

The Newsletter of the National Dragon Users Group

DRAGON



UPDATE

\*\*\*\*\*  
ISSUE 37.

SEPTEMBER 1987.

\*\*\*\*\*  
Chairman: Paul Grade. 6, Navarino Road, Worthing, Sussex. Phone: 0903-207585.

S/W.Ed: J. Barry Caruth. 132, Donaghadee Road, Bangor, Co. Down, N. Ireland BT20-4NH

Editor: Tim Lomas, 211a, Amesbury Avenue, London SW2. Phone: 01-674-0327.

\*\*\*\*\*

The Gaffer's Bit . . . . .

Further to my complaints in last month's "Bit" about the shortage of volunteer assistants in this area, and my appeal for the loan of a suitable unpaid workforce, several members have made propositions that I have regretfully had to refuse . . . . . I've been offered assorted wives, husbands, mothers-in-law, and one kindly member even offered to pay me to take his entire family provided it was on a permanent basis! However, I still haven't solved the problem, so keep the offers coming in!! there HAS to be a suitable one sooner or later!.

Now it's complaints time again! Some time ago Philip Beed wrote to Update and Dragon User saying that he intended organising a Dragon show / convention in the Southampton area if enough people were interested to make it a viable proposition, and asked that those interested should write and let him know. He got enough replies to convince him that the only possible venue would be a telephone kiosk!! What's the matter with you lot? You all seem to want more shows, but you can't even take the trouble to show a little interest when someone offers to organise one! It's no use waiting for "someone else" to do everything for you and then whining because they don't! if you want the Dragon scene to stay alive YOU have to do your share too. A lot of you appear to imagine that somewhere there is a team of dedicated lunatics ready and willing to expend large sums of money and vast amounts of time simply to keep YOU happy. Guess what?, you're wrong! People can't afford to organise shows unless they KNOW there will be enough owners interested to ensure that they don't lose money they can't afford; people can't afford to run groups or magazines unless YOU subscribe; nor can they afford to produce software and hardware for your machine unless they KNOW there is a guaranteed market for it, and in all cases they can only know if YOU do something about it! It's no good whining that "there's nothing available for the Dragon" . . . . . DO something to show that you are interested and there WILL be!.

OK, end of lecture, now read on . . . . .

THE EDITORIAL BIT . . . . .

As some of you might have noticed if you read the last issue I'm going to be resigning this post in the near future due to lack of time. I shan't be leaving the Dragon scene, it's just that I'm heavily into Play by Mail gaming as those of you who've been reading for some time may remember. I've just finished testing my new PBM game which I'm about to launch commercially and if it's a success (which it will be, hopefully) it's going to take up a lot of time. This being so, I told Paul some time ago that I'd have to pass this up, to give him time to find another editor before I resigned. Now we come onto a little moan, I'm suffering from the usual summer lack of articles, that's why this issue is so unbalanced. I've got quite a few bits from a certain few contributors but unless you want the whole newsletter written by two or three people I need something from the rest of you. It'd be nice to be able to pass it on to Barry with enough material to get an issue together! This job's demoralising enough at times without him having to wonder what the hell he's going to put into his first issue!! So, get yourselves together after your hols and get those articles flooding in, it's be nice to your next editor month! T.L.

## 2

### Pascal for Beginners (2) .. G. Coxhead.

Last time I gave you a basic introduction to Pascal. Now we look at the general features. Don't worry if you don't understand it all ... it will all become clear later. Any programming problem can be solved with 3 control structures, Sequence, Selection, and Iteration. A= Sequence - executing one statement after another in ascending order. This is the simplest control structure, and it cannot be further enhanced, even in Pascal. Selection, IF..THEN.. ELSE or CASE. I'm sure most of you are familiar with the IF..THEN construct. The CASE statement is like a series of IF....THEN statements. CASE..OF means test the statement between CASE and OF and depending on its value execute the appropriate statement(s). ie. CASE print OF 1: Writein ('Hello'); 2: Writein ('Goodbye'); etc. If print=1 then HELLO will be printed, if print=2 then GOODBYE, etc. The CASE statement is terminated by END. Iteration, WHILE..DO..REPEAT..UNTIL..FOR..DO etc. While I'm sure you all know about FOR NEXT in Basic, I shan't go into detail of these just now.

B - Partitioning a complex problem into simpler components makes each component more manageable, easier to code, and simplifies the design and testing of the components. As each 'module' is built up it can be tested separately, allowing a complex program to be built up from previously correct modules. Pascal provides procedures and functions to allow a program to be partitioned in this way, similar to sub-routines but far more useful.

C - The available data types or variables are character (chr), integer, real and Boolean, whereas in Basic we have only string and numeric. This has the advantage of trapping any logic errors, once a variable has been declared as one type it cannot be used as another type.

D - Program readability is improved by the provision of long identifier names rather than just the first two characters being significant as in Dragon Basic. Flexible formatting is allowed (ie. indenting) which aids readability. Comments may be inserted anywhere within a program surrounded by curly brackets (called braces) or (\*..\*).

Finally this time I'll be giving you 2 programs which perform the same task, one Basic, the other Pascal. Both can be typed and run. I'll leave you to examine them, next time I'll go through them and explain some of the rules and syntax.

#### BASIC.

```
10 'FIND THE AVERAGE OF N NUMBERS
20 'N= Number of items
30 'V= Present item being read
40 INPUT N
50 SUM=0
60 FOR I=1 to N
70 INPUT V
80 SUM=SUM+V

100 NEXT I
110 AV=SUM/N
120 PRINT "THE AVERAGE IS ";AV
130 END
```

#### PASCAL.

```
PROGRAM average (INPUT,OUTPUT)
(* Finds the average of N numbers*)
(* N=Number of items V=Present item*)

VAR I,N           :Integer;
Sum,V,Average    :Real;

BEGIN
  READ (n);
  I :=1; Sum :=0;
  WHILE I <= N DO
  BEGIN
    READ (v);
    Sum :=Sum+V;
    I := I + 1;
  END
  Average :=Sum/N;
  WRITELN ('The average is ',Average);
END
```

Just sitting back and reading will get you nowhere. If you really want to learn then you must have a go yourself, make your mistakes and remember them. You should now be able to print on the low res screen, so let's have a look at keyboard input. There is a ROM routine exec'd at &H8006 which will scan the keyboard, so in your program you'll have a JMP \$8006. This routine will return the last key pressed in register A which we have been using. To find out which key has been pressed we CMPA (n) where n is the ASCII code of the letter required. If a jump is made to &H800C, the key pressed will be printed on the screen. Supposing that you want an answer to a menu which gives the choices 1-4. The ASCII for '1' is 49d or 31h, '2' is 32h, '3' is 33h and '4' is 34h. Having got your menu on screen, you JMP \$8006 to get the keypress and JMP \$800C to print it on screen. Then you have to find out if it was one of those required, if not then you Branch Always (BRA) to the JMP \$8006 instruction. If it was one of the ones required, you have to find out which one and branch to the appropriate routine. This means that the A register must be compared in turn with the ASCII values 1-4 and a branch or jump made if equal (BEQ). Using labels this routine would be:-

500 @SCANKEY	JMP \$8006	560	CMPA #\$33
510	JMP \$800C	570	BEQ @ROUTINE3
520	CMPA #\$31	580	CMPA #\$34
530	BEQ @ROUTINE1	590	BEQ @ROUTINE4
540	CMPA #\$32	600	BRA @SCANKEY
550	BEQ @ROUTINE2		

Now you know how to detect a keypress you can also detect the arrow keys; for the right arrow the A register is compared with \$9, the left arrow \$8, the up arrow \$7E and the down arrow \$A. We will deal with the joysticks later. Let's have a look at high resolution. If you have the back numbers of Update you can get most of this information from John Martin's articles on M/C graphics for beginners << early 1986 ... TL>>, if you haven't perhaps they could be repeated if there's enough demand. This bit deals with the storing of graphics for use in your M/C routine. The first thing you would have to do is to draw your background screen, using one of the drawing programs and save it to disc or tape as machine code using the normal parameters. If you use an autorun Basic loader for your program, you can then load this screen from disc/tape while displaying the low res screen. The second alternative is to make a short Basic program to load the design, GET it as G with a DIM of about 1500 and parameters (0,0)-(255,191). This will put it as M/C in memory directly above the Basic program you're using. To find the end of Basic PRINT PEEK(27)\*256+PEEK(28). The end of the graphics code will be this value plus 6144 in PMODE 3 or 4. You can then save this to tape or disc using those addresses and include the data in your M/C routine. The third way in which you can save several designs is to write a short Basic routine to PEEK each byte of the graphics and POKE it into higher memory; ie. FOR I=1536 TO 7679: A=PEEK(I): POKE I+20000,A: NEXT, if you are using cassettes would put the graphics data at 31536 to 27679 which can then be saved with CSAVEM'',21526,27679,21536 for inclusion in your program. To get your program to put it on the screen pages again you would use LDY #\$5420 LDX #\$0600 LDA ,Y+ STA ,X+ not forgetting to CMPY with \$6C1F to stop the routine! In this way you can store several predesigned pages, especially in the lower PMODEs. The fourth way if you are using the 2 colour screen is to detect only those bytes which are not background, which will either be FF or 00. Your Basic to do this would have to print the address of each byte which holds a different value and the value it holds to the printer. Using this list you would have to enter it all as FCB data within your M/C program. You then use one of the registers to read the data, and another to hold the address, storing the data there. A bit of a chore but it saves memory in a long program.

#####Correction to part 11. Line 110 should have read 110 LDY # DATA

RE-INK YOUR RIBBONS . . . . . P. BEED

Now you've all cut your disc costs in half by making your discs flip sided you might like to know how to save a bit more money on printer ribbons. With printer ribbons costing around 5.00, when mine went dry I decided to have it re-inked rather than replace it, in fact as I had to send it away and didn't want to be without my printer, I bought a second one but of course if I continue to re-ink I won't need to purchase another one. The company I used was ALADDINK (4 Hurker Cres., Eyemouth, Berwickshire, Scotland. TD14 5AP) who regularly advertise in the computer press. The ribbon was returned to me in a little over a week and after running off a few sheets of rolling ASCII on scrap paper as advised to remove splash from the newly inked ribbon the print is back to its original density when it was new. In addition an advice sheet which says to send ribbons for re-inking before they run completely dry as at this point they start to fray and their life will be shortened. Cost was 1.50 as an introductory offer and I was quoted a future cost of 2.00 each, well under half the cost of a new ribbon. If you can provide proof (a current advert) of someone reinking at a lower cost they undertake to reink at 10p less again, if you can show that reinking costs more than half the price of a new ribbon, they'll reink at half that price, you can't lose. Also there is a discount for more than one ribbon of the same type as the machine doesn't need resetting for each one which can produce a saving if you have several old ribbons from friends with the same printer. Colour reinking and colour change is available which could be useful for anyone wanting coloured ribbons when they are not commonly available for your machine. My opinion is that it certainly represents a worthwhile saving and reinked ribbons are equal in quality to new ones. Note that only fabric in plastic cassettes can be reinked, not carbon film and spool or metal cassettes. Tell them you heard about them through the group and maybe we can get an NDUG discount.

KEEPING THE DRAGON ALIVE . . R.A. DAVIS

Micro Mart, which is a fortnightly publication costing 50p, full of small ads from people who want to sell or buy computers, peripherals etc., also includes some articles of general interest. They don't normally pay for these, relying on the enthusiast who has something to say to the majority of micro owners. Taking Paul's exhortations to publicise the Dragon to heart and at the same time the possibility of getting one of my favourite bees out of my bonnet, I sent them a short piece, mentioning the advantages of the Dragon 'en passant'. To my amazement it appeared in the next issue, with a plea for more of the same from others. Ensuing correspondence made it quite plain that they needed more and here is YOUR opportunity to help our favourite micro! (they offer a free subscription in return). Articles should not exceed 1000 words (approx), and you are more likely to see it appear if you appeal to a wide audience, not merely to Dragon users, so don't go 'Over the top' when referring to our micro. In response to their request I have sent in one more, about the impact which the micro has made on amateur radio, my other hobby, for which the Dragon just happens to be one of the most useful micros! You could use the same theme about your own hobby perhaps or general experiences with software, clubs, bulletin boards, newsletters, 'repairers' etc. There MUST be something you could write a chatty article about BUT steer well clear of anything remotely libellous! You can get Micro Mart at the major newsagents or like myself, order through your local shop or by direct subscription. Their address: Fiona Nicol, Micro-Mart (UK) Ltd., 47A Warwick Rd, Olton, Solihull, West Midlands. B92 7HS. She'll be glad to hear from you.



WOT! NO UPDATE?! ..... P. BEED

I have some bad news for all NDUG members, I have seen into the future and can foresee a month when you will no longer receive Update! The only way you'll know is that as the end of the month nears it doesn't arrive, the longer you wait, the more it doesn't arrive! Why is this you ask, is Paul going to flee the country with the group funds? No, (although he probably wouldn't get further than the Isle of Wight anyway), the answer is that the lynchpin of Update's production, the photocopier, will have copied its last copy and will be so poorly as to be 'not for resuscitation' as we would say in the medical profession. Photocopiers are expensive and temperamental pieces of equipment and ours is old and working a lot harder than it should be. I also have some good news, it is within OUR power to alter the future, what I have foreseen need not necessarily be our destiny. Paul has already started a fund for a new copier, unfortunately this is still way below the amount needed, try a phone call to a local supplier and see what they cost and you'll see what I mean, also bear in mind that we need a good one to handle what we need without costing a fortune in repairs. So, funds for a new copier are desperately needed. I can see two ways to achieve this; 1) If my information is correct it would take a donation of just 1.00 from each member to reach the sort of sum we are looking for, surely no-one can claim one pound will break them. 2) We can all dig in and raise funds, no, not with jumble sales, there are other ways. a) There is currently a program about called Dragdraw which was converted from a Tandy listing in Rainbow, it's a superb program with features which are the height of fashion on other machines and costing around 60.00 for them. For all his work on conversion and documentation, the converter is asking that recipients send just ONE POUND to the copier fund, perhaps anyone receiving a copy would like to do so. You may have written a program which you don't want the hassle of selling, if you think it's worth something then why not make it public domain and ask recipients who keep a copy to donate to the fund? b) Most of us have old software which we bought in the early days and no longer use, this is really of no value but new users often advertise, wanting it. My solution to this is to ask them for the postage and then a sensible amount (bearing in mind the low value of the goods) which is then donated to the fund. The buyer seems quite happy to pay this as in paying for his goods, he is also benefitting himself by supporting the group. c) I'm sure I'm not the only member of the group who's been given a surplus piece of hardware. Having received something, what I then do is donate a small sum to the copier fund, that way I have paid something for the hardware in such a way as to benefit myself, the donor, and the rest of the group. d) When I purchase something from the group I usually find the sum comes to an odd number of pence. It's no hassle to round the cheque up to the next pound and ask Paul to keep the change for the fund, it's not much I know but if we all did this it would soon mount up!

So how about it? Let's not lose the war for the sake of a few pounds each to get a new copier, you will be the one complaining when Update doesn't materialise. Put your minds to it, dig a little into your pocket and let's see what we can do. With a little effort we could have that new copier in a couple of months. One additional thought is that freeing Paul from repairing the copier would give him more time for the group in general and to live his own private life (If he still has one!)

<<No he doesn't still have one .... TL>>

Backdates.....

Regardless of the visions of Gipsy Phil Beed, the old Tosh is still staggering on, or you wouldn't be reading this, would you? However, I've just had a call from John Cox, and he asks me to apologise to all of you who have ordered back issues of Update from him recently. It appears that (a) he's been on holiday, and (b) HIS copier has just had a blow-up, but he assures me that with great restraint he has NOT cashed any of your cheques, and that normal service will be resumed as soon as possible. Don't worry, your money is safe, and you WILL get your orders very soon.

Local Groups.....

Further to my question about local groups last month, I've just heard from Chris Jobson, who tells me that I ought to give some publicity to HIS club!. It's the North East Dragon Users Club, and to date has 14 members, who meet every Wednesday at 8.pm in the Etterick Lounge of the Grindon Mill, in Chester Road, Sunderland.

If anyone in the area is interested, just turn up there, or if you're feeling shy contact Chris on 091-5415. OK?.

Helpline 87.....

If you have queries on any of the subjects mentioned here, write to the appropriate volunteer, enclosing a stamped envelope for reply. If you need help with a subject that isn't included in the list yet, or you aren't satisfied with the reply that you get, then contact Paul Grade as usual.

FORTH: John Payne, 3,Sibland Close, Thornbury, Bristol.

FLEX: Jurgen Mitchell, 62,Victoria Grove, Lupset, Wakefield, Yorks.WF2-8JD.

PROGRAMMING LANGUAGES AND STRUCTURED PROGRAMMING METHODOLOGY: Stan Davies, 153, Allestree Lane, Derby DE3-2PG.

GAMES SOFTWARE (MAINLY ARCADE BUT SOME ADVENTURES): Stephen Wood, 52,Downsway, Springfield, Chelmsford, Essex CM1-5TU.

M/C (EXCLUDING FLEX & OS9); DRAGON MUSIC; ARTIFICIAL INTELLIGENCE; "C" (UNDER OS9): Chris Jolly, 4,Pinehurst Walk, Orpington, Kent.

TAPE TO DISC CONVERSIONS (DRAGONDOS): Graham Smith, 3,Ashton Gate Terrace, Ashton Gate, Bristol BS3-1TA.

GENERAL HARDWARE AND UPGRADE CONVERSION PROBLEMS: Bob Hall, 22,Cumbria Close, Thornbury, Avon BS12-2YE.

CGP115 / MCP 40 & DMP110 PRINTER SOFTWARE QUERIES: Philip Beed, 27,Findon Road,Elson, Gosport, Hants.PO12-4EP.

WORD PROCESSING & GENERAL BASIC PROGRAMMING: F.J.Fisher, 29,Thornham Road, Gillingham, Kent.

BASIC PROGRAMMING: Ian Rockett, 2,Knowle Road, Burley, Leeds, Yorks.LS4-2PJ.

RTTY / RADIO; LISTINGS FROM INPUT MAGAZINE; SPRITE MAGIC; AMATEUR RADIO;

UPDATE ARTICLES / LISTINGS BY R.A.DAVIS: R.A.Davis, 39,Boxley Drive, West Bridgford, Nottingham NG2-7GQ.

OS9 SYSTEM AND UTILITIES: Jason Shouler, 70,Victoria Road, Parkstone, Poole, Dorset.BH12-3AE.

MODEMS, BASIC ELECTRONICS, ADD-ONS, and FLEX: Tim Hayton, 36,Laurel Drive, Willaston, South Wirral L64-1TW.

DELTA PROGRAMMING: Stuart Mills, 49,Templegate Crescent, Leeds, West Yorkshire LS15-0EZ.

DRAGON HARDWARE PROBLEMS AND REPAIRS: Alan Butler, 16,Barnston Green, Barnston, Great Dunmow, Essex.

MODEMS AND BULLETIN BOARDS / GENERAL COMMS. Gary Coxhead, 54,The Sorrels, Corringham, Stamford-le-Hope, Essex.

COMPOSER PROBLEMS:- Dave Cadman, 32,Breedon Hill Road, Derby DE3-6TG.

DRAGON/DELTA DOS PROBLEMS; OS9, BASIC 09, AND GENERAL BUSINESS SOFTWARE APPLICATIONS: M.A.A.Abbas, 55,Longland Court, Rolls Road, London SE1-5BN.

DMP 110 PRINTER PROBLEMS/SCREEN DUMPS ETC.: Dr.J.Hatton, 48,Wern, Llanfairpwll, Anglesey, N.Wales.

###Please note that the next "Helpline" list will be in the November Update.

MICRONET PAGES.....

Tim Hayton asked me to tell you that out new "Gallery" page number is 811220177, and also that Phil Goldie has a Dragon "questions and answers" frame on 811220171.

## DELTA DOS (6) . . . . . MARTIN LAYLEY

The concluding part of the our browse through the Delta routines.

```

INSECT          Initialises a given sector          Entry - CBC2
                Conditions Entry - 7A68&7A69 hold the start sector number
                7A6A&7A6B hold the end sector number
                Notes -- Equivalent to Basic FLUSH
CLØ             Closes all files                      Entry - D2F4
                Conditions None
                Notes -- Exits via FIRST
RM9             Gets a specifies random record        Entry - D1E2
                Conditions Entry - Register X contains the record number
                3E = SET
                Exit - 3E must be cleared by the user
                7AF3 = record length
                Notes -- Exits via FIRST
RDCHR           Reads a character from the buffer     Entry - D184
                Conditions Entry - None
                Exit - Register A holds the character
                The FCB pointer is incremented
                If necessary the next domain may be read
                into the file buffer
FP2             Increments the file pointer           Entry - D12F
                Conditions Entry - None
                Exit - 7AF6 = the file pointer and is incremented
WRITE CHAR      Writes a character out to a file     Entry - D19B
                Conditions Entry - Register A contains the character
                Exit - Sets the 'buffer dirty' flag

```

OK, that's your lot, thanks to Martin for the data for this lot and apologies to him that my formatting wasn't as neat as his, I had to condense it a little to save space.

**MICROLINE DUMP . . . . . JACOB HOFFMAN**

The following is a machine code screen dump for the Microline 80 printer. Before the picture is printed it is inverted in the first part of the routine. This routine takes 7 minutes to print, this is the fastest possible as it is at the limit of the print head speed. Thanks to R.Rolph for passing the routine on.

The data should be entered into a basic loader program from decimal 20001^

Note that the data is in DECIMAL not hex!

142	12	0	166	132	67	167	128	140	36	0	38	246	134	191	183	78	243	127	78
242	16	142	78	245	141	10	16	140	110	245	38	248	23	0	120	57	141	71	122
78	243	141	66	124	78	243	124	78	242	141	58	122	78	243	141	53	124	78	242
124	78	243	141	45	122	78	243	141	40	182	78	244	70	26	1	70	167	160	122
78	242	122	78	242	122	78	243	182	78	243	76	39	1	57	134	191	183	78	243
124	78	242	124	78	242	124	78	242	57	134	32	246	78	243	61	195	12	0	31
1	246	78	242	84	84	84	58	191	78	240	182	78	244	246	78	242	196	7	92
247	78	244	230	132	89	122	78	244	38	250	70	183	78	244	57	134	27	189	128
15	134	66	189	128	15	134	29	189	128	15	134	27	189	128	15	134	56	189	128
15	134	96	151	155	127	1	72	134	13	189	128	15	142	78	245	166	128	189	128
15	140	110	245	38	246	57	0	0	0	0	0	3							

This data is for machines with discs attached, hence if you have no DOS the following data must be changed:-

Line 1 item 2 - change 12 to 6; line 1 item 10- change 36 to 30;

Line 6 item 18- change 12 to 6

If the Dragon OS is for games then OS9 is definitely the system for utilities (eg Stylo, Dynacalc, RMS) and languages. Pascal, C, Basic09 and assembler were available as soon as OS9 went on sale in Britain. A public domain version of Lisp, Xlisp has been available for some time and now the latest of the series has arrived with Chris Jolly's Prolog interpreter.

Along with Lisp, Prolog is the major language of artificial intelligence and presents a formal computer language implementation of the laws of formal logic (or Venn diagrams for the more mathematically inclined). What can you do with Prolog? One thing it is ideal for is the creation and interrogation of small databases. Part of the structure of the language allows the building up of database structures. One set of relations could for example set up the details of cars and colours.

```
colour (ford, red):-
colour (ford, blue):-
colour (jaguar, green):-
colour (vauxhall, cream):-
colour (vauxhall, blue):-
```

Another set of relations could link cars with owners:

```
owner (john, ford):-
owner (fred, ford):-
owner (jack, jaguar):-
owner (tim, vauxhall):-
owner (patricia, vauxhall):-
```

Yet another could relate owners and car colour:

```
car (john, red):-
car (fred, blue):-
car (jack, green):-
car (tim, cream):-
car (patricia, blue):-
```

You can now interrogate the database in various ways, ie. to find out who owns a blue vauxhall:

```
colour (vauxhall, blue), owner (?X, vauxhall):-
```

will give the answer -- X=patricia, or to find out who owns a vauxhall: owner (?X, vauxhall) or a blue car: car (?X, blue):-

One difference between Metasoft and other implementations of Prolog is that commonly in prolog, constants are in lower case and variables in upper case. Metasoft, probably in order to run under upper case only systems indicates variables with the use of '?'.  
In a simple case like this, the full details could all be built up at once of course:

```
set (john, ford, red):-
set (fred, ford, blue):- etc.
```

But.. one of the strengths of Prolog is that once the initial set of relations has been built up it is easy to add a completely new and different set of relations later. Prolog as part of its structure implements relational databases rather than simple databases and the file of data can either be created as a file (by means of a word processor) and loaded into Prolog, or created interactively in running the program. Again the files as created or amended in the course of running. The interpreter can be saved to disc and reloaded in the course of a later session.

Is it worth it? I'd say certainly yes. For 29.95 you get a fairly complete Prolog interpreter and a 100 page manual. For anyone interested in database manipulation, artificial intelligence, natural language processing or computational languages, Chris Jolly's Prolog is an essential acquisition. As a substantial and useful program it stands beside such major OS9 programs as Stylo, Dynacalc, Colossal Caves and Xlisp. To use it seriously, especially if you've never tried Prolog before you'll need to consult one of the standard texts on



Edinburgh syntax Prolog (NOT Microprolog). The manual itself certainly isn't adequate to teach you Prolog from scratch and although all the necessary information is there, a section detailing the main differences and links between Metasoft and Edinburgh Syntax Prolog would have been useful, both for beginners and experienced users. A useful way into the language might be to translate some of the Edinburgh Syntax Prolog programs into Metasoft Prolog. Having worked a bit with this implementation, the only major limitation I can see at the moment is that the database has to be held entirely in memory. For large scale databases, the implementation would have to manipulate the database on disc, in order to work with data of any useful size. Against this, several years ago I wrote (in Dragon Basic) a timetable program; I've been meaning to rewrite this for sometime and now having come across Metasoft Prolog, I suspect I could do it in about a third of the code and with a fifth of the effort that I'd have needed with any of the other languages available and running under OS9.

Metasoft Prolog is 29.95 from Metasoft, 4 Pinehurst Walk, Orpington Kent. BR6 8DD

## DATA ENCRYPTION . . . . .ZENNAN GREEN

Data encryption is something I for one have been hearing and seeing quite a lot of recently, especially in the business side of computing. The idea struck me as quite interesting so I sat down to see what I could do on the Dragon. There are several ways of encrypting data, even something as simple as jumbling up the letters is surprisingly effective. The method I chose is one that I have seen elsewhere referred to as 'Caesar's Cipher', which in it's simplest form is moving each letter of the alphabet back so many letters, ie.

A moved back 3 letters becomes X  
 B moved back 3 letters becomes Y  
 C moved back 3 letters becomes Z  
 D moved back 3 letters becomes A etc.

As it stands at the moment, any data written using that method would be very easy to crack, using a simple program which looks at all 26 possible combinations. Somewhere along the line you will see some letters that make proper words. So, the next step is to move each letter of your data back a different number of letters, ie.

A moved back 3 letters becomes X  
 B moved back 4 letters becomes Y C moved back 5 letters becomes X

So, your simple ABC becomes XXX. Clever eh? But you have a simple key; 3,4,5 representing the number of letters each was moved back. The data can then only be deciphered by moving each letter of the encrypted data FORWARD the number of letters in the key. Obviously the key could be any combination of numbers with as many digits as you like.

Now we leave the theory of espionage and turn to the computer side of things. The key can also be used like a PIN number, similar to the cashpoint machines at the bank. So the PIN number for the key 3,4,5 would be 345. In the Dragon's case this number can be up to 255 digits in length (the maximum string length). As you can imagine a 255 digit number has millions of combinations <<Before any mathematicians take me to task the number of combinations is nine to the power 255 assuming that the number zero isn't used. It doesn't number in the millions, it's some magnitudes higher than the estimated age of the universe in seconds ... TL>>, any little hacker would be sitting around for quite a few hours waiting for his computer to go through all the possible combinations <<Again the time required would be greater than the age of the universe even using one of those Cray2 thingies ... TL>> So, how do you obtain this very complex encrypted data? very simple. The program I wrote was very simple, the encryption relying nearly totally on the combination of the PIN number. the decoding could actually be in your program, and no-one could get any closer to reading your data unless they knew the correct PIN number. The program I wrote is very basic and easy to understand. It can easily be upgraded for use within

# 10

one of your own programs, or modified to handle the whole ASCII set. This sort of encryption could be used in all sorts of applications where you don't want people to find out something they shouldn't know, such as data being sent over the phone (if you're into highly sensitive information), adventure games etc. Should you have any questions on modifying or understanding the program, or any questions on data encryption in general, don't hesitate to drop me a line (with SAE please) and I'll be more than happy to try and sort things out for you.

Aberllywd, Insh, Kingussie, Inverness-shire. PH21-1NT or Prestel Mbx 105402539 (don't worry about the Mbx name, I share it with my father.)

```
10 CLS:Q="":V$="":PRINT"ENCODE OR DECODE (E/D)?"
20 X$=INKEY$:IF X$="" THEN 20
30 IF X$="E" THEN 40 ELSE IF X$="D" THEN 50 ELSE 20
40 GOSUB60:GOTO100
50 GOSUB60:GOTO190
60 CLS:INPUT"WHAT IS THE KEY";T$:F=LEN(T$)
70 K$=RIGHT$(T$,1)+LEFT$(T$,F-1)
80 PRINT:INPUT"ENTER THE MESSAGE ";M$
90 RETURN
100 FOR I=1 TO LEN(M$)
110 N=I-INT(I/F)*F+1
120 A=ASC(MID$(M$,I,1))
130 IF A=32 THEN M=32:GOTO60
140 M=ASC((MID$(M$,I,1))-VAL(MID$(K$,N,1)))
150 IF M<65 THEN M=M+26
160 Q$=Q$+(CHR$(M))
170 NEXT I
180 PRINT:PRINT"THE ENCODED MESSAGE IS:":PRINT Q$:GOTO280
190 FORI=1 TO LEN(M$)
200 N=I-INT(I/F)*F+1
210 A=ASC(MID$(M$,I,1))
220 IF A=32 THEN M=32:GOTO250
230 M=ASC(MID$(M$,I,1))+VAL(MID$(K$,N,1))
240 IF M>90 THEN M=M-26
250 V$=V$+CHR$(M)
260 NEXT I
270 PRINT:PRINT"THE DECODED MESSAGE IS:"PRINT V$:GOTO280
280 PRINT:PRINT:PRINT"ANY MORE (Y/N)?"
290 X$=INKEY$:IF X$="" THEN 290
300 IF X$="Y" THEN 10 ELSE IF X$="N" THEN CLS ELSE 290
```

WHATSIT ..... R.A.DAVIS

Now I have a disc drive, I thought I might make some use of it, apart from putting all the tape programs on disc. Looking at the disc format, with tracks 0 to 39 and sectors 1 to 18 and doing my mental arithmetic, that gives me 720 entries of 2 strings, each of 128 bytes. Just what I need to overcome my bete noir of not remembering what a program does or what was the name of the program I wanted. This listing uses the SREAD and SWRITE commands and must NOT be on the disc on which the data is to be saved. The method is; load the driver program (below) then insert a disc which has been formatted but which is entirely for data. The driver program is menu driven. It has a global search routine which will find part of a name or routine in either the X or Y string. You may use punctuation in either string. The X string is used to hold the disc number/name and the program name, while the Y string holds brief details of the use of the program, up to 128 bytes, about 3 lines on the screen. Follow the usual rules about wrap around as you type for neat layout. To amend an entry just note the track number and sector number which are shown each time. You are given the option to escape if you chose the wrong one. The

whole entry must then be retyped. The disc of data can be added to at any time as it finds the next free sector when you run the program so you can build it up from time to time as the need arises. You can reclean a disk by DSKINIT which WRITES CHR\$(229) to all sectors except those on tracks 16 and 20.

```

10 CLEAR20000:CLS:T=0:S=1
20 CLS:PRINT:PRINT:PRINT"      1.EN
TER NEW DATA ON DISC ?      2.SE
ARCH FOR ANY WORD ?      3.AL
TER DATA IN TRACK/SECTOR ?"
30 I$=INKEY$:IF I$<>"1" AND I$<
"2" AND I$<>"3" THEN 30 ELSE IF
I$="2" THEN 200 ELSE IF I$="3" T
HEN GOSUB410:GOTO200
40 X$="":Y$="":S$="":N1$=""
50 GOSUB330
60 IF S=19 THEN S=1:T=T+1
70 IF T>39 THEN PRINT" DISC FULL
":POKE&HFF48,0:STOP
80 CLS:PRINT:PRINT" TRACK ";T;"
SECTOR ";S
90 TT=720-(18*T):TT=TT-S:PRINT"
SPACE FOR ";TT;" ENTRIES LEFT"
100 LINEINPUT" DISC NAME ";A$:GO
SUB180
110 LINEINPUT" PROGRAM TITLE ";A
$:GOSUB180
120 X$="# "+S$:S$=""
130 LINEINPUT"BRIEF DESCRIPTION
(NE120 CHRS) ";Y$:GOSUB170
140 S=S+1:CLS:PRINT" MORE (Y/N)"
;
150 I$=INKEY$:IF I$<>"N" AND I$<
">"Y" THEN EXEC&H8009:GOTO150
160 IF I$="N" THEN 20 ELSE 40
170 WRITE 1,T,S,X$,Y$:N=N+1:POK
E&HFF48,0:RETURN
180 S$=S$+" "+A$
190 A$="":POKE&HFF48,0:RETURN
200 CLS:PRINT@10," SEARCH":LINEI
NPUT" WORD ";N$
210 FOR T=0 TO 39:FOR S=1 TO 18
220 X$="":Y$=""
230 SREAD1,T,S,X$,Y$
240 IF LEFT$(X$,1)<>"#" THEN 320
250 I=INSTR(1,X$,N$):IFI<>0 THEN
GOSUB400:GOTO280
260 J=INSTR(1,Y$,N$):IF J<>0 THE
N GOSUB400:GOTO280

```

```

270 GOTO300
280 PRINT" MORE ?";
290 I$=INKEY$:IF I$<>"Y" AND I$<
">"N" THEN EXEC&H8009:GOTO290 ELS
E IF I$="N" THEN 320
300 X$="":Y$="":NEXTS
310 NEXTT
320 POKE&HFF48,0:PRINT:PRINT
SEARCH ENDED";BEEP1:PRINT" PRE
SS ANY KEY":EXEC34091:PRINT:GOTO
20
330 T=0:S=1
340 SREAD1,T,S,X$,Y$
350 IF LEFT$(X$,1)="#" THEN S=S+
1
360 IF S>18 THEN S=1:T=T+1
370 IF T>39 THEN PRINT" DISC FUL
L":END
380 IF LEFT$(X$,1)<>"#" THEN POK
E&HFF48,0:RETURN
390 GOTO340
400 PRINT:PRINT"TRACK ";T;" SECT
OR ";S:PRINTX$:PRINTY$:RETURN
410 CLS:PRINT@10," ALTER ENTRY":
INPUT "ENTER TRACK NO. ";T1
420 INPUT "ENTER SECTOR NUMBER";S1
S1
430 SREAD1,T1,S1,X$,Y$
440 PRINTT1;S1;PRINTX$:PRINTY$
450 PRINT" press e to escape or
p to proceed"
460 I$=INKEY$:IF I$<>"E" AND I$<
">"P" THEN 460 ELSE IF I$="E" THE
N RETURN
470 LINEINPUT"NEW DISC NAME ";A$
:A$=A$+" ":
480 N1$=N1$+A$
490 LINEINPUT"NEW PROGRAM TITLE
";A$
500 N1$=N1$+A$:X$="# "+N1$:N1$=""
510 LINEINPUT"NEW BRIEF DETAILS
";Y$
520 WRITE1,T1,S1,X$,Y$:A$="":RETURN

```

### Crossword 25 Answers . . . . .

ACROSS:- 1A) Dave CADman. 2I) Biped. 3A) Nous. 3I) Argue. 4E) Sidecar. 5H) Bug. 6B) Fortran. 7C) DAT. 7J) GEC. 8A) Buffer. 9J) Biro. 10A) Touchpad. 11A) Colleen. 11H) Oracle. 12E) Labrador. 13C) Pilchard.  
 DOWN:- A1) Dungeon. A8) Bit. B1) Abort. B9) Loop. C9) Tulip. D4) Lira. E1) Cassette. E9) Shell. G4) Diaper. H1) Mug. H8) Dodo. I1) Abacus. I7) Wafer. K1) Upgrade. K11) Cos. L7) Coral. M1) Odes. M5) Cathode.

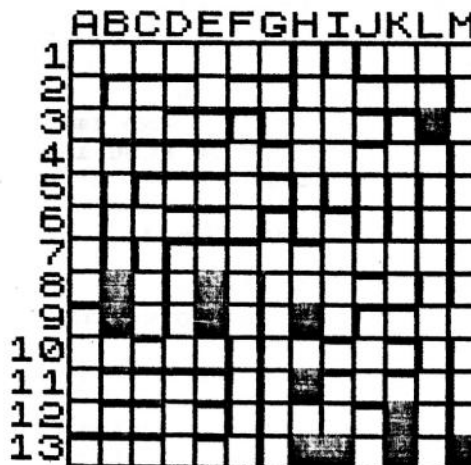
Winner of number 25 was Philip Riley of Yeovil, Somerset, who gets a games tape.

## Crossword 26. Compiled by J. Bateman.

ACROSS:- 1A & A1) Oriental board game?. 1J) Moderately hot in Wrexham. 2B) Small fowl or boxer. 2H) An angry type of compiler. 3A) Rub out. 3G) Dry and parched (desertlike). 4A) Use a SONY BEAR CART to still be there at the end of an innings. 5C & C5) You may have TASTED many OILS before obtaining an electronic device with no moving parts. 6B) Ring shaped reef enclosing a lagoon. 7D) If you drive a CAB around an ELIXER you should obtain an almost perfect famous sword. 8G) An open sore inside the stomach. 9J) Go in search of (thrills, sun, etc). 10A) An edible bulb with a pungent flavour. 10G) Monetary unit of Pakistan. 11A) Paint applicator. 11I) Not odd. 12A) Used for mountain communication in Switzerland. 12G) Long strip of paper or magnetic coated plastic. 13A & F7) The ultimate link between Britain and Europe.

DOWN:- A1) See 1A. A9 & I6) White whale. B4) Sea captain who pursued A9. C5) See 5C. D7) Caused by the reflection of soundwaves. D11) Abbrev. for Senior. E1) French and. F3) Thin metal sheet or leaf. F7) See 13A. G6) Measure of the number of bits per second. H1) Piercing cry of terror. I1) Breed of wolfhound. I6) See A9. J4) Recurved point of arrow, fish-hook, etc. J9) Number of segments in one LCD unit. K3) Shy nocturnal burrowing quadruped. L4) This Task may be unlucky for some. M1) The KING MUST have a TAIL to be capable of doing more than one job at a time.

I'm feeling generous this month, so we'll have prizes for the TWO first all correct entries .... first one in gets a pair of new Dragon Data joysticks, second gets a game tape. OK?



## REDUNDANT INFORMATION DEPARTMENT

Judging by the number of queries on how to prevent 'overflow' in arithmetic programs, not many beginners take the trouble to read pages 127-129 of the manual. This deals with PRINT USING and at first sight looks more formidable than it is. Even when you have the hang of it, having to enter the whole string of symbols each time within a program is tedious; it's also unnecessary - a point not mentioned in the manual. If you want all your answers to two decimal places for example, you can make a string of the characters within the quotes, ie. U\$="###.##" at the beginning of the program. you may then use PRINT USING U\$;NN where NN is the result of your calculation. You can have as many different sorts of U\$ making them U1\$, U2\$, U3\$ etc prepared in advance at the start of your program and calling the one needed for printing your results, without having to type out the whole string each time.

Save yourself time and effort at the start of your program this way. Your first line should be 10 GOTO 40, your second line 20 EXEC34091:RETURN, your third line 30 I\$=INKEY\$:IF I\$="" THEN 30 ELSE IF I\$="N" THEN (nnn) ELSE RETUR. Within your program and instruction to 'PRESS A KEY' should be followed by GOSUB 20 while a question to be responded to with 'Y' or 'N' should be followed by GOSUB 30. Easy and neat.

Thanks to R.A.Davis for those two. How about some redundant info from the rest of you, I've had nothing for months! T.C.

## Dragon User .....

Just to reassure all those of you who phoned and / or wrote to me about the absense of Dragon User magazine ... the one which ought to have arrived around the end of August ..... we have contacted DU, and it appears that it WAS produced on time, but the printers, not being Dragon enthusiasts, decided to muck about and delay things somewhat.

Dragon User, I am assured, is alive and well and still living at Little Newport Street, Helen Armstrong is not yet reduced to sitting outside the Dole Shop (Managerial and Executive section, of course!!) with her begging bowl, and your subscription moneys are still safe!. OK now?, feeling better again?.

By the way, Helen, I've had several enquiries recently from Dragon User readers who say they didn't know about the Group until someone or other told them ..... think you could give us another mention soon, just so I can tell 'em to read DU properly?

*Rad*

"It's suffering from Amnesia"

COMPUTER REPAIRS.



RAD



Dragon Games USA Style!...R. Boston.

Well now, with the state of the art of Dragon games at the moment you may well think "what's the point", well, wipe those little tears away now, for there is a glimmer of hope on the horizon (well, over the ocean really) because several games from the good old U.S. of A have finally made it past Customs and got into this country. The first two over were a very lifelike arcade game called MARBLE MAZE, guiding a ball down and around a very hard 3D maze that scrolls on and off the screen very smoothly and effectively, and a game called POPEYE THE SAILOR MAN, who's main aim in life is to bash Bluto all over the screen and to win hearts for his very own sweetheart Olive. Again the graphics are put to very, very good use, and the game is very playable. The next one over was a game called ATHLETIX 64, which as you can probably guess from the title was an earlier release from Microdeal, except that THIS one is specifically for the D64. I haven't seen it running myself, but I'm informed that it's quite good. Why Microdeal never released it over here is a mystery to me, but one reason put forward is that they thought there were not enough 64's in this country to make it profitable! (Keep taking the pills Mr. Symes, you'll get over it soon). Now, there are three more games due over soon, these being LAPERBOY ... I've seen several screen dumps from this and it looks very good indeed, the next a non-graphic adventure version of HITCH-HIKERS GUIDE TO THE GALAXY, and probably the best one out of all of them, GAUNTLET, which has appeared for many home micros lately. Hopefully in the following issues I'll be doing a review of each of these games and telling you where they are being sold, and a rough guide to the price. Finally a plea ... if any of you out there want me to review a specific game, want to know where you can get a copy, etc, please do write to me, or if you've got a modem you can MBX me on the London BB or Prestel 219796524.

Oh, just one last little bit, I haven't seen the cheat routine for SUPERKID anywhere in print so here it is! Firstly you've got to get a score that lets you get to the high score table. When there select the RES option and you will see two sets of numbers appear middle top of the screen. Using the j'stick change these until they are 13 and 37, press FIRE and enter the codeword ALISON via the alphabet. Now select END and you will move onto a screen that lets you turn the collision on and off. Now for extra lives the numbers are 25 and 67, the codeword is still ALISON and you can select lives from 1 to 9. Well I hope I haven't bored you too much. A review of MARBLE MAZE should be the offering next time.. Bye for now. R.B.

The late, Late Bit.....

Well, that's almost it for another month again ... apart from another twelve night's work copying, collating, folding, enveloping, sealing, stamping and labeling this little lot ... plus answering the odd few dozen letters at the same time! Child's play isn't it?, snag is that I'm rather past my first childhood and not yet into the second one! Which reminds me, maybe I ought to explain why my plea for assistance in the last issue was worded as it was. Now in this County we have a grand total of SIX members!, not exactly a crowd, is it?, and I've discovered the hard way that this job needs a very specific type of "helper", namely someone reasonably intelligent and aged between 12 and 16. Why?, simply because within that age range people seem to be capable of learning fairly quickly and easily, are old enough to be past the "silly stage" but not old enough to think they know it all and insist on holding a debate on how everything should be done and why!. Below that range the ability usually isn't there, and above it either the interest isn't or they consider that they are too "expert" to need to learn!. My former "help" learned beautifully and could do most of the job as well as I could eventually, but replacements are hard to find with such a limited number of members in the immediate area, hence the wording. So, if any of you who are fond parents of suitable brats want an alternative to strangling them when they've driven you so far up the wall that you're leaving claw marks on the ceiling, stick a stamp on 'em and send 'em down here for the week/weekend!. They might learn something, make a (very) little cash, and do a lot towards getting Update out on time!. The NDUG offers the best YOP scheme since Fagin!.

Late Final!!!!.....

Just to put you out of my misery, arrangements at the moment are that Tim Lomas will be resigning as Editor with effect from the November issue, and Barry Caruth will be taking over that thankless job. Richard Boston has been rash enough to volunteer to take over as Software Editor from that date, and everything else remains as is ... including me!. Just a suggestion, but Tim managed to stand up to the job for an exceptionally long time, and personally I think he deserves something more than just a vote of thanks!. Having driven him to drink, don't you agree that we ought to buy him one?, or at least a bottle of his favourite embalming fluid!?. The "Buy Tim a Drink Fund" is now open, and all contributions are welcome. Closing ~~time~~ date will be November 1st.

## Classifieds &amp; Special Offers Ads.

**DRAGON MUSIC!!!** A selection of music on tape or disc, arranged by Dave Cadman and produced by him on a specially extended version of Composer. The tunes are divided into four categories, "Rags", "Classics", "Standards", and a "Miscellaneous" selection. This month's release is a "Miscellaneous" selection, "Rags", "Standards" and "Classics" selections still available. Prices are TAPE 3.50, DISC 4.00, inclusive of postage. Orders to Dave Cadman at 32, Breedon Hill Road, DERBY DE3-6TG.

Dragon 32, plus D.Data disc drive and Dragon DOS, 5 discs of games etc, plus manual and a printer cable!. Bargain! 110.00 the lot o.n.o. Phone J.T.Black on 0670-819309.

**WANTED!!!** A copy of Dragon User magazine dated June 1983. Name your price!!!. Phone Jim Fisher on Stafford 768367.

Wrex Wyvern 4 way expansion board + software. 40.00 or swap for a 1200/75 modem & software. Phone 0783-38042.

Dragon software for sale from 1.00 inc. postage. All originals and in good condition. Phone for details. Phone Keith on 021-525-6010.

Contact wanted with other Dragon in the Mansfield area. General interests. Ray McNell, 31, Farmcroft Rd. Mansfield Woodhouse, Notts. (644717).

OKI 113 height (ultraslim) disc drive. NEW. 60.00; Mitsubisshi disc drive NEW. 63.00; Mitsubisshi disc drive. Used but perfect. 53.00 (two available). TEAC disc drive. Used but perfect. 53.00.

All the above drives except the OKI are half height, and all are 40 track 5.25" double sided units, uncased and without power supply. Prices include postage etc.

Large number of NEW 2725 EPROMS available at 2.00 each. Phone Alan Butler on 021-4234 (evenings only please.).

Basic Programs Listed. 1 Program Listing...75p. up to 4 pages. Additional pages 5p. each.

2 or more Programs...50p. each.

ALL tapes and listings will be returned as far as possible the following day...

G.W.Hall, "Rose Cottage, Hungerhill, Coolham, NR.Horsham, W.Sussex. RH13 8UE.

**MODEM PACKAGE SPECIAL!!!** Complete package for D64 owners, comprising of a Prism Modem 1000, connecting lead and software to access Viewdata and all scrolling type BB's. The modem will operate on 1200/75 baud for Prestel, and on 1200/1200 for user to user operation. The price for the complete package is ONLY 35.00 to Group Members, 40.00 to non members. Cheque/PO or cash (registered post) to T.Hayton, 36, Laurel Drive, Willaston, South Wirral L64-1TW.

Games to disc transfer...Unprotected game code of any game sent in return for a blank tape and 22p stamp, but you MUST include the inlay card to prove you have bought the original. Contact M.R.Vine, 120, Auriel Avenue, Dagenham, Essex RM10-8BU.

**THE BEST ADVENTURE AVAILABLE ANYWHERE!!** "The 13th Task" from ARC Software. Only 2.50 + 30 pence postage. ARC. 272, Mearns Road, Newton Mearns, Glasgow.G77-5LY.

**FORTH OPERATING SYSTEM:** Simply the best there is. Written by John Payne, and available for DragonDOS, Superdos, and DD or SD DeltaDOS. Available ONLY through the Group. 8.50 inclusive. Orders/cheques to the Group, 6, Navarino Road, Worthing, Sussex.

**Circuit Sheets:** Available for D32 (most variants), D64, Dragon DOS controller, and Cumana DOS controller. All the same price 1.00 each. Cheque/orders to the Group. 6, Navarino Road, Worthing, Sussex.

**Dragon Upgrade manual:** 32/64 conversion method fully explained so that you can upgrade your 32 yourself without difficulty. Written by Bob Hall and available only through the Group. Price 2.00.

Cheque/order to the Group. 6, Navarino Road, Worthing, Sussex.

**Belta DOS utility:** A m/c utility to copy all BASIC and m/c files from disc to tape in one operation. BASIC listing of loader and Hex dump 1.00 or on cassette for 2.50.

J.C.Bussell, 33, Tennyson Avenue, Clevedon, Avon BS21-7UJ. (0272-875528).

**OS9 MODEM PROGRAM:** Up and downloading of files. Any Baud rate from 50/50 to 9600/9600 (but not multiple rates). Up/Download buffer from 4k to 32k or program will adapt to largest capacity available. All other 6551 options supported. Price 8.00. Please phone Barry Knapp, 0932-242800 evenings only.

**DRAWEEZ!** A graphics drawing program, on tape, which we think is one of the best!. Written by R.A.Davis, it must be a bargain at 2.50 including postage. Orders to Paul Grade, 6, Navarino Road, Worthing, Sussex.

**DRAGONDOS EPROMS:** Your DOS 2764 reborn to "patched" V1.0 specification, or to Eurohard V4.0 or V4.1, or to PETER WILLIAMS TRANSLATED & DEBUGGED ENGLISH VERSION OF V4.1. Price for any version just 3.50. Computil, 24, Jays Mead, Wotton-under-Edge, Glos.GL12-7JF.

**BACKDATE UPDATES:** Copies of all earlier Updates available from John Cox, 3, St.Peters Road, Portslade, Sussex. (0273-422492). (Chris Channing, is currently having copier problems!).

**DDCOPY:** DragonDOS to OS9 file copy utility. Includes 'Telewriter' & Basic conversion filters....8.00.

**COM09:** OS9 comms. program. Xmodem (CRC & SUM), multiple upload modes, monitor buffer, function keys and more!. Suitable for any OS9 system (CoCo needs ACIA-Pak) and includes source files....8.00.

**PD-PAK:** Selection of useful public domain OS9 utilities on one disc....5.00.

Jason Shouler, 70, Victoria Road, Parkstone, Poole. BH12-3AE. (0202-722599).

**GRAPHICS SCREENS...** The Group Graphics Library, "DRAGONART" has a good selection of screens available now, so why not make use of the service offered?. Why not submit YOUR graphics as well?, you could win a prize!. All you need do is write for details. Dragonart Library, 5, Glen Rd, Parkstone, Poole, Dorset.

**NEWCOPY:** A m/c tape utility program for the production of backup copies of m/c programs. Capable of loading either headed or headerless programs or sections of programs, and saving these in their original or alternative formats. Also allows easy tape positioning using motor on/off routines. Written by Stuart Mills, available to Group members at 2.50 plus 25p postage/packing. Orders and cheques to the Group.

Tandy Speech/Sound cart. (as new). 30.00 or part exchange for half height drive (uncased).

Jason Shouler, 70, Victoria Rd, Parkstone, Poole, Dorset. (0202-722599).

Almost new D64 plus Alldream cartridge and two games tapes. 85.00 ono. "Plus" board with EDIT+. 60.00 ono. DELTA DOS controller (almost new) 25.00 ono. OS9 System disc and manual 30.00. FLEX Graph Drawer 9.00. CACHE MEMORY (OS9) 12.00. OS9 VDISK and 80x24 drivers 3.00. DELTA FORTH 10.00 including "The Complete FORTH Manual" by A.Winfield 10.00. Also for sale the following books:- PASCAL OS9 Users Manual 5.00; OS9 System Programmers Manual 5.00; Dyncalc Users Manual 5.00; 6809 Assembly Language (Leventhal) 10.00; OS9 Cash Book & VAT Registry Manual 5.00; The Dragon 32 (Sinclair) 3.00; Dragon 32 Games Master 3.00; Dragon Advanced Graphics 4.00. Please phone M.A.Abbas on 01-270-6379 or write to 55, Longland Court, Rolls Road, London SE1-5HB.

**PRINTOUT SERVICE.**

1 BASIC program listing (up to 5 pages). 50 pence.

2 or more programs 40 pence each (up to 5 pages). All additional pages 5 pence each. (5 pages = approx 250 lines).

Screen dumps 30 pence each, 2 or more dumps 20 pence each. (dump size approx. 6" x 4.5").

Text files, data files, DREAM source code files, please enquire.

All tapes or SuperDOS compatible discs (ONLY) must be accompanied by suitable stamped addressed envelope to hold tape/disc and printouts. All enquiries must include SAE. 24 hour return service where possible.

Contact Z.Green, Aberllywd, Insh, Kingussie, Inverness-shire.

PH21-INT.