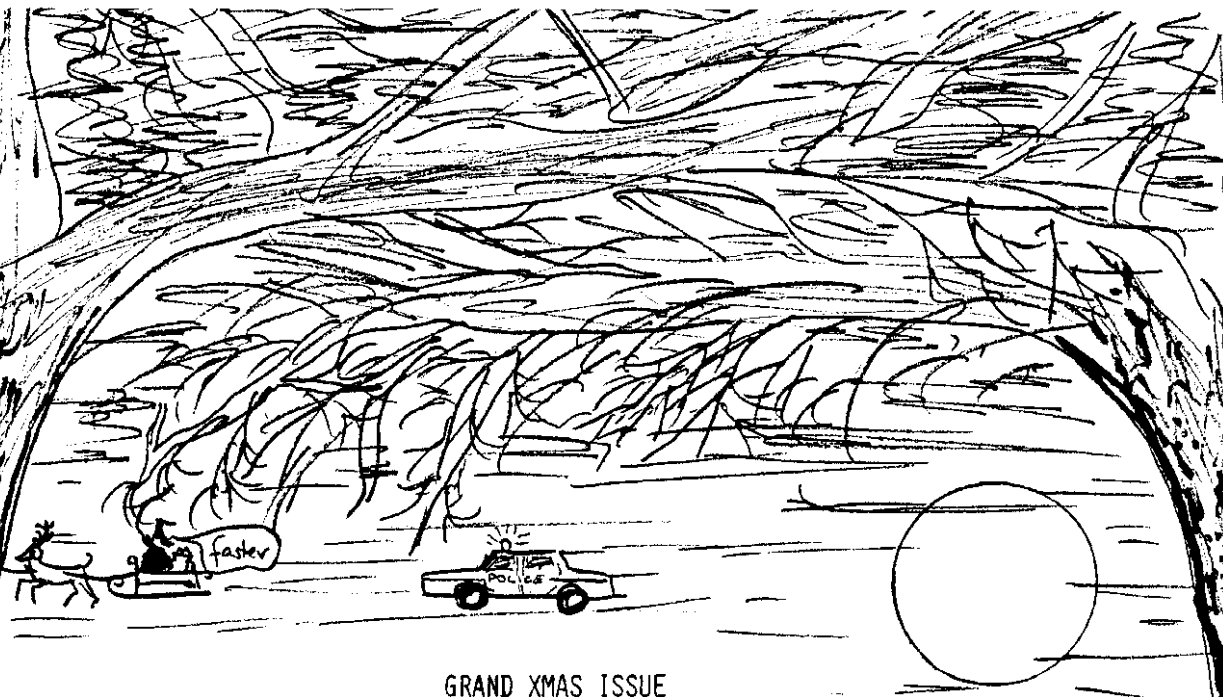


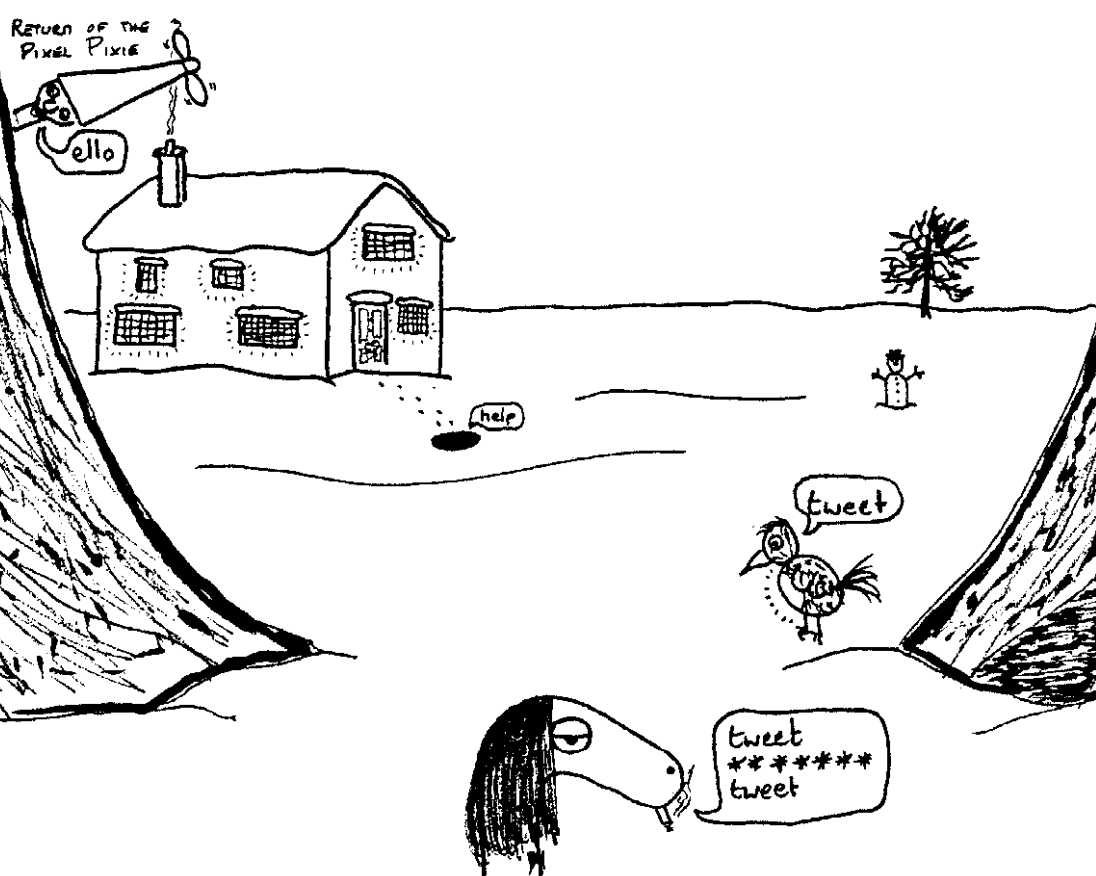
Inmc news

issue 5



GRAND XMAS ISSUE

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PRESIDENT'S CHRISTMAS MESSAGE

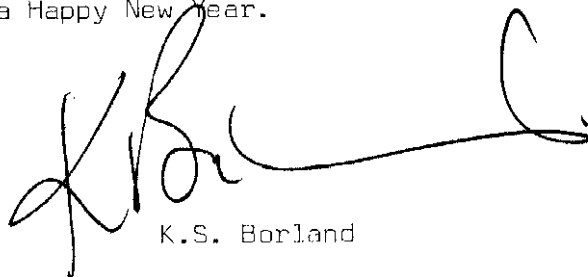
I am sure that you all feel as I do that a vote of thanks should be extended to David Hunt and his Committee for creating a sensible INMC giving increasing value for money throughout 1979. Also we must single out Paul Greenhalgh for the work he has done as Editor. In an organisation like the INMC, the Editor's task is not an enviable one and Paul has accepted the responsibility - the standard of the INMC News is in itself a tribute to the amount of work that he has put into the job.

To have managed this Bumper issue by Christmas was, I assure you, a marathon task and again it is an improvement on the last issue. No little thanks of course must go to yourselves. We are receiving material from all over Europe and instead of having difficulty in finding things to include, we are starting to have difficulty in choosing what to include from what we have been sent.

This is going to be another long Christmas and I hope many of you will receive, or buy yourselves, expansion for your Nascoms. Many of you will have new Nascom 2's and I look forward to receiving a bumper post in January with programmes written over the holiday period, which we can include in our first issue in 1980.

Nascom has many plans for 1980 and I think all of you next year will end up with expanded systems in various forms. The value of the INMC is becoming very apparent even within independent hobby clubs and I hope having started so well in 1979 that the INMC will become a major Z80 Users Group and Library.

Happy Christmas and a Happy New Year.

A handwritten signature in black ink, appearing to read 'K.S. Borland', written in a cursive style with a long horizontal flourish extending to the right.

K.S. Borland

CHAIRMAN'S PAGE

It is now almost a year since I took on the task of Chairman of the INMC and during that time I have watched the INMC grow. The membership is impressive by almost any standards and stands now at about 2000. The members are from all walks of life, from accountants to hospital porters, from bus drivers to professional computer engineers. It is encouraging to see the spirit that exists between the members of the INMC.

There is almost a latent sense of conspiracy to try to catch Nascom out, be it with bits of hardware design, software, or whatever; none the less, this spirit also expresses an intense loyalty to what is after all a very good product. (No Nascom don't pay me).

I was playing with a shortwave set recently, and overheard a conversation between two CB'ers on 27 MHz. One, calling himself the 'Prowler' was vigorously defending his Nascom 1 against the various merits of a product that hails from the nether depths of Barnet. Nascoms are now on the legitimate SW bands churning out and decoding morse code (one program is going into the library), and there is a distinct group of licensed radio amateurs who use Nascoms for RTTY and God Knows what!

I have seen a Nascom being used as a 'patient monitor' in a hospital intensive care unit where the patient's heart beat and respiration is continuously checked, and it also keeps a log of drugs dispensed. In all, Nascoms are turning up in the most unlikely places.

Another sign that Nascom is here to stay, is that external manufacturers are now making a range of Nascom products available, both software and hardware; ranging from word processors, and maths packages to relay switched output boards and EPROM programmers etc. Nascom continue to support their own product of course, although personally, I wish they wouldn't shout about new products until they are available. As a dealer, I get a lot of aggro on that score.

To the newsletter, I hope you think that the quality has improved over the past year, and now that subs are becoming due, that you feel you have had good value for money. At first we virtually had to write every word, and in the process almost exhausted everything we had to say; but our appeals for material from members is beginning to bear fruit, and more and more 'external products' are appearing in the mag. Speaking on behalf of the committee, we would like to make the mags more frequent, but pressure of work (yes we do put in the odd day's work occasionally) doesn't really allow this. Splinter groups of the INMC are now getting organised, and local newsletters may be a thing of the future. The Merseyside group have published a superb Nascom program book, and we look forward to the next.

Now for a moan: we occasionally get letters demanding (and I do mean demanding) solutions to technical problems, now I must emphasize that INMC does not exist to solve all technical problems. If we know

the answers then we will reply, or if of general interest, publish; or if we don't we will pass the letter on to someone who may. Either way, to DEMAND replies to technical questions is not really on.

I would like to thank those on the committee, Kerr, Paul, Richard, and Howard (who resigned recently) for their support over the last year. To Derek for taking on the mammoth task of re-assembling the complete library (he recently sent us a bill for 10 typewriter ribbons). To all the girls at Nascom who type the mags, control the circulation and mailing lists, and Bev in particular who keeps the library in some semblance of order. And to all those members who have written articles for us. Finally to welcome Derek (the same one) and Eddie to the committee.

Who knows what the future will hold, one thing is pretty certain, NASCOM RULES OK, and with any sort of luck the INMC will go from strength to strength.

D. R. Hunt
Chairman



ABOUT THE INMC

For the new members here is a brief explanation of what the INMC is and how it works.

The INMC is run by a committee, the members of which live in or around London. The President of the committee is Kerr Borland, Nascom's infamous Sales Director; the Chairman is David Hunt, and the other members are Richard Beal, Derek Brough, Paul Greenhalgh and Eddie Pounce.

The committee meets every couple of weeks at each others homes, although any single meeting is generally a small subset of the whole - i.e. two or three! At these meetings various letters and articles are considered for inclusion in the newsletter, and other articles are written. Up to date most of the content of the newsletter has been generated by the committee but our pleas for material are being heard (by a few) and it is members articles that we want to print.

We also like to hear of any technical queries, either hardware or software, and if of general interest we will print them with a reply. We cannot, however, guarantee a personal reply as we do all have full time jobs, houses, cars, computers and in some cases even wives to keep us busy.

The final job of the committee is to sift through the programs that we receive and consider them for the software library. (Please note that the existing library is for Nasbug and B-Bug only, although we do hope to include Nas-Sys programs shortly). These programs are then available for a photocopying charge, to the INMC members.

This brings us on to the secretariat - viz Beverly. Bev deals with all memberships, requests for programs, magazine subscriptions etc. Unfortunately Bev has been off ill for several weeks and will not be back for some time yet. However, good fortune is with us, Val has kindly stepped in to help clear the backlog. So please bear with us while we get things straight, but don't let any upset stop you sending in those articles!

EDITOR'S PAGE

May we all wish you a Happy Christmas, although by the time you get this you'll all probably be unwrapping your Easter Eggs. We tried to make this a bumper issue, but because of the close deadline, we didn't quite make it, so we filled the mag. with programs (as usual). As far as the programs go, we've tried to include something for everyone (except NAS-SYS 1 machine code freaks, sorry about that, how about some progs. for the library?), so there's N1 minimum system, and N1 expanded system, Tiny Basic, Super Tiny Basic, and 8K Basic for N1 and N2.

In the last issue we announced a Christmas Games competition, but due to the prolonged illness of a key member of staff (come back Bev) and printing delays, the mags didn't get posted till two days before the closing date, so the competition is still open, and we'll publish the winners in good time for next Christmas! Seriously though, the closing date is 3 weeks after you get this issue. Also, because of Bev's illness, the library has almost ground to a halt, so please bear with us if you have had difficulty extracting programs. We aren't saving your money for our next trip to the Bahamas.

Talking about the money: SUBS!!!!

In the early days, because it was all new, those who joined the INMC got away with paying a pound registration fee, and haven't been asked for anything since. More recent members have had to pay a fiver for the privilege (plus the registration fee). Now we have decided that all those who joined the INMC before the 31st January 1979 will have to pay up before the 31st January 1980, and all those who joined after January 1979 will be billed at the end of the month when their annual subscriptions become due (or something).

We will allow 21 days for cheques to reach us, then if we haven't seen the loot, names will be removed from the mailing list, and it will cost an extra quid to re-register.

The mailing list (for those who joined before January 1979) for issue 6 of this highly desirable rag will be made up from the list of subscriptions received (so the print run will be cheap anyway), so if you don't cough up, well sorry, but you won't ever find out who won the Great Christmas Competition. And we'll all know who the meanies are won't we.

So the message is 'cheque books to the fore' folks and send a fiver, payable to:

INMC
c/o Nascom Microcomputers,
92, Broad Street,
Chesham,
Bucks.

If you live in France special arrangements will be made for you to pay the money to the French Distributor, so we will be letting you know what to do.

So having got the sordid business over...

WELCOME ALL NASCOM 2 OWNERS. We're afraid that there isn't much in this edition (except 'ELIZA') to interest you, but we won't forget you just because Nascom haven't given us our free issue N2's yet nudge, nudge (some chance!). We'll be publishing bits about N2's as they come along, and about 10 8K Basic progs will be in the library by the time you see this. Just in case you haven't already guessed, this is your magazine, and all contributions are gratefully received, if not necessarily printed. So keep it all coming.

Just in case you haven't noticed, parts of last months news letter, and bits of this have been prepared using the new Naspen text processor, then typed using a secondhand IBM terminal, it's not had is it? Also, just in case you hadn't noticed, there is more than one Editor, that's why this rag suffers from a plethora of different styles. It is our plan to issue Naspen to all those concerned, that way all we need do is collect all the tapes together, then type them all on the IBM at one time.

Well this is the end of another late night editorial session. Time for bed, and dreams of the new super 'Inter-Galactic Bar Billiards' program, using real planets as balls (now I bet that will be an exhilarating experience for someone) and to wish all our readers Good Night, I mean Happy Christmas, and Happy Computing.

From us on the INMC Committee.

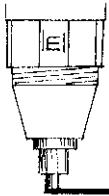
PLUG O PLUG O PLUG O PLUG O PLUG O PLU

The Merseyside Nascom Users Group, some 150 strong, has put together a 64 page, A4 book entitled "Nascom Programs and Information". The main part of the book is dedicated to the programs, some 15 in all including:

3D noughts and crosses	Othello	Income Tax
Screenwriter	Pico Pilot	Crash Landing

Plus the complete listing for a 2K Tiny Basic.

The INMC is able to offer these to its members for £2-75 including postage and packing. Please note that the programs in this book are for use with Nasbug T1, T2, T4 and B-Bug but not Nas-Sys. For use with Nas-Sys the various monitor calls require changing, and other patching (e.g. changing all codes to ASCII) may be required.



letters to the editor

IT'S NOT EASY

Dear Sir,

Many thanks for the Newsletter and Library. I have just purchased and built a Nascom 1 with B. Bug, and managed to get it going.

Now, here is a point for you:- After reading the construction book, which is easy to understand, I build the machine, so far so good. Now read the program Manual, and what do we find, a book written by people who know what they are talking about, but I am afraid it does not mean a thing to me. After about 3 days of trying we manage to get the simple programs contained going, but not a clue as to what keys to press or whatever. (It seems to me that you are supposed to know things like that). So the next thing we do we join the INMC and get the newsletter, to try and find out some of these things. What do we find, a snow plough circuit, great build it, it works, great, put the mystery program in, great it works! What next? Read the rest of the newsletter great, now all we've got is a whole load of questions, like, what's a T2 or a T4 or a ZEAP etc., etc.

Now don't think I am getting at just the newsletter writers, they know what they mean, but people like me are only just beginning to "play" with Nascom and just don't know what things like the above are.

Don't forget we just go and buy a Nascom off the shelf from somewhere or other and all you get are the two books with it, and one of these just is not in "non-computer" mans words.

Hope you can see what I mean, I don't usually moan like this, you're doing a good job, but please oh please lets have as much paperwork as you like, on T4 etc., and add ons etc., and newsletters or program manuals that the man in the street can understand, or at least tell him to press this and that and so and so will happen.

It will really help a lot, and perhaps stop some of us going hairless.

Cheers and Beers,
G.M. Hewitt
Gt Yarmouth

We are trying our best to give you all the information we have. The problem is that Mr Hewitt is an expert in electronics, but a beginner at software. The best suggestion we have is that he takes the "Mystery Program" which he has working, and writes out the hexadecimal codes, converting them to source code and then work out how it works! I know it isn't easy, but once you have

finished, you will understand how to write your own programs. Also, get programs from the INMC library, and don't just put them in and run them, but read them carefully until you understand them.

THEY DON'T WORK - OR DO THEY?

Dear Sir,

After many hours of soldering,
Building up my Nascom one,
I waited for your newsletter,
Hoping for programs to run.
Eventually the postman called
With a letter just for me,
And I really was delighted,
With Mastermind and a mystery.
There I sat at the keyboard,
All day and half the night,
But mastermind prints MARKING ERROR,
And the lolly lady moves at the speed of light.

Well I wonder where the fault lies,
Is it you or is it me,
After which I reconsider -
There can't be bugs at the INMC.
So, I've put my pen to paper,
With a cry for help, to you,
Hoping you can solve my problem
Before I burn out my VDU.

Yours hopefully,
R A E Milton
Folkestone

We received a couple of letters saying that the programs don't work, but we received lots of letters saying that they do! We can only suggest that Mr Milton check his programs again. Also as explained in "Little known facts" in Issue 4, the L command can be a great help in entering long programs by hand.

If you have still not got the free programs running, then we suggest you read the letter below. All you need then do is tabulate the non-working program, compare the checksums that are now displayed against the listing, then correct any errors. Simple, isn't it!

THE SOLUTION

Dear Sir,

Here is a little program to cause the 'T' command to print out the check sum, for use with Nasbug monitors.

It is written in position independant code so to run it, first load it into a convenient part of the memory then execute at the first memory address.

	CALL	£3FC	;	CALL RETURN IN MONITOR	CD	FC	03
Y	LD	DE,X-Y	;	GET OFFSET	11	OD	00
	LD	HL,(£FFE)	;	GET WHAT WAS ON STACK	2A	FE	0F
	ADD	HL,DE	;	CALCULATE ADDRESS OF X	19		
	LD	(£CRT+1),HL	;	CHANGE CRT ENTRY ADDRESS	22	4B	0C
	JP	PARSE	;	GO TO PARSE	C3	86	02
X	CP	BS	;	COMPARE WITH BACKSPACE	FE	1D	
	RET	Z	;	GO AWAY BS	C8		
	JP	CRT	;	JUMP TO CRT	C3	3B	01

To finish with this program do a reset.

Yours faithfully
D Tucker
Long Ditton

Thanks Mr Tucker we're sure this will be very useful in helping people load their Free Progs.

+++++

We have received one letter that complains that all we talk about are Nascom products! Well this is true, as we can only speak about what we have got.

Please remember, we are a bunch of private individuals, whose pockets only stretch so far (and not as far as that if our wives are to be believed). So we can hardly talk about the latest 'Um Yukee' from Fred Bloggs & Co unless we buy one. We get a fair amount of co-operation from Nascom in terms of advance information about new products, but unless the independent manufacturers submit samples of products to Nascom (where we can lay our hands on them) or to ourselves, we are hardly in a position to review them. So our admitted ignorance of, say, the CC SOFT Basic is because none of us has a copy.

If you would like reviews of other products please write them. We will print them provided they are objective.

Last issue we had a look at the Bits and P.C.s graphics, this issue there is a review of the Comp S100 board. If you have any other non-Nascom add on, please send us your report - or a few free samples!!
STOP PRESS Comp S100 board did not meet printing deadline - see next issue.

CRASHING ROAD RACE

Dear Sirs,

John Waddell, author of "Burst-the-Balloon" has written to me and pointed out an error in my "Road-Race" listing in the INMC library.

At OCDE, I have written B0 where I should have put OB! I'm very sorry for the inconvenience, but I hope you can change this, before sending out more copies?

May Babbage be with you,
Marcus Parker-Rhodes
London N4

SPECIAL OFFERS

you can't risk sneezing at

We have received the ads below from other INMC readers. In publishing them neither Nascom nor the INMC endorses any of the items offered for sale

Nascom Users!

Ex Bank terminals. "IBM Golfball Printer plus Interface" Typewriter quality print at up to 15 cps. Colour shift, Underline, Tab and normal typewriter functions are all program selectable. £450.00 plus VAT - Write for details to:- DTN Wembley, 77 Montpelier Rise, Wembley, Middx. Tel. (out of working hours) 01 907 1767 or 01 904 7411

FOR SALE

- 1) Burrough 80 Column Card Reader (200 cards per minute). Trolley mounted. Technical manuals and circuits included. £80 ono
- 2) Friden Flexowriter electric typewriter with built in 7 hole paper tape punch and reader. All Solenoid controlled but will need interfacing. Circuit diagrams included. (Requires an 110 volt transformer). £50 ono
- 3) IBM Maintenance manual for Selectric I/O typewriter. Offers.

Contact: D Brough
43 Cranbrook Road
East Barnet
Herts

MUSHROOM BASIC

Mushroom are able to offer to INMC members a copy of the Mushroom 4K Integer Basic Interpreter at the reduced price of £10.50 (normal price is £13.50). This includes cassette and manual - purchasers must state monitor used. In brief, it handles integer and string variables in scalar, one dimension or two dimension arrays as well as supporting nearly all the commands found on currently available 8K BASICS.

Contact: MUSHROOM
7 Bentinck Avenue,
Tollerton,
Nottingham

DOCTOR DARK'S DIARY-2

"Dedicated to the unknown op-code"

Since I last wrote, I have been sending poor Marvin (my paranoid Nascom) up the wall with non-existent instructions, in a search for anything beginning with ED that might be of some use or interest. I have discovered that ED 54 and ED 6B definitely do something, just what they do is at present still a mystery. If any of you want to experiment along these lines, the following subroutine should be useful. It may be located anywhere in the memory, and when called prints out the contents of AF, BC, DE, HL, IX and IY. Call it before and after your new op-code, then see if anything has changed.

```
F5 C5 E5 FD E5 DD E5 E5
D5 C5 F5 EF 1F 41 46 20
20 20 42 43 20 20 20 44
45 20 20 20 48 4C 20 20
20 49 58 20 20 20 49 59
1F 00 06 06 E1 7C CD 44
02 7D CD 44 02 CD 3C 02
10 F2 E1 C1 F1 C9
```

I am sure you won't need to be told that if you discover a new jump, you are going to be disappointed, because you'll never know what was in the registers after the instruction was executed! Equally obvious is the fact that if your new code does something that doesn't concern the CPU registers, it will look as though nothing has happened. Suggestions, anyone?

"There's always at least one better way"

Suppose you had a pair of Comp joysticks hooked up to your PIO, and you wanted to play some other game than the Fighter Pilot game that Comp provide. Just try to find out how to control those joysticks from their un-commented code listing. If you've never used the PIO for anything before, it can be a beast, until its little quirks are unravelled. The following extract from Darkbug (one reason why Marvin is paranoid is the presence of this utterly non-standard 2708 of mine) is my best effort so far. It saves all the registers it uses on the stack, and it puts the readings of the joysticks in RAM, which is handy. An added feature is the ability to control the scale of the results, by setting a delay constant in 0C56.

I've shown the addresses for this one, if you want to use it at some other address than 0400, you will need to alter parts of it.

This is also the case if you don't want the results where I have put them.

```

0400    CD  07  04  CD  15  04  C9  F5
      08  C5  D5  E5  21  50  0C  11  00
      10  00  0E  06  18  0C  F5  C5  D5
      18  E5  21  53  0C  11  00  00  0E
      20  07  3E  FF  ED  79  3E  FC  ED
      28  79  3E  03  0D  0D  ED  79  3E
      30  00  ED  79  3E  03  ED  79  ED
      38  78  CB  5F  28  04  36  00  18
      40  02  36  FF  23  ED  78  CB  7F
      48  28  10  14  CB  77  28  01  1C
      50  3A  56  0C  47  F5  F1  10  FC
      58  18  EA  CB  77  20  F1  72  23
      60  73  E1  D1  C1  F1  C9

```

Calling 0400 reads both joysticks, to read only one, call either 0407 or 0415, depending on which socket the joystick is plugged into. The format of the results is;

- 0C50 Trigger A 00 normal, FF if trigger pressed.
- 0C51/2 Pot A/1, A/2 One byte for each pot in the joystick.
- 0C53 Trigger B 00 normal, FF if trigger pressed.
- 0C54/5 Pot B/1, B/2 One for each pot of other joystick.

0C56 RANGE SETTING The value set in this byte controls the range of the results. For example, if 10 is used, each pot returns a number between 01 and 48, approximately. The smaller the number in 0C56 is, the larger the range of the results becomes.

"What else is there in this Darkbug"

Quite a lot, is the answer to that question, but a lot of it relates to the graphics board I mentioned in my earlier effort. There's the spiral screen wipe, for instance; or the automatic graph plotting routine. Pretty boring, really, isn't it? NO? In that case, here is one I use a lot, in games, and in "wall-paper" programs. It is relocatable, it is called SWAP, and it has the effect of replacing all of a given character on the screen with another. Just put the character you wish to remove in B and its replacement in C, then call this subroutine:

```

F5  D5  E5  21  0A  08  11  FA
OB  7E  B8  20  01  71  23  B7
ED  52  19  20  F4  E1  D1  F1
C9

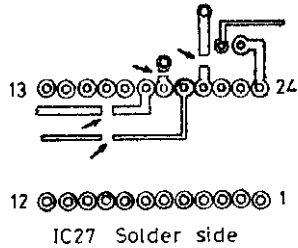
```

Those of you with sharp eyes will have spotted that I have used something from INMC News No 2, without which the routine would have been a lot longer, to compare HL and DE. Finding that proved the value of the club to me, and I only hope this lot does as much for your programs as that did for mine!

BASIC CHIPS ON NASCOM 1's

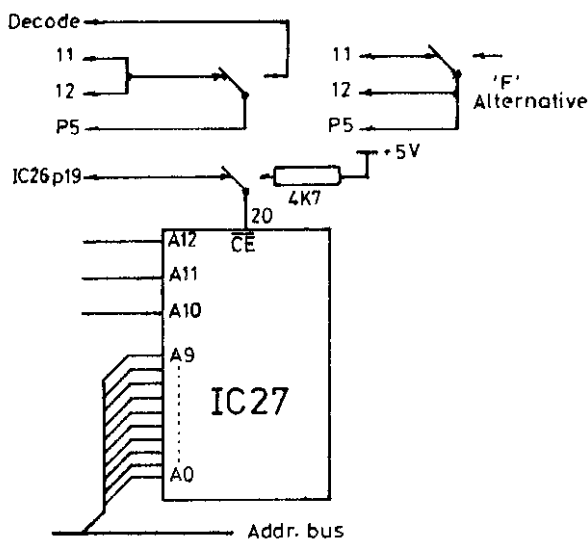
So there you are with your brand new (and expensive) MK36271 BASIC ROM, and wondering where to fit it. There don't seem to be any holes for it. When the memory board was designed it wasn't envisaged that anyone would want to fit an 8K ROM to it, so no holes were provided. Never mind, a little bit of surgery, and all will soon be working.

Take a careful look at fig. 1, and carefully cut the tracks as shown. Then connect wire jumpers as follows:



- 1) IC26 pin 19 to IC27 pin 20.
- 2) IC24 pin 2 to IC27 pin 19.
- 3) IC24 pin 3 to IC27 pin 18.
- 4) IC25 pin 7 to IC27 pin 21.
- 5) Decode pads 11 and 12 together to pad P5.
- 6) Check it!
- 7) Plug the board back in the Nascom and try it. Lo! You should have BASIC.

Now this mod. means that you have lost the use of the other 3 sockets, so for those more adventurous souls, you can get them back again. The tracks to pins 19 and 21 were the +12 and -5



volt supplies to the EPROM sockets so these must be restored to make ICs 28, 29 and 30 operable. Two jumpers from the points where the tracks were cut to pins 19 and 21 on IC28 will restore the juice. But this will also put juice back on IC27, as these pins are linked on the top side of the pcb. Some deft knife work is required to cut these two tracks between ICs 27 and 28 sockets (and get it right 'cos you'll never repair a mistake!!!). Now the way we have mod'd the chip select on the Basic ROM means that it will come on regardless, so a switch is called for to disable the ROM when not required. So make it a double pole switch, and use it for

selecting the decaodes as well. Note that alternative arrangements are shown, for any other decode apart from 'E' and 'F', and decode for 'F'. Why? Well some idiot will want to run Big BASIC and Super Tiny BASIC on one board. Apart from that our version of Naspen is an early one, and runs from F800 to FFFF. Naspen usually resides between B800 and BFFF.

Can we make one thing quite clear, these mods have been tried and work, but the INMC can not take responsibility for any failures, or chewed up pcbs as a consequence of trying them. If you don't think you are capable of attempting these mods, DON'T TRY. Seek the help of someone competent, then you can blame him if he chews up half the tracks on the pcb.

STOP PRESS! 100 nF capacitor required across pins 24 and 12 of the BASIC ROM.

Murray, The Nascom 2 Has Arrived.

by E. Pounce

=====
There was great jubilation and excitement when my Nascom 2 arrived late one Friday night. I had been suffering from withdrawal symptoms for a couple of months since I sold my Nascom 1. Even my two and a half year old son was pleased, as he had been most disappointed when told that he could not play with the 'Lollypop Lady'.

Reading the documentation started there and then, but proved rather hard going, since my copy was rather poorly copied (you'd think that Nascom would clean their Xerox machine once in a while). There are also a number of pages which had been reduced so small that the printing was almost illegible. But worst of all there was no explanation of what the different sections were, or how to find them. It seems a shame that such a good product should be let down by the presentation of the documentation, which was all there if you could find it and read it. (We believe this has now been rectified, Ed.) One big improvement over the Nascom 1 is that there are references in the components lists to positions in a layout matrix, to show where the components are located on the pcb. This helped a lot since it took several minutes to find the location of some of the components when building my Nascom 1.

Construction of the main board (kits are currently supplied as a main board and a memory board) commenced after lunch on Saturday and took about 12 hours over the weekend to complete. Whilst soldering R17, I noticed what appeared to be a short between two parallel tracks. I don't think the tracks were touching, but just in case, these were 'tidied up' before continuing. One suggestion made was that this may have been caused by a speck of dust on the negative when the board was made.

To help keep the IC sockets tight against the board when soldering, I cut a piece of card 2" x 1", wrapped a piece of selotape round one end, inside out, and folded it in half, the selotape keeping it folded. This will stick to the sockets while the board is upside down, and keep the socket you are working on tight against the pcb. Another trick I learned when constructing my Nascom 1 was to leave the LEDs and transistors till last, less chance of them being damaged by turning the board over whilst soldering sockets etc.

After assembly, the VDU part was powered up as per the instructions (a bit brief) and the first problem was evident - in each character space, there appeared to be two, in fact the front half of each character twice. After a call to my 'friendly neighbourhood dealer' (at home, he wasn't pleased) the fault was cured by placing a 100pF capacitor between the LD pin and earth (pins 1 and 8) of IC65. The reason is that the signal on the LD pin leaves something to be desired, and the capacitor smoothes out the ripple.

Things were moving now until after inserting the CPU, monitor and workspace RAM.

NOTHING!!!

After much checking with a cheap multimeter, I discovered that the RESET line was low, ie: active. Tracing it back, it appeared that IC12a was misbehaving. In fact it was a dud. A replacement chip cleared the fault.

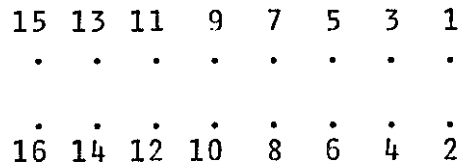
From here on everthing went smoothly. The memory board was built and connected to the buss. Everything else worked first time.

Other Points of Interest
=====

1) The graphics chip which the documentation says should be there seems to be an optional extra.

2) The Basic chip needs a wait state to run properly, Nascom don't say anything about that in their advertising. So what the ads mean is that although the Nascom 2 runs at 4 MHz, the Basic doesn't. (With the wait state, the BASIC averages 1.8 times the speed at 2 MHz without the wait state, Ed.)

3) The numbering of PL/2/3/4 appears to be as follows, and not what you would expect:



It follows the colours of the ribbon cables, but it doesn't say so.

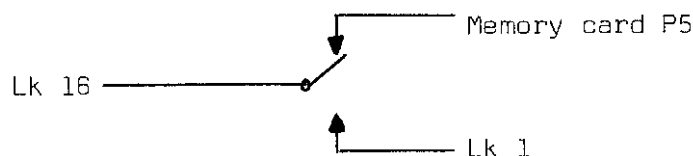
4) R43 is missing from the drawing in the base of TR3

5) My cassette interface would not work unless the variable resistor was adjusted such that the wiper gave 0 volts.

6) The Veroboard tends to buckle in the middle when the edge connectors are being soldered.

Now for a quick mod.

For those of you with Nascom 2 who want to run programs from Nascom 1, the NASBUG monitors may be fitted on the extension memory card in location 0 (& 1 for 2K monitors). Connect pin 16 of LSK1 to P5 on the memory card instead of pin 1 on LSK1. To give quick conversion, use a single pole double throw switch as follows:



To switch without ruining anything in memory, execute a 'HALT' instruction before changing monitors, and use 'RESET' to recover control.

Having had my moans, Nascom are to be congratulated, Nascom 2 is a superb machine, and another satisfied customer bites the dust.

Other bits of info for Nascom 2 from various sources
=====

The video fault mentioned above seems to be fairly common, and really comes back to the oscillator. The output of the 74S04 (IC56) seems to be almost sinusoidal in shape, and this makes the first divider (IC49) a bit unhappy. IC49, in turn feeds IC71a which generates the LD signal for IC65, and any jitteriness of IC49 is transferred to IC65. The best cure is the 100pF capacitor as mentioned above, but a 5pF capacitor between pins 12 and 7 of IC56 helps to square up the clock a little. Severe clock jitter can cause some very weird timing problems giving rise to overall unreliability.

The memory supplied with N2's at present is our old friend Nascom Series 1 Memory card, which was the subject of a note about 'Memory Plague' in an earlier news letter. Well as an N2 may well ask it to run at 4 MHz without any wait states, a little more investigation was considered desirable. The buss signals from an N2 are a lot cleaner than an N1 which helps, but 'Plague' still raises its head from time to time. First, check that you have used the 74157s in the memory not the 74LS157s. Both types are used on an N2, and are easily mixed up. Secondly, gridding the +5 volt and ground rails is a good idea, there is a sheet in the N2 kit about that. Thirdly, change all the 33R resistors to 68R, and change the links between P8 and P9, P12 and P13 for 68R as well.

These mods alone cured a board that suffered from severe 'Plague' at 2 MHz on an N1. All the other mods (the Rs and Cs from the earlier note, etc), were removed. The board worked perfectly at 2 or 4 MHz on both an unmodified 'B' issue N1 (worst case) and an N2. So it seems that proper gridding of the board, and curing any tendency for the address and control lines of the 4116s to under-shoot (the 68R resistors) will cure 'Plague' on its own.

THIS SPACE
TO LET

STOP PRESS - SCOOP

MASK PATTERN FOR 256 K

RAM CHIP REPRODUCED

BELOW - ENTIRELY FREE

AND AT NO COST.



XTAL BASIC UPDATE 1.3 - SEPTEMBER 1979

We have received the following release from Crystal, and reproduce it here for your information.

The following 'bugs' are the only ones so far found in XTAL BASIC:-

1. In all copies up to and including serial no 55.
Caused errors in the use of scientific notation.

CORRECTION:-

>M2744	>M274E
A6>A9	A5>A8

2. In copies up to serial no 66.
'WAIT' command does not work properly

CORRECTION

>M2267	>M226F
0A>08	C1>5F C1 F1 47

3. In copies up to serial no 88
BASIC 'hangs' sometimes when a string space overflow occurs

CORRECTION

>M20C0
02>00

4. In copies up to serial no 106.
Caused characters within quotes of ASCII value greater than 80H to appear as reserved words under 'EDIT' but OK under 'LIST'

CORRECTION

>M2B1B
F4>F6

5. In copies up to serial no 150.
Programs longer than about 5K found to contain corrupted lines deep within the program.

CORRECTION

>M13E8	>M1519
AF>CD 19 15	00>AF BE 23 20 FC C9

6. In copies up to serial no 165.
The numbers used in the CLEAR command cannot exceed 32767.
This could cause problems if it is required to use small machine-code programs at the top of the memory space in systems with 32K or more RAM.

CORRECTION

>M1813	>M1827	>M12B1
C7>B1 12	C7>B1 12	00>CD 7F 1B C3 DO 1

Now, to set TOPRAM to say, 8400H in a 32K system, you would type:

CLEAR 50, -31744 i.e, use negative numbers for locations greater than 7FFFH, as in the CALL and POKE commands.

7. Again up to serial no 165.
Some users have expressed a preference to restrict the number of keys that interrupt a BASIC program. This modification will allow the program to stop if 'BS' is typed, and then any key will continue. If 'shift BS' is typed, either when running or when halted, the program will BREAK, as if a STOP command had been encountered.

>M168A	>M16F9
52>F8 16 18 02	52>4D 0C FE 1D CC 3E 00 FE 1E 00 00 00 00.

All should now be well! Just save XTAL BASIC on another tape.

REVIEW OF EDITOR / ASSEMBLER PACKAGES FOR NASCOM COMPUTERS

Here is a chart showing a detailed comparison of all the Editor / Assemblers available for the Nascom. All three are capable of editing and assembling a program correctly, and they are all good and quite easy to use. ZEAP is available in two versions, ZEAP 1.1 for the old NASCOM monitors, T2 and T4, and the considerably improved ZEAP 2.0 which uses NAS-SYS. ZEN and V & T Packages are only available for T2/T4, but it is very likely that they will soon be modified to run under NAS-SYS as well. The ZEAP 2.0 tested was a pre-release version and there may well be modifications made before production commences. Our thanks to NASCOM, V & T Electronics, and Newbear for allowing us to sample the delights of the programs. We are not going to recommend that any one is best, because it depends on exactly what you want to do with it, and also on how much you can afford to spend. Here then is the detailed chart.

EDITOR / ASSEMBLER PACKAGES FOR NASCOM COMPUTERS

<u>BASIC INFORMATION</u>	<u>ZEAP 1.1</u>	<u>ZEAP 2.0</u>	<u>ZEN</u>	<u>V & T</u>
Available from:	NASCO	NASCO	NEWBEAR	V & T Electronics
Written by:	Sigma Software	Sigma Software	Avalon Software	V & T Electronics
Price:	£30	£30	£14.50	£11.50
Memory Size for the package:	3K	4K	4K	4K

EDITOR FEATURES

ZEAP 1.1

ZEAP 2.0

ZEN

V & T

To display a group of lines

Specify start and/or end line number.
Pause facility

Specify start and/or end line numbers.
Pause and lines per page features

Move pointer to start of group, then specify number of lines to display.

Specify start and end line numbers. Lines per page feature automatic.

To enter a line

Type in the line with the line number. Line numbers can be provided by the system.

Type in the line with the line number. NAS-SYS editing available for corrections. Line numbers can be provided by the system.

Add single line by specifying line number, or add a group of lines starting at a certain line. Line numbers are provided by the system.

To delete lines

A single line or a group can be deleted

A single line or a group can be deleted

A single line or a group can be deleted.

To edit a line already entered.

Editing mode allows full editing of a single line, including insertion/deletion.

NAS-SYS editing using cursor control keys allows very clear and easy editing including insertion/deletion.

No editing possible. Line must be replaced by re-typing.

Compression of source code, to save valuable RAM

None

None

None

None

Search for character string

Yes, including continued search. Only from start of file. Only up to 6 characters.

Yes, including improved continued search. Only from start of file.

Yes, from any point, (but no editing - see above).

No

Remembering

Yes

Yes

Not needed because system supplies line numbers

Yes

GENERAL FEATURES

Source code supplied

No

No

Yes, good listing but only partly commented.

No

Adaptability to other systems

No

Only by author

Yes, quite easy

No, but it includes an amazing ability to relocate itself to any address. All work areas can be put anywhere in memory.

Storage of source code on cassette

Yes, but better to use NASBUG Read/Write

Yes, but better to use NAS-SYS Read/Write

Yes, uses own routines. Can append files. This did not seem to work very reliably.

Yes, uses NASBUG routines.

<u>ASSEMBLER FEATURES</u>	<u>ZEAP 1.1</u>	<u>ZEAP 2.0</u>	<u>ZEN</u>	<u>V & T</u>
Does it work?	Yes	Yes	Yes	Yes
Error handling	All lines in error displayed	All lines in error displayed	Stops on first error	Displays all errors.
Pseudo-ops	Only some object code displayed for DEFB, DEFW, DEFB.	Better than ZEAP 1.1 but only first four bytes displayed.	Excellent, all codes displayed. Non-standard.	Standard Pseudo ops.
Hex numbers	Must have £ prefix	£ prefix or H suffix	H suffix, also Octal.	Hex is the default, decimal numbers have a decimal point.
Arithmetic operators	+ -	+ -	All four arithmetic plus OR, AND logical operators	+ -
Listing	VDU or printer	VDU or printer	VDU or printer	VDU only.
Symbol table	No	Yes, sorted and includes line number reference	Yes, sorted by first letter only.	No
Cross reference table	No	No	No	No
Object code destination.	Nowhere/memory/memory displaced/tape.	Nowhere/memory/memory displaced/tape.	Nowhere/memory/memory displaced/tape.	Memory, actual location only - but see above for relocating feature.
Speed	Rather slow - 10 mins to generate 2K	Pre-release copy as Zeap 1.1. Sigma working on speeding it up.	Fast - 4000 lines a minute claimed.	Fast.

RRRRR REPEAT KEYBOARD

In the past we have avoided publishing full assembly listings of programs, rather, we have put them in the software library, and commented on them when we publish the occasional library list. However, interest has suddenly swung round to the ability to add a repeat key facility to the Nascom, and we have received four programs which offer this feature.

Two programs by Dr. P. Curtiss offer full 'n-key' rollover, and have been assembled for both Nasbug and Nas-sys. Another (plagiarised by myself from those of Mr. Pounce and Dr. Curtiss) has been assembled at B000H and is intended to reside in EPROM for use with Nascom 2, which, by having its reset jump set to page 'B', automatically initialises the repeat key mode on reset. Unfortunately this is only directly applicable to Nascom 2, as hardware mods for the reset jump would be required for Nascom 1.

The program published here, whilst perhaps not the most elegant, is the shortest, and has been assembled for Nascom 1 using Nasbug or B-Bug, and is therefore the most immediately useful to the reader.

As some mystery surrounds the workings of the keyboard routines we publish Mr. Pounce's article and assembly listing in full.

KEYBOARD REPEATER =====

by E. Pounce

This routine is used to give a repeat facility when a key is held down on the keyboard. If a key is pressed and held down, with no other key being pressed, then a character will be received as usual (eg. from a call to CHIN); but after a set period of time, whilst waiting for the next character, the same character will appear to be received. This period of time is determined by the value loaded into the 'repeat rate counter' at line 280, zero is the longest time, 80H would be approx half that time (FFH would be the shortest possible). If the operator continues to hold the key down then the relevant character will appear to be received again and again, the time period being determined by the value loaded into the 'repeat rate counter' at line 660. C0H is used in the assembly to give a repeat speed of approx. one quarter of the initial delay time.

Fast operators should not be affected by this routine as there are only 23 extra bytes of code executed for each key depression compared with the 100 odd + the delay of 7.5mS in the KBD routine.

The routine is activated by modifying the reflective address from TIN (for T4 monitors) or KBD (for T2 and B-Bug monitors) located at address 0C4EH and 0C4FH to point to 0C5AH either as part of a program or via a modify command as follows:

```
M 0C4E  
0C4E XX>5A 0C.
```

This command must be entered on one line as the first half of the address should not be changed without the second half.

Once this routine has been loaded and the reflective address changed the repeat is available to any program using CHIN. But take care not to corrupt any of the program otherwise no characters can be entered - even monitor commands - and a reset will be required to put the reflective address back to normal.

```

0010 ;      *** KEYBOARD REPEATER ***
0020 ;
0030 ; By E. Pounce                                October 1979
0040 ;
0069      0050 KBD      EQU  #0069 ; Keyboard routine
0C01      0060 KMAP     EQU  #0C01 ; Current key map
04F6      0070 SRLIN   EQU  #04F6 ; Serial input routine
          0080 ;                               for T4 monitors
          0090 ;
0C50      0100          ORG  #0C50 ; Origin of workspace
0001      0110 CHRSTR  DEFS 1 ; Last valid character seen
0001      0120 RATE    DEFS 1 ; Repeat rate temporary store
0008      0130 KMAPC   DEFS 8 ; Copy of last 8 of KMAP
          0140 ;
0C5A CD6900 0150 RT0    CALL KBD ; Scan for new character
0C5D C5      0160          PUSH BC ; Save status
0C5E D5      0170          PUSH DE
0C5F E5      0180          PUSH HL
0C60 11020C 0190          LD   DE, KMAP+1 ; Set up pointers
0C63 21500C 0200          LD   HL, CHRSTR ; Start of work area
0C66 010800 0210          LD   BC, 8 ; Length of KMAP used
          0220 ; Note: last 8 bytes only used
0C69 300B    0230          JR   NC RT2 ; No character ?
          0240 ;
          0250 ; New character from KBD call
0C6B 77      0260          LD   (HL), A ; Store character
0C6C 23      0270          INC  HL
0C6D 70      0280          LD   (HL), B ; Zero repeat rate counter
0C6E 23      0290          INC  HL
0C6F EB      0300          EX   DE, HL ; Set up to copy KMAP
0C70 EDB0    0310          LDIR ; Copy KMAP into KMAPC
          0320 ;
0C72 E1      0330 RT1     POP   HL ; Restore status
0C73 D1      0340          POP   DE
0C74 C1      0350          POP   BC
0C75 C9      0360          RET ; Return from routine
          0370 ;
          0380 ; No character found from KBD call
0C76 7E      0390 RT2     LD   A, (HL) ; Is a character stored ?
0C77 B7      0400          OR   A
0C78 2810    0410          JR   Z RT5 ; No, jump to exit
          0420 ;
0C7A E5      0430          PUSH HL ; Save the pointer
0C7B 23      0440          INC  HL ; Point to counter store
0C7C EB      0450          EX   DE, HL ; Set up to compare
0C7D 13      0460 RT3     INC  DE ; Inc to next KMAPC byte
0C7E 1A      0470          LD   A, (DE) ; Compare KMAP with KMAPC
0C7F EDA1    0480          CPI
0C81 2005    0490          JR   NZ RT4 ; Not equal
0C83 E2900C 0500          JP   PO RT6 ; Equal: end of compare

```

```

0C86 18F5      0510      JR    RT3
               0520 ;
               0530 ; Map copies are different
0C88 E1       0540 RT4    POP  HL      ; Get char. store pointer
0C89 70       0550      LD   (HL), B ; Zero character store
0C8A E1       0560 RT5    POP  HL      ; General return point
0C8B D1       0570      POP  DE
0C8C C1       0580      POP  BC
0C8D C3F604   0590      JP   SRLIN   ; Change to RET if using T2
               0600 ;
               0610 ; Map copies are equal
0C90 E1       0620 RT6    POP  HL      ; Get char. store pointer
0C91 23       0630      INC  HL      ; Point to counter store
0C92 34       0640      INC  (HL)   ; Inc. counter store
0C93 20F5     0650      JR   NZ RT5  ; If not zero, exit
0C95 36C0     0660      LD   (HL), #C0 ; Reset repeat speed
0C97 2B       0670      DEC  HL
0C98 7E       0680      LD   A, (HL) ; Recover stored char.
0C99 37       0690      SCF ; Set flag to simulate char. found
0C9A 18D6     0700      JR   RT1    ; Loop back to exit
               0710 ;
               0720 ;      END OF LISTING

```

All four repeat key programs will be put in the software library in due course.

ELIZA Continued from Page 37.

```

2550 DATA "I SEE, IS THAT ALL YOU HAVE TO SAY ?"
2560 DATA "I'M NOT SURE I UNDERSTAND YOU FULLY."
2570 DATA "COME COME, ELUCIDATE YOUR THOUGHTS."
2580 DATA "CAN YOU ELABORATE ON THAT ?"
2590 DATA "THAT IS QUITE INTERESTING."
2600 REM
2610 REM ** DATA FOR FINDING REPLIES
2620 REM
2630 DATA 1,3,4,2,6,4,6,4,10,4,14,3,17,3,20,2
2640 DATA 22,3,25,3,28,4,28,4,32,3,35,5,40,9
2650 DATA 40,9,40,9,40,9,40,9,40,9,49,2,51,4
2660 DATA 55,4,59,4,63,1,63,1,64,5,69,5,74,2
2670 DATA 76,4,80,3,83,7,90,3,93,6,99,7,106,6
2680 REM
2690 REM ** DATA FOR MACHINE CODE INPUT
2700 REM
2710 DATA 31711,1090,-53,536,-20665,3370
2720 DATA -5664,0
2730 REM
2740 DATA 27085,14336,-13564,6399,18178
2750 DATA 10927,-8179,233
OK

```

DOCTOR DARK'S DIARY-3

EPISODE THE THIRD

This episode has been re-written about five times, due to rapid advances in the development of Marvin, and the influence of Doctor Dark's elderberry wine, (more powerful than a Z8000!) Doctor Dark strongly recommends the manufacture of wines in the computer room, as the carbon dioxide produced in the fermentation process is very good for putting out electrical fires.....

Marvin now has a new monitor, Nasbug T4, and as a result, I have decided that Marvin doesn't really need Nas-Sys after all. I have now almost forgotten how boring it was waiting for the tape recorder all the time, and of course am much less likely to suffer Electricity Board repression now, thank goodness.

Richard Beal said in INMC News No 3, that programs written for T2 would run under T4. This is almost entirely true, but not if you try to run a program where the @ key has to be used during the program. No problem, use another key to solve that one. When all else had failed, I had a look at the instructions, where I found a diagram of the keyboard, with the @ key marked as the control key. What does it control, Richard? (Try it, or read the manual! - Ed).

Another addition to Marvin made recently is a 16K RAM board, naturally this means a buffer board and mother board too - then I fastened it all in a Vero-frame to stop it flapping in the breeze. The telly couldn't be put on the top, which is wide open, so I made a chipboard box and cured Marvin's agorophobia once and for all. Has anyone else noticed how difficult it is to solder chipboard?

Those of you who remember me mentioning Darkbug will be thinking T4 has put paid to that idea, perhaps. The answer is no, because the 16K RAM board just happens to have four sockets for 2708 EPROMs. Darkbug is going to be bigger and better than I had first intended, and will now be known as Darkbug 4K. Here is an extract, re-written for the RAM on the main board, so you can all use it!

0C60	C5	0E	7F	CD	6D	0C	0E	20	CD	6D	0C	C1	C9	F5	D5	E5
0C70	DD	E5	21	CA	0B	11	40	00	DD	21	2F	0F	06	30	71	23
0C80	CD	35	00	10	F9	21	F9	07	06	07	CD	9F	0C	10	FB	19
0C90	06	22	71	2B	CD	35	00	10	F9	DD	E1	E1	D1	F1	C9	C5
OCA0	DD	44	19	71	CD	35	00	10	F9	DD	25	DD	45	2B	71	CD
OCB0	35	00	10	F9	DD	2D	DD	44	ED	52	71	CD	35	00	10	F8
OCC0	DD	25	DD	45	23	71	CD	35	00	10	F9	DD	2D	C1	C9	

A few things to note; the subroutine starts at 0C60; if you have a Bits & PC's graphics board, put E0 at 0C62. You can also load register C with the character of your choice and call 0C6D. Fun, isn't it? (It seems to impress non-computer owners, too). Keen users of disassemblers will find some very interesting instructions mixed in with the well-known ones.

I must have been typing E 0C50^{NL} for over a year now, and nobody told me that the E command will^{NL} pick up three addresses, if they are there. If you type E 0C50 0C60 0C70^{NL} the program at 0C50 will be executed as normal, but all three^{NL} addresses are in the scratchpad RAM, available for use by the program. The 0C60 would be at ARG 2 (0COE/F) and 0C70 at ARG 3 (0C10/1). This would be useful if you had a program you wanted to run repeatedly, with varying parameters, and couldn't be bothered to put a proper keyboard input routine in, or hadn't enough memory to do so.

A NEW MAGAZINE WORTH TEN POUNDS!

The first edition of the Liverpool Software Gazette has arrived at Zilog Villas; it is produced by Microdigital, and is well worth investigation. For a start, they have included a listing of their own Nascom programming language, M5. This is normally sold for ten pounds, so you save nine pounds fifty on the first issue! There is also an article about running Sargon on a Nascom, which I expect will come in handy when I get around to translating all those funny TDL mnemonics. There was also a short article on the text oriented language, Pilot, which has given me an idea for what to write next to perplex poor Marvin. Obviously, a Nascom Pilot interpreter.... Yet another setback for the heap of half finished programs in my possession. (An example of this is the program suggested by Richard Beal, to test/convert programs intended for other machines; to tell the truth though, all I had done was draw a circle and write "start" in it....)

AN IDEA FOR A PROGRAM

The code that follows is used to draw a maze on the screen, the computer then has to try to solve the maze. The target is represented by a @ and the creature that has to solve the maze by a symbol I can't type - 07H. You know the one I mean...Key U,D,L or R to draw the maze, E to erase parts you don't want, F to mark the finish, and then S to start. The next instruction will be at 0CB0, only you have to write it.

0C60	EF	1E	00	21	E0	09	11	40	00	01	C0	FF	CD	3E	00	FE
0C70	55	20	06	09	36	2B	C3	6C	0C	FE	44	20	06	19	36	2B
0C80	C3	6C	0C	FE	4C	20	06	2B	36	2B	C3	6C	0C	FE	52	20
0C90	06	23	36	2B	C3	6C	0C	FE	45	20	05	36	20	C3	6C	0C
0CA0	FE	46	20	05	36	0F	C3	6C	0C	FE	53	C2	6C	0C	36	07
0CB0	Your turn.....															

If we are lucky INMC will make a competition of it. If I am unlucky I will have to judge it!

TRAILER FOR NEXT EPISODE

Will the Nascom 4 sack its designer? Can you run eight Z8000's off one crystal? Will Darkbug ever be finished? Is anyone reading this? When will the INMC library contain a Chess program?

FREE PROGS

On the next few pages are a selection of programs for virtually all combinations and permutations of Nascom equipment.

For minimum system Nascom 1 with Nasbug or B-Bug:

Go-Karting by J Butcher
Fruit Machine by Anon.
Hangman by D Hunt

For expanded Nascom 1 with Nasbug or B-Bug:

Piranha by J & E Long - adapted by N. Ray.

For expanded Nascom 1 with Tiny Basic:

Jackpot by D Bullock

For expanded Nascom 1 with Super Tiny Basic:

Lord by H Birkett

For Nascom 1 or 2 with 8K Basic:

Eliza by J Shrager, adapted by D Hunt.

Happy Computing!

> GO-KARTING BY J BUTCHER

>T C50 F98

```

0C50 00 00 00 00 00 00 00 00 5C
0C58 00 00 00 00 00 00 00 00 64
0C60 31 FF 0F 3E 1E CD 3B 01 10
0C68 21 8A 08 36 20 21 CD 0B 76
0C70 22 18 0C EF 09 09 47 4F 59
0C78 2D 4B 41 52 54 49 4E 47 C1
0C80 09 09 20 20 54 49 4D 45 0D
0C88 3A 2D 20 20 20 20 50 45 10
0C90 4E 41 4C 54 59 3A 2D 00 8B
0C98 2A 18 0C 36 20 3E 10 21 B7
0CA0 0A 08 06 30 77 23 10 FC 9A
0CA8 21 8A 0B 06 30 77 23 10 4A
0CB0 FC 11 40 00 01 00 0D 21 38
0CB8 4A 08 77 19 10 FC 01 00 B3
0CC0 0D 21 79 08 77 19 10 FC 17
0CC8 3E 16 06 09 21 29 0C 5E AB
0CD0 23 56 23 12 13 13 12 10 D2
0CD8 F6 3E 17 11 40 00 21 E3 84
0CE0 0A 77 19 77 19 77 C3 69 B9
0CE8 0F B2 0A EE 09 F2 08 A4 54
0CF0 09 D5 08 0E 09 0C 0A 9E 6D
0CF8 0A 98 09 B2 0A 00 00 00 6B
0D00 00 00 00 ED 0C 99 09 00 88
0D08 FE 0A 20 2A F5 D5 E5 3A 50
0D10 07 0D B7 20 1A 3C 32 07 97
0D18 0D 2A 03 0D 5E 23 56 23 66
0D20 22 03 0D 13 ED 53 05 0D C4
0D28 5E 23 56 EB 23 36 0A E1 3B
0D30 D1 F1 7C FE 00 C9 F5 E5 1C
0D38 3A 07 0D B7 28 09 AF 32 5C
0D40 07 0D 2A 05 0D 36 20 E1 D4
0D48 F1 18 E7 F5 E5 2A 05 0D 5B
0D50 7C FE 09 20 0A 7D FE 99 1E
0D58 20 05 00 00 C3 7C 0F E1 B9
0D60 F1 C9 00 00 00 21 0B 0B 5E
0D68 11 00 00 36 2A 06 78 CD 31
0D70 69 00 FE 4A 20 04 14 C3 29
0D78 90 0D FE 47 20 04 15 C3 63
0D80 90 0D FE 59 20 04 1C C3 84
0D88 90 0D FE 4E C2 90 0D 1D FA
0D90 CD 35 00 10 DA C5 D5 E5 08
0D98 EB 00 7C FE 00 28 0D FA 39
0DA0 88 0D CD EB 0D 25 18 04 68
0DA8 CD FA 0D 24 7D FE 00 28 50
0DB0 0D FA BA 0D 2D CD 0B 0E 9E
0DB8 18 04 CD 20 0E 2C 3A 50 92
0DC0 0C FE 16 0C 33 0E FE 17 0F
0DC8 0C 4B 0D FE 10 0C C8 0E A9
0DD0 CD 08 0D 28 03 C3 9A 0D 54
0DD8 7D FE 00 28 03 C3 9A 0D F5
0DE0 E1 EB D1 C1 CD F0 0E C3 D9
0DE8 68 0D 00 EB D5 11 50 0C 9A
0DF0 1A 77 23 7E 32 50 0C D1 8E
0DF8 EB C9 EB D5 11 50 0C 1A 00
0E00 77 2B 7E 32 50 0C D1 EB 78
0E08 C9 00 00 EB D5 11 50 0C 0C

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0E10 1A 77 11 40 00 ED 52 7E BD
0E18 32 50 0C D1 EB C9 00 00 39
0E20 EB D5 11 50 0C 1A 77 11 FD
0E28 40 00 19 7E 32 50 0C D1 6C
0E30 EB C9 00 F5 D5 E5 11 54 06
0E38 0C 21 56 0C CD 10 0F 11 D2
0E40 F0 0B 21 55 0C CD 20 0F C7
0E48 E1 D1 F1 C9 D5 E5 3A 58 0E
0E50 0C FE 00 28 04 FE 03 28 BD
0E58 23 F5 21 F4 0B 22 18 0C E4
0E60 EF 4C 41 50 3A 2D 00 2A CB
0E68 18 0C 36 20 F1 3C 21 58 96
0E70 0C 77 11 F9 0B CD 20 0F 12
0E78 C3 60 0F 00 E1 21 50 0C 16
0E80 06 0A 36 00 23 10 FB 21 23
0E88 DA 09 22 18 0C EF 50 72 70
0E90 65 73 73 20 22 2F 22 20 9C
0E98 6B 65 79 2C 00 2A 18 0C 69
0EA0 36 20 21 5A 0A 22 18 0C CF
0EA8 EF 74 6F 20 70 6C 61 79 5E
0EB0 20 61 67 61 69 6E 2E 00 0C
0EB8 2A 18 0C 36 20 CD 3E 00 75
0EC0 FE 2F 20 F9 C3 60 0C 00 43
0EC8 D5 E5 21 5A 09 22 18 0C 5A
0ED0 EF 59 4F 55 20 48 41 56 C9
0ED8 45 20 43 52 41 53 48 45 01
0EE0 44 21 00 2A 18 0C 36 20 F7
0EE8 C3 7C 0E 00 00 00 00 00 43
0EF0 C5 D5 E5 11 52 0C 21 56 63
0EF8 0C CD 10 0F 11 E3 0B 21 1E
0F00 53 0C CD 20 0F E1 D1 C1 DD
0F08 C9 00 00 00 00 00 00 00 E0
0F10 06 02 AF 1A 8E 27 12 23 DA
0F18 13 10 F8 C9 00 00 00 00 0B
0F20 ED 53 18 0C 06 02 CB F9 5F
0F28 7E CB 79 28 13 F5 E6 F0 FF
0F30 20 0B F1 E6 0F 20 0E 05 83
0F38 20 12 04 18 08 F1 CB B9 12
0F40 CD 44 02 13 08 CD 4D 02 9E
0F48 CB B9 18 01 04 2B 10 D8 0B
0F50 2A 18 0C 36 20 C9 00 00 CC
0F58 00 00 00 00 00 00 00 00 67
0F60 21 56 0C 3E 01 77 E1 D1 5A
0F68 C9 21 99 09 22 05 0D 21 58
0F70 07 0D 36 00 21 B3 0A 36 DD
0F78 0A C3 65 0D 21 E9 0C 22 FE
0F80 03 0D E1 F1 C3 4C 0E 00 8E
0F88 00 00 4E 00 50 45 4E 43 0B
0F90 49 4C 00 48 41 50 50 59 B6

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*
> CONTROL KEYS: Y G J N
> EXECUTE AT C60
> SPACE FROM C50 TO C60 MUST
> INITIALLY BE 'NOPS'.

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> FRUIT MACHINE BY ANON.

>
> T C50 FEF

0C50	F5	C5	D5	E5	3E	FF	BE	CA	95	0E30	10	F4	C9	00	06	0A	3E	3F	98
0C58	67	0C	5E	23	56	23	06	00	D7	0E38	32	8F	0C	21	76	0C	ED	5B	FE
0C60	4E	23	ED	B0	C3	56	0C	E1	80	0E40	90	0C	CD	50	0C	CD	6C	0E	5A
0C68	D1	C1	F1	C9	00	00	00	00	C0	0E48	EB	CD	50	0C	CD	6C	0E	EB	9C
0C70	00	15	22	00	A4	0E	1F	0B	8F	0E50	10	F0	C9	00	06	03	21	9F	F0
0C78	05	20	20	20	20	20	5F	0B	93	0E58	09	BE	C0	23	23	10	FA	21	5E
0C80	05	20	20	20	20	20	FF	00	30	0E60	79	0C	06	05	3E	24	77	23	FA
0C88	52	78	0E	C6	0C	D8	0C	06	28	0E68	10	FC	C9	00	C5	ED	4B	8E	D6
0C90	EA	0C	8A	0E	00	00	00	0F	39	0E70	0C	0D	20	FD	10	FB	C1	C9	49
0C98	04	06	07	0F	1A	06	00	1A	FE	0E78	5F	08	05	48	4F	4C	44	53	6C
0CA0	0F	04	0F	06	0F	0F	07	06	FF	0E80	9F	08	05	41	20	42	20	43	40
0CA8	00	18	1A	18	04	18	1A	18	4C	0E88	FF	00	5F	08	05	20	20	20	61
0CB0	06	18	00	04	18	06	0F	1A	25	0E90	20	20	9F	03	05	20	20	20	EA
0CB8	18	04	2A	00	06	0F	00	06	25	0E98	20	20	DF	03	05	20	20	20	32
0CC0	07	18	04	1A	2A	06	0E	0A	11	0EA0	20	20	FF	00	D9	08	12	46	29
0CC8	0D	53	50	41	43	45	20	54	C1	0EA8	52	55	49	54	20	4D	41	43	EB
0CD0	4F	20	53	50	49	4E	FF	00	84	0EB0	48	49	4E	45	20	47	41	4D	D7
0CD8	CE	0A	0D	20	20	20	20	20	59	0EB8	45	50	03	07	4A	41	43	4B	83
0CE0	20	20	20	20	20	20	20	20	EC	0EC0	50	4F	54	6A	08	08	31	30	9F
0CE8	FF	00	1F	0B	05	20	20	20	82	0EC8	20	50	45	52	20	53	50	49	E9
0CF0	20	20	5F	0B	05	20	20	20	0B	0ED0	4E	8F	03	09	50	41	59	53	09
0CF8	20	20	FF	00	00	00	00	00	43	0ED8	20	20	31	30	30	AA	08	0B	74
0D00	EF	1E	00	2A	74	0C	CD	50	E1	0EE0	52	41	4E	44	4F	4D	20	48	17
0D08	0C	21	79	0C	11	7A	0C	3E	9C	0EE8	4F	4C	44	D1	08	05	07	20	DA
0D10	20	77	01	04	00	ED	B0	11	67	0EF0	07	20	07	5D	09	09	FF	FF	99
0D18	85	0C	0E	05	ED	B8	CD	32	6D	0EF8	FF	FF	FF	FF	FF	FF	FF	2A	29
0D20	0D	FE	1E	CA	86	02	CD	90	05	0F00	09	0C	44	49	53	50	4C	41	E1
0D28	0D	CD	F4	0D	CD	34	0E	C3	E2	0F08	59	20	50	41	59	53	50	09	26
0D30	09	0D	AF	32	73	0C	2A	92	6F	0F10	07	33	20	41	4C	49	4B	45	DF
0D38	0C	CD	50	0C	3A	88	0C	47	8F	0F18	6B	09	0A	2D	20	20	20	06	45
0D40	CB	40	28	06	2A	89	0C	CD	12	0F20	20	20	20	31	30	90	09	07	90
0D48	50	0C	2A	8B	0C	CD	50	0C	9B	0F28	50	41	59	53	20	35	30	9D	96
0D50	CD	69	00	30	FB	2A	8D	0C	81	0F30	09	09	FF	FF	FF	FF	FF	FF	4B
0D58	CD	50	0C	FE	20	C8	FE	1E	90	0F38	FF	FF	FF	AB	09	0A	2D	20	4F
0D60	C8	CB	40	28	E5	11	73	0C	DD	0F40	06	20	06	20	20	20	32	30	3D
0D68	21	DF	03	FE	41	20	06	36	18	0F48	D1	09	05	00	20	00	20	00	76
0D70	0B	EB	CB	C6	EB	23	23	FE	33	0F50	EB	09	0A	06	20	06	20	06	AF
0D78	42	20	06	36	0B	EB	CB	CE	B2	0F58	20	20	20	33	30	11	0A	05	4A
0D80	EB	23	23	FE	43	20	05	36	5A	0F60	04	20	04	20	04	DD	09	09	AA
0D88	0B	EB	CB	D6	C3	4A	0D	00	46	0F68	FF	FF	FF	FF	FF	FF	FF	FF	6F
0D90	ED	5F	11	88	0C	12	00	00	A0	0F70	FF	51	0A	05	1A	20	1A	20	52
0D98	21	73	0C	3E	7F	CD	B2	0D	8E	0F78	1A	61	0A	01	FF	6B	0A	0A	3B
0DA0	1A	CD	B2	0D	CB	C6	1A	CD	CB	0F80	06	20	06	20	20	20	20	20	68
0DA8	B2	0D	CB	CE	1A	CD	82	0D	B3	0F88	32	30	A0	0A	03	FF	FF	FF	A3
0DB0	C9	00	F5	C5	D5	E5	47	4E	8F	0F90	AB	0A	0A	06	20	20	20	20	FE
0DB8	DD	21	96	0C	21	70	0C	11	13	0F98	20	20	20	31	30	DF	0A	05	56
0DC0	9F	09	CD	DC	0D	CD	DC	0D	E1	0FA0	FF	FF	FF	FF	FF	EB	0A	0A	A9
0DC8	CD	DC	0D	3E	06	32	8F	0C	9C	0FA8	2D	20	06	20	20	20	20	20	B7
0DD0	CD	6C	0E	E1	E5	10	E0	E1	BB	0FB0	31	30	2B	0A	0A	06	20	20	B2
0DD8	D1	C1	F1	C9	CB	41	20	05	62	0FB8	20	06	20	20	20	32	30	FF	AE
0DE0	ED	67	3C	ED	6F	7E	32	EB	74	0FC0	FF	FF	FF	FF	FF	FF	FF	FF	C7
0DE8	0D	DD	7E	22	12	23	13	13	DA	0FC8	FF	FF	FF	FF	FF	FF	FF	FF	CF
0DF0	CB	09	C9	00	3E	07	CD	54	00	0FD0	FF	FF	FF	FF	FF	FF	FF	FF	D7
0DF8	0E	FE	24	20	07	21	81	0C	0A	0FD8	FF	FF	FF	FF	FF	FF	FF	FF	DF
0E00	CD	62	0E	C9	3E	00	CD	54	73	0FE0	FF	FF	FF	FF	FF	FF	FF	FF	E7
0E08	0E	FE	24	C8	3E	04	CD	54	71	0FE8	FF	FF	00	04	80	00	07	0C	8C
0E10	0E	FE	24	C8	3E	1A	CD	54	8F										
0E18	0E	FE	24	C8	3E	06	06	03	6B										
0E20	21	9F	09	11	7A	0C	BE	20	6C										
0E28	05	EB	36	24	23	EB	23	23	D4										

> EXECUTE AT D00
> FOR USE WITH T2 AND T4 MONITORS

HANGMAN BY D. HUNT

> VOCABULARY FOR A 6 YEAR OLD

>TC66 FDA

0C66 48 41 4E 47 4D 41 4E 00 6C
0C6E 00 00 CD 6F 0D 21 D6 09 03
0C76 22 18 0C CD 94 0D 31 FF 66
0C7E 0F 06 07 21 50 0C 36 20 79
0C86 23 10 FB 06 0F 21 57 0C 59
0C8E 36 00 23 10 FB DD 21 66 62
0C96 0C FD 21 50 0C CD B0 0D B2
0C9E CD 69 00 30 F8 4E AF B9 BE
0CA6 2B 20 FA 23 23 11 5F 0C B9
0CAE 06 30 A9 7E B9 28 06 12 10
0CB6 13 04 23 18 F5 CD 6F 0D 52
0CBE 21 8A 0B 22 18 0C CD CE 61
0CC6 0D 21 9B 0B 78 77 CD 40 A2
0CCE 02 CD 40 02 78 D6 30 32 9B
0CD6 F5 0D 32 5C 0D CD FF 0D 58
0CDE CD F1 0D CD 69 00 30 FB 16
0CEE 2A 18 0C 23 23 77 CD 11 DB
0CEE 0E 3A 57 0C FE FF 20 0F D1
0CF6 CD 37 0E CD 40 02 CD 4E 3E
0CFE 0E 20 02 28 11 18 D6 CD 2E
0D06 60 0E CD 40 02 DD 7E 00 EB
0D0E FE 00 28 21 18 07 CD 40 4E
0D16 02 EF 59 6F 75 20 77 69 51
0D1E 6E 2E 20 00 CD 3E 0D CD 1C
0D26 94 0D 00 00 00 00 00 00 D4
0D2E 00 00 C3 7C 0C CD 40 02 35
0D36 EF 42 61 64 20 6C 75 63 9D
0D3E 6B 2C 20 74 68 65 20 77 DA
0D46 6F 72 64 20 77 61 73 00 03
0D4E CD 8E 0D 06 06 21 5F 0C 5B
0D56 CB BE 23 10 FB 06 03 21 44
0D5E A1 0B 11 5F 0C 1A 77 13 37
0D66 23 23 10 F9 CD 40 02 18 E9
0D6E B6 3E 1E CD 3B 01 CD 8E F1
0D76 0D 21 DA 0B 22 18 0C EF CB
0D7E 09 20 09 20 48 41 4E 47 FB
0D86 4D 41 4E 20 0D 20 00 00 C9
0D8E 2A 18 0C 36 20 C9 EF 50 47
0D96 72 65 73 73 20 61 6E 79 C8
0D9E 20 6B 65 79 20 74 6F 20 37
0DA6 70 6C 61 79 2E 00 CD 8E F2
0DAE 0D C9 21 6D 0F 11 D0 0F 1E
0DB6 ED 52 20 05 21 7B 0E 28 F9
0DBE 0A 2A B1 0D AF BE 28 03 55
0DC6 23 18 FA 23 22 B1 0D C9 D4
0DCE EF 4F 4B 2E 20 54 68 65 D3
0DD6 20 77 6F 72 64 20 68 61 B8
0DDE 73 20 20 20 6C 65 74 74 77
0DE6 65 72 73 2E 00 00 00 CD 38
0DEE 8E 0D C9 21 9C 0B 06 03 30
0DF6 36 5F 23 36 20 23 10 F8 3C
0DFE C9 EF 59 6F 75 72 20 67 F9
0E06 75 65 73 73 20 3F 00 CD 00
0E0E 8E 0D C9 F5 3E 00 32 57 3C
0E16 0C F1 06 06 21 5F 0C 11 CA
0E1E 58 0C BE 28 05 23 13 10 C1
0E26 F9 C9 F5 3E FF 32 57 0C BD
0E2E F1 12 06 90 77 D6 90 19 6A
0E36 EC 21 58 0C 06 06 11 9C 6E
0E3E 0B AF BE 20 06 23 13 13 33

0E46 10 F8 C9 7E 12 AF 18 F5 71
0E4E 21 58 0C 11 5F 0C AF BE CA
0E56 28 04 23 13 18 F9 62 6B A4
0E5E BE C9 DD 7E 00 FD 77 00 C2
0E66 DD 23 FD 23 21 AA 0B 06 70
0E6E 07 11 50 0C 1A 77 23 23 C7
0E76 13 10 F9 C9 00 43 41 54 41
0E7E 00 44 4F 47 00 48 41 54 43
0E86 00 42 41 54 00 41 4E 44 3E
0E8E 00 48 4F 54 00 4D 4F 55 78
0E96 53 45 00 41 50 50 4C 45 AE
0E9E 00 47 52 45 45 4E 00 4D 6A
0EA6 41 54 00 4C 4F 56 45 00 7F
0EAE 4F 52 41 4E 47 45 00 4C C4
0EB6 45 54 54 45 52 00 53 45 E0
0EBE 43 52 45 54 00 54 48 41 D7
0EC6 4E 4B 00 47 52 41 50 45 DC
0ECE 00 41 52 45 00 4E 55 54 AB
0ED6 00 52 41 42 42 49 54 00 98
0EDE 54 4F 50 00 56 41 4E 00 C4
0EE6 46 49 53 48 00 42 4C 4F FB
0EEE 43 4B 00 54 4F 59 00 42 C8
0EF6 41 44 00 47 4F 4F 44 00 B2
0EFE 54 41 50 00 54 48 41 54 22
0F06 00 54 48 45 4E 00 53 48 DF
0F0E 4F 50 00 43 55 54 00 43 EB
0F16 41 53 45 00 42 49 47 00 D0
0F1E 53 4D 41 4C 4C 00 42 55 3D
0F26 59 00 42 4F 58 00 51 55 1D
0F2E 45 45 4E 00 52 41 49 4E 3F
0F36 00 4F 4E 45 00 54 57 4F 21
0F3E 00 54 48 52 45 45 00 46 0B
0F46 4F 55 52 00 53 54 52 49 8D
0F4E 4E 47 00 53 57 49 4E 47 7A
0F56 00 48 4F 57 00 50 41 59 3D
0F5E 00 47 4F 00 4F 55 54 00 FB
0F66 46 55 4E 00 4F 4E 00 4C 47
0F6E 4F 54 00 53 49 54 00 54 64
0F76 41 4C 4B 00 4C 49 46 54 3C
0F7E 00 48 45 4C 50 00 4E 4F 53
0F86 54 00 50 45 4E 00 50 45 61
0F8E 4E 43 49 4C 00 48 41 50 9C
0F96 50 59 00 4C 4F 53 54 00 90
0F9E 4C 4F 4E 47 00 4C 49 54 C6
0FA6 54 4C 45 00 54 45 45 54 CC
0FAE 48 00 54 4F 4F 4B 00 4F 91
0FB6 57 4E 00 53 45 45 00 57 9E
0FBE 41 4C 4C 00 4E 41 49 4C CA
0FC6 00 4E 4F 00 4D 4F 4E 45 A1
0FCE 59 00 53 49 4C 56 45 52 0B
0FD6 00 00 00 00 C3 6A 0E 00 20

> EXECUTE AT C70

1318	3A	4D	15	32	32	4D	15	23	00	1408	13	10	FA	06	0E	21	4A	08	30
1320	23	3A	4C	15	3D	20	D6	3A	5E	14D0	77	0E	2F	23	0D	C2	D3	14	71
1328	4D	15	E1	C9	E5	21	34	15	96	14D8	77	0E	11	23	0D	C2	DB	14	63
1330	13	04	E5	21	35	15	8E	28	95	14E0	05	C2	D0	14	21	59	16	36	65
1338	05	CD	2A	15	13	F8	23	7E	0D	14E8	17	23	36	50	23	36	17	23	4F
1340	E1	C9	35	C0	3E	01	CD	B6	B4	14F0	36	00	23	01	E2	09	70	23	DC
1348	11	A7	C0	23	7E	FE	4F	C8	39	14F8	71	3E	07	02	16	15	23	23	35
1350	FE	58	CA	6F	14	E5	FE	49	32	1500	36	4F	CD	29	15	15	20	F6	D0
1358	CC	B2	13	E1	23	7E	2B	2B	D4	1508	21	E1	0B	06	14	11	54	15	BE
1360	77	CD	2A	15	16	00	5E	7B	E5	1510	1A	F6	00	77	13	23	10	F8	EA
1368	87	C8	B7	F2	70	13	16	FF	3B	1518	3E	FF	32	73	15	AF	32	75	7A
1370	23	46	23	4E	0A	FE	20	20	A5	1520	15	CD	38	10	C3	78	10	23	CD
1378	06	CD	2F	15	36	4F	C9	E5	D5	1528	23	23	23	23	23	C9	2B	2B	0B
1380	60	69	19	EB	E1	1A	FE	25	7E	1530	2B	2B	2B	C9	01	C0	01	02	53
1388	CA	03	14	FE	20	C2	15	14	35	1538	C1	02	04	01	04	08	41	08	6A
1390	2B	72	23	73	0A	12	3E	20	50	1540	10	40	10	20	3F	20	40	FF	73
1398	02	C9	C5	21	F6	F7	19	11	73	1548	40	30	8F	80	08	00	AD	F4	05
13A0	C0	FF	06	10	19	05	7C	B7	D9	1550	F9	08	00	00	53	43	4F	52	9D
13A8	F2	A4	13	58	7D	C6	40	57	96	1558	45	20	20	20	20	20	20	20	92
13B0	C1	C9	3E	64	CD	B6	11	47	CA	1560	30	30	20	20	20	20	20	20	95
13B8	3A	7C	15	88	D8	CD	2A	15	32	1568	50	48	41	53	45	20	20	20	4E
13C0	E5	56	23	5E	CD	3A	13	42	4B	1570	20	20	20	FF	2E	00	40	01	53
13C8	4B	3A	5D	16	57	3A	5E	16	D8	1578	02	60	30	0A	01	32	31	15	F2
13D0	5F	CD	3A	13	73	92	57	F2	0F	1580	16	40	01	02	60	30	0A	01	89
13D8	D8	13	2F	47	79	93	5F	B7	71	1588	32	3D	01	26	5C	30	14	04	D7
13E0	F2	E4	13	2F	B8	38	00	7B	83	1590	4B	3A	01	24	58	2C	1E	07	F8
13E8	B7	FA	F0	13	3E	40	19	0F	54	1598	64	37	01	22	54	2C	28	0A	1D
13F0	3E	C0	13	08	7A	B7	F2	FD	44	15A0	7D	34	02	20	50	28	32	0D	3F
13F8	13	3E	01	13	02	3E	FF	E1	95	15A8	96	31	02	1E	4C	28	3C	10	64
1400	2B	77	C9	CD	2F	15	7E	FE	0C	15B0	AF	2E	02	1C	48	24	46	13	35
1408	50	28	05	2B	CD	70	14	C9	DE	15B8	C8	2B	02	1A	44	24	50	16	AA
1410	AF	23	23	77	C9	CD	2E	15	69	15C0	E1	28	04	18	40	20	5A	19	CD
1418	CD	70	14	CD	91	14	CD	70	2C	15C8	FA	25	04	16	44	20	64	1C	FA
1420	14	21	01	00	09	CD	3E	14	92	15D0	FF	00	00	00	00	00	00	00	E4
1428	21	FF	FF	09	CD	3E	14	21	A4	15D8	00	00	00	00	00	00	00	00	ED
1430	40	00	09	CD	3E	14	21	C0	3D	15E0	00	00	00	00	00	00	00	00	F5
1438	FF	09	CD	3E	14	C9	7E	FE	B8	15E8	00	00	00	00	00	00	00	00	FD
1440	20	CA	55	14	FE	25	C8	FE	90	15F0	00	00	00	00	00	00	00	00	05
1448	2B	C8	E5	C5	EB	CD	91	14	56	15F8	00	00	00	00	00	00	00	00	0D
1450	CD	70	14	C1	E1	EB	C5	CD	D4	1600	86	02	4C	12	00	10	14	12	32
1458	7D	14	C1	7C	B7	C8	3A	7A	6D	1608	1C	12	20	12	18	12	24	12	DE
1460	15	77	23	36	98	CD	2A	15	8D	1610	28	12	30	12	2C	12	3F	12	31
1468	72	23	73	3E	2B	12	C9	2B	F3	1618	77	10	43	12	02	12	FF	22	3F
1470	23	36	4F	CD	2A	15	46	23	A1	1620	21	21	53	0D	59	38	4E	32	E9
1478	4E	3E	20	02	C9	21	60	16	9A	1628	47	34	4A	36	54	37	55	39	52
1480	06	15	7E	FE	4F	28	08	CD	77	1630	42	31	4D	33	43	35	50	2E	34
1488	27	15	10	F6	21	01	00	2B	2B	1638	41	30	FF	47	4F	2D	55	2D	03
1490	C9	21	59	16	06	16	CD	29	0F	1640	44	2D	4C	2D	52	2D	55	4C	60
1498	15	7E	23	BA	20	07	7E	B8	7C	1648	2D	55	52	2D	4C	4C	2D	4C	70
14A0	20	03	C3	2E	15	23	10	2E	FE	1650	52	2D	48	2D	50	2D	41	2D	45
14A8	21	00	00	C9	21	0A	08	06	DF	1658	FF	2F	4F	17	00	09	E2	3D	7A
14B0	10	0E	40	36	20	23	0D	20	C8										
14B8	FA	10	F6	21	0A	08	11	3A	9A										
14C0	08	06	30	3E	25	77	12	23	24										

* EXECUTE AT 1000

LIST

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25 P.↑
26 P. "      ◆◆◆◆◆◆◆◆◆◆ JACKPOT ◆◆◆◆◆◆◆◆◆◆"
27 P.;P.;P.;P.;P.;P.;P.
30 P." PLEASE ENTER THE AMOUNT OF MONEY THAT"
35 P.
40 INPUT" YOU WISH TO PLAY WITH MAX. (2000)"Z
41 P.
42 IF Z>2000 P.;P.;P.;GOTO 30
60 IF Z<0 GOTO 30
70 GOTO 90
80 P." PLEASE ENTER A POSITIVE NUMBER!"
85 FOR I=1 TO 1000;NEXT I;GOTO 27
90 P.
99 Y=0,N=1
100 INPUT" DO YOU WANT INSTRUCTIONS?(Y-N)"A
101 IF A=1 GOTO 370
102 P.↑
140 P." BANDIT! A SIMULATED SLOT MACHINE"
150 P." PLAY UNTIL YOU OR THE BANK ARE BUST!"
160 P." WINNING COMBINATIONS ARE AS FOLLOWS:-"
161 FOR I=1 TO 3000 ;NEXT I;P.↑
180 P." CHERRY CHERRY ANY PAYS 2:1
190 P." CHERRY BAR ANY PAYS 2:1
200 P." CHERRY CHERRY BAR PAYS 4:1
210 P." CHERRY CHERRY CHERRY PAYS 4:1
220 P." ORANGE ORANGE ORANGE PAYS 8:1
230 P." LEMON LEMON LEMON PAYS 16:1
240 P." GRAPE GRAPE GRAPE PAYS 32:1
250 P." MELON MELON MELON PAYS 64:1
260 P." PLUM PLUM PLUM PAYS 128:1
270 P." APPLE APPLE APPLE PAYS 256:1
280 P." BAR BAR BAR SUPRISE!
290 P." BELL BELL BELL TAKES IT ALL!
291 P.
292 INPUT " PRESS ANY KEY TO CONTINUE"X
293 P.↑
305 P." ◆◆◆ SOME FURTHER ADVICE!◆◆◆
306 P.;P.
310 P." (1) A -BAR- IS MILD!"
320 P." (2) YOUR STAKE WILL BE REDUCED BY 2◆ THE BET FOR EACH -GOOPS-!"
325 P." (3) A BELL ANYWHERE PAYS 10◆ THE BET!"
330 P.;P." IF YOU WANT TO STOP THE GAME"
340 P." PRESS 0,0 WHEN YOUR BETS ARE CALLED"
361 P.
365 INPUT " PRESS ANY KEY TO CONTINUE"X
366 P.↑
370 P.↑
371 LET B=(Z◆3)/2;LET P=Z
380 C=0;D=0
390 IF D<0 GOTO 510
400 IF B<=0 GOTO 1480
410 GOTO 480
420 INPUT " HOW MANY GOES DO YOU WANT?"C," AND HOW MUCH PER BET
"E
430 P.↑
440 IF (C=0)◆(E=0) GOTO 1670
450 IF E<=0 GOTO 420
460 D=0
470 GOTO 510
480 P.;P." THE BANDIT HAS",◆5,B,,"YOU HAVE",◆5,P
490 P.

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500 GOTO 420
510 P=P-E;B=B+E
520 D=D+1
530 GOSUB 740
540 F=@(2)
550 GOSUB 740
560 G=@(2)
570 GOSUB 740
580 H=@(2)
590 IF F#9 GOTO 600
595 F=G
600 IF G#9 GOTO 610
605 G=F
610 IF H#9 GOTO 620
615 H=G
620 IF (F#G)#B GOTO 640
630 G=H;F=G
640 IF F=G GOTO 660
650 GOTO 1180
660 IF G=H GOTO 720
665 IF F=2 GOTO 680
670 GOTO 1180
680 IF H=1 GOTO 1180
690 B=B-(2#E);P=P+(2#E)
700 P." MIN",, #3,2#E
710 GOTO 390
720 IF F=1 GOTO 1180
730 GOTO 1370
740 @(2)=0
750 @(1)=RND(10000)
760 IF @(1)>8800 GOTO 750
770 IF@(1)>8700 GOTO 870
780 IF@(1)>8500 GOTO 880
790 IF@(1)>8100 GOTO 890
800 IF@(1)>7500 GOTO 900
810 IF@(1)>6700 GOTO 910
820 IF@(1)>5700 GOTO 920
830 IF@(1)>4500 GOTO 930
840 IF@(1)>3100 GOTO 940
850 IF@(1)>100 GOTO 950
860 GOTO 960
870 @(2)=@(2)+1
880 @(2)=@(2)+1
890 @(2)=@(2)+1
900 @(2)=@(2)+1
910 @(2)=@(2)+1
920 @(2)=@(2)+1
930 @(2)=@(2)+1
940 @(2)=@(2)+1
950 @(2)=@(2)+1
960 @(2)=@(2)+1
970 IF@(2)<10 GOTO 990
980 P." BELL ",;RET.
990 IF@(2)<9 GOTO 1010
1000 P." BAR ",;RET.
1010 IF@(2)<8 GOTO 1030
1020 P." APPLE ",;RET.
1030 IF@(2)<7 GOTO 1050
1040 P." PLUM ",;RET.
1050 IF@(2)<6 GOTO 1070
1060 P." MELON ",;RET.
1070 IF@(2)<5 GOTO 1090
1080 P." GRAPE ",;RET.
1090 IF@(2)<4 GOTO 1110
1100 P." LEMON ",;RET.
1110 IF@(2)<3 GOTO 1130
1120 P." ORANGE",;RET.
1130 IF@(2)<2 GOTO 1150
1140 P." CHERRY",;RET.
1150 IF @(2)>=1 GOTO 1160
1160 P." OOPS! ",
1170 RET.
1180 J=0
1190 IF F=10 GOTO 1260
1191 IF G=10 GOTO 1260
1192 IF H=10 GOTO 1260
1200 IF F>1 GOTO 1210
1201 J=J+1
1210 IF G>1 GOTO 1220
1211 J=J+1
1220 IF H>1 GOTO 1230
1221 J=J+1
1230 IF J>0 GOTO 1290
1240 P.
1250 GOTO 1580
1260 P." WIN ",, #3,10#E
1270 B=B-(10#E);P=P+(10#E)
1280 GOTO 1580
1290 IF J>1 GOTO 1320
1300 B=B+(2#E);P=P-(2#E)
1310 P." LOSE",, #2,2#E;GOTO 1580
1320 IF J>2 GOTO 1350
1330 B=B+(4#E);P=P-(4#E)
1340 P." LOSE",, #2,4#E;GOTO 1580
1350 B=B+(8#E);P=P-(8#E)
1360 P." LOSE",, #3,8#E;GOTO 1580
1370 @(4)=2
1380 FOR @(3)=2 TO 10
1390 @(4)=@(4)#2
1400 IF F=@(3) GOTO 1420
1410 NEXT @(3)
1420 IF F=10 GOTO 1460
1425 IF F=9 GOTO 1530
1430 B=B-(@(4)#E);P=P+(@(4)#E)
1440 P." WIN",, #3,@(4)#E
1450 GOTO 1580
1460 P=P#2
1470 B=0
1480 P.
1490 F.I=1 TO 815;P.#1," #",;N.I
1495 P.;P." ***** JACKPOT ***** "
1500 P.;P.;P.;P." YOU BROKE THE BANK, YOU NOW HAVE",P
1510 P.,,," PLEASE LEAVE QUIETLY!"
1520 GOTO 1630
1530 R=(2#2)
1540 P=P+R;B=B-R
1550 P." ITS BONUS TIME ! ***** YOU WIN", #4,R," POUNDS *****"
1560 P.
1580 IF B<=0 GOTO 1490
1590 IF P<=0 GOTO 1620
1600 GOTO 390
1610 P.
1620 P." YOU ARE BUST!- NO CREDIT ALLOWED!"
1630 P.
1635 Y=0,N=1
1640 INPUT " DO YOU WANT TO PLAY AGAIN Y, OR N" T
1650 IF T=1 STOP
1660 GOTO 25
1670 S.
OK

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LIST

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10 P.3↑
20 M=20464,L=16
30 P."WHAT IS YOUR NAME?";MCI
40 P.3↑;M=M+15
50 MCL;IFK=32M=M-2,L=L-1;G.50
60 IFL=0G.10
70 M=20464
80 P."Lord ";MCP;P." .... YOUR ESTATE AWAITS."
90 P.;P."TO QUIT, SELL ALL YOUR LAND."
100 P.
110 L.P=25,Y=5,D=0,S=700,R=50,H=3,T=750,A=250,J=1,N=100
120 P."Lord ";MCP;P."; LAST YEAR"
122 P.#1;D;" SERFS STARVED AND ";Y;" CAME TO THE ESTATE."
124 IFJ>0G.140
130 P=P/2;P."THE PLAGUE KILLED HALF THE SERFS !!"
140 P."YOU NOW HAVE ";#1;P;" SERFS."
141 IF(P<10)+(P=Y)G.143
142 G.145
143 P.;P."          *****";P.;P."WHAT WAS LEFT OF THE SERFS HAV
MOVED ON (AFTER CUTTING YOUR THROAT)";G.500
145 P.#1;"HARVEST WAS ";T;" BUSHELS AT ";H;" BUSHELS PER ACRE.";P.#1;"RATS RUI
ED ";R;" BUSHELS, LEAVING ";S;" IN STORE."
150 P.;P."THE ESTATE OWNS ";#1;A;" ACRES, AND LAND IS WORTH"
152 V=17+R.(6)-1;P.#1;V;" BUSHELS PER ACRE."
155 IN."HOW MUCH LAND WILL YOU BUY?"I;IFI<0G.155
157 IFI=0G.190
160 J=I+V;IFJ<=3G.180
170 GOS.1000;G.155
180 S=S-J,A=A+I
185 G.240
190 IN."HOW MANY ACRES WILL YOU SELL?"I;IFI<0G.190
195 IFI=0G.240
200 IFI<A5.230
210 IFI=A5.500
220 GOS.1000;G.190
230 A=A-I,S=S+V+I
240 P.;P."Lord ";MCP;P."; HOW MANY BUSHELS"
242 IN."SHALL WE DISTRIBUTE AS FOOD?"I;IFI<0G.240
244 IFI<=3G.260
250 GOS.1000;G.240
260 S=S-I,D=P-I/20,Y=0;IFD>=0G.280
270 Y=-D/2,D=0
280 IN."HOW MANY ACRES SHALL WE PLANT?"I;IFI<0G.280
285 IFI>A6.300
290 J=I/2;IFJ<=3G.310
300 GOS.1000;G.280
310 IFI>10+P6.300
320 S=S-J
330 H=R.(5),T=H+I,R=R.((T+S)/14+1)
340 S=S-R+T,J=R.(10)-1,Y=Y+((5-H)+S)/600+1
350 IFY<=50G.360
355 Y=50
360 P=P+Y-D;P.;P."          *****";P.;G.120
499 S.
500 P.;IN."DO YOU WANT TO TRY AGAIN (Y OR N)?"I
505 P.
510 IFI=YP.3↑;G.70
520 IFI=NP."YOU WERE NO GOOD IN ANY CASE.";G.540
530 G.500
540 P.;IN."ANYBODY ELSE WANT TO TRY (Y OR N)?"I
550 IFI=NS.
560 IFI=YC.10
570 G.540
1000 P.;P."Lord ";MCP;P."; THINK AGAIN - YOU HAVE"
1010 P.#1;P;" SERFS, ";A;" ACRES, AND ";S;" BUSHELS.";P.;R.
PK

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LORD

By H Birkett

```
10 REM          *** ELIZA ***
20 REM
30 REM FROM THE PROGRAM BY THE SAME NAME BY
40 REM JEFF SHRAGER, PUBLISHED BY CREATIVE
50 REM COMPUTING. ADAPTED FOR NASCOM 1/2 BY
60 REM D. R. HUNT          OCTOBER 1979
70 REM
80 REM REQUIRES APPROX. 16K RAM SPACE.
90 REM SUITABLE FOR NASBUS T4 AND NAS-SYS.
100 REM
110 REM ** INITIALIZATION
120 REM
130 CLEAR 1500: DIM S(36), R(36), N(36)
140 REM
150 REM ** SET UP MACHINE CODE INPUT.
160 REM
170 RESTORE 2740: X1=31: X2=29
180 IF PEEK(1)=0 THEN RESTORE 2710: X1=13: X2=8
190 DOKE 4100,3200: FOR I9=3200 TO 3214 STEP 2
200 READ I8: DOKE I9, I8: NEXT
210 REM
220 REM ** CHANGE R FOR USE WITH A PRINTER
230 REM
240 A=47
250 WIDTH A: N1=36: N2=14: N3=112
260 RESTORE 2630
270 FOR X=1 TO N1: READ S(X), L: R(X)=S(X)
280 N(X)=S(X)+L-1: NEXT
290 CLS: PRINT "HELLO, I'M A NASCOM SPECIALLY TRAINED IN"
300 PRINT "PSYCHOANALYSIS. PLEASE TELL ME YOUR PROBLEMS."
310 REM
320 REM ** USER INPUT SECTION.
330 REM
340 PRINT: I$=" ": B1=0
350 B=USR(0): IF B<0 THEN 350
360 IF B=X2 AND I$=" " THEN 350
370 IF B1=175 AND B<>X2 AND B<>X1 THEN 350
380 PRINT CHR$(B): IF B=X1 THEN 430
390 IF B=X2 THEN 420
400 IF B>92 THEN B=B-32
410 I$=I$+CHR$(B): B1=B1+1: GOTO 350
420 I$=LEFT$(I$, LEN(I$)-1): B1=B1-1: GOTO 350
430 I$=I$+" ": IF PEEK(1) <> 0 THEN PRINT
440 REM
450 REM STRIP OUT SURPLUS PUNCTUATION.
460 REM
470 FOR L=1 TO LEN(I$)
480 IF MID$(I$, L, 1)="/" THEN I$=LEFT$(I$, L-1)+RIGHT$(I$, LEN(I$)-L): GOTO 480
490 IF MID$(I$, L, 1)=", " THEN I$=LEFT$(I$, L-1)+RIGHT$(I$, LEN(I$)-L): GOTO 490
500 IF MID$(I$, L, 1)=". " THEN I$=LEFT$(I$, L-1)+RIGHT$(I$, LEN(I$)-L): GOTO 500
510 IF MID$(I$, L, 1)="? " THEN I$=LEFT$(I$, L-1)+RIGHT$(I$, LEN(I$)-L): GOTO 510
520 IF L+4<=LEN(I$) THEN IF MID$(I$, L, 5)="SHUT " THEN PRINT "SHUT UP ....": END
530 NEXT
540 IF I$=P$ THEN PRINT "PLEASE DON'T REPEAT YOURSELF!": GOTO 310
550 REM
560 REM ** FIND KEY WORD IN I$
570 REM
580 RESTORE
590 S=0: FOR K=1 TO N1
```

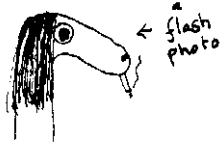
```
600 READ K$:IF S>0 THEN 640
610 FOR L=1 TO LEN(I$)-LEN(K$)+1
620 IF MID$(I$,L,LEN(K$))=K$ THEN S=K:T=L:F$=K$
630 NEXT L
640 NEXT K
650 IF S>0 THEN K=S:L=T:GOTO 680
660 K=36:GOTO 910: REM NO KEYWORDS
670 REM
680 REM ♦♦ TAKE RIGHT PART OF STRING AND
690 REM     CONJUGATE IT, USING LIST OF STRINGS
700 REM     TO BE SWAPPED.
710 REM
720 RESTORE 1410
730 C$=" "+RIGHT$(I$,LEN(I$)-LEN(F$)-L+1)+" "
740 FOR X=1 TO N2/2:READ S$,R$
750 FOR L=1 TO LEN(C$)
760 IF L+LEN(S$)>LEN(C$) THEN 800
770 IF MID$(C$,L,LEN(S$))<>S$ THEN 800
780 C$=LEFT$(C$,L-1)+R$+RIGHT$(C$,LEN(C$)-L-LEN(S$)+1)
790 L=L+LEN(R$):GOTO 830
800 IF L+LEN(R$)>LEN(C$) THEN 830
810 IF MID$(C$,L,LEN(R$))<>R$ THEN 830
820 C$=LEFT$(C$,L-1)+S$+RIGHT$(C$,LEN(C$)-L-LEN(R$)+1)
830 NEXT L
840 NEXT X
850 IF MID$(C$,2,1)=" " THEN C$=RIGHT$(C$,LEN(C$)-1)
860 FOR L=1 TO LEN(C$)
870 IF MID$(C$,L,1)<>"!" THEN 890
880 C$=LEFT$(C$,L-1)+RIGHT$(C$,LEN(C$)-L):GOTO 870
890 NEXT L
900 REM
910 REM ♦♦ NOW USING KEYWORD NUMBER (K),
920 REM     GET THE REPLY.
930 REM
940 RESTORE 1480
950 FOR X=1 TO R(K):READ F$:NEXT
960 R(K)=R(K)+1:IF R(K)>N(K) THEN R(K)=S(K)
970 REM
980 REM ♦♦ CONVERT OUTPUT STRING TO LOWER CASE.
990 REM
1000 IF RIGHT$(F$,1)<>"♦" THEN Z$=F$:GOTO 1020
1010 Z$=LEFT$(F$,LEN(F$)-1)+C$
1020 Z1$="":FOR L=1 TO LEN(Z$)
1030 Z=ASC(MID$(Z$,L,1)):IF L=1 THEN 1070
1040 IF MID$(Z$,L,3)<>" I " THEN 1060
1050 Z1$=Z1$+" I ":L=L+2:GOTO 1080
1060 IF Z>=65 THEN Z=Z+32
1070 Z1$=Z1$+CHR$(Z)
1080 NEXT
1090 Z2$=RIGHT$(Z$,1)
1100 IF Z2$="."OR Z2$="?"OR Z2$="!" THEN 1170
1110 FOR L=LEN(Z1$) TO 1 STEP -1
1120 IF MID$(Z1$,L,1)=" " THEN NEXT
1130 Z1$=LEFT$(Z1$,L)+" ?"
1140 REM
1150 REM ♦♦ JUSTIFY TO WIDTH HELD IN A
1160 REM
1170 IF LEN(Z1$)<A THEN PRINT Z1$:GOTO 1230
1180 Z$=LEFT$(Z1$,A):FOR J=LEN(Z$) TO 1 STEP -1
1190 IF MID$(Z$,J,1)=" " THEN 1210
1200 NEXT
1210 Z$=LEFT$(Z$,J):PRINT Z$
1220 Z1$=RIGHT$(Z1$,LEN(Z1$)-J):GOTO 1170
1230 P$=I$:GOTO 310
```

1240 REM
1250 REM ♦♦ PROGRAM DATA FOLLOWS
1260 REM
1270 REM ♦♦ KEYWORDS
1280 REM
1290 DATA "CAN YOU", "CAN I", "YOU ARE", "YOU'RE"
1300 DATA "I DON'T", "I FEEL", "WHY DON'T YOU"
1310 DATA "WHY CAN'T I", "ARE YOU", "I CAN'T"
1320 DATA "I AM", "I'M ", "YOU ", "I WANT", "WHAT"
1330 DATA "HOW", "WHO", "WHERE", "WHEN", "WHY"
1340 DATA "NAME", "CAUSE", "SORRY", "DREAM"
1350 DATA "HELLO", "HI ", "MAYBE", " NO", "YOUR"
1360 DATA "ALWAYS", "THINK", "ALIKE", "YES"
1370 DATA "FRIEND", "COMPUTER", "NOKEYFOUND"
1380 REM
1390 REM ♦♦ STRINGS DATA FOR CONJUGATIONS
1400 REM
1410 DATA " ARE ", " AM ", " WERE ", " WAS "
1420 DATA " YOU ", " I ", " YOUR ", " MY ", " IVE "
1430 DATA " YOUVE ", " IM ", " YOU'RE ", " ME "
1440 DATA " !YOU "
1450 REM
1460 REM ♦♦ REPLIES
1470 REM
1480 DATA "DON'T YOU BELIEVE THAT I CAN♦"
1490 DATA "PERHAPS YOU WOULD LIKE TO BE ABLE TO♦"
1500 DATA "YOU WANT ME TO BE ABLE TO♦"
1510 DATA "PERHAPS YOU DON'T WANT TO♦"
1520 DATA "DO YOU WANT TO BE ABLE TO♦"
1530 DATA "WHAT MAKES YOU THINK I AM♦"
1540 DATA "DOES IT PLEASE YOU TO THINK I AM♦"
1550 DATA "PERHAPS YOU WOULD LIKE TO BE"
1560 DATA "DO YOU SOMETIMES WISH YOU WERE♦"
1570 DATA "DON'T YOU REALLY♦"
1580 DATA "WHY DON'T YOU♦"
1590 DATA "DO YOU WISH TO BE ABLE TO♦"
1600 DATA "DOES THAT TROUBLE YOU ?"
1610 DATA "TELL ME MORE ABOUT SUCH FEELINGS."
1620 DATA "DO YOU OFTEN FEEL♦"
1630 DATA "DO YOU ENJOY FEELING♦"
1640 DATA "DO YOU REALLY BELIEVE I DON'T♦"
1650 DATA "PERHAPS IN GOOD TIME I WILL♦"
1660 DATA "DO YOU WANT ME TO♦"
1670 DATA "DO YOU THINK YOU SHOULD BE ABLE TO♦"
1680 DATA "WHY CAN'T YOU♦"
1690 DATA "WHY ARE YOU INTERESTED IN WHETHER OR NOT I AM♦"
1700 DATA "WOULD YOU PREFER IF I WERE NOT♦"
1710 DATA "PERHAPS IN YOUR FANTASIES I AM♦"
1720 DATA "HOW DO YOU KNOW YOU CAN'T♦"
1730 DATA "HAVE YOU TRIED ?"
1740 DATA "PERHAPS YOU CAN NOW♦"
1750 DATA "DID YOU COME TO ME BECAUSE YOU ARE♦"
1760 DATA "HOW LONG HAVE YOU BEEN♦"
1770 DATA "DO YOU BELIEVE IT IS NORMAL TO BE♦"
1780 DATA "DO YOU ENJOY BEING♦"
1790 DATA "WE WERE DISCUSSING YOU .. NOT ME."
1800 DATA "OH, I♦"
1810 DATA "YOU'RE NOT REALLY TALKING ABOUT ME, ARE YOU ?"
1820 DATA "WHAT WOULD IT MEAN TO YOU IF I GOT♦"
1830 DATA "WHY DO YOU WANT♦"
1840 DATA "SUPPOSE YOU SOON GOT♦"
1850 DATA "WHAT IF YOU NEVER GOT♦"
1860 DATA "I SOMETIMES ALSO WANT♦"
1870 DATA "WHY DO YOU ASK ?"
1880 DATA "DOES THAT QUESTION INTEREST YOU ?"
1890 DATA "WHAT ANSWER WOULD PLEASE YOU THE MOST ?"

1900 DATA"WHAT DO YOU THINK ?"
1910 DATA"ARE SUCH QUESTIONS ON YOUR MIND OFTEN ?"
1920 DATA"WHAT IS IT THAT YOU REALLY WANT TO KNOW ?"
1930 DATA"HAVE YOU ASKED ANYONE ELSE ?"
1940 DATA"HAVE YOU ASKED SUCH QUESTIONS BEFORE ?"
1950 DATA"WHAT ELSE COMES TO MIND WHEN YOU ASK THAT ?"
1960 DATA" NAMES DON'T INTEREST ME."
1970 DATA" I DON'T CARE ABOUT NAMES .. PLEASE GO ON."
1980 DATA" IS THAT THE REAL REASON ?"
1990 DATA" DON'T ANY OTHER REASONS COME TO MIND ?"
2000 DATA" DOES THAT REASON EXPLAIN ANTHING ELSE ?"
2010 DATA" WHAT OTHER REASONS MIGHT THERE BE ?"
2020 DATA" PLEASE DON'T APOLOGISE !"
2030 DATA" APOLOGIES ARE NOT NECESSARY. "
2040 DATA" WHAT FEELINGS DO YOU HAVE WHEN YOU APOLOGISE ?"
2050 DATA" DON'T BE SO SENSITIVE !"
2060 DATA" WHAT DOES THAT DREAM SUGGEST TO YOU ?"
2070 DATA" DO YOU DREAM OFTEN ?"
2080 DATA" WHAT PERSONS APPEAR IN YOUR DREAMS ?"
2090 DATA" ARE YOU DISTURBED BY YOUR DREAMS ?"
2100 DATA" HOW DO YOU DO .. PLEASE STATE YOUR PROBLEM. "
2110 DATA" YOU DON'T SEEM QUITE CERTAIN. "
2120 DATA" WHY THE UNCERTAIN TONE ?"
2130 DATA" CAN'T YOU BE MORE POSITIVE ?"
2140 DATA" YOU AREN'T SURE ?"
2150 DATA" DON'T YOU KNOW ?"
2160 DATA" ARE YOU SAYING NO JUST TO BE NEGATIVE ?"
2170 DATA" YOU ARE BEING A BIT NEGATIVE. "
2180 DATA" WHY NOT ?"
2190 DATA" ARE YOU SURE ?"
2200 DATA" WHY NO ?"
2210 DATA" WHY ARE YOU CONCERNED ABOUT MY♦"
2220 DATA" WHAT ABOUT YOUR♦"
2230 DATA" CAN YOU THINK OF A SPECIFIC EXAMPLE ?"
2240 DATA" WHEN ?"
2250 DATA" WHAT ARE YOU THINKING OF ?"
2260 DATA" REALLY, ALWAYS ?"
2270 DATA" DO YOU REALLY THINK SO ?"
2280 DATA" BUT YOU ARE NOT SURE YOU♦"
2290 DATA" DO YOU DOUBT YOU♦"
2300 DATA" IN WHAT WAY ?"
2310 DATA" WHAT RESEMBLANCE DO YOU SEE ?"
2320 DATA" WHAT DOES THE SIMILARITY SUGGEST TO YOU ?"
2330 DATA" WHAT OTHER CONNECTIONS DO YOU SEE ?"
2340 DATA" COULD THERE REALLY BE SOME CONNECTION ?"
2350 DATA" HOW ?"
2360 DATA" YOU SEEM QUITE POSITIVE. "
2370 DATA" ARE YOU SURE ?"
2380 DATA" I SEE, TELL ME MORE. "
2390 DATA" I UNDERSTAND. "
2400 DATA" WHY DO YOU BRING UP THE TOPIC OF FRIENDS ?"
2410 DATA" DO YOUR FRIENDS WORRY YOU ?"
2420 DATA" DO YOUR FRIEND PICK ON YOU ?"
2430 DATA" ARE YOU SURE YOU HAVE ANY FRIENDS ?"
2440 DATA" DO YOU IMPOSE ON YOUR FRIENDS ?"
2450 DATA" PERHAPS YOUR LOVE FOR YOUR FRIENDS WORRIES YOU ?"
2460 DATA" DO COMPUTERS WORRY YOU ?"
2470 DATA" ARE YOU TALKING ABOUT ME IN PARTICULAR ?"
2480 DATA" ARE YOU FRIGHTENED BY MACHINES ?"
2490 DATA" WHY DO YOU MENTION COMPUTERS ?"
2500 DATA" WHAT DO YOU THINK MACHINES HAVE TO DO WITH YOUR PROBLEM ?"
2510 DATA" DON'T YOU THINK COMPUTERS CAN HELP PEOPLE ?"
2520 DATA" WHAT IS IT ABOUT MACHINES THAT WORRIES YOU ?"
2530 DATA" DON'T YOU HAVE ANY INTERESTING PSYCHOLOGICAL PROBLEMS ?"
2540 DATA" WHAT DOES THAT SUGGEST TO YOU ?"

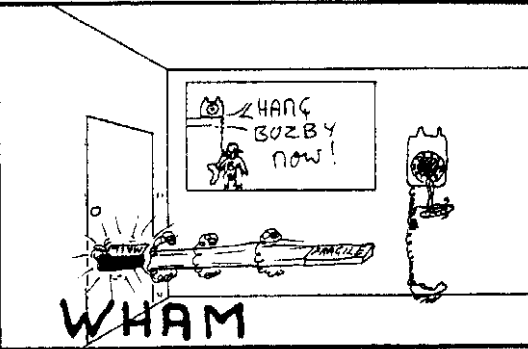
THE PERSECUTION OF THE INTELLECTUAL

SAGA THREE: hell hath no fury

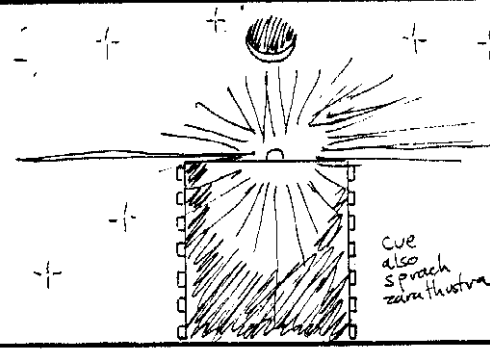


starring lawrence the long-haired weirdo

ONE MORNING A PARCEL IS DELIVERED BY THE FRIENDLY GPO.



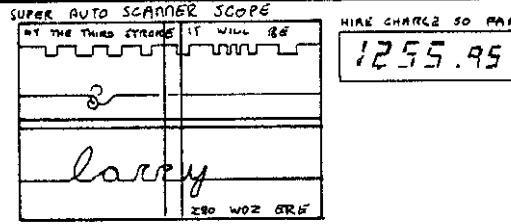
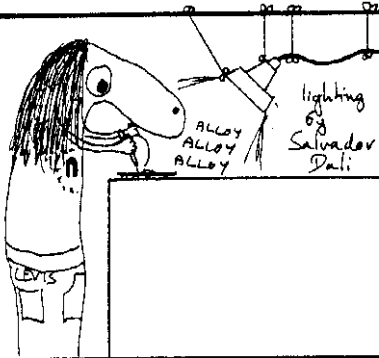
IT IS A FREE SAMPLE OF A REMARKABLE ONE-CHIP SPEECH SYNTHESIZER



WHICH LAWRENCE RAPIDLY ASSEMBLES

IT CHECKS OUT

SO



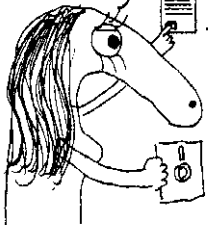
- MICROPROCESSOR CONTROLLED
- PRESS POWER SWITCH & STAND BACK

THREE WEEKS LATER:

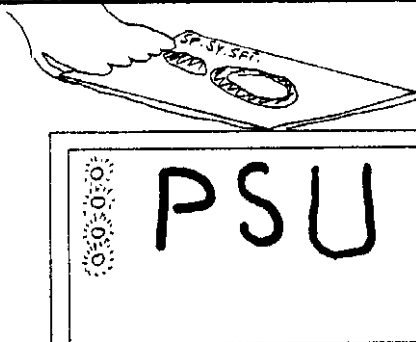
HELOISE PUTS DOWN THE DISC AND THEY BOTH GO OUT.

LATER

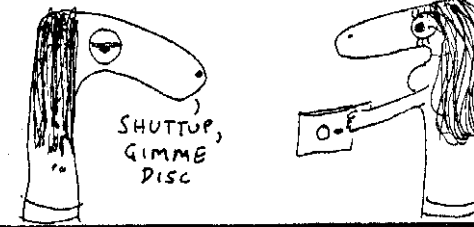
I HAVE FINISHED; I AM GOING TO YOGA; I HAVE NOT BEEN FOR A MONTH



OK. I'M GOING OUT TO GET SMASHED



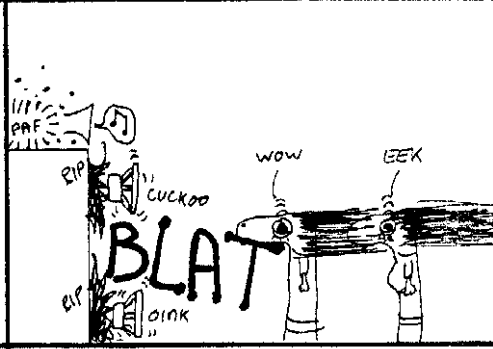
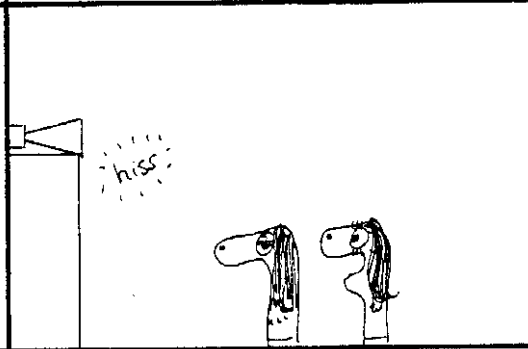
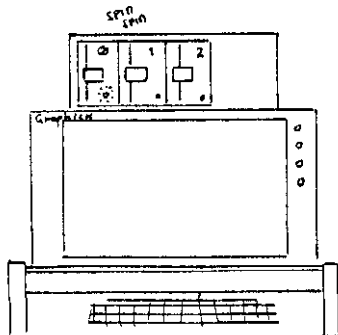
WHAT A MESS YOU ARE IN, ETC.



THEY RUN THE SOFTWARE INTO LAWRENCE'S NASCOM, NOW CONNECTED

TO HIS HI-FI.

RESULTS ARE NOT AS EXPECTED

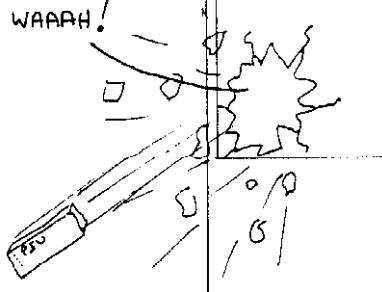
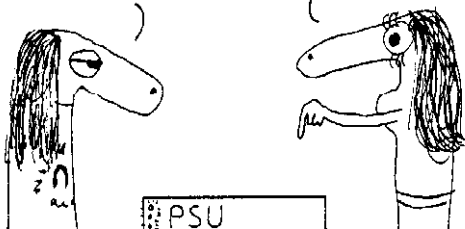


INVESTIGATION

REVEALS THE CAUSE.

WHERE WAS THE DISC?

HERE



Discs and tapes are designed by their fiendish manufacturers to be sensitive to the smallest of magnetic fields, like that of the glorious NM power supply; try not to play into the reactionaries' hands by leaving tapes, discs etc where evil magnetic fields can thus defile weeks' work.

