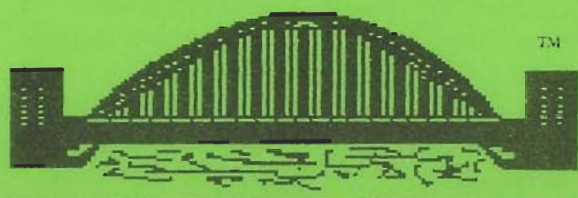


TYNE & WEAR



ATARI



8-BIT

USER GROUP

Issue 28

July/August 1997

TWAUG NEWSLETTER

Publishing

TWAUG NEWSLETTER is published bi-monthly, around mid-month of (Jan, Mar, May, July, Sept and Nov.)

It is printed and published by TWAUG, no other publishing company is involved.

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Max's Comments

Well here we are again, I managed to put out another issue. On the ST section I wrote about word processors which I owe and use or have used in the past.

It would really make my work easier if someone would write an article or two on their experience with some programs. You probably think nobody wants to hear about it, you are wrong there, I am quite sure there are a lot of readers out there who would like to hear your experience with some programs.

You see I am not sure if our readers want to read everything I write about, or want to read some of the articles I include. To keep the newsletter going I need material for it and sometimes I must include old stuff to keep the pages full. I don't like to reduce the pages of the issues, the more material I receive the better it is for me to keep everyting flowing and get the newsletter out on time.

You are paying for the newsletter and it is yours you are members, so please be brave and write something. I am waiting for replies.



Post it to this
address

TWAUG NEWSLETTER



PUBLISHING!

This new look newsletter is set up with the Desktop Publishing program "TIMEWORKS 2", on the Mega 1 ST with 4 meg memory. Files are converted to ASCII and transferred to the ST with TARI-TALK. Those files are then imported into the DTP and printed with the Canon BJ-30 Bubble Jet Printer at 360 dpi, with excellent result.

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Issue 29 is due mid-September

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GRAPHICS MODES

We continue with Dave Russell's series on the Atari graphics modes

We looked at Graphics 1 and 2 in last issue and saw how they were split screen text modes. We also saw that only half the character set was immediately available - normally the numbers and upper case letters.

Now we'll access the "hidden" half of the character set and see how we can use lower case letters in Modes 1 and 2.

Let's start with one of the little programs from last month. Type in and run Program 1:

```
10 GRAPHICS 1
20 POSITION 5,5
30 PRINT #6;"TWAUG NEWS"
```

Program 1

It should produce our name in orange upper case letters and the word Ready should be in the text window at the bottom of the screen.

The operating system can only see

half of the character set containing upper case letters at the moment. However, there is a location in memory which tells the system which half to look at.

Location 756 usually contains the value 224, which specifies the upper case half of the character set. If you'd like to verify this, simply type:

PRINT PEEK(756)

in the text window. The value 224

Redefine that

should appear at the top of the text window.

In order to convert our name to lower case all you need to do is change the value in location 756 to 226. You can do this by entering:

POKE 756,226

in the text window. Try it now and see what happens. There you are our name's in lower case as promised, but what are all those hearts doing

GRAPHICS MODES

there?

If you laid the two halves of the character set out next to each other, the lower case letters would line up with the upper case letters. That's why TWAUG NEWS gets changed to twaug news.

The hearts arise from the fact that the space character lines up with the special graphics heart shape. Consequently changing the value of location 756 to 226 causes a heart to be printed wherever a space was printed previously, which in this case means most of the screen.

A screenful of hearts might be useful

cheating heart

on one particular day in February, but for most of the time they tend to clutter up the display.

There are two ways we can get rid of the hearts, one by "cheating" and losing one of the available colours, the other by redefining the character set. With the screenful of hearts, enter:

```
SETCOLOR 0,0,0
```

and the screen should be blank

again. All you've done is change the colour in register 0 to the same colour as the background. Hence the hearts are still there in one sense - they're just printed in the same colour as the background. It's a bit like using black chalk on a blackboard.

Unfortunately, although our name is still there, we can't read it because its colour was also redefined by register 0. We saw how to change colour last month by using lower case letters to select a different colour register, so we can use this technique now to restore our name.

Press Reset and enter Program II:

When you run it will produce the familiar result in lower case, with the letters now

being green instead of orange because register 1 is selected.

```
10 GRAPHICS 1
20 SETCOLOR 0,0,0
30 POKE 756,226
40 POSITION 5,5
50 PRINT #6;"twaug news"
```

Program II

The second method of removing the

GRAPHICS MODES

hearts requires a little more work but introduces a technique which can be put to good use in other ways. It requires us to redefine the character set.

When you turn your micro on the characters are already there because they are held in read-only memory - ROM. As the name implies, we can only read from this sort of memory, we can't write to it or alter it.

Now if the character set was in RAM - random access memory, more properly called read and write memory - we could change it at will. What we must do, then, is move the character set into RAM so that we can change the heart character to something else.

We don't actually move the character set, we simply copy it, just like taking a photocopy. However, before we do this we need to know how the micro represents the characters if we're going to change some of them.

If you look closely at the heart shapes you'll see that they are made up of little dots. The micro represents each dot as a bit of information in its memory, and each memory location can store eight bits, or a byte as it's known.

If you've been following Mike Bibby's

Bit Wise series you'll know that a bit can be either 1 or 0. If it is 1, then a dot gets printed on the screen. If it is zero, no dot is printed.

Each character is represented as an 8x8 matrix of dots, and so requires eight bytes of memory. The bit

```
00000000
00110110
01111111
01111111
00111110
00011100
00001000
00000000
```

pattern for the heart shape looks like this:

With not too much difficulty you can see that the 1s form a heart shape against a background of 0s.

Each row of the matrix can be read as a number by converting the binary representation to decimal. The top row of the heart would be 0, the second row would be 54, the third row would be 127 and so forth.

In order to redefine the heart shape as a space, we need to set the bit pattern of the character to the bit pattern of a space. Fortunately, the bit pattern of a space is easy to

GRAPHICS MODES

remember - it's simply eight rows of zeros. All we need to know now is where the bit pattern is held in memory. We'll know that when we decide where we're going to put the character set in RAM.

Program III copies the character set into RAM and redefines the heart shape as a space. However, it needs to do some "housekeeping" on the way, so I'll explain what each line is doing.

```

10 RAMTOP=PEEK(106)
20 POKE 106,RAMTOP-4
30 GRAPHICS 1
40 CHBAS=RAMTOP-4
50 ADDR=CHBAS*256
60 FOR X=0 TO 1023
70 POKE ADDR+X,PEEK(57344+X)
80 NEXT X
90 CHAR=64
100 POS=ADDR+(CHAR*8)
110 FOR X=0 TO 7
120 READ A
130 POKE (POS+X),A
140 NEXT X
150 DATA 0,0,0,0,0,0,0,0
160 POKE 756,CHBAS+2
170 POSITION 5,5
180 PRINT #6;"TWAUG NEWS"
```

Program III

The character set occupies 1k of memory, so we need to set aside this

amount of RAM and protect it in order that the rest of our program doesn't interfere with it. The easiest way to do this is to move the top of the memory down by 1k and put the character set in there. If we tell the micro that we've done this, it will do the necessary protecting for us.

Memory is organised in ¼k (or 256 bytes) pages and so we need four pages of memory for the character set. Memory location 106 holds the current position of RAMTOP, the top of RAM memory, so line 10 looks at the current value and line 20 moves the value down by 4 pages, giving us the necessary 1k.

Before we move the character set we must tell the micro that we've moved RAMTOP, otherwise we might write over the display list. The easiest way to do this is to issue a Graphics command, hence line 30.

We'll call the beginning of the character set CHBAS. Line 40 tells the micro where CHBAS is to begin, with line 50 giving the actual location.

In ROM the character set begins at location 57344, so the loop from line 60 to line 80 pokes a value into ADDR corresponding to the value held in 57344.

The loop counter increments by 1, so

GRAPHICS MODES

next the value held in 57344+1 is poked into ADDR+1. This loop is carried out 1024 (or 1k) times, resulting in a copy of the character set being poked into RAM and starting at ADDR.

The heart is character number 64 and each character requires eight memory locations. Since we know that the set begins at ADDR, we can work out that the heart begins at ADDR + (64*8). Lines 90 and 100 provide the program with this information.

For each of the eight bytes of the heart character in turn the loop from 110 to 140 writes a 0, as taken from the data in line 150. This replaces the heart with a blank.

Lines 160 to 180 give us our old favourite message, but this time it's in lower case orange.

If you use this routine in your own programs, use:

POKE 756,CHBAS

to access the upper case characters and:

POKE 756,CHBAS+2

to access the lower case characters.

The advantages of this technique over the colour-changing "cheat" method are that all the colours are available and you can redefine any of

the characters. All you need to know is the internal character number of the character that you want to change.

For a simple demonstration of redefining the heart to something visible, change all 0s in line 150 to 1s.

In last issue we saw how in Modes 1 and 2 the COLOR command selects the character to be PLOTted. By adding 32 to the character, we produced a different colour but didn't say where the number 32 came from.

Now that we've seen how to use location 756, we can use the COLOR/PLOT combination to produce multi-coloured messages. In order to do this you'll need to use Table 1 and 2, which are adapted from pages 55 and 56 of the Atari Basic Reference Manual. (Note that Table 2 corrects an error in the original.)

Find the character you want in Table 1. If it is in column 1 or 2 it is part of the upper case set. If it is in column 3 or 4 it is part of the lower set. Remember that at the level we're operating we can't mix upper and lower case characters.

Suppose we want to plot an A in the colour contained in register 0

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Column 1		Column 2		Column 3		Column 4								
No. CHR	No. CHR	No. CHR	No. CHR	No. CHR	No. CHR	No. CHR	No. CHR							
0 Space	16	0	32	@	48	P	64		80		96		112	P
1 |	17	1	33	A	49	Q	65		81		97	a	113	q
2 "	18	2	34	B	50	R	66		82		98	b	114	r
3 #	19	3	35	C	51	S	67		83		99	c	115	s
4 \$	20	4	36	D	52	T	68		84		100	d	116	t
5 %	21	5	37	E	53	U	69		85		101	e	117	u
6 &	22	6	38	F	54	V	70		86		102	f	118	v
7 ' .	23	7	39	G	55	W	71		87		103	g	119	w
8 (	24	8	40	H	56	X	72		88		104	h	120	x
9)	25	9	41	I	57	Y	73		89		105	i	121	y
10 *	26	:	42	J	58	Z	74		90		106	j	122	z
11 +	27	;	43	K	59	[	75		91		107	k	123	
12 ,	28	<	44	L	60	\	76		92		108	l	124	l
13 -	29	=	45	M	61	]	77		93		109	m	125	
14 _	30	>	46	N	62	^	78		94		110	n	126	
15 /	31	?	47	O	63	_	79		95		111	o	127	

1. In Mode 0 these characters must be preceded with an Escape, CHR\$(27), to be printed.

Table 1: Internal character set

GRAPHICS MODES

(orange). Table 1 tells us that A's character number is 33 (column 2) and Table 2 tells us that in order to plot column 2 characters in register 0 colour we must add 32 to the character number.

If we'd wanted to plot the A in register 3's colour (purple), Table 2 tells us that we would have to add 192 to the character number.

The registers contain their default values but we can alter them using the SETCOLOR command as we saw in the last issue.

To illustrate the use of the conversion factors type in Program 4 while you've still got Program 3 in memory. It overwrites lines 170 and 180 and adds lines 190-220, using the same technique as we used last time.

```
170 FOR A=1 TO 10
180 READ X
190 COLOR X
200 PLOT A+5,5
210 NEXT A
220 DATA
65,116,193,242,73,32,117,
```

PROGRAM IV

Play about with the actual colours display by changing the contents of

the registers via SETCOLOR. You can get some nice effects with a well-pace FOR ...NEXT loop.

Now lets continue, so far in this series we've looked at the text modes obtained using Graphics 0, 1 and 2. We will now start on the graphics modes, or map modes as they're sometimes called.

Modes 3, 5 and 7 can be conveniently taken together because they are all four-colour modes. They differ in the size of the smallest block, or pixel, that can be placed on the screen. That is, they offer different levels of resolution and therefore make different demands on memory space.

The pixels in a Mode 3 screen are the same size as those of Mode 0. If you type:

GRAPHICS 3

most of your screen will go black and you'll be left with the familiar blue text window at the bottom.

You now have 20 rows of 40 columns on which you can produce your display. Before we start trying to put anything up there, let's get the colour register sorted out in our minds.

I often think that the designers of the Atari and the writers of the Basic were kept apart in order to produce

GRAPHICS MODES

		POKE 756,224		POKE 756,226	
Mode 1	SETCOLOR 0	+32	+32	-32	-32
	SETCOLOR 1	None	+64	-64	None
or Mode 2	SETCOLOR 2	+160	+160	+96	+96
	SETCOLOR 3	+128	+192	+64	+128

Table II: Character colour assignment

as many different numbering systems as possible.

I'm not always this cynical - it comes over me when I try to remember all the different schemes for selecting a colour.

Registers 0, 1 and 2 hold the information for the foreground colours and register 4 holds the information for the background colour.

Register 4 defaults to black while registers 0, 1 and 2 default to orange, light green and dark blue respectively.

We can use the SETCOLOR command to alter these colours. With a clear Graphics 3 screen, try typing:

SETCOLOR 4,13,0

The black background should have

Getting to grips with the graphics modes

been replaced by darkish green because you have changed register 4 to colour 13 with luminance of 0.

When we want to put something on the screen, the COLOR command selects which of the registers to take the colour information from.

It's here where the numbering

starts getting tied in knots, because COLOR 0 selects the background colour information in register 4.

COLOR 1 selects register 0, COLOR

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2 selects register 1 and COLOR 3 selects register 2. As you can see, for these three registers the COLOR number is one more than the register 1 it selects.

It's not difficult, but it could have been simpler.

At this point I suggest you press Reset to get back to default conditions and then type GRAPHICS 3 (or GR.3 to save a bit of typing). Now let's put something up there.

Try typing:

```
COLOR 1: PLOT 15,15
```

This should yield an orange square fairly close to the text window.

The COLOR 1 selects the colour in register 0 (orange) and the PLOT 15,15 fills the pixel at screen position 15,15 with a block of this colour.

Press Reset again and try entering Program V. When you Run it, two things should be demonstrated.

Firstly, the size of the orange block gets smaller as we move from Mode 3 through Mode 5 to Mode 7. In other words, Mode 7 has higher resolution than Modes 3 and 5.

Secondly, the orange square 'moves' up towards the top left-hand corner as the mode changes. This illustrates that screen position 0,0 is actually at the top corner.

```
10 FOR A=3 TO 7 STEP 2
20 GRAPHICS A
30 COLOR 1:PLOT 15,15
40 FOR DELAY=1 TO 300:NEXT DE
L A Y
50 NEXT A
```

Program V

For many people it seems more natural to think of 0,0 as being the bottom left-hand corner. You'll have to remember this or your displays will have a nasty habit of appearing upside-down.

If you've run Program V you'll be left in Mode 7 so press Reset and go back to GRAPHICS 3.

If you enter:

```
COLOR 1:PLOT 15,15
```

again you'll once more have the orange square.

Inspirational, isn't it?

In addition to the PLOT command, the other main command for producing displays in these modes is DRAWTO. As you might imagine, this command causes a line to be DRAWn from the last PLOTted position TO the specified position.

If you enter DRAWTO 15,4 a vertical orange line should appear. Try DRAWTO 20,4 to produce a

GRAPHICS MODES

horizontal line.

If you now enter DRAWTO 30,15 you'll see how sloping lines are produced - not very well in a low resolution mode like this, but it's often adequate.

Program VI shows how you can produce simple displays using this

```
10 GRAPHICS 3
20 COLOR 1:PLOT 19,5:DRAWTO 19
,14
30 PLOT 17,5:DRAWTO 17,11:DRAW
TO 14,14
40 PLOT 21,5:DRAWTO 21,11:DRAW
TO 24,14
```

Program VI

method. It's all the same colour, but if you add a line:

25 COLOR 2

you can change the colour used by lines 30 and 40.

You can also change the mode number in line 10 to either 5 or 7 and see the effect of increasing resolution.

Because Mode 3 has the same pixel size as Mode 0, the bottom right-hand corner of a Mode 3 screen is position 39,19. If you try to PLOT 39,20 you won't see anything happen because the text window is effectively covering row 20.

However, if you try to PLOT 40,19 you'll get an ERROR 141 telling you that the cursor is out of range.

In Mode 5 the bottom right-hand corner is position 79,39 and in Mode 7 it is 159,79. But while Mode 3 needs only 434 bytes of memory, Mode 5 needs 1174 bytes and Mode 7 needs 4190 bytes. As you can see, the extra resolution costs memory.

You don't need to specify a particular screen point in the PLOT command. You can provide PLOT with an expression to evaluate, the result of which will give the position to be plotted.

Program VII gives a brief example of this. We can't say where each point will be plotted until the random number generated has been used twice.

You can also print to the screen using the PRINT #6 format that we used in Modes 1 and 2. The only difference is

```
10 GRAPHICS 3
20 COLOR 1
30 FOR A=1 TO 20
40 PLOT INT(RND(0)*39+1),INT(RN
D(0)*19+1)
50 NEXT A
```

Program VII

GRAPHICS MODES

that you can't print an actual character like letter or number.

Being a map mode, pixels are either lit (in a colour) or unlit (in the background colour).

To demonstrate the effect, press Reset and enter GR.3 to get a clear Mode 3 screen. Now type:

```
POSITION 15,15:PRINT #6;"1"
```

and you should see the orange square that we started from. Try substituting a 2 or a 3 for the 1 and see the effect.

```
10 DIM A$(3),B$(5),C$(2)
20 A$="111":B$="22222":C$="33"
30 GRAPHICS 3
40 COLOR 3:PLOT 10,17
50 DRAWTO 10,1:DRAWTO 19,1:DRAWTO 19,3
60 FOR A=4 TO 6
70 POSITION 18,A:PRINT #6;A$
80 NEXT A
90 FOR A=7 TO 10
100 POSITION 17,A:PRINT #6;B$
110 NEXT A
120 A=11 TO 14
130 POSITION 17,A:PRINT #6;C$;" ";
C$
140 NEXT A
150 POSITION 14,7:PRINT #6;A$
160 POSITION 22,7:PRINT #6;A$
170 POSITION 16,15:PRINT #6;A$;" "
:A$
```

Program VIII

There are times when it's easier to use the PRINT #6 than PLOT and DRAWTO. Program VIII produces a chunky Mode 3 display using a combination of the two methods.

It's not brilliant programming but it might give you some ideas while your hanging around waiting for the postman to deliver the next issue.

ATARI 8-BIT COMPUTERS

In last issue we had an article on the 8-bit computer, the Table of contents showed four subjects on the Atari 8-bit computer. In this issue we continue but cut out some of the subjects that, in my view, would not appeal to most of our readers.

Welcome to the comp.sys.
Atari 8-Bit Newsgroup!
Atari 8-Bit Computers
Frequently Asked Questions
List.
by Michael Current

ATARI 8-BIT COMPUTERS!

File Formats

9.1) What's this UUEncoding stuff (.uu, .uue files) all about?

9.2) What is an .arc file?

9.3) What are the .DCM, .ATR, and .XFD file formats?

9.4) What are the .XMO and .BIN file formats?

File Transfer Solutions

11.1) What are the best terminal emulators available?

11.2) Can I read/write 8-bit Atari disks on an IBM-PC?

11.3) Can I read/write MS-DOS disks on an 8-bit Atari?

11.4) How do I transfer files using a null modem cable?

General Interest

13.1) What's the best DOS for the Atari?

Subject: 9.1)

What's this UUEncoding stuff (.uu, .uue files) all about?

UUEncode/UUdecode is a UNIX utility that will convert a binary file into

100% printable ASCII characters, so that the file may be posted or e-mailed anywhere a text message can go. The 8-bit Atari is perfectly capable of UUEncoding/UUdecoding as well. On the archives:

Uudecode 1.2a by John Sangster - very functional. filenames: Archivers/uudecode.bas, Archivers/uudecode.doc

Yet Another UU-coder by John Dunning - both decoding/encoding. filename: Archivers/yau.arc

Uudecode.com, Uuencode.com by ??? - "newer, cleaner, easier to use." filename: Utilities/uue.arc

Dumas UU-coder by John Dunning filename: Cc65/dumasuu.arc

Subject: 9.2)

What is an .arc file?

A file with the extender .arc has been archived in a standard manner that is common in the MS-DOS world. This is done to make the file shorter, so it takes up less space on your disk and it takes less time to transfer between computers. The archives

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contains several 8-bit Atari archivers fully compatible with this standard, including:

Super Un-Arc 2.3, Super Arc 2.0 by Bob Puff - highly recommended.
filenames: Archivers/superarc.arc - both Super Un-Arc & Super Arc
Archivers/suprarc2.arc - Super Arc
Archivers/supunarc.com - Super Un-Arc
Archivers/supunarc.uue - Super Un-Arc

Subject: 9.3)

What are the .DCM, .ATR, and .XFD file formats?

These are all filename extensions used to name files containing entire 8-bit Atari floppy disk images.

DCM - Disk Communicator format.
Invented by Bob Puff,
mailto:76702.1076@compuserve.com
for his Disk Communicator 3.2 utility.
Used when working with native Atari hardware.

ATR - Atari disk image format.
Invented by Nick Kennedy,
mailto:nkennedy@cswnet.com for his SIO2PC project. Used when working with non-Atari hardware.

XFD - Xformer disk image format.
Invented by Emulators Inc,
mailto:emulators@msn.com for their ST Xformer emulator. Identical to ATR except without the 16 byte header. Used when working with non-Atari hardware.

PRO - APE ProSystem format.
Invented by Steven Tucker,
mailto:classics@nacs.net for his APE ProSystem device. Used with APE, the Atari Peripheral Emulator.

Subject: 9.4)

What are the .XMO and .BIN file formats?

XMO stands for XMODEM. The idea was that the file was not plain text, but was a binary file. As a binary file, it had to be downloaded using a file transfer protocol such as XMODEM. The use of ".xmo" as a filename extender was popular once, but has been discouraged for years.

BIN - another filename extension sometimes used to designate binary-load files. Like .xmo, use of .bin is discouraged.

Subject: 11.1)

What are the best terminal emulators available?

Here are some of the more popular PD/freeware/shareware terminal programs available.

BobTerm 1.22, shareware by Bob Puff
Emulates: VT52 Text: 40 columns in gr.0; 80 col. w/ XEP80
File Xfer: XMODEM, YMODEM, FMODEM
Autodial: Yes Backscroll buffer: No
Capture-to-disk: Yes
Summary: Feature-filled; excellent for BBSing
filename: Telecomm/

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bterm12.arc

Kermit-65 3.7, PD by John R. Dunning Emulates: VT100 Text: 40 columns in gr.0; 80 col. in gr.8; 80 col. w/ XEP80 (sort of) File Xfer: Kermit Autodial: No Backscroll buffer: No Capture-to-disk: No Summary: Excellent VT100 emulation; rock-solid Kermit Xfers filenames: Telecomm/k65v37.arc - latest version Telecomm/k65doc.arc - documentation Telecomm/k65src.arc - source code

OmniCom by CDY Consulting Emulates: VT100 Text: 80 columns in gr.8 File Xfer: XMODEM, Kermit Autodial: No Backscroll buffer: No Capture-to-disk: No Summary: Combination VT100, XMODEM, Kermit; buggy at file Xfers filename: Telecomm/omnicom.arc

VT850 B1, shareware by Curtis Laser Emulates: VT100/VT102 (plus complete VT220 keymap) Text: 40 columns in gr.0; 80 col. w/ XEP80 File Xfer: None Autodial: No Backscroll buffer: No Capture-to-disk: Yes Summary: Excellent at VT100 on the XEP80; 1200bps top speed filename: Telecomm/vt850b1.arc

FlickerTerm 80 v.0.51, freeware by LonerSoft (Clay Halliwell) Emulates: VT100, IBM ANSI Text: 80 column via a special Graphics 0 screen (no hardware req'd) File Xfer: None Autodial: No Backscroll buffer: No Capture-to-disk: No Summary: Fastest and most complete VT100 emulation; readability a minus

filename: ?????

Ice-T XE v. 2.72 (128K) or Ice-T 1.1 (48K) by Itay Chamiel Emulates: VT100 Text: 80 column via a fast-scrolling graphics 8 screen File Xfer: XMODEM download Autodial: Yes (2.7 XE) or No (1.1) Backscroll buffer: Yes--8 screens (2.7 XE) or One screen (1.1) Capture-to-disk: Yes--up to 16K (2.7 XE) or No (1.1) Summary: Excellent for high-speed VT100 emulation

Subject: 11.2)

Can I read/write 8-bit Atari disks on an IBM-PC?

There are several programs that allow an MS-DOS system to work with an Atari-format diskette. The following require a DOS and disk drive on the Atari end capable of the SS/DD 180K format:

ATARIO by Dave Brandman w/ Kevin White - Reads SS/DD 180K Atari disks. filename: Diskutils/atario21.arc

SpartaRead by Oscar Fowler - Reads SS/DD 180K SpartaDOS disks. filename: Diskutils/sr.arc

UTIL by Charles Marslett - Reads/Writes SS/DD 180K Atari disks. Use MyUTIL! filename: Diskutils/dskutil.arc (Older versions are contained in pcxfer.arc, util.arc, and atarisk.arc)

MyUTIL by Charles Marslett with

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Mark Vallevand, and SpartaDOS disk utility by Mark Vallevand filename: Diskutils/myutil.zip includes best version of UTIL for read/write of SS/DD 180K Atari disks, plus Mark's SpartaDOS disk utility v0.1e to access 180K SpartaDOS disks

MyUTIL and the XF551 - tips from <mailto:JTKIRK@urp.edu.pe>:

]MyUtil works fine with the XF551. The XF551's speed is 300 rpm (sometimes even]up to 303 rpm). I've got two XF551s and can read/write disks written on a PC]with MyUtil on both with no problems. MyUtil even can write to a DS/DD disk,]for a total of 360 K, BUT: the ATARI disks not only have the bits inverted,]the second side is also read BACKWARDS respect to PC disks. That is, when]MyUtil on the PC writes to what it thinks is sector 721, it really is writing]to sector 1440! Worse, if you take an ATARI disk with a file whose sectors]get past sector 720, MyUtil will attempt to read the sector 2161-n instead of]'n', and you'll get a 'truncated record' error. The solution is simply to]rewrite the code to take into account this (if $sec > 720$ then $sec = 2161 - sec$).]Let me know if you modify this. You don't know how frustrating it is to have]to use only 180 K of a 360 K disk! I'm going to analyze the source code, but]I don't know if I will be able to modify it properly. If someone does it]before, please email me and send

me an uuencoded copy or tell me where to get]it.

Here's some advice on using the above utilities from <mailto:hans@umd5.umd.edu> (Hans Breitenlohner):

There are two technical obstacles to interchanging disks between DD Atari drives and PC drives.

1. The Atari drive spins slightly slower (288 rpm instead of 300 rpm). If you format a disk on the Atari, then write sectors on the PC, it is possible that the header of the next physical sector will be overwritten, making that sector unreadable. (The next physical sector is usually the current logical sector+2). The solution to this is to format all disks on the PC. (Aside: Does anybody know how this problem is handled on the XF551? Is it also slowed down?) Konrad Kokoszkiewicz, <mailto:conradus@plearn.edu.pl> answers: "The XF551 disk drive is not slowed down - these drives are spinning 300 rotations per minute. To prevent troubles with read/write disks formatted and written on normal Atari drives (288 rot/min), the main crystal frequency for the floppy disk controller is 8.333 MHz (not 8 MHz, as in 1050, for example)."
2. If the PC drive is a 1.2M drive there is the additional problem of

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the track width. The following is generally true in the PC world: - disks written on 360k drives can be read on either drive - blank disk formatted and written on 1.2M drives can be read on either kind - disks written on a 360k drive, and overwritten on a 1.2M drive, can be read reliably only on a 1.2M drive. - disks previously formatted on a 360k drive, or formatted as 1.2MB, and then reformatted on a 1.2M drive to 360k, can be read reliably only on a 1.2M drive. (all this assumes you are using DD media, not HD).

Solution: Use a 360k drive if you can. If not, format disks on the Atari for Atari to PC transfers, format truly blank disks on the PC for PC to Atari transfers.

While the above work with SS/DD 180K Atari-format disks, the following combination of utilities can be used to work with SS/SD 90K Atari-format disks, and is currently the best bet for reading SS/ED 128K Atari-format disks.

AnaDisk 2.07, shareware by Sydex - Reads/Writes "any" 5.25" diskette
filenames: Xf2/anad207.zip,
Xf2/anadisk.txt Deana by Nate
Monson - converts AnaDisk dump
files from Atari format filenames:
Xf2/deana.com, Xf2/deana.txt

Explanation --> According to
mailto:crow@cs.dartmouth.edu
(Preston Crow), "As best as I can

figure it out, if your PC drive happens to read FM disks (I'm not sure what the criteria for that is), then you can read single density disks on your PC by dumping the contents to a file with AnaDisk, and then using Deana.com to convert the dump file into a usable format. For enhanced density disks, Anadisk generally only reads the first portion of each sector, but it demonstrates that it is possible for a PC drive to read enhanced density disks."

Subject: 11.3)

Can I read/write MS-DOS disks on an 8-bit Atari?

- a) Mule by Rick Cortese - Read/Write 180K MS-DOS disks with an Atari 1050 drive or equivalent. Very limited. filenames: Diskutils/mule.arc, Diskutils/mule.exe, Diskutils/mule.txt
- b) SIO2PC, described elsewhere in this FAQ List (section 12.4), can be used to read/write to a hard drive connected to an MS-DOS system. This can also be a very effective file-transfer solution.
- c) The XF551 3.5" Upgrades from Computer Software Services (see the companion vendor/developer list) allow the Atari XF551 disk drive to read 720K 3.5" MS-DOS disks.
- d) The Floppy Board, the add-on to

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the Black-Box from Computer Software Services (see the companion vendor/developer list), allows both low density (360K 5.25", 720K 3.5"), and, in the case of the Deluxe Version, high density (1.2M 5.25", 1.44M 3.5") external MS-DOS-standard floppy drives to be used on the Atari. A utility is included to read/write MS-DOS formatted floppies in all supported densities.

Subject: 11.4)

How do I transfer files using a null modem cable?

This section by <mailto:cb541@cleveland.Freenet.Edu> (James R. Gilbert)

A: Simply put, you need a terminal program and an RS 232 port on each computer. The RS 232 ports need to be connected together using a 'null modem cable'.

For up to 4800 bps, no flow control lines need be connected. Just cross the transmit and receive lines and join the grounds together. (Transmit is pin #2, receive is pin #3 and ground is pin #7 on the 25-pin port.)

The right hand pin on the 'long' side of a female 'D' connector is #1.

There are 13 holes on this 'long' side, 12 holes on the 'short' side.

The numbers go from #1 on the right to #13 on the left on the 'long' side and from #14 to #25 from right to left

on the 'short' side.

#25 is closest to being under #13.

A male connector is the mirror image of this.

Most terminal programs allow a null connection, without a carrier detect. Notably, '850 Express!' does not.

A convenient way to make a null modem cable, up to about 30 feet long, is to use two female DB25 connectors and some three or more conductor cable. Using the two DB25 female connectors allows unplugging your modem and plugging in the null modem cable. This also avoids the confusion of the wide variety of serial port jacks on different computers. Almost all computers connect into the modem via a DB25 connection.

The SIO port on the Atari cannot be used directly. An 850 Interface Module, P:R:Connection, Multi I/O, Black Box (by Computer Software Services) or similar device that provides an RS232 port must be used.

On the Atari, the port is a female DB9. So you need a male DB9 to male DB25 modem cable to connect to your modem. So why not use this cable as your null modem cable as well?

For higher speed connections, above about 9600 bps on the 8-bit, you need the flow control lines. You also need a Multi I/O or Black Box, which use the PBI (parallel bus), then you

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can go higher than 9600 bps.

Following are pin assignments for a DB25 pin RS 232 C port.

13	1
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	
25	14

(Above is female, male is mirror image.)

1. Protective Ground
2. Transmit Data
3. Receive Data
4. RTS (Request to Send)
5. CTS (Clear to Send)
6. Data Set Ready
7. Signal Ground
8. Carrier Detect
12. Select Alternate Rate
15. Transmit Clock (sync)
17. Receive clock (sync)
20. Data Terminal Ready
22. Ring indicator
23. Select Alternate Rate
24. Transmit Clock

A high speed cable would need not only pins 2 and 3 crossed but also pins 4 and 5 as well as 6 and 8. Or better yet, make a true 25 wire, straight through cable and use a commercial null modem. A commercial null modem is just a small device with the correct lines already crossed.

DTE = Data Terminal Equipment, i.e., your computer.

DCE = Data Communications

Equipment, i.e., your modem.)

Subject: 13.1)

What's the best DOS for the Atari?

This is a matter of opinion, but general consensus is that all 8-bit Atari users should treat themselves to either MYDOS or SpartaDOS to appreciate the power of the system.

Either MYDOS or SpartaDOS will work with almost any disk drive, up to 8 drives or hard disk partitions, and ramdisk.

MYDOS is modelled after Atari DOS 2.0S/2.5, but provides subdirectory and hard-drive support. MYDOS 4.53 is freeware from Wordmark Systems (Charles Marslett and Bob Puff).

There are two versions of MYDOS 4.53, one uses 3 digit sector numbers where possible, known as 4.53/3; the other, known as 4.53/4, uses 4 digits minimum. Complete documentation about the disk formats and commands, as well as the source code, is available.

SpartaDOS is a completely different command-line DOS modelled after MS-DOS, though it is perfectly capable of reading all Atari DOS and MYDOS disks. SpartaDOS 3.2g is disk-based; SpartaDOS X 4.22 is cartridge-based and includes many additional features. SpartaDOS is available from Fine Tooned Engineering (see companion vendor/developer list). SpartaDOS

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3.3a and 3.3b were rewritten by Stephen J. Carden for use with BBS Express PRO!.

It is recommended that all 8-bit Atari users own at least DOS 2.5 for complete compatibility with existing software, and then choose either SpartaDOS or MYDOS as they see fit. DOS 2.5, MYDOS and SpartaDOS are all available on the archives. filenames: Os/dos25.arc (DOS 2.5) Fte/fte32g.arc (SpartaDOS 3.2) Os/mydos453.dcm (MYDOS - latest version) Os/mydos45m.arc (MYDOS - latest complete doc's)

Any other versions of DOS all 8-bit Atari users should be aware of??

Subject: 13.6)

What versions of Atari BASIC or the C/GTIA chip do I have?

Atari BASIC:

At the READY prompt, enter "PEEK(43234)"

If the result is: You have Revision:

162	A
96	B
234	C

Freddy Offenga,
mailto:offen300@hio.tem.nhl.nl adds:
there's another good answer (IMO):

You can also take a look at the part numbers on the IC's inside your Atari and compare them with the numbers

from the following table:

Part#	Version
CO12402 + CO14502	A
CO60302A	B
CO24947A	C

CTIA or GTIA installed?

In BASIC, type POKE 623,64 [RETURN] and if the screen blackens, you have the GTIA chip. If it stays blue, you have the old CTIA.

The following Operating Systems exist for the Atari 8-bit:

(SEE NEXT PAGE)

TARI-TALK

In answer to Dennis Fogerty who asked for details on the Tari-Talk interface in issue 26, I'm afraid this interface is no longer available, but there may be some still floating about second hand. I'm sorry I didn't mention it in last months issue, it completely slipped my mind. I tell you what, if you still want me to write about it drop me a note and I'll write about it in next issue. I am afraid I cannot sell you my Tari-Talk interface I am using it all the time.

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Rev.	System(s)	Models	Size	Part Nr(s)
A	NTSC	400/800	10kB	CO12499B, CO14599B, 12399 B (*)
A	PAL	400/800	10kB	CO15199, CO15299, CO12399 B
B	NTSC	400/800	10kB	(?)
B	PAL	400/800	10kB	(?) (*)
1 A	NTSC/	1200XL	16kB	CO60616A, CO60617A
1 B	NTSC/	1200XL	16kB	CO60616B, CO60617B (?) (*)
1	NTSC/PAL	600XL	16kB	CO62024
2	NTSC/PAL	XL/XE	16kB	CO61598B
3	NTSC/PAL	XE	16kB	C300717
4	NTSC/PAL	XEGS	16kB	C101687

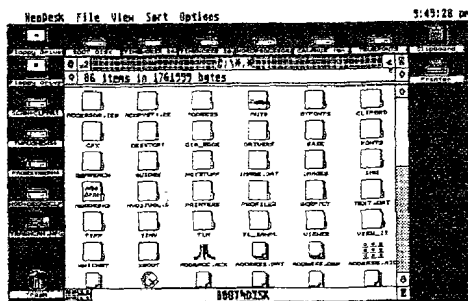
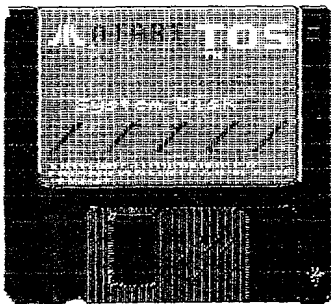
(?) more information or confirmation required

(*) these versions should exist, although I've not seen them.

If you have one (or more?) of these, please contact me.

NOTE:

The 400/800 O.S's consist of three ROMs (two 4kB and one 2kB).



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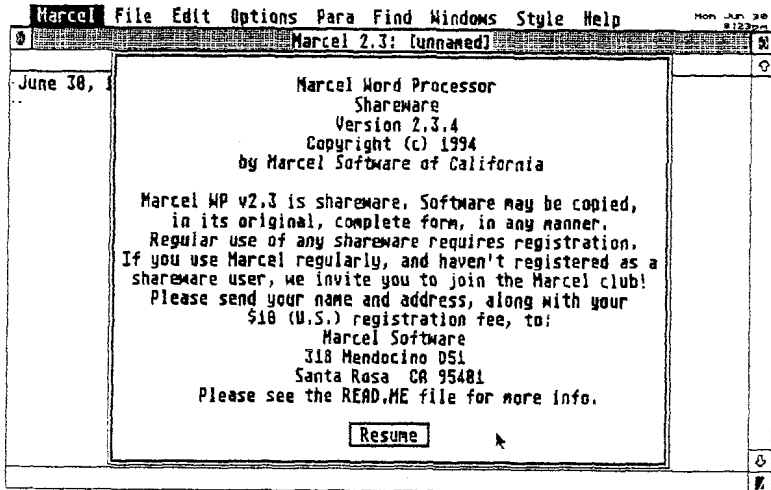
If you are using a computer, I have no doubt you do, or you wouldn't read this newsletter, you are using a word processor. I don't know what kind, but I am sure you would like to have more than one in your library, if you're like me you like to experiment with them to find one to suit your needs. I have in my possession seven word processors and have used all of them in the past, I found some are good, some very good and others I couldn't get used to at all. I've got one, I like it very much, but I'm not using it often. It is similar to a Desktop publishing program, I prefer a DTP better and I've got a few to play around with.

Now this one I am writing about first, Marcel, is now available free. It started its life as a commercial word processor, was then sold as a Shareware, but is now a Freeware. If you like me you want a word processor that's easy to use and yet gives you features that much dearer programs offer, if you are willing to delve deep beneath the surface, you can make life much easier with a WP. Don't be put off by the many features on offer, because most jobs can be carried out without these special features.

It doesn't matter how good a word processor is at helping you, you still have to use your fingers to type everything in. It doesn't even matter if you're not very good with spelling, you can use Marcel's own spelling checker.

With Marcel you can work with two or more documents at once. This can be very useful when you work on a long document, or even if you want to compare a draft and final versions of a document. Whatever the reason, it is handy to transfer text from one document to another. To transfer text, open both documents and choose Split from the drop down window, or just press (F3). Select the block of text to transfer and use cut or copy from the Drop Down Menu Edit. Highlight the other document by clicking on the window with the left mouse button, select the spot where you want to place the text and select paste from the Edit Menu. You can now close the second document, use Control F3 and continue with your work in the first window. To highlight a block of text, move the mouse pointer to the beginning of the text and click the left button, now move to the end of the text you want to move and click the right mouse button, then

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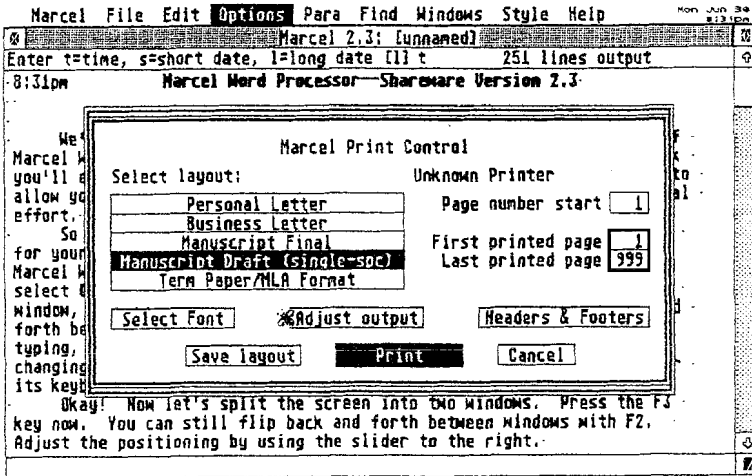
proceed to the paste option.

Have you ever had a thought of an idea you want to put into your letter or document, but you want to put it nearer the end, but so you won't forget you had to use pen and paper to make a note. Well Marcel has a Notes feature for just such an emergency when your busy writing an article. To open the Notes window press (F1), type in the text and then press Control F1 to go back to the main window and carry on with your work. When you want to use the note in your text simply go back to the Notes window highlight it, as explained above and use the Cut or Copy option, move to the main

window and paste it into your text.

The F-keys are also configurable, you can attach frequently used text, such as names or favourite phrases, to the F-keys. Just type a phrase or text then press Control+Shift+F1-10. To access the text held in the F-key, press the Shift+ the appropriate F-key, and the text is pasted at the cursor position, like so, TWAUG Newsletter. You can go over the top with it, just keep pressing the Shift+F-key and it pastes it in forever. When you have finished typing your letter or document you want to print it. Before you do you must choose a printer driver that is compatible with your printer. First go to the Options

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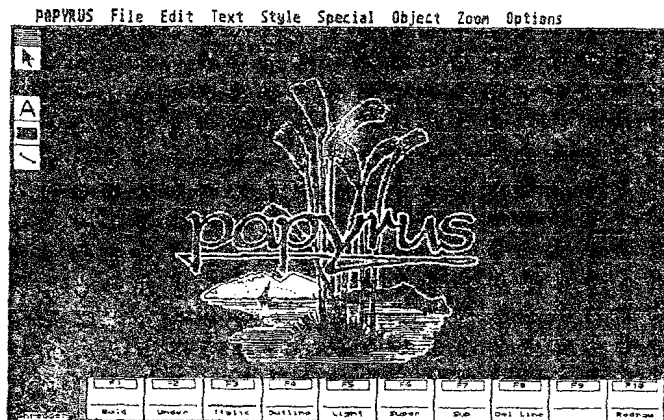


Menu and select Preferences, a Dialog Box is displayed, click in the box Choose printer type and a Selector Box is displayed with some printer drivers, select the driver compatible with your printer and click on Save, make sure the program disk is in the drive. Every time you boot the program disk the selected driver is loaded. You can also load a font, but you can't mix typefaces in a document only one font can be used. Once you've chosen the typeface and the printer driver you can start printing, but Marcel has another feature and that is a print preview mode, you can view your document or letter before you print. Well that's it - just pop the letter or your novel into

an envelope and drop it into that post box.

As mentioned at the beginning of this article some word processors are better than others, one I class the top of the range is of course POPYRUS. It is an expensive word processor but it gives you more then just a word processor it's also a Desktop Publisher. It is similar anyway and has lots of features the same, you can paste images into the text in IMG format, to create letterheads and business cards. I must admit I'm not using it nowadays I prefer Desktop Publishing programs and I have 5 of them. Besides that, I have used Papyrus and I'm familiar with this

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good word processor.

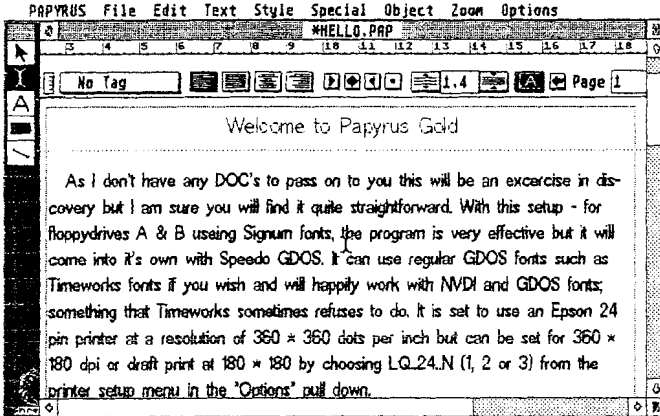
The screen of Papyrus shown here is what you see when you boot up the program, and in the course of this article I will show more with some of the options available. Now first of all let me describe to you how best to make a letterhead for your letters and business cards.

I have been saying that you can paste images into Papyrus and there are plenty Clipart images available for the ST's. First select an image of your liking, one that you think represents your standing. Once it is pasted on the page, adjust it to the size and shape to suit your design. Add the main title with a large size and good looking font and set up the basic layout. If you choose a centred

layout, centre the text and move the picture and place it just above the text. Use a smaller font size for your address and telephone number. Add the address with a left-aligned text on the left of the picture and then add the telephone number with right-aligned text to the right of the picture. Use the margin and picture frame lines to line the work up correctly. The guidelines can now be removed to enhance the appearance and a line across the bottom will enhance the design. A different font for your main name will enhance the appearance further.

The design of a business card is relatively small, so use a high Zoom level so you can see better. First get the main title and picture on the page

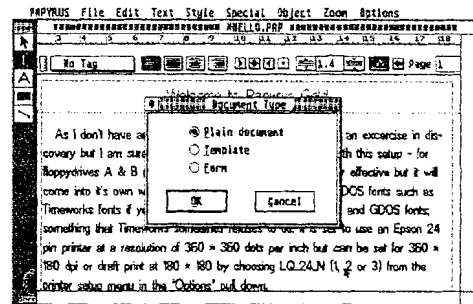
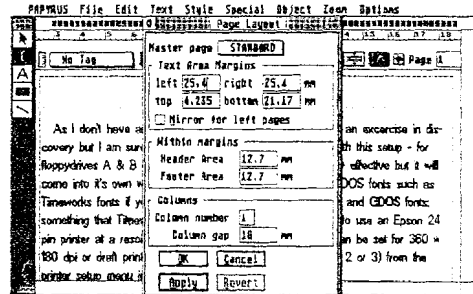
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and centre the text. A capitalised font gives a neat title. Next enter the rest of the text and format, use the centring feature to achieve a professional look. The easy way to create a professional border is to draw two boxes around your work using different line width and try to keep the text box centred.

To create multiple copies of the business cards, use the text first, using the clipboard, don't put the cards too close together. Next copy the graphics by selecting the items in graphics mode and hold down the Control key as you click and drag. Graphics are all pre-formatted so they fit easily into place. When completed remove the guidelines to see how it looks and print them on plain or

coloured card.



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I wrote these two articles on word processors from experience I've used both of them before but not very often. Marcel I've used on a number of occasions and I must say I did enjoy using it.

Papyrus is of course different from Marcel, as I have mentioned it is similar to a Desktop Publisher, I have also used it a few times, maybe not as much as Marcel it is a little more difficult to use. What I wrote about it - doing letterheads and business cards - I've done them. I have actually used Papyrus before I have used a Desktop Publishing program, I practiced with Papyrus doing fancy letterheads.

I will now write about my favourite word processor, PROTEXT - those who read my newsletters from the beginning will know that I was a TextPro user, when I was setting up the newsletters from issue #1 to issue #18. If you write TEXTPRO & PROTEXT you can see they are both the same only turned around. There is a difference though, Protex has more features then TextPro. But besides that I always use Protex before any other word processor.

Protext word processor isn't all that nice to look at, in fact it is just a black screen with the information line at the top. When you first load the program you will be presented with a split screen with the black background. The top screen is the Edit Mode or Text Screen and the bottom is the Command Mode or screen. When you're in the command mode you can call the directory up for any disk drive or hard drive partition, first type the drive number and press Return then type dir and Return and the directory

of that drive is displayed, (see screen snap) on next page.

You can move between the two screen very easily, just press the ESC key anytime. You can select all the menus from the menu bar along the top of the screen, you call it by pressing the right mouse button, or <F3> does the same operation. Moving the mouse pointer over an item in the menu bar makes the menu drop down. There are ten Options in the Menu line plus a Help option, and I can say that there are lots of options available. To exit a menu without

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File Text Block Move Line Sundry Print Spell Style Option 3:25:19 pm

```

PROTEXT v4.37 (c) Arnar 1991 Printer (P) SIMPLE Directory \
A dir
Directory: A:\
HCOPY.B2 F12 32014 01-07-97 15:24
APPOWER.B3C 1626 01-07-97 29:00
2 files occupying 33660 bytes. Free space 655006 bytes.
    
```

selecting anything, click outside the menu.

Protex has a special feature to highlight special dates or anything special you're including into the document or letter by drawing lines around it, to draw lines use the Alternate key and the arrows, (see screen snap) next page.

Protex also lets you save text in ASCII format, this is important especially when you want to export the files to other programs. I find that when you want to change characters from lower case to upper case Protex has a very good feature. If you place the cursor on the character you want to change and press Control+/, this will change from lower case to upper case. To change from upper case to lower case again

placing the cursor onto the character but this time press Control+\. You find these keys next to the Shift keys.

Another feature in Protex is to include into your text special characters. Either press the right mouse button or <F3> and point at the Text option, click on Choose Character, a full character set is displayed and if you click on the character it is inserted into the text where the cursor key is positioned. here is the half and quarter character as an example (½ + ¼.)

A configuration program, CONFIG.PRG, is supplied so you can set up the program to suit your system. All the options appear in large boxes with menu options which you can highlight by clicking with the mouse button, or simply press the corres-

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```
PRTEXT Document WADPNER2.ASC 2K      MH  Rutfn      SCR Line
Page 1  Line 38  Col 1      Insert  No markers set      16:09:14
-----
You say: The top screen shows two lines with black characters on
white background. First is PROTEXT, when you click on Protect it shows
you the directory files and to get back to your work click onQuit
(see screen snap). Next is the document name, the size of that
document, next you'll see H if you have a horizontal plus autformat
and if you press F3 the Menu line comes up, or you can press the right
mouse button, you only need to point with the mouse pointer on any
options of the line and a Menu drops down. (see screen snap). There
are ten Options in the Menu line plus a Help option, and I can say
that there are lots of options available, including a spelling
checker.

Protect has a special feature to highlight special dates or anything
special you're including into the document or letter by drawing lines
around it, to draw lines use the Alternate key and the arrows. see
example:

  3 July 1997 16:06 43
  *RUG newsletter
```

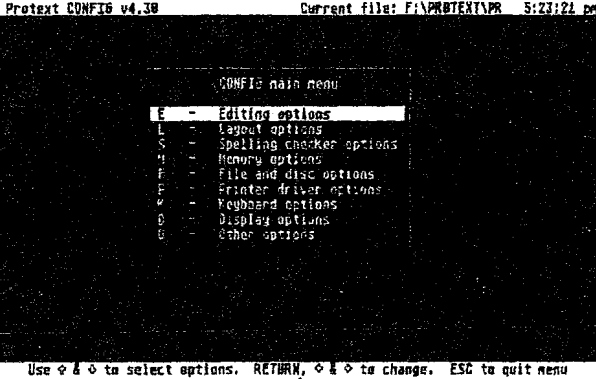
ponding single key in front of the highlighted option. Pressing the Return selects the option and pressing the ESC exits from the menu. Some of the configuration options take you into another dialog box with more options, when you have gone through all the options and configure them to suit you, you may have to press more than once the ESC to move into the main menu from where you can save the new configuration.

I mentioned above that Prottext also has a spell checking feature, take my word for it it is very good. First copy the dictionary on to the same disk od directory as the Prottext program is and instal it using the Configuration file. The dictionary can check single words, blocks of text, the complete

text in memory or file on disk. To check the spelling of a single, highlight it by dragging the mouse pointer over it while keeping the left button pressed. You can use the Control Q or go to the Spell menu and select single word option, the word is then run through the dictionary. The same process is used to check a block of words. Mark the block of words to check and select Check Current Block. To check a file on a disk, select Check File in the Spell menu, checking the complete text in memory, again select the Spell menu and click on Check whole text. Prottext has a built in function that enables you to create dictionary files from text files. Go to the Spell menu, select the Make Dictionary option and a command line appears asking for

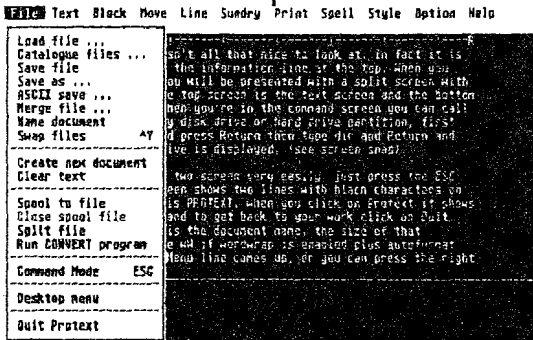
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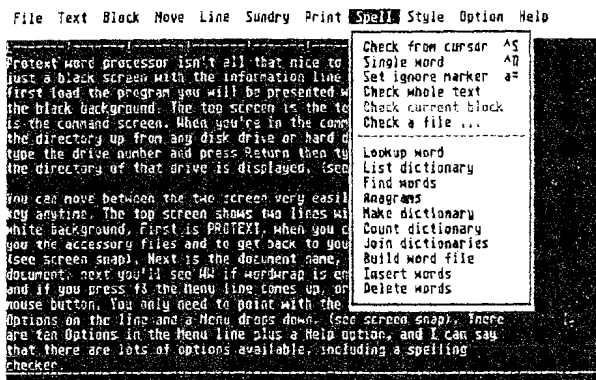


the name of text file you want to convert, enter the name of the file, followed by the name you are going to give the dictionary and press Return. The program convert the entire file into a dictionary file which can then be joined to the main dictionary. There is one drawback, Protex cannot convert files over 1000 words long, just split the files into blocks.

Now let me recap on the screen snaps displayed for Protex. On page 30 is the screen when you boot up Protex, I typed "dir" to get up the directory for disk A. Page 31 contains the screen displaying one of the features of Protex the Line drawing mode. Above is the screen with part of the configuration menu. Below is a display of the File menu options available in the drop down menu.



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The last screen displayed above is the Spell menu option, if you have a good look at it, some may need a magnifying glass to see it properly, it shows you all the options available.

Before I complete this article on word processors, let me introduce another feature of Protex, and that is the ability to handle foreign languages. If you are into foreign languages you can create entire dictionaries with special characters and accents.

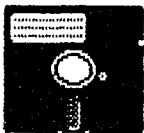
To produce accents press the ALTERNATE and the following key:

- <"> produces an umlaut
- <'> produces an acute accent
- <^> produces a circumflex
- <|> produces a grave accent
- <~> produces a tilde

Pressing ALTERNATE and the following keys produces special characters:

- <C> produces c cedilla ç
- <E> produces æ diphthong æ
- <N> produces n tilde ñ
- <O> produces o slash ø
- <H> produces half ½
- <Q> produces quarter ¼
- <(> produces French open quote “
- <)> produces French close quote »
- <?> for inverted question mark ¿
- <!> for inverted exclamation mark ¡

This is all for this issue in the next one I will write about the Desktop Publisher that's producing this newsletter.



DISK CONTENT

A few more games and some good utilities on this issue disk on Side A.

When you boot this disk with Basic, a menu pops up and all you do is press a number to select the game or utility of your choice.

- 1) Slot Machine
- 2) 2 Dimensional Polar Plots
- 3) Base Hunter
- 4) Quick Dos
- 5) Drive Speed Test
- 6) Air Attack
- 7) Lines of Action
- 8) Daisy-Dot font Examiner

On Side B of the disk we've included Megablaster a nice way to blast your nights away.

Some of the games take a while to load so be patient, as specialy Megablaster.

You will find that the odd number pages of this issue still have the May/June date on, sorry about that, it is my fault I forgot to change it in the footer option. I only noticed it after I had printed all the pages and to change the date and reprint would have ment a lot of wasted paper.



TWAUG NEWSLETTER

ADVERTISING USER GROUPS

LACE

The LONDON ATARI COMPUTER ENTHUSIASTS

As a member of LACE you will receive a monthly newsletter and have access to a monthly meeting. They also support the ST and keep a large selection of ST and 8-bit PD software.

The membership fee is £8.00 annually for more information contact:

Mr. Roger Lacey
LACE Secretary
41 Henryson Road
Crofton Park
London SE4 1HL
Tel.: 0181 - 690 2548

O.H.A.U.G.

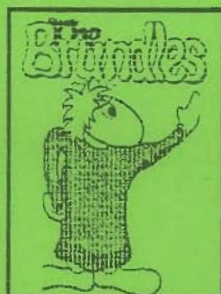
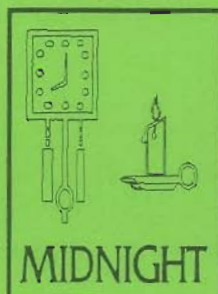
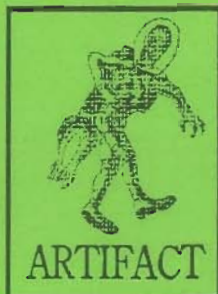
The OL'HACKERS ATARI USER GROUP INC.

O.H.A.U.G. is an all 8-bit user group in the STATE of NEW YORK.

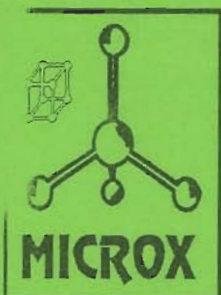
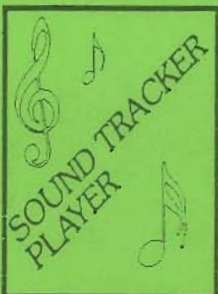
They are producing a bi-monthly double sided disk based newsletter. The disk comes with its own printing utility, which lets you read the content of the disk, one screen page at the time, and/or you can make a hard copy of the disk, in one, two or three columns and 6 to 8 lines to the inch. A large PD Library is available.

Contact:

Mr. Ron Fetzer
O.H.A.U.G.
Secretary & Treasurer
22 Monaco Avenue
Elmont, N.Y. 11003
USA



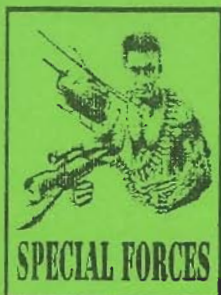
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