

# Graphic Workshop for Windows

FROM ALCHEMY MINDWORKS INC.



If you like this program, please:

Send us \$40.00, the normal user fee for this software.

Registered users of this software are entitled to phone support, notification of upgrades and good karma. When you register Graphic Workshop for Windows we'll send you a copy of the latest version of this software and a registration number to make the closing About box go away. Please tell us the version number of your copy of Graphic Workshop for Windows when you register. We are:

**Alchemy Mindworks Inc.**  
**P.O. Box 500**  
**Beeton, Ontario**  
**LOG 1A0**  
**Canada**

Complete registration information can be found later in this document.

NOTE: German users of Graphic Workshop for Windows should contact our German distributor, PD-SERVICE-LAGE, Postfach 1743, D-4937 Lage, West Germany.

NOTE: Australian users of Graphic Workshop for Windows should contact our Australian distributor, Budgetware, P.O. Box 496 Newtown NSW 2042. Phone (02) 519-4233 FAX (02) 516-4236.

NOTE: French users of Graphic Workshop for Windows should contact our French distributor, DP Tool Club, 102 rue des fusilles, 59650 Villeneuve d'Ascq, France, telephone (33) 20 56 55 33, fax (33) 20 56 55 25.

NOTE: We now have a bulletin board system. See the section on contacting Alchemy Mindworks for more information.

Please share this package with your friends and upload it to any bulletin boards you feel are worthy of it. However, when sharing Graphic Workshop, please distribute the whole, unmodified package. Thanks...

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### **Introduction**

Graphic Workshop is a program for working with computer bitmapped graphic files. It will handle most of the popular file formats, as listed in the contents section of this file.

Graphic workshop is a simple, menu driven environment which will let you perform the following operations on the aforementioned files.

- View them.
- Convert between any two formats (with a few restrictions).
- Print them.
- Dither the colour ones to black and white.
- Reverse them.
- Rotate and flip them.
- Scale them.
- Reduce the number of colours in them and do colour dithering.
- Sharpen, soften and otherwise wreak special effects on them.
- Crop them down to smaller files
- Adjust the brightness and colour balance of the colour ones.

Using Graphic Workshop, you can have your image files in the formats that your software recognizes, all without keeping track of numerous funky utilities. In addition, using the halftoning and dithering facilities of Graphic Workshop, you can convert full colour digitized photographs for use as superb black and white clip art, suitable for inclusion in your documents.

Graphic Workshop will handle image files of any size your computer has enough memory to work with. Hopefully, it lacks even the merest vestiges of bugs... a likely story, but we hope so.

Graphic Workshop will drive your monitor and print through the Windows hardware drivers. If you have screen and printer drivers for Windows, you have them for Graphic Workshop for Windows.

### **Hardware and software**

Graphic Workshop will run on any system which is capable of running Windows 3.0 or better. Its ability to deal with large files is limited by the amount of free memory in your system. Note that unlike the DOS version of Graphic Workshop, Graphic Workshop for Windows cannot use virtual memory.

GWS.EXE - The Graphic Workshop program itself.

GWS.WRI - Yes, you're reading it now.

GWS.HLP - The on-line help file.

EXAMPLE1.IMG - A monochrome picture file.

EXAMPLE2.GIF - A sixteen-colour picture file.

EXAMPLE3.GIF - A 256-colour picture file.

There is no EXAMPLE4, a 24-bit picture file, as the smallest one we could find ran to over 400 kilobytes. There are several 24-bit files on our bulletin board, should you want one to look at.

Note that EXAMPLE3.GIF has a comment block. You can use the Details function of the F4 key to look at it.

### **DOS and Windows Versions of Graphic Workshop**

Graphic Workshop is available in versions to run under MS-DOS and under Microsoft Windows 3.0 or better. With certain exceptions, both applications have essentially the same capabilities. Their user interfaces are similar, within the confines of the environments they run under. Here's a brief overview of the differing capabilities of these two packages.

The DOS version can handle potentially larger files, inasmuch as it will use virtual memory.

The DOS version provides limited EPS support, which the Windows version does not.

The DOS version includes scanner support. The Windows version does not.

The DOS version drives all display cards directly. The Windows version does not... it drives all displays through Windows. It can optionally dither images which have more colours than your display can handle.

The eight-colour dithering options differ slightly between the two version.

All printer support is handled through Windows in the Windows

version of the software. The printing facilities differ slightly between the two versions of Graphic Workshop.

Here's a beg notice. Graphic Workshop for Windows took a long time to write, and almost none of the code which comprises the DOS version of the software was of much use in a Windows environment. As such, we hope that if you use the Windows version as well as the DOS version, you'll regard them as two distinct applications and register them.

### **File formats**

Graphic Workshop works exclusively with bitmapped image files. This is as opposed to vector or line art files. Vector files include DXF, GEM, CDR, Harvard Graphics, Lotus PIC and CGM files, among others. Graphic Workshop does not support vector files, nor is it likely to in the immediate future.

In most cases, the specifications for image files are pretty standardized, and Graphic Workshop will reliably import image files in its supported formats without difficulty. There are a few exceptions to this, as will be discussed in detail throughout this section.

Each of the formats listed here also includes the maximum number of bits of colour the format will support. You can work out the number of colours this represents as 2 to the power of the number of bits. Hence, an eight-bit file has  $2^8$  possible colours, or 256. Twenty-four bit files have essentially an infinite number of possible colours.

### **MacPaint files - Maximum bits: 1**

These can come in two flavours. The most common one is straight ported MacPaint files, that is, files having a "MacBinary" header. The other is "headerless" files, these being the ones used with PFS:First Publisher. Graphic Workshop reads both types, but if you convert a file from a different format to MacPaint format the file will be written in accordance with the setting of the MacBinary header field in the Setup box.

Files converted to the MacPaint format from other formats will be cropped or padded out as necessary to fit in the MacPaint format's 576 by 720 format. Only monochrome files can be converted to MacPaint files, since MacPaint is a monochrome-only format.

### **GEM/IMG files - Maximum bits: 24**

There are actually quite a few variations on IMG files... they handle monochrome and grey level images. The primary application for IMG files is as the bitmapped image file format of Ventura Publisher. Graphic Workshop supports files with up to 256 levels of grey and 24-bit IMG

files with up to sixteen-million colours. Note that 24-bit IMG files are only supported by Ventura 4.0 and better.

### **PCX files - Maximum bits: 24**

These are the files used to hold images for Z-Soft's PC Paintbrush package. These can range from monochrome to 24-bit images. All the various formats are supported by Graphic Workshop.

### **GIF files - Maximum bits: 8**

These can range from monochrome to 256-colour images in any size you can find 'em. Graphic Workshop supports both the 87a and 89a versions of the GIF standard. It will read the first image of GIF files having multiple images.

The Details function of the Get Info box will display the entire structure of a GIF file. Many newer GIF files contain text information along with their images.

### **TIFF files - Maximum bits: 24**

The TIFF options in Graphic Workshop can get a bit involved. The TIFF format offers lots of options to make it applicable to a wide variety of applications... which entails a certain amount of confusion, as well. Registered users of Graphic Workshop are welcome to contact us for help in unraveling the TIFF options if needs be.

Graphic workshop supports monochrome, colour and grey scale TIFF files. Grey scale TIFF files can be created by converting any colour format into TIFF with Graphic Workshop set up to produce grey scale TIFF files using the appropriate options of the Setup box. These import into desktop publishing packages such as Ventura for sharp looking PostScript halftones.

Note that as of this writing Ventura will read grey scale TIFF files correctly. It seems to invert some colour TIFF files.

Colour TIFF files are useful in Corel Draw, among other places. Corel Draw 2.0 will import colour TIFF files for inclusion in CDR graphics. This is preferable to importing colour PCX files, as the size of a TIFF file in Corel Draw is preserved.

Some applications have trouble reading grey scale TIFF files which have been compressed... Gray F/X chokes on them as of this writing, for example. Others read 'em fine. For this reason, Graphic Workshop defaults to creating compressed grey scale TIFF files but you can tell it not to compress them if you're not sure that whatever you'll be importing them into will read them.

Note that due to the wide variations among the programs which produce TIFF files, Graphic Workshop would be lying rather badly if it claimed to be able to read all TIFF files. Specifically, it does not read Huffman or LZW compressed TIFF files as yet, as we haven't devised code to do this in a reasonable amount of space. Colour TIFF files are another area in which Graphic Workshop only handles files from some sources.

When you're creating TIFF files which will be used as desktop publishing art or in other situations wherein they'll be printed to a PostScript printer, you should create them with greyscale expansion enabled. If they will be displayed on a monitor or edited in a paint program, you may want to create them with greyscale expansion disabled.

Whether you create colour or grey scale TIFF files will be largely dependant on the application you want your TIFF files to be read by. Here are a few guidelines:

If you want to import TIFF files into Ventura or PageMaker so they'll output as halftones to a PostScript printer, use grey scale TIFF files with grey scale expansion enabled.

If you want to import colour TIFF files into Corel Draw to print to a colour output device, use colour TIFF files... the grey scale expansion doesn't matter.

If you want to import colour TIFF files into Corel Draw to print to a monochrome output device, use grey scale TIFF files with the grey scale expansion enabled.

If you want to import grey scale TIFF files into a paint or image editing package, such as ImageIn or Desktop Paint 256, use grey scale TIFF files with the grey scale expansion disabled.

Note also that Graphic Workshop packs TIFF files with an eye to maximum unpacking speed, rather than for optimum compression. As such, pictures with between 32 and 256 colours will be promoted to 256 colours. Pictures with between four and sixteen colours will be promoted to sixteen colours.

We have found a very small number of applications which will read colour TIFF files, and hence have not had much opportunity to test the colour TIFF facility of Graphic Workshop with real world software. The TIFF files it works with are correct according to the TIFF specifications... but this rarely means a lot. We will be most grateful for any feedback in this area.

### **WPG files - Maximum bits: 8 (or maybe 4)**

These are the native import graphic files for WordPerfect. These files can contain both bitmaps and line art, or vector graphics. Graphic Workshop can only deal with the bitmapped parts of them. If you view, print or convert a WPG file containing both bitmapped and vector elements, the vector elements will be discarded.

WPG files which refuse to read with Graphic Workshop are usually those which contain only vector elements and no bitmaps. If you use the Get Info function on a WPG file which does not read, the comments field of the file information box will say "Vector file" if this is the case.

Graphic Workshop will deal with WPG files having one, four or eight bits of colour information, that is, monochrome files, sixteen-colour files and 256-colour files.

The WPG specification allows for 256-colour files. As of this writing, WordPerfect itself would not read them. If you wish to use 256-colour images in a WordPerfect document, you might want to either reduce them to sixteen colours or dither them to monochrome, depending upon what you'll be outputting them to.

### **MSP files - Maximum bits: 1**

These are the image files used by the paint program which came with Microsoft Windows version 2. Don't confuse these with PCX files... some versions of Windows 2 came with a Windows implementation of PC Paintbrush from ZSoft as well. The two programs... and the two file formats... are not compatible. MSP files are monochrome only.

### **IFF/LBM files - Maximum bits: 8**

These started out on the Amiga. The IFF file standard is extremely flexible, and allows all sorts of things besides images to be stored in IFF files. IFF files are found on the PC having been ported from Amiga systems. They are also created on the PC by several applications such as Electronic Arts' Deluxe Paint package and Digital Vision's Computer Eyes video scanner board. In the first case they are given the extension LBM. In the second they are given the extension CE. The basic file structure is the same, however.

Deluxe Paint is a bit of a problem in the way it deals with IFF files, actually. This affects 256 colour files. Its native format is a subclass of IFF called PBM, and compresses its images as bytes. It's somewhat unique to Deluxe Paint, and Electronic Arts won't tell anyone quite how it works. You can actually work it out to a large degree, but every so often a file created in this format in the way it seems like it should be



done refuses to load into Deluxe Paint.

The standard form for IFF image files is called ILBM, compressing all images as planes. This is much slower, but it means that files thus compressed will be readable by pretty well all IFF readers... even if you port 'em back to the Amiga. This is how Graphic Workshop creates IFF files. Unfortunately, there's a problem with old versions of Deluxe Paint which will occasionally cause them to stop reading one of these files part way through the image. This happens to IFF files from sources other than Graphic Workshop, so it's probably a bug in these versions of Deluxe Paint. It appears to have been rectified in more recent releases.

If you encounter an image which, when converted into an IFF file will not read into Deluxe Paint, use Setup box the set up Graphic Workshop to produce an uncompressed IFF file. Uncompressed files read into Deluxe Paint with no difficulty.

Note that Graphic Workshop only reads "pure" IFF files, and will not handle the countless variations on the format which have appeared on the Amiga. Specifically, it does not read hold and modify, or HAM, files.

### **BMP files - Maximum bits: 24**

These are the files which are used as "wallpaper" under Windows 3. They can be created using the Paint application supplied with Windows.

BMP files use no image compression, as the intention appears to be to make them fast to load. Plan on your BMP files being very large.

There is a very important aspect of colour BMP files which you should bear in mind when you use this format. Windows uses a fixed palette which Windows Paint cannot go about changing, as doing so would make the screen and border colours change too.

This means that transferring an image to the BMP format may result in some colour shifts when BMP files are imported into Windows applications.

The BMP format can support 24-bit files, which Graphic Workshop does generate. However, as of this writing importing a 24-bit BMP image into Windows Paint results in a noticeable colour shift. This appears to be a peculiarity of Windows Paint.

### **PIC files - Maximum bits: 8**

These should not be confused with Lotus 1-2-3 PIC drawing files.

PIC files are created by PC Paint (not PC Paintbrush) and are used by Grasp, among other things. They come in many flavours. Graphic

Workshop has been tested with the most common ones. In theory it should support them all, but that's only a theory.

PIC files are structured exceedingly weirdly, especially in their sixteen-colour manifestations. For this reason, it's necessary for Graphic Workshop to create a temporary scratch file while it's packing or unpacking a sixteen-colour PIC file. You will note that upon beginning to read or write one, the bar graph will appear to pause for a few seconds before it starts to move.

By default, the temporary file will be written to the current directory. However, you can direct it to somewhere else by including the following line in your environment, for example:

```
SET TEMP=H:\
```

This will cause the temporary file to be written to the root directory of drive H:. You can, of course, specify any path you like. If drive H: is a RAM drive, this will speed up the packing and unpacking of sixteen-colour PIC files considerably.

### **TGA files - Maximum bits: 24**

The Truevision Targa format is used by several high end paint programs and things like ray tracing packages. It can handle images with up to sixteen million unique colours. You might want to read the discussion of images with 24-bit colour elsewhere in this document.

### **EXE files (self displaying pictures) - Maximum bits: 8**

You can convert images with between two and 256 colours to files with the extension EXE. Such files are self displaying pictures. For example, if you have a file called PICTURE.GIF and you use Graphic Workshop to translate it to PICTURE.EXE, typing PICTURE from the command line will cause the picture to display on your screen.

Note that these are DOS EXE pictures, not Windows EXE pictures. They're compatible with the EXE pictures created by Graphic Workshop for DOS.

Pictures written into the EXE format can subsequently be read back into any other format. However, note that Graphic Workshop can only read EXE files which it has created. Use the Get Info function to check out EXE files if you aren't sure whether they're pictures or programs.

Graphic Workshop will not read self displaying pictures written by other applications.

In order for an EXE picture to display, the system which you attempt to run it on must have a card which supports enough colours to show the picture under Graphic Workshop. Specifically, you will need a VGA card to display an EXE picture with 256 colours, at least an EGA card to display one with 16 colours and so on.

EXE picture files support CGA, EGA, VGA and Hercules cards only.

Pictures displayed by converting them to EXE files and running them can't be panned around, even if they're larger than your screen. Hitting any key will return you to DOS.

An EXE picture created by Graphic Workshop will attempt to autodetect the display card type in the machine it's run on. Some cards are sufficiently weird that this isn't always possible. The VGA cards in PS/2 systems are an example of this... IBMs are no longer really IBM compatible in this regard. To get around this, you can run EXE pictures with display card command line overrides. These are the command line switches an EXE picture will accept:

- /CGA - Assume there's a CGA card in the system.
- /EGA - Assume there's an EGA card in the system.
- /VGA - Assume there's a VGA card in the system.
- /HER - Assume there's a Hercules card in the system.
- /VER - Display the version number of the EXE file.

If you run an EXE picture with a question mark as its command line argument, it will display a list of its command line switches, just like Graphic Workshop itself.

The command line switches assume that you're using DOS 3.0 or better.

Note that EXE pictures will not support your super VGA card. The best resolution you'll see them in is 320 by 200 pixels in the 256-colour mode.

You can create EXE picture files either compressed or uncompressed. This can be selected through the Graphic Workshop Setup box. Uncompressed files display quickly but take up a lot of disk space. Compressed files usually save space but display a bit slower. Note that especially in complex scanned or dithered images, you might find that compression actually results in a larger file than leaving an image uncompressed.

### **TXT files (text files) - Maximum bits: 1**

Graphic Workshop will create a 640 by 400 pixel, two colour image from

any ASCII text file. The text will be truncated at 80 columns and 25 lines if it exceeds either dimension. It can contain both alphabetic characters and high order IBM block graphic characters. Tabs are expanded and all other control characters except for carriage returns are ignored.

Note that a suitable text file must be in pure ASCII, not a proprietary word processor format. It must have the extension TXT.

If you convert another file to the TXT format, the image information about the file... its dimensions and such... will be written to the appropriately named TXT file.

Note that as long as you're attempting to read files, you can treat text files just like other monochrome graphic files from within Graphic Workshop. As such, you can view them, convert from TXT and so on.

### **Halo CUT files - Maximum bits: 8**

The CUT format is exceedingly awkward, and Graphic Workshop makes a few assumptions about how CUT files will be used in order to make it workable. To begin with, CUT files don't know how many colours they have in them. They rely on a second file, called a PAL file, to define their colours.

Graphic Workshop looks for a PAL file to decide whether a CUT file has two bits or eight bits of colour. If it doesn't find a PAL file with the same name as your CUT file, it assumes that the CUT file in question only has two bits of colour. Otherwise, it assumes that there are 256 colours in the file.

Files written to the CUT format from Graphic Workshop will appear as two-colour files if they started out that way or as 256-colour files if they had more than two colours initially.

If you're using CUT files and have any suggestions to improve Graphic Workshop's handling of them, or if you encounter problems with its CUT files, please get in touch with us. The CUT format, while occasionally requested, turned out to be very weird.

### **Twenty-four bit files**

Most of the image file formats commonly found in use on a PC which support colour do so using a palette structure, as this is the way most PC full colour display cards work. An image stored in a palette structure file will have a maximum of 256 unique colours, drawn from a potential palette of 16 million.

For practical purposes this colour arrangement is sufficient to reproduce pretty convincing colour photographs. However, for a number of

reasons, high end photographic manipulation software, colour separation software and so on works better with a non- palette image, one in which every pixel is represented as a distinct colour. In these images, every pixel consists of three bytes of colour information, one each for the red, green and blue components of the pixel's colour. Such pictures are referred to as RGB or twenty-four bit pictures.

Among the formats which currently support 24-bit images are Targa, PCX, BMP, IMG and TIFF.

In order to convert twenty-four bit images into palette driven formats, such as GIF,, Graphic Workshop must "quantize" and then "dither" them. Quantizing a twenty-four bit image involves finding the 256 most unique colours in the image. Dithering involves replacing each RGB pixel in the image with a palette value which is more or less the same colour, allowing for the limitations of a 256 colour format. In addition, dithering adjusts the colours of surrounding pixels to make the image as a whole look as much like the original twenty-four bit image as possible.

In order to convert a twenty-four bit image into a palette based format... for example, to convert a twenty-four bit PCX file into a GIF file... you must use the colour reduction function of the Effects button. This will perform a full 256-colour dither, which will usually result in a 256-colour image which is almost as good as the original twenty-four bit image was.

The colour reduction function also contains options to allow you to reduce a twenty-four bit file to lesser numbers of colours. Choosing fewer than 256 colours will produce a smaller file in some cases, but it will also leave you with a less faithful representation of your original colour image.

### **A word about memory**

Graphic Workshop for Windows expects Windows to supply it with the memory it requires. If insufficient memory exists to handle a file, it will say so. Note that it requires real memory, not virtual memory, to buffer an image. This is a bit awkward, in that Windows does not provide a realistic way to ascertain how much real memory is available. As such, the free memory value in the About box may be misleading if you have a permanent swap file, for example.

Unlike the DOS version of Graphic Workshop, Graphic Workshop for Windows cannot spill an image to disk if it runs out of real memory.

### **If you encounter a problem**

While we have tested Graphic Workshop thoroughly, it's possible that

you may encounter a situation we hadn't anticipated, and perhaps a file which will not read. If this happens, we would be interested in knowing about it so we can deal with it in the next release of Graphic Workshop. Here's how to report a problem to us.

Copy your WIN.INI, SYSTEM.INI, GWS.INI, CONFIG.SYS and AUTOEXEC.BAT files onto a floppy. Copy the image files which resulted in the problem and provide a description of what you did and what happened. Tell us in as much detail as possible what sort of hardware you're using.

Alternately, ZIP up the relevant files and upload them to our bulletin board.

If we can't recreate it, we probably won't be able to fix it.

Before you contact us with a problem in Graphic Workshop, please make sure you've read this document thoroughly and that you understand how the software should work. Many problem reports which receive aren't problems with the software at all.

### **Using the main window**

Graphic Workshop always shows you all the names of the image files it knows how to deal with in the current directory, along with all the visible subdirectory names, if any are present. If you are in a subdirectory, you will also see a subdirectory entry which is two periods.

Click on an entry to select it. If you double click on a directory entry or a drive letter... shown in square brackets... you will move into that directory or drive. If you double click on the two period entry, you will move back up your directory tree by one step.

If there are too many files in your current directory to see all at once, Graphic Workshop will allow you to scroll through them using a scroll bar at the bottom of the file name selector box.

If you double click on a file name, Graphic Workshop will display the file.

Clicking once on a file name will select it. You can select multiple files and then select a function to be applied to all of them using one of the function buttons at the top of the Graphic Workshop window.

Whenever Graphic Workshop is processing a file, a status box will appear in the middle of the main window. Click your mouse at any time when this box is visible to abort the current file and any as yet unprocessed files.

Here are the Graphic Workshop function buttons and what they do.

**Clear All**

Untags any previously selected files.

**Tag All**

Selects all the currently available files, save for drive and directory names.

**Rename**

Allows you to rename all the currently selected files.

**Delete**

Deletes all the currently selected files. A prompt will appear to make sure you really want to do this.

**Help**

Invokes the on-line help for Graphic Workshop. The Windows help application and GWS.HLP must be available.

**About**

This button will display an About box with the version number of your copy of Graphic Workshop, our address and some other dogma. It will also include a display of the available memory. Note that this memory value may include virtual memory available to Windows but not of much use to Graphic Workshop, and as such be artificially high. This box also appears when you exit an unregistered copy of Graphic Workshop.

**Quit**

This button exits Graphic Workshop.

**View**

If you double click on a file name or select one and then click on the View button, Graphic Workshop will display the selected file. Select multiple files and click on View to show several files one after another. The View function will start by showing you a wait box, which has a bar graph in it to indicate the status of what you've asked Graphic Workshop to do. When the picture is fully unpacked, Graphic Workshop will open a display window and show you the picture.

If the picture is larger than your screen, the cursor keys will allow you to pan around it. Normally you will pan around in small increments. If you hold down either shift key when you hit a cursor key, you will move around in increments of half your screen dimensions.

There are also scroll bars to move around with.

Hitting Esc or Enter will return you to the main screen. If you have selected multiple files to view at once, Enter will display the next file and Esc will abort any further files and return you to the main screen.

Depending upon the Setup box settings, Graphic Workshop will dither pictures with more colours than your display can manage. It may also warn you if you attempt to view a twenty-four bit image without dithering enabled, as this function can take a long time and cannot be aborted once the display begins to refresh. These options are discussed in dealing with the Setup box.

In the sixteen and 256 colour display modes, you can make adjustments to the VGA colour palette while a picture is being displayed. This can be handled either by opening the Palette box from the Picture menu or by using the colour adjustment keys, as follows. The 'r' and 'R' keys will increase and decrease the amount of red in a picture, the 'g' and 'G' keys will adjust the amount of green, the 'b' and 'B' keys will adjust the amount of blue. The 'i' and 'I' keys will adjust the overall intensity of the picture. The '=' key will return the picture to its normal state. Note that these adjustments only affect the original picture that you're viewing... they do not alter the palette in the file on your disk unless you save the changes to a new file.

You can save an adjusted picture to a new file by selecting Save from the Picture menu. Note that if you are viewing a dithered version of an image, the file you save with the Save function will be dithered too.

You can get information about an image while you're in View mode by selecting Get Info from the Picture menu.

## **Print**

Printing is a batch function. If you tag multiple files and then click on Print, each will be printed.

Graphic Workshop's printing facilities will be determined by the printing capabilities of your print driver. It will print in colour, print to unusual printers and so on if you have an appropriate printer driver installed in Windows.

You can set up your current printer by clicking on the Setup button of the Print box... you'd probably expect this. You can also select the size of your printed pictures using this box. The available percentage values represent the degree of expansion based on the resolution of your printer.



Consult the section on the Setup box to choose setup options which best suit your printer.

Printing under Windows is a lot slower than it is under DOS.

### **Convert**

Graphic Workshop allows you to convert a file of any format into a file of any other format... with a few restrictions. The new file will have the same name as the original but a new extension. Converting PICTURE.MAC into an IMG file will create PICTURE.IMG. PICTURE.MAC will not be affected.

You can batch convert any mixture of file types using Graphic Workshop. Any files which are inappropriate for the conversion you've requested will simply be ignored. The ongoing status will appear in the status box.

You cannot convert pictures having more bits of colour than the destination format can handle. For example, you cannot convert a 24-bit Targa file directly to an 8-bit GIF file. You would have to use the Effects colour reduction facility to do this. Likewise, to convert a colour file to a monochrome one, you'd have to use the Dither function.

### **Dither**

Dithering is a sort of magical process by which colour images can be converted into pretty attractive black and white versions for reproduction on a monochrome screen or a black and white laser printer.

Note that source files for dithering must have more than one bit of colour information.

Dithering often works a lot better if you scale the original image up. Graphic Workshop lets you dither with images of anywhere from "size as" up to 500 percent expansion if you have enough memory.

Note that the Dither only dithers to monochrome. Colour dithering is handled by one of the functions of Effects button.

Dithering is a fairly slow process, and the better the dithering algorithm, the slower it gets. Big files and really good dithering can take half an hour or more on a slower computer, although the results are usually worth it.

At its best, dithering can look better than halftoning, and a dithered file can be printed on both PostScript and LaserJet printers. Dithered files

sent to a PostScript printer will print faster than halftoned files.

If you have Graphic Workshop dither a file, it will create a new file for you of the type selected and with "D\_" before the name. Thus PICTURE.GIF could be dithered to D\_PICTUR.IMG, for example. PICTURE.GIF would be left untouched.

The simplest... and fastest... form of dithering is a Bayer dither. This does not produce great results, but it's extremely quick.

The remaining three dithering algorithms use what is called "error diffusion". These produce really nice looking dithers, but they're quite slow. The fastest... and least attractive... is Floyd-Steinberg. The best... and by far the slowest... is Stucki. The Burkes dither is somewhere in the middle.

All three of these dithers come in two flavours, ... unidirectional and bidirectional. These options will produce slightly different results.

You should plan to experiment with the dithering options of Graphic Workshop a bit to see what it's capable of.

Dithering scans an image line by line, starting in the upper left corner and working down to the lower right corner. For this reason, you will find that if you rotate an image by ninety degrees, dither it and then rotate the dithered version by a further two hundred and seventy degrees, you'll get different results than you would have had you dithered the original image.

Dithering is a batch function. You can tag a number of files and then set them up to dither unattended.

### **Info**

This box will show you some basic information about one or more selected files. Some file formats actually contain a lot more information than can be displayed in the normal Info box. TIFF files, for example, can contain the name of the artist responsible for them, the type of software used to create them and so on. You can get at this sort of optional information for formats which support it by clicking on the Details button of the Info box when it's available. The arrow keys will scroll you through the detail window. Details are available, for example, if you get information about GIF, TIFF or IFF/LBM files.

Note that the Info and details information for EPS files actually pertain to the TIFF preview.

You may need some external assistance in fully interpreting the details.

### **Crop**

This function will scale your selected file or files to fit your display window if they're too large. You can select areas of the displayed image by dragging a rectangle around the bits you like with your mouse. Select Save from the Picture menu to save the selected fragment.

Cropping is a batch function. Note that if you use Esc to abort one cropped file in a batch, the rest of the batch will be aborted.

### **Reverse**

This function will create a reversed version of any image file. The new file will have the same name as the original file, with "R\_" appended to the front of it. Thus, reversing PICTURE.MAC will leave you with R\_PICTUR.MAC. If you reverse a colour image, you'll get a colour negative. These look weird... we haven't found a use for them as yet.

Reversing is a batch function.

### **Transform**

This function will pop up a menu offering you five image transformations. You can rotate an image in ninety degree increments and you can flip it horizontally or vertically. These functions work on images of any number of colours.

Note that the ninety and two hundred and seventy degree rotation functions will take a very long time if your images are large. They're the breaks.

Transformed images will be stored in files with "T\_" in front of the names. Thus PICTURE.GIF will become T\_PICTUR.GIF after any of the five transformations have been wrought upon it. If you rotate it and then flip the rotated image, for example, it will become T\_T\_PICT.GIF, and so on, with intermediate files along the way.

Transforming is a batch function.

### **Scale**

This function will allow you to scale files from 25 to 500 percent.

Your original files will not be altered when you scale them. New files with the prefix "S\_" will be created. Thus, PICTURE.GIF will produce S\_PICTUR.GIF after scaling.

Scaling a picture can produce some really ugly results, depending on

what you scale. Bear in mind that scaling by integral values... down to seventy five or fifty percent, up to two hundred percent and so on... will produce less ugly results than scaling by arbitrary values.

The scaling values you enter will be rounded to the nearest lower integral value. Thus, 42.5 percent will really be 42 percent.

Scaling is fairly time consuming.

You should probably avoid scaling dithered monochrome pictures down. Nothing terribly bad will happen, but for reasons which will become obvious if you think about it, the results will almost always be really ugly.

Note that the scaling percentage you enter determines the size of the destination image relative to the source image, not the actual percentage of scaling. Thus, entering 25 will produce a destination image which is one quarter... 25 percent... of the original image. Entering 200 will create a destination image twice as big... 200 percent of... the original. Entering 100 will produce a destination image identical to the source image.

By default, scaling will be the same in both dimensions. If you hit F8 while the scaling box is visible, you will be able to enter independent horizontal and vertical values.

Scaling is a batch function.

## **Effects**

This function has a submenu which will allow you to access a number of special tools for working with colour image files under Graphic Workshop.

All of these are batch functions. The destination files will have "X\_" in front of their names. Note that these functions require substantial amounts of memory.

### **Colour reduction**

This function allows you to create destination files with fewer colours than the source files they're derived from. You can use this function, for example, to reduce a 256-colour file down to a 16-colour one. It's particularly useful for reducing twenty-four bit files down to 256-colour files.

Whenever you reduce the number of colours in a file, some image information will get lost. The simplest form of colour reduction is

"remapping". This simply means that the destination image will have the best colour palette it can, and that all the pixels in it will be replaced with colours from that palette. The results aren't usually very attractive.

Colour dithering, also available in this function, can produce decidedly better results. With colour dithering, you can reduce 24-bit files down to eight bits with very little loss of detail or colour resolution.

### **Grey scale**

This function creates a grey scale destination image from a colour source image. The number of bits of colour will remain the same.

### **Sharpen**

This function will create a destination image with more contrast than its source image.

### **Soften**

This function will create a destination image with less contrast than its source image. This function is particularly useful for minimizing the effects of scanning moire patterns caused when you attempt to scan a previously screened original. In less technical terms, if you scan pictures of nude women from magazines, softening the image files will reduce the interference patterns.

### **Smudge**

This function will create a destination image which looks like it's being viewed through water drops.

### **Spatial posterization**

This function will create a destination image in which the image is made up of large square areas. This effect is similar to the one used by television news to obscure the faces of people whose identities are to be kept secret.

### **Promote to twenty-four bits**

This function will create a twenty-four bit file with the same image information as a file with fewer colours.

## **Setup**

You can configure Graphic Workshop by clicking on the Setup button. This will open a dialog box with the available setup options. Any changes you make will be saved when you exit Graphic Workshop, and will be in place the next time you boot it up. The current configuration is saved in a file called GWS.INI in your \WINDOWS directory.

In most cases the default values will prove applicable to typical Windows hardware.

### **Untag After View**

If this option is enabled, all the tagged file names will be cleared after executing a View command using the View button. Note that this does not affect viewing by double clicking on a file name.

### **Pause After Functions**

If this option is enabled, Graphic Workshop will pause after batch operations even if no errors have occurred. Normally it will only pause if one or more files were not processed due to errors.

### **Create GIF 89a Files**

If this option is enabled, GIF files created by Graphic Workshop will be type 89a, and will include a comment block. If it's not enabled, Graphic Workshop will create type 87a GIF files.

### **MacPaint with MacBinary header**

If this option is enabled, MacPaint files created by Graphic Workshop will include a MacBinary header. Disable this option if you are creating MacPaint files for use with PFS:First Publisher.

### **Warn Before Viewing RGB**

If this option is enabled, attempting to view a twenty-four bit image without dithering enabled will cause Graphic Workshop to display a message telling you that the viewing procedure will take a long time, and will not be abortable. Disable this option if you have a twenty-four bit display card.

### **Create IFF Files with PBM Pack**

If this option is enabled, 256-colour IFF/LBM files will be created using the proprietary packing format used by Deluxe Paint. This provides files which read faster and usually compress better, but which will not be readable by other applications that accept IFF files. Disable this option if you plan to port IFF files created by Graphic Workshop to an Amiga.

### **Dither Files When Viewing**

If this option is enabled, all colour files will be dithered prior to viewing them. This will produce the most faithful colour representation possible on a sixteen-colour display, but at a considerable loss of resolution.

### **Dither Extra Colours Only**

If this option is enabled, only those colour images with more colours than your display can handle will be dithered. If you enable this option, make sure to disable the Dither Files When Viewing Option. Most users will want to have this option enabled.

### **Expand Grey Scale TIFF Files**

If this option is enabled, Graphic Workshop will create grey scale TIFF files which are suitable for printing from within a desktop publishing chapter or word processing document to a PostScript laser printer. Disable this option if you plan to use your TIFF files with a grey scale editing or retouching package. This option is ignored if you have Graphic Workshop set up to produce colour TIFF files.

### **Create Colour TIFF Files**

If this option is created, images with between four and 256 colours written to the TIFF format will be stored as colour files. If it's disabled they'll be stored as grey scale files. Twenty-four bit images will always be stored as colour TIFF files.

### **Create Compressed TIFF Files**

If this item is enabled, TIFF files will be created using PackBits run length compression. If it's disabled, they'll be created uncompressed. Note that twenty-four bit TIFF files are always stored uncompressed.

### **Create Compressed EXE Pictures**

If this item is enabled, images written to the EXE self-displaying pictures option will be stored using run-length compression. If it's not enabled they'll be stored without compression. Note that complex scanned images may result in smaller EXE files if they're stored uncompressed.

### **Create Compressed IFF Files**

If this item is enabled, images written to the IFF/LBM format will be stored using PackBits run length compression. If it's not enabled, IFF/LBM files will be written uncompressed.

### **Dither Printed Halftones**

If this item is enabled, colour or grey scale images will be dithered prior to printing. Enable this option if you are using a printer driver which cannot support halftones.

### **Expand Printed Halftones**

If this item is enabled, colour pictures being printed will be algorithmically converted to grey scales and expanded to compensate for the contrast loss in PostScript printers. Enable this option if you're using a monochrome printer which can produce true

halftones. Disable it if you're driving a colour printer.

### **Registration Number**

#### **Registration Name**

When you register Graphic Workshop, type in the registration number provided with your confirmation letter in the registration number field and your name as it is in the letter in the registration name field. This will disable the About box when you exit Graphic Workshop and list you as a registered user of the software when you click on the About button. It will also keep our leather winged demon of the night off your back... see the section on registration elsewhere in this document.

### **Startup Directory**

If you fill in a path specification in this field, Graphic Workshop will log into the specified directory when it boots up. Note that this field is not checked for validity... if it does not specify a valid path it will be ignored. It should end with a backslash.

### **Ventura publisher tricks**

Graphic Workshop is great for getting images into Ventura Publisher documents. Here are a few tips for getting the most out of it.

Monochrome bitmapped images should be converted into IMG files for use with Ventura. Note that while Ventura will import colour PCX files with up to 16 colours, the results are rarely pretty. You'll do much better to halftone or dither colour PCX files for use with Ventura.

Having poured an image into a frame, use the Sizing and Scaling box in the Frames menu to select "By Scale Factors." Set the scale width to the natural size of the image... as it defaults to... or to some integral multiple of it. This will eliminate distortion or plaiding of the image.

You can create halftones from colour images by converting them to grey scale TIFF files. Ventura allows you a great deal of control over the way the grey scale and screening information is handled in a TIFF file.

You can also create halftones in Ventura by converting colour and grey scale files to IMG files and importing these. The only drawback to this over using grey scale TIFF files is that the grey scale and screening information will not be adjustable. Note that as of this writing the Windows and Macintosh implementations of Ventura did not seem to like IMG files with more than one bit of colour.

If you use the Define Colours option of the Frame menu to display colours as shades of grey rather than as colours... and if you're using an



EGA or VGA monitor... grey scale TIFF files will appear in your chapters as pretty slick little photographs.

Note that if you will be creating grey scale TIFF files for use with Ventura, you should enable grey scale TIFF and grey scale expansion.

### **CorelDRAW tricks**

If you import bitmapped images into Corel Draw, you can decide how they'll be handled once they get there by choosing the image type you use. Imported PCX files will be scaled to an arbitrary size upon entering Corel Draw, with the result that it's almost impossible to adjust them to get a one to one relationship between the image pixels and the printer pixels. This will make many PCX files print badly.

TIFF files, on the other hand, import initially with one to one scaling. If you use TIFF files and leave them at their initial size, or stretch them to integral multiples of their original sizes, they'll print without distortion or plaiding.

Grey scale TIFF files imported into Corel Draw come up as PostScript halftones... these can look very slick as part of a line drawing. Colour TIFF files are useful if you'll be outputting your Corel Draw files to a colour output device or if you'll be getting them separated.

You might want to check out "Mastering Corel Draw 2" by Steven William Rimmer, published by Sybex Books (Sybex book 814).

### **Contacting Alchemy Mindworks Inc.**

We hope you'll contact us to register Graphic Workshop... see the section about registering Graphic Workshop elsewhere in this document.

You can contact us by mail by writing to us at:

**Alchemy Mindworks Inc.**  
**P.O. Box 500**  
**Beeton, Ontario**  
**LOG 1A0**  
**Canada**

We will attempt to answer questions from unregistered users who write to us to the extent that their answers are needed for you to fully determine whether Graphic Workshop will suit your requirements.

We can also be reached through the Alchemy Mindworks bulletin board. It's available twenty-four hours a day at (416) 729-4609. As of this writing, the protocol was 300, 1200 or 2400 baud, or 9600 baud v.32bis,

eight data bits, no parity and one stop bit.

The bulletin board always has the most recent versions of all our shareware on it, plus bug fixes, drivers and other relevant information. It only exists to support Alchemy Mindworks' shareware... it does not have a general file area.

If you encounter problems with a file, you're welcome to upload the errant file to our bulletin board. Actually, you can upload any picture files you like to the board... we enjoy getting pictures.

If you have a question about Graphic Workshop, feel free to leave it on the bulletin board. We try to answer all questions within twenty-four hours. Note that you must call back to retrieve your answer... please don't ask us to phone you or to leave the answer on another bulletin board.

Registered users of Graphic Workshop will receive our voice number for immediate technical support. The voice number is only available for use from 10:00am to 5:00pm EST. If you call and get our answering machine... it does happen... please leave us a message or call back later. We are only able to return long distance calls if we can call you collect. In this regard, please note that as of this writing Canada has a very peculiar electronic voice mail collect call system... if the phone company's computer starts talking when you pick up the phone, it's probably us returning your call.

We ask that in contacting us you appreciate that we are a small company with limited resources. If you have not registered Graphic Workshop we will not tell you to go to hell, but please don't ask us for half an hour of free technical support.

### **Registration**

If you like this program and find it useful, you are requested to support it by sending us \$40.00. This will entitle you to telephone support, notification of updates, a free copy of the latest version of Graphic Workshop for Windows and other worthwhile things. More to the point, though, it'll make you feel good. We've not infested the program with excessive beg notices, crippled it or had it verbally insult you after ten days. We trust you to support Graphic Workshop if you like it.

At such time as you do register Graphic Workshop, the About box will stop appearing when you exit the program.

If you want to see additional features in Graphic Workshop, register your software. If we had an Arcturian mega-dollar for everyone who has said

they'd most certainly register their copy if we'd add just one more thing to it, we could buy ourselves a universe and retire.

Oh yes, should you fail to support this program and continue to use it, a leather winged demon of the night will tear itself, shrieking blood and fury, from the endless caverns of the nether world, hurl itself into the darkness with a thirst for blood on its slaving fangs and search the very threads of time for the throbbing of your heartbeat. Just thought you'd want to know that.

Our address is:

**Alchemy Mindworks Inc.  
P.O. Box 500  
Beeton, Ontario  
LOG 1A0  
Canada**

If you have previously registered Graphic Workshop, you can update your copy to revision six for \$20.

If you have a FAX number, please include it in your registration. We're hoping to be able to handle notification of future updates of Graphic Workshop by FAX where we can. This is both considerably faster and a lot cheaper than mail.

You can FAX your order to us at (416) 729-4156. You'll find an order form in this ZIP to make this easier.

If you have previously registered a copy of Graphic Workshop for DOS, revision 6.1a or newer and would like to register Graphic Workshop for Windows, you can do so for \$30.00.

### **Canadian users**

The registration fee for Graphic Workshop is \$40.00 (CDN) plus seven percent GST, or \$42.80. If you live in Ontario, please add eight percent PST to this, for a total of \$45.80. We sincerely regret collecting this tax on behalf of several levels of government which will only squander it. If you sincerely regret having to pay it, we urge you to express your regret by voting in the next federal and provincial elections.

### **American users**

The registration fee for Graphic Workshop is \$40.00 (US). The exchange on US funds pretty well covers the extra postage to the States.

### **Other users**

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The registration fee for Graphic Workshop is \$40.00 (US). If you pay us by cheque, please make sure that it's a cheque drawn on an international bank, and that it will be negotiable in Canada. If there's no bank clearance number along the bottom of the cheque, it will not clear. Please don't send us Eurocheques... they are not accepted outside Europe.

### **Paying by credit card**

We can accept payment by Visa only. We need your Visa card number and expiry date and the name which appears on your card. We also need written authorization to debit your Visa account for the specific amount you're sending us.

We cannot accept MasterCard, American Express or other credit cards.

### **Source code availability and books**

It isn't.

After considerable meditation and several bad experiences, we have decided not to release the source code for Graphic Workshop. We do license parts of it for specific applications... if you want more information about using some of the functions of Graphic Workshop in your software, please contact us.

A complete guide to computer graphic file formats... including an in depth discussion of working with them in conjunction with several popular word processors and desktop publishing packages... can be found in "The Graphic File Toolkit", by Steven William Rimmer. It's published by Addison-Wesley, and will be available in mid-1992.

If you're interested in writing programs which use graphics, you'll find everything you need to know in "Bitmapped Graphics", by Steven William Rimmer. It's published by TAB Books, (TAB book 3558). It features code to pack and unpack MacPaint, IMG, PCX, GIF and TIFF files, as well as chapters on screen drivers, dithering and printing.

An additional book on this subject, "Supercharged Bitmapped Graphics", (TAB Book 4102), will be available in mid-1992. It discusses the GIF 89a, WordPerfect, BMP, IFF/LBM, TGA, MSP, 24-bit PCX and colour TIFF file formats, as well as such subjects as colour dithering and colour printing.

If you specifically want to be able to write programs which use bitmapped graphics in the Windows environment, you might want to get a copy of "Bitmapped Graphics for Windows" by Steven William Rimmer, published by TAB Windcrest. It will be available in the third quarter of 1992.

If you'd like to write applications which use menus, icons, windows and all the other paraphernalia of a graphical user interface, you might find the book "PC Graphical User Interfaces" handy. It's published by TAB Books (TAB Book 3875). It includes the C source for a complete graphical user interface library, related code to manage fonts and bitmaps and a tiny paint program.

If your local bookstore doesn't have these books, they can be mail or phone ordered from Christies of Cookstown, P.O. Box 392, Cookstown, Ontario L0L 1L0, Canada. Their phone number is (705) 458-1562. It has a FAX machine on it after hours. As of this writing, they're open seven days a week.

### **Bundling Graphic Workshop**

If you'd like to include Graphic Workshop with your product, please get in touch with us. We have several ways to help you do this so your users get the most out of Graphic Workshop and we don't have to set our leather winged demon of the night on 'em.

### **Shareware distributors**

We receive numerous requests for copies of Graphic Workshop from shareware distributors and we don't have the facilities to send out disks in response to all of them.

We can provide you with a disk containing copies of our larger shareware applications for \$10.00 (US). Alternately, you can download the current versions of our applications from CompuServe in the GRAPHSUPPORT forum or from our bulletin board at (416) 729-4609. You can also order them from one of the larger distributors we use, such as Public Brand Software, 3750 Kentucky Avenue, Indianapolis, IN 46241. They always have the current versions of our programs.

If you obtain current copies of our shareware, you have our permission to distribute it under the following terms.

That nothing be added to, deleted from or changed in the archive files which contain our packages. This includes adding ZIP file comments to them.

That our shareware is not included in or bundled with other hardware or software without our written permission.

That no printed documentation regarding our shareware is included with the package without our written permission.

That hard copy explaining that our packages are shareware is included with the disks.

You do have our permission to copy the ZIP files from our quad density disk to multiple lower density disks for distribution.

### **Other Alchemy Mindworks shareware**

The following are the other shareware packages we have available as of this writing. Our newsletter, available for the asking, will list all the current ones.

#### **Graphic Workshop for DOS**

This is the last word in image programs. It converts, prints, views, dithers, transforms, flips, rotates, scales, crops, colour adjusts, scans, quantizes and wreaks special effects on MacPaint, GEM/Ventura IMG, PCX, GIF, TIFF, WPG, MSP, IFF/LBM, BMP, Halo CUT, Targa and EPS files. It drives CGA, Hercules, EGA, VGA and pretty well all super VGA cards. It will drive PostScript and LaserJet Plus laser printers, colour PostScript printers, colour inkjets and most dot matrix printers. It features batch processing, extended and expanded memory support, an intuitive user interface and easy to follow menus. It allows you to convert colour image files into superb black and white clip art for desktop publishing, among other things.

#### **Image Gallery**

Image Gallery is a visual database to help you keep track of a large number of image files quickly and effectively. It will create database files... galleries... of any combination of bitmapped image files, displaying them as small ``thumbnail" images. You can search a gallery visually or by key words. Each entry in a gallery supports key word and comment fields, as well as the dimensions, location and other specifics of each image. You can also print all or part of a gallery, producing hard copy catalogs of your images when you need them. Image Gallery requires no extended or expanded memory. It will run with any VGA card. It uses a Microsoft compatible mouse and will drive any PostScript or LaserJet Plus compatible laser printer. It will read all the image file types that Graphic Workshop supports.

#### **Desktop Paint 256**

Desktop Paint 256 is a powerful super-VGA paint program. Desktop Paint 256 will let you create and edit pictures stored as PCX, GIF, TIFF and IFF/LBM files. It features a rich selection of drawing and image manipulation tools, XMS and EMS support to work on large images and a user friendly interface. Looking very much like monochrome Desktop Paint in colour, it's a powerful application which will be

equally useful for picture collectors, artists and desktop publishing users... it makes a quick and easy to use editor for grey scale TIFF files, too. It supports Paradise (and compatibles), Headland Video 7, Tseng Labs 4000 series cards, Trident cards which use 8900 series chips and ATI VGA Wonder cards. Note that you must have one of these super-VGA cards to use Desktop Paint 256... it does not run in the standard 320 by 200 pixel "standard" VGA mode. Desktop Paint 256 requires a Microsoft-compatible mouse.

### **Desktop Paint**

Desktop Paint is a powerful monochrome paint package fine tuned for use with desktop publishing applications. It will read and write MacPaint, Ventura IMG, PCX, WordPerfect WPG and TIFF image files. It has EMS and XMS support to handle images of virtually any size, an intuitive user interface and a wide selection of image creation and manipulation tools. Desktop Paint can utilize fonts from many other sources, including Ventura Publisher, Macintosh FONT and NFNT resources and Windows FNT files. Desktop Paint 256 requires a Microsoft-compatible mouse.

### **GrafCat release three**

GrafCat prints a visual catalog of your image files, with fifteen or sixteen pictures to a page, depending on the image orientation you choose. It supports all the file types that Graphic Workshop handles, and will drive any PostScript or LaserJet Plus compatible laser printer, including LaserJet II and LaserJet III series printers. This is a complete re-write of GrafCat... it now supports a file finder screen like the one in Graphic Workshop and numerous print options.

### **GifInfo**

GifInfo creates catalog files from your GIF collection, allowing you to store fifty or more miniature full colour representations of GIF files on a single quad floppy.

### **Storyteller**

Storyteller is a hypertext program with a mouse driven graphical user interface which will allow you to create reports, manuals and interactive fiction, among other things, which has a tree structure. Each page of a Storyteller document can lead to related sub-pages, which can in turn have their own sub-sub pages, and so on. It looks slick and is exceedingly user friendly. Storyteller requires a Microsoft-compatible mouse.

If you can't obtain them from the usual sources of shareware, they're available from us for \$40.00 each preregisterd. They're also all available for downloading from our bulletin board at (416) 729-4609.

**Legal dogma**

The author assumes no responsibility for any damage or loss caused by the use of these programs, however it comes down. If you can think of a way a picture program can cause you damage or loss you've a sneakier mind than mine.

All the registered trademarks used herein are registered to whoever it is that owns them. This notification is given in lieu of any specific list of trademarks and their owners, which would not be as inclusive and would probably take a lot longer to type.

Graphic Workshop is a trademark of Alchemy Mindworks Inc.

That's it...