","38SWG","24SWG","40SWG","26SWG","42SWG"
40 PRINT@445,"ENTER WIRE SIZE"
50 LETN=0
60 INPUTS$
70 IFS$="10"THEN LETN=7.48
80 IFS$="12"THEN LETN=9.09
90 IFS$="14"THEN LETN=11.78
100 IFS$="16" THEN LETN=14.8
110 IFS$="18"THEN LETN=19.7
120 IFS$="20"THEN LETN=26
130 IFS$="22"THEN LETN=33
140 IFS$="24"THEN LETN=41.5
150 IFS$="26"THEN LETN=50.3
160 IFS$="28"THEN LETN=61
170 IFS$="30"THEN LETN=72.5
180 IFS$="32"THEN LETN=82.6
190 IFS$="34"THEN LETN=96.2
200 IFS$="36"THEN LETN=116.3
210 IFS$="38"THEN LETN=144.9
220 IFS$="40"THEN LETN=178.6
230 IFS$="42"THEN LETN=212
240 IFN=0 THEN GOTO 60
250 PRINT@445,"WIRE SIZE=";  S$;"SWG"
260 PRINT@525,"ENTER COIL DIAMETER=MM"
290 PRINT
350 INPUT R
360 LET P=R*.03937
370 LETP=P/2
380 PRINT@525,"THE COIL DIAMETER=";R;"MM"
390 PRINT@605,"HAS COIL ADJUST-SLUG?YES/NO"
400 INPUTB$
410 IFB$="YES" THEN PRINT@642,"****THE COIL IS SLUG-TUNED"
420 IFB$="YES" THEN GOTO435
430 PRINT@605,"----------AIR SPACED--------"
435 REM
440 PRINT@728,"INPUT MICROHENRYS=";
450 INPUTJ
460 IFB$="NO" THEN LETH=J
470 IFB$="YES" THEN LET H=J/1.5
480 PRINT@728,"INDUCTANCE=";J;"UH.
490 LET W=(H*5)/(P[2*N)
500 LET E=(.36*(N[2*P[3)/H)+1
510 LET G=SQR(E)+1
520 LET W=W*G
530 LET W=INT(W*10+.5)/10
540 PRINT@340,"WIND";W;"TURNS OF ENAM. WIRE"
```

```
100 PRINT"QQRR RADIO LOG RRQQ"
120 REM
130 CLEAR 5000
140 DIMC$(500)
150 N=1
160 C$(1)=" "
200 REM
205 PRINT
210 INPUT"NEXT CALL SIGN";A$
220 IF A$="ALPHA"THENGOTO 500
230 IFA$="LIST" THEN GOTO 700
240 GOSUB 800
245 PRINT
250 PRINT"CONFIRM";D$
251 INPUTB$
252 PRINT
260 IF B$<>"YES" THEN GOTO210
270 REM
280 FORI=1TON
290 IFD$=C$(I) THEN GOTO 410
300 NEXT I
310 REM
320 N=N+1
325 C$(N)=D$
327 PRINT
330 PRINT D$;" IS NEW CALLSIGN"
332 PRINT
335 PRINT
340 PRINTN-1;"CALLS LOGGED"
350 PRINT
360 GOTO200
400 REM
405 PRINT
410 PRINTD$;" ALREADY LOGGED"
420 GOTO 340
500 REM
505 PRINT
510 PRINT"SORTING"
520 FOR I=1TON
530 D$=C$(I)
540 PRINT"*";
550 FORJ=1TON
560 IF D$<=C$(J) THEN GOTO 580
570 B$=C$(J)
572 C$(J)=D$
574 D$=B$
580 NEXT J
590 C$(I)=D$
600 NEXT I
605 PRINT
610 PRINT"SORT COMPLETE"
615 PRINT
620 INPUT"PRINTOUT";A$
630 IF A$="NO" THEN GOTO 900
700 PRINT
702 PRINT"CALLSIGNS LOGGED"
710 FOR I=1TON
720 IF 5*INT(1/5)<>I THEN GOTO 750
730 INPUT"CONTINUE";A$
731 REM
732 REM
740 IFA$="NO" THEN GOTO 900
```

```
750 PRINT C$(I)
760 NEXT I
770 PRINT
772 PRINT
780 GOTO 900
800 REM SPACE STRIPPER.THIS REMOVES SPACES FROM
802 REMCALLSIGN.E.G.ZL 2 AA BECOMES ZL2AA
810 D$=" "
820 FORI=1TOLEN(A$)
830 IFMID$(A$,I,1)="" GOTO 850
840 D$=D$+MID$(A$,I ,1)
850 NEXT I
860  RETURN
900 REM
910 INPUT"DO YOU WANT TO QUIT.IF YOU QUIT YOU LOSE ALL DATA";A$
915 PRINT
920 IF A$="YES" THEN GOTO 940
930 GOTO 200
940 PRINT"O.K.GOODBYE NOW..ZZZZZZZzzzzzzzz"
945 PRINT
950 END
```

```
920 IF A$="YES" THEN GOTO 940
930 GOTO 200
940 PRINT"O.K.GOODBYE NOW..ZZZZZZZzzzzzzzzz"
945 PRINT
950 END
```

ANOTHER PROGRAM FROM H.N. GRUSNING.

```
5 CLEAR 100
10 LET A$="ZL1ACO***"
12 DIMA$(25)
20 LETD=LEN(A$)
29 CLS
30 PRINT"PLEASE INPUT THE CALLSIGN OF THE STATION BEING WORKED.IF YOU WISH TO SA
VE THE INFORMATION ALREADY FILED THEN INPUT A "">"" SIGN"
40 INPUTB$
43 CLS
44 IFB$=">" THEN GOTO 700
50 LET C=LEN(B$)
60 LETN=1
70 IFA$(N)="*" THEN GOTO 100
80 IFN=D THEN GOTO 500
90 LETN=N+1
96 GOTO 70
100 IF CODE(A$(N+1))<>C THEN GOTO 130
110 LETH$=A$((N-C) TO N-1)
120 IFH$=B$ TTHEN GOTO 160
130 LETF=CODEA$(N+2)
140 LETN=2+F+N
150 GOTO 70
169 CLS
170 PRINT"THE INFORMATION ON";B$;" IS"
180 LETG$=A$(N+3 TO (N+2+CODEA$(N+2))))
190 PRINT
200 PRINTG$
210 PRINT
220 PRINT
230 PRINT"WOULD YOU LIKE TO UPDATE THIS INFORMATION?(Y/N)"
235 LETU=0
240 LET G$=INKKEY$
250 LET U=U+1
255 IFU=100 THEN PRINT"PLEASE PRESS"Y"OR"N"
260 IFG$="" THEN GOTO 240
270 IFG$<>"N" ANDG$<>"Y" THEN GOTO 235
280 IFG$-"N" THEN GOTO 29
285 CLS
290 PRINT"PLEASE INPUT THE NEW INFORMATION ON ";B$
300 INPUTI$
```

```
310 LETNU=CODEA$(N+2)
320 LET Q=LEN(I$)
340 LET A$=A$(1TON+1)+CHR$(LEN I$)+I$+A$(N+2+NU TO)350LETD=LEN(A$)
360 GOTO29
500 REM
510 PRINT"THERE IS NO INFORMATION ON "
520 PRINTB$;"WOULD YOU LIKE TO CREATE A FILE ON HIM?(Y/N)"
525 LETU=0
530 LETG$=INKEY$
540 LETU=U+1
550 IF U=100 THEN PRINT "PLEASE PRESS ""Y"" OR ""N"""
555 LETG$=INKEY$
560 IFG$="" THEN GOTO 540
570 IFG$<>"Y" ANDG$<>"N" THEN GOTO 525
580 IF G$="N" THEN GOTO 29
585 CLS
590 PRINT"PLEASE TYPE IN THE INFORMATION YOU WOULD LIKE TO STORE ON";B$
600 INPUT I$
610 LETJ$=B$+"*"
620 LETA$=A$+J$
625 LETD=LEN(A$)
630 PRINT"INFORMATION SAVED"
640 FORP=1TO50:NEXT
650 GOTO 29
670 SAVE "CALL"
680 GOTO 29
700 PRINT"PLEASE SET UP TAPE RECORDER"
710 PRINT"AND PRESS ANY KEY WHEN READY"
720 FOR P=1TO400:NEXT
740 CLS
750 PRINT"*********************************"
760 PRINT
770 PRINT
780 PRINT
790 PRINT"*********************************"
800 FORP=1TO250:NEXT
810 GOTO29
```

N E W   S O F T W A R E

I had hoped to bring you quite a few new titles this month, however, as the English companies are rather slow, they will have to wait until next time.

Tapes Available Now

Flying Bytes $14.00
This flight simulator has now been converted by Phil Lovegrove of Rakon, and will run ON EITHER NEW OR OLD ROMS. This is a superb program, and not at all easy. The more you get into it, the better the program becomes.

Space Trek $14.00
This is another 'new rom' program which has been converted to old roms by David Donaldson, of Papatoetoe. David (and his kids!) really recommend this program. It is an arcade-type game. The 'ad' says:
    Defeat the Klingon Invasion Fleet. Quadrant display. 8x8 galaxy phasors. Photon torpedos. Long range scans and much more. Full instructions included.

Draughts $10.00
Quite a good program, in basic, based on the board game. At the end of your game, you can get the computer to reply all moves made, and you can even stop this, and change moves made and carry on playing.

English to French $10.00
Educational. French words are put in in data statements, and can be added to, if required. Includes scoring on correct words.

Bank Account $12.00
For home accounts and cheque book reconciliations. Comes complete with 5 pages instructions. In basic so you can go through the program and change it.

Maths Magic $10.00
For children up to about 10-11 years.

Spell A Picture 1 $12.00
Spell A Picture 2
One on each side of the tape. Another educational offering for up to 10 year olds.

Toad Mania $12.00
A very good machine code version of Frogger. I love the music. My kids, after hours of practice, can get all frogs across the highway, over the river, and into their little 'pigeonholes'. A very good game.

The following program is from Don Edwards, of Feilding. Called 'OIL TYCOON'
instructions are as follows:

1. R&D   Research and Development, decreases drilling costs
2. Explore   Necessary before drilling
3. Drill   To gain revenue
4. Reprice   Alter selling price of your oil
5. Pass   Turn passes without ongoing transactions occurring
6. Redraw   It is possible to scroll the various columns out of synchronization
              and this will redraw it all the way it should be.

```
2 REM COPYRIGHT (C) 1978, INSTANT SOFTWARE, INC. (P)
3 'ADAPTED TO COLOUR GENIE BY DON EDWARDS
10 POKE16553,255:CLS:CLEAR200:DEFINTB,D,G,I,M,N,T,U:DIMA(32):F$=" ##########,":CO
LOUR4:PRINTTAB(15);"OIL TYCOON"
15 COLOUR2:PRINT:INPUT"NAME OF COMPANY 1 (6 CHR) ";A$:PRINT:INPUT"NAME OF COMPAN
Y  2 (6 CHR)";B$
20 RANDOM:G=RND(100)+125:T=RND(2)-1:FORI=1TO4:A(I)=2E6:NEXT:A(13)=500:A(14)=500:
A(15)=1E5:A(16)=1E5
90 GOSUB1000
100 GOSUB2000:U=ABS(T-1):COLOUR2:PRINT§520,;:IFT=0PRINTA$;ELSEPRINTB$;
130 IF(A(T+21)=0)+(RND(100)>5)GOTO200
150 COLOUR5:PRINT", YOU'VE SUFFERED A BLOWOUT !!":PRINT"DAMAGE : $";:Q=75*A(T+21
):A(T+3)=A(T+3)-Q:A(T+21)=0:A(T+27)=0:COLOUR4:PRINTUSINGF$;Q;
180 COLOUR7:PRINT:PRINT"PRESS RETURN TO CONTINUE.";
185 N$=INKEY$:IFN$=""THEN185ELSE700
200 IF(A(T+9)=0)+(RND(100)>8)GOTO280
220 COLOUR5:PRINT", YOU'VE SUFFERED A TANKER SPILL !!":PRINT"DAMAGE :";:Q=A(T+9)
*RND(0):A(T+9)=A(T+9)-Q:R=Q:COLOUR4:PRINTUSINGF$;Q;
260 Q=20*R:A(T+3)=A(T+3)-Q:COLOUR5:PRINT" BARRELS,$";:COLOUR4:PRINTUSINGF$;Q;:GO
TO180
280 COLOUR5:PRINT", ENTER YOUR DESIRED TRANSACTION :":INPUT"(1=R&D, 2=EXPLORE, 3
=DRILL, 4=REPRICE,  5=PASS, 6=REDRAW) ";M
285 IFM<1ORM>6THEN100
290 PRINT§520,CHR$(31);:PRINT§520,;:ONMGOTO300,400,500,600,700,90
300 COLOUR5:INPUT"ENTER AMOUNT (THOUSANDS) : $ ";Q:Q=Q*1E3:IFQ<0ORQ>=A(T+3)THENM
=1:GOTO290
320 A(T+31)=A(T+31)+Q*(.4+RND(0))/2E6:IFA(T+31)>1A(T+31)=1
340 A(T+3)=A(T+3)-Q:GOTO700
400 A=60-A(T+31)*20-RND(40):B=1E3*(1+RND(9)):C=1E4*RND(10):D=9+RND(41):E=4E3*(C+
1E3*D)/B:A(T+3)=A(T+3)-E
410 COLOUR5:PRINT"GEOLOGIST'S REPORT:":PRINT"REPORT COST= $";INT(E/1E3);"THOUSAN
D," :PRINT;"DRY HOLE PROBABILITY=";INT(A);"%"
420 PRINT"DEPTH=";B/1E3;"K FT,   FLOW=";INT(C/1E3);:PRINT"K BARRELS,    VOLUME="
;D;" X  FLOW"
430 PRINT§765,;:PRINT"DO YOU WISH TO DRILL";:COLOUR1:INPUT" (Y/N)";N$:IFLEFT$(N$
,1)="N"THENM=5:GOTO290
440 A(T+23)=B+2E3*(RND(3)-2):A(T+25)=C*(.5+RND(0)):A(T+27)=D*A(T+25)*(.5+RND(0))
:IFRND(100)<ATHENA(T+23)=1E6
450 A(T+21)=0:M=3:GOTO290
500 COLOUR5:IFA(T+27)=0PRINT"YOU MUST FIRST EXPLORE !":GOTO180
510 A(T+3)=A(T+3)-A(T+15):A(T+21)=A(T+21)+2E3:IFA(T+21)>=A(T+23)GOTO530
520 COLOUR5:PRINT"SORRY, NO OIL YET":GOTO180
530 COLOUR8:PRINT"YOU'VE HIT OIL !!":A(T+5)=A(T+5)+1:A(T+7)=A(T+7)+A(T+25):A(T+2
1)=0:A(T+23)=0
550 A(T+29)=A(T+29)+A(T+27):A(T+25)=0:A(T+27)=0:GOTO180
600 COLOUR5:IFA(T+5)=0PRINT"YOU HAVE NO OIL TO SELL !":GOTO180
610 COLOUR5:IFA(U+5)=0PRINT"YOU'RE A REGULATED MONOPOLY !":GOTO180
620 COLOUR5INPUT"WHAT IS YOUR NEW PRICE/100 BARRELS ";A(T+13)
700 PRINT§520,CHR$(31):FORI=1TO2:IFA(T+29)<>0THENA(T+7)=A(T+7)*(1-A(T+7)/A(T+29)
)
710 Q=A(T+13)/100:R=A(U+13)/100:S=A(T+7)+A(T+9):A(T+11)=A(T+7)*.95*(R^3+1)/(Q^3+
1):IFA(T+11)>STHENA(T+11)=S
740 A(T+9)=S-A(T+11):A(T+29)=A(T+29)-A(T+7):R=A(T+11)*Q:S=A(T+11)*4/(A(T+31)+1):
A(T+3)=A(T+3)+R-S:A(T+17)=R-S:IFS=0GOTO790
780 A(T+19)=100*(R-S)/S
```

```
790 A(T+15)=1E5-A(T+31)*5E4:IFA(T+3)<OA(T+3)=0
800 A(T+1)=A(T+3)+A(T+9)*(A(T+13)+A(U+13))/200:IFA(T+3)>0GOTO830
810 GOSUB2000:COLOUR2:IFT=OPRINT§520,A$;ELSEPRINT§520,B$;
820 COLOUR8:PRINT" GOES BANKRUPT !!!";:GOTO900
830 G=G-1:IFG>0GOTO860
840 GOSUB1000:COLOUR5:PRINT§520,"GAME OVER  --   ";:COLOUR2:IFA(1)>A(2)PRINTA$;EL
SEPRINTB$;
850 COLOUR3:PRINT" WINS !!!";:GOTO900
860 M=T:T=U:U=M:NEXT:T=U:GOTO100
900 COLOUR5:PRINT:INPUT"WANT TO PLAY ANOTHER GAME";N$:IFLEFT$(N$,1)="Y"THENRUNEL
SEEND
1000 CLS:COLOUR2:PRINT§21,A$;TAB(32);B$:COLOUR6:PRINT"TOTAL NET WORTH -$":COLOUR
2:PRINT"CASH HOLDINGS ---$"
1010 COLOUR6:PRINT"NUMBER OF WELLS --":COLOUR2:PRINT"OIL FLOW (BARRELS)" :COLOUR
6:PRINT"RESERVES (BARRELS)"
1020 COLOUR2:PRINT"OIL SALES(BARRELS)" :COLOUR6:PRINT"COST/100 BARRELS $":COLOUR
2:PRINT"DRILL COST/2000FT$
1030 COLOUR6:PRINT"NET PROFIT (LOSS)$":COLOUR2:PRINT"RATE OF RETURN (%)":COLOUR6
:PRINT"DRILL DEPTH (FT)"
1040 COLOUR1:FORI=1TO40:PRINT"-";:NEXT:RETURN
2000 COLOUR4:FORI=1TO21STEP2:PRINT§20*I+38,USINGF$;A(I);:PRINTTAB(29);USINGF$;A(
I+1);:NEXT:RETURN
```

```
10 DIMA(30)
15 'CONVERTED FOR COLOUR GENIE BY DON    EDWARDS
20 CLS:COLOUR7:PRINT§368,"SUPER   MASTERMIND"
30 PRINT§840,"DO YOU NEED INSTRUCTIONS";:COLOUR1:PRINT" (1=YES, 2=NO)";:INPUTC
40 IF (C<>1)*(C<>2) THEN20
50 IF C=1 GOSUB 810
60 CLS:F=0:G=0:H=0
70 COLOUR2:INPUT"HIGHEST NUMBER (2 TO 9)";A
75 IF (A<2)+(A>9) THEN70
80 INPUT"NUMBER OF COLUMNS (2 TO 9)";B
85 IF (B<2)+(B>9) THEN80
90 REM * GENERATE RANDOM NUMBERS *
100 CLS
110 FOR C=1 TO B
120 RANDOM
130 COLOUR13:A(C-1)=RND(A-1)+1:PRINT§ 2+2*C,"#";:NEXT C
140 COLOUR1:PRINTTAB(24);"POSITN";:COLOUR6:PRINT"   VALUE"
150 REM * INPUT A SET OF NUMBERS  *
160 J=0
165 FORE=1 TO 18
170 PRINT§40*E," ";:FORC=1TO4:PRINT"            ",:NEXTC
180 COLOUR5:PRINT§40*E,E+J;
190 FOR C=1 TO B
200 PRINT§ 2+40*E+2*C,".";:A(9+C)=A(C-1)
210 NEXTC
220 FOR C=1 TO B
230 COLOUR4:PRINT§ 855," ";
240 COLOUR4:INPUT A(19+C)
245 REM PRINT 43 SPACES
```

```
240 COLOUR4: INPUT A(19+C)
245 REM PRINT 43 SPACES
250 PRINT§840,CHR$(30)
255 PRINT§880,CHR$(30)
260 IF A(19+C)=999 THEN340
270 IF (A(19+C)<1)+(A(19+C)>A) THEN290
280 GOTO300
290 COLOUR5:PRINT§ 846,"REDO, VALUE MUST BE FROM 1 TO";A;"    ";:GOTO240
300 IF C=B THEN 315
310 COLOUR4:PRINT§ 1+40*E+2*C, A(19+C);:COLOUR5:PRINT".";: NEXTC
315 COLOUR4:PRINT§ 1+40*E+2*C, A(19+C);
320 NEXTC
330 GOTO440
340 REM * PRINT HIDDEN NUMBERS *
350 COLOUR8:C=B: PRINT§ 5+40*E,"THE CORRECT ANSWER IS:-":PRINTCHR$(31)
360 FORC=1 TO B
370 COLOUR4:PRINT§ 42+40*E+2*C,A(C-1);:NEXTC
380 COLOUR8:PRINT:PRINT TAB(4);"THAT IS THE END OF THIS SESSION."
390 PRINT TAB(1);:PRINT"DO YOU WANT TO PLAY AGAIN";:COLOUR1:INPUT" (1=YES, 2=NO)
";C
400 IF (C=1)+(C=2) THEN430
410 COLOUR5:PRINT TAB(4);:INPUT"PLEASE ENTER 1 FOR YES, 2 FOR NO";C
420 GOTO400
430 ON C GOTO 60,700
440 REM * CHECK FOR CORRECT POSITION *
450 PRINT TAB(21);: FOR C=1 TO B
460 IFA(19+C)<>A(9+C)THEN480
470 COLOUR13:PRINT"*";: A(9+C)=0: A(19+C)=0
480 NEXTC
490 REM * CHECK FOR CORRECT SOLUTION *
500 FORC=1 TO B
510 IF A(9+C)<>0 THEN720
520 NEXTC
530 REM * SCORING ROUTINE *
540 F=F+E+J:G=G+1
```

```
--- , . .-.-.-.-.-.
550 H=F/G
560 COLOUR8:PRINTCHR$(31):PRINT:PRINT"CONGRATULATIONS MASTERMIND!":PRINT"   YOU
ORKED IT OUT IN ONLY";
570 PRINTE+J;:IF E+J=1 THEN590
580 PRINT"TRIES.":GOTO600
590 PRINT"TRY."
600 E=1:C=0
610 PRINT:PRINT; "YOU HAVE PLAYED";G;: IF G=1 THEN 630
620 PRINT"GAMES THIS SESSION": GOTO640
630 PRINT"GAME THIS SESSION"
640 PRINT;"YOUR AVERAGE SCORE IS";INT(10*H)/10;:IFH=1THEN660
650 PRINT"TRIES PER GAME.": GOTO 670
660 PRINT"TRY PER GAME."
670 PRINT:PRINT;"DO YOU WANT TO TRY AGAIN";:COLOUR1:PRINT" (1=YES, 2=NO)";:INPI
C
680 COLOUR8:IF (C=1)+(C=2) THEN 690
685 COLOUR5:INPUT"PLEASE ANSWER WITH 1 OR 2.";C
687 GOTO680
690 ON C GOTO 100,700
700 COLOUR2:CLS:PRINT§ 367,"'BYE FROM SUPER MASTERMIND."
710 FOR C=1 TO 1500: NEXTC: CLS: END
720 REM * CHECK FOR CORRECT VALUE *
730 PRINT TAB(31);
740 FOR C=1 TO B: FOR D=1 TO B
750 IF A(19+C)=0 THEN 790
760 IF A(19+C)<>A(9+D) THEN780
770 COLOUR2:PRINT"O";:A(9+D)=0: D=B
780 NEXT D
790 NEXT C
800 NEXTE
805 J=J+18:GOTO165
810 REM * INSTRUCTIONS *
```

```
720 CLS
830 COLOUR4:PRINT"SUPER MASTERMIND ALLOWS YOU TO PIT YOUR WITS AGAINST THE COMPU
TOR."
840 PRINT:PRINT"THE COMPUTER SELECTS A SERIES OF";
850 PRINT" NUMBERSAT RANDOM AND 'PRINTS' THEM INVISIBLY AT";
860 PRINT"THE TOP OF THE SCREEN.  YOUR TASK IS TO FIND";
870 PRINT" THE VALUE OF EACH NUMBER AND ITS   CORRECT POSITION."
880 PRINT:PRINT"TO DO THIS, YOU ENTER NUMBERS ONE AT A  TIME AND";
890 PRINT" THE COMPUTER PLACES THEM IN A ROW ON THE SCREEN";
900 PRINT", UNDER THE INVISIBLE  ONES.";
910 PRINT"  IT THEN COMPARES THE TWO SETS OF NUMBERS.  FOR EACH";
920 PRINT" CORRECT NUMBER IN ITS CORRECT POSITION,    THE";
930 PRINT" COMPUTER WILL PRINT AN *,     FOR EACH OTHER CORRECT";
940 PRINT" NUMBER IN THE WRONG POSITION, THE"
950 PRINT"COMPUTER WILL PRINT AN O.":PRINT:PRINT"  THE GAME ENDS WHEN YOU";
960 PRINT" EXACTLY":PRINT"DUPLICATE THE INVISIBLE NUMBERS."
970 COLOUR1:PRINT:PRINT TAB( 6);"ENTER ANY NUMBER TO CONTINUE";:INPUTC
980 CLS:PRINT:PRINT
990 COLOUR4:PRINT"YOU MAY CHOOSE ANY NUMBER OF COLUMNS, UP TO 10 AND";
1000 PRINT" THE MAXIMUM VALUE FOR THE     NUMBERS, UP TO 9.";
1010 PRINT"  (O IS NOT A VALID   NUMBER).":PRINT"THE MORE";
1020 PRINT" COLUMNS YOU HAVE AND THE HIGHER THE MAXIMUM VALUE,";
1030 PRINT" THE HARDER THE GAME.":PRINT
1040 PRINT"AT ANY TIME, YOU MAY ENTER 999 , WHEN   THE COMPUTER";
1050 PRINT" WILL DISPLAY THE INVISIBLE NUMBERS AND THE GAME";
1060 PRINT" WILL END.":PRINT:PRINT TAB(14);"GOOD LUCK":PRINT
1080 COLOUR1:PRINT:PRINT TAB( 6);"ENTER ANY NUMBER TO CONTINUE";:INPUTC
1090 CLS:RETURN
```

```
10 REM DIGGER
20 REM CHRIS PALMER
30 REM SET UP  VARIABLES
40 CHAR 4
50 CLEAR 2000:SC$=STRING$(39,191)
60 TS=17408:BS=18431
70 RS=197:JS=242:M=TS+40*3+3:B=M:MS=91
80 EN=500:LL=3
90 GOSUB 5000
100 GOTO102
101 REM SET UP SCREEN
102 CLS:COLOUR 7
130 PRINT@120,CHR$(182);CHR$(185)
140 FOR I=1TO10
150 COLOUR4
160 PRINTSC$
170 NEXT
180 FOR I =1TO60
190 PS=TS+5*40+RND(40*9)
200 IF PEEK( PS) =RS OR PEEK(PS)=32 THENGOTO 190
210 POKE PS,RS:CP=PS+&HAC00:POKE CP,08
220 NEXT I
230 FOR I=1 TO 10
240 PS= TS+5*40+RND(40*9)
250 IF PEEK(PS)=RS OR PEEK(PS)=32 THEN GOTO240
260 POKE PS,JS:CP=PS+&HAC00:POKECP,13
270 NEXT I
300 GOTO302
301 REM MOVE
302 EN=EN-1:IF EN<1 THEN GOTO 4000 ELSE GOSUB 1000
303 IF PEEK(17531)<235 THEN PRINT@83, "DIG NOW"ELSE GOTO 310
304 FOR T=1TO100
305 NEXT T
306 PRINT@83,"                "
307 FOR J=1TO50
308 NEXT J
310 G=PEEK(-1934)
320 IF G AND 64 THEN M=M+1:B=M-1: MS=62
325 POKE X,MS
330 IF G AND 32 THEN M=M-1:B=M+1:MS=60
335 POKE X,MS
340  IF G AND 16 THEN M=M+40:B=M-40:MS=47
345 POKE X,47
350 IF G AND 08 THEN M=M-40:B=M+40:MS=92
352 IF G AND 128 THEN GOTO 4000
355 POKE X,92
360 IF M>BS THEN M=B
370 IF M<TS THEN M=B
380 NP =PEEK(M)
390 IF NP=RS THENM=B:GOTO 300
400 IF NP=JS THENSC=SC+1:EN=EN-1ELSE GOSUB1000
410 IF SC>9 THEN GOTO 4000
420 IF NP=32 THEN M=B:GOTO 460
430 IF NP=191 THEN EN=EN-1 ELSE GOSUB1000
440 IF PEEK(M-40)=RS THEN GOSUB 2000
460 POKE B,235:POKEM,MS
470 GOTO300
1000 COLOUR 2
1001 REM DISPLAY SCORE
1005 COLOUR8
1010 PRINT@5,"ENERGY=";EN;"   JEWELS=";SC;"   LIVES=";LL
```

```
1020 RETURN
2000 GOTO 2002
2001 REM DROP ROCK
2002 IF PEEK (M)=MS THEN GOTO 3000
2010 POKE M-40,32
2020 POKEM,RS
2030 M=B
2040 RETURN
3000 GOTO 3010
3001 REM MAN DIES
3010 POKE M,RS
3020 POKEM-40,32
3025 GOSUB 7000
3030 LL=LL-1:IF LL<1 THEN GOTO4000
3040 M=TS+40*3+3:B=M:GOTO300
4000 GOTO4010
4001 REM SCORE BOARD
4010 CLS
4020 PRINT@50," GAME OVER "
4030 CS=SC*500*(LL+1) +EN*(LL+1)*5
4040 IF CS>0 THEN PRINT@ 210, "YOUR SCORE IS   ":CS
4050 PRINT@450,  "PLAY AGAIN (Y/N)"
4060 A$= INKEY$
4070 IF A$="Y" THEN SC=0:GOTO60
4080  IF A$="N" THEN END
4090 GOTO4060
5000 GOTO5010
5001 REM START
5010 CLS: COLOUR4
5020 PRINT " DO YOU WANT INSTRUCTIONS (Y/N)"
5040 A$=INKEY$
5050 IF A$="Y" THEN GOSUB 6000
5060 IF A$="N" THEN GOTO 100
5080 GOTO5040
6000 GOTO 6010
6001 REM INSTRUCTIONS
6010 CLS
6015 COLOUR2
6020 PRINT      " DIGGER'S INSTRUCTIONS"
6030 PRINT" RETREIVE THE JEWELS BUT AVOID"
6040 PRINT" DIGGING UNDER THE ROCKS"
6045 PRINT
6050 PRINT" ROCKS  =   " CHR$(197)
6060 PRINT" JEWELS =   " CHR$(242)
6070 PRINT:PRINT
6080 PRINT "CONTROLS"
6085 PRINT
6090 PRINT "MOVE RIGHT =   " CHR$(255)
6095 PRINT
6100 PRINT "MOVE LEFT  =   "CHR$(253)
6105 PRINT
6110 PRINT "MOVE UP    =   "CHR$(232)
6115 PRINT
6120 PRINT "MOVE DOWN  =   "CHR$(251)
6130 PRINT
6135 PRINT"PRESS SPACE BAR TO END AND RETAIN ENERGY"
6137 PRINT
6140 PRINT"PRESS S TO START "
6150 B$=INKEY$
6160 IF B$="S" THEN GOTO 100 ELSE GOTO6150
7000 GOTO 7010
7005 REM SOUND SUB ROUTINE
7010 SOUND 7,7
7020 SOUND 6,0
7030 SOUND 7,7
7040 SOUND 8,16
7050 SOUND 9,16
7060 SOUND 10,16
7070 SOUND 12,56
7080 SOUND 13,0
7090 RETURN
```

```
100 REM:ARITHMETIC
110 REM: COPYRIGHT 1979 BY PHIL FELDMAN
AND TOM RUGG
120 REM MODIFIED FOR COLOUR GENIE
140 CLEAR50:DIMA(4),B(4),C(4),G(4)
150 ND=0
160 NP=20
170 RANDOM
200 GOSUB310:PRINT:PRINT""WHAT TYPE PROBLEM SHALL WE DO?""
210 PRINT""   1 - ADDITION""
220 PRINT""   2 - SUBTRACTION""
230 PRINT""   3 - MULTIPLICATION""
240 PRINT""WHICH TYPE (1,2, OR 3)?"";
250 R$=INKEY$:T=VAL(R$):IFT.LT.1ORT.GT.3 THEN 250
260 PRINT CHR$(24);""-"";T:GOSUB1300
270 PRINT STRING$(40,""=""):;PRINT ""WHAT KIND SHALL WE DO?""
280 PRINT""   1 - EASY PROBLEMS""
290 PRINT""   2 - MEDIUM PROBLEMS""
300 PRINT""   3 - HARD PROBLEMS""
310 PRINT""WHAT  KIND (1,2,OR 3)?"";
320 R$=INKEY$:D=VAL(R$):IFD.LT.1 OR D.GT.3 THEN320
330 PRINTCHR$(24);""-"";D
350 ONDGOTO360,370,400
360 GOSUB940:GOSUB920:GOSUB930:GOTO420
370 GOSUB940:GOSUB930
380 IFT=3THENGOSUB960:GOSUB920:GOTO420
390 IFT.LT..GT.3THENGOSUB950:GOSUB920:GOTO420
400 GOSUB950:GOSUB920:GOSUB930
410 IFT=3THENGOSUB940:GOSUB930
420 IFT.LT..GT.2THEN450
430 FORJ=1TO4:IFB(J).GT.C(J)THENR=C(J):C(J)=B(J):B(J)=R
440 NEXT
450 GOSUB1000:GOSUB910
600 FORJ=1TO4:GOSUB1100:NEXT
610 FORK=1TO4:P=357+K*10:GOSUB800:G(K)=N:NEXT
620 PRINT@532,""A N S W E R S"";
630 FORJ=1 TO 4:P=633+J*10:GOSUB1400:NEXT
640 FORJ=1 TO4:P=712+J*10
650 IFA(J).LT..GT.G(J)THENPRINT@P,""WRONG!""::GOTO670
660 PRINT@P,""RIGHT!""::NR=NR+1
670 NEXT:FORK=1TO9:R$=INKEY$:NEXT
680 PRINT@844,""HIT ANY KEY TO CONTINUE"";
690 R$=INKEY$:IFR$=""""THEN690
700 FORJ=1TO10:R$=INKEY$:NEXT
710 ND=ND+4:IFND.LT.NPTHENGOSUB910:GOTO350
720 GOSUB1500
730 PRINT:PRINT""WANT MORE PROBLEMS (Y OR N) ?""
740 R$=INKEY$:IF R$="""" THEN 740
750 IFR$=""Y""THENGOTO140
760 IFR$=""N""THENCLS:END
770 GOTO740
800 N=0:M=1:FORJ=1TO10:R$=INKEY$:NEXT
810 PRINT@P,""?"";
820 R$=INKEY$:IFR$=""""THEN820
830 A=ASC(R$):IFA=13 AND M=1  THEN PRINT@P,""0"";:RETURN
840 IFA=13 THEN PRINT@P,CHR$(32);:RETURN
850 V=VAL(R$):IFV=0 AND A.LT..GT.48 THEN 820
860 PN=48+V:PRINT@P,CHR$(PN);:N=N+M*V:M=M*10
870 IFM.GT.1000THEN RETURN
880 P=P-2:GOTO810
```

```
910 CLS:PRINTCHR$(23);TAB(6);""A R I T H M E T I C"":RETURN
920 FORK=1TO4:C(K)=L+RND(H-L+1)-1:NEXT:RETURN
930 FORK=1TO4:B(K)=L+RND(H-L+1)-1:NEXT:RETURN
940 H=9:L=0:RETURN
950 H=99:L=0:RETURN
960 H=25:L=1:RETURN
1000 ONTGOTO1010,1020,1030
1010 FORJ=1TO4:A(J)=B(J)+C(J):NEXT:RETURN
1020 FORJ=1TO4:A(J)=C(J)-B(J):NEXT:RETURN
1030 FORJ=1TO4:A(J)=C(J)*B(J):NEXT:RETURN
1100 B$="""":IFC(J).LT.10THENB$=CHR$(32)
1110 P=155+J*10:PRINT@P,B$;C(J);:P=194+J*10:PRINT@P,C$;
1120 B$="""":IFB(J).LT.10THENB$=CHR$(32)
1130 P=235+J*10:PRINT@P,B$;B(J);
1140 P=274+J*10:PRINT@P,STRING$(4,""-"");
1150 RETURN
1300 ONTGOTO1310,1320,1330
1310 C$=""+"":RETURN
1320 C$=""-"":RETURN
1330 C$=""X"":RETURN
1400 B$=CHR$(32):IFA(J).GT.999THENPRINT@P,A(J);:RETURN
1410 IFA(J).GT.99THENPRINT@P,B$;A(J);:RETURN
1420 IFA(J).GT.9THEN PRINT@P,B$;B$;A(J);:RETURN
1430 PRINT@P,B$;B$;B$;A(J);:RETURN
1500 GOSUB910:PRINT
1510 PRINT""YOU GOT"";NR;""RIGHT""
1520 PRINT""OUT OF"";NP;""PROBLEMS""
1530 P=NR/NP*100
1540 PRINT:PRINT""THAT'S"";P;"" PERCENT CORRECT"":RETURN
```

NOTE .LT. IS < , .GT. IS >

```
10 REM- SON ET LUMIERE
20 REM  A NOT VERY ORIGINAL DEMO FOR THE
COLOUR GENIE
30 REM     USE A COLOUR TV
40 REM     AND TURN UP THE VOLUME
50 RANDOM:NBGRD:FGR:FCLS
60 X1=X2=Y1=Y2=C1=C2=10
70 DIMC(150),H1(150),H2(150),V1(150),V2(150)
80 AT=1
90 NPLOTH1(AT),V1(AT)TOH2(AT),V2(AT)
100 IFC1.LT..GT.OTHEN120
110 CL=RND(04):C1=5*(1+RND(10)):IFCL.LT.2THEN110
120 IFC2.LT..GT.OTHEN140
130 D1=RND(9)-4:D2=RND(9)-4:E1=RND(9)-4:E2=RND(9)-4:C2=5*(1+RND(10))
140 P1=X1+D1
150 IFP1.GT.=OANDP1.LT.=159THEN170
160 P1=X1:D1=-D1
170 X1=P1
180 P2=X2+D2
190 IFP2.GT.=OANDP2.LT.=159THEN210
200 P2=X2:D2=-D2
210 X2=P2
220 Q1=Y1+E1
230 IFQ1.GT.=OANDQ1.LT.=95THEN250
240 Q1=Y1:E1=-E1
250 Y1=Q1
260 Q2=Y2+E2
270 IFQ2.GT.=OANDQ2.LT.=95THEN290
280 Q2=Y2:E2=-E2
290 Y2=Q2
300 FCOLOURCL
310 S2=1+RND(5):S3= RND(12):S4=S2+1:S5=S2+2
320 PLAY(1,S2,S3,8)
330 PLAY(2,S4,S3,8)
340    PLOTX1,Y1TOX2,Y2
350 PLAY(3,S5,S3,8)
360 C(AT)=CL:H1(AT)=X1:H2(AT)=X2:V1(AT)=Y1:V2(AT)=Y2
370 AT=AT+1:IFAT.GT.150THENAT=1
380 C1=C1-1:C2=C2-1
390 GOTO90


   NOTE:  .LT. IS <,.GT. IS >
```