DISK INCLUDED INSIDE

US $8.95 Canada $9.95

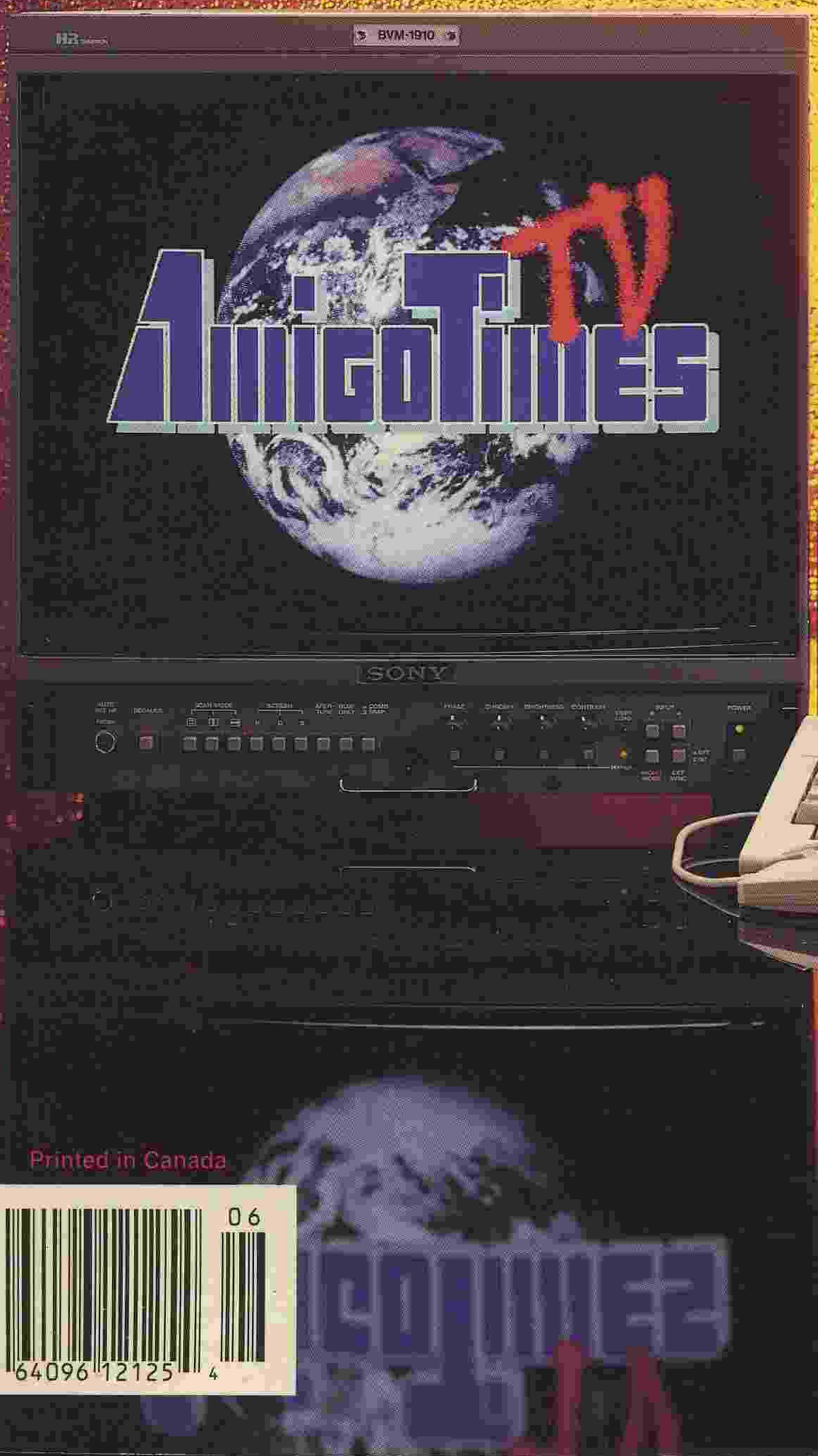
Issue 1.5

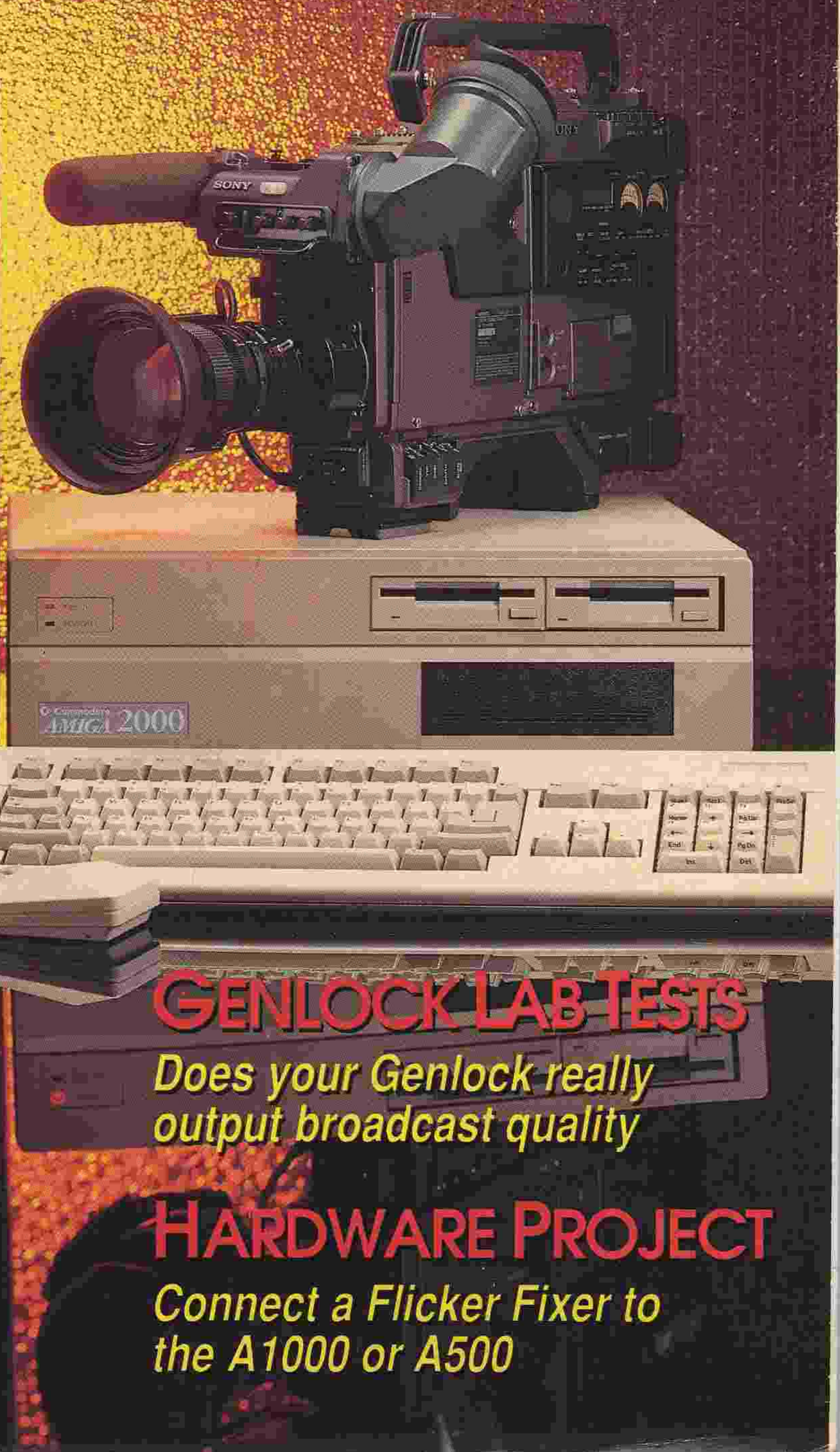
AmigoTimes

CREATED ON THE AMIGA

News and Information Resource for the Commodore AMIGA™

Desktop Video





Genlock Lab Tests

Does your Genlock really output broadcast quality

Hardware Project

Connect a Flicker Fixer to the A1000 or A500

Printed in Canada



PAGE render3D



™

- Supports stereo vision
- Includes large library of pre-defined objects, letters, and numbers while allowing the easy addition of user defined objects
- Generates 3D in any number of bit planes (even one bit plane 3D!)
- Allows exact control over motion in 3D
- Performs automatic light adjustment when light source re-positioned
- Presents choice of co-ordinate systems for optimum 3D generation

Mindware International 110 Dunlop Street, West, Box 22158 Barrie, Ontario, Canada L4M 5R3

For more information or the dealer nearest you: **1-705-737-5998**

Amiga is a trademark of Commodore Business Machines, Inc. PageRender 3D is a registered trademark of Mindware International.

DIGI-VIEW GOLD

All-New!
Hardware and Software Designed for A500/2000—Even Better Pictures Than Before!



1.



2.



Actual 4096 color Digi-View Gold picture

3. Simply the Best.

The all new Digi-View Gold is the best video digitizer for the Amiga. Period. Nothing else even comes close. Why? The secret is that Digi-View Gold captures 2.1 million colors in memory, giving you an incredible 100,000 apparent colors on screen simultaneously.

And it's easy to use. Just focus your video camera on any object or picture, and in seconds Digi-View Gold turns it into Amiga graphics that glow with vibrant color and clarity. Whether you are creating graphics for desktop publishing, presentations, video, or just for fun, Digi-View Gold gives you dazzling images with amazing simplicity.

Digi-View Gold is designed specifically for the Amiga 500 and 2000, and plugs directly into the parallel port. Digi-View Gold's powerful image capture and manipulation software (version 3.0) now has complete control of color and sharpness, full overscan, extra halfbrite, and a special line art mode for desktop publishing.

Only Digi-View Gold:

- Can digitize in all Amiga resolution modes from 320x200 up to 768x480 (full hi-res overscan)
- Uses 2 to 4096 colors (including extra halfbrite)
- Uses exclusive Enhanced HAM for super fine detail
- Is 100% IFF compatible and works with any graphics software
- Can digitize 21 bits per pixel (2.1 million colors) for the highest quality images possible
- Has advanced dithering routines that give an apparent 100,000 colors on screen simultaneously
- Has powerful Image processing controls for complete IFF picture manipulation

If you want the highest quality graphics for your Amiga, as easy as 1, 2, 3; then you need the new version of the best selling video digitizer of all time: Digi-View Gold.

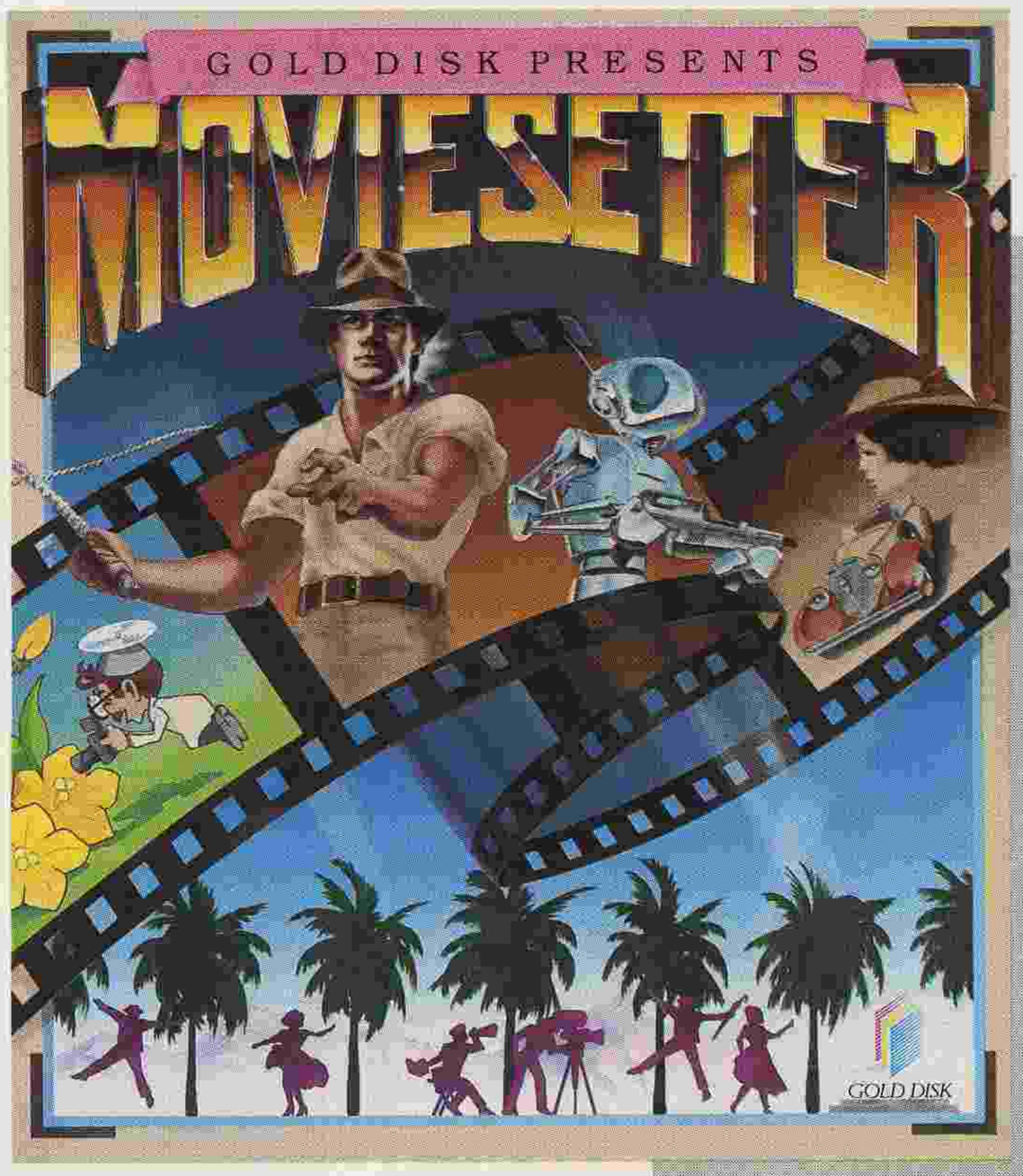
*Requires standard gender changer for use with Amiga 1000. Video camera required; not included. NewTek sells a video camera, copy stand, and the Digi-Droid automated filter wheel for Digi-View Gold. If your local retailer doesn't carry these products, call us at 913-354-1146. Digi-View Gold is a trademark of NewTek, Inc. Amiga is a trademark of Commodore-Amiga, Inc. Be seeing you!!

Only $199.95

Digi-View Gold is available now at your local Amiga dealer.
Or call 1-800-843-8934

NewTek INCORPORATED

Saturday Matinee.





Combine MovieClips, stereo sound, storyboards and...



history features to effortlessly create minutes of animation.

MovieSetter, the latest software blockbuster from Gold Disk, is the Amiga owner's ticket to pro-quality video animation and brilliant stereo soundtracks. And because of a software design breakthrough, it'll let you create dazzling overscan video movies that are minutes - not seconds - in length, without requiring truckloads of memory (512K minimum, 1MB recommended).

In spite of its power, MovieSetter is easy to use - even for the first-timer. Unlike other programs, it lets you see what you animate *as you animate it*. Using on-screen tools, it's easy to change speeds (up to 60 frames per second), colors (up to 32 on-screen at once), transition effects, and backgrounds. It's got handy built-in graphics and sound tools, and can import IFF graphic and sound files created by your favorite programs. Or you can take the shortcut and use the generous supply of "MovieClip" clip art and sound samples that are included with the MovieSetter program disk. Either way, "cutting together" your epic masterpiece will be a breeze with MovieSetter's full array of editing features - including the incomparable convenience of on-screen storyboards.

So bring a little tinseltown to your desktop. Call Gold Disk today at 1-800-387-8192 to order a copy of MovieSetter for only $99.95 (additional MovieClips sold for $34.95) or stop by your nearest Amiga software dealer.

GOLD DISK

P.O. Box 789, Streetsville
Mississauga, Ontario, Canada, L5M 2C2
(416) 828-0913

This ad was produced using Gold Disk's Professional Page.

AmigoTimes

Editor-in-Chief Eyo Sama

Marketing Director Lisa Sama

Art Director Olusegun A.Olaniyan

Data Manager Ernest N. Nagy

Senior Editor Michael Hermann

Music Editor Serge Boucher

Assistant Art Director Jacqui Summers

Assistant Editor Sandra Mongeau

Circulation Coordinator Ansa Sama

Advertising Coordinator Stephen Robitaille

Sales Manager Steve Cariglia

Shipping Manager Istvan Nagy

Office Manager Idem Sama

Photography Studio 5

Contributing Authors

Sue Albert
Denny Atkins
Serge Boucher
Peter Cherna
Marthe Corriveau
Dave Donald
Michel Feugeas
Michael Hermann
Gerald Hull
Harv Laser
Christopher Kohler
Jim McInnis
Kevin McKenzie
R. Shamms Mortier
Ernest N. Nagy
Olusegun A.Olaniyan
Nick Poliwko
Eyo Sama
James W. Shields
Rick Sulpizio

Advertising Sales CALL
Lisa Sama
or, Stephen Robitaille
1-(514) 638-6304

Dealer Enquiries CALL
1-(514) 638-6303

AmigoTimes® (ISSN 0836-0588) is published monthly by Sama Software Inc., 5124 St. Laurent, suite 100, Ville St. Catherine, Quebec J0L 1E0, CANADA. Subscription rates are US $39.95 for 6 issues (in Canada CDN $49.95), and US $72.00 for 12 issues (in Canada CDN $87.00). For Foreign Airmail, please inquire. Phone: (514) 638-6303.

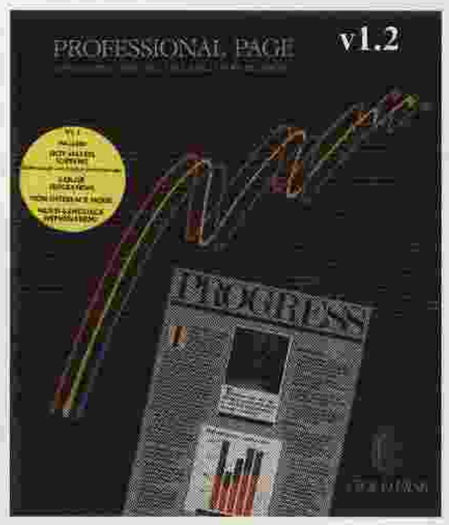
The entire contents of this publication are the copyright 1989 of Sama Software Inc. Though *AmigoTimes* makes every effort to assure the accuracy of its contents, it assumes no responsibility for damages due to errors or omissions. *AmigoTimes* reserves the right to refuse any advertising.

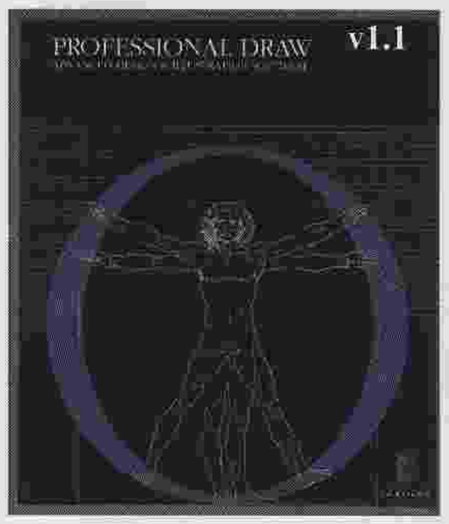
PRINTED IN CANADA

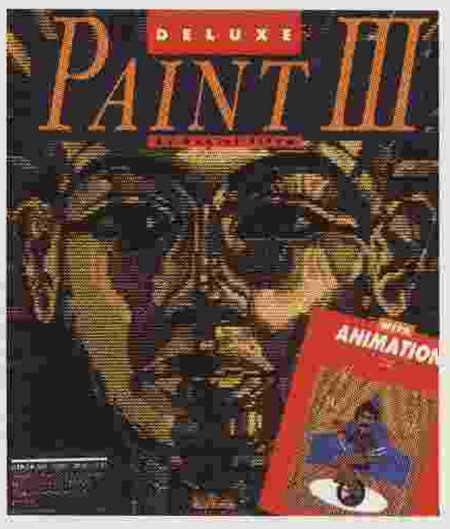
The AmigoTimes Typesetting Team:

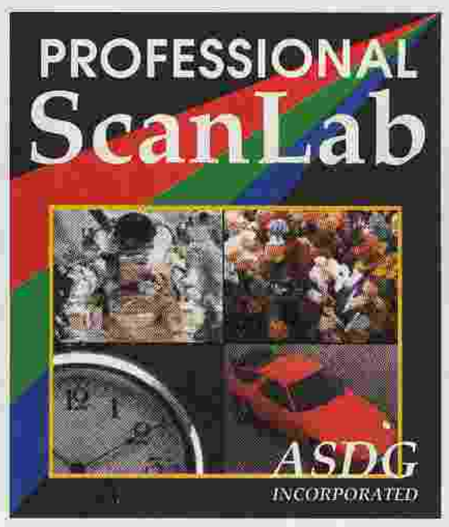
Eyo Sama . Olusegun Olaniyan . Jacqui Summers . Michael Hermann

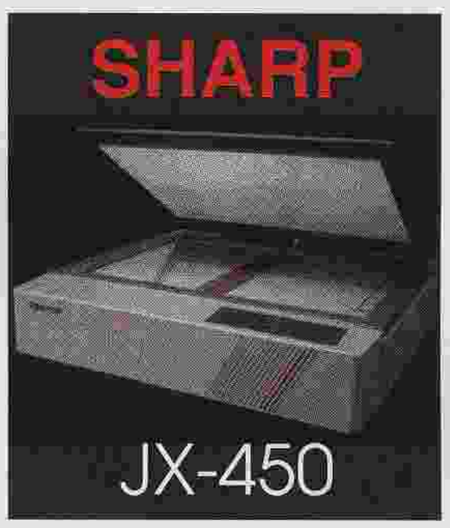
AmigoTimes issue 1.5 was created on Commodore Amiga computers with the aid of the following tools:

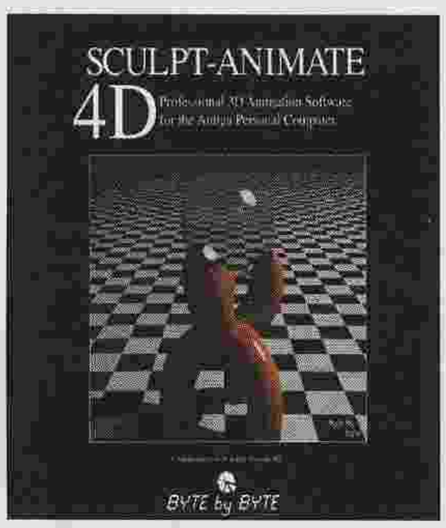




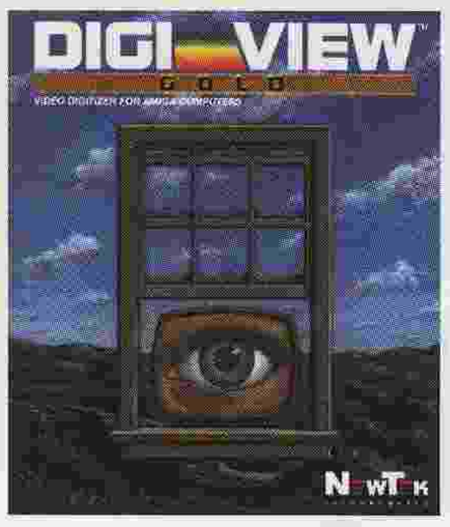


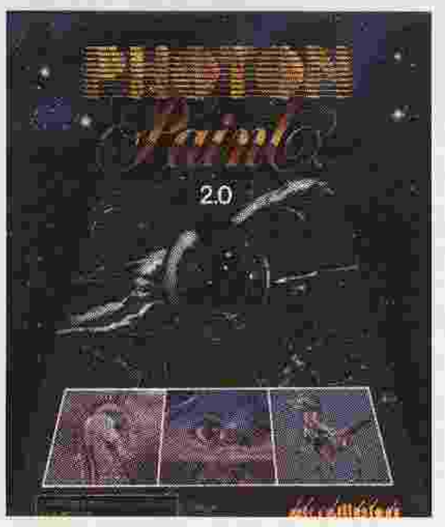


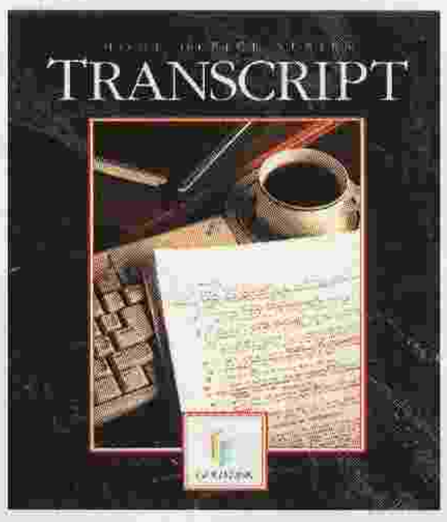




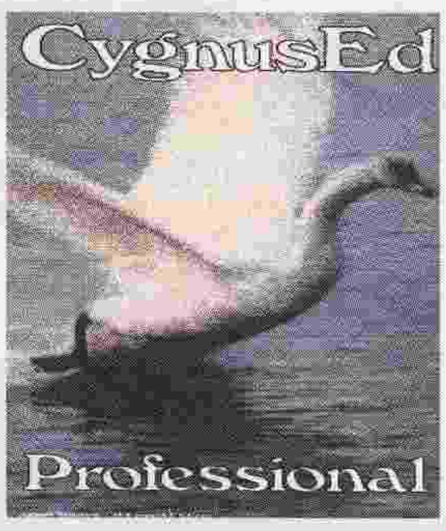




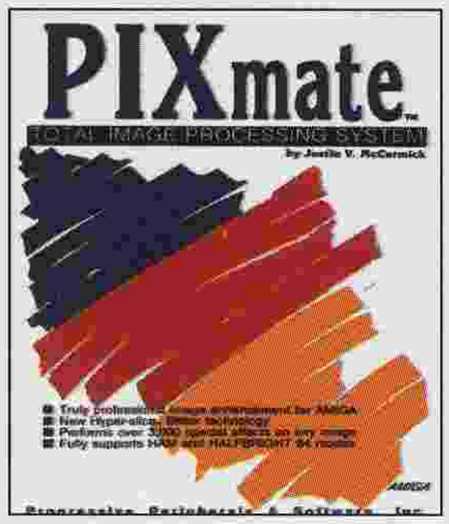


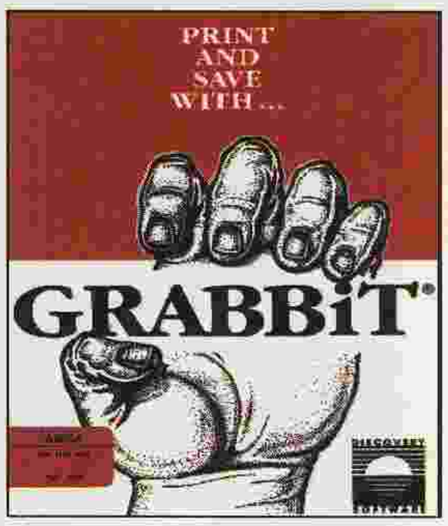












AmigaTimes

News and Information Resource for the Commodore AMIGA™

C O

FEATURES

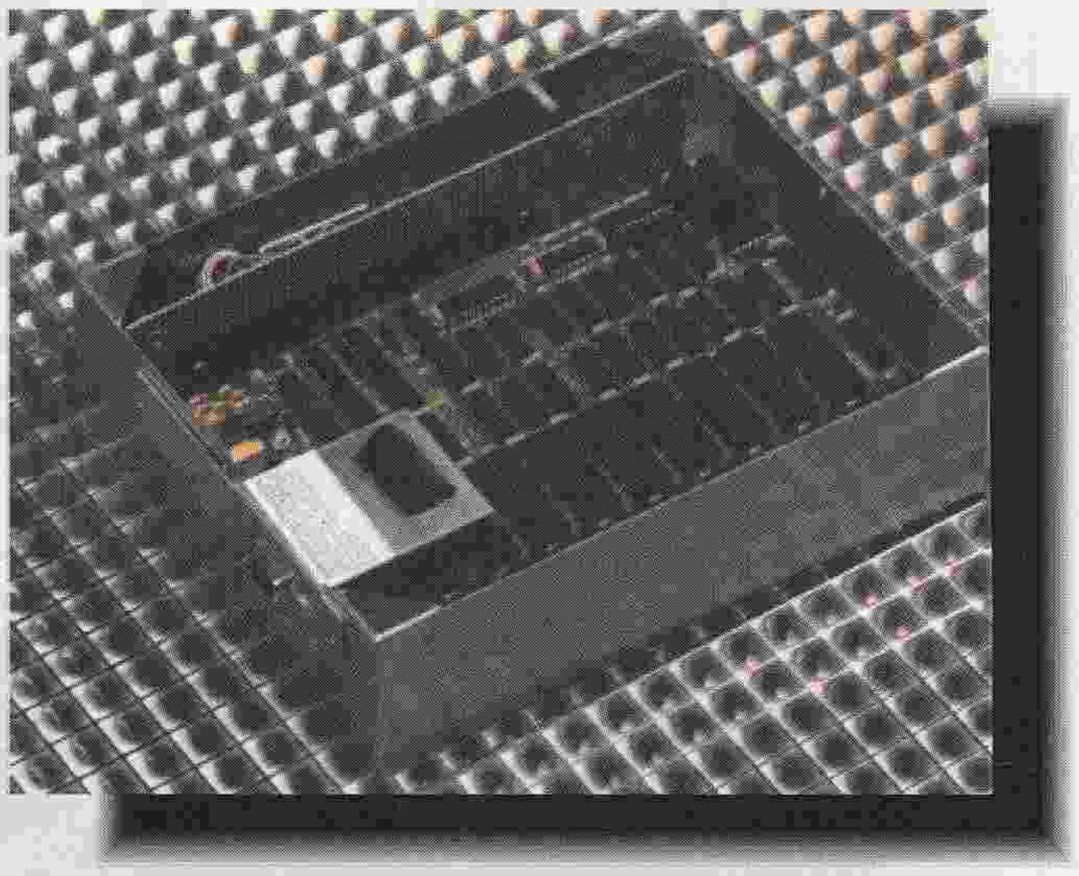
16 **The Truth About Genlock/Encoders** *by Dave Donald*
An explanation and review of 6 Genlocks.

54 **Smooth As Silk** *by Christopher Kohler*
Using the Amiga to design silk screens.

65 **Animating with the Director** *by Jim McInnis*
Hints for using the Director.

72 **Fixing the Flicker Fixer** *by Kevin McKenzie*
Hardware project to connect the Flicker Fixer to the Amiga 500/1000.

86 **Amiga Music** *by R. Shamms Mortier, PhD.*
...or why I don't sleep anymore.



COLUMNS

6 **The Editor's Corner**

28 **Woman by Woman** *by Sue Albert*
An interview with Ariel Pelikan.

62 **Video Productions** *by Nick Poliwko*
The Amiga Video/Animation Workstation.

92 **Desktop Publishing** *by Eyo Sama*
Professional ScanLab and Professional Page V1.2.

99 **Midi** *by Serge Boucher*
Synchronising Video and Midi.

101 **Telecomm** *by Harv Laser*
Our on-going column on the topic of Amiga telecommunication:
...in PCPursuit of Savings

106 **Data Managers PD Reviews** *by Ernest N. Nagy*
PD and Shareware Reviews.



PROGRAMMING

81 **Shells** *by Denny Atkins*
Using the enhanced CLI.

88 **Modula-2** *by Jim Shields*
Introduction to Modula-2 Part 2: Data elements.

96 **Assembler** *by Gerald Hull*
Printer Drivers under AmigaDOS 1.3.

CONTENTS

REVIEWS

8 **Sculpt Animate 4D** *by Serge Boucher*
Is this the Ultimate Ray-tracing package?

34 **Modeler 3D** *by Nick Poliwko*
3D Modeling is not just on mainframes any more.

36 **Deluxe Paint III** *by Peter Cherna*
Deluxe Paint III is here, and well worth the wait.

40 **MovieSetter** *by Michel Feugeas*
An Animation and Video Program.

56 **Interfont** *by Marthe Corriveau*
The 3D Object font designer.

58 **Page Render 3D** *by Nick Poliwko*
Not just another Rendering and Animation Package.

60 **Page Flipper Plus FX** *by Michel Feugeas*
The animation controller.

68 **Forms in Flight II** *by Serge Boucher*
An inexpensive animation alternative.

70 **Photon Video Cel Animator** *by Michel Feugeas*
The animation studio for your Amiga.

78 **Microfiche Filer Plus** *by Harv Laser*
Databases don't have to be intimidating.

83 **Jet Instrument Trainer** *by First Officer R. Sulpizio*
A serious and powerful training tool for instrument pilots.



DEPARTMENTS

14 **The Art Gallery**
An exhibition of Amiga artwork.

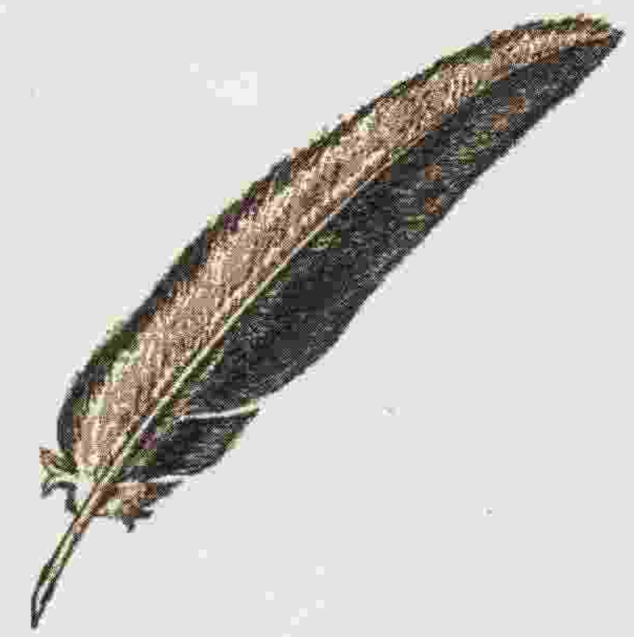
45 **The Amiga Monitor**
Your source of information on whats going on in the Amiga community.

108 **Animation Contest Winners**
The results of the AmigoTimes Animation Contest.

112 **Advertisers Index**

COVER:
Monitor BVM-1910 with the BKM-2056 by SONY
Camera BVW-507 BetaCAM by SONY
Special thanks to SONY Canada.





The Editor's Corner

AMIGA...DeskTop Video & Animation



We have been hearing rumours spread by other publications that AmigoTimes would run into financial difficulties if we continued to use high-quality gloss paper. Well, all I can say to that is if these publications do not have the finances to use high-quality paper, then maybe they should reduce their budget by typesetting their **Amiga-specific** magazines with Amiga computers just like we are proudly and successfully doing. Incidentally, for this issue we have added 16 more pages of that same paper for a total of 112 pages. Not only will the number of pages continue to increase, but our circulation continues to increase rapidly. In short, we're doing just fine guys.

Now for a look at this month's issue. DeskTop Video (DTV) is a vast field which encompasses several aspects of the production of video: animation, titling, production etc. Each aspect can again be subdivided into several other classes, for example, animations can be two-dimensional, three-dimensional, ray-traced, digitized etc.

In the "under $20,000" range, the Amiga is the best suited, most powerful and versatile DTV workstation. There are several powerful software packages available to aid the Amiga DTV producer. Although there isn't an abundance of hardware, there are still enough quality products available to make the choice between them a difficult one. One problem in DTV is the greatly varying prices of these hardware products, for example, investing in a Genlock can cost you anything from $200 to $3000. The difference in price is usually attributable to the difference in output quality, therefore the question to ask yourself is what quality do you require for your video or animation production?

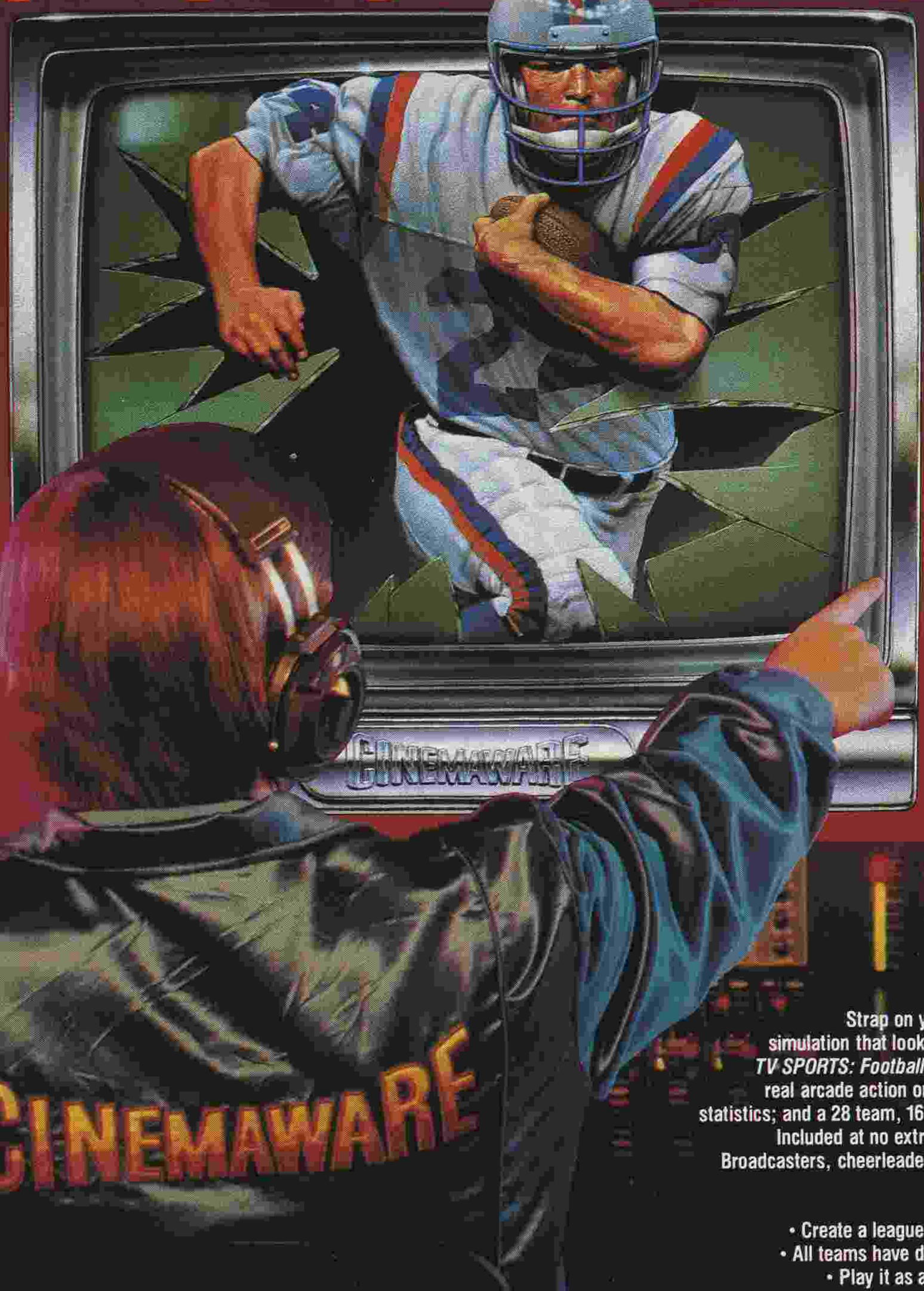
Professional broadcasters are used to paying $15,000 or more for a genlocking device, so you can imagine what kind of impact the Amiga could have in this field. What we need is to have Commodore seriously push the Amiga into this high-end market. I feel that if a company does not have the ability or finances to successfully market a product into multiple markets, then it should concentrate on doing so for just one or two markets (the other markets will then usually follow the success of the first). The Apple Macintosh and the IBM PC are proof to that marketing tactic.

There seem to be a lot of rumours about an Amiga cartridge game machine being released by Commodore. Every magazine that mentions the rumour seems to report a different version. Instead of fuelling the fire with more rumours, I will tell you what my thoughts are on the matter. I hope that Commodore does not release such a machine under the Commodore or (especially not) under the Amiga trade name. If they must release such a machine then it should be under a third-party label, not their own. I feel that such a machine will badly hurt our chances of taking the Amiga into the high-end market (where it should rightfully be). The Amiga is capable of accomplishing very professional tasks such as desktop publishing, desktop video etc., therefore I do not think it should be looked upon as being just another game machine. I'm not saying that we should have less games on the Amiga, on the contrary, whether we like it or not, a large portion of Amiga sales are generated by the incredible games you can buy for the machine. Even though I have met people who seem to treat games like they are some form of virus on the Amiga, I personally have no qualms about doing accounting, desktop publishing, and playing games on the same machine. What would bother me though, is having my 7MB, 68020/68881/68851 based, 120MB hard disk storage, decked with laser printer and color scanner, flicker-fixed, graphics mean-machine mistaken for a $200 cartridge machine. ❑

Eyo Sama
Editor-In-Chief

TV SPORTS™

FOOTBALL









Strap on your helmet and get ready for a pro football simulation that looks exactly like a Sunday network broadcast. *TV SPORTS: Football* features amazing graphics and animation; real arcade action on offense and defense; individual and team statistics; and a 28 team, 16 game schedule with post season playoffs! Included at no extra charge are these TV SPORTS exclusives: Broadcasters, cheerleaders, fans in the stands and a halftime show!

"SO REAL IT...SWEATS!"

- Create a league with up to 28 human controlled franchises
- All teams have different offensive and defensive tendencies
- Play it as an arcade game or coach from the sidelines
- Play alone, against a friend, or with a friend against the computer
- Includes "pushbutton statistics" to view the top performers in the league

Screen photos represent the Amiga version only. Others may vary. Cinemaware®, TV Sports and TV Sports: Football are trademarks of Cinemaware Corporation.

To order direct call 800-527-4391 (in Ca. 805-495-6515) or send your Visa/MC number and expiration date, check or money order for $49.95 (C64 is $34.95) plus $3. handling to Cinemaware Corp., P.O. Box 5083, Westlake, CA., 91359. Ca. residents add 6% sales tax. Allow 3-5 weeks for delivery.

Sculpt Animate 4D

SCULPT-ANIMATE 4D

There is something fascinating about images created on a computer, images that can only exist in a computer's memory and be seen on a computer screen. Although this form of art lives in the computer, it still requires an artist to dream up the world of objects that will be rendered by it. We all know the Amiga is the perfect microcomputer for such tasks; it can display up to 4096 colors at once and reproduce life-like images easily. With the right software it can become a great tool for the professional artist. Sculpt 4D is such a program, it is the latest in a series of 3D rendering and animation software published by Byte by Byte corporation.

Sculpt 4D was written by Dr. Eric Graham, the same man who gave us one of the first rendered 3D animations on the Amiga, the Juggler. Some of you might remember this demo and everybody's fascination. Later, Sculpt 3D was released and was one of the best object modeling and rendering software. It uses the ray-tracing rendering technique, also used in Sculpt 4D, and gives the most realistic results of all the rendering modes. Once Animate 3D was added to the line and merged to Sculpt 3D, it added animation functions capable of creating animated sequences out of the rendered images. Sculpt 4D now incorporates all these functions and much more. It incorporates functions for modeling 3D objects and renders the images, furthermore by rendering successive frames, it also includes the possibility to animate these objects in an improved environment. Many tools have been added and the rendering process is faster. It also provides the necessary "hooks" to connect it to professional video equipment such as, frame buffers and still frame video controllers.

CREATING 3D OBJECTS

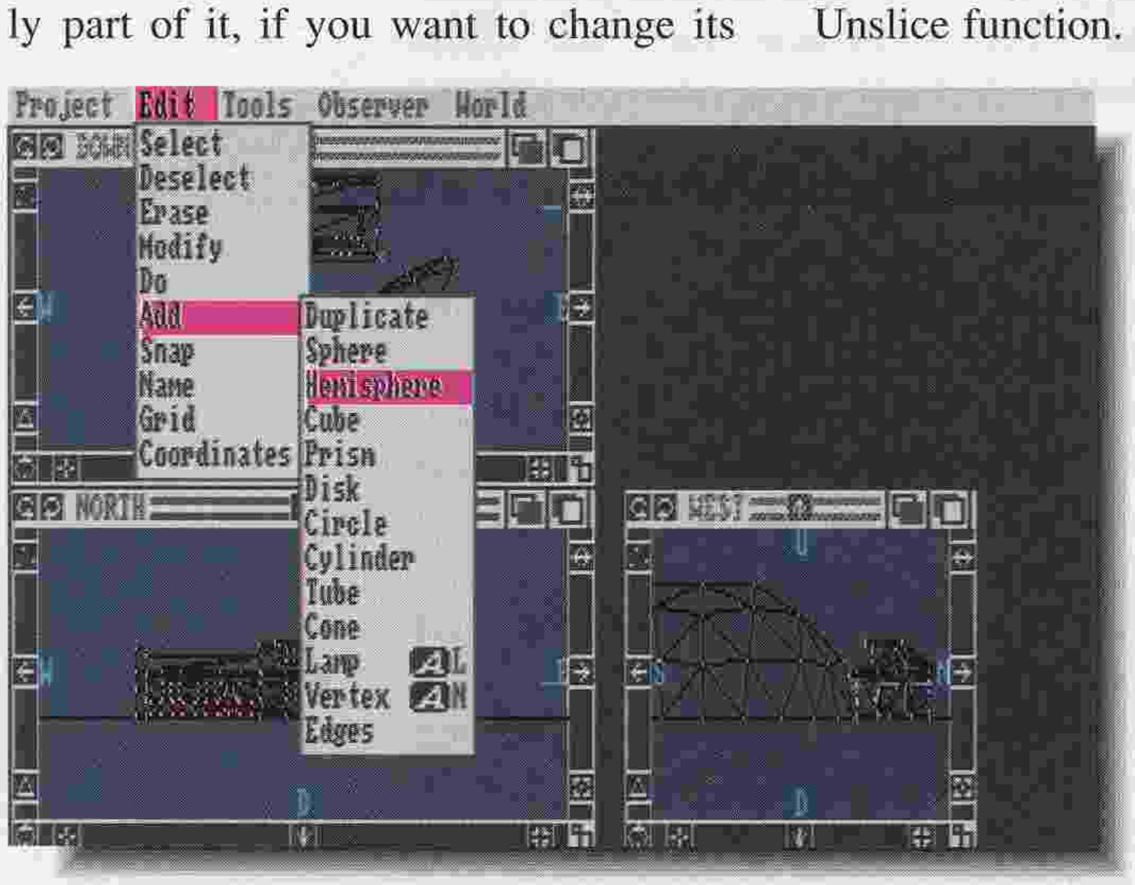
For 3D users, Sculpt 4D will seem familiar because it has the same user interface. You are presented with what is called, in Sculpt parlance, the Tri View. These are three windows displaying the orthogonal views familiar to industrial draftsmen, one each for front, side and top view, they are labeled North, West and Down respectively. Using these windows, objects are built by placing vertices (points) and positioning them in 3D. The basic shape in sculpt is the triangle, all objects must be made up of several triangles in order to be rendered properly, otherwise the surfaces will not show in the final picture. For example, if you construct a square plane, it will only be rendered in the wire frame mode and not in the others unless you add a diagonal line in the square so it is made up of two triangles. This may sound like an important limitation, but it is not, there are tools to help you fill in surfaces and once you get used to this way of working it becomes very easy.

By Serge Boucher

Each basic triangle has its own color and texture, but they can't be seen in the Tri View windows. Therefore, it is difficult to design objects with more than one color or texture, I consider this the only weakness in Sculpt 4D. The addition of a surface mapping function in the future will correct some of this problem by possibly colouring whole objects at once (no dates given by the people at Byte by Byte).

Although any object can be created freehand, predefined shapes can be added to speed up the process, they can then be reshaped to fit your needs using one of a long and impressive list of tools. Once you have selected the vertices you want to work on, you can choose a tool which will effect only those selected. Reshaping tools include Extrude to add thickness to flat object, an edge maker to add edges to existing vertices, a grabber to drag the vertices[which will move an entire object, or only part of it, if you want to change its shape,] and a magnet tool just to name a few. The magnet tool, if it is powerful, can either attract or repel selected vertices yet the effect of the magnet depends on the distance the magnet is from the vertices; the closer it is, the more effect it has on them. If, for example, you use the magnet on a subdivided flat surface, it will create a rounded shape in 3D!

Along with tools to reshape objects, there are some tools to create complete shapes out of a simple outline. They include Spin which rotates a simple curve and makes a 3D object out of it. For instance you could make a wine glass shape by simply making the outline and rotating it around the proper axis, a task that can take hours, however if it's done freehand it can now be realized in seconds. You can also copy an object, make a reverse copy by using the Reflect tool, create an helix from a simple outline or join parallel curves with the Unslice function.



The "Add" function gives access to a series of predefined objects. Once on the screen they can be modified to fit your needs.



The new file requestor has been greatly improved, those of you who used Sculpt-3D will immediately appreciate this new requester. The only problem is that it still only lists files with the correct extension.

Some of these functions use simple curves as a starting point, Sculpt 4D has a powerful means of creating and controlling the aspect of a curve, known as the spline. A spline is a special curve made from a selected number of vertices (knots) that can control the angle of the curve on either side of the knot. Once the angles are adjusted, the curvature between the knots is calculated automatically. You can therefore adjust the roundness of a curve before using a shape creation tool to make a 3D object out of this spline.

If you need precision in your work, a grid can be added to guide you while designing an object. You can also measure the length of edges and the angle between edges with the functions included in the co-ordinates' window. This only scratches the surface of the different tools available in Sculpt 4D..

RENDERING IMAGES

Once objects have been created and placed in the Tri View, you will then want to have a look at the resulting image. Before you do, there are a number a things that can be added or modified that will determine the result. You must first place the observer (camera) and the target point, depending on the observer's distance from the objects and the camera lens's focal length, the objects will appear smaller or bigger in the final image. To test the results, the image can be drawn in wire frame mode, it is the fastest and gives a good idea of the result. You must then add lamps, by adding one or more light sources, this can change the look of the image (it is important to note that no image will be rendered in any of the color modes if there is not lamps in the scene.) If you want you can add a ground plane made of either solid color or checkered, and a sky. If no sky nor ground is added, the background will be black.

An image can be rendered in several drawing modes; they vary in drawing precision, number of available colors and rendering speed. Of course the more precise the final image, the longer the rendering time. Some of the faster and less precise modes are adequate for previewing the result in color, while the

THE WORLD OF COMMODORE

AMIGA • C-64 • C-128 • Commodore PCs

Next Stop ...

L.A.

It's landing in Los Angeles.

With amazing computers.
Stunning software.
Powerful peripherals.

The World of Commodore is coming to capture your imagination.

It's the computer show for beginners and hackers, professionals and students, business people and home users.

Commodore Business Machines and many other exhibitors will display and sell the **AMIGA, C-64, C-128, PC** computers, a galaxy of software for Commodore and AMIGA computers, and a glittering constellation of printers, disk drives and desktop publishing equipment. You will find peripherals and accessories for all your present and future equipment. It's computer heaven.

Stage demonstrations and provocative seminars, presented by top experts, are included with your admission.

Three days of bargains, selection, information, excitement and prizes.

See it all with your own eyes. Try it all with your own hands at The World of Commodore in Los Angeles.

May 19, 20 & 21, 1989 L.A. Convention Center

Adults $10 Students & Seniors $8
(Seminars and stage demonstrations are included with admission.)

Exhibitors contact: The Hunter Group (416) 595-5906 Fax (416) 595-5093. Produced in association with Commodore Business Machines

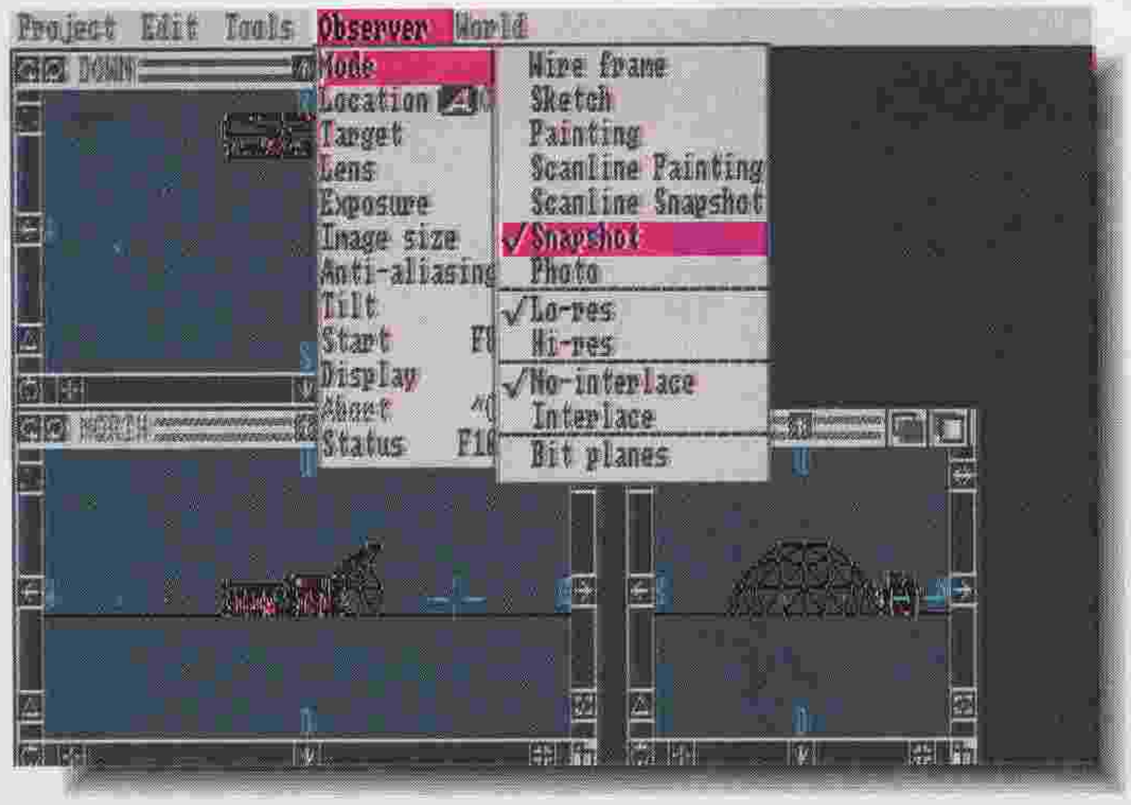
more detailed modes can take so much time (they should be used only when all the details of the scene have been decided upon.) Some objects, however, can only be rendered in the higher precision modes, such as glass and mirror objects, but you can still preview these in a reasonable amount of time by choosing a smaller image size (image size ranges from 1/8 of the screen for "Tiny" to severe overscan for "Video" size.)

The biggest problem with the most precise drawing mode is the time it takes to render an image. Sculpt 4D uses a technique called ray-tracing to obtain almost life-like results in these modes, but it can take a while before you get to see them. Photo mode gives the best results, it will draw reflections in the mirrored surfaces and render glass objects properly, it will even add shadows to the objects, but it can take up to 10 hours or more to render a complex scene. Although the rendering process is faster than earlier version of Sculpt 3D, it still can take a lot of time. A special version of the program is included, it makes use of the 68020 processor and the 68881 math co-processor for a substantial increase in the program's operation speed. This version of the program should not be used on a standard Amiga using a 68000 processor as it will crash. According to a text file included on the same disk as the 68020 version, the program makes minimal use of the 68881 math chip, so using a 68881 with the 68000 will not make a big difference in rendering speed. The file also explains the benifits of using a certain number of hardware add-ons like accelerator boards, 32 bit RAM etc. It is clear from reading it that the ideal system is comprised of a 68020 with 32 bit RAM.

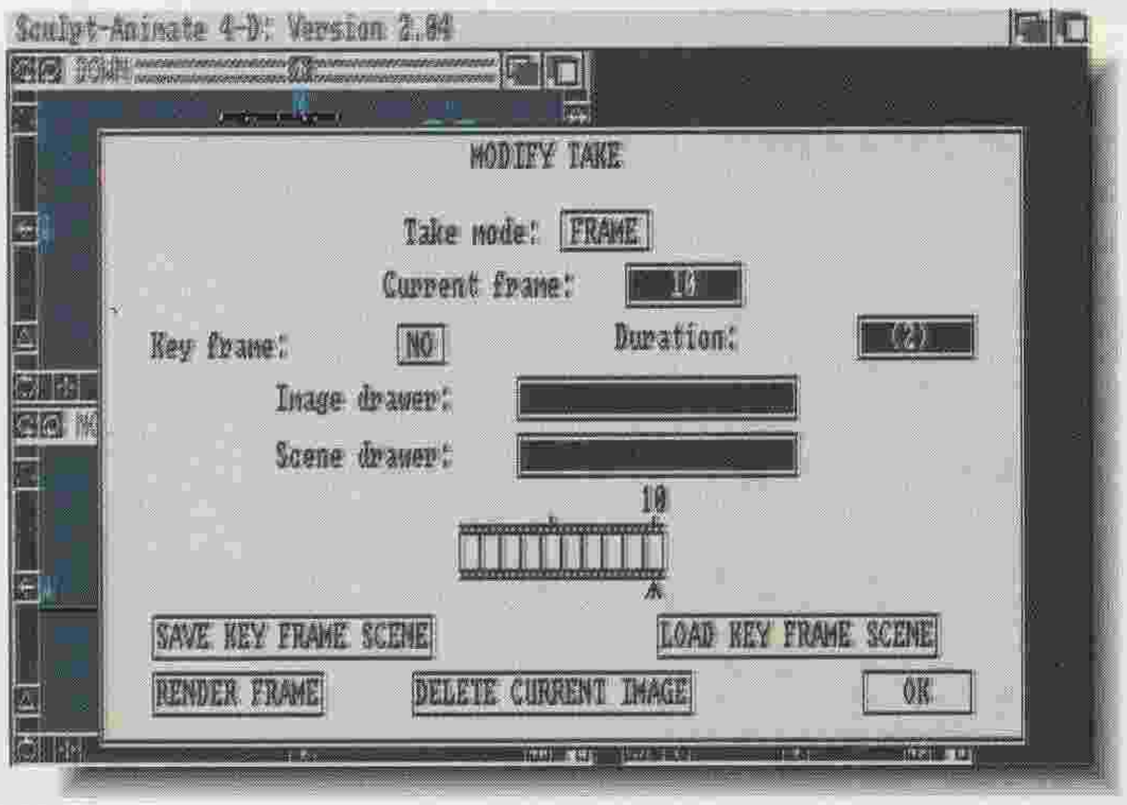
ANIMATION

The fourth dimension in Sculpt 4D is that of time. By rendering images successively and moving objects between each of them, an animation can be produced. For this purpose there are two basic methods used to specify movement in Sculpt 4D, Key frame and Global mode. These two modes are accessed in the Modify Take window. A take, like in movies, is a short animated sequence and in Sculpt 4D it is where you will define the parameters to film this take. Key frame mode defines most key frames between the objects position that will be interpolated by the computer. It is the simplest but least versatile mode. Global mode, on the other hand, adds several elements to a scene that will define the movement of that object in the scene. This is done by creating a path and linking the path to the objects. The path is a series of vertices linked by edges. When the animation is being created, each vertex will represent the successive positions of the object, also a new angle of rotation can be defined for each new position. Linking a path to an object is done by giving the same name to the object and the path you want to attach to it. Naming objects has an even more important aspect, it is the object hierarchy. Each object can be part of a kind of family tree of objects, this gives the possibility to construct an object out of a some smaller ones. For example, you could build a car out of its different parts, let's say to keep things simple, the body, the doors and the wheels. Then when specifying a movement for the car, the doors and wheels will move along with the body because they all are part of the car's family tree. Furthermore, each object can move independently, for example you could give a rotating action to the wheels while they move along with the rest of the objects defining the whole car. This is a very powerful and complex approach. Luckily the manual is well written and guides you smoothly through the process, it will still take some practice to get the hang of it. Exemplified animations are included on the Data disk, the documentation files accompanying each of them gives a detailed description of their creation along with a few tricks, they are very helpful when learning how to use the program.

Generating animations can use a lot



Changing drawing modes will vary rendering speed and precision. You can also select the BitMap resolution and the number of bitplanes to be used, upto 24 bitplanes can be used.



In the Key Frame mode you set the key frames in the scene while the program interpolates the frames inbetween.

of computer memory, the program does run on a machine with one meg of memory, but you will run out of space quickly. Running out of memory while using the program was the only reason that caused my system to crash. For that reason I consider the ideal system having at least a 2 meg memory expansion board, which brings the total to 3 megs. A hard drive is also recommended if you contemplate doing long animations because all these images and animation files take up a lot of storage space!

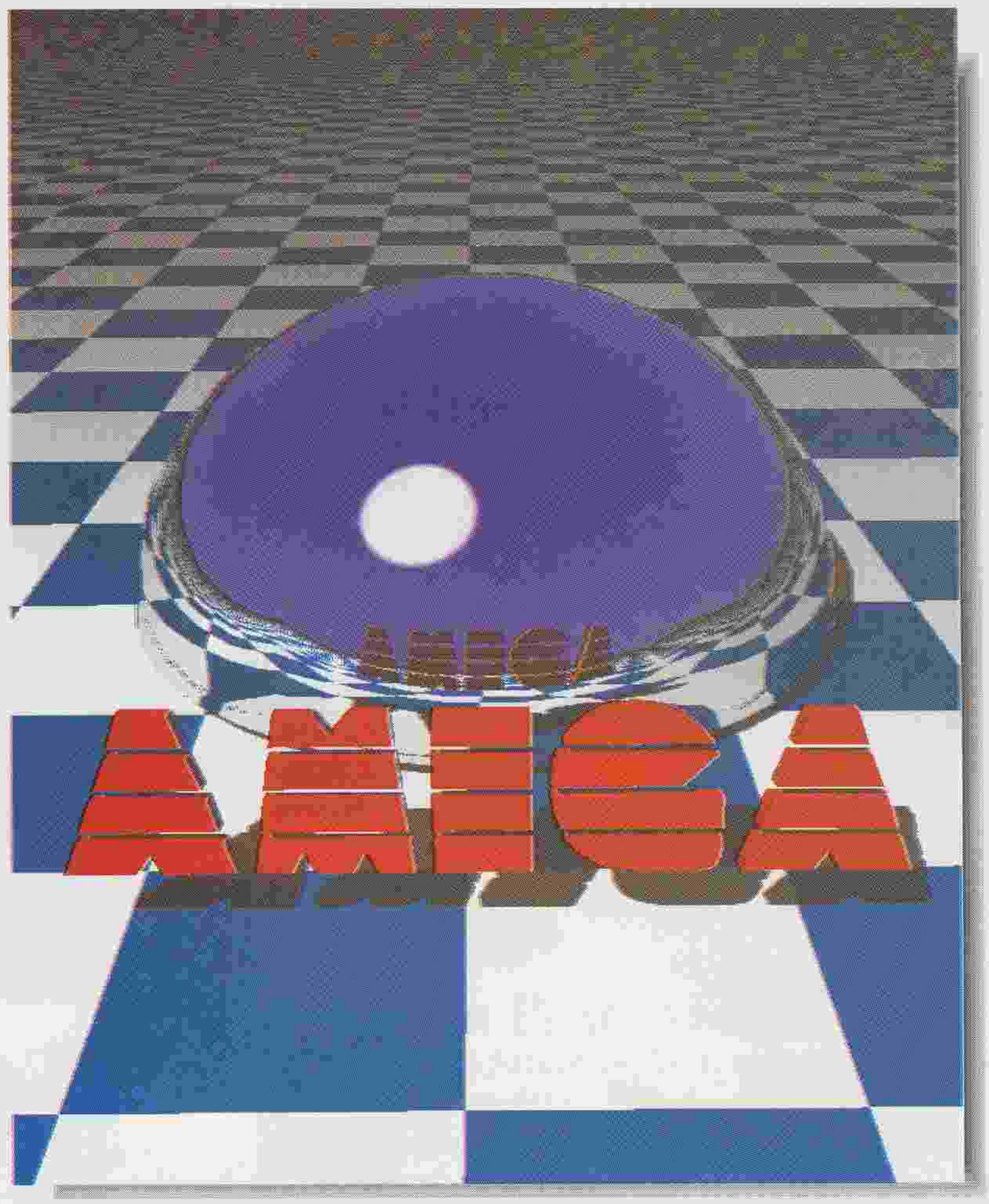
OTHER FEATURES

Sculpt 4D also has a number of features to make life easier once you are familiar with the program. One of the more interesting and powerful ones is the hot key programming function. After selecting a menu item, press the "Alt" key with any letter you desire and this letter will then become a keyboard equivalent for this menu item. This feature proves to be very useful accelerating. These hot key settings can be saved to disk by using the script function, a script is a text file containing many Sculpt commands including hot key programming. Almost every Sculpt function can be programmed from a script file, it can be used to automatically generate a number of frames or do any other set of functions you want.

Another new feature in Sculpt 4D is the Font function. By specifying a directory where the 3D font objects are, you can add a letter to the scene by simply typing the appropriate key on the keyboard. Although no fonts are provided, they are easily created using a program such as Interfont by Syndesis. As one might expect, the hot key feature is disabled when the font function is active, it is a small price to pay for such a powerful function.

FOR THE PROS

As mentioned previously, you can use the program with professional video equipment. Sculpt 4D can generate images in a higher resolution and number of colors that the Amiga can display, you can specify as many as 24 bit planes giving a color palette of 16 million colors! This data can be sent to special hardware capable of displaying or recording such images. To do this, Sculpt 4D uses software devices called drivers to link the program to the hardware devices. Example drivers are included on one of the disks, there is one example device for a frame buffer and one for a single frame controller. The frame buffer driver was used for testing the Sculpt 4D interface software and is included as an example. The single frame controller, on the other hand, was tested with actual hardware devices: the BCD Video Link Controller connected to a Sony V-05850 pro video. Drivers are hardware dependent and each hardware device must have its own driver. Byte by Byte developers kit including driver source code is available for $499.95. Although information is not included in the manual, complete documentation is included as text files in the proper driver directory on one of the three disks.



CONCLUSION

There in not enough place in this review to describe all the features available in Sculpt 4D, but I think they will satisfy the most demanding computer animator. The best proof of Sculpt 4D's capabilities is in the superb results you get. It makes the best use possible of the Amiga's graphic capabilities, and can be used for even more impressive results by using special video hardware. As opposed to other systems, Sculpt 4D is time consuming when creating computer generated animations. ❑

Sculpt Animate 4D
Byte by Byte
Arboretum Plaza II
9442 Capital of Texas Highway North
Suite 150
Austin, TX 78759
USA
$499.95 (US) retail price

ART Gallery



"Battle" originated from the Canadian Remote Systems Limited. by Unknown.



"Pieces" by Melody H. Prince; rendered with Sculpt Animate 4D



"Nymphflight" by Unknown



"Future" by C. Massey

If you would like to see your work exhibited in the Amiga Art Gallery, send your masterpieces on a 3.5" formatted diskette to:
AmigoTimes, Amiga Art Gallery, 5124 St. Laurent, suite 100, Ville Ste. Catherine, Quebec J0L 1E0, CANADA

When it's all been done—

You define the future...

Pioneer Probe Mark IV: the answer to planetary over-population. A self-replicating, terra-forming robotic space-ship. At first, it worked like a dream. But then, something went wrong. And now, it's out of control, mindlessly spewing its destructive offspring throughout the galaxy. It's coming— but maybe, just maybe, you can stop it. *You must try!*

The first game with "HAM Mode" Graphics for the Amiga

BROUGHT TO YOU BY

TERRIFIC™ SOFTWARE

Look for Pioneer Plague, only $39.95, at your favorite computer store, or call 800-234-7001

PIONEER PLAGUE:
Defines the future in Amiga game development:

- Executed in "HAM mode", bringing 4,096 colors to the screen.
- Designed to instantly challenge you with the excitement of its arcade-style action while drawing you into an adventure set against a vast galactic tapestry.
- Sub-Euclidian hyper travel
- Orca Drones: programmable combat support aircraft. You design your own offensive and defensive tactics. Every time you play, it's different!
- A sinister cast of increasingly clever opponents.
- Qualitative scoring to help you improve your game play.
- Original stereo music score
- Digitized sound effects

PIONEER PLAGUE™

by Bill Williams

TERRIFIC SOFTWARE™ is a division of Antic Software, 544 Second Street, San Francisco, CA 94107 (415) 957-0886. Terrific Software, Antic Software and Antic are trademarks of Antic Publishing, Inc.
*Amiga is a registered trademark of Amiga-Commodore, Inc.

THE TRUTH ABOUT GENLOCK/ENCODERS

JUST WHEN YOU FINALLY THOUGHT THAT YOU WERE COMPUTER LITERATE ALONG COME: COMPOSITE, RGB, ENCODERS, GENLOCKS, KEY, NTSC, PAL, and SECAM.

These are some new words being added to today's computer users' vocabulary. For someone coming from a video background, these terms are old hat. But for computer abusers interested in video, you've got to do some catching up.

RGB

RGB stands for red, green and blue which are the three primary colors of light. We learned in school that the three primary colors were red, yellow and blue. These are the three primary colors of paint and pigment, but not of light. Since a video image is created by gathering light or its reflection, originally through a video camera, the initial video signal is comprised of the three primary colors of light. In addition, by holding a glass prism up to the light you will see that the prism breaks it into the separate colors of the light spectrum.

The term RGB describes a video signal that includes these three colors isolated and delivered on three separate wires. Inside the main cable the RGB video signal has separate inner wires for each color. Then each color is the combination of luminance or brightness, hue or tint and chroma or saturation values. The RGB signal arrives at the receiving end, usually an RGB monitor or TV with an RGB input, delivering the highest quality picture. Computers such as the Amiga, which create a color signal, use the RGB signal to project their image onto a monitor or TV, because it provides the highest quality image. Being the original video signal, it is simple and cost efficient to make.

Although the Amiga 1000 has a color composite video output, the quality of this output was never up to scratch. Also, the quality varied greatly from computer to computer. The 500, 2000 and 2500 have monochrome or black and white composite video outputs.

COMPOSITE

Composite video is the combination of R, G and B signals, composite blanking signals (vertical and horizontal blanking pulses), and composite sync signals (vertical and horizontal sync pulses). Blanking and sync pulses, though different from one another, are both sync signals. By the way, sync or synchronization means timing.

When the R, G and B signals are combined, problems occur. The quality of image being produced from a composite signal input, onto a monitor or TV, reflects these problems. So why do we have composite video? The reason we created it was based on practical demands. In order to broadcast or transmit a video image through the air, developers were confronted with problems when dealing with the RGB signal. These problems were solved when the RGB signals were combined with the appropriate sync signals to form a composite video signal. When the composite video signal was combined with a particular radio frequency wave, called a carrier frequency, it was possible to broadcast that signal from transmitter (TV station) to receiver (TV set), over great distances, with good results and at a reasonable cost.

Because the distance between your computer and monitor is short, RGB signals can be used and provide a high quality image. Video inputs on VCRs and all types of video equipment, unless otherwise indicated, use the composite video signal.

NTSC - PAL - SECAM

NTSC, National Television Systems Committee, is a committee of the Federal Communications Commission (FCC) of the United States' Government. Its role is to determine the principles upon which the U.S. television system functions. NTSC is the standard of television for North and Central America, the Caribbean, part of South America, Japan, South Korea, Taiwan, The Philippines, Okinawa and Burma. The rest of the world operates on two other systems called PAL (Phase Alternation Line) and SECAM (Systeme Electronique Couleur Avec Memoire). SECAM was developed by the French and is used by French speaking and communist block countries. PAL was developed by the British and Germans, and is used by the remaining countries not using NTSC nor SECAM.

These three types of television systems operating in the world today are not compatible! If you make a VHS, Beta or Video 8 recording in North

By Dave Donald

America and send it to Europe, that video cassette will not play back with any understandable image on a European machine, even though the European machine fits the same type of cassette and vice versa. The recorded signals on the tape are not at all compatible. A transcoded copy can be made between any of the three systems so the copy in the appropriate television system standard may be played on the appropriate machine, but such transcoded copies may cost anywhere from $30 to $400.

THIS ARTICLE IS SPLIT INTO TWO SECTIONS: AN EXPLANATION OF VIDEO TERMS, AND AN INDEPTH REVIEW OF 6 GENLOCK/ENCODERS.

Video equipment inputs can be composite video in any one of the three world standards. However, this does not mean that you can make copies between standards by taking the video output of an NTSC VCR and feeding it to the video input of a PAL or SECAM VCR, because the three standard forms of composite video are not compatible. Note that Amigas are made in NTSC and PAL standards.

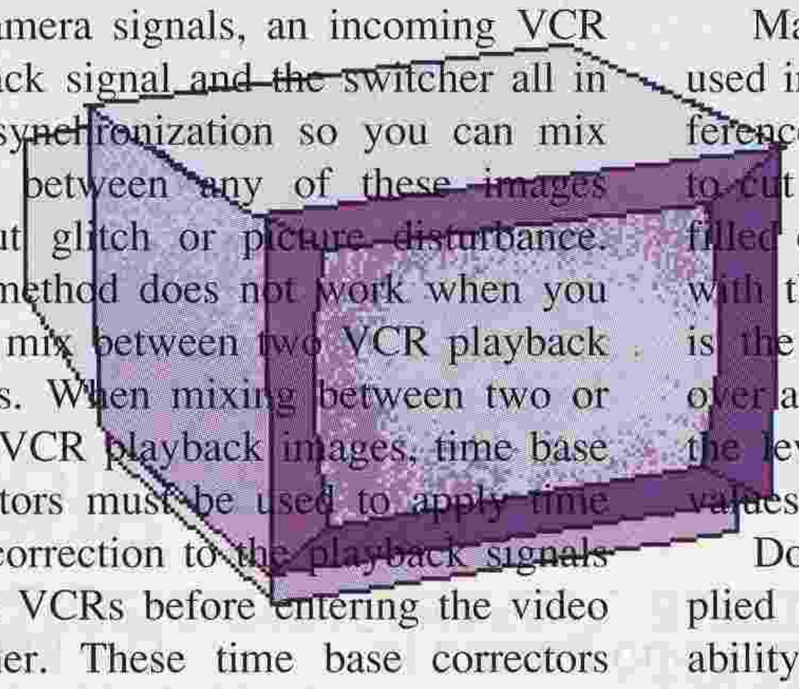
ENCODERS

An encoder is a unit containing the necessary circuitry to combine the three separate R, G and B signals along with the appropriate sync signals into one composite (encoded) video signal. These RGB signals come from sources such as cameras or computers. Because the Amiga computer outputs RGB signals and video equipment requires composite signal input, we need encoders. An encoder is all we need to record computer created images onto videotape.

GENLOCKS

Genlock (generator locking device) is a generic term for units which lock the synchronizing generators from two different sources. It can describe the facility of particular video equipment to lock on to incoming sync signals. Its main purpose is to allow the mixing of non-composite (composite video signal minus the synchronizing signals) camera signals through a video switcher with a built in genlock facility. Most video switchers have an internal sync generator which supplies the necessary sync signals to the incoming non-composite camera signals via the genlocking function. To mix between two or more video images, all incoming images must be in total synchronization with each other. The device (switcher) used to mix between these images must also be in synchronization with those incoming signals.

Genlock is also used to mix between a non-composite camera signal and a VCR playback signal. The VCR output is fed into the switcher's genlock which separates the sync signals from the rest of the incoming tape signals. These sync signals are then fed internally to the switcher's sync pulse generator which locks onto the incoming VCR sync signal from the genlock and feeds this sync internally to the switcher in order to lock all incoming non-composite camera signals. You now have incoming camera signals, an incoming VCR playback signal and the switcher all in total synchronization so you can mix freely between any of these images without glitch or picture disturbance. This method does not work when you try to mix between two VCR playback images. When mixing between two or more VCR playback images, time base correctors must be used to apply time base correction to the playback signals of the VCRs before entering the video switcher. These time base correctors (TBCs) and the respective VCRs must also be in sync ith the same sync source used for every other piece of equipment in the system.



In ideal broadcast situations, a separate sync pulse generator is used to lock every piece of equipment in the studio by distributing a master sync signal through a distribution amplifier or DA. This takes one incoming sync signal and divides or distributes it into many outgoing sync signals which, are fed to each piece of studio equipment. Because signal loss occurs in the division or distribution of the sync signal, the DA also amplifies the outgoing signals to match the original incoming sync signal quality.

For our purposes, genlock will be used to describe the ability of mixing the Amiga's images with another image from a camera or VCR.

KEY

Key describes an electronic effect. Keying places or cuts an image into a background image. Internal keying and external keying apply to the versatility of a particular video switcher. The difference is that any one of the cameras feeding a video switcher can be used to internally key, whereas only the camera, or a device equipped with an external key output, connected to the external key input of a video switcher can be used to externally key. The external key camera is a dedicated key camera that avoids confusion in a multi camera situation. Knowing what type of key facilities are available with a video switcher indicates how flexible that switcher is.

Matte is another video term often used interchangeably with key. The difference is that the image which is used to cut into a background image can be filled or colored to any particular shade with the matte control. Chroma keying is the effect of keying a color image over a color background and controlling the level of key by adjusting the color values instead of the brightness values.

Downstream keying is a term applied to any effects unit with keying ability that takes the master output of the switcher and adds an extra key effect before sending the master output to the master record VCR or transmitter. On the Amiga, keying is accomplished by luminance value or through the Amiga's color 0 function.

Forms In Flight II

3D GRAPHICS AND ANIMATION SOFTWARE

CENTAUR SOFTWARE

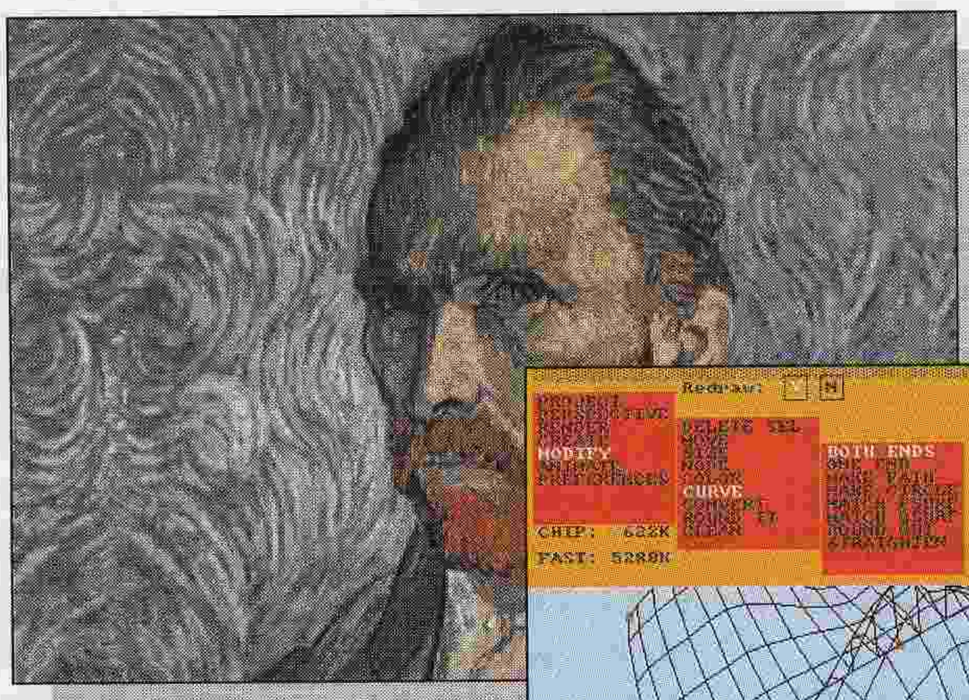
Win Amiga 2500 Power! (details below)

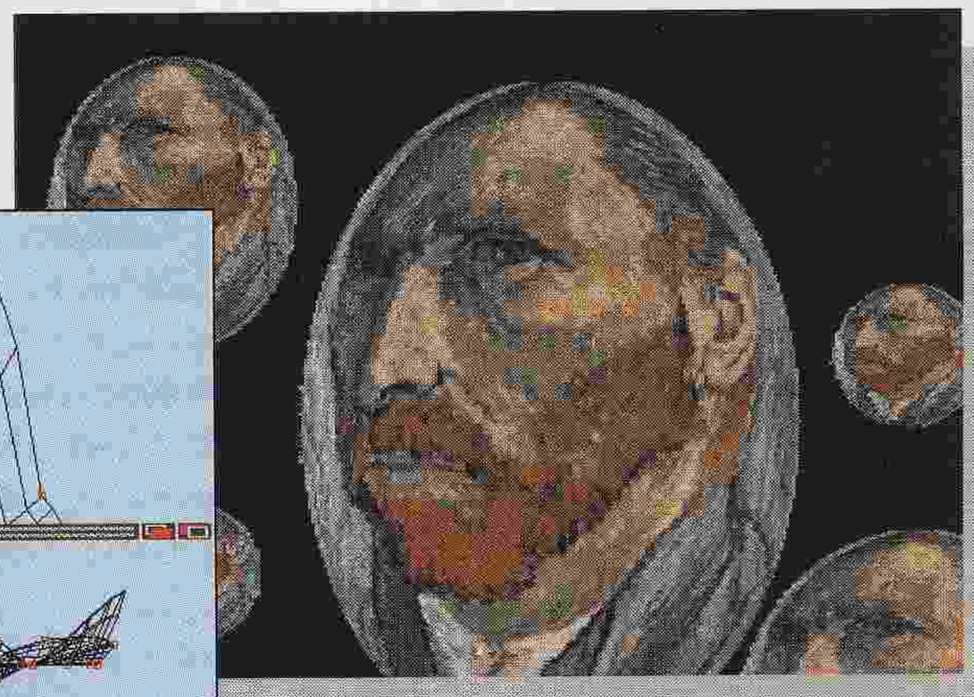
The new Forms In Flight II is the missing link for your Amiga three dimensional graphics design and animation.

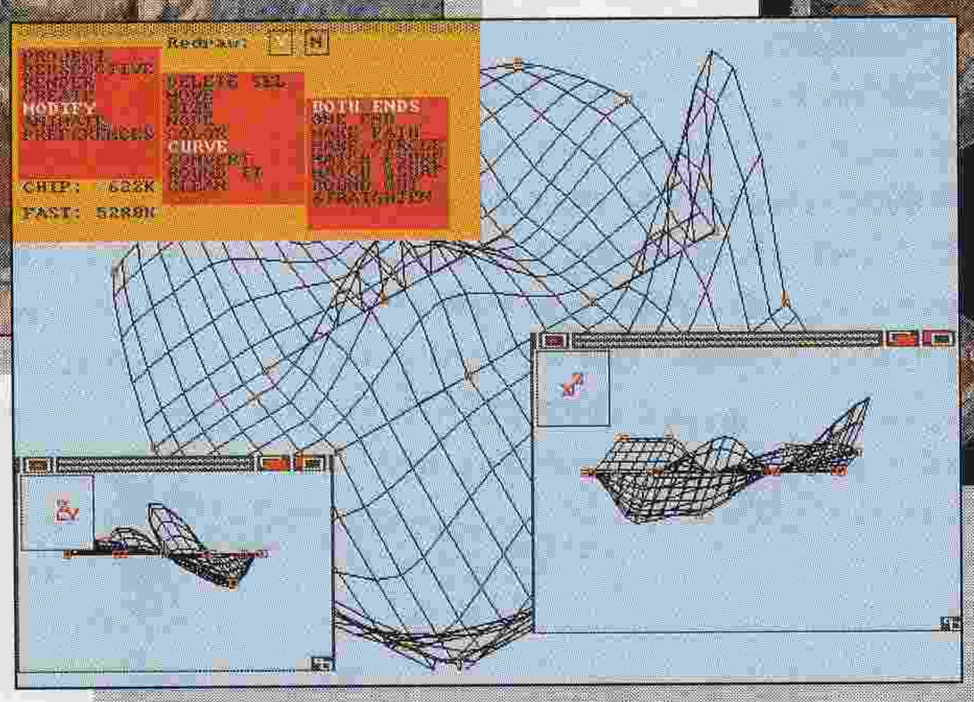
Create fast, high quality images with fancy curves and curved surfaces. Then use the complex objects you design to create smooth animations. You can also import objects from other animation programs using Interchange by Syndesis.

- ***S*** urface Patches
- ***P*** hong (Smooth) Shading
- ***T*** exture Mapping
- ***E*** xtrusions along curved paths
- ***H*** ierarchical animations using paths
- ***S*** upports overscan and PAL systems
- ***L*** ow Price: *Only $119*

Many more features!







$119 retail

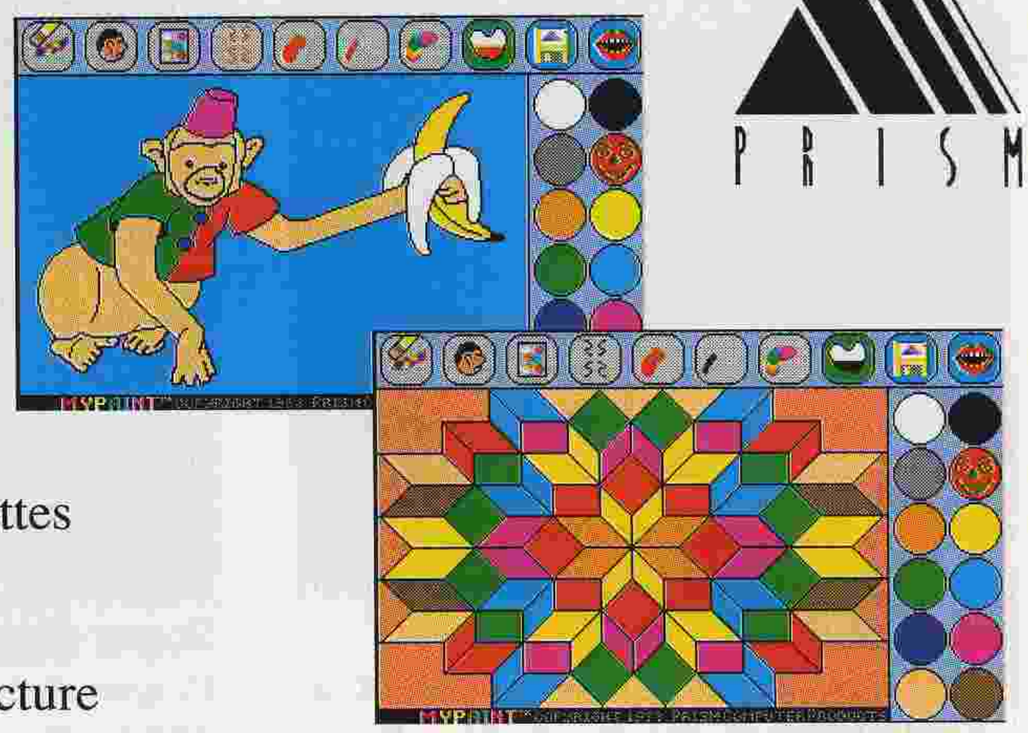
Special Offer:

Create the best animation using **Forms in Flight II**, and win an Amiga 2500 upgrade kit! Animations will be judged on quality, smoothness, interest level, creativity & length. Send your submissions to us by June 30th, 1989. Call us for more information.

Get $50 for your old animation or paint program! Upgrade to **Forms in Flight II** from your current animation or paint program by sending your manual cover or disk to us along with $70 including shipping and handling.

Mypaint™

Educational Paint Program &
Coloring Book



PRISM

- Easy to Understand
- Animated icon menus
- Fill Mode
- Various brush modes
- Color cycle effects
- No reading skills required
- 28 Drawings included
- Kids can draw their own pictures
- More "coloring book" diskettes available
- Educator approved
- Sampled sounds for each picture mode

$49.95 retail

Make Your Disks Fly with.....

Centaur Software Inc.
14040 Tahiti Way, suite 528
Marina Del Rey
CA 90292

B.A.D.

- **The Ultimate Disk Optimizer**
- **Decrease Disk Access Time Up To 500%**
- **Restore Smooth Disk Operation**
- **Designed For Use On Floppies AND HardDrives**
- **Supports Multiple Partitions**
- **FAST CLI Directory Access**
- **Incredible Workbench[tm] Performance**
- **100% AmigaDOS Compatible**
- **Works with the FAST FILING SYSTEM**

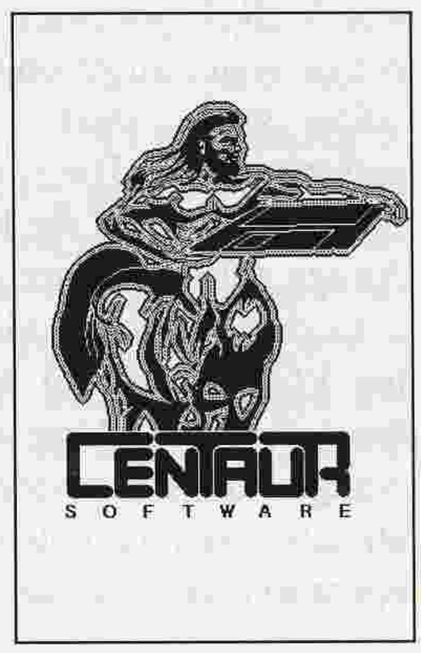
B.A.D. **analyzes, restructures, and processes ANY AmigaDOS disk such that permanent speed increases will be realized. This is NOT a RAM cache based system!**

$49.95 retail

M.V. Micro

Other Centaur Software Products

C-Zar	Patch Editor/Librarian for the CZ series of Casio Synthesizers	**$195.00**
MidiVU	MIDI Signal Monitor and 1 Channel Sequencer	**$39.95**
Pro-Net	Schematic Capture CAD program.	**$495.00**
Pro-Board	Professional PCB (Printed Circuit Board) layout program.	**$495.00**
NTF Fonts	Comix, Roman, Fancy, Sans Serif	**$79.95**



To order products, order direct from us by calling (213) 821-5995, or see your nearest Amiga dealer.

SWITCHER

This unit switches or mixes between incoming video signals and has several many inputs and outputs. The video switcher is an essential piece of equipment to control the video signal in any video editing studio or TV station. On a good quality switcher, features such as built in sync pulse generator, genlock, external key input, external sync input, luminance key, chroma key, matte, border generator, key positioner and fader controls and even some special effects and wipe patterns are included.

Money might be the criteria of an encoder/genlock for the Amiga. If you earn a living from your computer video work, that will determine how much you can afford. If you want to charge for your services, you are entering competitive professional video. The resulting mixed video must be able to compete in areas of quality and price to videos created by professionals on more sophisticated systems.

Because the Amiga is not a $500,000 broadcast graphics computer with an RGB signal to match the price, an encoder/genlock, which carries and lives up to the specifications of broadcasters, becomes more desirable for commercial use. There are many different encoders for various uses already available on the professional video market priced all the way up to $15,000 and more!

In the video world there are three categories of equipment that do the job: encoders, genlocks and encoder/genlocks. In the computer world, there are only two categories: encoders and encoder/genlocks. If you want to record the output of your Amiga onto videotape, then you need an encoder and VCR. If you want to record the output of your Amiga on top of already existing video, then you need an encoder/genlock. The reason for the latter is that first, to get the RGB image of the Amiga onto videotape, you must encode it to the composite video signal which the VCR can record. Second, you must have the genlocking ability to lay the Amiga composite video image over an already existing video image. For this operation, you will need two VCRs, one to play an existing image and the second to record the Amiga's image genlocked and keyed over the playback image of the first VCR.

So, now we have come to the evaluations of six such products:

C View I, NTSC Encoder
C Ltd.
AmiGen, NTSC Encoder/Genlock
Mimetics Corp.
ProGEN, NTSC Encoder/Genlock
Progressive Peripherals
Super Gen, NTSC Encoder/Genlock
Progressive Image Tech.
4004, NTSC Encoder/Genlock
Magni Systems Inc.
Image Master, NTSC Encoder/Genlock
Neriki/Telmak

The first product, by C Ltd., is an encoder only. The rest are encoder/genlocks.

These are not the only units available on the market. They were singled out because they were the ones which were made available to me for testing.

Both encoding and genlocking performances were tested and evaluated with the following equipment and in the following manner:

Test Equipment:

- Amiga 2000*
- Leader Test Generator(TG)***
- Tektronix 528 Waveform Monitor(WFM)*
- Tektronix 1420 NTSC Vectorscope(VS)*
- Industrial VHS and 3/4" U-matic VCRs
- Amiga SMPTE Bars software by Mike Berro, BCS Software**

*The Tektronix waveform monitor and vectorscope were both calibrated and certified by Tektronix of Canada. They were used to verify the Leader test generator's outputs and the voltages of the R, G and B pins of the Amiga 2000 were measured, using the WFM, to determine the quality of the Amiga's RGB source signal to establish a base for testing.

**Although a fine job was done faithfully reproducing SMPTE bars on the Amiga, the limitation of the Amiga's 16 grey scales does not permit the absolute accurate reproduction of SMPTE Bars. Using the high end encoders WFM and VS readings and comparing them to actual bars' standards from SMPTE, I was able to establish a very good base for comparison.

***The Leader has EIA bars instead of SMPTE bars. The difference is that SMPTE bars contain a three level gray signal for monitor setup use. The pluge, as this area is called, is not necessary for encoder evaluation.

TEST & EVALUATION PROCEDURES:

1) Using Mike Berro's SMPTE Bars software for standardization purposes, an Amiga RGB signal was generated. WFM and VS readings of each encoder's NTSC composite video outputs were taken and evaluated for encoder accuracy.

2) Using the Leader TG as a stable source of video input to the five encoder/genlocks, WFM and VS readings of each encoder/genlock's NTSC composite video output were taken to measure the effects of the encoder/genlocks on the incoming video.

3) VHS and 3/4" U-matic NTSC video recordings were made of each encoder's output of Mike Berro's SMPTE bars. These video recordings were then copied down to fourth generation to measure endurance of recorded encoder's Amiga signal.

Both SMPTE and EIA bars contain luminance values, chrominance values, sync, burst, pure white, pure black and two signals called I and Q. The values or peak levels of these signals are identical:

COLOR BARS ON THE WFM

EIA color bars start with the brightest color, gray, on your viewing left and proceed to the darkest color, blue, on

your right. Beneath these color bars are four areas of color. From left to right they are the I signal pure white, the Q signal and pure Black. As you look at the WFM, the degree of luminance is measured from bottom to top. About 1/3 up from the bottom, you will see a centering line. This is the 0 mark where you line up your sync line before beginning with your measurements. Below this line is sync information.

Above this line is luminance and chrominance information. Black should line up on the +7.5 IRE line. The color bars will climb up the WFM scale with their readings, according to their brightness, until white reaches the 100 IRE line at the top of the WFM screen. Any reading greater or lesser than the above standards for th corresponding color indicates inaccuracy. A higher reading of luminance means the encoder is adding more brightness to the color. A lower reading means that the colors are not bright enough.

This reflects directly in your VCR recordings. A higher reading of chrominance means that the encoder is adding too much color and the result can be over saturated and bleeding color on your VCR, especially in 3rd or 4th generation recordings. A lower reading means that colors will have a more pastel look to them.

COLOR BARS ON THE VS

The VS has a circular scale on its screen, measured in 360° increments starting at 0 at the 9 o'clock position and increasing clockwise. Six target grids are the dedicated areas of the scale for Red, Green and Blue and their complementary colors, Yellow, Cyan and Magenta. On the 0 line at 9 o'clock, the color burst should line up on the larger of the intersecting and perpendicular tiny lines. This is the 75% amplitude marking for correct color burst vector. It's where you line up your scope picture before beginning with your measurements. The radius of each color signal is in relation to the saturation of the color. The longer the radius the more saturated. The color vectors should fall dead center on their respective grids. Any rotation either clockwise or counter

AMIGEN



clockwise out of the grids indicates incorrect hue or tint. The faint lines running between the target areas indicate differential gain and phase. The straighter they are the better. The more bowed in appearance indicates poor differential gain and hase. The I and Q signals are indicated at 2 and 4 o'clock. They should be on their respective lines and marks.

Except for the C View, which has photos of the encoded output of the Amiga, all photos shown are of what is happening to that pass through composite video signal. In this case a very clean and stable EIA color bar composite video signal generated by the Leader was used.

C VIEW I by C LTD.

I have no idea why this product was made! It is the worst job of encoding that I have ever seen. For a retail price of $39.95 (US) forget it! It's not even suitable for hobbyists or home video. Here are the scope readings to prove it.

AMIGEN by MIMETICS CORP.

This product's performance was not satisfactory, therefore, I would not recommend it. Look at the scope readings. That's with a super clean video source! Don't forget, we're supposed to be looking at the TG's EIA bars looping through untouched! I did a sweep for frequency response and AmiGen started to roll off (I should say fall face first) at 1 mhz. That's about 100 lines resolution. Says it fits all machines and is priced at $199.95 (US).

ProGEN



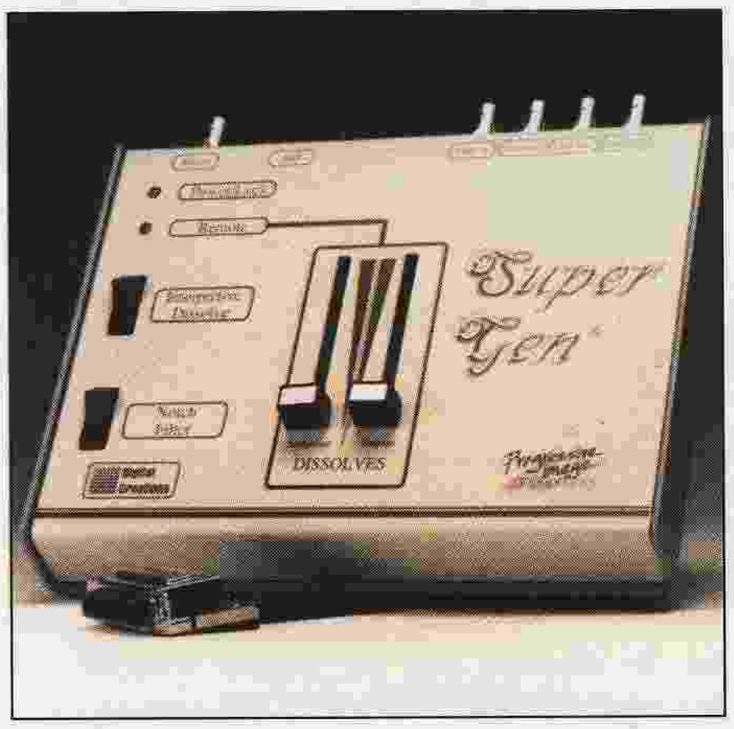
ProGEN by Progressive Peripherals & Software

It's a simple unit to work with. No external controls. Just follow the instructions, plug it in and turn it on. Although not broadcast or even professional quality by any standards, it still does a decent job for hobbyists or home video. I would even say that you could use it professionally for wedding videos, but test it first before buying. If you want to use this as an encoder without feeding a video source to the genlock, it is possible, but I don't recommend it to be used that way.

As a genlocking device, the encoder section seems to improve drastically and the colors start to fall in place. It works better when external sync is applied. Note the green and magenta. Also, the Amiga graphics foreground image tears a little, leaking a bit of the incoming video image through, during my recording tests. Image quality falls apart in 3rd and 4th generations. Contrary to manufacturers claims, my unit did not meet RS-170A standards. I got it all the way up to about 4.5 Mhz, but it does some strange things getting there. That would be about 400 lines resolution of detail if the sweep didn't twist and turn.

There is ringing going on with the sync tip, burst, luma and chroma. It runs a little hot on the incoming video image. It comes with software control of the graphics and incoming video display. The ProGEN sells for $449.95 (US).

SuperGen



SuperGen by Digital Creations

I tested Super Gen for the first time in May of 1988. Recently, for this article, I received a second unit. Initial tests said this was a great unit, but technical difficulties disrupted it. This could have been due to a failing internal part, which happens from time to time in even the most expensive video and computer equipment on the market. When I tested the first unit last year, it worked well except for some annoying vertical cross talk down the center of the encoded composite output. This took the form of a vertical band or strip of wriggling distortion down the center of the screen and was recorded on video as well.

This time around, the initial readings from the scopes were very good. Frequency response was above 4.5 mhz before high frequency enhancing took place. The sync and burst were clean with only slight ringing on the beginning of the burst. The manufacturer claims broadcast quality and it was shaping up that way. However, there was a bit of chroma on the luma reading and the vectors were too long, indicating over saturation, but hue was good. Differential phase and gain were both good with a tad of phase jitter. It looked great. So what happened? Well, following the procedures religiously and reading every word of instruction before plugging it in, rules out mishandling. About the 4th time it was connected, it had a brief moment of glory, then the computer just would'nt boot when it was connected.

It has facilities for professional use. It's easy to use, it has external fader bars for video or graphics and has two composite video outputs. It also comes with a composite loop. It has software control, internal setup, internal blanking, fits all Amigas and has an external key out. Video studios need longer cables, than they provide, to accommodate different console designs. The Super Gen is $749.95 US.

As I was about to test it as a straight encoder, it stopped working. There was no time left to get another before going to press.

4004/4010 by Magni Systems Inc.

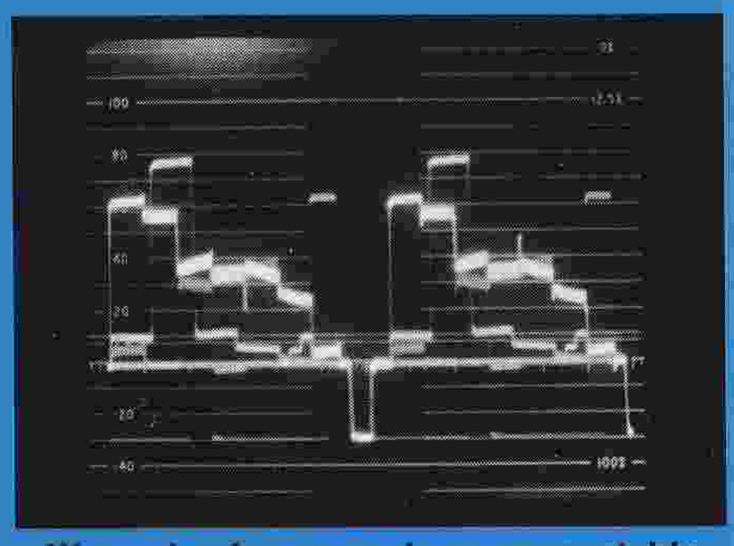
The Magni 4004 is an NTSC video graphics and genlock/encoder system for the Amiga 2000 and the new 2500. The Magni 4005 is the PAL version. The Magni 4010 is an external remote control fader box. Magni is a manufacturer of broadcast test instruments. They make VSs and WFMs. Their products are used by the major broadcast networks to evaluate equipment and signal quality. Magni competes with Tektronix among others. So, at first glance, manufacturing an encoder/genlock for the inexpensive little Amiga may seem unusual. It is a clear indication that professionals are starting to take the Amiga more seriously. They have perfected a product and have been actively marketing it since last spring.

Several Amiga software products directly address the internal control of the Magni as does Magni's own software. Their 4010 remote control fader box is great and it comes with a 10 foot cable. The Magni comes as two computer boards. One is a full length graphics encoder board which fits into a slot on the PC side. The second smaller interface board fits into the video slot on the extreme right of the A2000. It is on the back of this board that the 4010 remote control plugs in. The two boards connect to each other by two ribbon cables. On the back of the encoder board, a breakout cable is fitted providing 4 BNC connectors. Each connector is color coded and one of the four can be configured as either preview graphics, black burst or key out by changing in-

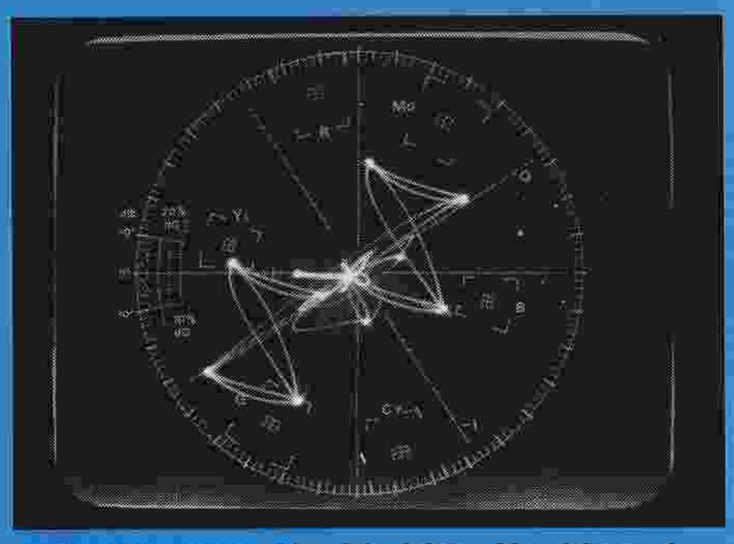
C VIEW I

by

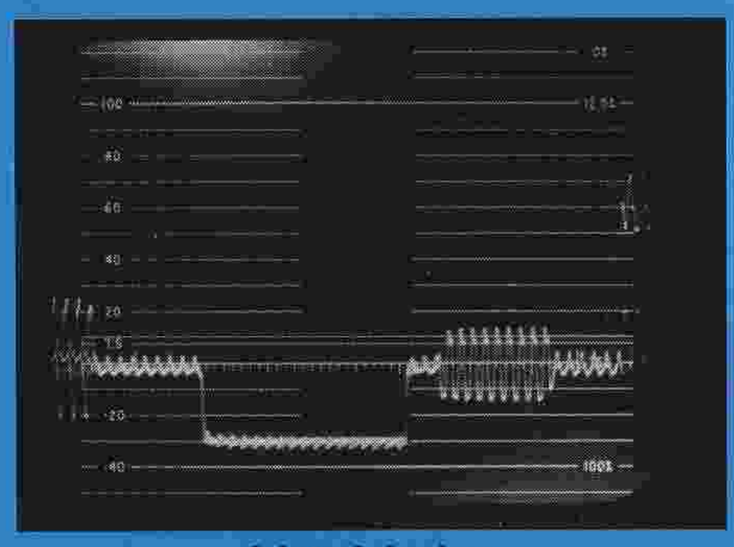
C LTD.



Wrong luminance and an unacceptable Fawlty Towers front staircase.



That's green..No, it's blue..No, it's red.. The end points are completely astray.



A lot of ringing.

SMPTE & EIA COLOR BAR LEVELS	
Black Luminance	7.5 IRE
Blue Luminance	15.0 IRE
Red Luminance	28.0 IRE
Magenta Luminance	36.0 IRE
Green Luminance	48.0 IRE
Cyan Luminance	56.0 IRE
Yellow Luminance	69.0 IRE
Gray Luminance	77.0 IRE
Blue Chrominance	46 IRE
Red Chrominance	72 IRE
Magenta Chrominance	77 IRE
Green Chrominance	89 IRE
Cyan Chrominance	100 IRE
Yellow Chrominance	100 IRE

AmiEXPO

Presents

May 6th & 7th

AmiFORUM



THE AMIGA EVENT IN THE LONE STAR STATE!

AmiEXPO, The Amiga Event, and *AmigaWorld* are pleased to announce AmiFORUM - Texas, an exhibition, conference and meeting designed to fulfill the needs of the regional Amiga specific marketplace. AmiFORUM - Texas offers many of the same elements as our national Amiga expo's, but at a reduced cost to both attendees and exhibitors.

Over 40 companies are expected to exhibit at AmiFORUM - Texas. Our Master Class Series will give users a chance to meet and learn from true professionals in the field. AmiFORUM will be a great place to see the latest Amiga products, get discounts from retailers, meet Amiga VIP's and take a class with a Master.
AmiFORUM - Texas, May 6th - 7th, 1989

AmiFORUM Master Classes The Amiga Education

Amiga Graphics and Artist's Techniques.
Renown Amiga Artist Jim Sachs (*Defender of the Crown, Ports of Call*) will teach beginners from 10:00 A.M.-1:00 P.M. on Saturday and advanced students from 2:00-5:00 P.M. on Saturday and 10:00 A.M.-1:00 P.M. and 2:00-5:00 P.M. Sunday. Mr. Sachs will hold a "critique" session after hours both days for students of his classes.

Amiga Animation
Steve (*Dance of the Stumblers*) Segal, award winning Amiga animator and educator will teach two-dimensional techniques for beginner animators from 10:00 A.M.-1:00 P.M. and three-dimensional techniques for advanced animators from 2:00-5:00 P.M. both Saturday and Sunday.

Amiga Video
Cal Vornberger, independent producer and art director, will teach an overview of video techniques and discuss broadcast video terminology for beginners from 10:00 A.M.-1:00 P.M. and advanced video users from 2:00-5:00 P.M. both Saturday and Sunday.

Programming the Amiga in "C"
This class in "C" programming on the Amiga will concentrate on using the Exec in Programming I (10:00 A.M. - 1:00 P.M.) and on Graphics programming for advanced students in Programming II (2:00-5:00 P.M.) both Saturday and Sunday. Instructor to be announced.

THE EXHIBIT

Over 40 Amiga developers will display the latest and most advanced Amiga technology on the market today. Included will be software publishers, hardware manufactures, local area retailers, magazines and user groups.

Saturday May 6 — **10:00 A.M. to 6:00 P.M.**
Sunday May 7 — **12:00 Noon to 6:00 P.M.**

THE CLASSES

Master Classses are limited to 35 people per class. Admission is $50 per person. Please call 800-32-AMIGA for class availability and to pre-register.

THE PLACE

AmiFORUM-Texas is being held at DFW Hilton Executive Conference Center, 1800 Highway 26E in Grapevine, Texas.

THE COST

Admission to the Exhibition and the Exhibitor Demonstration area is as follows:

One Day - $10.00 Two Days - $15.00

THE REGISTRATION

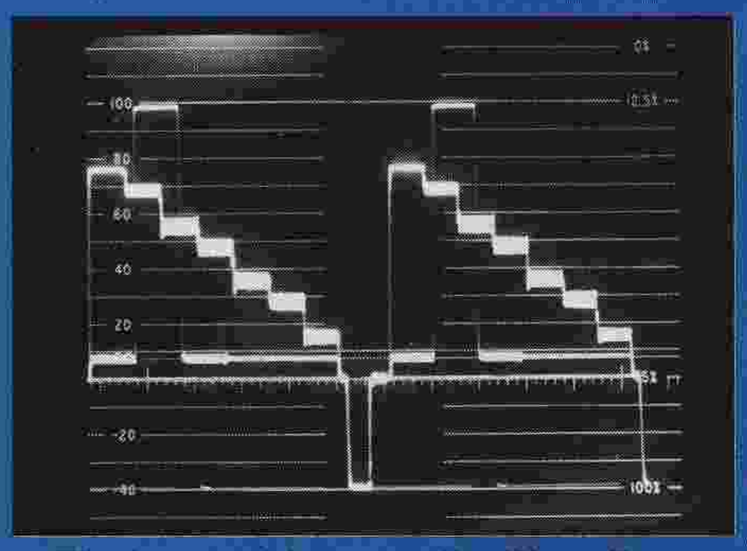
Master Class attendees may register in advance by calling AmiHeadquarters at 800-32-AMIGA. You must have a valid MasterCard or Visa credit card to register on the phone. **Deadline for Master Class Pre-Registration is May 3, 1989. Exhibit Only attendees may register at the door only.** On-site registration is open from 8:00 a.m. to 4:00 p.m. both days.

THE AIRLINE

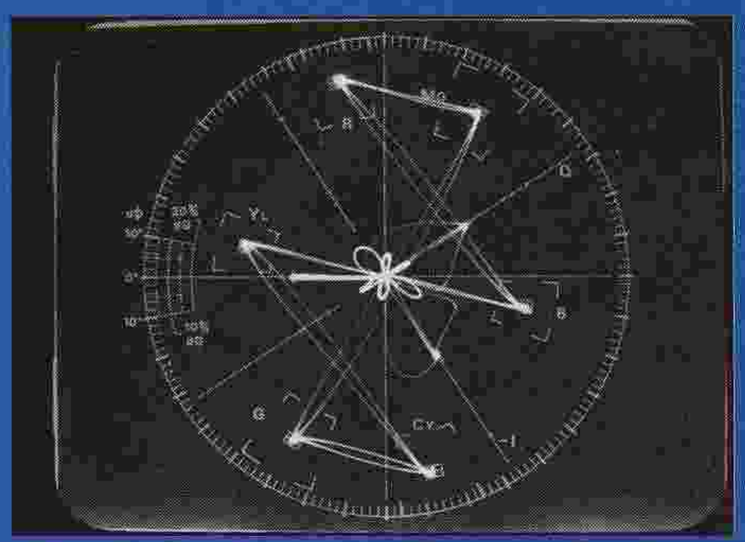
Call American Airlines at 800-433-1790 with ID 83536 for a special 5% discount on all flights to the Dallas-Fort Worth

Leader Test Generator

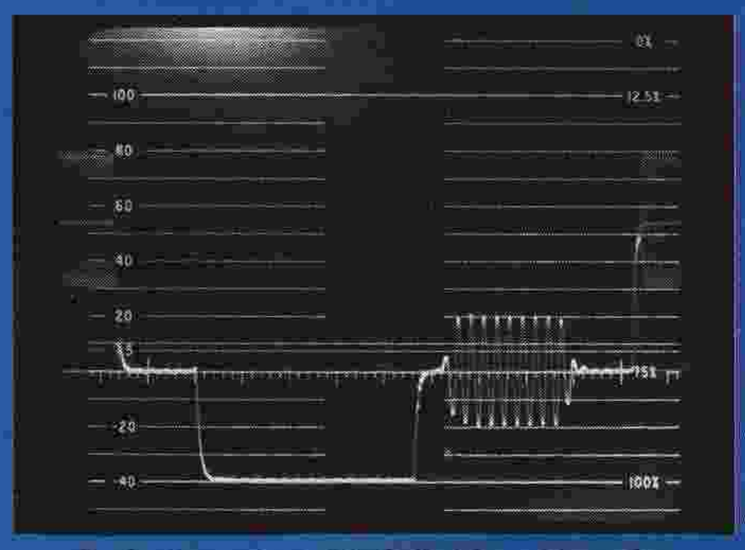
The way it should be



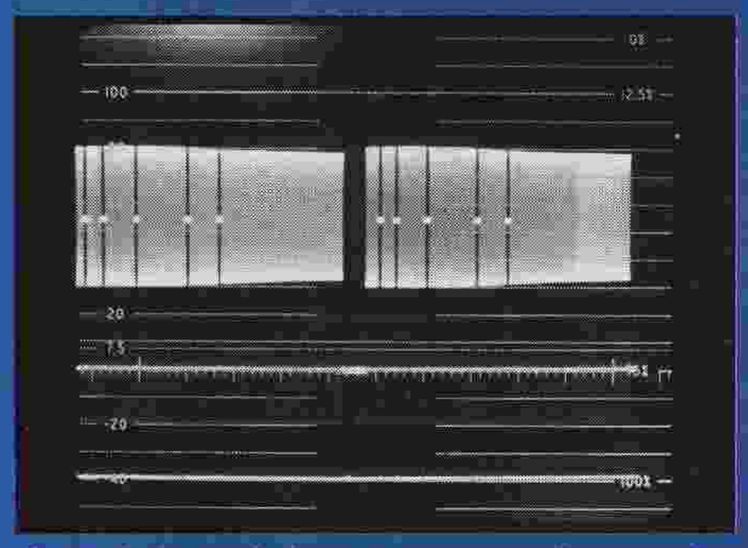
The Luma stairway on the Wave Form Monitor (WFM).



The Vector Scope readings are dead on, the end points are within the target areas.



A clean sync with 9 flat burst peaks.

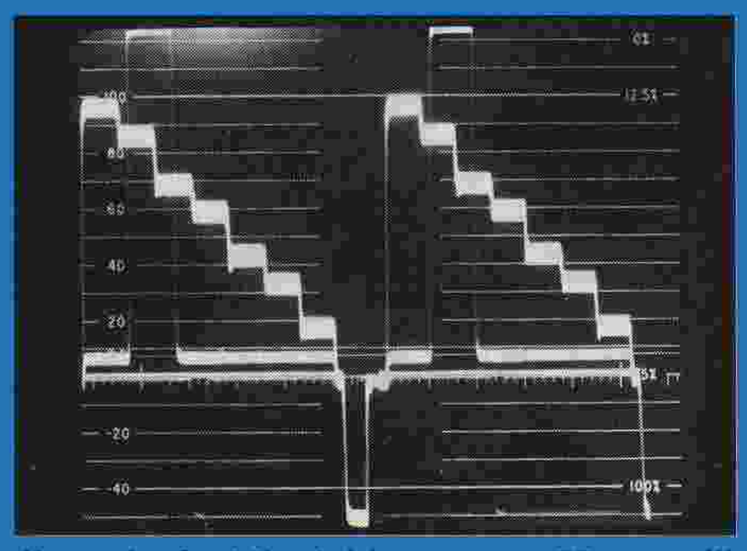


A straight and clean sweep reading on the WFM.

AMIGEN

by

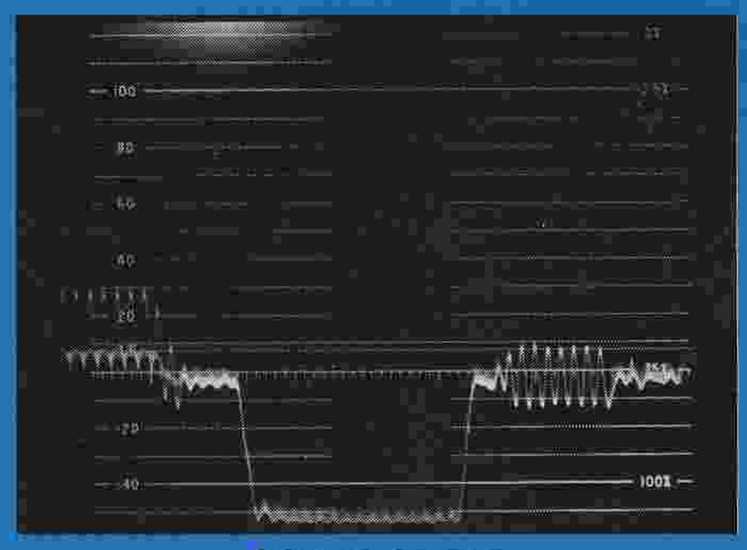
Mimetics



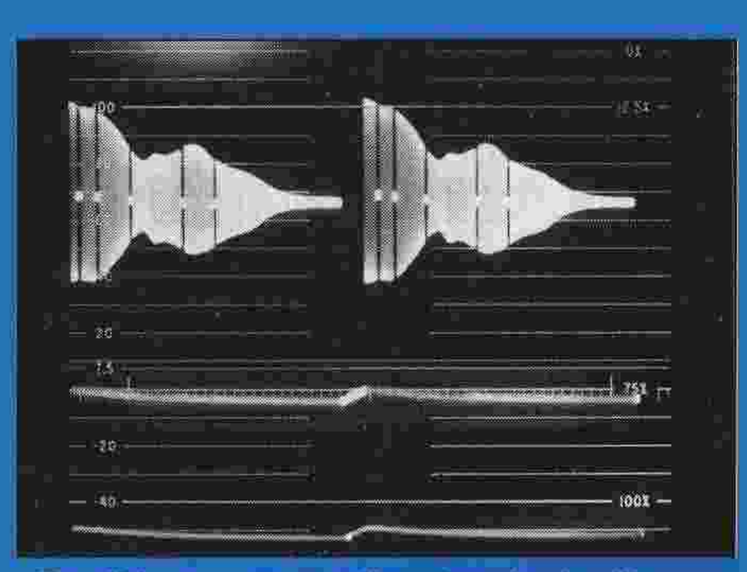
If you look at the table on page 22 you will notice that the luminance here is all wrong



What does this inkblot mean? End points are supposed to be on the target grids.



A lot of ringing.

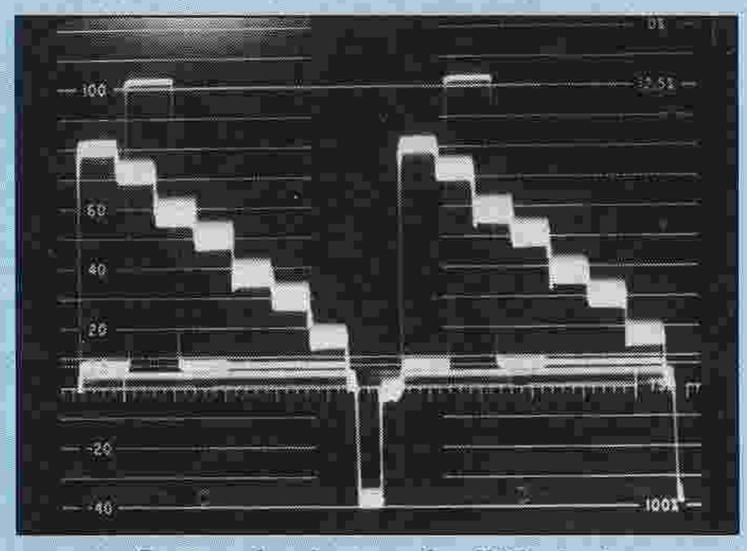


Terrible sweep reading that looks like an electronic pasifier.

ProGEN

by

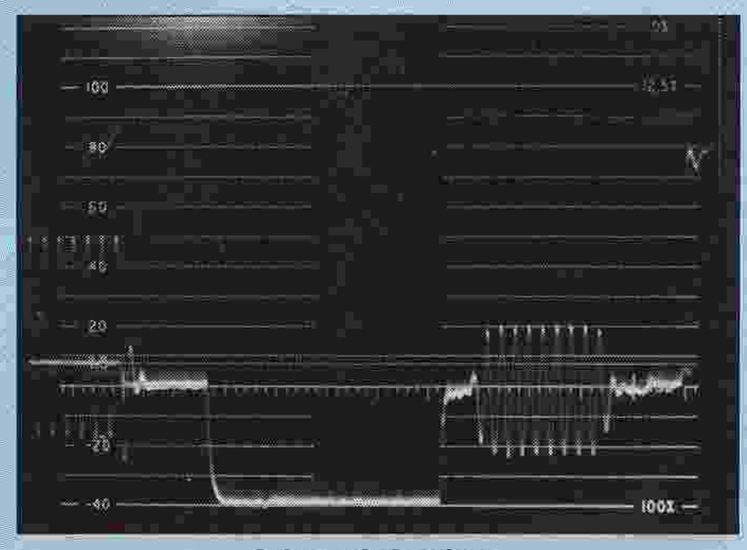
Progressive Peripherals & Software



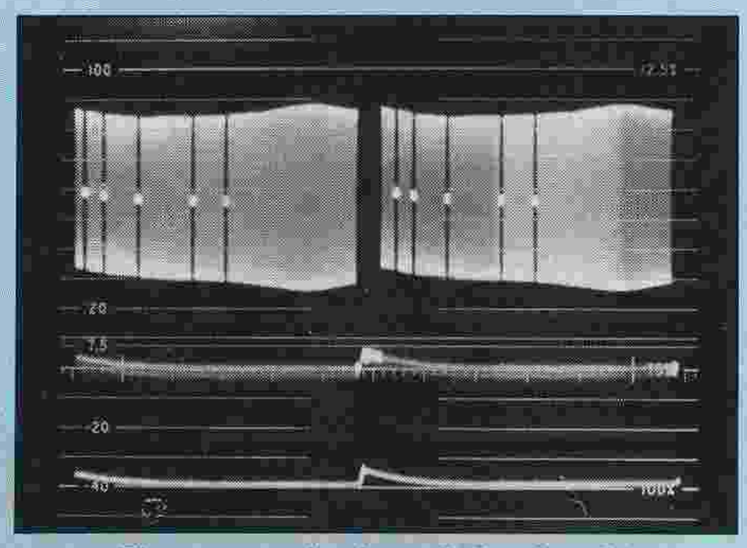
Some ringing and a little hot.



A little hot, but the hue is great.

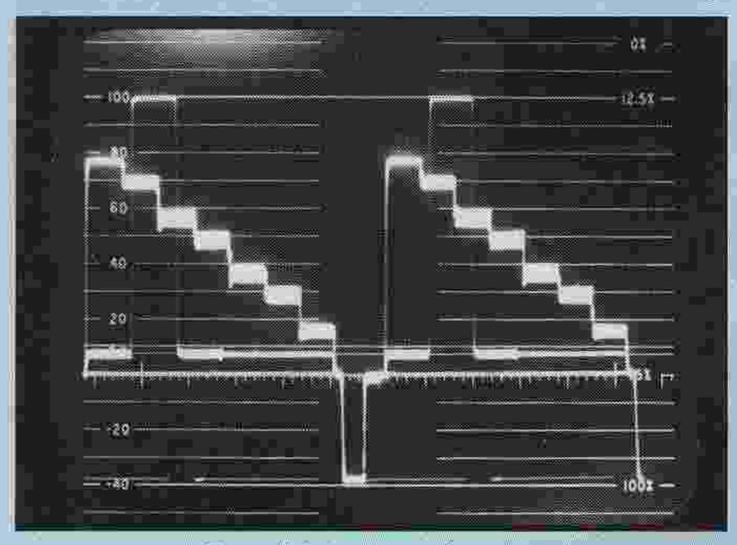


A lot of ringing.

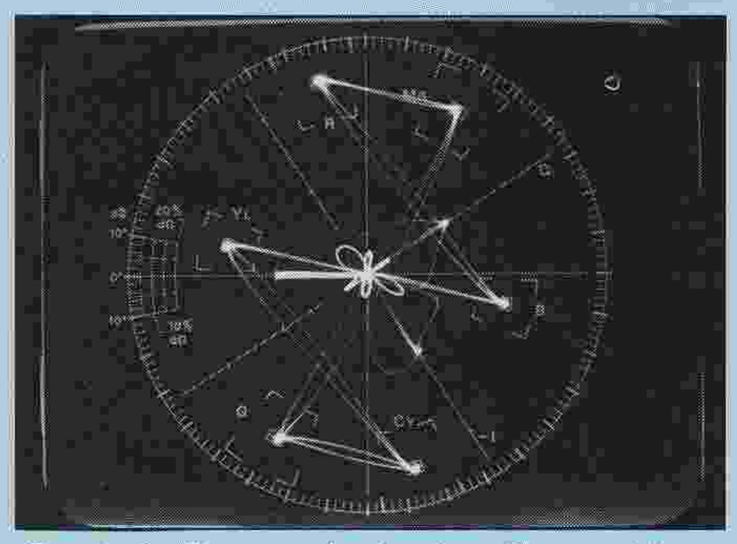


The sweep looks a little drunk.

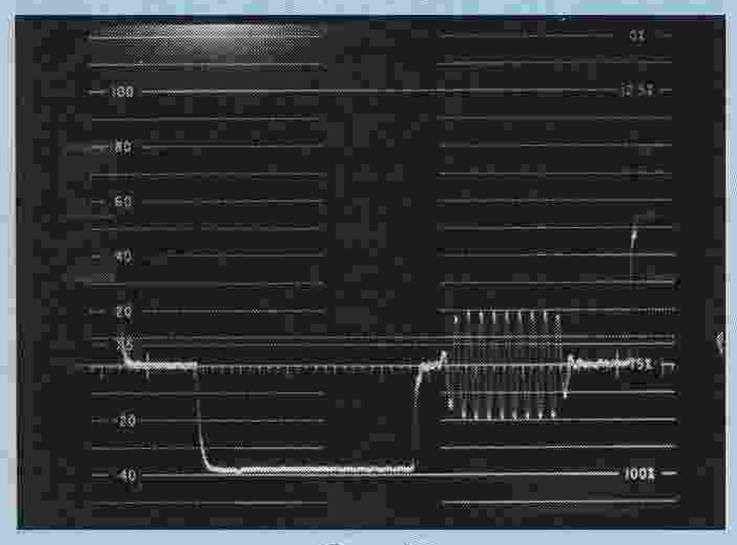
SuperGEN by Digital Creations



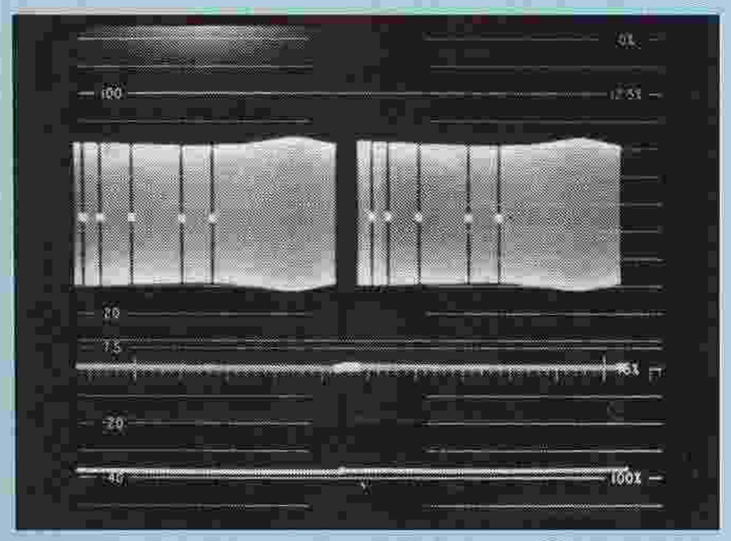
Good luma stairway.



Great reading, perfect saturation and hue.

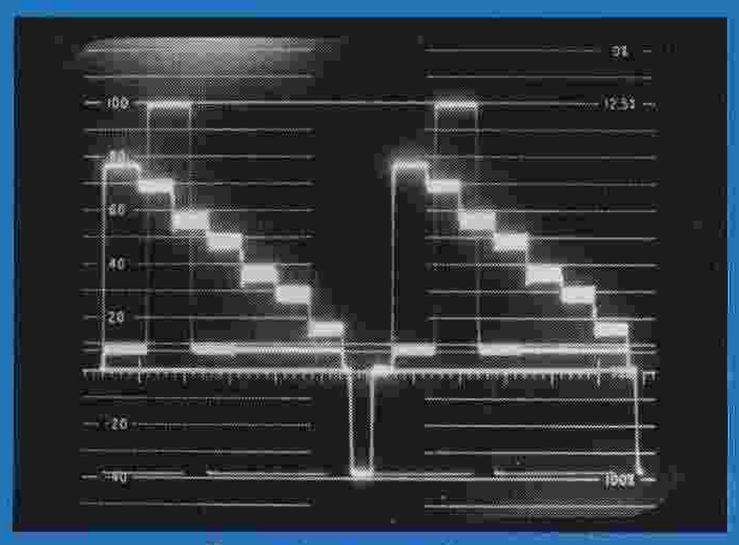


Good.

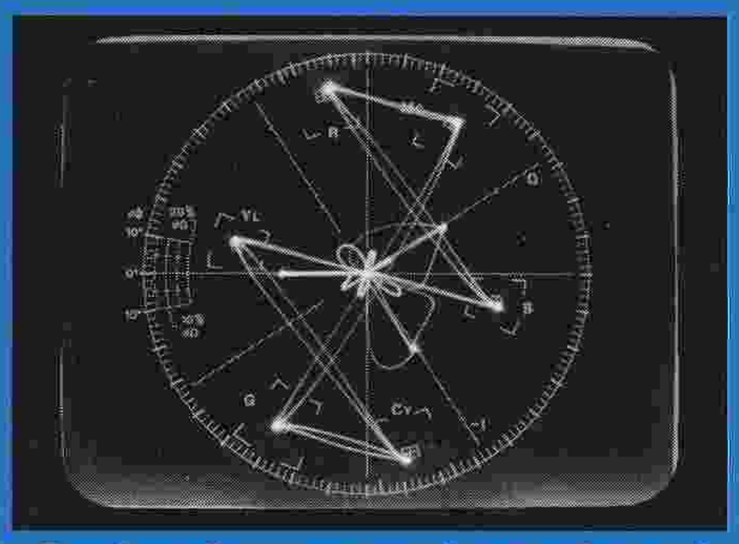


Enhancing only after 4.5 mhz.

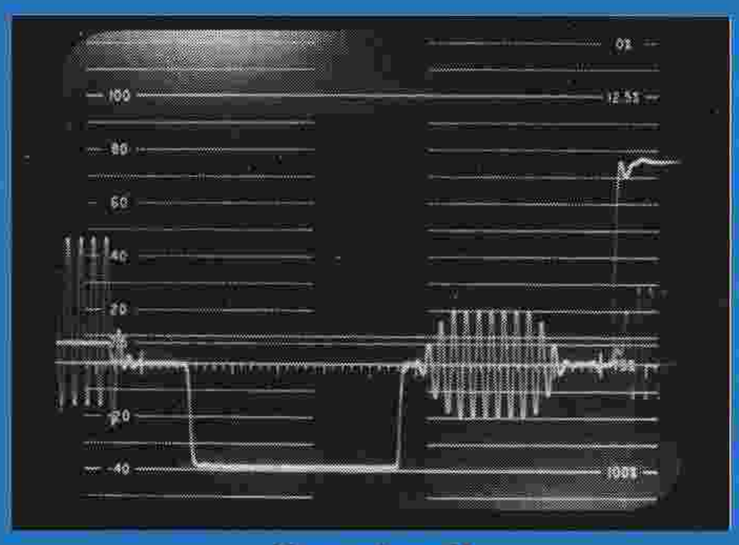
4004 by Magni Systems Inc.



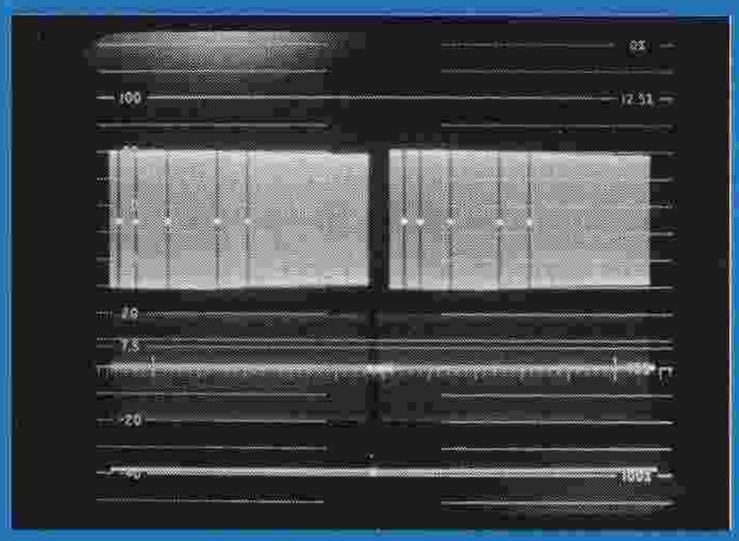
Great luma stairway.



Great reading, very good saturation and hue.

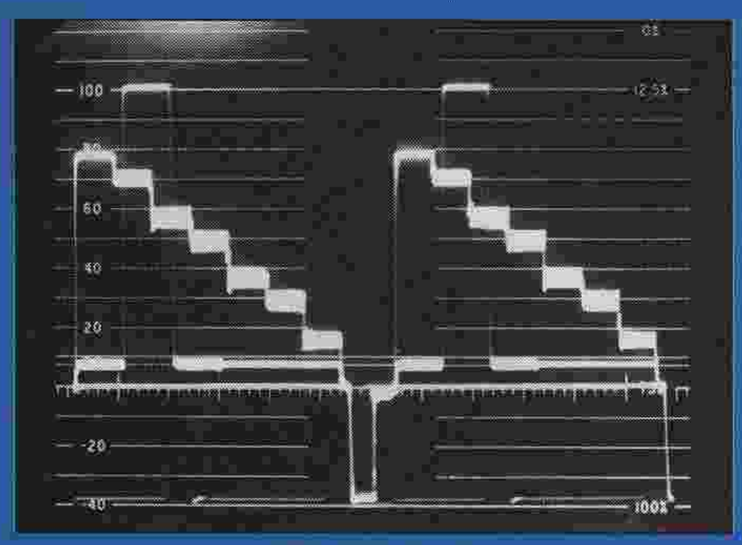


Very clean!!

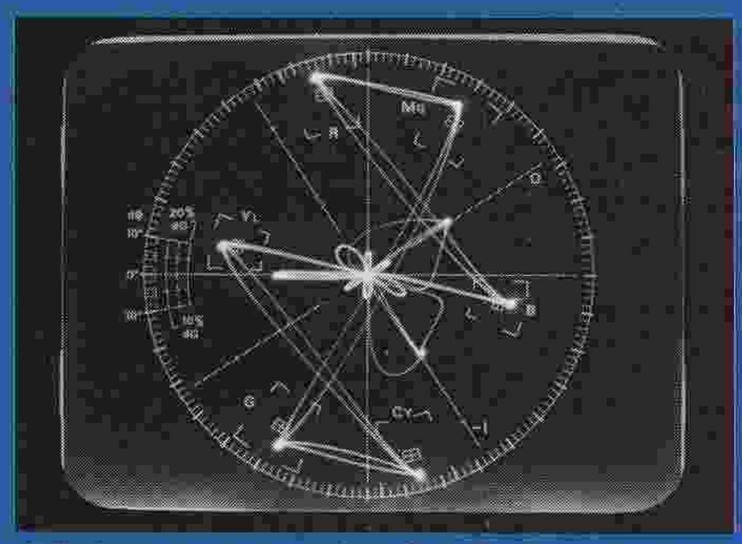


The Magni Series....A clean sweep!

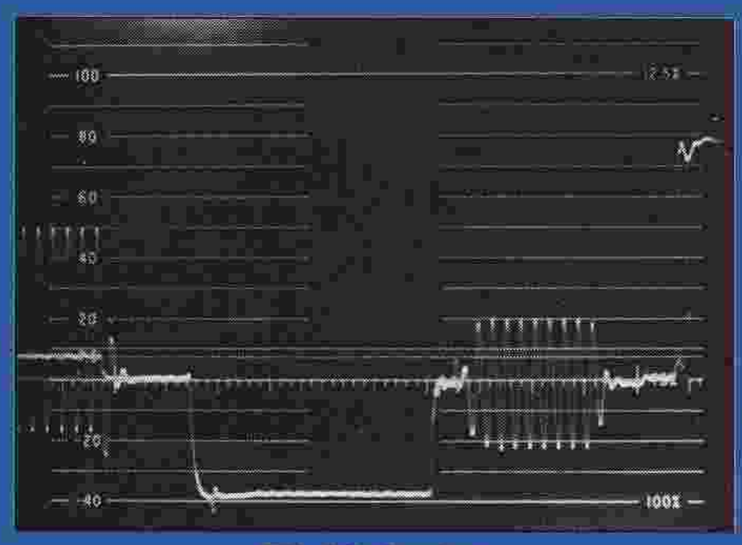
Image Master by Neriki



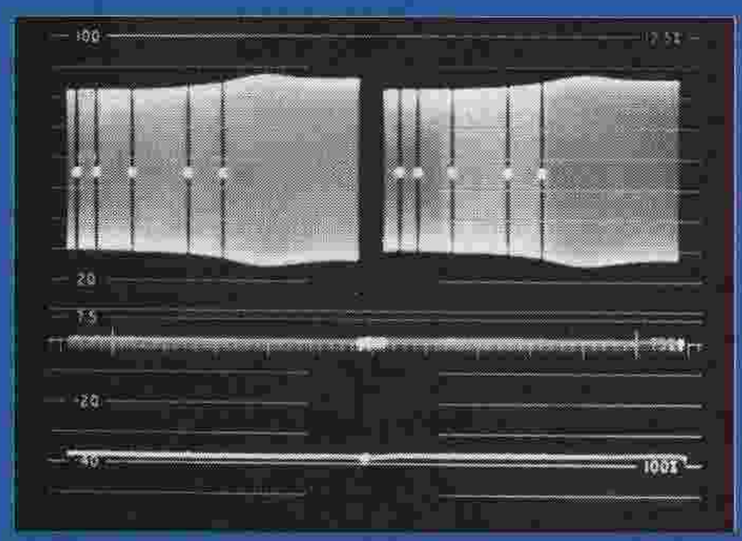
Slightly hot.



Slight over-saturation but the hue is dead on.

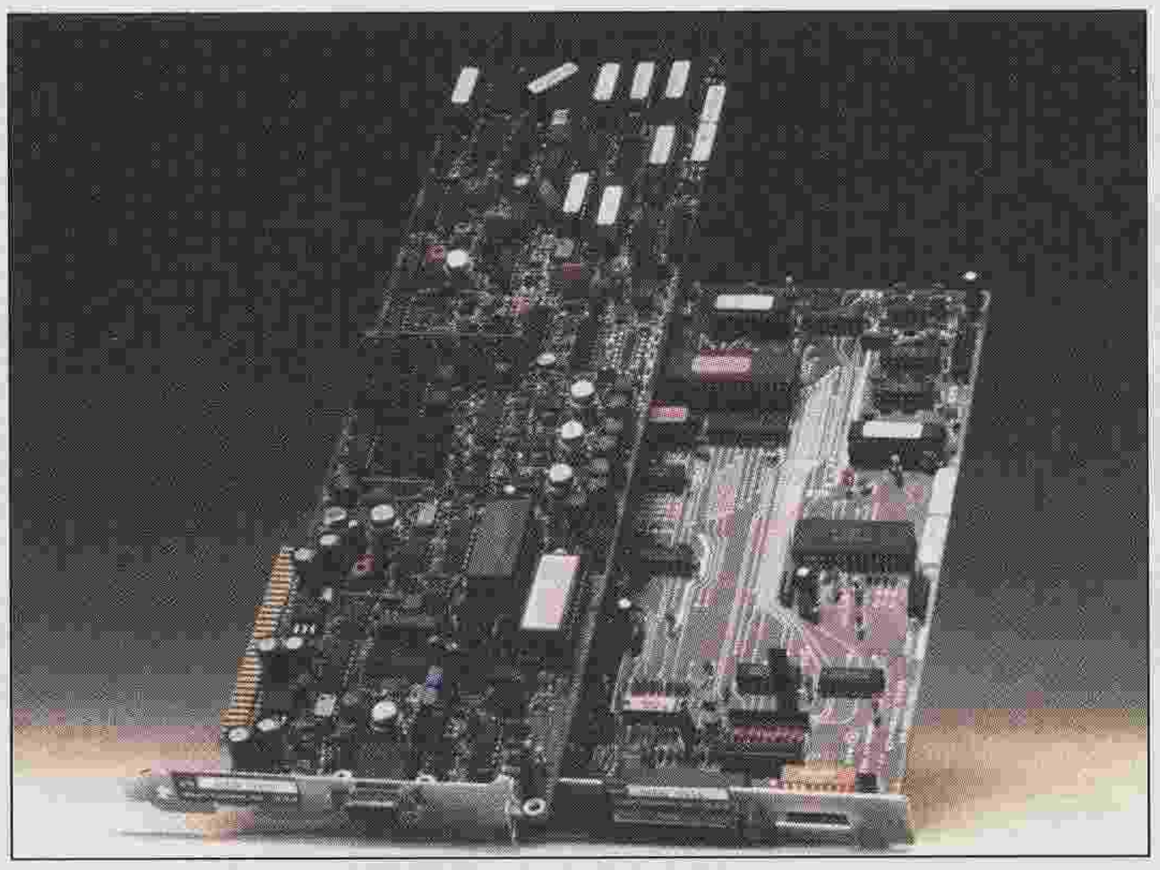


Slight ringing



Enhancing only after 4.5 mhz.

4004/4010 Magni





ternal jumpers. The other three BNC connectors are video reference in, video output and external key in.

Be careful with this breakout cable. The first cable I had was defective. On the back of the interface board, by changing the positions of 8 DIP switches, 13 different modes may be activated. Although I've had this unit for two months, I'm still discovering new functions and features. Here are just some of the features: Internal sync pulse generator, internal black burst generator, genlock with correct color framing, next frame control output. The Magni sweep was clean all the way up to 6 mhz. Every test performed, proved this to be a truly great encoder/genlock. The 4010 is wonderful. Dissolves of overlaid graphics can be made either manually or automatically from .5 seconds all the way up to 10 seconds. Add the right images and music and you have a powerful video. Keying can be done in either forward or inverse modes of luminance values and by color 0. Aside from fader bar control, punch in and out buttons are available for key, fade and cut. The inner workings of this system have solved an enormous amount of techical problems when it comes to marrying the Amiga with video.

There are disadvantages. The first is the price: $1695 (US) for the two boards and $1995 (US) for the two boards with the remote control box. Second, and more important is that the Magni takes up two valuable internal slots which could be used for other boards such as frame buffers, memory etc. Third, one of the two slots used by the Magni, is the video slot. Trouble is, the "Flicker Fixer" uses that same video slot. Fourth, it only works with the 2000 and the 2500. Fifth, its software doesn't work when a printer is connected. It is entirely possible that there are other features and even possibly other limitations to this system, but even after two months, it's just not long enough to explore all the possibilities. It's a great system for the wealthy or professional user. Take a look at the scope readings.

Image Master Amiga Pro-Genlock by Neriki/Telmak

This unit is geared for the professional market but can be used by anyone demanding the best in quality. Addressing the needs and demands in a more conventional professional video manner, Neriki/Telmak has made a 19" EIA standard rack-mountable unit for video studios or for stand alone systems. Designed by Neriki, manufactured by Fordray and marketed worldwide by Telmak.

In April 1988, at the National Association of Broadcasters Convention (NAB), in Las Vegas, Nevada, I first came into contact with Neriki/Telmak. Having worked with these encoder/genlocks in my own production studios since last May, I can personally vouch for their quality. The current model B, soon to be upgraded, in time for this year's NAB show, comes with a host of controls, adjustments and inputs/outputs. The interesting thing about this unit is that it can be internally adjusted and fine tuned to your particular situation. With scopes for the professional, or by using a monitor for the independent user, simple adjustments on the encoder section can really make this unit perform.

Located on the face plate, a rotary luminance keyer with clip position and a key enable, allows you to drop Amiga graphics in and out, glitch free. The key inverse switch decides the direction of luminance key. Besides these controls are, the power switch, two external adjustments, 180° chroma phase (switch) and fine phase control (screw pot). These last two allow you to fine tune to an incoming studio black signal.

On the backside are the connectors: A genlock input for either composite video or studio black, controlled by a toggle switch, a loop through of the unaltered video input accompanied by a termination switch, an NTSC composite video output, three separate R, G and B outputs, the Amiga monitor and computer 23 pin plugs, a sync output to time other units with this one, and an external key output. All connectors are BNC. Every application by professional and stand alone users has been thought of and addressed in the Neriki's design. Frequency response was tested all the way up to 6 mhz with only slight high frequency enhancing after 4.5 mhz. Not

quite as good as the Magni but only noticeable on a WFM screen. We're talking about a miniscule difference here. Sync and burst are clean with only traces of some sync spiking and slight ringing from sync to burst. More obvious is the over saturation of chroma apparent on the luma reading, but hue is dead on.

The good points of this unit are the ability to fine tune to your system, the assortment of inputs/outputs, to be able to address switchers and other RGB input using equipment, the ability to rack mount, and of course the quality of the image output. It keys both by luminance and color 0 and its external key out signal is independent from and unaffected by its internal key. The Neriki/Telmak works with all Amigas. Tests show that 3rd and 4th generation tapes with recorded outputs from the Neriki hold their image quality very well. Being self-powered, it doesn't have the same restrictions as the Magni, nor does it use up valuable internal slots, so you can have both your "Flicker Fixer" and a Broadcast Encoder/Genlock. It also works with a printer connected.

It has its faults. First, the cable is too short, but they do have an optional longer cable. It does not have a fade or dissolve control for the Amiga graphics. This is a disadvantage for the stand alone user who does not have a video switcher to offer this much desired graphics control. At $2200 (US), it's the most expensive unit I've tested, but it's always a question of which product best suits your needs. There is no internal sync pulse generator nor black burst generator so it does need external sync applied to start it running but it does work well with any VCR playback signal from VHS to 1 inch tape. Once it's up and running, the sync may be removed.

Recently, I read an article in another Amiga magazine claiming that encoder/genlocks which need sync to be able to start running were factory maladjusted or just foolishly made. I beg to differ. Sync has to come from somewhere. If an internal sync pulse generator is not included then an external sync must be applied. If you're wondering why this is not the case with other low end encoder/genlocks, then, you just answered your own question. LOW END! Quality demands certain methods and standards to function.

Image Master, Neriki



Neriki/Telmak will be introducing two new models and an upgraded version of their current B model at NAB, in April, 1989. On the model B, the rotary luminance control will be replaced by the much desirable graphics fader and a foreground/background switch. I'm told that there will possibly be a few other improvements while keeping the price the same.

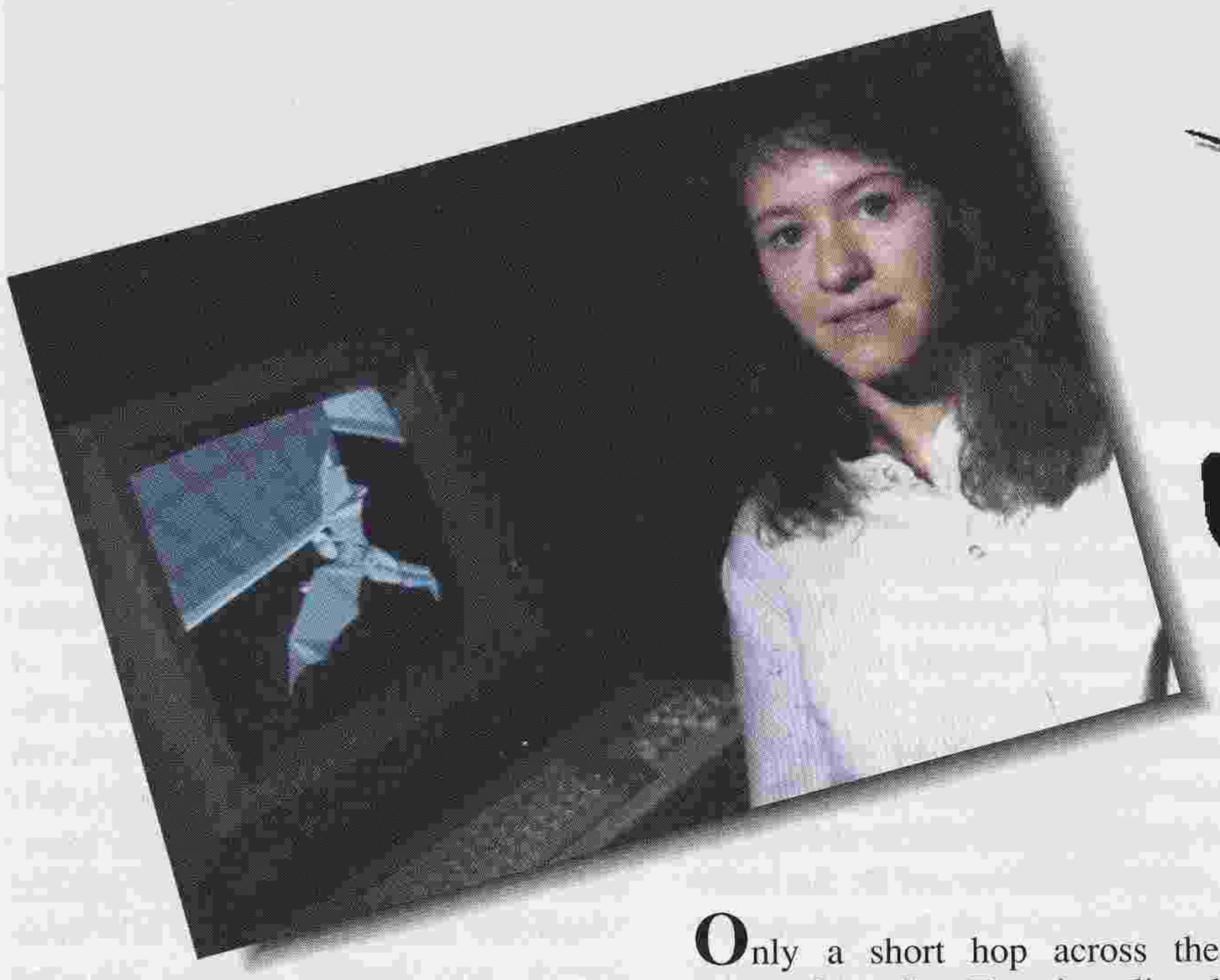
The two new models will be lower and higher end units from the model B. Priced around $1000 US, the low end unit will contain the new fader control, but will not have all the adjustments for fine tuning or all the assortment of connectors on the back panel. The good news is that the encoder quality will remain the same as in model B! The high end unit priced around $3000 US, will most probably have an internal sync pulse generator, sophisticated fader controls (possibly external with a long cable I hope!), and the long awaited Y C inputs and outputs. As well, it is quite possible to see an assortment of other 7 pin dub connectors or Y, R-Y, B-Y inputs and outputs to address the various tape formats in professional use.

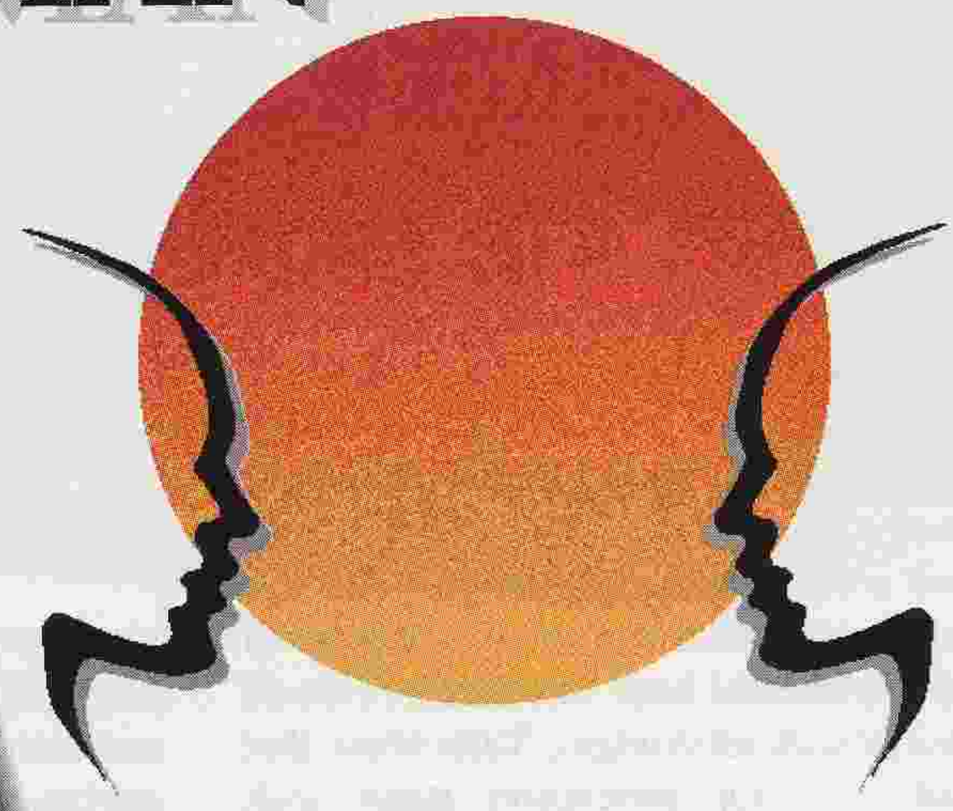
I would like to thank the following people for helping to make this happen: Jacques Rousseau and Robin Drolet of Tele-Syn Broadcast Video Inc., Montreal, Commodore and Neriki dealers, John Cole, Norman Jew and Chris Butler of Telmak and Chris Young of Neriki, Gord Ballantyne and Vic Hosquet of Applied Electronics, Canadian distributor of Magni, Toronto/Montreal, Keith the engineer at Magni, Oregon, USA, Michel Descoteaux, Commodore, Montreal, Peter Tiedemann, Soft Wares, Montreal, computer dealer, my three friends, photographer, Armen Alemian and video engineers Zaven Dishoyan and Peter Jaslow and last, but not least Eyo Sama publisher of AmigoTimes. ❑

ABOUT THE AUTHOR

David H. Donald, President of D.H.D. Productions Inc. and D.H.D. Studios, is a video producer from Montreal. He lectures for the International Television Association (ITVA), Combec and Dimensions trade conventions and teaches video and Amiga courses in Montreal at Dawson College's "Dawson Institute of Photography."

WOMAN BY WOMAN





An Interview With Ariel Pelikan

Only a short hop across the Bay bridge from San Francisco lies the fabled city of Berkeley where innovative social and political experiments breed, are honed, diluted, then ripple out to all parts of the world. The University of California is the magnetic pole of this fabulous assembly of intellect and idiosyncrasy. Located a few blocks from the campus is the hyperactive, stimulating, and chronically overcrowded computer store, Winner's Circle. It functions as a valuable information exchange as well as a superbly stocked commercial venture. Tucked into a small interior room at the rear of the shop is the home of a subsidiary company, Winner's Circle Productions. An animation and graphics production company it is co-owned by store owner Andy Jong and Tracy McSherry. It was there among a clutter of Amigas, monitors, VCRs, tangled cables, and a few fertile minds, that the first Amiga animation to be accepted and presented at a SIGGRAPH Conference, sprang to life.

The Presentation Systems Production Manager of the fledgling company is a slender young woman with the picturesque name of Ariel Pelikan. At 28, Ariel has accumulated an impressive history of programming dating back twelve years into the dark ages of punch card mainframes. Excelling in mathematics and science during high school in Washington D.C., Ariel was awarded a National Science Foundation Scholarship in 1975 to attend a summer program at Georgia Tech. There she learned Basic and with assorted Radio Shack parts, assembled a laser shuttle counter for use in a textile engineering project.

REWIND

Later during a volunteer job at the National Health Institute at Bethesda Maryland, she worked under the direction of Dr. Russ Jaffe on research into the cause of heart attacks. When she announced her plans to enter the University of California at Berkeley the following year, the staff unanimously decreed her college experience would benefit from the undertaking of some challenging computing. They presented her with a new computer language called

By Sue Albert

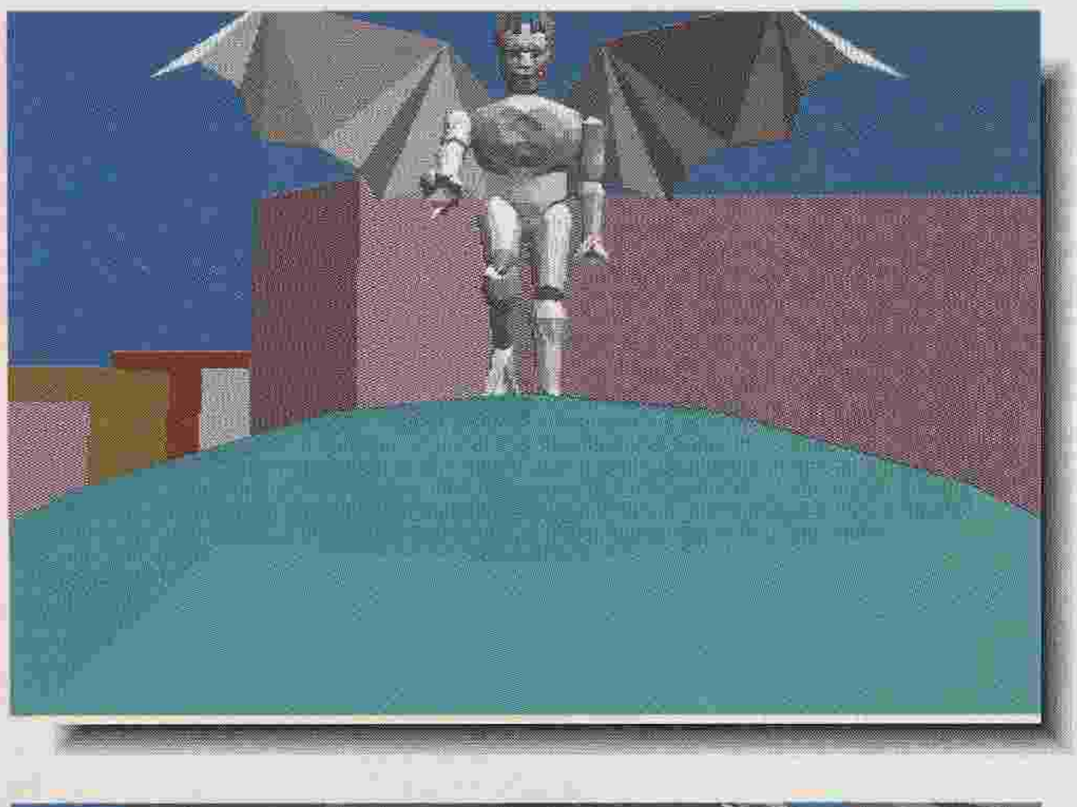
M-LAB developed by the National Institute of Health possessing just one paragraph of un-indexed documentation. Then came masses of medical research data to be charted. Rising to the occasion, Ariel transposed the data into tidy graphics.

As one job led to another Ariel progressed downward through mainframes to the newly introduced Mackintosh, then tackled the IBM computer and eventually a job programming in the research department at IBM in Silicon Valley. Moving on she combined her personal philosophy of service and her acquired skills in a pilot program using computers and various adaptive software and unique input devices to train severely impaired adults to do bookkeeping at United Cerebral Palsy in Berkeley.

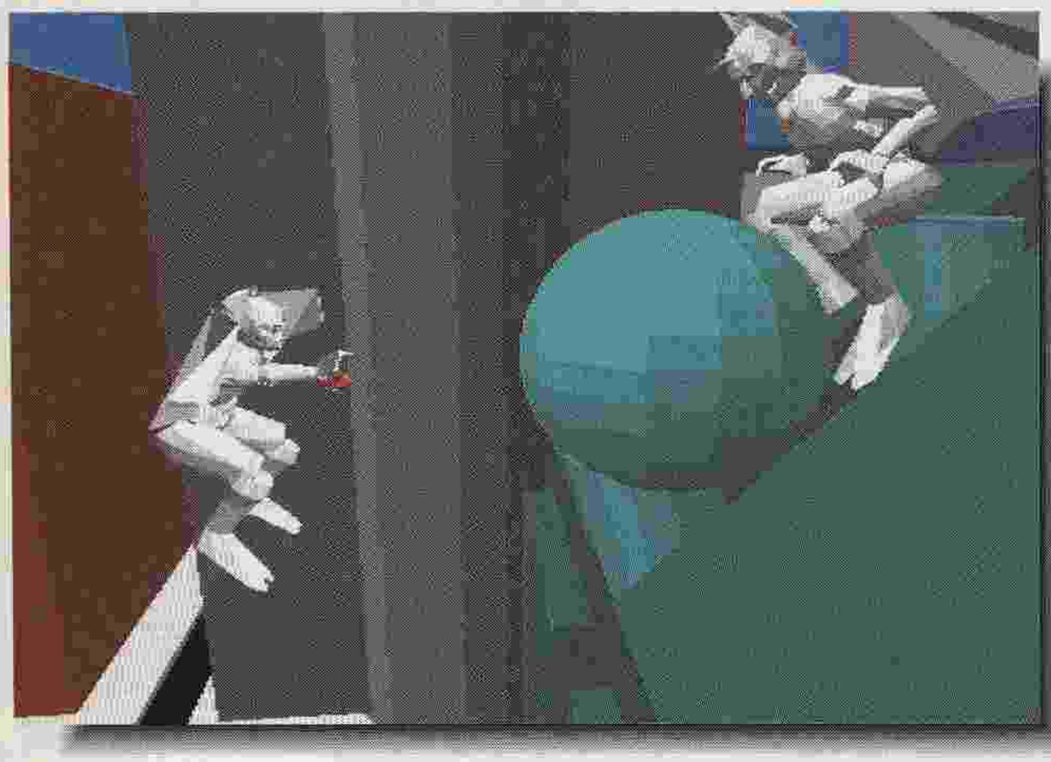
Two years teaching at United Cerebral Palsy were profoundly satisfying to Ariel. "It was great to wake up in the morning and know that what you were going to do that day made a genuine difference to the quality of someone's life." When Tracy McSherry came to work there as a volunteer he was impressed with her computer skills and abilities to interact with people. He eventually asked her to come work for Winners Circle Systems and consequently with the Amiga.

FAST FORWARD

So now we have Ariel and the Amiga together and it's October of 1987. During a few forays into animated advertisements of the familiar "spinning name" variety, Ariel discovered she had a facility and an affinity for animation. I made the assumption that she was also an artist, but she explained "No. I'm not much of an artist, but I'm a fine animator. Conceptually, I can see the action and I'm used to working with the numbers, points and angles, tangents, ...cosines. I'm used to working with the mathematics behind the animation."



"Time and Again," a delightful video chronicling of the plight of two gargoyles displaced by urban renewal.



The stars of the incredibly detailed video are Greg and Frumpy.

As manager Ariel deciphers the ideas sometimes locked in the head of a client and puts them together into an image which she translates verbally to the artists. After this act of "mental magic" she and the artist work together to sculpt and polish that image for presentation to the client as a finished product. Surprisingly there seems to be an open market and little competition for middle-end graphic presentations that can be reasonably priced.

Somewhere along the road Ariel fell in love with the creative process. The same analytical skill she expresses in mathematics allows her to separate the small individual movements involved in the larger gesture. This was put to the test near the end of 1987 when it was decided Winner's Circle would create and enter an animation for the SIGGRAPH conference in August of 1988. After two months of long, hard days of collaboration with several artists, the Winners Circle Productions crew created 3 1/2 minutes of animation using an original story and score by Tracy McSherry. The following spring three more weeks of intensive reworking resulted in the competion-ready version of "Time and Again," a delightful video chronicling of the plight of two gargoyles displaced by urban renewal.

Ariel had found her niche. "When I first saw the gargoyles poised to shoot, and they were quivering with movement, it was thrilling...and beautiful This expression of beauty in the rhythms of movement puts a ribbon around the diverse elements from Ariel's experience as a molecular chemistry major, programmer, and her early studies in sculpture.

CUTTING EDGE

After the honor of acceptance for showing at SIGGRAPH, "Time and Again" toured the country and has been shown on West German TV, CNN, and local

California television. But Ariel likes to be on the cutting edge of development. Right now Winners Circle is working on another intriguing animation for the upcoming NCGA Competition. Ariel is personally developing a software driver for automating output of animation frames from the Amiga directly to mass storage media of an optical disk recorder and a worm (write once read many) drive given to them for testing by Panasonic. The optical disk will allow storage of 24,000 frames per disk, about 13 minutes of animation.

Winner's Circle is also closely cooperating with Phil Gossett in Mountain View, California as he finishes developments for his Video Service with software and hardware solutions to the broadcast quality limitations of the Amiga. His service will allow users to send him a disk of IFF/RGB VideoScape 3D animation frames, which his frame buffering equipment will re-render in overscan, smooth out with anti-aliasing, into 2 million, ready for prime time, colors. Do I hear a standing ovation?

THE BOUGH IS BENT

I asked Ariel how she found it so easy to continue her interests in mathematics and science. Ariel's support system got an early start right in the home. Her father, a former diplomat and financial consultant for the U.S. government, and her mother, a Family Therapist, always presumed that she would have a career and a family. Their discussions about her future revolved in a comfortable manner around her plans for college and meaningful, fulfilling, work in the world.

Though she had a group of supportive friends during her teens, she was relieved of dependence on peer acceptance by her religious inclinations at the time. She interpreted her beliefs to mean that, as she was obligated to be the best she could be, any decisions she then made would be a matter between her and God. On these firm foundations she has continued to make many non-traditional choices such as a summer job project bricklaying, transportation via a classic Kawasaki Z1, and her present hobbies of rock and ice climbing.

"It was also prestigious." Ariel had surprising support from older women. "In my teens the woman's movement had just crested and I got a lot of praise from older women for doing the things I was doing...and I liked that. They would say 'Oh isn't it wonderful she is so interested in mathematics and engineering' and 'God! Isn't it impressive she can do bricklaying?' So I was doing things I enjoyed, having fun, and getting praise for it."

ACCENTUATE THE POSITIVE

This same positive affirmation has continued, giving her a pleasant incentive as she pursued her interests through almost exclusively male dominated environments. In the U.S. Navy R.O.T.C. and in her university studies of molecular chemistry, she enjoyed the special attention she received from being among the few resolute females. "Of course," she pointed out "When I messed up, I also got more attention." She acknowledges a large gender gap on the development side of the Amiga. Her feelings are that the seeming invisibility of women using the Amiga may be partly due to the fact that every woman she knows in the Amiga world is very busy.

PLAY

As to the idea that women need an application to justify their involvement, she typifies "the rule that proves the exception." Her initial excitement with computers was because of the applications. She first experienced the flip side of the coin with the IBM. "The IBM was thrilling to me when it came out as a personal computer. Here was something where I could take out every individual piece, know what that piece did, know the assembly language, know where the electrons were going, know how the whole thing worked, and make it do things other people couldn't. I came through the practical to 'Oh boy. Look at this neat toy.' That's the fun of the Amiga. It's a very powerful computer and it's a great toy."

WHERE TO ARIEL?

When I asked Ariel about her future plans she emphasized her desire to continue work that will make a positive contribution to humanity. This may eventually lead to programming for special users such as the handicapped. For the present "I love discovering new things. I'd like to explore the Amiga and the part of graphics that hasn't existed before...include use of my mathematical background...take it all...and make someone giggle!" ❑

THE MATH/SCIENCE NETWORK

The Math/Science Network is a non-profit organization working in over 70 locations in the U.S. and 1 in British Columbia, Canada. Since 1978 they have encouraged over 130,000 Junior High and High School girls to study the mathematics and science classes needed to continue onward through college into careers. Their one day "Expanding Your Horizons" conferences are directed toward giving girls from the 6th grade through high school an opportunity to meet and make personal contacts with women using their training in traditionally male occupations. "Expanding More Horizons" is a project to provide minority girls with positive female role models working with mathematics.

The Math/Science Network offers a list of helpful books and pamphlets and several video tapes available for rental/preview or purchase. They will assist you to start a branch in your area and will send you further information on present locations, holding conferences, or making a contribution. Contact:

Math/Science Network
2727 College Avenue
Berkeley, CA 94705 USA
(415) 841-MATH

PROGRESSIVE PERIPHERALS & SOFTWARE

The Professional Image!



Photography M.T.Morrissey

ProGEN™ GENLOCK

FrameGrabber™ Real Time Video Image Digitizer







ProGEN is a must for Amiga desktop video! Editing studios, artists, television studios, in-house production departments can all use **ProGEN** with their Amiga 500, 1000 and 2000

- Make your own desktop video productions
- Overlay Amiga Graphics on any video signal
- Transfer images from your Amiga to VCR

FrameGrabber Real-time Video Image Digitizer for the Amiga 500, 1000 and 2000

- Grabs images from VCR or home video camera
- Captures color images in 1/30 of a second (1/60 of a second for black & white)
- Supports screen resolutions from 320 x 200 to 640 x 400 Also supports overscan (352 x 240)



oftware-Selectable
oreground, Background,
miga Out and Video In
elect one of
2 colors as transparent for
ideo effects
low available from
rogressive Peripherals &
oftware, Inc. or your local
ealer
Meets RS-170A standards





- Includes image processing software from the creator of PIXmate!
- Automatic Time Lapse Animation feature
- Multiple exposure mode
- Stores images in IFF format or as raw RGB images
- Allows you full control of Hue, Color and Saturation with conveniently placed control knobs

Progressive Peripherals & Software, Inc. • 464 Kalamath St. • Denver, CO 80204 • (303) 825-4144

Amiga 500, 1000 and 2000 are trademarks of Commodore-Amiga, Inc., ProGEN, FRAMEGRABBER and PIXmate are trademarks of Progressive Peripherals & Software, Inc.

Creative Computers

ORDERS ONLY: 800-872-8882 OUTSIDE CALIF. 213-370-2009 INSIDE CALIF. 213-542-2292 CUSTOMER SERVICE OR ORDER STATUS

VISA, MasterCard, American Express, Discover, International Phone and Mail Orders, Educational, Corporate and Aerospace Purchase Orders Accepted.

4453 Redondo Beach Blvd., Lawndale, CA 90260 Mon.-Sat. 8 a.m.-6 p.m. PST FAX: 213-214-0932

HOT NEW PRODUCTS

VIDEO & AUDIO:
- Forms In Flight II
- Photon Paint II
- Music X
- Caligari
- The Performer
- Movie Setter
- MidiVU
- C-Zar
- Comic Fonts
- Pro-Sound Designer
- MIDI Magic
- Zoetrope
- Photon Cell Animator

GAMES:
- Double Dragon
- Designasaurus
- Baal
- Trump Castle
- Operation Wolf
- Bubble Bobble
- Rastan
- Dragon's Lair
- TV Sports Football
- Lords of the Rising Sun
- Univeral Military Simulator
- Advanced Dungeons & Dragons
- Kingdoms of England
- Hostage
- Test Drive 2
- Downhill Challenge
- Rampage
- Evil Garden
- Artic Adventurel

BUSINESS PRODUCTIVITY:
- Page Stream
- Works Platinum
- Pen Pal
- Tax Break
- Desktop Budget
- Pro-Net
- Pro-Board
- Professional DataRetrieve
- Professional Draw
- Aegis Draw 2000
- Superbase Personal 2
- Superplan

EDUCATIONAL:
- My Paint

UTILITIES:
- B.A.D. (hot floppy and hard disk accelerator)

HARDWARE:
- INTRUDER ALERT
- AMAC Emulator (Macintosh emulator!)
- Spirit Deluxe MIDI
- Vault-30

PLEASE CALL FOR PRICES

SOFTWARE

3-D GRAPHICS	36.13
3-DEMON	71.95
4 X 4 OFF ROAD RACING	32.46
4TH & INCHES CONSTRUCTION	9.95
4TH AND INCHES	29.24
64 EMULATOR 2, THE	49.95
A-B ZOO	25.99
A-TALK III	64.97
AAARGH!	23.95
AC BASIC COMPILER	134.06
AC FORTRAN	199.00
ACCOUNTANT, THE	186.95
ADRUM	51.98
ADVENTURES OF SINBAD	32.46
AEGIS ANIMATOR	87.95
AEGIS DRAW 1.4	52.95
• AEGIS DRAW 2000	181.95
AESOP'S FABLES	19.95
ALGEBRA I	36.95
ALGEBRA II	36.95
ALIEN FIRES	24.95
ALIEN SYNDROME	32.46
ALL ABOUT AMERICA	38.95
ALTERNATE REALITY	27.95
• AUDIOMASTER II	54.95
• AUTODUEL	27.00
AWARD MAKER PLUS	31.16
AWARD MAKER: SPORTS	19.95
AZTEC 68/AM-D	194.95
AZTEC C PROFESSIONAL	129.95
• AZTEC 605K C68K SPEC.	369.72
• B.A.D. DISK OPTIMIZER	32.46
• BAAL	22.95
BAD CAT	30.25
BALANCE OF POWER	34.95
BALANCE OF POWER (BOOK)	8.51
BARBARIAN	25.95
BARD'S TALE	35.95
BARD'S TALE CLUE BOOK	10.95
BARD'S TALE II	41.95
BARD'S TALE II CLUE BOOK	10.50
BARDS TALE HINT DISK	13.95
BASIC GRAMMER SERIES	19.46
• BATTLE CHESS	32.46
BATTLE SHIP	19.46
BBS-PC	62.32
BECKER TEXT	99.95
BENCHMARK C LIBRARY	64.95
BENCHMARK IFF LIBRARY	64.95
BENCHMARK MODULA-2	129.95
BENCHMARK SIMPLE LIBRARY	64.95
CAPITALIZATION SERIES	19.46
CAPONE	25.95
CAPTAIN BLOOD	32.46
CAPTAIN FIZZ	19.95
CARRIER COMMAND	30.95
CASINO FEVER	25.95
CB TREE PLUS	64.95
• CBM DOS 1.3 WORKBENCH	24.95
CELEBRITY COOKBOOK	22.95
CENTERFOLD SQUARES	19.95
• CHARON 5	25.96
CHESSMASTER 2000	32.46
CHICKEN LITTLE	19.95
CHRONO QUEST	33.95
CITY DESK	93.95
CITY DESK ART COMPANION	19.95
CITY DESK BUNDLE	99.95
CLI MATE	24.95
CLIP ART #1-#8 (EA.)	12.95
COMBAT COURSE	25.95
• COMIC FONTS (NEW & NICE)	59.95
• COMIC SETTER	64.96
COMIC SETTER (FUNNY DATA)	22.95
COMIC SETTER (SF DATA)	22.95
COMIC SETTER (SUPERHEROS)	22.95
• COSMIC BOUNCER	19.95
CRAPS ACADEMY	25.95
CRASH GARRET	25.96
CRAZY CARS	25.95
CROSSWORD CREATOR	34.95
• CUBEMASTER	9.95
CUSTOMS SCREENS	43.73
• CYGNUS ED PROF.	64.95
DARK CASTLE	25.95
DATA RETRIEVE	49.95
• DATA RETRIEVE PROF.	211.95
DEATH SWORD	19.95
DECIMAL DUNGEON	32.46
• DEEP SPACE	9.95
DEFCON 5	25.95
DEFENDER OF THE CROWN	34.95
DEJA VU	34.95
DELUXE ART PARTS #1	21.95
DELUXE ART PARTS #2	21.95
DELUXE HELP CALLIGRAPHER	22.71
KAWAI K-1 ED/LIB	92.97
KAWAI K-5 ED/LIB	92.95
KCS	154.95
LEXICON ED/LIB	92.95
MIDI RECORD. STU.	43.50
MT-32 ED/LIB	92.95
MATRIX-6 ED/LIB	92.95
• DRAGON'S LAIR	46.50
DREAM ZONE	32.46
DRUM STUDIO	32.47
• DUNGEON MASTER	32.46
DUNGEON MASTER HINT DSK.	12.95
DYNAMIC DRUMS	49.95
DYNAMIC STUDIO	139.00
DYNAMIC-CAD	299.00
EARL WEAVER BASEBALL	34.95
EARL WEAVER STATS	12.95
EASY LOANS	24.95
EBON STAR	25.96
EMERALD MINES	14.95
EMETIC SKIMMER	25.95
EMPIRE	34.32
ENCORE	45.95
EUROPEAN SCENERY DISK	17.95
• EVIL BARDEN	25.95
• EXCELLENCE	159.00
EXPLORER	32.47
EXPRESS COPY	29.95
EXPRESS PAINT 3.0	90.95
EXTEND	25.95
FACC II	21.95
FAERY TALE ADVENTURE	31.95
FAERY TALE GUIDEBOOK	7.95
FALCON	32.46
• FAMILY TREE	32.46
FANCY 3D FONTS	46.95
FANTAVISION	42.95
FERRARI FORMULA ONE	33.95
• FINAL ASSAULT	32.46
FINAL MISSION	19.95
FINE PRINT	41.95
FIRE 'N FORGET	25.95
FIRE ZONE	23.95
FIRE-BRIGRADE	32.46
FIREPOWER	16.95
INTERFONT	75.36
INTERNATIONAL SOCCER	25.96
INTROCAD	49.95
INVESTOR'S ADVANTAGE	64.95
• INVISION	99.95
IT'S ONLY ROCK & ROLL	21.95
J FORTH	77.96
JET	37.46
JET SET FONT SET	32.50
JINXTER	25.95
• JOKER POKER	32.46
KAMPFGRUPPE	41.95
KARA FONTS	54.95
KARATE KID II	25.95
KEY TO "C"	22.95
KICK-WORK 1.3	22.95
KIDTALK	27.95
KIKUGI	18.95
KINDERAMA	32.46
KINDWORDS	64.95
KING OF CHICAGO	34.95
MICROLAWYER	37.95
• MIDIVU	29.95
• MISSION CON-BAT	31.16
MODELER 3-D	65.00
MOEBIUS	39.95
MONEY MENTOR	64.95
• MOVIE SETTER	64.95
MULTI-FORTH	59.95
MULTI-PREFS	19.45
MURAL PRINTER	29.95
MUSIC MOUSE	51.95
MUSIC STUDENT	37.95
MUSIC STUDIO	34.95
• MY PAINT	32.46
NAG PLUS 3.0	49.95
NEWSLETTER FONTS COLOR	29.95
OBLITERATOR	25.95
OFFSHORE WARRIOR	25.96
OGRE	32.46
ONLINE 2.0	43.56
OPERATION CLEAN STREETS	25.95

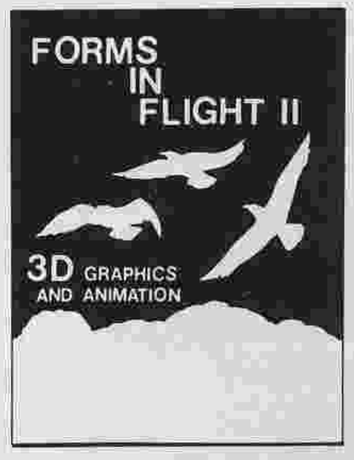
We carry OVER 1100 items
The best NEW products
The LOWEST PRICES

NEW PRODUCTS ARRIVE DAILY. CALL FOR UNLISTED ITEMS.

DELUXE HELP FOR DIGIPAINT	21.84
DELUXE HELP FOR DPAINT II	21.84
DELUXE HELP FOR PHOTON	21.95
DELUXE HELP PAGE SETTER	22.95
DELUXE MAPS	16.95
DELUXE MUSIC 2.0	69.95
DELUXE PAINT ART & UTIL	21.95
DELUXE PAINT II	89.95
DELUXE PHOTO LAB	99.95
DELUXE PRODUCTIONS	139.95
DELUXE VIDEO 1.2	89.95
DEMONSTRATOR	21.95
DES CARTES	22.95
DESIGN DISK:	
ARCH SCULPT or VSCAPE	22.74
FUTURE SCULPT or VSCAPE	22.74
HUMAN SCULPT or VSCAPE	22.74
MICROB SCULPT or VSCAPE	22.74
• DESIGNASAURUS	32.46
DESKTOP ARTIST	18.95
• DESKTOP BUDGET	45.95
DESTROYER	25.95
DEV DISK (ASSORTED UTIL)	7.95
DEVELOPERS TOOLKIT	36.95
DEVPAC AMIGA ASSEMBLER	64.95
DIGI-PAINT	41.95
DIGI-VIEW UPGRADE	13.95
• DIRECTOR'S TOOLKIT	24.95
DIRECTOR, THE	45.95
DISCOVERY EXPANSION DISKS	12.97
DISCOVERY/MATH	25.00
DISCOVERY/SPELL	25.00
DISCOVERY/TRIVIA	25.00
DISCRETE MATHEMATICS	36.95
DISK MECHANIC	58.50
DISK PRO PLUS	18.95
DISK TO DISK	34.95
DISK WICK	32.46
DISKMASTER	37.95
DISTANT ARMIES	29.95
DOCTOR TERM PROFESSIONAL	74.95
DOMINOES	16.95
DOS TO DOS	37.95
• DOUBLE DRAGON	27.95
DOUG'S MATH AQUARIUM	51.95
DOUGS COLOR COMMANDER	19.46
DR. T'S:	
4-OP ED/LIB	92.95
BACH SONGBOOK	17.95
CASIO V21 ED/LIB	92.95
COPYIST	155.38
CZ CARTRIDGE	51.95
CZ RIDER	92.95
D-110 ED/LIB	92.95
D-50 ED/LIB	92.95
DR. DRUMS	17.95
DR. KEYS	17.95
DX7 ED/LIB	92.95
ESQ-APADE ESQ-1	92.95
FIRST LETTERS & WORDS	33.00
FIRST SHAPES	33.00
FISH	29.95
FLEET CHECK	25.96
FLIGHT PATH 737	16.95
FLIGHT SIMULATOR II	37.46
FLOW	62.32
FONTS AND BORDERS	22.95
FOOTMAN	21.95
• FORMS IN FLIGHT II	79.50
FOUNDATIONS WASTE	23.62
FRACTION ACTION	32.46
GALACTIC CONQUERER	29.95
• GALAXY FIGHT	9.95
GALILEO 2.0	45.46
GALLERY 3-D (SCULPT)	51.95
GAMES, THE WINTER EDITION	32.46
GETTYSBURG	38.95
• GFA BASIC 3.0	90.95
GIZMOZ	45.95
GLOBAL COMMANDER	27.46
GOLD SPELL II	29.95
GOLDEN PATH	29.95
GOLDRUNNER II	25.95
GOMF! 3.0 (SOFTWARE ONLY)	27.95
GRABBIT	20.95
GRADE MANAGER	58.95
GRAND SLAM TENNIS	31.25
GRAPHICS STUDIO	38.95
GREAT STATES II	25.95
• GRETZKY HOCKEY	32.46
GUILD OF THIEVES	30.95
HAMANDEL	25.95
HARDBALL	28.95
HARRIER COMBAT SIMULATOR	32.95
HEAD COACH	32.46
HEROES OF LANCE HINT DSK.	13.95
• HEROES OF THE LANCE	27.95
HISOFT BASIC PROF.	103.95
HIT DISK VOL I	32.46
HOLE IN ONE	25.99
HOLLYWOOD POKER	25.95
HOME BUILDERS CAD	129.95
HOSTAGE	29.95
HOT & COOL JAZZ	21.95
HUNT FOR RED OCTOBER	34.95
• HYBRIS	25.99
ICON PAINT	58.95
IMPACT-BUSINESS GRAPHICS	62.46
IMPOSSIBLE MISSION II	32.46
INDOOR SPORTS	31.22
INOVA TOOLS	52.03
INSTANT MUSIC 1.2	33.00
INTELLITYPE	35.95
INTERCEPTOR	37.95
INTERCHANGE	29.95
INTERCHANGE CONVERSION	16.95
INTERCHANGE OBJECTS #1	16.95
INTERCHANGE TSLV MODULE	12.96

SPECIAL HOT PRODUCT!
DELUXE PAINT III $99.95

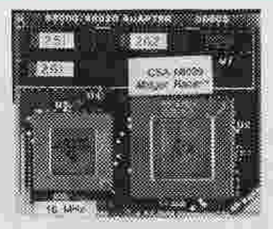
KING'S QUEST I	32.95
KING'S QUEST II	32.95
KING'S QUEST III	32.95
KNIGHT ORC	30.95
LANCELOT	27.95
LASER UP! FONTS VOL. I	31.95
LASER UP! PLOT 1.2	39.95
LASER UP! PRINT 1.2	71.95
LASER UP! UTIL. VOL. I	31.95
• LATTICE "C" 5.0 COMPLETE!	195.00
• LATTICE C++	345.00
LAZERSCRIPT	28.10
LEADER BOARD DUAL PACK	22.72
LEADER BOARD TORNA DISK	13.95
LEADER BOARD-GOLF GAME	27.00
LEARNING CURVE	51.95
LEARNING THE ALPHABET	19.46
LEATHER GODDESSES	32.46
LEATHERNECK	25.95
LEISURE SUIT LARRY	26.40
LEXCHECK	26.85
LIFE CYCLES AMIGA	19.46
LIGHTS! CAMERA! ACTION!	59.95
LINKWORD DUTCH	20.55
LINKWORD FRENCH	20.55
LINKWORD GERMAN	20.55



Forms In Flight II ($79.50)

LINKWORD GREEK	20.55
LINKWORD ITALIAN	20.55
LINKWORD PORTUGUESE	20.55
LINKWORD RUSSIAN	20.55
LINKWORD SPANISH	20.55
LINT (GIMPLE)	63.70
LION'S/CALLIGRA FONTS	58.95
LITTLE RED HEN	19.95
LOGIG WORKS ADVANCED	189.95
LOTTERY MAGIC	19.95
LURKING HORROR	25.95
• M INTELLIGENT MUSIC	143.46
• MABELLAN	119.00
MAGICAL MYTHS	32.46
MAJOR MOTION	25.96
MANIAX	16.95
MARAUDER II-DUPLICATION	27.47
MARBLE MADNESS	33.00
MASTER NINJA	30.95
MASTERING CLI	25.95
MASTERPIECE FONT, 20-DSKS.	167.95
MATCH IT	25.95
MATH MAGICIAN	27.49
MATH TALK	31.95
MATH TALK FRACTIONS	26.95
MATH WIZARD	32.46
MATH-AMATION	64.95
MAVIS BEACON TYPING	30.89
MAXIPLAN 500	93.95
MAXIPLAN PLUS	124.95
MEAN 18 COURSE DISK	14.95
MEAN 18 COURSE DISK II	14.95
MEAN 18 GOLF	28.95
MEDIALINE FONTS	22.95
MENACE	19.98
METACOMCO ASSEMBLER	68.95
METACOMCO PASCAL VER 2.0	92.95
METACOMCO SHELL	39.95
METACOMCO TOOLKIT	34.95
METASCOPE DEBUGGER	59.95
MICROFICHE FILER	69.95
MICROFICHE FILER PLUS	116.95
ORGANIZE	62.32
OTG DSM (DISASSEMBLER)	43.95
OUT RUN	32.46
P.O.W.	25.95
PAGE FLIPPER	31.23
PAGE FLIPPER PLUS F/X	103.95
• PAGE STREAM	129.95
PAGESETTER	93.72
PALADIN	25.95
PALADIN (QUEST DISK 1)	16.86
PCLO PRINTD CURCUIT LYOUT	199.95
PCLO+ PRNTD CURCUIT LYOUT	399.95
PERFECT SCORE	54.95
• PERFORMER (ELAN)	38.95
PHANTASIE	27.47
PHANTASIE 3	24.95
PHANTASM	22.95
• PHASAR-FIN'L MGMT	62.46
• PHOTON CELL ANIMATOR	99.95
PHOTON PAINT	64.96
PHOTON PAINT EXP. DSK.	19.95
PHOTON PAINT TRANS. CNTRL	194.95
PHOTOSYNTHESIS	97.95
PINBALL I.Q.	19.46
PIONEER PLAGUE	25.96
PIXMATE	45.95
PLANET PROBE	19.95
PLATOON	29.21
POKER SOLITAIRE	22.95
POLICE QUEST	32.46
PORTS OF CALL	29.95
POWER WINDOWS 2.5	58.47
POWERSTYX	22.95
PRE CALCULUS	36.95
PRESIDENT IS MISSING	25.95
PRIME TIME	25.95
PRINTMASTER PLUS	31.23
PRO MIDI STUDIO	130.95
• PRO VIDEO PLUS	184.95
PROBABILITY THEORY	36.95
• PROFESSIONAL DRAW	129.95
• PROFESSIONAL PAGE	229.00
PROJECT D	31.95
PROMISE: SPELLING CHECKER	34.95
PROSCRIPT	32.95
PROWRITE 2.0	78.10
PUNCTUATION SERIES	19.46
QRADRALIEN	19.95
QUARTERBACK	45.95
QUESTRON II	32.46
QUICK MERGE	37.95
QUINTETTES	29.95
QUIZ MASTER	49.95

MIDGET RACER
CSA



HOT NEW ACCELERATOR FOR ALL AMIGAS $349.00

- 68020 processor.
- Optional math co-processor up to 33 Mhz 68882!
- 50% average speed increase *without* math co-processor.

ALSO: Sculpt Animate 4D $399.95

PACKAGE DEAL $979.00

INCLUDES: 1. SCULPT ANIMATE 4D; 2. MIDGET RACER; 3. 68882-20 CO-PROCESSOR; 4. 20 OR 24 Mhz CRYSTAL OSSC.



Boing! Mouse

Professional Optical 3-button mouse for your Amiga.

- Optical technology eliminates friction and momentum coefficients for super-precise handling.
- No moving parts for increased reliability.
- Middle button makes it the only mouse compatible with A2024 software and X Windows.
- Compatible with ALL Amiga computers.

SPECIAL PRICE!
LIMITED TIME ONLY: $99.95

WE CAN BEAT ANY ADVERTISED PRICE! BUT WE SELDOM HAVE TO — OUR PRICES ARE THE LOWEST! (IF YOU SEE A LOWER PRICE ON AN ITEM, GIVE US A CALL.)

R.R. AESOP'S FABLES 19.95
RAW COPY 1.3 ..... 38.95
REACH FOR THE STARS 27.95
READ & RHYME 31.95
READ-A-RAMA 32.46
REALM OF THE WARLOCK 22.74
REBEL CHARGE CHICKAMANGA 39.95
REEL FISHIN'—GONE FISHIN 30.88
RETURN TO ATLANTIS 34.95
ROAD RAIDERS 25.96
ROADWAR 2000 ..... 27.47
ROADWAR EUROPA 29.95
ROADWARS 23.95
ROB. READER UGLY DUCKLING 19.45
ROBBEARY 16.21
• ROCK CHALLENGE 25.95
ROCKET RANGER 32.46
ROCKFORD 23.95
ROMANTIC ENCOUNTER 25.95
SAMPLEWARE-DIGITAL 16.95
SAMPLEWARE-GRAB BAG 16.95
SAMPLEWARE-ORSHESTRAL 16.95
SAMPLEWARE-ROCK 16.95
SANTA PARAVIA & FIUMACCIO 19.95
SARGON III 35.95

SUPERBASE 93.73
• SUPERBASE PERS. II 94.46
• SUPERBASE PROF. 3 ..... 209.95
• SUPERPLAN (SPREADSHEET) 99.95
SUPERSTAR ICE HOCKEY 32.46
SWORDS OF SODAN 32.46
SYMPHONY SONGS (EACH VOL) 15.95
SYNTHIA 59.95
SYSTEMS MONITOR 28.95
T SHELL 32.46
TAKE STOCK 32.46
TALES FROM ARABIAN NIGHTS 32.46
TALKING ANIMATOR 39.00
TALKING COLORING BOOK 18.95
TANGLE WOOD 25.95
TARGIS 28.95
TATE FONTS 45.95
• TAX BREAK 51.95
TECHNOCOP 32.46
• TELE EPIC 25.96
• TELE WARS II 25.96
TELEGAMES 23.95
TERA QUESTRON 25.95
TERRAIN FOR TURBO SILVER 19.95
TERRORPODS 25.95

VIDEO VISIONS 2 ..... 12.95
• VIDEOSCAPE 3D 124.95
VIDEOTITLER 99.95
VIP VIRUS 32.46
VIRUS (GAME) 19.46
VOCABULARY IMPROVEMENT 25.95
W SHELL 31.95
WAR & MIDDLE EARTH 36.99
WARLOCK 22.71
WBEXTRAS 21.95
WESTERN GAMES 31.95
WHO FRAMMED ROGER RABBIT 29.95
WILLOW 25.95
WINDOW PRINT II 22.95
WINTER CHALLENGE 19.95
WINTER GAMES 27.46
WORD MASTER 32.46
WORD PERFECT 179.00
WORD PERFECT LIBRARY 84.95
WORLD CLASS LEADER BOARD 25.97
WORLD GAMES 27.46
WORLD TOUR GOLF 27.45
WRITE 'N FILE 59.95
• WSHELL 32.95
X-CAD 389.00
ZAK MCKRACKEN 29.95
ZANY GOLF 27.95
ZERO GRAVITY 19.46
ZING KEYS 31.95
ZING! SPELL 57.95
• ZOETROPE 89.95
ZOOM 21.95
ZORK TRILOGY 47.95
ZOUND SOUNDS VOL I 21.95
ZUMA FONTS VOLS 1 THRU 4 ..... 68.95
ZYNAPS 23.95

HARDWARE

68020-12 CPU/PROC. 170.00
68030-16/20 CPU/PROC. 570.00
68881 CRYSTAL OSSC. 16MHZ 5.00
68881-16 MATH COPROC. 200.00
68881-20 MATH COPROC. 300.00
68882-20 MATH COPROC. 500.00
68882-25 MATH COPROC. 620.00
ALCOTINI SAMPLER 500/2000 ..... 89.95

M.A.S.T. PRODUCTS

MINIMEGS: Expandable, external FAST RAM (up to 2-MBs), low power — available for Amiga 500 or 2000 —
- MINIMEGS 512K $299
- MINIMEGS 1 MB $449
- MINIMEGS 2 MB $749

TINY TIGER: Low cost, high performance, SCSI hard drives for all Amigas — complete — nothing else to buy —
- TINY TIGER 30 MB $629
- TINY TIGER 40 MB (Quantum) $799
- TINY TIGER 80 MB .. $1129

UNIDRIVE $159
TWIN DRIVE $269
(special price/limited time only)

MICROBT. HARDFRAME SCSI 239.00
MIDI GOLD 64.20
MIDI GOLD 2000 (INT) 68.47
MIMETICS MIDI INTERFACE 43.00
NERIKI GENLOCK 1975.00
OKIMATE 20 W/PLUG N PRNT 249.00
OKIMATE PLUG N PRINT 79.95
OMEGA STR. SAMPLER A1000 ..... 79.95
PAINTJET COLOR PRINTER 1095.00
PANASONIC WV1410 CAMERA 225.00
PANASONIC WV1500 CAMERA 320.00
PEOPLE METER BIO FEEDBACK 39.95
PERFECT SOUND DIGITIZER 67.95
• PERFECT VISION 169.95
PRO RAM A2000 2/8 MG 699.00
• PRO SOUND DESIGNER 119.95
PROCESSOR ACCEL CMI 159.00
PROGEN 399.00
QUANTUM 40 MB DRIVE, 11MS 599.00
QUANTUM 80 MB DRIVE, 11MS 995.00
• ROLLAND MT-32 TONE MOD. 549.00
RUGGEDWRITTER HP PRINTER 1395.00
SOUND SAMPLER 86.95
SPIRIT 0 MB FOR A1000 ..... 249.00
• SPIRIT DELUXE MIDI 214.95
STAR NX1000 PRINTER 199.00
STAR NX1000 RAINBOW 279.95
STARBOARD 2 SCSI MOD. 100.00
STARBOARD 2 UPPER DECK 80.00
STARBOARD 2/A500 0K 300.00
STARBOARD 2/A1000 0K 250.00
STARBOARD SB2000 ADAPTER 42.00
STEREO SOUND SAMPLER STRV 87.95
• SUPERGEN 699.00
• SUPRA 2400 MODEM 149.00
SUPRA DRIVE 20 MEG A500 ..... 699.00
SUPRA DRIVE 20 MEG A1000 ..... 699.00
SUPRA DRIVE 30 MEG A500 ..... 799.00
SUPRA DRIVE 30 MEG A1000 ..... 799.00
TOOL BOX, ESCORT FOR A500 ..... 170.00
TRUMP CARD SCSI CNTR 2000 ..... 168.96
• TWIN-DRIVES EXT 3.5" FDD 269.00
• UNIDRIVE 3.5" EXT. DRIVE 159.00
• VAULT-30 HARD DRIVE 30 MB ..... CALL
VI 500 VIDEO INTERFACE 59.95
VI 500 VIDEO/RF MOD. 69.95
VI 2000 VIDEO INTERFACE 69.95
VI 2000 VIDEO/RF MOD. 79.95
X-SPECS 3D 99.95
XEROX 4020 INK JET COLOR 1140.00
XEROX 4020 STARTER KIT 156.00

ACCESSORIES

A1084 CARRING CASE 51.95
A500 & MONITOR CARRY BAGS 69.95
AMIGA BAG 29.95
AMIGA BRASS KEY RING 3.95
AMIGA FASHION GOLF SHIRT 19.95
AMIGA FASHION JACKET 39.50
AMIGA MUG 6.95
AMIGA NOTE PAD!! 4.99
AMIGA PEN & PENCIL SET 19.95
AMIGA PINS 4.95
AMIGA PLASTIC VISOR 1.95
AMIGA SLEEVE TSHIRT 7.95
AMIGA TERRY CLOTH VISOR 5.50
AMIGA TOWEL 15.95
AMIGA TWILL CAP W/CORD 7.95
BOSS JOYSTICK 12.95
CABLE, 10' CAMERA 12.95
CABLE, 500/2000 IMAGE-1 ..... 19.95
CABLE, 500/2000 IMAGE-2 ..... 19.95
CABLE, 6' MIDI LINK 9.95
CABLE, A1000 TO IMAGE-1 ..... 19.95
CABLE, A1000 TO IMAGE-2 ..... 19.95
CABLE, AMIGA TO NEC II 24.95
CABLE, AMIGA TO SONY 1302 ..... 19.95
CABLE, AMIGEN TO 1084 ..... 19.95
CABLE, DB25M DB25F 8 FT. 19.95
CABLE, DB9M TO DB9F 6 FT. 16.95
CABLE, DRIVE EXT. 2 FT. 19.95
CABLE, DRIVE EXT. 3 FT. 27.95
CABLE, FLCK FIX TO NEC II 19.95
CABLE, FLCK FIX-SONY 1302 ..... 19.95
CABLE, M-CENTR TO M-CENTR 22.95
CABLE, MONITOR EXT 4FT 21.95
CABLE, MOUSE EXTENSION 14.95
CABLE, PARALLEL A1000 ..... 19.00
CABLE, PARALLEL A500/2000 ..... 19.00
CABLE, SCSI RIBBON, 2 FT. 15.95
CABLE, SERIAL A1000 ..... 19.00
CABLE, SERIAL A500/A2000 ..... 19.00
CLEANING KIT (ALLSOP) 14.95
CLEANING KIT SM. ALLSOP 6.95
CONTROL CENTRE FOR A500 ..... 71.95
COPY/CAMERA STAND, LIGHTS 64.95
CURTIS DIAMOND 33.95
CURTIS DIAMOND PLUS 46.95
CURTIS EMERALD 40.95
CURTIS PHONE LINE SURGE 12.36
CURTIS RUBY 58.95
CURTIS SAPPHIRE 56.95
DESKJET BLACK CART. 15.95
DESKJET COURIER FONT CART. 62.95
DESKJET DUST COVER 29.95
DESKJET EPSON FX-80 EMUL. 62.95
DESKJET HELV 8 & 10 PT. 79.95
DESKJET HELV ASCII FONTS 104.95
DESKJET LANDSCAPE FONT 79.95
DESKJET LANDSCAPE UPGRADE 79.95
DESKJET LETTER GOTHIC 79.95
DESKJET PRESENTATION FONT 79.95
DESKJET PRESTIGE ELITE 79.95
DESKJET RMN/HELV SOFT FNT 79.95
DESKJET STAND/ORGANIZER 84.95
DESKJET TMS RMN 8 & 10 PT 79.95
DESKJET TMS RMN ASCII 104.95
DIGI-DROID 69.95
DISK FILE 30 ..... 7.95
DISK FILE 80 ..... 19.95
DUST COVER FOR A500 ..... 8.95
DUST COVER FOR A2000 ..... 11.95
DUST COVER, A1000 W/MON. 13.95
EPYX 500XJ JOYSTICK 14.95
ERGO STICK 17.95
FLICKER MASTER 13.95
FLOPPY WALLET 7.95
FOUR PLAYER ADAPTER 11.95
• FUJI DISKETTES 19.95
GAME PLAY COMPACT DISK 12.95
GENDER BENDER (DIGI-VIEW) 20.95
KEYBOARD SKIN A2000 ..... 19.95
KEYBOARD SKIN A500 ..... 19.95
KEYBOARK SKIN A1000 ..... 19.95
KRAFT MAZEMASTER JOYSTICK 9.95
LASERJET-2 TONER CART. 104.00
LASERJET-2 8.5 X 14 TRAY 104.95
LASERJET-2 COURIER FTS. 144.50
LASERJET-2 ENVELOPE TRAY 79.95
LASERJET-2 LASER CNTRL SW 117.95
LASERJET-2 PLOTTER SOFTW 117.95
LASERJET-2D ENVELOPE TRAY 279.95
LIGHT GUN 48.95
MICHTRON DISK FOLDER 10.95
• MIDI MAGIC 97.95
MIND LIGHT 7 ..... 164.95
MOUSE COVER W/GLASSES 5.95
MOUSE MATS 6.95
MOUSE WASH 6.95
PAINTJET BLACK CART. 23.60
PAINTJET COLOR CART. 29.10
PAINTJET CUT-SHEET PAPER 19.10
PAINTJET DUST COVER 19.95
PAINTJET PAPER CATCHER 23.95
PAINTJET PRINTER STAND 66.95
PAINTJET TRANSPARENCY FLM 54.05
PAINTJET Z-FOLD PAPER 14.95
POWERPLAYERS JOYSTICK 19.95
PRINT & WEAR 13.95
QUICKSHOT II JOYSTICK 12.95
RAM, 1 MEG X 1-10 CHIPS 30.00
RAM, 1 MEG X 8-12 SIMMS 340.00
RAM, 256K X 1-12 CHIPS 12.00
RAM, 256K X 1-15 CHIPS 10.00
RAM, 256K X 8-12 SIMMS 88.00

PROGRAMMERS BOX:

LATTICE C 5.0	$195.00
LATTICE C++	$345.00
AREXX	$ 32.95
W-SHELL	$ 32.95
GFA BASIC 3.0	$ 90.95

RUGGED W. 16KB +4 FONTS! 124.95
• SONY DISKETTES, COLORED 22.95
SONY DISKS 10 PACK 20.95
TAC-2 JOYSTICK 10.95
TEAK-TECH 120 DISKHOLDER 32.95
TEAK-TECH 60 DISKHOLDER 27.95
TRACKBALL (2 BUTTON MOUSE) 39.95
TRANSVESTOR 1000 ..... 23.95
TRANSVESTOR 2500 ..... 41.95
WINNER JOYSTICK 14.95
XEROX 4020 4-PACK INK 19.95

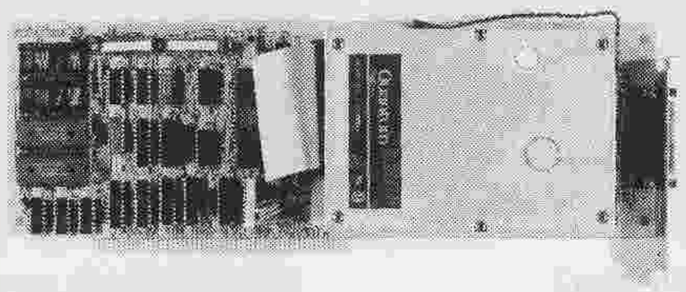
NEW FROM CENTAUR: THE SILENT DRIVE $159

FEATURES: • CSI 3200 • Clickless • Small compact design • Metal case • Compatible with all Amiga computers • Low power consumption • Hinged dust cover • Drive disable switch • 1-year warranty.

ALSO AVAILABLE: CSI 2200 internal drive for Amiga 2000—100% compatible with same mechanism as Commodore 2010 ..... $149.00

SCARY MUTANT SPACE ALIENS 25.95
SCENERY DISK #11 EAST COAST 18.72
SCENERY DISK #7 EAST COAST 18.71
SCHEMATIC CAPTURE 199.95
SCRABBLE 27.46
SCRIBBLE 62.32
SCULPT 3-D 69.95
• SCULPT ANIMATE 4-D 399.95
• SDI: CINAMAWARE SERIES 34.95
SEASONS AND HOLIDAYS 21.95
SECONDS OUT 19.46
SECURITIES ANALYST 49.95
SEVEN CITIES OF GOLD 14.95
SEX VIXENS 25.95
SHADOW GATE 31.95
SHAKESPEARE 146.95
SHANGHAI-STRATEGY GAME 27.46
SHERLOCK 27.00
SILENT SERVICE 25.95
SINBAD & FALCON 34.95
SKY BLASTER 19.95
SKY CHASE 26.95
SKYFOX II 27.45
• SLAYGON 14.95
SMOOTH TALKER 33.95
SNAKE PIT 24.95
SOCIAL STUDIES 19.46
SOFTWOOD FILE SG 78.21
SOLITAIRE ROYAL 22.71
SONIX (AEGIS) 49.95
SORCERER LORD 23.95
SOUND OASIS 64.95
SOUNDLAB 209.95
SOUNDQUEST:
CZ MASTER 92.95
D-10 MASTER 92.95
D-110 MASTER 92.95
D-50 MASTER 92.95
DX7 MASTER 109.95
DX7-II MASTER 109.95
ESQ/ESQ-80 MST 92.95
GENERIC MASTER 77.95
K-1 MASTER 92.95
M-1 MASTER 92.95
MT-32 MASTER 92.95
TEXTURE 92.95
TX-802 MASTER 92.95
TX-81Z MASTER 92.95
SOUNDSCAPE PATTERN SPLAT. 35.95
SOUNDSCAPE UTILITIES 1 ..... 35.95
SOUNDSCAPE UTILITIES II 42.95
SOURCE LEVEL DEBUGGER 49.96
SPACE CUTTER 19.95
SPACE HARRIER 32.46
SPACE MATH 29.95
SPACE PORT 27.38
SPACE QUEST II 32.46
SPACE RACER 19.46
SPACE SCHOOL SIMULATOR 22.95
SPACE STATION OBLIVION 32.46
SPACEQUEST 33.00
SPELLBOUND 25.95
SPELLER BEE 31.25
SPELLING IMPROVEMENT 25.95
STAR WARS EMPIRE STRIKES 30.25
STARFLEET I 29.95
STARGLIDER 30.95
• STARGLIDER II 29.95
STARRAY 19.95
STELLAR CONFLICT 28.95
STELLARYX 25.95
STOCK MARKET-THE GAME 16.95
STRIP POKER 27.46
STRIP POKER DATA #4 ..... 12.95
STRIP POKER DATA #5 ..... 12.95
STRIP POKER II 25.95
STUDIO FONTS V1 (COLOR) 29.95
STUDIO MAGIC 64.95
SUB BATTLE 24.95
SUMMER CHALLENGE 19.95
SUPERBACK 51.95

TEST DRIVE 34.95
TETRA QUEST 25.95
TETRIS 21.80
TEXTCRAFT PLUS 59.95
THEXDER 23.95
THINKER 38.95
THREE LITTLE PIGS 19.95
THREE STOOGES 35.95



GVP GREAT VALLEY PRODUCTS

For Amiga 2000:
IMPACT HC/45—48 MB 28ms Hard Card 799.00
IMPACT HC/40Q—42 MB 11ms Hard Card 799.00
IMPACT HC/80Q—84 MB 11ms Hard Card 1199.00
For Amiga 500:
IMPACT A500-SCSI/HD20—20 MB HD 749.00
IMPACT A500-SCSI/HD45—45 MB HD 995.00
IMPACT A500-SCSI/HD40Q—42 MB 11ms High-Speed Hard Drive 1049.00
IMPACT A500-SCSI/HD80Q—84 MB 11ms High-Speed Hard Drive 1449.00
Quantum 80S, 84 MB 11ms 3.5" HD 995.00
Shock mounted, 64KB cache (for 11ms speed), SCSI interface. Compatible with IMPACT or A2090 boards.
Quantum 40S—42 MB version of above drive 599.00

THUNDERBOY 22.95
TIME & MAGIK 26.95
TIME BANDITS 21.95
TOOL CADDY 32.46
• TOWER TOPPLER 32.46
TRACERS 22.95
TRANSCONTINENTAL RAILROAD 25.95
TRANSPUTOR 22.95
TRIANGO 29.95
TRIGONOMETRY 36.95
TRINITY 25.95
TRUE BASIC 68.95
TRUE BASIC ARITHMETIC 45.95
TRUE BASIC TRUE STAT 32.46
• TRUMP CASTLE 25.95
TURBO PRINT 32.95
• TURBO SILVER 3.0 ..... 129.95
TV SHOW 64.95
• TV SPORTS FOOTBALL 34.95
TV TEXT 62.32
TWILIGHTS RANSOM 19.95
TXED PLUS 51.95
ULTIMA III 28.95
ULTIMA IV 38.96
ULTRA DOS 37.95
UMS CIVIL WAR DATA DISK 12.95
UMS VIETNAM DATA DISK 12.95
UNCLE D CON SOUND TRATION 25.97
UNINVITED 34.95
• UNIVERSAL MILITARY SIMULTR 32.46
VAMPIRE'S EMPIRE 29.95
• VIDEO EFFECTS 3D 129.96
VIDEO VEGAS 24.10
VIDEO VISIONS 1 ..... 12.95

AMAS MIDI SAMPLER 109.95
AMIGEN GENLOCK 149.00
AMPLIFIED SPEAKERS 2X50 W 84.95
APRO DRAW 12X12 NO CURSOR 464.95
APRO DRAW 12X12 W/CURSOR 499.95
• BOING! OPTICAL MOUSE 99.95
CA-880 FLOPPY DRIVE 199.00
CBM A2300 INT GENLCK 2000 ..... CALL
CBM A520 COMPOS. ADAP 500 ..... 49.95
• CBM DOS 1.3 ROM 39.95
CLTD TIMESAVER 57.95
• CMI MIDI I (EXT) 52.76
COLOR SPLITTER 79.95
CPS 500-POWER SUPPLY A500 ..... 74.95
CSA DRAGSTRIP RAM ACCEL 723.45
CSA FASTRACK 68020 ACCEL 905.45
CSI 2200 INT DRIVE A2000 ..... 149.00
CSI 3200 AMIGA EXT FLOPPY 159.00
DELUXE MIDI INTERFACE 59.95
DESKJET 128K RAM CART 117.95
DESKJET PRINTER (300 DPI) 749.00
• DIGI VIEW GOLD A500/A2000 ..... 149.00
DIGI-VIEW 143.95
EASYL 500 TABLET 369.00
EASYL 1000 TABLET 369.00
EASYL 2000 TABLET 369.00
ECE MIDI 500/2000 ..... 48.95
ECE MIDI 1000 ..... 48.95
ESCORT 48 MB HRD DR A500 ..... 879.00
ESCORT 48 MB HRD DR A1000 ..... 859.00
• FLICKER FIXER (HARDWARE) 479.00
FRAMEGRABBER 539.95
FUTURE SOUND A500 ..... 93.95
FUTURE SOUND-AUDIOSAMPLER 142.20
GEN ONE GENLOCK 739.00
GOMF! 3.0 W/BUTTON 48.95
GVP A2000 AUTOBOOT EPROM 29.95
GVP A500 RAM/ROM MODULE 69.95
HURRICANE 68030 ADAP. BRD 300.00
HURRICANE A1000 ACCEL BRD 350.00
HURRICANE A1000 MEM. BRD 540.00
HURRICANE A2000 ACCEL BRD 500.00
HURRICANE A2000 MEM. BRD 540.00
IMPRINT 399.00
• INTRUDER ALERT 124.02
LASERJET II-D PRINTER 2995.00
LASERJET SERIES 2 PRINTER 1749.00
LASERJET-2 RAM, 1 MB 419.95
LENS, 16 MM, NO IRIS F1.6 ..... 21.85
LENS, 16 MM, W/IRIS F1.6 ..... 66.25
LIGHT PEN 97.95
LIVE! 500 ..... 289.00
LIVE! 1000 ..... 270.00
• LIVE! 2000 ..... 349.00
MAGNI 4004 GENLOCK 1595.00
MICROBT. 4 X POP-SIMM BRD 74.50
MICROBT. 8-UP RAM BRD, 0K 145.00

MORE CREATIVE PROMOTIONS:

NEW NEW NEW

SCULPT-ANIMATE 4D JR. $99.95
CENTAUR TRUE FLIGHT $59.95
(Proportional control yoke for Flight Simulator II)

Computer systems & package deals available ..... CALL FOR DETAILS!

- FREE VCR with purchase of computer — call for details.
- Amiga Live! 2000 ..... $349
- Flicker Fixer (A2000 only) — *Eliminate all flicker and scanline gaps 100% — optional multisync monitor* $479

FREE SHIPPING!*

CREATIVE COMPUTERS is both a mail order company with a store's support and three store showrooms with mail order prices. Visit one of our showrooms today. You'll be amazed!

3 RETAIL SHOWROOM LOCATIONS TO SERVE YOU

SANTA MONICA & WESTSIDE: 318 Wilshire Blvd., Santa Monica, CA 90401. Tues.-Sat. 11-7 p.m./Sun. 11-5 p.m./Phone: 213-394-7779

LAWNDALE & SOUTH BAY: 4453 Redondo Beach Blvd., Lawndale, CA 90260. Mon.-Sat. 11-7 p.m./Phone: 213-542-2292

VENTURA, OXNARD & SANTA BARBARA: 2112 E. Thompson Dr., Ventura, CA 93001. Tues.-Sat. 11-7 p.m./Sun. 12-5 p.m./Phone: 805-652-0325

COMMODORE AMIGA™

THE CREATIVE COMPUTERS ADVANTAGE:
- Authorized Amiga Dealer
- The largest dealer of Amiga products in the World
- Three store locations means excellent support
- Amiga-specific—unlike the competition, we don't claim being Amiga specific while selling other brands under another business name
- Authorized service center
- Uniform low pricing and largest selection, no hidden costs or catches
- We don't charge your card until the product ships

CUSTOMER SERVICE: Call 213-542-2292 from 11 a.m. to 7 p.m. PST for technical questions.

VISA · MasterCard · AMERICAN EXPRESS Card · DISCOVER

***SHIPPING INFO:** No surcharge for Visa/MasterCard; 4% surcharge for American Express; 1% surcharge for Discover. Shipping within the continental United States for software orders over $100 (U.S.) is FREE. Please call for all other shipping information. Educational, corporate and aerospace purchase orders accepted.

RETURN POLICY: Call Customer Service at (213) 542-2292 for return authorization. All returns without authorization number (RMA#) will be refused. Returned products must be in original condition and packaging. No refund on defective products or products that do not perform satisfactorily. We make no guarantees for product performance.

CONDITIONS: Creative Computers reserves the right to limit the sales of any items to local in-person pick-up only. Prices and availability subject to change without notice.

CREATIVE COMPUTERS GOES INTERNATIONAL!

INTERNATIONAL TOLL-FREE ORDERING POLICIES: Minimum order $100 U.S. Orders only please. Absolutely *no* product inquiries, or any shipping inquiries, will be taken over the toll-free phone lines. For any other information, please call (213) 542-2292. We have operators versed in the following languages: English, French, and Spanish, only. Shipping prices vary and are quoted following your order. Payment is made via credit card or electronic fund transfer. For any other information please call our regular toll lines.

INTERNATIONAL PHONE NUMBERS: Canada 1-800-548-2512; Italy 1678-74086; United Kingdom 0800-89-1178; France 19-0590-1099; W. Germany 01-30-810466; Japan 0031-11-1351; Australia 0014-800-125-712; Netherlands 06-022-8613; Norway 050-12029; Denmark 0434-0297; Switzerland 046-05-3420.

WE CAN BEAT ANY ADVERTISED PRICE! BUT WE SELDOM HAVE TO — OUR PRICES ARE THE LOWEST! (IF YOU SEE A LOWER PRICE ON AN ITEM, GIVE US A CALL.)

3D MODELING with Modeler 3D

Creating objects that existed in three dimensional space and animating them was once the domain of the mainframe computer, or the result of extensive and expensive add-ons for an IBM-PC or Apple system. With the Amiga and nothing more to buy except the appropriate software, three dimensional modeling, rendering and animation suddenly became available to the home user. Of course, with the open architecture of the Amiga 2000 family, users can also build their own professional 3D turnkey system by adding the appropriate cards or boards that perform a variety of functions: from additional memory, to higher resolution and more colours.

AN INTEGRATED ENVIRONMENT

Most computer graphics on the Amiga are created in one of two ways: with 2D paint-based programs, or 3D object-based programs. Fortunately, the multitasking abilities of the Amiga, as well as the IFF standard for files makes it a simple matter to integrate the various programs together and therefore use the best features of each.

In this article we will look at the creation of a 3D logo for the "Bubblegummers" line of shoe-ware from Bata Shoes. This logo animation is used as part of an opener for broadcast advertisements as well as point-of-purchase sales. The software profiled includes Modeler 3D and VideoScape 2.0 from Aegis Development, Deluxe Paint II from Electronic Arts, Photon Paint from MicroIllusions, and PageFlipper Plus from Mindware International, with the emphasis on Modeler 3D.

HOW THE LOGO WAS CREATED

After we received a coloured photostat to work from, we broke down the "Bubblegummers" logo to the necessary components which we would model and animate in 3D. The logo consisted of several elements: a large yellow diamond as the background, a large ring which enclosed the three Bubblegummers cartoon characters, and the Bubblegummers text itself. This would require animating seven objects since the text was broken into two words.

THE DIAMOND AND RING

Loading in Modeler 3D, we began with the simplest objects. 3D primitives such as boxes, spheres, and tubes. The diamond was created in minutes, using the BOX creation option which generates a 3D box to chosen specifications, in this case the size and depth. The box was then rotated to sit on a corner (and look like a diamond), and finally coloured in a glossy yellow. The object was then stored on the harddisk, and the screen cleared.

Creating a 3D ring was next in line and Modeler 3D has the appropriate tools to make this a simple operation. Going from Modeler's tri-view work area into the Template screen, a simple polygon was created. This polygon would serve as a slice or cross-section of the ring. Returning to the GENERATE Menu, the LATHE option was chosen, which allows one to take any polygon created and spin it up to 360 degrees around a central axis (either X or Y) in as sections designated (in this case, 24), making it a solid object (See Figure 1.) A solid outline version of the ring was then checked in the Preview window (See Figure 2), then coloured as chrome and stored to harddisk.

THE TEXT

After we had made a few 8 1/2" x 11" xerox enlargements of the logo lettering to work with, we pulled out the Easyl drawing tablet (from Anakin Research), taped one of the xeroxes to the tablet, loaded the Easyl driver, then went back to Modeler's Template screen.

Using a pencil and the Easyl, we entered the appropriate points of the logo lettering into the Template screen. This way we could keep the logo accurate to the original rendering. After this was completed we had a "connect-the-dots" version of the logo (See Figure 3). Moving back to the tri-view screen, and magnifying a portion of the logo, we began to define the points as polygons, selecting the appropriate points in a clockwise order in two of the three work windows, and then choosing the ADD POLYGON gadget to define the polygons (See Figure 4). By selecting the points in a clockwise order, we could be sure that the visible surface of the polygons would always be facing in the same direction. Modeler 3D displays this with a radiating line extending away from the created polygon. By rendering the logo as a series of small polygons, as opposed to one large one (which is also possible), we can circumvent the problem of overlapping polygons (this is where background polygons sometimes cover foreground polygons) in VideoScape.

Once the "face" or "surface polygons" of the logo were completed, we headed back to the Template screen and chose the SIMPLE EXTRUDE option from the GENERATE menu. Unlike the Extrude that Modeler also offers, Simple Extrude creates an enclosed volume. Voila, within seconds we had an extruded 3D object, which we once again checked via the Preview window (See Figure 5). All that was left was to define

By Nick Poliwko

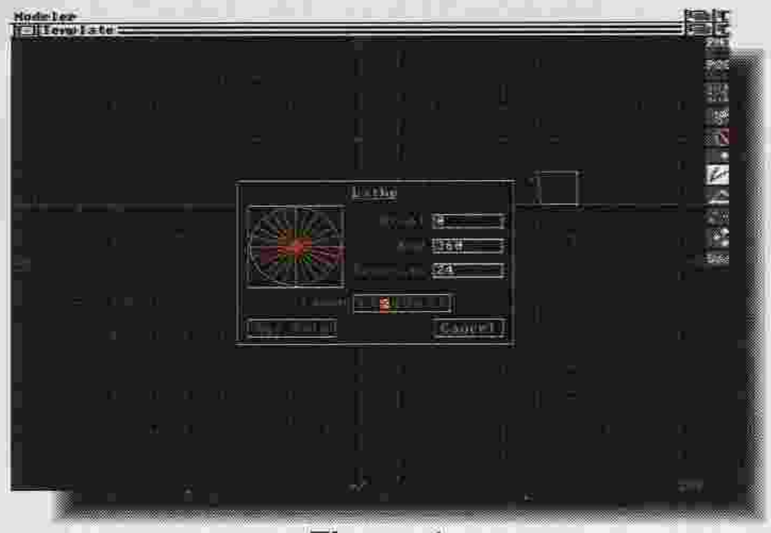


Figure 1

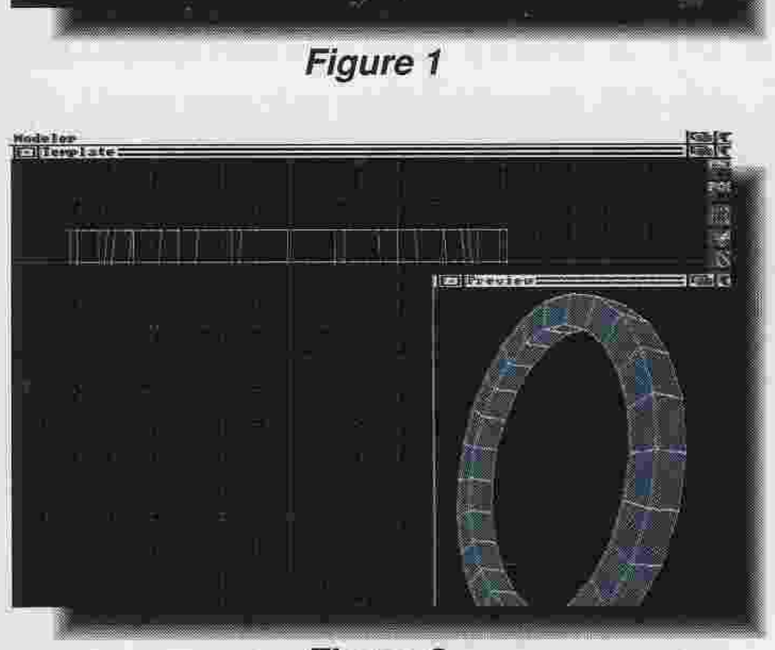


Figure 2

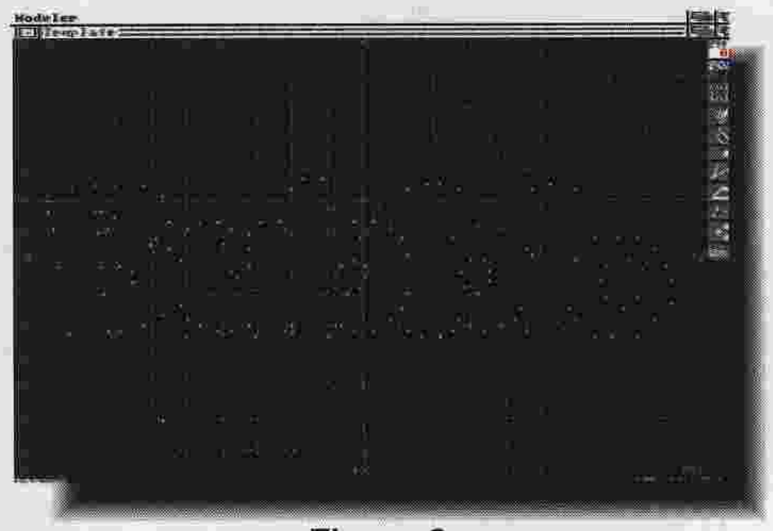


Figure 3

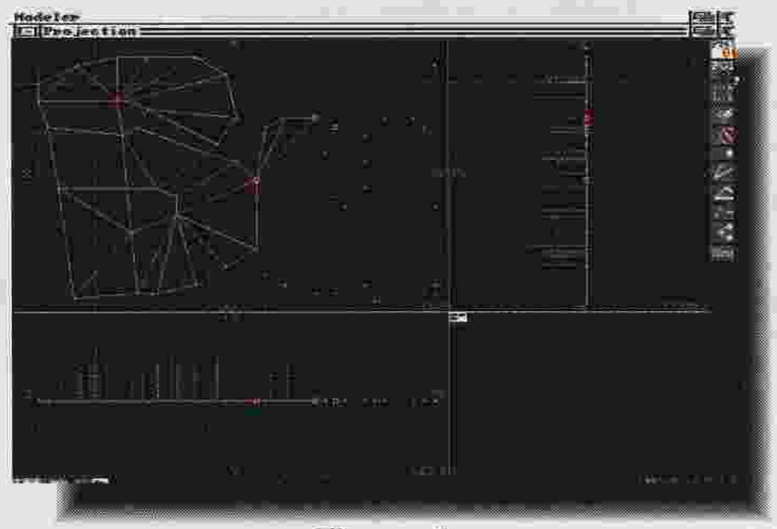


Figure 4

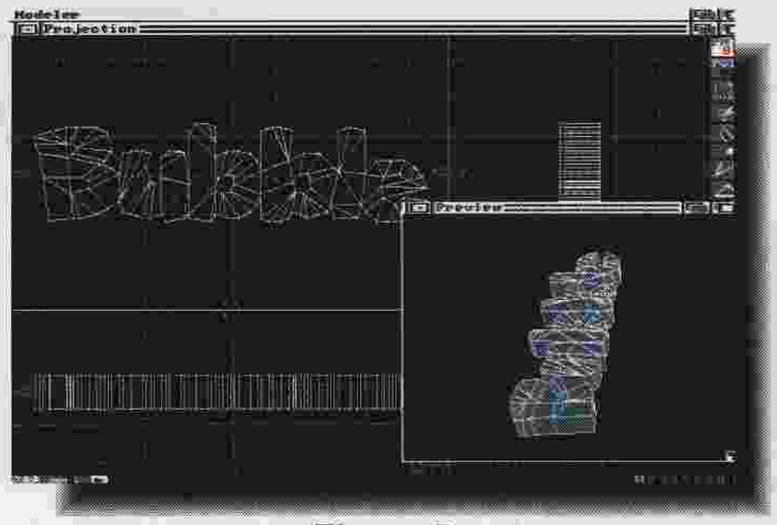


Figure 5

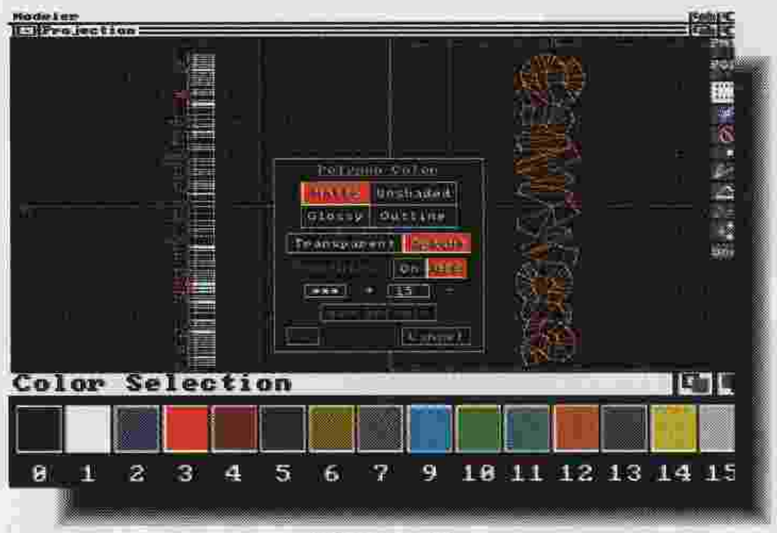


Figure 6

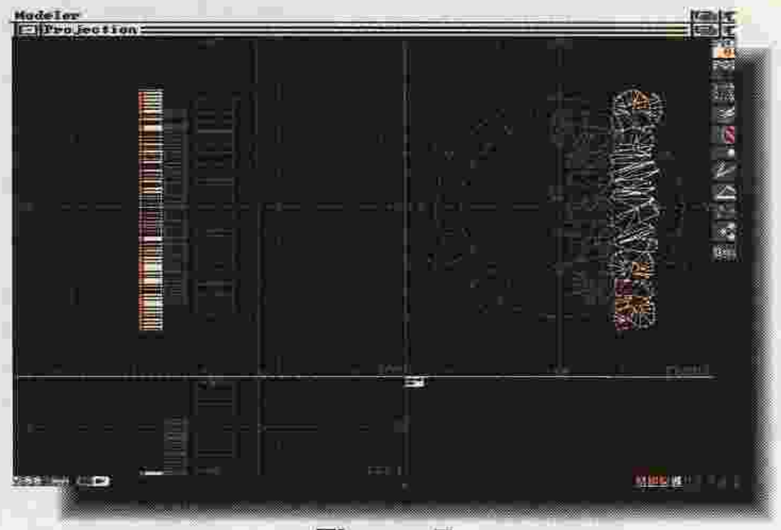


Figure 7

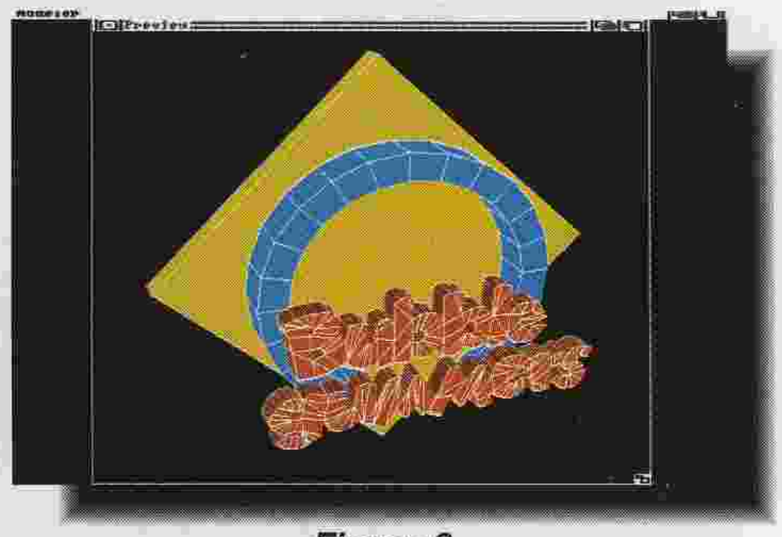


Figure 8



Figure 9

the colours. First we coloured the entire object smoothed chrome, and then using the Volume Mode Tool, isolated the front face of the logo, activated the polygons and defined the colour as a matte red (See Figure 6). This was repeated for the back face of the logo. The result gave us logo lettering in red with smoothed chrome for the side extrusions. After we had repeated the same process for the second part of the logo text, we saved the objects to harddisk.

PUTTING IT ALL TOGETHER

We had created the necessary elements and stored them on the hard disk. The next step was to ensure they would fit together properly in terms of size and placement. One of Modeler 3D's features is that you can work on several layers of screens at once, similar to a CAD program.

We loaded the diamond object into screen layer one. We would use this as our basis for sizing the remaining objects. Then, using the option that allows us to overlay the next screen layer atop the previous one (similar to putting a piece of tracing paper over a drawing), we proceeded to screen layer two and loaded in the next object: the chrome ring. We could now use the SCALE function and visually resize the ring to suit the diamond. We continued this process until all the objects had the proper size relationship between them.

Now we could use this layer overlay feature to position the objects in relation to each other, using the MOVE tool (See Figure 7.) Placing the object in Modeler 3D simplifies the animation process later in VideoScape. When you save an object in Modeler, it is saved with an xyz value of 0. Therefore, if all the objects are placed in their "end-of-animation" positions in Modeler, and saved in those locations, then the various motion files that must be written in VideoScape can all have an xyz ending location of 0. You can be sure that all your objects will end up in the right spot without having to fiddle about with various values.

Object positioning complete, we take a final look at the work in the Color Preview Window (See Figure 8). Everything looks fine, so we can now resave the individual objects and move on to animating them.

ABOUT MODELER 3D

The gadgets and functions covered in the creation of the "Bubblegummers" logo are only a few of the tools available to the user with Modeler 3D,

(continued on page 95)

DELUXE PAINT III



The King of Paint programs now sports animation features as well as several new paint modes.

When DeluxePaint was first released for the Amiga, a lot of heads turned. Amiga artists finally had a paint program that was reliable, well-behaved, and seemed to do all they could ask for.

The release of DeluxePaint II was as significant, adding many surprising features, including the ability to do perspective graphics. Now, Electronic Arts has released DeluxePaint III, in which they answer some, but not all the obvious criticisms of DeluxePaint II. They have added many exciting and powerful commands, most significant among them the ability to draw animations.

The DeluxePaint III package contains the program disk, an art disk, and an animation disk with several useful examples, including an "Aquarium Construction Kit" animation to experiment with. The manual is well written, and contains many illustrative examples.

ANIMATION

DeluxePaint III allows the artist to create animations in any resolution and number of colours (except HAM, which the program does not support.) An animation consists of a number of frames which can then be played forwards, backwards, or "ping-pong" (alternately forwards and backwards.) You can draw in each frame using any of the regular drawing tools, or you can affect several frames in a row using the new animation drawing tools. The program enables commands to step through the animation, or go to any particular frame. Frames can easily be added or deleted, but there is no easy way to move a block of frames somewhere else in the sequence, or to reverse the playing order of a block of frames.

DeluxePaint III introduces "anim-painting," where you can draw with a brush via the animation either freehand, or with any of the line tools (vector, curve, circle, ellipse, rectangle, polygon). The brush gets stamped down on successive frames of the animation, following either the mouse or the chosen path.

The most dramatic way to automatically move a brush is the new Move Requester, which works with two-dimensional as well as three-dimensional movement. First, you should position a brush in two or three dimensions in the same way as was possible in DeluxePaint II. The Move Requester lets you specify the total distance and angle (in x, y, and z) that you wish the brush to move through, and whether these are to be measured relative to the brush or absolute (relative to the screen.) In addition, you can specify the number of frames that this movement is to take, as well as the number of frames to ease out (where the movement starts slowly and accelerates) and/or ease in (where the brush decelerates at the end of the movement). A preview mode gives you a feel for the motion you are about to create. Then, by clicking on the Draw gadget, the motion is created. Rotating, spinning, tumbling logos can be easily designed, as can various screen shattering effects, similar to those produced by VideoEffects 3D.

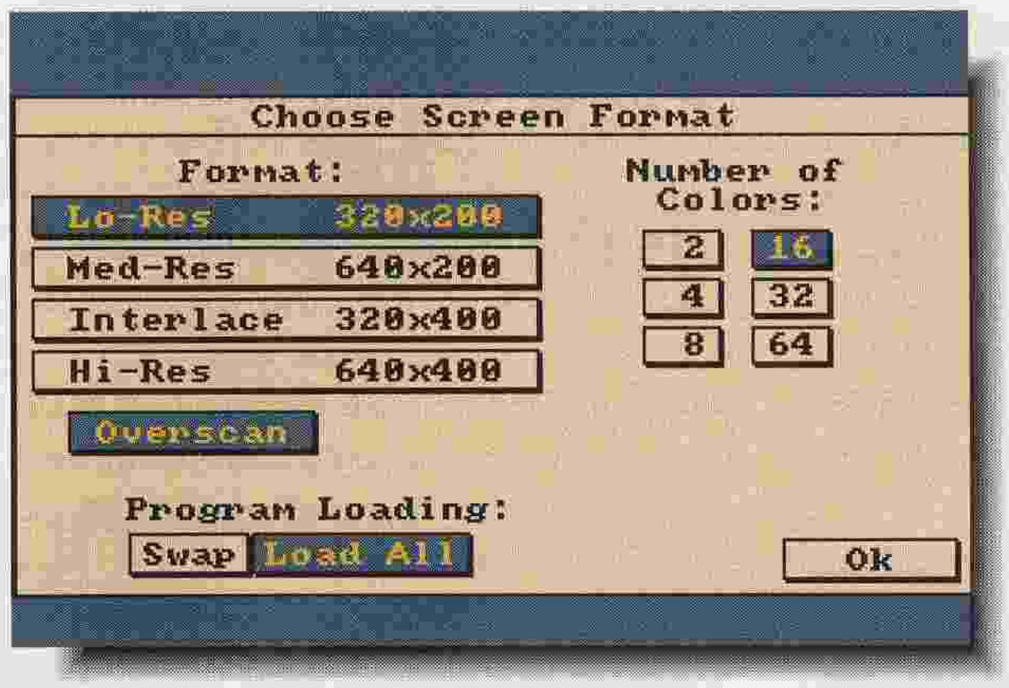
DeluxePaint III introduces animbrushes, which contain many frames. You may pick up an animbrush just like a regular brush, except it picks it from all the frames in your animation. The resulting animbrush has the same number of frames as the animation you took it from. You can then adjust the number of frames in the animbrush, step through its frames, or go to any arbitrary frame. As well, you can set the animbrush to play forwards, reverse, or in "ping-pong" mode.

Once you have an animbrush, you can perform many of the familiar brush operations, for example, saving, loading, or flipping, but you can't change its size. More important, animbrushes can be used with any of the drawing methods available in DeluxePaint III, including animpainting, perspective operations, and the Move Requester. As you draw with an animbrush, it automatically advances to the next brush and animation frame. So, if you had an animbrush consisting of a person walking, and you had an animated scene (say an

By Peter Cherna

amusement park), then by dragging the animbrush across the screen, you can add the walking person to the animation. Or, if your animbrush consisted of several frames of a cat walking, you could use the Move Requester to rotate this brush about a vertical axis to recreate the well known Amiga animation "El Gato."

Once you are satisfied with the animation you have created, you can save it (or any sub-range of frames) to disk. You may save the animation as a sequence of IFF ILBM (regular picture) files, or you can save the animation in IFF ANIM format. When saved, it will be compatible with other packages that can read IFF ANIM files, such as DeluxePaint III's animation player program, ShowANIM, or the Director.



New screen format requestor; notice the overscan and extra half-brite modes, there are even more changes in the program.



An example of a 3D rotating animation in Deluxe Paint III observe the current frame number and the total number of frames in this animation.

SIXTY-FOUR COLOUR PAINTING

DeluxePaint III now supports sixty-four colours in lo-res non- interlace or interlace. This is the EXTRA-HALFBRITE mode available on later Amiga 1000's as well as all 500's, 2000's, 2500's, etc. You still have the choice of thirty-two colours in this mode, while the second set of thirty-two has the same colours but at half-intensity. A few additional painting commands are available, such as "HBrite" mode, where drawing with the left mouse button replaces colours by their half-brightness cousins, while the right button does the reverse.

When using dithering (in the Fill Requester), you have the choice of using both the full-strength and half-bright colours in the range. This can work well if the colours in your range are all of the same shade (say several shades of gray), but if your range is a transition from blue to orange (supposing for a sunset), then you will get a range of bright blue to bright orange, followed by dull blue to dull orange, which isn't very useful.



A much welcome font requestor. The user can now change from one font directory to another or even to a font disk.

The "Fill type" requestor now has new features such as Tint, Wrap, Perspective, and half-brite.



OVERSCAN SUPPORT

With DeluxePaint III, you can paint directly in overscan mode. This means you can work with a full overscan image and paint into the border areas with-

out having to scroll around.

IMPROVED REQUESTERS

DeluxePaint III sports a new file requester which automatically recognizes the disk devices in your system. As an added convenience, when you try to load a picture or animation which has a different resolution or number of colours from current setting, DeluxePaint III asks you if you wish to change to that resolution and number of colours.

DeluxePaint III solves all complaints about DeluxePaint II's handling of fonts. Fonts are now loaded through the Font Requester, where fonts are presented in the same way that file names appear in the File Requester. You can select the font, point size, and style (bold, italic, or underlined), as well as view the font before using it. There is no limit to the number of fonts allowed in the FONTS: directory. It is also possible to reassign the FONTS: directory within the requester. If you are loading a ColorFont, DeluxePaint III asks if you want to change to the palette of the ColorFont.

NEW PAINTING FEATURES

You can now automatically add one or more single-pixel outlines to a brush, or you can put a trim inside the border of a brush. These effects are great for colouring fonts. Airbrushing is also more powerful, as you can now specify that you wish to airbrush using any of the line drawing tools (lines, curves, circles, boxes, ellipses, and polygons.)

Brush filling and wrapping have enhanced the Fill Requester. Brush filling stretches the current brush to fit the area to be filled by any of the solid drawing tools (filled rectangle, ellipse, etc.) or by the fill tool. Wrapping is similar, but exaggerates the stretch so that a square brush wrapped onto a circle looks more like a sphere.

The perspective drawing routines are now three to five times faster when anti-aliasing is off, and about twenty to fifty percent faster with anti-aliasing on, when compared with DeluxePaint II.

MULTI-TASKING

DeluxePaint II was known for poor multitasking. Keeping a copy running in the background significantly slowed down other tasks. Another difficulty was finding a safe place to click to reactivate the program (especially if the toolbox is hidden). DeluxePaint III doesn't slow down other tasks when kept in the background, and when you return to DeluxePaint III, the first click (that activates the program) is thrown out, so your drawing isn't messed up.

SHORTCOMINGS

While DeluxePaint III adds many exciting features and fixes difficulties of its predecessor, there are a few major features missing. Most people hoped and expected that it would support the HAM mode; most unfortunate is the lack of HAM support because it would be useful to be able to touch up animations made by other programs such as raytracers, but these animations are usually in HAM mode. The other shortcoming surfaces when using DeluxePaint III to create three-dimensional movements or video effects such as shattering. Unfortunately, there is no way to recreate the same shatter effect or movement on a different picture except by repeating all the work by hand. It would be helpful if there were an option to save the parameters from the Move Requester, but the solution would be to add some kind of programmable control, for instance an AREXX port, to DeluxePaint III. Then a program to do video wipes, shatters or fancy text manipulations could be built onto DeluxePaint. One could even make a program that could take data from an AREXX-compatible spreadsheet and generate animated charts and graphs. When Amiga paint packages add an AREXX port, the door will be opened for some powerful and unique video applications.

DeluxePaint III is still limited to a maximum page size of 1008 by 1024 pixels, yet many applications demand higher limits than this. So far only Deluxe Photo Lab and Express Paint provide this. Finally, and this last point applies to many other programs as well, there should be keyboard shortcuts for as many of the menu options as possible. A menu provides a great way to access a function you do not use much, but once you are familiar with it, it is always faster to use a keyboard equivalent. Some new shortcuts have appeared in DeluxePaint III, but not enough.

CONCLUSIONS

Overall, DeluxePaint III is a significant program for the Amiga worth the price of the upgrade, and worth considering for those interested in animation on the Amiga. The beta version we saw was reliable, and relatively trouble-free. Electronic Arts has for the third time in the DeluxePaint series redefined the state of the art in paint programs for the Amiga. ❑

DeluxePaint III
Electronic Arts
1820 Gateway Dr.
San Mateo, CA 94404
USA
(800) 245-4525 (U.S.A. and Canada)
Electronic Arts address &
upgrade information, or
(415) 571-7171 ext. 555

UPGRADE POLICY:

If you bought Deluxe Paint II between DEC 1st 1988 and APR 1st 1989, you can obtain Deluxe Paint III by sending a dated receipt, the manual cover, and $20 + $7 shipping to ECA.

If you bought DPaint II before DEC 1st 1988, then just send the manual cover and $50 + $7 shipping for the upgrade.



Yes! I want to subscribe to

THE DESKTOP PUBLISHING MAGAZINE

Electronic & COMPOSITION IMAGING



The Canadian magazine for

- DeskTop Publishing
- Electronic Publishing
- Pre-press Imaging

- Bi-monthly issues packed with information on desktop publishing
- includes the award-winning Graphic Perspective, the publication of sophisticated computer design
- product reviews • industry news
- resident input • and more

Name .....
Title .....
Company .....
Address .....
City ..... **Prov.** .....
Postal Code ..... **Date** .....
Type of Business ..... **Signature** .....

START MY SUBSCRIPTION TO EC&I FOR THE TERM INDICATED

☐ 6 ISSUES $25. ☐ 12 ISSUES $47. ☐ 18 ISSUES $66.

☐ PAYMENT ENCLOSED ☐ BILL ME

Outside Canada add $20.00 per term. Payment in Canadian funds must accompany order.

Electronic & COMPOSITION IMAGING

200 Yorkland Boulevard • Willowdale • Ontario • Canada • M2J 1R5

AT0489

MOVIESETTER

an Animation and Video Program



Screen shot of an animation layout and storyboard in the Moviesetter program.

Well known for its quality desktop publishing programs Pagesetter and Professional Page, Gold Disk just entered the Amiga video market with what they call a "WYSIWYG" (What You See Is What You Get) Animation and Video program: MovieSetter. This program allows you to create animated cartoons and features stereo sound, background wiping and scrolling, color cycles and looping frames, all in overscan mode.

The MovieSetter package contains two disks (one program disk and one ClipArt disk) and documentation. The manual is one of the nicest software manuals we have seen on the Amiga market; well written, well structured, abundantly illustrated with a touch of humour. The program is designed to work under Workbench 1.2 or higher with a minimum of 512Kb (1 Mb recommended) and with one 3.5" floppy disk drive. The program disk is not copy protected so you can keep the original in a safe place while using a working copy. You can use the program disk to boot-up your Amiga, but the program will also multitask easily in another Workbench environment.

Once loaded, MovieSetter allows you to create a new production or to load an existing one from the disk, using the LOAD PRODUCTION requester. The ClipArt disk contains a demo production that you can load and play for a quick and easy startup. When a production is ready to run, a requester resembling a VCR remote control appears: the Player Control Window. This requester will allow you to step single frames forwards or backwards, to play in both directions and to jump directly to the beginning or end of the production. A counter will also display the current frame number and elapsed time in minutes and seconds; you can also click and edit the displayed values to enter a specific frame number or time. During a full speed playback, this window will disappear, but you can always control the operation with the keyboard and press the space bar to stop the movie.

One important note is that MovieSetter only works in one resolution: 352 x 240 known as low resolution overscan, with interlace optionally turned on or off. This can seem a little strange since, except for memory usage, nothing should prevent this program to work in higher resolutions, and this limitation will keep MovieSetter out of the toolbox of some animation fans.

Pictures, in MovieSetter, exist in two forms: backgrounds and faces, both using the IFF graphic format. Backgrounds always stay at the back of a scene and cannot hide anything, but can be scrolled vertically and horizontally. Faces are single images of a character or an object; when they represent different positions of a subject they may be grouped in sets in a logical order, to make the subject walk, jump or move. A special tool, the Set Editor, is used to create faces and to group them in sets. Then the Scene Editor, the heart of MovieSetter, will allow you to assemble backgrounds, sets and also sounds to make animated tracks. To meet memory requirements, the Set Editor can be run as a separate program from its own icon, or can be invoked from MovieSetter.

The Set Editor looks like many paint programs and has the same familiar features: brush, magnifyers, airbrush, palette, fill tool and also the tools used to resize and manipulate brushes. The brushes, when loaded from disk, are

By Michel Feugeas

stored in a clipboard window; you can then grab and stamp them into the Set Editor with a single click of the mouse. A series of special tools are dedicated to the assembly and preview of an animated set and, here again, a VCR-like control panel makes this task an easy one. Once completed, sets can be saved and retrieved for later edition.

With all the tools provided, the Set Editor is a powerful and friendly program so you should not need another program to design your animated caracters, but if you feel better driving your favourite paint program you can always use it to generate standard IFF brushes, and use MovieSetter to make sets of them.

When you have given life to your series of faces, your sets can be loaded into MovieSetter's scene editor, but you must load a background first; after entering its name in the requester, you will be asked to choose between six different wipe effects or a direct cut to display the new background. Now you are ready to create a new track; enter the name of a set to load, and the first face of the set will be attached right under your pointer. Then, every time you click the mouse, the current object is stamped in place and the production advances one frame while the set also advances one face. Easy! The manual calls this stamping. While stamping the last frame of the track with your selected set, you hold down the CONTROL key. You can then play back the entire production with the control window gadgets.

Several gadgets are used to edit tracks. You can specify a number of frames where a face will be held at the same position, thus saving a couple of mouse clicks; also, a TRACK REPEAT function lets you specify a number of repeated frames to produce.

GUIDES provide the most powerful control function, it gives a track a smooth linear or elliptical path. All you have to do is to specify a number of frames, click on the origin and on the destination points on the screen, then a plotted curve will appear, showing each successive position of the object; the curve is represented by a rubber band line wich can be affected by selecting ELLIPSE or LINEAR and specifying a start velocity and acceleration, in a horizontal or vertical direction. This function produces natural movements with a minimum effort and time, and is not even found on most major animation programs on the market. Tracks can be shifted to allow insertion of frames similarly to the insert function in a word processor. Editing features allow users to cut, to paste and to change the order in which objects are stacked; several tracks can overlap with the last added object hiding the others.

To add sound to your production, you can select a particular frame with the control window, and enter a sound sample name in the SOUND requester. For example, you can easily load a "boing" sound when positioned at the frame where an animated ball hits the ground, and MovieSetter does the rest. The same requester allows you to test the sound sample, change its pitch, octave, volume, position (left or right) and even to give it an apparent position in space using a stereo PAN (panoramic) gadget.

The playback speed can be changed from 1 to 60 frames per second; 10 frames/second is the default value. Timing changes are stored as events in your production, so they can be used to produce variable speed movements.

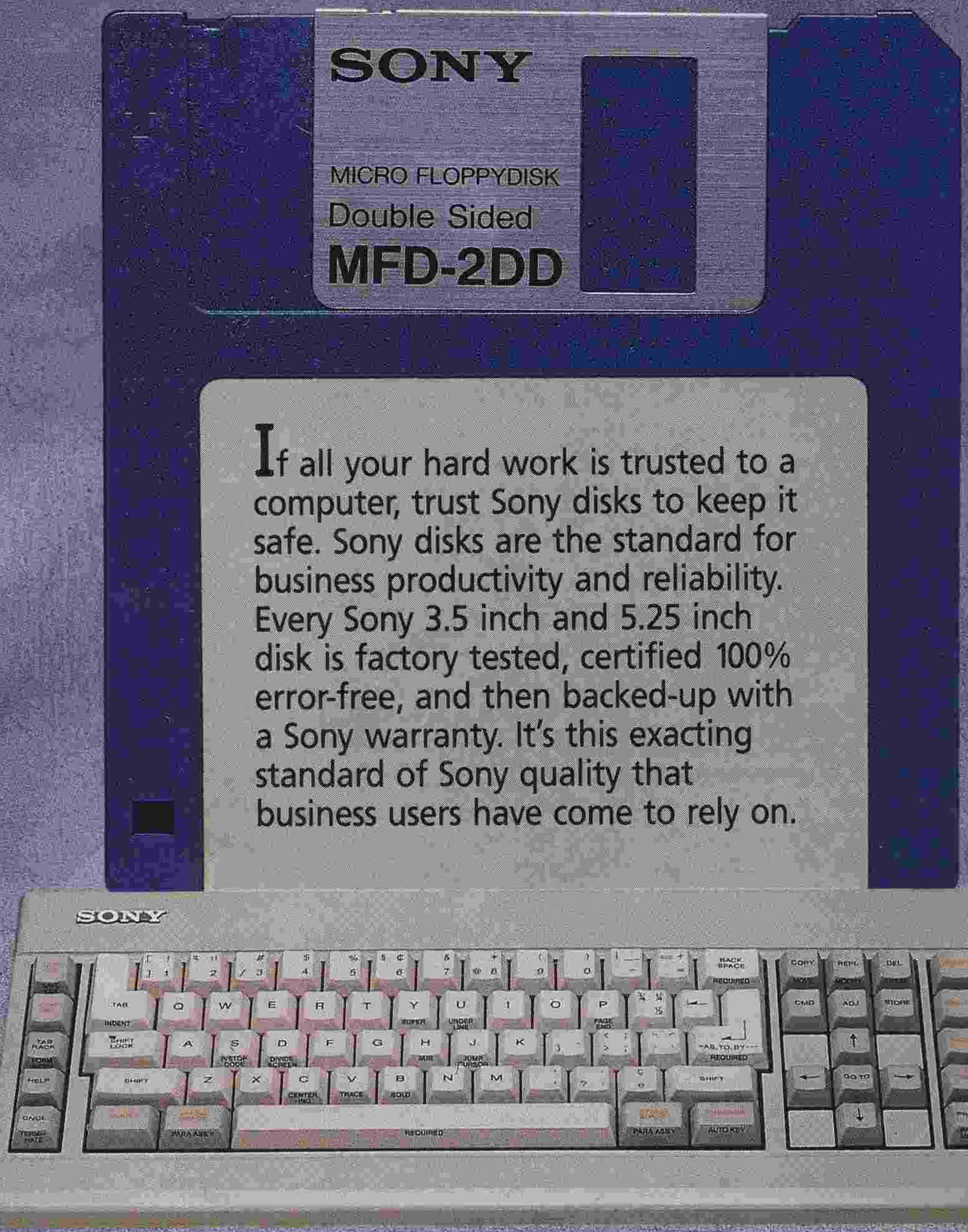
All tracks are also clipped in a storyboard window where the whole production can be sorted and scanned for a particular element. An entire production can finally be saved in two formats: EMBED which makes a complete script containing all the pictures and sounds, thus making a complete animation, and NO EMBED which saves a short script containing only the characteristics, settings and names of the elements used in your production. Unfortunately, the animations produced are not compatible with other players or animation programs.

With the tools and functions found in MovieSetter, making a cartoon animation is a snap. For those who experimented with film, glue, scissors and cardboard, such a program will open new horizons. Some functions provided are powerful pieces of software and the user interface is friendly. Users with professional needs will only regret that Gold Disk did not make their program to work with higher resolutions nor to generate animations in a format compatible with existing programs, but casual animators will enjoy making animated presentations with MovieSetter. ❑



Screen shot of a frame from an animation produced in Moviesetter.

MovieSetter
Gold Disk, Inc.
P.O. Box 789
Streetsville, Ont.
CANADA L5M 2C2
(416) 828-0913
(800) 387-8192
$124.95 (CDN)
$ 99.95 (U.S.)



Sony Sets The Standard



Why risk your valuable data on anything but the best? Make Sony your standard.

Sony computer disks are available in formats to match all types of personal computers. Ask for them from your computer dealer or for more information contact:

Sony of Canada Ltd. Computer Media Dept.
405 Gordon Baker Road, Willowdale, Ontario M2H 2S6
Telephone (416) 499-1414

SONY®

DISKPAGE

V1.5

CONTENTS

COOO

PROGRAM_LISTINGS (dir)

- ASSEMBLER (dir)
  - Better_DJ
  - DATA.C
  - DOSPECIAL.C
  - INIT.ASM
  - MAKEFILE
  - PRINTERTAG.ASM
  - RENDER.C
  - TRANSFER.ASM
- MOD2 (dir)
  - Count — Count.MOD
  - Repeat — Repeat.MOD
  - Squares — Squares.MOD
- TeleCOMM (dir)
  - AMNIX
- TOOLS (dir)
  - AutoMount
  - GPrint
  - KeyHack
  - Pyro
  - ConMan_1.3
  - AtomClk
  - 730x478
  - SHOWFONT_3.3
  - SetCPU_1.4
  - VirusX_3.2
- AT_Exclusive (dir)
  - DiskOpti
  - DiskView
- GAMES (dir)
  - 15
  - Concentrate
  - Towers
- INTERESTING (dir)
  - YOW
  - Jumble

Why include a disk with a magazine?
It allows AmigoTimes to provide the reader with some of the latest and best commercial demos, shareware, and public domain software available. Making demos of commercial programs available on the disk allows you to have hands on experience with the program before actually going out and buying the original package. How about public domain software and shareware? You now have access to a vast, continuously changing library.

As a programmer you will have available to you pretested source code that does not have to be typed into the computer; most of the source code and running programs that are referred to in AmigoTimes articles can be found on the disk.

NOTE: **THIS IS NOT A BOOT DISK**
Instead boot with your workbench disk.
READ THE DISK LABEL INSTRUCTIONS

If you purchased this magazine without the AmigoTimes Disk, you can order the disk by sending $5.00 (US) to:

AMIGOTIMES
5124 St. Laurent, Suite 100
Ville Ste. Catherine, Quebec
J0L 1E0 CANADA

V 1.5

AMIGOTIMES DISCLAIMER

The entire risk as to the quality, results and performance of the software supplied on the disk is assumed by the purchaser of this media publication. In no event will AmigoTimes, their distributors, or their retailers be liable for any direct, indirect, or consequential damages resulting from the use or inability to use any of the software on the AmigoTimes disk.

The above limitations and implied liabilities for incidental or consequential damages may not apply in geographical areas having laws against the exclusion or limitation of such policies.

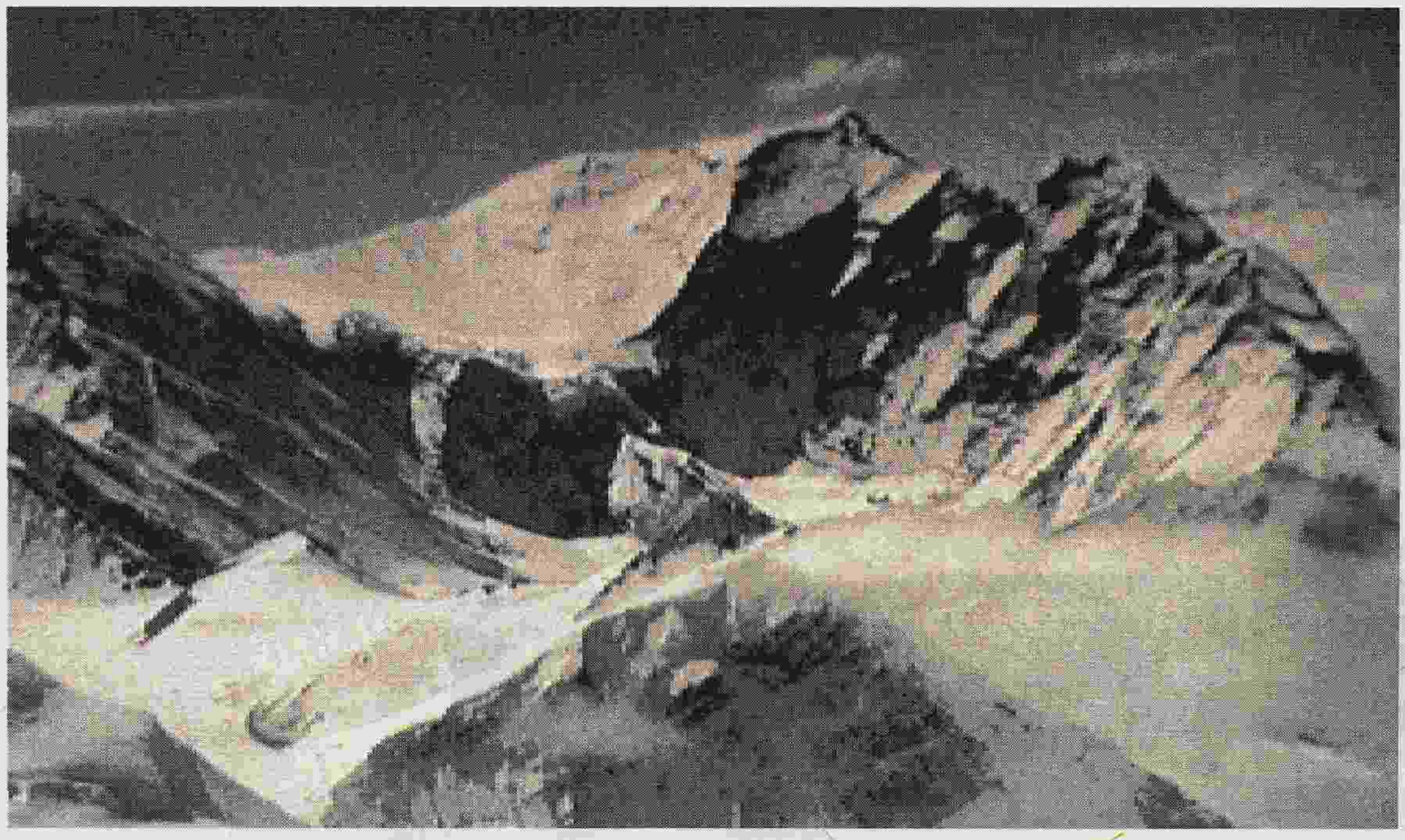
If the disk you receive is faulty, please return it to AmigoTimes for a free replacement (no refunds provided). Return disks to one of the following address:

AmigoTimes
P.O.B. 1158
Champlain, NY 12919-1158
USA

AmigoTimes
5124 St. Laurent, suite 100
Ville Ste. Catherine
Quebec, J0L 1E0
CANADA

All material on the enclosed disk has been made available by third party individuals releasing them as public domain software or shareware. Some of the programs were specifically written for AmigoTimes. All DEMOS provided on the disk are made available both with the consent of the Companies, and agreement to their distribution as PUBLIC DOMAIN material. The AmigoTimes Disk is freely distributable and belongs in the PUBLIC DOMAIN. We fully support the shareware concept and suggest you contribute the amounts requested by shareware authors if you find their programs useful.

AmigoTimes Designer Disk Sets



WHERE DO YOU FIND AMIGOTIMES DESIGNER DISK SETS...?

Certainly not at the top of the highest mountain in the world, Mount Everest. What are AmigoTimes designer disks? The AmigoTimes DESIGNER DISK SET was due to the large volume of interesting Public Domain programs that we have collected, but due to size constraints, are unable to place on the AmigoTimes issue disk accompanying the magazine.

Each DESIGNER DISK SET deals with a specific theme, and is packaged as a three (3) disk set, packed with close to 2.6 megabytes of information relating to a specific theme. This gives you the freedom to choose only those Public Domain programs that you would like *to have*. ***To order for any of the Designer Disk Sets, use the subscription oeder form located on page 91 of this Issue.***

ANIMATIONS

DESIGNER DISK SET

This was the first *DESIGNER DISK SET*, with the theme being animations. Many of these animations are must haves (check issue v1.2 for a description of some of them) and would never have appeared on the disk accompanying the magazine. All the necessary tools needed to run the animations are on the three disks, all you have to do is double click on their icons and away they go.

INCLUDED ON THE SET

BOING THROWS (WITH SOUND)
FROG_MOVIE
TELLSTAR-ONE
GHOSTPOOL (WITH SOUND)
KHANANKAS (WITH SOUND)
MOTION_MACHINE
BUBBLES
CAR
TOWER

UTILITIES

DESIGNER DISK SET

Here is the next *DESIGNER DISK SET* following in the footsteps of its predecessor. The idea is exactly the same, just the topic is different. Its three disks full of handy utilities, including icon tools, dir tools, accelerators and many more important utilities (check next issue for a description of some) that will help you function much more effortlessly and faster. Some of the programs will be new, some old, but all will be great stuff. Available one week after this issue goes out for general sale.

PLANNED FUTURE DESIGNER DISK SETS

FONTS
MIDI & Sound Samples (including popular Star Trek sounds)
Pictures Extravaganza

The above disk sets are currently in production and will be announced in AmigoTimes magazine as soon as they are available. All DESIGNER DISK SETS are sold separately.

The Amiga monitor
Vol. V

NEW LOW COST SCANNER FOR AMIGA DTP

GOLD DISK AND CANON TEAM UP TO PRESENT 300 DPI BLACK AND WHITE SCANNER

Gold Disk has developed a hardware/software interface for the Canon IX12, black and white, 300 dot per inch scanner. This easy to use method of saving pictures as IFF files, is ideal for Amiga desktop publishing, or illustration. The images can be saved at resolutions of 75, 150, 200, or 300 DPI. Simply feed your page in the scanner. The image will be saved in aproximately 15 seconds.

Software control allows the user to define regions of scanned pages for high resolution use. The scanned images can be used in any Amiga program that supporting the IFF standard. This means you can color your images in paint programs like Deluxe paint II. Or import your scanned pictures directly to your Professional Page layouts. You can even import your scanned images into Professional Draw to be traced over and made into structured graphics.

Canon IX12 Scanner w/
hard-software interface
Gold Disk, Inc.
P.O. Box 789
Streetsville, Mississauga
Ontario, CANADA
L5M 2C2
(416) 828-0913
(800) 387-8192
$1095 (US)



The Canon IX12 Black and White scanner; capable of saving IFF images at a maximum resolution of 300 dpi, the scanner is a low cost image input alternative.

SIGNAL PROCESSOR

The *VidTech Scanlock model VSL-1* provides broadcast-quality video outputs of processed reference and Amiga computer video signals. The Scanlock's reference video can come from a stable source, such as a video camera, or from the playback of a VCR tape. Both composite (NTSC or PAL) or component (luma/chroma or Y/C) formats, including S-VHS, M2 or BETACAM, are processed by the Scanlock. The Scanlock VSL transforms the Amiga RGB video into NTSC, PAL or Y/C format without degrading the reference video. Two models are available: VSL-1-N, compatible with the NTSC broadcast format; VSL-P is compatible with the PAL broadcast format.

With the Amiga's external clock and H/V reset inputs, the Scanlock model VSL-1 genlocks the computer to a reference video signal. The Scanlock features the format of the video in the Scanlock output identical to the format of the reference video. It reformats the computer graphics output to match the timing of the reference video.

The Scanlock includes a video-process amplifier for the computer video signal. A vertical interval switch permits glitch-free switching between the reference video, computer video or keyed video. The Scanlock is equipped with independent FADE controls for reference and computer video. When FADE is activated the amplitude of either video is controlled linearly from full in to full out. All units have a connection for an optional external power supply or a cable that connects to the Amiga computer's internal power supply.

In Y/C mode, the Scanlock provides a key-out signal that is fully synchronized to the reference video. The synchronized signal eliminates color dot crawl on reference or computer video and can be used by an external chroma keyer.



Scanlock, Model VSL-1 provides broadcast-quality video outputs of processed reference and Amiga computer video signals.

SCANLOCK:
MODEL VSL-1

IDTECH
NTERNATIONAL, INC.
2822 NW 79th Ave.
Miami, FL 33122
USA
(305) 477-2228

AMIGA TAX BREAK

Amiga-Tax/Tax Break, from OXXI and DATAMAX RESEARCH

There is a version of this tax program for Canada and for the U.S.A. The Canadian version is known as *Amiga-Tax 3.0*, and the U.S. version is called *Tax Break 1.0*. The Canadian version includes T1, All Schedules, all Provinces and "Quebec Forms" and more. Updates are available for $29.95 (CDN) direct from *DATAMAX RESEARCH*.

Developed by DATAMAX RESEARCH, TaxBreak includes all of the most frequently used forms and schedules including: form 1040, Schedules A-E, SE, 1906, 2106, 2441, IRA and more.

TaxBreak incorporates many user friendly features to make tax return preparation simpler and more accurate. All schedules and forms can be opened either by a menu, or by double clicking on the result line for the schedule or form on the Form 1040. Line by line data entry prompts and on screen representation of the IRS instruction booklet give the user information as they need it. A pop up calculator is available with the F3 function key which can paste in results into any location on a form or schedule. Various tax strategies can be tested with usage of multiple tax forms, with the bottom line status of taxes due or refund owed always available at the bottom of the screen or in an expanded version in a status window available at any time with a mouse click. All forms and schedules are represented as look alike on the screen, and can be printed out in IRS acceptable facsimile.

Amiga-Tax v3.0
DATAMAX RESEARCH
Box 5000, RR4
Bradford, ONT L3Z 2A6
CANADA
(416) 775-2225
$69.95 (CDN)

Tax Break v1.0
Oxxi, Inc.
P.O.Box 90309
Long Beach,
CA 90809-0309
(213) 427-1227
Attn: John Houston
$79.95 (US)

MS-DOS PRODUCTS

NEW AMIGA 7 MS-DOS PC PRODUCTS

Commodore International Limited announced, in Germany, that its European subsidiaries will market new professional, business and consumer enhancements to Amiga microcomputers. At the *CeBIT* computer show, Commodore previewed Amiga's graphics card and two new computers for its *MS-DOS PC* product group.

Amiga's new products include a *UNIX* version of the Amiga 2500; an *Amiga 2000HCD color Desktop Publishing Package;an Amiga 500 Desktop Video Package* with the new *Videobox* peripheral; a 20 MB autoboot expansion drive for the Amiga 500; and a high resolution color graphics card for the Amiga 2000 family. The MS-DOS has added 80386 and 80286 to its lines of personal computers.

NEW AMIGA 7
MS-DOS PRODUCTS
Commodore
Executive Offices
1200 Wilson Dr.
West Chester, PA 19380
USA
(215) 431-9100

CALIFORNIA GAMES FROM EPYX

Hey dudes and dudettes, *Epyx* has *California Games* for the Amiga with six (6) of the gnarliest sporting events to ever hit So-Cal (Southern California). The object of the game is to win trophies by competing in all events, or individual events, and become the "raddest dude." Each event requires specific skills and expertise.

Coordination and timing are critical in the Half Pipe Skateboarding event, with points being awarded for each successful kick turn, hand plant and aerial turn. If you are really into laid back sports, try out the Foot Bag; keep in mind it's not easy.

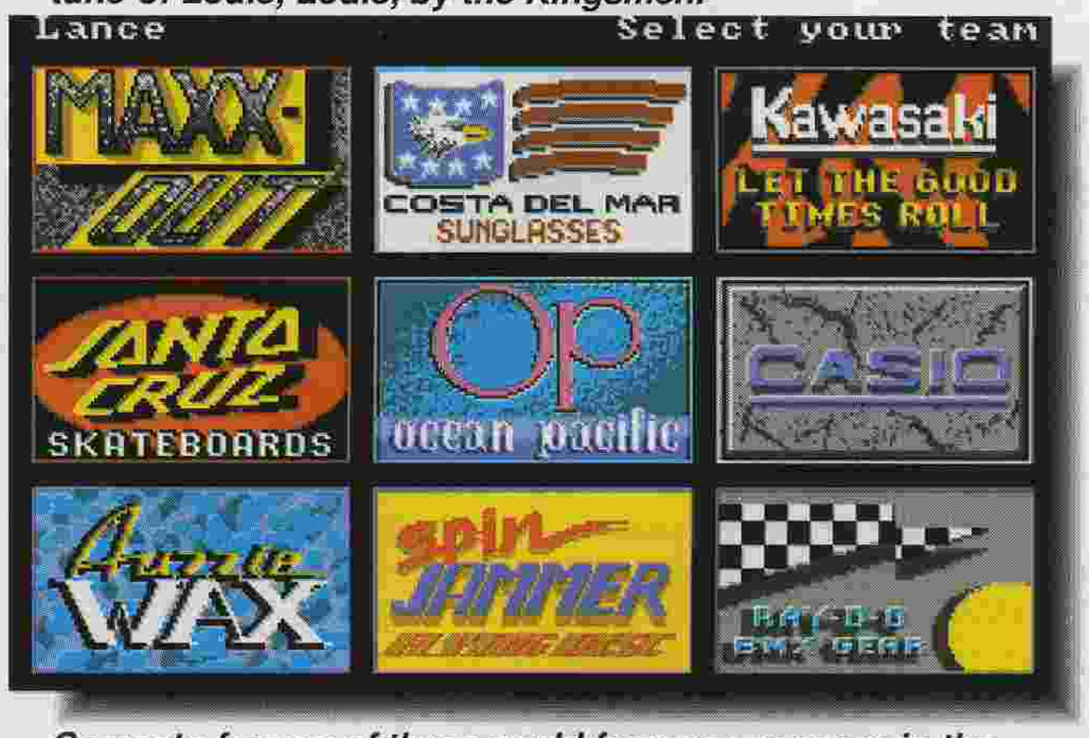
There is Bicycle Motocross (BMX) for the masochistic, an action packed bicycle race on the dessert. The "Flying Disk" or Frisbee Toss is another one of the events, very popular with the students.

Surfing, the sport of Hawaiian kings can also be found in California Games. Here players are scored on the length of the ride, number of turns and speed at each turn. California games would not be complete without Roller Skating, the trick is to skate down a beach boardwalk without falling. Sound easy? Try it on sidewalks with pieces missing, puddles of water, scattered shoes, and flying beachballs, to name a few things.

CALIFORNIA GAMES
Epyx
600 Galveston Drive
P.O. Box 8020
Redwood City, CA 94063
USA
(415)369-2999
$49.95 (US)



California Games opening screen accompanied by the tune of Louie, Louie, by the Kingsmen.



Compete for any of these world famous sponsors in the California Games

HARD DRIVE UTILITY

HARD DISK BACKUP AND FILE COPY UTILITY BY EXPRESS-WAY

ExpressCopy can perform hard disk backups and copy files from hard disk to floppy disk at a rate of up to 1MB per minute, 600K per minute with verification. Backup disks have the same directory structure and file attributes of original files, and can be used normally. Normal and Fast File System compatible disks can be written. Files to be copied can be selected by their DateStamp, filename pattern matching, the Archive Bit, and by source directory. Options for setting the Archive Bit, verifying the data written to floppy and estimating the number of disks required for backup. Up to four copies of the backup can be created at once, or disks can be pre-loaded in up to four disk drives. New disks are automatically formatted and verified. Backup parameters can be saved in configuration files. Backup restoration can be done by any file copy program, directory utility, or ExpressCopy's restore program. ExpressCopy may be used via the CLI and Workbench, it will multi-task and is not copy-protected.

ExpressCopy
Express-Way Software, Inc.
P.O. Box 10290
Columbia, MO 65205-4005
USA
(314) 474-2984
$44.95(US)

SUPERPLAN MULTI-PURPOSE SPREADSHEET

Precision Incorporated, makers of the *Superbase* family of Data management software, have announced *Superplan*, a new integrated, *ARexx* compatible system for Amiga business users that combines a powerful spreadsheet, advanced project management software and a flexible business graphics system into a single, mouse driven enviroment.

Besides a large 74 function spreadsheet, Superplan comes with a comprehensive macro language that lets anyone completely tailor their work environment from menus to data entry and report generation. This flexibility makes Superplan a perfect development environment for a wide range of potential turnkey business applications.

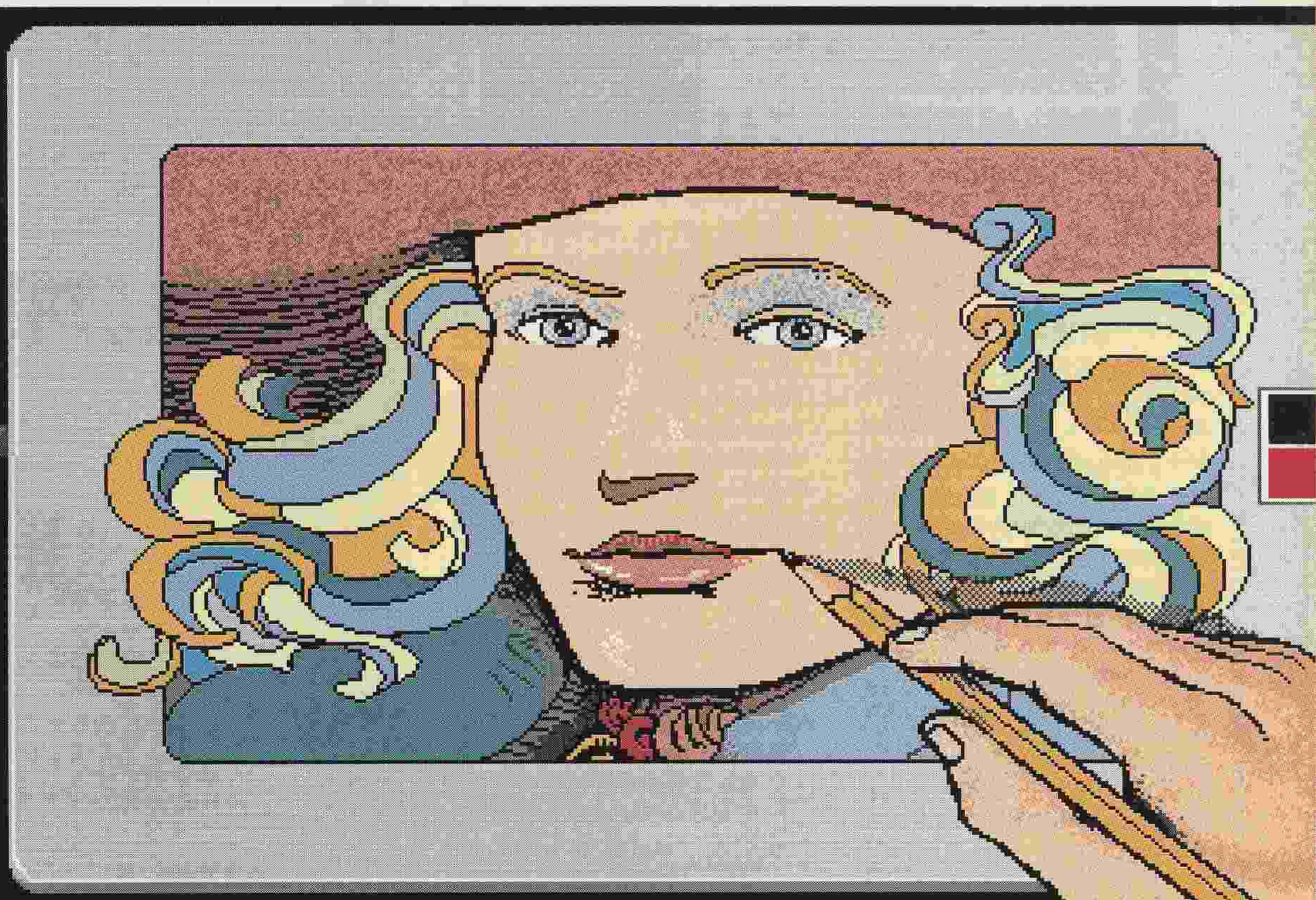
Superplan allows sophisticated project management activities, including critical path analysis, time/expense planning, resource allocation, gantt and PERT charts. Superplan allows you to chose from 18 different kinds of charts, together with 5 independent titles and 10 different character fonts on 128 independent free format annotation lines.

Superplan
Precision Inc.
8404 Sterling St.
Suite A
Irving, TX 75063
USA
(214) 929-4888
$149.95 (US)

EASYL™
THE HUMAN TOUCH

The EASYL graphics tablet, a natural extension of your pen or pencil, is the simplest and most intuitive way to put your ideas into the Amiga. Whether you are an artist, animator, designer or engineer, EASYL quickly draws your attention to its' power, precision, ruggedness and ease of use.

Once installed in your Amiga 500, 1000, or 2000, EASYL is ready to work with Deluxe Paint, Draw Plus, Photon Paint, Express Paint, Professional Draw, plus many other popular graphics programs. No matter what the job, EASYL is just a pen stroke away. EASYL also leaves your mouse active and the mouse/joystick, serial, and parallel ports free for other uses. For a powerful way to express yourself on your Amiga, pick up the EASYL pressure sensitive graphics tablet. Chances are you won't put it down. Contact your Amiga dealer for a free demonstration, or contact one of the addresses below.
EASYL is also available for Commodore PC/XT/AT and compatible computers. EASYL technical support is available on BIX.



In Canada:
Anakin Research Inc.
100 Westmore Drive, Unit 11C Rexdale,
Ontario, Canada M9V 5C3
(416) 744-4246

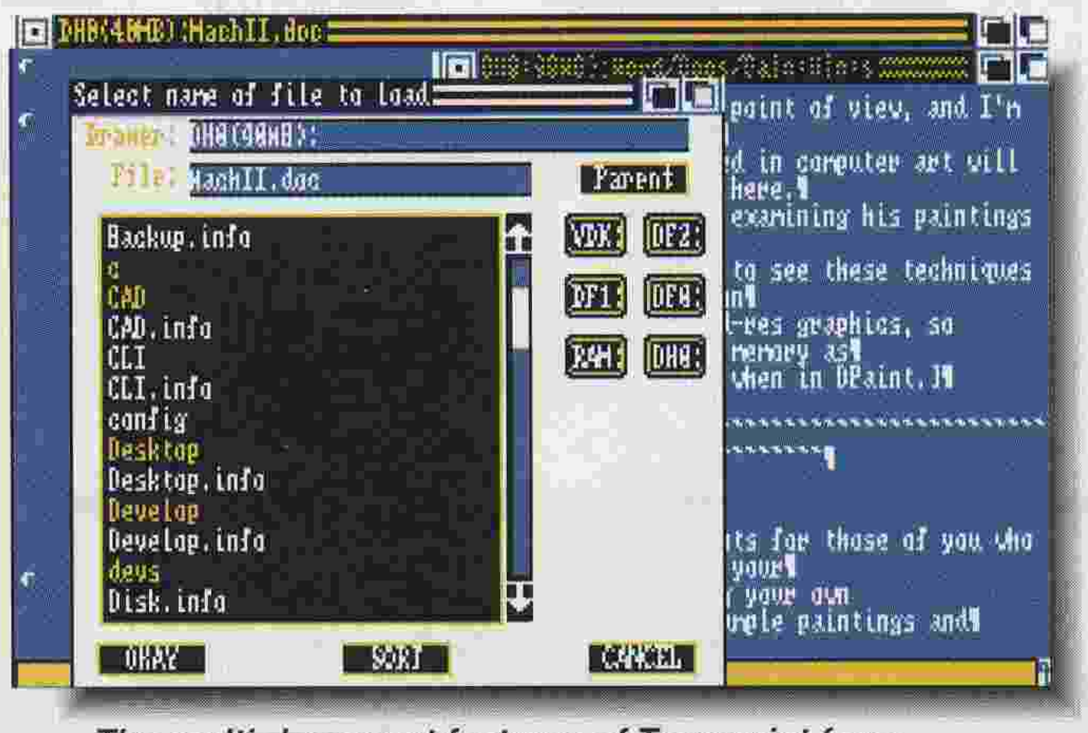
In the U.S.:
Inforite Corporation
1670 S. Amphlett Blvd., #201
San Mateo, Ca 94402
(415) 571-8766

Easyl is a registered trademark of Anakin Research Inc., Deluxe Paint is a registered trademark of Electronic Arts, Professional Draw is a registered trademark of Gold Disk Inc., Photon Paint is a registered trademark of Microillusions, Draw Plus is a registered trademark of Aegis Development Inc., Express Paint is a registered trademark of P.A.R. Inc.

NEW RELEASES FROM GOLD DISK INC.



Setting up a budget is no longer a chore with Desktop Budget.



The multi-document features of Transcript from Gold Disk.

GOLD DISK PRESENTS TWO NEW RELEASES TO THEIR HOME OFFICE SERIES

DESKTOP BUDGET and *TRANSCRIPT* have recently graced *GOLD DISK's* product line. TRANSCRIPT is an incredibly fast text editor/word processor. Regardless of your typing speed TRANSCRIPT will keep pace with your key strokes, yet the program is so compact that the entire word processor can be copied onto your favorite disc or hard drive directory. The program includes *TRANSEDIT* which performs all but TRANSCRIPT'S output functions. Also included is TRANSPELL, a 90,000 word spelling checker that can work along side TRANSCRIPT or stand alone. Easy access to text operations is provided by ten different ways to move the cursor, all by using the cursor keys alone orr with shift or alt. All the keyboard short cuts are listed in the pull down menus, allowing TRANSCRIPT to be quickly learned and operated with equal ease using keyboard or mouse. TRANSCRIPT will automatically generate indexes and mail merging.

DESKTOP BUDGET is an icon-based personal finance program. This user friendly program is as easy to use as Workbench. Every individual budgeting concern is represented by an individual icon. Budgeting and bookkeeping become as simple as point and click, and yet detailed and accurate transactions are provided by automatic report generation from your dot matrix printer. DESKTOP BUDGET assists in setting up monthly payments and automatically performs month end reconciliations and year end roll overs. The program even contains useful, built-in tools such as a full function calculator and personal icon editor.

TransScript
Desktop Budget
Gold Disk, Inc.
P.O. Box 789
Streetsville, Mississauga
Ontario, CANADA,
L5M 2C2
(416) 828-0913
(800) 387-8192
$69.95 (US & CDN) each.
512K required

PRESENTING A.M.A.S. ADVANCED MIDI AMIGA SAMPLER.

Released by *Michtron*, this full feature 8-bit stereo audio digitizer complete with a full implementation MIDI interface, all built into the same stylish wedge. The digitizer accepts mono or strereo inputs via its line input sockets and is provided with an extra microphone input socket for additional vocal signal input. The MIDI sockets are comprised of MIDI in, MIDI out, and THRU'.

The sampler/editor provides: left, right or stereo sampling; sampling rates to 28Khz; dual-time, real-time oscilloscopes(one for each channel); real-time spectrum analyzer; auto record trigger on input level; up to 8 banks on machines with two megs of RAM (200-250K per bank), with up to ten stereo samples per bank. If this is not enough you can save or load data raw or in IFF format. All editing facilities work in either mono or stereo.

A.M.A.S.
MicroDeal
576 S. Telegraph
Pontiac, MI 48053
USA
(313) 334-8729
$169.95 (US)



The editing window and load requester from the A.M.A.S. software.

LOOK OUT, HERE COMES DIGI-PAINT 3

ANNOUNCING DIGI-PAINT 3

The latest version of *NewTek's* best-selling HAM paint program, *Digi-Paint 3*, will be available this April. Digi-Paint 3 is now complete with anti-aliased fonts, user-controllable 3D texture mapping, true colorizing, super bitmaps, and overscan support features.

More specifically, some of the Digi-Paint 3's latest features include an extended set of drawing tools with resizable built-in brushes. The user-controllable 3D texture mapping enables more control over brush warping.

The program is now capable of over l billion virtual colors to create the best dither patterns. Its assembly code delivers the fastest response time of any HAM paint program. For the experienced users there is now a complete set of keyboard shortcuts. Also included is its image-processing software that transfers images between resolutions modes and display using NewTek's exclusive algorithms for the highest color and picture resolution.

NewTek also announced a HAM contest and an upgrade program for current users and users of rival paint programs. all registered Digi-Paint 3 owners are automatically entered in the jackpot. The Grand Prize includes a complete *Video Toaster* system with an Amiga 2500 and an all-expense paid trip to exotic Topeka, Kansas. Entry details are available in every package of Digi-Paint 3.

Digi-Paint Upgrade
NewTek
ll5 W. Crane St.
Topeka, KS 66603
USA
$99.95 (US)

SPOTLIGHTS

AN EXCITING NEW LINE OF ENTERTAINMENT SOFTWARE FROM CINEMAWARE:
THREE PREMIERE TITLES

Cinemaware Corporation announced Spotlight Software, an exciting line of enterainment software that features critically acclaimed games worldwide. "With the addition of Spotlight Software, people can look to Cinemaware for the finest fantasy role-playing, adventure, action-strategy, simulation and sports games," stated Cinemaware President Bob Jacob. The first three titles include Federation, Deathbringer and Total Eclipse.

DEATHBRINGER

Deathbringer is fantasy role-playing that relies on the player's interactive ability to achieve most goals, and only those characters who wish to shed your blood must be destroyed.

The land of Mezron is threatened by the resurrection of a long dead wizard of darkness. His wishes to seek revenge on mankind have terrorized the land. Five magical gems, protected by powerful beings, are the only defense against the wizard's depraved plans. The game takes the player far beyond a dungeon universe, as the player explores castles, towers, forests, and temples to locate the missing gems.

The game features an easy-to-use interface, digitized sound effects and superb graphics.

PRICE: $39.95 (US)

FEDERATION

This spotlight on adventure begins with low risk tasks, such as delivering packages to distant planets, players will work their way from Space Courier to Admiral of the Space Federation as they tackle fifteen increasingly difficult missions in a hostile univers. Federation has a built-in space flight simulator with a variable weapons system, complete navigation system, communications systems that let you communicate with other ships and a sophistiated shipboard computer. Federation is as close as it comes to experiencing an electrifying journey through space. Federation is an epic space adventure where time is endless, the universe boundless and one's future utterly terrifying. A game with over 8 million planets to visit, high-quality filled 3-D graphics and a professional music soundtrack.

PRICE: $49.95 (US)

TOTAL ECLIPSE

You become an archaelogical explorer who must travel through a giant pyramid to locate and destroy a secret shrine which holds the power of the Egyptian curse. On October 26th, l930, an ancient Egyptian curse triggered by the eclipse caused the explosion of the Moon and a cascade of colossal meteorites. This upset the ecological balance of the Earth, plunging civilization into a dark age of death and starvation.

Welcome to Egypt. Treasures and traps abound as the player explores a vast labyrinth with a revolver, a compass, and a wristwatch. As time runs out and dangers increase, the player encounters deadly mummies and other oddities in his search. Total Eclipse features FREESCAPE, a fast, smooth-scrolling solid 3-D system, players are given the impression that they are travelling in a massive Egyptian pyramid as they view their entire surroundings in a first-person point-of-view.

PRICE: $29.95 (US)

SPOTLIGHTS
CINEMAWARE
CORPORATION
4l65 Thousand Oaks Blvd.
Westlake Village, CA 9l362
USA
(805) 495-65l5

MOUSE PROBLEMS

ARE YOUR MICE DYING YOUNG?

VEGA TECHNOLOGIES can save them. Thousands of mice everywhere are rejoicing over the newly released *Leather Mouse Pad*. The Leather Mouse Pad comes in three traction grades: High for precise operation, Normal for normal operation, Low for fast movement such as games. Its dimensions are 9" x 10.5" and it is handmade with the finest leather.

The Leather Mouse Pad
Vega Technologies
3171 Iris St.
San Ysidro, CA 92073
USA
(619) 477-2024
$15.95 (US)

BATTLE SIMULATORS

RAINBIRD WAGES WAR WITH NEW RELEASES!

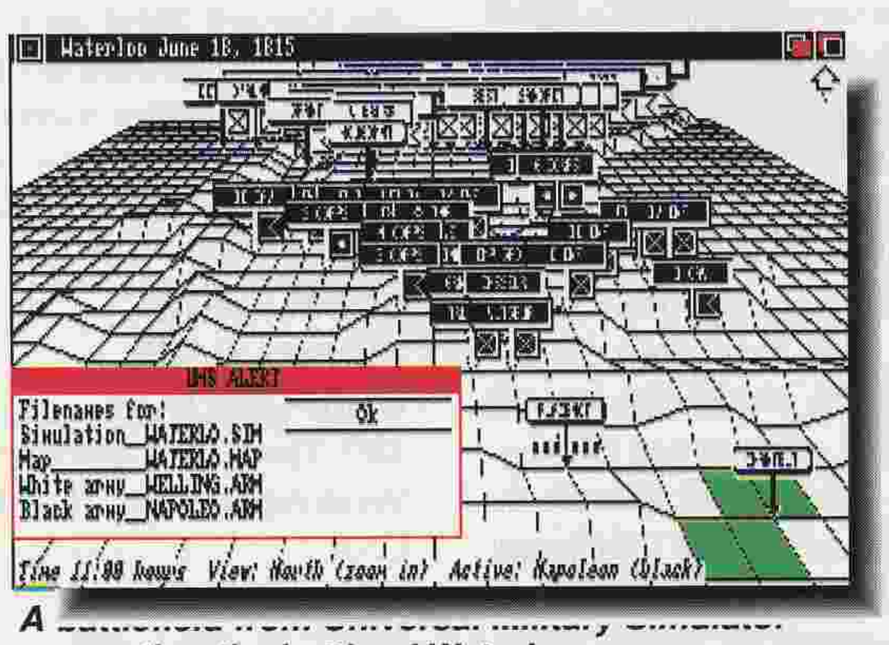
RAINBIRD continues their foray in the Amiga game market with their recent release of *UNIVERSAL MILITARY SIMULATOR*. This game, souped up for the Amiga includes digitized sound, color and multi-tasking. The game includes five pre-programmed historical battles: Gettysburg, Arbella, Hastings, Marston Moor and Waterloo. If this doesn't satisfy your conquering spirit than you can try Vietnam or the American civil war, which have also been released on scenario disks sold separately. Each scenario disk is comprised of three significant battles. If you have ever experienced any "what ifs?" as regards to some of these historical battles, now is your chance to do it right (if there is a right way.)

Rainbird has also recently released *CORRUPTION*, a text adventure with graphics. CORRUPTION is set in the city of London, make that the underworld of London. Where drugs, gambling and big money talk, where high finance is just as commonplace as low double cross deals. In the game you have finally become a partner in the firm, when you discover that you have been framed and are the chief suspect in an insider trading scandal. Your only reprieve is to be more devious than the rest.

Rainbird Software
3885 Bohannon Dr.
Menlo Park, CA 94025
USA
(415) 322-0412
Universal Military Simulator
$49.95 (US)
Corruption
$44.95 (US)



Universal Military Simulator from RainBird; here you see the option of accessing any of the available data disks.



A [illegible] re-creating the battle of Waterloo.

LIVING WITH A N.A.G.

LOOK-OUT! GRAMMA'S BACK AND SHE'S GONNA KEEP YOU ORGANISED.

You'll never miss another birthday, anniversary or important appointment with *NAG PLUS 3.0*, a handy new schedule assistant with the unique ability to verbally remind you in advance of upcoming events, up to 99 events per day.

NAG PLUS 3.0 from Seattle's *GRAMMA SOFTWARE*, is fully memory resident, runs in the background with other Amiga software, and synthesizes sounds using the Amiga voice and sound hardware. One time entry of events such as birthdays places them in the Perpetual Calender. Events or appointments can then be edited up to two years in advance. Reminders are then presented in any form you choose: as a screen flash, computerized voice, or as any one of 24 fully adjustable bells and whistles.

This program will even dial the phone for you and put you in touch person to person. Just point and click to any number on your screen with over six digits and your modem will automatically be dialed. To keep you organized there is a report generating facility that will print out a list of each day's appointments (for more than one person if necessary), or search the appointment database for individual appointment records containing specific key words. Additional features include a text editor for generating phone call notes, memos or quick correspondence, an on-line help facility and an AREXX port for initiating any timed event or action. To cap it all off there is a configuration program that enables you to customize according to your own personal needs.

NAG PLUS 3.0
Gramma Software
17730 15th Ave. NW
Suite 223
Seattle, WA 98155
USA
(206) 363-6417
$79.95 (US)

INTERACTIVE JAM SESSION WITH AEGIS

AEGIS ANNOUNCES INTERACTIVE MUSIC DISKS.

Aegis released *Sonix SoundTrax Volumes One and Two*, a series of high quality interactive songs for *Aegis Sonix*. SoundTrax will allow even the amateur musician to participate flawlessly. Each volume contains two full disks of songs.

Written and performed by Jon Rami, these disks offer the ultimate sound clarity by using clean sampled instruments. Jon Rami has performed with Stevie Wonder, Ray Parker Jr., the Drifters, among others. He has also worked for Roland, VOX, and Marshall Amps. "I'm very pleased to say that nothing like this is available for any other music programs," says Jon. "Being able to play along with these songs will bring the musician out of everybody."

Sonix SoundTrax Volumes One & Two
Aegis Development, Inc.
2115 Pico Blvd.
Santa Monica, CA 90405
USA
(213) 392-9972
$19.95 (US) each volume

LUCASFILM ENTERS THE AMIGA GAME MARKET

LUCASFILM ENTERS THE AMIGA ARENA

With the release of *"Zac McKracken and the Alien Mindbenders"*, *Lucasfilm Games* is hopping on the Amiga band wagon. This bizarre new game is centered around Zak, a journalist who writes for a supermarket tabloid, "the National Inquisitor." Zak loves to invent stories about possessed toasters, two headed turtles and vegetarian vampires. But when he discovers that an Inquisitor story about space aliens that have taken over the phone company and plan to reduce our IQs to single digits is true, he embarks on the adventure of his life.

Zak McKracken
Lucasfilm Games
P.O.Box 2009
San Rafael, CA 94912
USA
(415) 662-1745
$44.95 (US)
All Amigas



Zak McKracken and the Alien Mindbenders; beware of two-headed turtles, possessed toasters, carnivorous canteloupes, reincarnated rock stars, and vegetarian

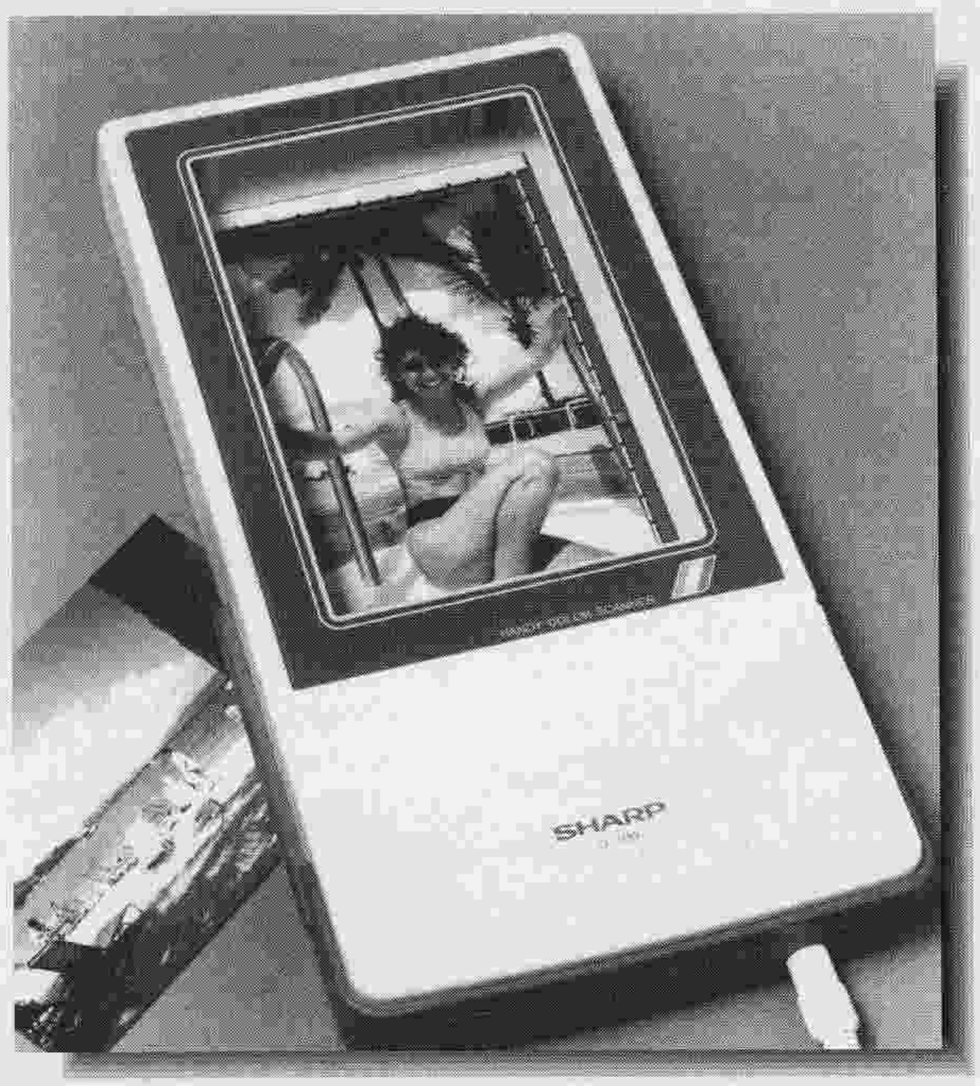
HAND-HELD SCANNER FOR THE AMIGA

WORLD'S FIRST HAND HELD COLOR SCANNER-AND IT WORKS ON THE AMIGA

Thanks to ASDG the SHARP JX-100 color scanner will be able to scan an area of 4" by 6" at 200 dots per inch and for the Amiga 500, 1000, or 2000. It will offer many of the same capabilities as Sharp's more professionally-oriented scanners, including the ability to do black and white, gray-scale and color scanning for high-quality desktop publishing.

Sharp will sell the JX-100 for approximately $995 (US). ASDG has not yet announced a price for ScanLab/100.

ScanLab/100
ASDG, Inc.
925 Stewart St.
Madison, WI 53713
USA
(608) 273-6585



The JX-100 hand-held scanner from Sharp. With a scan area of 4" x 6" is the worlds first hand held color scanner.

MEGGIDO ENTERPRISES RELEASES TWO NEW COOKBOOKS.

Now all you gourmet computer users can start to eat well, really well. *Meggido's Desserts cookbook* contains over 150 delectable delights to satiate your sweet tooth. The *Variety cookbook* covers the gamut, from soups and salads to sauces to entrees, 150 entries to keep them interested.

These cookbooks are available on disk and the actual files are in ASCII format. All recipes are edited for home-cookin', but if you tend to be more voluminous in your edible escapades than we would recommend the "institutional version." The recipes come with a display program that facilitates their display and hard copy printout. Don't worry, the recipes also have been nutritionally analyzed.

DESSERTS COOKBOOK
VARIETY COOKBOOK
Meggido Enterprises
P.O.Box 3020-191
Riverside, CA 92519-3020
USA
(714) 683-5666
$14.95 each

AEGIS GOES ON-LINE

Aegis announced the reinstatement of the *Aegis BBS*. Their BBS is on-line twenty-four hours a day and includes support for technical questions, warranty and update information, product announcements, beta test information, product demos, direct access to their programmers and more. The service is free, 300-1200-2400 baud, 8 Data Bits, No parity, and one Stop Bit. The BBS offers full color suport so ANSI terminal packages are recommended.

Aegis BBS
Aegis Development, Inc.
2115 Pico Blvd.
Santa Monica, CA 90405
USA
(213) 392-9972 [voice]

HELP FOR DEVELOPERS

APACHE TECHNOLOGY ANNOUNCES NEW CONCEPT IN SOFTWARE PUBLISHING.

In the past, in order for a developer to assure the successful distribution of his program he would have to go to a major publishing company. While larger publishers offer worldwide distribution, the developer has little or no say in the future of his product. Even the packaging, advertising and overall look of the product is at the mercy of the publishing company. By acting as a sales and marketing arm, *Apache* links with developers to help them distribute and publish their own products.

Getting more involved in the success of the products and drawing from the expertise of one of the most highly developed distribution teams assures the developer recognition in the industry as well as higher profit margins.

Steven Ackrich
Apache Technologies, Inc.
5341 Derry Ave., Suite C
Agoura Hills, CA 91301
USA
(818) 991-2244

DESIGNER DATA BASE

COMPLEMENT MIICROFICHE FILER

Software Visions has released *Designer Database series* for the Amiga. This package is a coblllection of many useful databases and macros, organised in a ready to use format. These off the shelf applications are designed to work with Software Visions' *Microfiche Filer* and *Microfiche Filer Plus* database engines.

The first two disks in the designer database series are the *Home I* and *Business I* disks. Home I will include classic applications such as: cassette, stamp, and recipe catalogs, a home budget, a personal inventory and more. Business I will include a daily calendar, mail merge (with macros), expense report, general ledger, a sophisticated invoicing/inventory application with macros for inventory processing, and more. Look for *Video/Graphics* and *Sound I*, *Home II* and *Business II* to follow these new releases.

Designer Database Series
Software Visions, Inc.
P.O.Box 3319
Framingham, MA 01701
USA
(508) 875-1238
(800) 527-7014
$39 (US) **Home I**
$59 (US) **Business I**

NEW RELEASE OF DIGITIZER, FUTURESOUND

APPLIED VISIONS RELEASES FUTURESOUND 500

This audio digitizer, designed specifically for the A500 and A2000, records in true stereo, features sampling rates up to 42,000 samples per second, and comes with an updated software editing package.

The *FutureSound 500* digitizer utilizes CMOS construction for low power consumption, and connects to the Amiga parallel port with a ribbon cable. In addition to the two direct line RCA inputs, a 3.5mm microphone input with built-in amplifier is also supplied. Input volume is adjusted with a sliding input gain control, and the hardware can monitor any input source through the Amiga prior to recording. The sampling rates are variable from 5042 to a maximum of 42,118 samples per second in mono, or up to a maximum of 19,889 samples per second in stereo.

The digital editing software provided with the package is an updated version based on the easy to use interface familiar to FutureSound users. New features include a software switchable output filter, support for expansion memory up to 8 megs, type in sampling rate and playback values, and an improved file handling system. Workbench 1.3 is supported, including the Fast File System, with provisions for hard disks, RAM disks, and VDK devices. The editor still incorporates 4 independent tracks, with a visual graph of the sound wave and mouse control of pull down menus and play/record controls. Amiga users can record voice or sound effects through the microphone input, and record directly from compact disk, records or tapes in mono or stereo. The software supports cutting and pasting between tracks, and editing small sounds sections or entire tracks with a wide range of special effects. Sampled sounds can be used in custom programs with the routines we supply or saved in the IFF format for use in commercial music, animation and video programs.

FutureSound 500
Applied Visions
One Kendall Square
Suite 2200
Cambridge, MA
02139
USA
(617) 494-5417
$119.95 (US)

DR.T SOOTHES THE PAIN WITH COPYIST PROFESSIONAL

This music transcription and scoring program features pull-down menus, scroll bars, and multitasking support. *Copyist* files can be transcribed from the KCS format, standard MIDI files, or SMUS. Scores can also be exported to other sequencer programs via KCS, SMUS, or the standard MIDI file formats. Scores can also be entered and edited directly on the PC using the mouse and a set of mnemonic keystrokes for fast, flexible input. Notes, text, symbols, and lines can all be placed wherever you desire in a page and can be separately moved or deleted.

Copyist includes a full complement of musical symbols; Treble, Bass, Alto, Tenor, Soprano, and Percussion clefs; guitar chord grids. The Copyist comes with an extensive manual containing easy to follow tutorials, and a comprehensive index. Dr. T's offers telephone technical support to registered owners and publishes a quarterly newsletter newsletter including advance applications of the program.

The program supports Epsom FX, LX, and HP Inkjet compatible dot matrix printers and prints in draft or quad density quality mode. Other printer support includes HP Laserjet Plus or HP Laserjet series II, and HP Deskjet. Additional printers are supported through the standard Amiga workbench utilities.

Copyist Professional
Dr.T's Music Software
220 Boylston St.
Chestnut Hill, MA 02167
USA
(617) 244-6954
$275 (US)

INTERNATIONAL SOCCER

A unique and dynamic soccer game is now available for your computer screen with hires graphics. This exciting game of movement, teamwork and skill utilizes an optional adapter (available from *MicroDeal* for $14.95 (US) that allows four joysticks simultaneously.

You create the challenge. Choose weather conditions such as rain or shine, high winds or decide if you want trickier night shadows. In addition, you form your team. You can play two players against two, or field a team of up to three against the computer, just determine the midfield players and attackers.

The ball is at the center of *International Soccer*. Increase the stategy by ground passes, chips and large clearances. Intensify the competition with throwins, corners, goalkicks and penalties. Assume control of the ball, attempt to tackle, coach your goalie to successfully deflect the ball. All this strategy guarantees mounting excitement.

The time is displayed in intervals of 5, l0, 30, or 45. Half and full time scores are displayed on the electronic scoreboard. The competetive atmosphere is completed by fans who cheer you on to the World Cup, and by an onscreen referee that ensures fair play.

International Soccer
Microdeal
Paul Deckard
Public Relations
576 S. Telegraph
Pontiac, MI 48053
USA
(313) 334-8729
$39.95 (US)

COMMODORE DEALER TRAINING PROGRAM

The *Commodore-AMIGA* dealer training program includes application-oriented seminars, a dealer presentation kit and a pre-configured Amiga system. The program is marketed for education, home and professional users. The intention is to support dealers selling the Amiga personal computer into graphics design, desktop publishing and desktop video markets.

Seminars begin this month and will continue in major cities throughout the year. During the hands-on seminars, dealers will be able to create professional presentation materials. The Amiga provides the dealers with ways to reach a profitable market since there is a great need for computers with graphics and video applications.

WORKSTATIONS

Commodore offers its dealers pre-configured Amiga systems to demonstrate specific applications so that customers get the appropriate hardware and software.

The graphics design workstation contains the Amiga 2000HD, with an internal 40MB, the Summagraphics Tablet, Hewlett-Packard Paint Jet Printer, NewTek's DigiView Digitizer and appropriate cabling.

Dealers in the desktop publishing market will receive an Amiga 2500, the flickerFixer by Microway, a Monitor by Multisync, Nec LC890 Post Script Laser Printer and cabling .

For the desktop video market, a bundle built on the Amiga 500 will be available.

Dealers will be supplied with a sales kit that provides market information, demonstration and sales guidelines. Commodore will also supply Amiga Application videotapes to distribute to potential custormers. Finally a sample direct mail piece will also be included. For further information pleasecontact:

COMMODORE
Computer Systems Division
1200 Wilson Drive
West Chester, PA 19380
USA
(215) 431-9100

DAWSON INSTITUTE OF PHOTOGRAPHY

VIDEO AND AMIGA COMPUTER WORKSHOPS

Video 8- Home Video
Introduction to Video
Video Production
The Video "Director"
Video Editing
Video Editing Techniques
Video Weddings
Digital Video Effects
Amiga: "Desktop" Video l
Amiga: "Desktop" Video 2
Amiga: Animaiton l

Registration:
April ll & 12 1989,
12:00-7:00 PM

(Late registration will be accepted if there is space available)

FOR FURTHER INFORMATION:
CALL (514) 866-6588

A CALL FOR AMIGA GRAPHIC ARTISTS

ATTENTION ALL AMIGA ARTISTS:

With all the art fantastic artwork being created on the Amiga personal computer, there exists a need to provide a medium other than the computer to display this work, enter the idea of some experts in the field of computer art.

The *ABACI Gallery of COMPUTER ART* in association with *MACHLAN Enterprises* is compiling an art book that will be composed exclusively of computer fine art created on the Commodore Amiga Personal Computer. Computer artists interested in submitting their artwork for consideration should send any number of duplicate slides (no originals will be accepted). Each of the submitted slides should include, title, artist and copyright. All artwork should be original, preferably hand-drawn, created by the artist(s) submitting the work. Artwork must be created or designed using the Amiga personal computer as an art tool.

Art Editors for the book include Daria S.H. Barclay, a known expert on computer fine art, and Richard A. Machlan, President of MACHLAN Enterprises. Two other book proposals coming up later this year are a MACINTOSH computer art book (submission date: July 1 through September 30, 1989) and a IBM computer art book (submission date: October 1 through December 31, 1989).

For more information:
Contact Daria at
ABACI Gallery
(503) 228-8642
or Richard at
(503) 639-4631

All interested applicants should send entries to:

ABACI Gallery of Computer Art
312 NW 10th
Portland, OR 97209
USA
(503) 228-8642
Attention: Daria Barclay

DEADLINE FOR SUBMISSIONS:
June 30, 1989
(No exceptions)



SMOOTH AS SILK

I am always delighted when I find creative applications that my Amiga cannot only accomplish, but do so with a definite advantage. Creating and producing art and designs for silkscreening on shirts, or other items for that matter, is this type of project.

HOW SILKSCREEN WORKS

Silkscreening is a method of "printing" images with varying numbers of colors. This is accomplished by stretching a "screen," which is a finely meshed fabric (at one time it was silk) across a rigid frame. A stencil is then adhered to the screen, with the design appearing as holes in the stencil. This allows paints, dyes or inks to be pressed through the screen in the image areas and transferred to the surface underneath.

These days it is common for a modern version of the technique, known as photomechanical, to be used. Instead of handcutting the image from a stencil, designs are photographed as "film positives" which are black images on clear film (the opposite of a photo "negative"). A special masking material is adhered to the entire surface of the screen, the film positive is placed flatly against it and then intense light is cast on it for a certain period of time. This masking material chemically reacts to the light

By Christopher Kohler

Designing Silkscreened Shirts With Your Amiga

by hardening. After this exposure, the areas beneath the black image on the film positive which have not received the light remain soft and can be removed through a washing. Thus, the image exists as "holes" in the hardened masking material and ink can be pressed through.

Typically, a separate screen must be used for each individual color which will appear in the image. Therefore, it is important to have black and white copies of each of the different colored areas within any given image, so that separate film positives may be used. The more sophisticated processes will allow very good "composite" color, which is similar to four-color printing on paper, whereby many colors are created by using varying combinations and dots of the basic colors. Also, sometimes certain effects can be achieved by using several colors on one screen.

SILKSCREEN APPLICATIONS

One of the more common and rewarding applications of silkscreening is to produce designs on clothing. In my example here, I designed a shirt for my local Amiga user group. We produced both T-shirts and longsleeved sweatshirts.

These shirts were then sold to both members of the user group and to the public at meetings and other events. This enhanced the identity of the club, provided a good vehicle for promotion and even produced a profit to help finance the group activities. This kind of project can be just as successful for just about any organization. I've talked with other local Amiga users who are now beginning to use their computer art in commercial silkscreen businesses, showing that it's not only fun but also a viable source of business.

DESIGN FACTORS

I decided to base this design on letterforms. I meant to establish the group's identity strongly and with so many words it could quickly become either cluttered to include additional elements or illegible to make the words too small. But, also, I hesitated at attempting to settle on one specific picture or image to represent the group. I felt it was most important to present the name, adding some stylistic touches.



Original BitMap



Blue Separation



Red Separation



White Separation

The design centers on the word "Amiga." This was shortly after Commodore had redesigned the Amiga logo. We had decided that it might not be acceptable to use the actual logo, so I worked up a version that approximated some of the new approach but which was original. I also incorporated the "Boing Ball," which was the symbol originally associated with the Amiga and is still a favorite design for so many Amiga enthusiasts.

The silkscreener we used was able to produce designs with many colors - as many as eight or more, had we wished. However, it's not always better to use many. Here, I felt that we would have a stronger design by using fewer colors. This was similar to my use of medium resolution. I've always felt that it can often be a mistake to avoid the lower resolutions and the "jaggies." This is an inherent characteristic to this medium and I see absolutely no reason to apologize for it nor hide it. I consider it "texture." So I proudly chose to use it clearly and boldly.

There was a nice selection of shirt colors available from the outfit that was doing the silkscreening. Most silkscreeners carry their own lines of clothing articles, for your convenience, and will most likely offer you a choice. However, you are free to locate your own source of garments which you can provide to the silkscreener. You might like to look up clothing wholesalers in the yellow pages to explore your options.

Since the garments are available in a wide range of colors and fabrics, this should be considered when developing your design. The inks and paints are usually rather opaque, meaning that your design should print clearly and strongly on just about any color fabric. But, certain combinations of colors are more striking and pleasing.

Just as DeluxePaint opens to a deep

(continued on page 104)

INTERFONT



INTERFONT

3D object font designer

With the increasing popularity of ray tracing programs on the Amiga, an urgent need for 3D designing tools has emerged. Due to the complexity of three dimensional work, software designers have a new challenge in creating the ultimate 3D drawing tool, but also are facing the problem of objects' incompatibility between different rendering systems, each having its advantages and inconvenients. The first commercial 3D conversion tool for Amiga, InterChange was introduced by Syndesis about one year ago. Today, they complete their package with InterFont, a font designer and conversion tool able to generate 2D and 3D texts.

InterFont comes bundled with Syndesis's previous product: InterChange. In fact, these two programs will run concurrently to effect conversion between different object formats. Since you may have already heard of the InterChange conversion module, we will concentrate only on the 3D font programs. InterFont itself consists of two modules: an object font designer and a conversion module. Everything comes on one non-protected disk along with the manual and a quick reference card. The InterFont system works with WorkBench version 1.2 or greater and with any amount of memory, however, processing of large fonts may require more than the basic 512K.

The well written manual is contained in a three ring binder and divided in seven chapters related to each specific module. Since there is some hierarchical relation between these modules (except for the font designer) it is necessary to read carefully the instructions, but if you had previous experience with InterChange, this will not be too difficult.

THE FONT DESIGNER

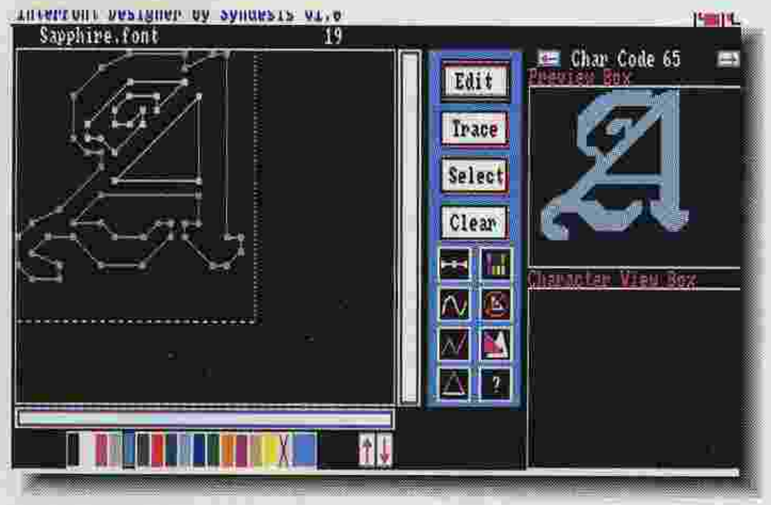
The biggest difficulty encountered, when trying to draw high quality resizeable fonts, is to allow surface expansion or contraction without losing the characters' basic shape (i.e. curves must remain as curves, not become stairs). If you want to use standard Amiga fonts, which are bitmapped fonts composed from many small dots, in a 3D rendering software or a line drawing program, they could appear, once magnified, as made from large squared dots. Instead, we must use fonts composed of polygons, just like any other object we use in 3D programs. Any character can be expanded or contracted by changing the co-ordinates of the points where the polygons' borders are joined and the rendering program will do the rest. The InterFont designer program is mainly a polygon editor used to create the shapes for all characters of a font, making an entirely new font style, or using an existing bitmapped font as a model.

InterFont designer's screen looks like many paint programs, with a working window, palette, TOOLS gadget and menus. The creation of an InterFont begins by loading an Amiga font, with all its basic information, in memory; the font width and proportion will also be used by the created polygonal font (also called interfont). Standard requesters are used to select fonts to be loaded, but a good feature is a NEW FONT gadget which brings a new requester to allow selection of a new disk/directory as the font location.

Once loaded, the font's character "A" appears enlarged in the character edit box, and in its natural size to the lower right of the screen, in the character view box. A gadget allows scanning of all the character codes while you can directly enter the code in a requester. As soon as you choose a new code, the corresponding character is displayed. From that point, all you have to do is to reproduce the character shape in the edit box, using the tools provided.

Clicking on a small triangle, in the TOOLS gadget, will make this polygon appear in the edit box, over the bitmapped model; you must then click and drag the three control points of this triangle over the edges of the model character, and the lines between those points will expand as rubber band. Clicking on the TRACE gadget will

InterFont user interface using InterFont typeface "Sapphire".



By Marthe Corriveau

generate new intermediate points which must be dragged and then clicked in place until the whole contour of the character is completed, just like adding pins to put the rubber band in place. At anytime, you can select or deselect points using some gadgets; selected points can then be copied, erased or colored. A SPLINE gadget is used to bend the contour line in a particular curve, calculated from the position of currently selected points.

While you create new shapes, the normal sized object appears in the preview box, to the upper right of the screen. Every time you create a new polygon, you can choose one of 16 colors from the palette, so a character may consist of several polygons with different colors. Also a "hole color" makes polygons appear to cut through any polygon on which they lie. When polygons overlap, the topmost (last added) polygon will cover the others when the character is redrawn in the preview box.

When a polygonal font is completed, you can save it with the "SAVE INTERFONTS" menu and reload it at any time for edition. This particular type of font can then be used to generate two or three-dimensional objects with the conversion module, as described later.

The process of building characters using polygons is not an easy task, and it takes a lot of patience and determination, even if InterFont provides all the necessary tools. I wonder why they did not include a function to automatically reproduce a character's shape with polygons, since a couple of mathematical functions should do the trick. The one frustrating thing is that some bitmapped characters are justified to the extreme left of the character edit box, almost covered by the box border, making it difficult to position or edit points to the left side of the character; the box has zooming and positioning gadgets, but they do not allow to center the picture. Also, it is sometimes difficult to select points, even with the cross-hair pointer, because this one must be positioned exactly over the desired point. It should be possible to design a more tolerant pointing function. However the program works fine and comes with several ready-made interfonts which can be used to generate nice objects.

THE INTERFONT CONVERSION MODULE

Once you have a couple of polygonal fonts on hand, you can generate 2D or 3D objects by assembling them into words or phrases (and extruding them for 3D). This is how the conversion module can help. The InterFont system is one good example of multi-tasking and inter-process communication. The InterChange program must be launched first for the InterFont conversion module to work, then the appropriate translator module (for generating Sculpt-3D, Videoscape 3D or AegisDraw Plus format) must be run, and finally the Interfont Module itself. All these can be run from CLI or using WorkBench icons.

In fact the job of generating 3D text will be separated in three tasks. First, you must enter the InterChange window and select the directory/name of the Interfont you want to use to generate your text, then select the appropriate output format and the output directory/name. After clicking the CONVERT gadget, watch the progress messages telling you what character code is being processed.

Once finished, the Interfont conversion module window will automatically pop up in front of the others, and wait for you to enter your text specifications. This window can receive five lines of text. For each line you select, you can enter text and characteristics such as: justification (left, right, center), style, height, depth texture and backsides (for 3D), smoothness aspect (for spline curves) and a clipping option to handle crossed polygons. These settings can then be saved and retrieved, or reset to default parameters.



InterFont Conversion Module window open on the Workbench screen

After entering text and values, just click on the CREATE gadget; the window will go back behind all the others, while InterChange will take over informing you of the creation progress. The resulted object file will be saved as specified and from then on, can be used with the targeted rendering software.

Despite the apparent complexity of the multi-window system used in InterFont conversion process, the task is easily accomplished, assuming that your fonts are complete (no missing characters) and don't have illegal polygon crossing (InterChange will inform you of any error during conversion). The overall process of building 3D text only takes a couple of minutes and gives you a choice of styles and dimensions.

A first of its kind, the InterFont system allows to create polygonal fonts, making generation of three-dimensional text an easy task. The interface used to design fonts is not a breakthrough, and needs a little more polishing, but otherwise performs honestly. The included InterChange conversion module is, by itself, worth the price for its sharable objects between multiple 3D rendering programs, the InterFont conversion module and the ready-made polygonal fonts, it will be a gratifying tool indispensable to everyone interested in digital imagery. ❑

InterFont

Syndesis
20 West St.
Wilmington, MA 01887
USA
(617) 657-5585
$119.95 (US)

PageRENDER 3D

What? Yet another rendering and animation package for three-dimensional graphics? Every once in a while, software surfaces that offers the user unique features and options that were previously unavailable, or impossible to achieve, on a micro-computer. PageRENDER 3D is such a program.

Created by Michael Abrams, and published by Mindware International, PageRENDER 3D is for the most part an outstanding product that will definitely find its way into the software bag- of-tricks of many a professional video animator.

Being more of an animation tool than a 3D object modelling program, the simplicity alone that this package allows in the creation of spectacular animated logo sequences makes it worth its weight in gold!

THE INTERFACE

As soon as the PageRENDER 3D screen pops up on your Amiga, you can see the differences between it and other programs of this type. PageRENDER actually offers a WYSIWYG work area! You get one three-dimensional view, which features an XYZ axis guide. Of course, there are no limitations to either object or observer placement and movement within the 3D universe that the screen represents.

PageRENDER supports all possible Amiga resolutions, display modes and page sizes, including overscan and HAM. Graphics may be generated as wire frame, filled outlines, and filled shapes, with shading if light sources are turned on. Several levels of dithering are available to enhance your graphics, as well as pseudo ray-tracing. A couple of unique modes present are Stereo-Vision and X-Specs 3D, which actually give you the ability to create and edit animated sequences in 3D with either the old red and blue 3D glasses or Haitex Resources' X-Specs.

All the standard tools you would expect for the creation and manipulation of 3D objects are present, as well as an extensive object and font library. Most of the tools, such as Stretch and Rotate feature on-screen representations of their effects before the command is executed. Nearly all of PageRENDER's menu and gadget commands may be implemented by typing in the command at a prompt in a small console window known as the 3D> CLI. In fact, whenever a menu or gadget is selected, the result is always echoed in the 3D> CLI window. There is also a handy "repeat last command" gadget.

SO, WHAT'S SO UNIQUE?

Among the options that make this program different from others of its ilk are the ARRAY commands. These commands will reproduce the work object(s) and place them in either an array or a precise order. You may choose from two types of array: rectangular 3D array and horizontal hex array. The first will space objects in the X,Y, and Z directions in an orderly manner, while the latter will space objects in a hex or honeycomb arrangement.

The fun doesn't stop there! Once you've created an array of objects, you can take that array and twist it, or modify it into such things as a dome, sphere, funnel... or even a crevice! These options alone allow for the simple creation and manipulation of dozens of 3D objects in a choreographed environment.

Now let's look at movement options. Of course you may simply move an object from one place to another by indicating a direction and distance, or invoke absolute movement, which allows you to move objects to specific points relative to the origin as well as the XYZ axis. In fact, this is where most 3D animation programs end with their motion options.

Not so with PageRENDER 3D, Abrams has cleverly added a few twists for defining movement: he has incorporated four movement systems into the program, the first being the Cartesian co- ordinate system, which is the default, and is similar to what you would find in VideoScape in its handling of movement, the second is the Spherical

---

By Nick Poliwko

co-ordinate system, giving you three possible directions of movement, such as radial, east-west, or north and south, which are all relative to a sphere. The third is Cylindrical, which combines movement features from both Cartesian and Spherical systems, and finally, Tetrahedral, which is based on a regular tetrahedron, a figure bounded by four equilateral triangles.

Needless to say, these systems give the animator a lot of leeway and control in object motion, as well as make what would be a complex process with most other products a simple act.

CONCLUSIONS

PageRENDER 3D has a lot going for it, but it may not be THE program for everybody. As I've mentioned previously, the strong-point I find for PageRENDER are in animations requiring a number of objects that move in choreographed sequences, such as logo animations, and used in this stead, there is nothing else out there that comes close to touching this program in its abilities.

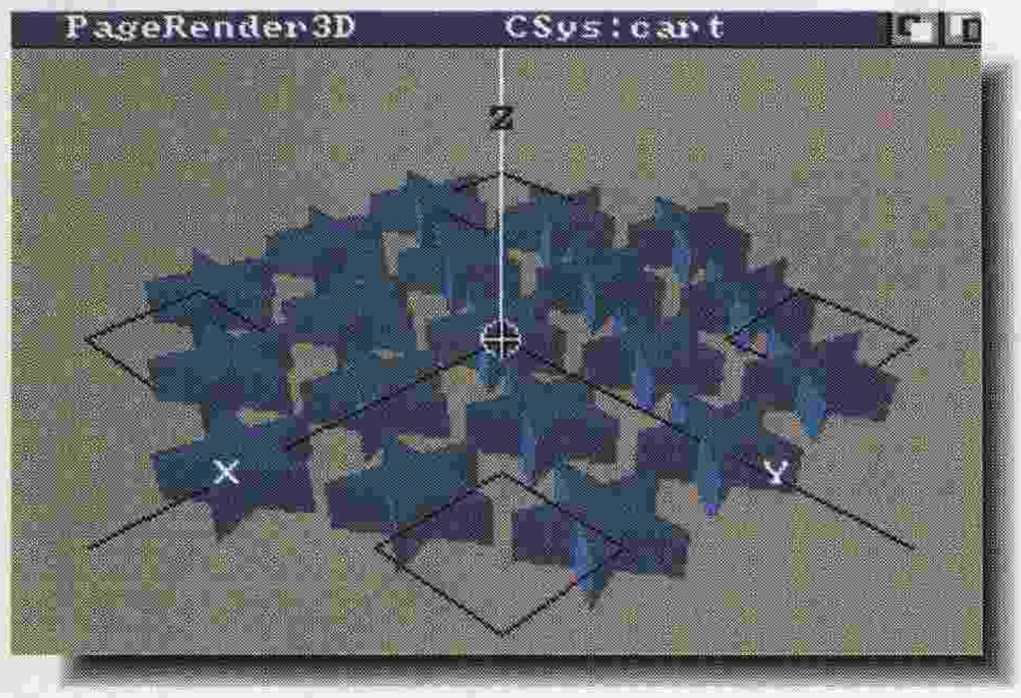
There are, of course, some things that I would like to see, like more keyboard equivalents, as well as some minor alterations to the way some requesters appear, but these are little details which really do not interfere with what the program does best.

I should mention that there is also a 68020/68881 version of the program, and from what I can tell, both it and the 68000 beta versions that I've been playing with are pretty stable, so I would expect a nice solid release version of PageRENDER 3D. ❑

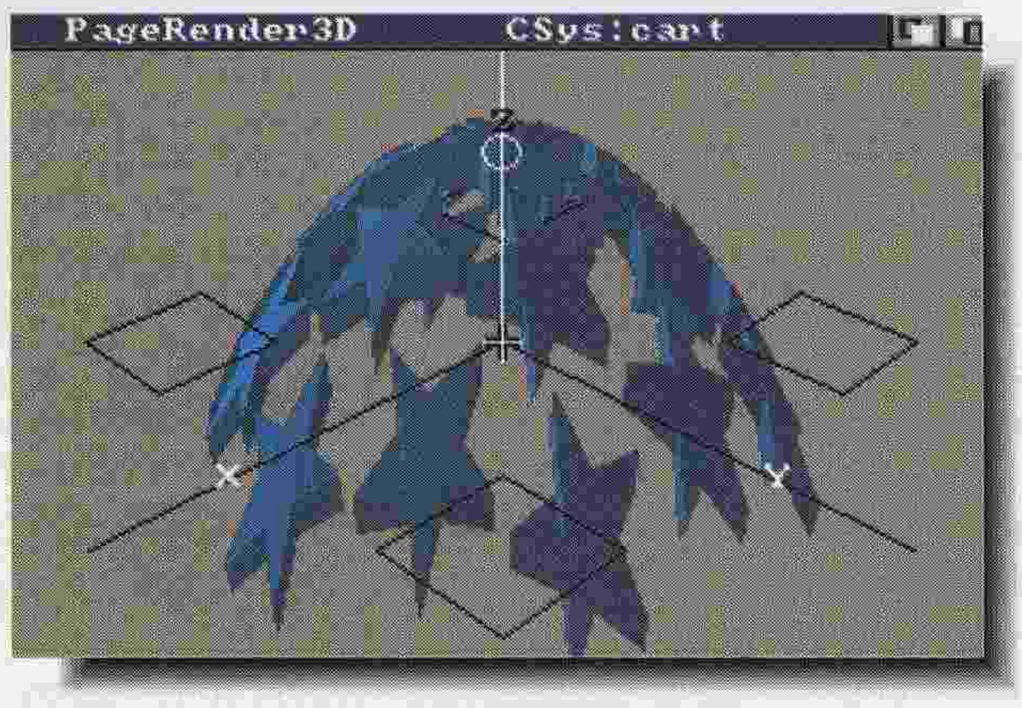
PageRENDER 3D
Mindware International
110 Dunlop St. West
Box 22158
Barrie, ONT L4M 5R3
CANADA
$159.95 (US)



The PageRENDER 3D work screen. Menu bar and gadgets may be removed from the screen display, which also supports overscan.



An example of an object reproduced as a hex array.



... and now the hex array modified into a dome!



PageRENDER 3D makes use of the CLI, and all commands are transcribed as they are implemented.



The Animation Controller

PAGEflipper Plus F/X (abbreviated PFX) is a full screen animation program distributed by Mindware International and oriented on desktop video production; it is not a 3D animation package (Mindware International is planning to release one soon).

The program is not copy protected and requires 512K with one disk drive (two preferred) and AmigaDOS version 1.2. It is highly recommended to have more memory since many of the tutorials described in the manual will take up to 1 MB to complete, but a large number of basic steps can be performed on a 512K system. The documentation indicates development has been exclusively in assembler; this should give the best performance in full-screen animation. The resulting program takes about 100K of memory, most of which will be FAST RAM if available, saving CHIP RAM to satisfy the display constraints of the Amiga.

The manual is well laid out and accurately describes all the screens, requesters and functions of the program. It may seem, however, very technical to the novice Amiga owner because of all the particular concepts mentioned from the very first pages without any extensive explanation (the first section jumps right into bit planes and color registers). But we have to admit that a lot of prerequisites are to be considered when we enter the world of computer animation.

The first concept we have to familiarize ourselves with, involves three components: Slaves, Intermezzos and Masters. Slaves are animation sequences running concurently and "sharing" bit planes. For example, using five bit planes in low resolution allows to run a two bit planes animation slave in parallel with another three bit plane animation slave (or any other combination using all five bit planes). The transitions between two sequences, like a vertical blind fade, are special cases of slaves.

Intermezzos are used in the middle of a sequence or between two segments coming from different disks, for example. They are also used to allow chaining of different-format animation sequences, so you can have, say, a HAM mode introductory section, followed by a lo-res body and a hi-res credit screen (you may have to include brushes into that sequence, instead of full screens, to save chip memory!).

Finally, masters are the supreme entities, invoking and coordinating the slaves and intermezzos.

PFX offers 76 built-in special effects or transitions (blinds, dimmers, mosaics, rectangles, etc...) which are treated as 1 bit plane slave animations. They are resolution and mode independent, but their best visual impact may be found at certain resolution levels so they have been named accordingly by their designer.

When it comes to long sequences, chaining across disks can be a very important issue; it may be performed here using slaves. Since slaves share buffers, there is no theoretical limit to the number of disks we can chain with them. The only restriction, however, will be that all segments are the same resolution and mode and use the same number of bit planes.

PFX uses a special language to write scripts, but fortunately you don't have to learn it to be able to produce complex animations. In fact, when we use the menus and various tools to build a simple animation sequence from a list of pictures, the script appears automatically on the screen and can be edited, then "compiled" and finally executed for animation playback. The language used by the program is made of about 50 different statements. They are described in the manual with their particular syntax and application notes, to allow the advanced user to take the best out of this powerful program.

Scripts can be manipulated with a built-in context sensitive editor; if necessary it can help the user by displaying a list of the options allowed for any particular statement pointed at. Most of the functions are accessed through on-

By Michel Feugeas

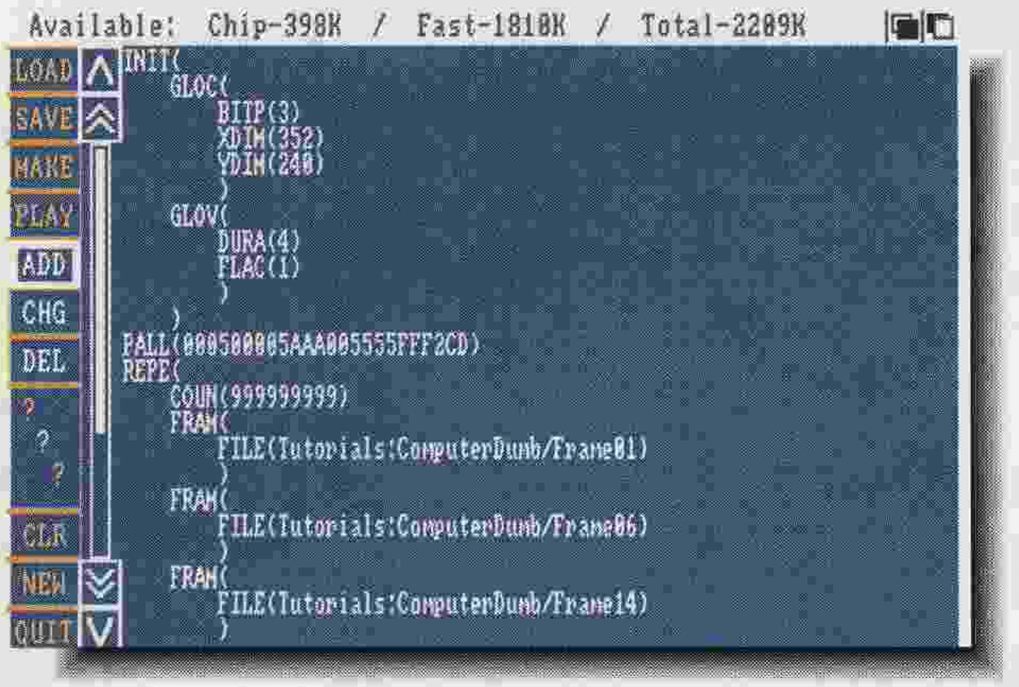
screen gadgets instead of drop-down menus, which reduces the number of steps required to perform a task. Since all functions cannot fit on a single on-screen menu, you gain access to sub-menus containing all the features required. The developers have chosen to use command names rather than fancy icons to save precious CHIP RAM for your real display needs.

To allow a certain degree of compatability with other programs, Mindware International has included an "ANIM TO IFF" utility, enabling PFX to convert Aegis VideoScape and Aegis VideoTitler animations to IFF pictures and later reproduce or extend them with its own features. PFX also can produce a bootable player disk with a very compact (less than 30K) standalone player, for your compiled animations. You can also produce multiple disks presentations packages.

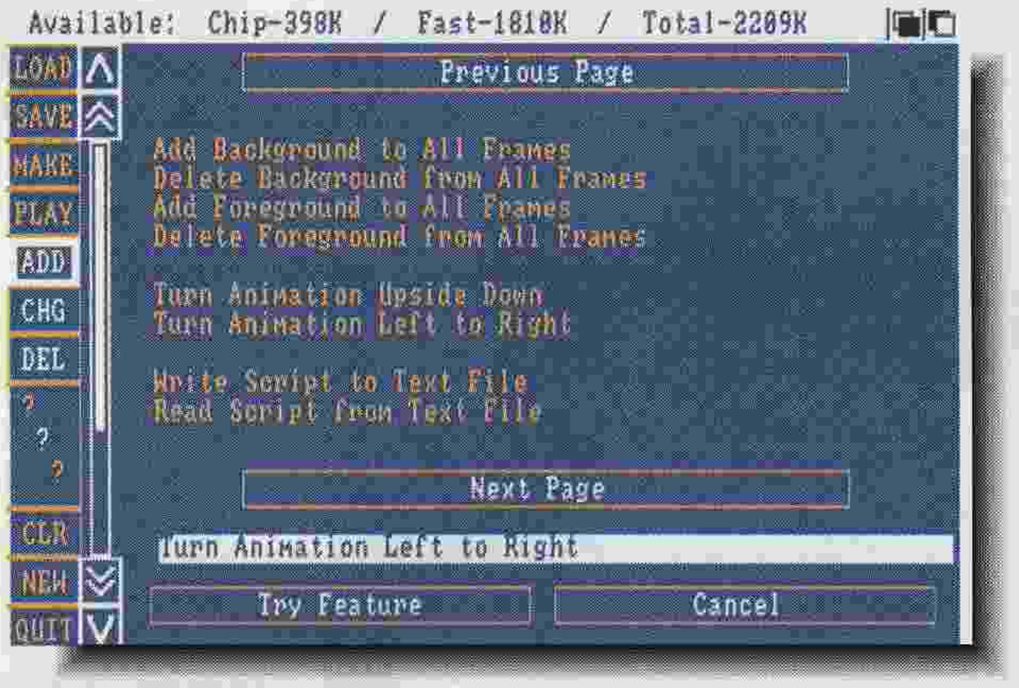
In addition to the powerful functions provided, PFX also has a set of special features wich includes: adding (deleting) a background or a foreground to all frames of a segment, turn animation upside down or left to right, save scripts to text files, and single step through animations while saving frames in IFF format files.

Among the wide variety of programs one can find for microcomputer animation production, PFX is noticeable by its functionality and lack of fancy gadgetry. Although its creators have decided not to call it a "professional" package, we must say that it will allow more than a lot of so-called programs and will also perform better. It will use the best of your Amiga to produce with simplicity what an low-cost computer like this one can produce: quality desktop video. ❑

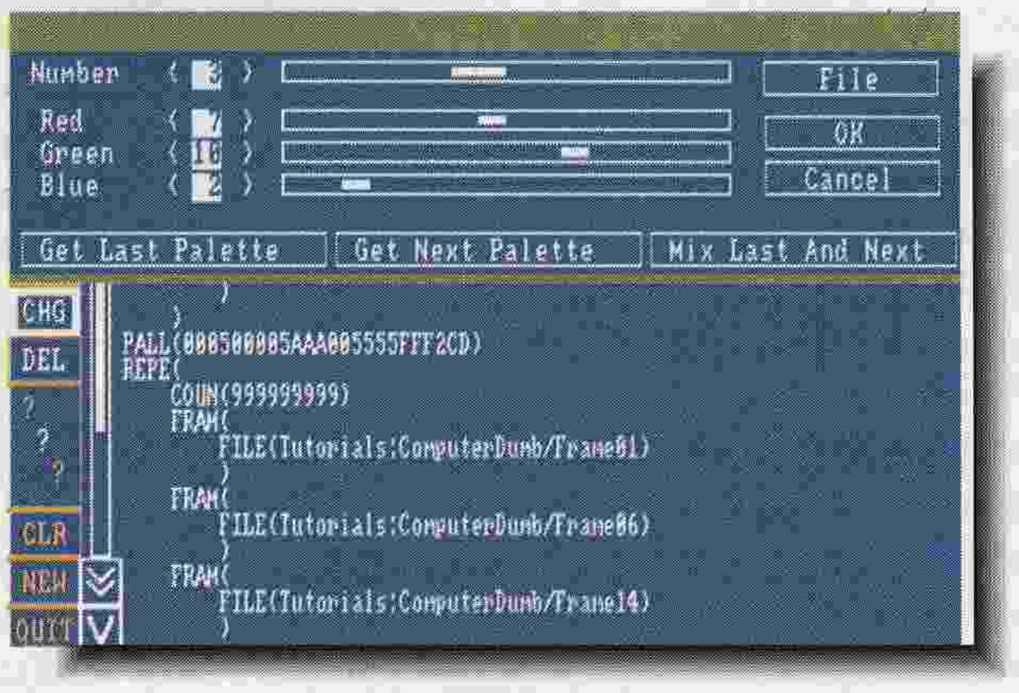
PageFlipper Plus F/X
Mindware International
110 Dunlop St. W., Box 22158
Barrie, ONT L4M 5R3
CANADA
(705) 737-5998
$199.95 (CDN)
$159.95 (US)



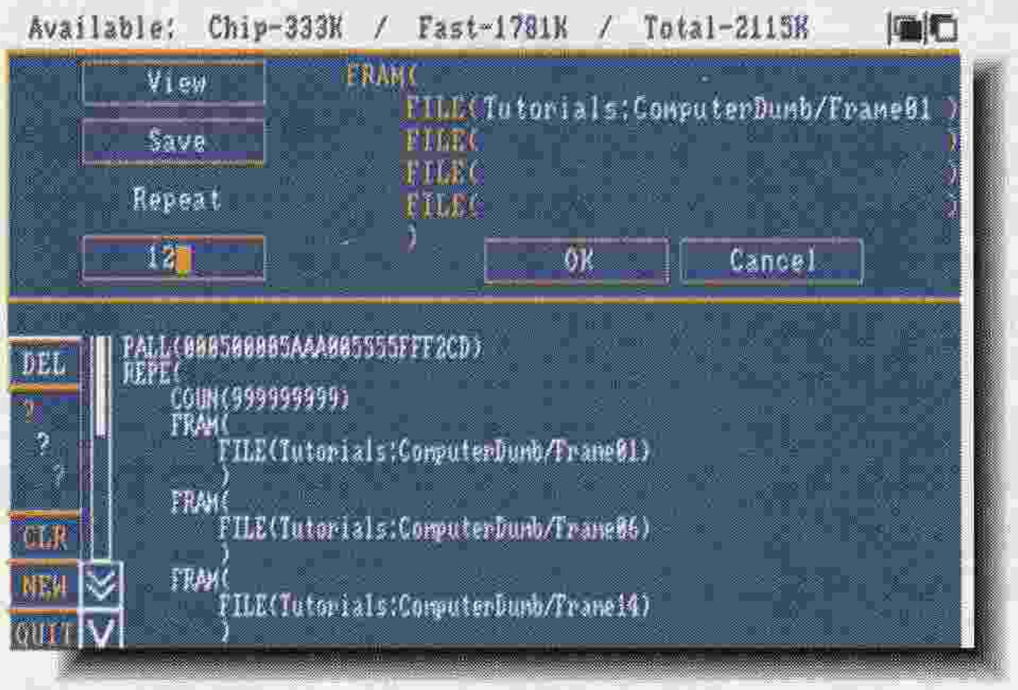
PAGEflipper Plus F/X features an exceptional and very user-friendly script generator/editor screen. Just about the entire script is generated through mouse control.



Just click on the "???" button and the first of three special function screens will pop-up.

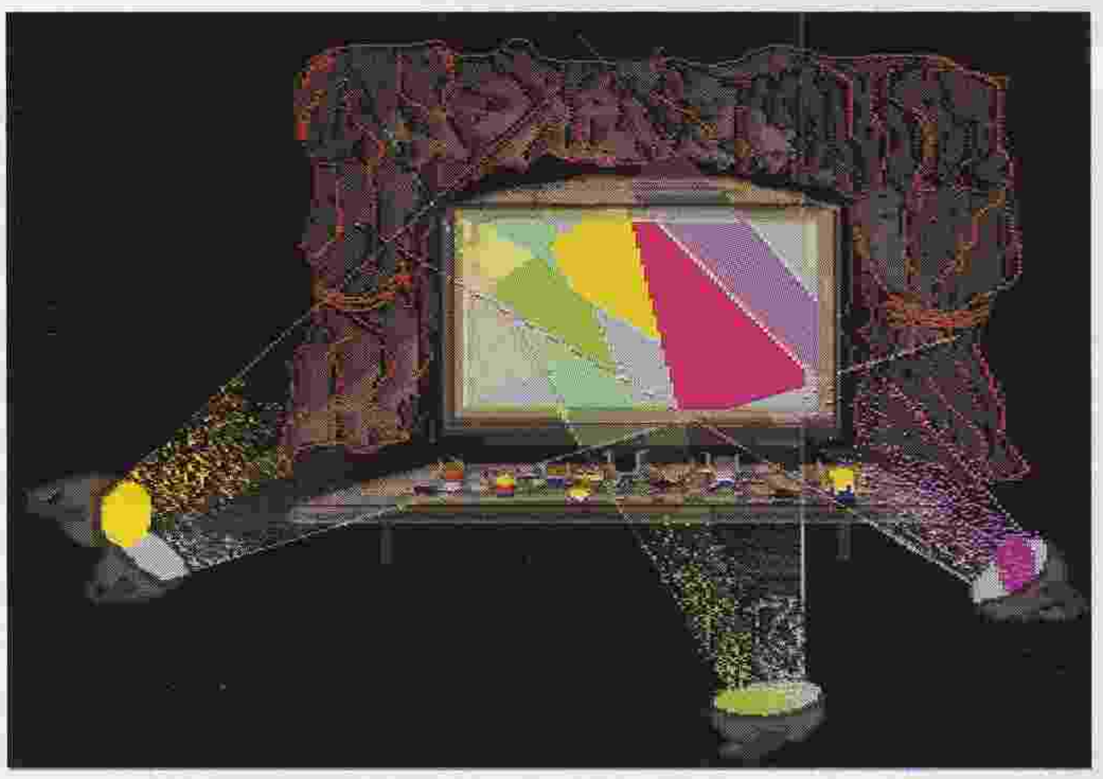


The palette editor mode allows the user to alter the colors in the animation.



Individual frames can be added, deleted, edited, and pre-viewed before the animation is completed.

The Amiga Video/Animation WorkStation



Two powerful forms of communication are video and animation. Both of which the Amiga computer is capable of dealing within a professional capacity. However, there are a few things you'll need to get your Amiga to that point, so that's what we'll look at in this column.

HARDWARE AND PERIPHERALS

Let's begin with the Amiga itself. If you're planning on getting into some heavy animation and video work, the Amiga 2000 or greater is your best purchase. These machines will give you the expandability required once you start racing at a thoroughbred's pace. The magic of these machines are those nice inner empty slots. Those slots allow you to add all those goodies that will turn your Amiga into a VideoTech warrior!

What if you've got an Amiga 1000? Don't despair. My main workstation has been built on the foundation of the Amiga 1000. I consider the 1000 to be a very well-built machine, and in the last three years, it's also proven to be a real work-horse, surviving heat-waves, high humidity levels and power surges!

In any event, whether you have an A1000 or A2000, there are a few peripherals you'll need to get you properly on the road: a hard disk or Bernoulli drive (or both), extra memory and a genlock. These make up what I consider to be the hardware basics of a video/animation WorkStation. Without them, you'll suffer much frustration and despair.

HARD DRIVES

Let's look at the hard disk and Bernoulli drives first. These devices provide mass storage, fast access times, and when you start doing animation, you're going to need mass storage. If you're looking for a hard disk, I'd advise starting with at least 40 MB, but it's the Bernoulli (or any other cartridge system) drive which has the advantage, since it uses removable 20 MB cartridges. As your storage requirements grow, you can acquire more cartridges!

My workstation has both. I have a 40 MB Comspec hard disk where I keep all the software I use for my work, and a 20 MB Comspec Bernoulli Drive, which I use to store the graphics and animations of ongoing jobs, as well as finished work. I consider this the ideal set-up in terms of organization and efficiency.

MEMORY BOARDS

You should not avoid this feature. You'll need the extra memory. Our

By Nick Poliwko

Amiga 2000s are outfitted with the Commodore 2 MB RAM boards, which, added to the 1 MB internal RAM gives us 3 MB. My Amiga 1000 has two Comspec 2 MB RAM expansions slapped on the side, which gives me a total of 4.5 MB. I'm already beginning to realize this is limiting. So by all means, spend the bucks on extra memory because serious video work requires it.

GENLOCKS

This is another must. A good genlock will allow you to output a broadcast-quality video signal from your Amiga. Lately, genlocks for the Amiga have been popping up like rabbits in a carrot patch. There's a lot of choice, but remember to shop carefully and investigate the manufacturer's claims to broadcast-quality output..

A couple of genlocks that we use and recommend are the Magni Genlock and the SuperGen. Our recommendations come with footnotes, however and are as follows: the Magni is an excellent genlock and performs flawlessly, but it will only work with the Amiga 2000 since it comes on two cards, therefore requiring two expansion slots, one slot being the video slot. Taking up the video slot can be a disadvantage, since this slot will be the one used for cards that will offer more colours and higher pixel resolutions. Another disadvantage is price. The Magni is not inexpensive by any means. The SuperGen, on the other hand, is reasonably priced and reliable since it plugs into the RGB port. On the down side, it seems that not all SuperGens are created equally. The one we use does provide broadcast-quality output, but we've run into folks using SuperGen that are just not getting the clean output we are. If you get a SuperGen, the first recommendation is going to a video production studio to run a few tests on it to make sure you're getting true broadcast-quality output. If not, I'd send it back and ask for a replacement.

HARDWARE EXTRAS

Now let's take a look at a couple of hardware extras that can make life with video a little simpler: accelerator boards, image digitizers and graphics tablets.

To begin, we'll examine accelerator boards. A 68020/68881 combo makes a great addition to your workstation if you plan to do a lot of graphics and animation. Developers are realizing that more and more folks are turbo-charging their Amigas, and as a result, are releasing '020 versions of their graphics software. The time saved with these programs is remarkable. In business, time is money, so, any time-consuming feature is worthwhile. We use the Commodore 68020 board in our A2000s, and for A1000 users, we heartily recommend the LUCAS board. (The LUCAS board was developed by Brad Fowles from Toronto then released into public domain.) The schematics and details regarding its parts and construction are available on various BBSs (such as USENET) as well as in an article featured in the December 1988 issue of "Transactor for the Amiga" magazine.

DIGITIZERS

Somewhere along the way, you're going to end up using a scanned image in an animation. We use Digi-View from NewTek, and I still believe Digi-View is the best digitizer on the market. Furthermore, version 3.0 acknowledges video use with implementing such options as overscan.

Finally, let's look at graphics tablets. Our obvious recommendation here is the Easyl pressure sensitive drawing tablet from Anakin Research. The Easyl has been around a long time, and the drivers written for it perform without a hitch. The advantage with the Easyl is the fact that you can use an ordinary pencil and paper to draw with. No little buttons to press on an oversized pen, and no little cord to contend with. The Easyl keeps your drawing natural. The little animation pegs that come with the Easyl are another plus. These will allow you to keep separate drawings registered correctly for cel animation.

SOFTWARE

Now that we've got our ideal video/animation workstation all set up, we're going to need programs that allow us to do our work quickly and painlessly. Our software needs are twofold: graphics and animation. There's a ton of good programs out there, and rather than weighing the advantages and disadvantages of each one we'll just cover the software that I use in my day-to-day work.

GRAPHICS SOFTWARE

DeluxePaint II, one of the first remains one of the best. For most video graphics applications, DPaint II will fit the bill. We use it extensively with the Easyl for any work that requires storyboards, cel animation or background graphics. The latest release of the program also does away with copy-protection and fixes all known bugs. Of course, DPaint III has arrived and it's a major upgrade which now integrates animation. Having played a bit with DPaint III, I can safely say that the animation interface is simple to utilize and can save time when it comes to cel animation. Dan Silva has significantly enhanced the graphics end of things with direct overscan painting: you can finally draw into the border areas without having to scroll around the screen, have extra-halfbrite support, have an improved font requestor and more brush options. In any graphics workstation environment, DPaint is a must.

One thing that DPaint does not support is the 4096 colour Hold And Modify (HAM) mode. Graphics done in this mode can be very impressive, as it opens the door for smooth shading, transparent colours and improved anti-aliasing. We haven't found one HAM paint program that fits all our needs exactly, so we end up using both Photon Paint from MicroIllusions and Deluxe PhotoLab from Electronic Arts.

Photon Paint offers one of the best and most versatile interfaces for gradient fills; allowing you to do bursts and special effects easily and quickly. Photon Paint is great for retouching HAM images that have been rendered with ray-trace packages or scanned in with Digi-View. Since Photon's user interface is based on DPaint's, you're kept in familiar territory. Because Photon

Paint is not a memory hog, you have the ability to work on two HAM images simultaneously on swap screens, without having to worry about crashing the machine because of insufficient CHIP RAM.

Deluxe PhotoLab offers a different set of tools. The feature we use most often is the brush warp. This allows you to take IFF brushes and wrap them on any shape imaginable, including freehand shapes. PhotoLab also gives you options of transparent colours and adding a light source to the brush wrap. Some of the effects achieved can be startling. One of the most advantageous features of this program is its ability to display and manipulate overscan images. You can display an overscan image full screen and then use the cursor keys to move the image on the x and y co-ordinates which is great when it comes to positioning a still screen for video transfers.

GRAPHICS UTILITY SOFTWARE

Image manipulation programs such as PIXmate from Progressive Peripherals and Butcher from Eagle Tree are other useful software for graphics. These programs give you complete control over an image through dozens of options, some of which allow you to reduce the number of bit-planes, convert resolutions, do edge-detections and remap colours to different palettes. The important key is that these programs do these things fast and do them well!

Although it is database software, we use SoftwareVisions' MicroFiche Filer Plus for composing storyboards. Its advanced picture handling capabilities and text integration make this a perfect tool for that purpose and when you get right down to it, storyboards are nothing more than graphic databases.

VIDEO TITLING

The only software we use to generate titles for video productions is VideoTitler from Aegis. There are other packages available that are quite good, such as ProVideo Plus, but in an integrated video-graphics/animation workstation, VideoTitler tends to offer the least resistance in its use. The ten built-in text effects, such as neon, 3D block, star and emboss can be applied to any Amiga bit-mapped font. Additional options for text kerning and automatic justification are among the things that make this an attractive package.

3D OBJECT MODELLING AND ANIMATION

For 3D object creation we use Modeler 3D from Aegis(with its eight screen layers to work on) and advanced object creation/manipulation tools; this is the most efficient software of this type available. There are also tons of keyboard equivalents which accelerates your work when you become familiar with the program.

The area of animation is where we use the greatest variety of packages. Few animation jobs are similar and as a result, different software is better for different applications.

For straight and simple lo-resolution cel animation, we use MovieSetter from Gold Disk Inc. MovieSetter seems to be the logical successor to Deluxe Video and offers an easy-to-use visually-oriented interface for the composition of your animations, which you create as what amounts to animated brushes. This program's special feature is the ability to pan across a background as a continuous loop.

For more advanced cel animation, Mindware International's PageFlipper Plus FX (PFX) is our choice. After you've created your various cels with a paint or rendering package, you load the images into PFX, which in turn writes a script file. At this point, you may alter the script file to reflect timing changes and add special effects. After that, you use the program to compile the images into a single file that may be played back in real-time and dumped to videotape.

When it comes to 3D rendering and animation, VideoScape 2.0 from Aegis is our mainstay. The script file format for indicating object motion and camera movement gives us a high degree of flexibility and accuracy in the actual animation. Add to that the clean and fast image rendering that VideoScape offers in its paint and HAM modes and you have a nice tight image. In fact, industrial and corporate video who work with VideoScape have no problem in competing successfully with the big boys on the block

Another package we frequently use is PageRender 3D from Mindware International. PageRender works in all resolutions and includes a pseudo ray-trace mode. There are features in this program that are not available anywhere else in any form. Among them are cyclic symmetry, mirror symmetry, rectangular arrays, and hex arrays, as well as movement using cartesian, cylindrical, spherical, and tetrahedral co-ordinate systems. What all this amounts to is the ability to create and animate spectacularly choreographed sequences that lend themselves very nicely to logo animations, although are not limited to that use. More details on PageRender 3D is available in a product preview elsewhere in this issue.

For higher level animation, we find Byte-by-Byte's Sculpt-Animate 4D and Turbo Silver 3.0 from Impulse to be excellent tools. Both these packages provide high-quality 3D ray-trace images and animation capabilities and both are available in 68020 versions which decrease image rendering time significantly, thus making them very practical to use for deadline sensitive jobs.

Sculpt-Animate 4D also features advanced object hierarchies and a sophisticated motion plotting system. Unlike VideoScape, the animation interface for 4D is visually-oriented and is based in part on the concept of key-frame animation, wherein you create two extremes of movement as your key-frames and the computer does the in-betweens. Many people find the 4D animation interface to be a lot easier to deal with than VideoScape's script-based system.

Turbo Silver also has a few outstanding features, among them being the ability to wrap IFF brushes onto 3D objects and being able to create an unlimited variety of reflective or textured surfaces.

REAL-TIME ANIMATION

Now that we have all our hardware and software together for our Amiga video/animation workstation, we need to address the need of producing

(continued on page 67)

ANIMATING WITH THE Director

Above the darkened Chicago skyline, a helicopter gunship aims at an advancing alien war machine. It fires, lighting the night sky. Unscathed, the opponent returns fire. The outcome is inevitable. An ancient saga is presented to a modern day audience, deftly illustrated and enhanced with animation and music. Like pages in a magic storybook, the computer spins a tale for the ages.

A casual personal computer user, overcome by radiation from his monitor, performs unlikely facial contortions. Is he permanently disfigured or only temporarily bent?

Brian Williams' "Walker Demos," Brad Schenk's "Charon" and Joel Hagen's "RGB," though stylistically very different, are all brought to your computer screen by a piece of software called The Director, from the Right Answers Group. This product is a professional display and animation language for the Amiga 500/1000/2000 computers. The Director allows for a multitude of display and animation possibilities, from the simplest slideshow to a full blown computer or video production. It is not a stand-alone paint, animation or music system, rather the glue that can bind all these elements into a cohesive piece. Working with standard Amiga IFF and ANIM files, The Director sets the stage and choreographs the movements and sounds. It works in all the resolutions the Amiga has to offer, including HAM and overscan.

There is no graphical interface or pull-down menus, The Director runs from the CLI. The program uses easy to learn BASIC-like commands in a script-based structure that can be created with any text or word processor. This may seem like a drawback at first, but actually provides much of The Director's power. Conditional (IF... THEN...) statements, FOR... NEXT loops, GOTOs and GOSUBs, plus a generous helping of mathematical operations give intimate control over animations and interactive presentations. The mouse and keyboard can be utilized to accept user input. Special effects such as wipes, fades and dissolves are built-in commands. The Director can generate text and graphics on the fly for use in animations.

Let's look at The Director on the simplest level. To create a slideshow all you need are two IFF pictures and a few lines of script. First, load the pictures into an area of memory (a buffer) from a storage device with the LOAD command. It is important to remember that to be displayed, pictures must be in CHIP RAM, currently limited to 512K on the Amiga.

```
LOAD 1, "df0:pictures/city_scene"
LOAD 2, "df0:pictures/country_scene"
```

Upon loading, the first picture will automatically be visible. To show the second picture we'll need to use DISPLAY.

```
LOAD 1, "df0:pictures/city_scene"
LOAD 2, "df0:pictures/country_scene"
DISPLAY 2
```

This caused the first picture to be replaced quickly by the second. Too quickly. To remedy this, use the PAUSE command. A PAUSE of 1 equals one-tenth of a second. We'll use 20 for a two second pause.

```
LOAD 1, "df0:pictures/city_scene"
LOAD 2, "df0:pictures/country_scene"
PAUSE 20
DISPLAY 2
```

Now we view the first picture longer. Adding another DISPLAY, PAUSE, a GOTO statement and line number causes our slideshow to loop, until we stop it by clicking the left mouse button.

```
LOAD 1, "df0:pictures/city_scene"
LOAD 2, "df0:pictures/country_scene"
10  PAUSE 20
DISPLAY 2
PAUSE 20
DISPLAY 1
GOTO 10
```

Now we'll save our script as a text file and compile it with The Director. In the CLI type:

```
Director filename
```

By Jim McInnis



Scene from "Walker Demo II," by Brian Williams.

The Director compresses the script into a file that ends with the .film extension. This .film file can be played back by The Director or the included, freely redistributable, Projector player.

So far we've only LOADed and DISPLAYed picture files. If we remove the PAUSE lines, the two screens will toggle back and forth very rapidly. This is an animation technique refered to as "page-flipping." If the screens contain slightly different versions of the same image, the illusion of movement will occur. This page-flipping is very memory intensive as each frame of animation requires a full-sized picture.

An advantage of The Director is its ability to do "partial-screen" page flipping, in which only a small portion of the screen need be changed at a time. The first screen contains the "background" image you animate into. The second screen contains the animated "objects" that are placed into position as needed. The Amiga hardware provides for moving rectangular blocks of images quickly in memory space with its Blitter chip. The Director accesses this chip via BLIT, probably the language's most commonly used command. The BLIT command tells the Amiga which buffer the image resides in, the upper left corner of the source image rectangle, the upper left corner's position on the destination screen, and the size of the rectangle. For example, to BLIT a full screen 320 X 200 low-resolution picture from buffer 2 to the currently displayed screen you would enter:

```
BLIT 2,0,0,0,0,320,200
```

the zeros represent the very top left hand corners of the screen.

Let's add another buffer containing a picture made up of objects and a BLIT command to our script. We don't want this script to loop so remove the GOTO 10 and replace it with the END statement.

```
LOAD 1, "df0:pictures/city_scene"
LOAD 2, "df0:pictures/country_scene"
LOAD 3, "df0:pictures/objects"

DISPLAY 2
PAUSE 20
BLIT 3,10,24,32,120,30,23
PAUSE 20
DISPLAY 1
PAUSE 20
BLIT 3,283,14,124,33,27,107
PAUSE 20
END
```

In the first BLIT a rectangular portion of the "objects" picture starting at a screen position 10 pixels across and 24 pixels down, is placed on the currently displayed picture at 32 pixels across and 120 pixels down. The size of the object rectangle is 30 pixels wide by 23 pixels tall. The following BLIT operation puts another portion of the objects picture in the next current display.

Gathering the coordinates for use with the BLIT command can be done in your painting program, but there is an easier way. BLITUTIL, a utility written with The Director, is included on the disk. BLITUTIL asks you to load both a background and an objects screen, then select the object by using the mouse to enclose it in a rectangle. Upon pressing return, BLITUTIL lets one position it with the mouse and cursor keys over the correct place in the background. Press return again and a BLIT command giving the proper parameters for that object is printed on the CLI screen.

Whereas BLIT pops an image instantly onto the screen, the DISSOLVE and WIPE commands perform in a slightly different manner. DISSOLVE adds another parameter for the number of pixels to be transferred in a single blitter pass. This can be used to make an image appear to build slowly into the displayed screen or swiftly "sparkle" on.

The WIPE command lets you choose the direction and speed in which an image will sweep onto the displayed screen. An image may be wiped from top to bottom, left to right, bottom to top, or right to left. This is also useful as a method of "peeling" away layers to reveal what lies hidden beneath.

Transitions between displayed screens are possible with the FADE command. Screens may be faded in or out of black at variable speeds. The Director also has a few custom wipes and gives you the ability to create your own. Most of these effects work best when pictures are of the same resolution and color palette.

The software has built-in drawing commands. Using MOVE and DRAW,



"RGB," a wild animation by Joel Hagen.



"Charon," another animation using The Director.

one can add lines or shapes to an animation without the memory overhead of a IFF file. Rectangles, circles and ellipses are drawn with the RECT, CIRCLE, and ELLIPSE commands. Drawing can be done with any color in the current palette by way of the PEN command. FILL will color in any area surrounding a specified point with the current foreground pen color. It is very handy to draw in a non-displayed buffer and BLIT the results to the displayed screen. This allows the object to appear instantly on the screen rather than have it drawn before the viewer's eyes.

Words can be generated directly from the script with the TEXT command. The Director uses LOADFONT to add any Amiga font to your animation. Text can either be "typed on" from the script or sent to a buffer which becomes displayed after the text is in place. Text attributes include Normal, Bold, Underline and Italic, and are set with the STYLE command. Special effects such as outlines, dropshadows, and embossed text may be done by stamping down more than one color of text. There is even a provision for centering lines of text on the screen.

Color cycling, effective for some types of animation such as flowing water, is supported. Use your paint software to set up the cycle ranges and speed. The Director will use this information when cycling is turned on. Complete control over color palettes is possible, even altering or creating new colors on the fly. Individual bit planes of a picture can be rearranged for interesting effects.

Sound can play a large part in any presentation. The Director lets one use sounds with the Sound Module. Sampled sounds from audio digitizers are very effective and many IFF instrument sounds are available. A sound can play for a specified time then drift away using the SLOWFADE command. Volume, period, and pitch are all controllable in the script. Sound data may contend with your images as it must also reside in CHIP memory. The sound module will load itself into expansion memory if it's available.

Standard ANIM format files created by other animation software packages can be run with The Director controlling every frame of the animation. Enhancements such as adding text or graphics may be added to your ANIM files on a per frame basis. ANIM animations may be chained together as scenes in a film with The Director.

This is not software one masters in an evening. While the learning curve is steep, the rewards are plenty for those who like total control over their presentations. A very complete and well written manual acts as a reference, explaining every command in detail. An easy and fun tutorial takes you through the animation process.

The Director holds the reins on the horsepower of the Amiga. In subsequent articles we'll look at this program in more depth. ❑

(continued from page 64)

The Amiga Video/Animation Workstation

real-time animated output of the images we've created.

All of the 3D rendering packages we've looked at have their own animation file format and they're all incompatible with each other; VideoScape uses the Anim format (which Aegis is attempting to make a standard), Sculpt-Animate 4D has its Movie format, Turbo Silver has its Ani format, and so on. This can all become confusing after a while, so when it comes to the actual page-flipping of any images, no matter what package they were created on, we use the PageFlipper Plus animation file format for all our work.

PageFlipper Plus offers the fastest flipping of IFF screens that we've come across. Where the Anim format provides jerky animation, PageFlipper Plus smooths it out. This makes it practical to generate real-time animation sequences from the Amiga without sacrificing smoothness of movement. We have not yet found the need to resort to any type of single-frame controller, nor do we plan to, since this would defeat our concept of providing cost-effective computer animation for our clients.

While PageFlipper Plus is not a miracle page-flipping program, it has come through with shining colours on at least ninety percent of the work we've tossed at it.

CONCLUSIONS

Each software package offers unique options for image rendering and animation, and it is difficult to get along with only a few programs. But, if you must, a basic graphics and animation software set-up would be DeluxePaint II, Butcher, Digi-View, Photon Paint, Modeler 3D, VideoScape and PageFlipper Plus. These programs will give you all you need to produce professional quality animations quickly and efficiently. ❑

FORMS in Flight II

If I remember correctly, Forms in Flight was one of the first animation packages available for the Amiga. It has evolved a great deal since it was first released, which explains the "II" in its name. Forms In Flight II is a full featured object modeling and animation package that includes functions, not yet available on more expensive animation packages, such as texture mapping and extrusion along a path etc.

THE PROGRAM

When you start FIF2, the program automatically starts in 3D mode and loads a background image and an object, you then get the choice of keeping or deleting these two things. When you first use the program you might want to keep the default object (an object you have created can be defined as the default object) to practice with. Viewing mode can be changed from 3D to one of the 2D modes which provide a top, side or front view of the objects. FIF2 has its own methods, for instance the menus are not as I expected, rather they are brought up using the right mouse button, but appear where the pointer is positioned in the screen. The good thing about this is that less mouse movement is required to reach the desired option, but the disadvantage is getting used to it and even after a while you will still miss the "target" selection at times.

You can choose the screen resolution and number of colors you want to use from the Preferences menu. Unfortunately the program does not work in HAM (4096 colors) mode. This means the maximum number of colors available is 32 in Lo-Res (320 x 200) mode, as a result, shading is more limited. The program uses dithering to simulate a greater number of colors, this helps a bit. You can also turn the drawn axes on or off from the Preferences menu, which indicate the view mode and the position of the objects in space. This is where you will find the useful Undo function, especially when you are new to the program. Other settings can also be turned on or off from this menu including Snap, a grid function and Clipping which will tell how to handle parts of the objects which run off the screen.

OBJECT BUILDING

It seems that the different rendering programs have their own way of defining 3D objects, this is the case with FIF2 which uses a unique way of doing this. The basic shapes for objects are called FSurfs and QSurfs, every object is built from a combination of these special surfaces. An Fsurf or "flat surface" can be made out of many curves joined at their end points, even though the elements of an Fsurf can be curved, they all lie on the same surface, as the manual says, it is like drawing on transparent sheet of paper. On the other hand, a QSurf, or "quad surface" is made of 4 curves joined at their end points, but this time the curves are not limited to the same surface, each line can be curved in any direction, and the dividing lines or grid inside the QSurfs will be adjusted automatically in order to form a smooth 3D surface. The only limitation is that a QSurfs must be made out of 4 curves, this is why it is called a Quad. The FSurfs, on the other hand, can be made up of any number of curves as long as they lie in the same plane, in addition an Fsurf can be open or closed; the difference being the first does not form a closed surface, while the other does. Each curve that is part of type Surf is in reality a kind of spline (the user has complete control on the curvature of each of them.)

All modifications made on an object will affect only selected curves, in fact, there is a number of ways to select the curves you want to work on. You can select and modify only one node (point) or one or more curves, but it can become difficult to select just one object when the screen becomes cluttered with several objects. It would be nice to have a function to select an entire object by clicking part of it.

There are many tools available to help create 3D objects. One is the Sweep function which lets you extrude a 2D shape into 3D by thickening the object. This function can become powerful when combined with a path. When an Fsurf is defined as a path, it can be used as part of an animation or as a way to control the Sweep direction. For example, you could create 3D fonts by

By Serge Boucher

drawing letters out of simple curves (an open FSurf), then by using this as a path where a closed surface would be swept along, you would end up with a 3D letter of any desired cross section. Other tools let you move, re-size or re-shape one or more selected curves. You can also copy or make a mirror duplicate of an object. You will, however, have to practice a while before you get used to the program. The menus are especially difficult to work with because it is hard to remember where the desired function stays. For this reason, the menus could be rearranged in a more logical order.

RENDERING AND ANIMATION

FIF2 uses Phong shading. Before the program can shade properly, you must verify that the color pallet provides the required colors as it does not do this automatically. You must first set color ranges that vary from dark to light tints and specify one of these as the object color, the program will then use this range of colors to do the shading. This can become a complicated process especially if there are a lot of objects and you run out of available colors. As I mentioned, dithering helps, but the use of HAM mode and a form of automated color shading would be ideal.

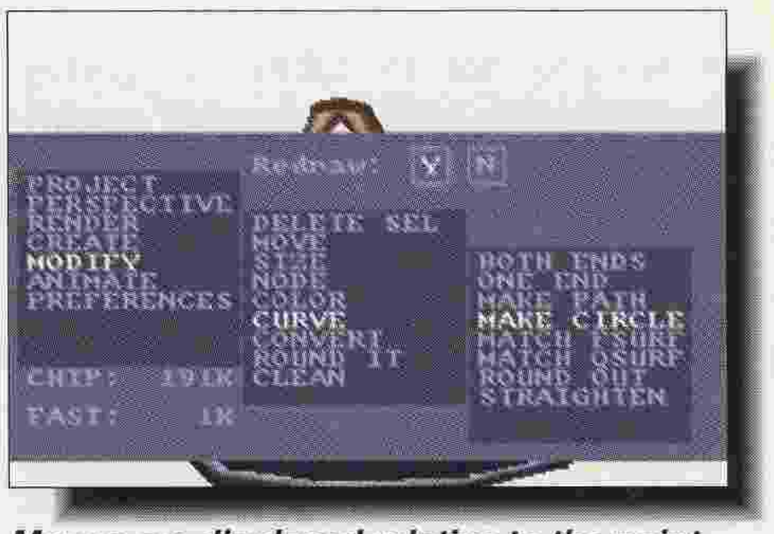
The camera and light source can be moved as desired, but shadows can't be drawn. The only texture available is a dull surface, whereas mirror or shiny surfaces cannot be rendered. However, there is a texture mapping function. Any IFF image can be defined as the texture of a surface. This is done from the Animation requester where the IFF file can be chosen from the TMap file requester. But again the number of colors limits the usefulness of this. When the IFF file of the right screen resolution is loaded, the image's color palette becomes the current color palette. You must make sure that this palette will provide the necessary color shades needed for the rendering of objects. For this reason it is important to plan and ensure that the IFF image used for texture mapping has the right palette.

Animation is created by defining a hierarchy of objects and attaching a path to these objects. Objects can be named and have "brothers" and "sons"; brother objects are independent while son objects will move along with their father object. This is the most powerful technique in computer animations, everything needed for the animation is included in one scene and the program generates the frames. Furthermore, you can define object orientation, so the object stays aligned with the direction of the movement, you can also define rotations, re-sizing, object speed and acceleration. The object can even disappear and reappear later and the roundness (rounding feature) of the curves can be made to vary during the animation. As expected the animations can take a while to generate and the amount of memory and disk space needed can be staggering. Although a one Meg RAM system can be used, you really need more memory to make longer animations. It is just a fact of life that animation rendering with any program takes up a lot of computing time and memory and FIF2 is no exception to this. The animation files have a unique format and a player program is provided to view the animations as this cannot be done from within the program.

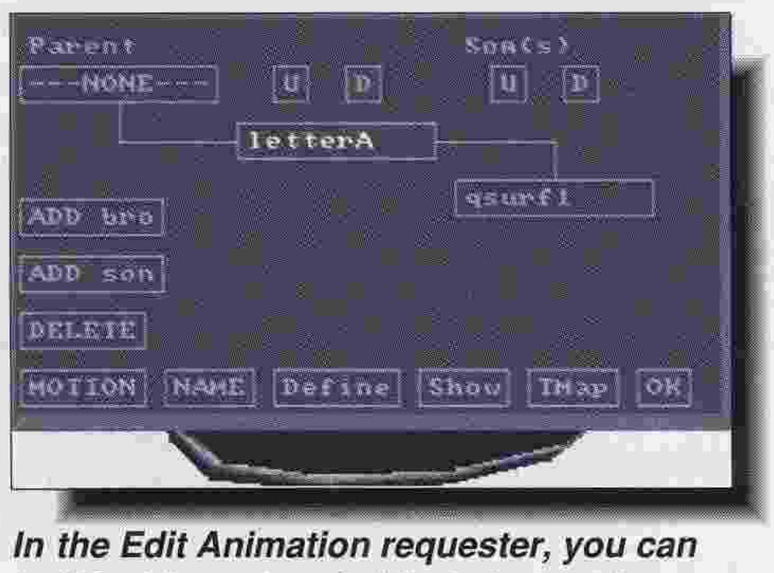
CONCLUSION

FIF2 is a good way to learn the different aspects of computer animation, although it has a unique way of defining objects, it does use a somewhat standard method of defining animation movements (object hierarchy and path.) Its price makes it a good buy, but you have to be ready to learn a program with a steep learning curve. The results are not quite up to par with other packages, but these other animation packages are sometimes more expensive. ❑

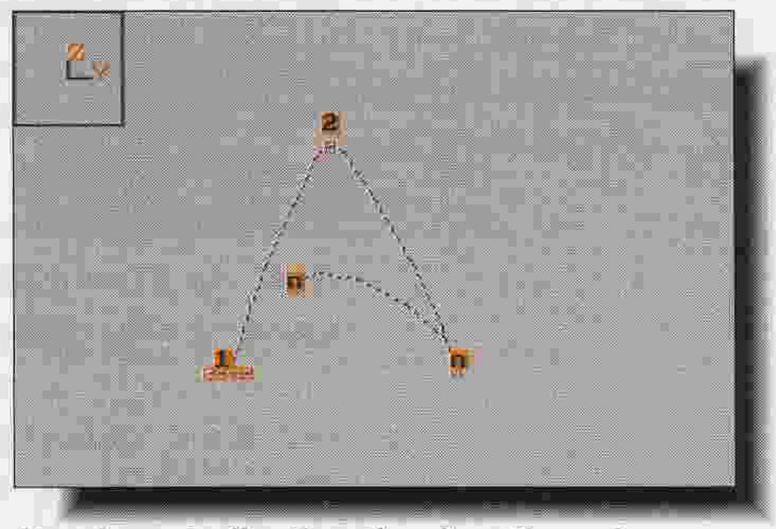
Forms In Flight II
Centaur Software Inc.
14040 Tahiti Way, Suite 528
Marina Del Rey, CA 90292
USA
(213) 821-5995
$119 (US)



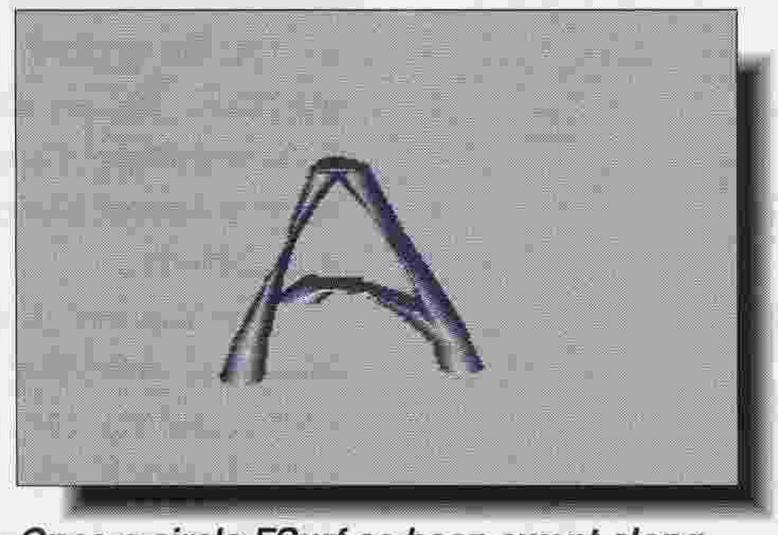
Menus are displayed relative to the pointer's position. Menu items are selected more or less in the usual Intuition manner.



In the Edit Animation requester, you can build a hierarchy of objects by naming them and placing them in the right place in the "family tree". The IFF file for texture mapping is also selected here with the TMap option.



Numbers indicating the direction of movement appear when a curve is defined as a path. This path can be used either to define movement in an animation or as an extrude path.



Once a circle FSurf as been swept along an extrude path, you get a 3D object that has the shape of the path and with it's cross section equal to the FSurf.

PHOTON VIDEO CEL ANIMATOR

A Mini-animation Studio for your Amiga

The Amiga computer is well known for its ability to produce quality animations, and some programs have been developed by professional animators who changed their traditional tools to learn the best of this new technology. MicroIllusion's Photon Video Cel Animator is one of these new tools.

Cel Animator is not like those sophisticated but not so professional 3D animation programs, it is mainly a professional sound and animation synchronization tool, and a pencil test system, allowing real-time playback and frame by frame transfer to videotape. As a professional tool, it requires a well equiped Amiga: the manual says 1 megabyte is a minimum (although the package label claims 512K is required) and a full memory expansion of 8 or 9 megabytes is recommended for full color playback of HAM or hi-res animation sequences. One disk drive is needed, but two are recommended and a hard drive can be useful to record large animation sequences. To be able to use the sound synchronizing capability, you will also need a sound digitizer and accompanying software.

The manual is well written by a professional animator and is very progressive, guiding the novice user step by step through the technical maze of video resolutions, display modes, colors and file types. This progressive approach should allow any professional animator, without computer knowledge, to familiarize himself with this new generation of instruments. Unfortunately, the manual lacks illustrations and the text is too dense and printed with a large font wich makes it difficult to read, despite the nice printing quality.



A frame from an animation created in Photon Video: Cel Animator in HAM mode

Cel Animator is not a paint program, but imports pictures from most popular paint programs, like its companion Photon Video, using standard IFF and HAM formats of most resolutions, with or without overscan. In fact, Cel Animator has some of the functions we can find in paint programs, such as: line, circle, box, flood fill, palette, etc. However, since these are very limited and only provided to make small corrections to drawings (no arc function, no brush nor fonts...), they will never replace a

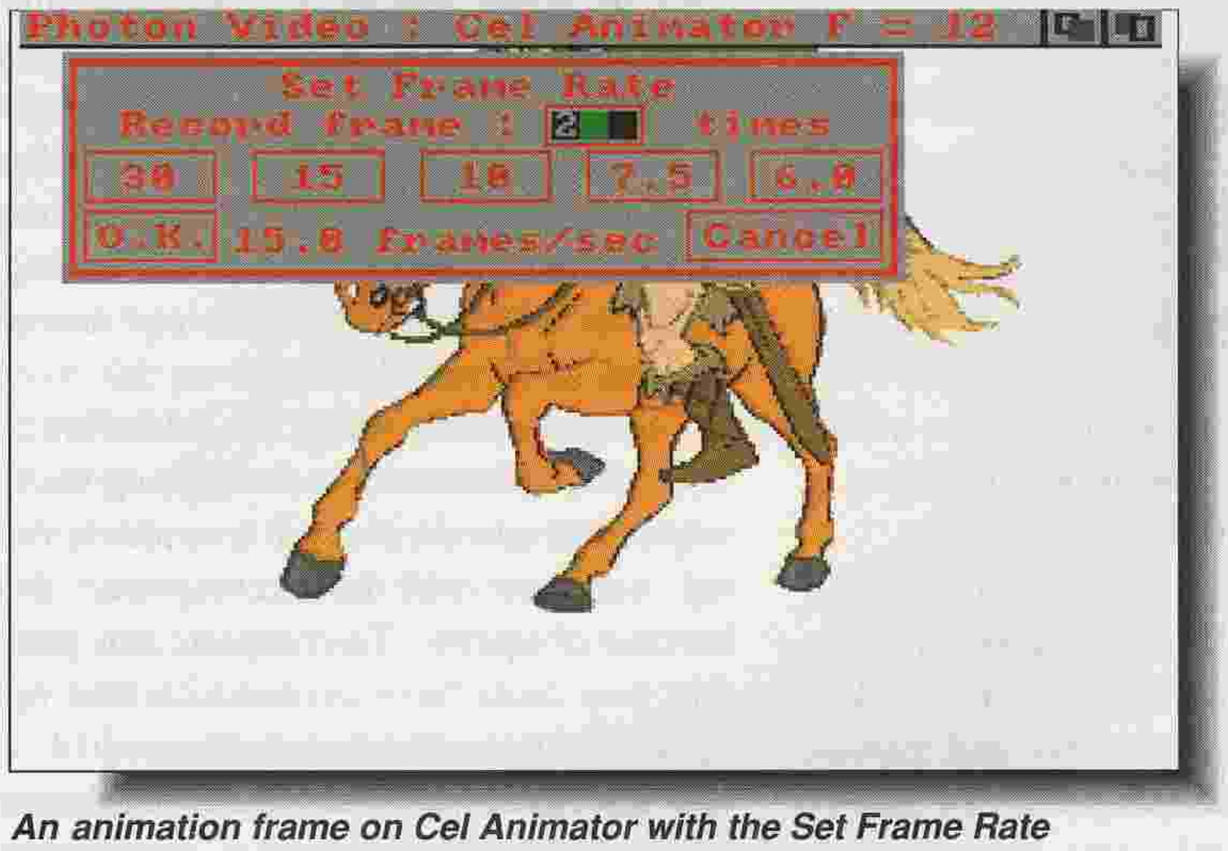
By Michel Feugeas

dedicated program.

Since all the pictures must be loaded in memory in order to produce a real-time animation, a lot of megabytes are required to produce sequences of a few seconds, when high resolutions and a lot of colors are used. According to the manual, a two and a half megabytes Amiga will allow play back of 55 Low Resolution frames with 32 colors, or 15 High Resolution frames with the maximum of 16 colors. Fortunately, as for cartoon production, we can use a method called "pencil testing." This is simply accomplished on the Amiga by reducing the number of colors to two, thus saving precious memory space. Using Pencil Test, our 2.5 MB Amiga will allow 281 lo-res or 69 hi-res frames. To use this method, however, we will have to make series of outlined two colors drawings with our favourite painting program, play them as a pencil test, adjust everything (eventually including sound synchronization) then finally paint them for final recording. Also we have to mention that pencil test mode is not available for HAM pictures, since HAM mode has a special method of color coding wich makes it impossible to reduce to two colors.

If the final full colored animation is too large for the memory available, we will have to use the accompanying transport controller software to record it frame by frame on a video tape. This special module works with five models of hardware frame by frame controllers: LYON LAMB MINIVAS, VAS IV, VAS V, PICOSYSTEMS, and VIDEO-MEDIA V-LAN. A special requester asks for the duration for which we want each individual image to be recorded. Here we can select anything from a number of hours to the duration of a single video frame.

One of the most useful features of Cel Animator is its sound synchronization capability. When series of pictures are loaded in memory, we can also load a digitized sound sample and play it back frame by frame, along with the animation. This is usually done in pencil test since it involves a lot of memory. Then it is possible to find the specific sound element (a noise or a phoneme) and the corresponding picture, and to synchronize them precisely, specifying the image number where the sound sample playback must start, and the playback rate. This relationship between sound and image can then be verified in pencil test, before the final animation is recorded on videotape and the sound is copied, using professional methods of sound track dubbing.



An animation frame on Cel Animator with the Set Frame Rate requestor box appearing on screen

Needless to say, this is not what every Amiga owner can do with his standard home VCR and tape recorder. On one of the Cel Animator data disks, we find a demo of an animation with sound. This short sequence, made with a "frame grabber" and a video camera, contains digitized pictures of the author of the software pronouncing the phrase "Where is Max?" A special effect, a la Max Headroom, was produced by staggering the order of the original 40 frames using one of the software functions. Since the sound is correlated to each frame, it was also automatically staggered.

For professional results, the author of the manual recommends the use of a black and white video camera and a video digitizer to shoot traditional animation pencil tests. A suitable camera should have a 2:1 interlace, 2/3 inch vidicon tube, 600 lines minimum resolution, and a switchable automatic gain control. This will insure a good reproduction of black and white line art, without introduction of extraneous shades of gray which could make colouring a difficult task. If such an investment is not desired, an Amiga paint program can be used to create the outline drawings.

With its extensive memory requirements, Photon Video Cel Animator is certainly not for the casual animator. It is a very nice tool to assemble sequence of pictures, synchronize them with sound samples, then test and finally record them. Therefore, is not a replacement for any paint program but instead a modern complement to many dedicated instruments involved in professional animation production. ❑

Photon Video Cel Animator
MicroIllusions
17408 Chatsworth St.
Granada Hills, CA 91344
USA
(818) 360-3715
(800) 522-2041
$149.95 (US)

FIXING THE FLICKER FIXER

A Hardware Project for 500 and 1000 Owners

WARNING!! UNDERTAKING THIS HARDWARE PROJECT WILL VOID THE WARRANTY ON YOUR AMIGA, UNLESS YOU ARE CONFIDENT IN THE ART OF SOLDERING AND ELECTRONICS, YOU SHOULD NOT ATTEMPT IT. AMIGOTIMES WILL NOT BE HELD LIABLE FOR ANY DAMAGE TO YOUR AMIGA OR FLICKER FIXER. THE PROJECT WAS SUCCESFULLY COMPLETED BY THE AUTHOR SO SHOULD YOU HAVE ANY QUESTIONS YOU CAN CONTACT HIM CARE OF THIS MAGAZINE OR THE ADDRESS AT THE END OF THIS ARTICLE.

When I got my Amiga 1000 it was an answer to my dreams. Here was a computer that had it all, and at a price I could afford! I got amazing sound and astounding graphics and of course "flicker." But what's one little problem in a mountain of good fortune? As they say: "He who has it all wants more!" Then came the A500s and the A2000s. At first I had no desire to upgrade to an Amiga 2000. Slots, who needs 'em! As for IBM compatibility, I just turn on my Compaq (which still has empty slots). If I want to multi-task IBM software with Amiga, I turn on both machines. How could I trade a machine that gave me so many wonderful hours? Then I thought to myself that anything worth adding to the new line could work in my 1000 some way.

So the diehard 1000 owner stayed with the ship. Over the months I improved my system. I grounded my PALs. I added a software switchable audio filter. I put in the half bright chips. However, I am still baffled about how to get a Fat Agnus into a 1000. Even after two years I still had only 512K. I had become a real memory miser so what's an extra 512K of CHIP RAM. Besides, who needs a resolution that has only four colors and requires a new monitor?

Then I saw the Flicker Fixer in action. My interlaced drawings stood crisp on the screen instead of trying to make my eyes bounce out of my skull. I had seen the ads, but at that price I just ignored them. The Flicker Fixer could remove the thorn in my side, but alas it was only for the Amiga 2000. By now I had become stubborn and was not going to upgrade unless some real changes were made. So I called MicroWay, then I got a hold of Peter Selverstone (designer of the Flicker Fixer). After a few false starts and a few problems I had a "Flicker Free" 1000.

MOUNTING THE FLICKER FIXER

Since it is difficult to mount the Flicker Fixer internally on the 1000, and impossible on the 500, I mounted it in an external case. Inside the case I mounted an edge connector onto a vector board. The edge connector was wired to a centronix connector mounted on the outside of the case. A 36 wire ribbon cable was then used to connect from the case to the inside of the Amiga. The cable supplied both the video signals and power to the Flicker Fixer.

To Connect the Flicker Fixer to a 500 or a 1000, you will need a few tools and skills. Be forewarned this project will void your warranty, since not only must you open your system, but you also must solder directly to the motherboard.

Let's discuss skills for this project. You need experience in soldering. In the 1000 you will be soldering to resistors and ferrite beads. The 500 is more difficult since you must solder to some chips directly. Without a good soldering technique you could easily heat damage some components. Also, familiarity with components and the ability to use an ohm meter come in handy. Reading resistors and knowing where pin one is located on a chip can help.

Even without being an electronics whiz, if you have a good soldering technique and can do the job in a methodical way you will have conquered the hardest obstacles. To complete this project you must have access to a fine tip soldering iron, an ohm meter, a drill, a file and tinsnips. The last three items are not going to be used to connect to your motherboard! Instead they are needed to mount the Flicker Fixer in the metal box and to modify the shield on a 1000 to pass the ribbon cable out.

TECHNICALITIES

In order to work, the Flicker Fixer must have the following signals: All twelve digital color signals (/R0-/R3,/G0-/G3,/B0-/B3), both horizontal and vertical syncs (/Hsync,/Vsync), the clock pulse (/C1), the +5V and Ground. The Flicker Fixer draws about 0.5 amps and should not pose a problem to 500 owners, unless you are already pushing your power supply past its limits.

The length of the cable used to pass the signals to the Flicker Fixer should

By Kevin McKenzie

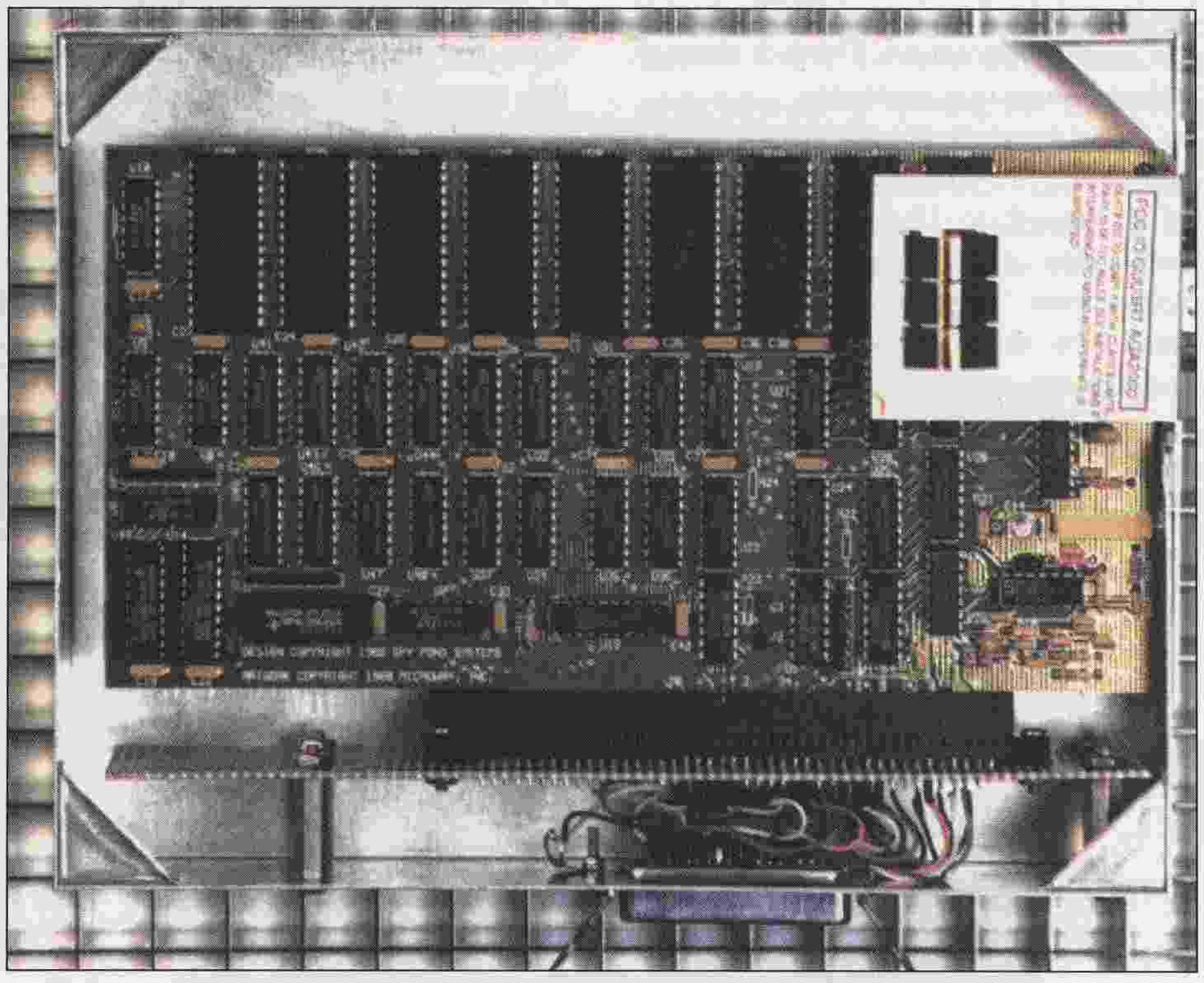
not exceed eight inches. This limits the placing of the box that holds the board. The most convenient place for it was on top of the 1000, especially since the Packard Bell monitor is too big to sit on my 1000 and still fit in the hutch.

All video signals are retrieved between the buffer chip and the DAC. On the 1000 the signals are available from the precision resistors going into the D to A converters. The 500, however, has the entire DAC set-up packaged into a hybrid chip. Therefore, you can take the signals directly off the hybrid chip or the buffer chips. Another option is to solder to the underside of the board. This gives you an easier job of soldering but you must completely dismount the motherboard to do this. Be very careful not to bend or apply uneven pressure when handling the board.

For the 1000, the +5V can be obtained from FB1, which comes directly from the power connector. The ground is pulled off the video ground, available at three separate resistors. On the 500, the power and grounds are pulled from the capacitors used to filter out noise, or from two main pass-through areas on the motherboard.

If there is static where you are working, make sure to ground yourself. Otherwise you could damage your system, and it always seems that the more expensive the chip the easier it gets zapped. Grounding straps should be available at your local electronic's shop.

Table 1 shows the list of necessary signals and their locations on both the 1000 and 500. The locations are accurate based on my schematics. However, given the number of revisions made, it would be wise to ohm out the signal to ensure that the labels match correctly. Some signals are present on the 23 pin video port, so this makes a good check. The signals not present can be tested from Denise. These test points are also shown in Table 1. When checking for continuity do not use the "beep" mode on your ohm meter. In most meters this is a diode test and will not always give true readings, since charging and discharging can cause it to beep. Also you will get readings in the thousands of ohms even between power and ground due to the circuitry. A true connection should read between zero to eight ohms.



Picture 1

As previously stated the Flicker Fixer is connected via a 36-wire ribbon cable. I strongly suggest using a colored ribbon cable, as this helps in sorting out which wire should be connected where. When deciding the placement of the signals in the ribbon cable, I tried to minimize the complexity in wiring the centronix connecter to the edge connector. This is a tedious part of the project and it's an easy place to make mistakes. By simplifying this step however, it complicates the way the ribbon cable connects to the motherboard. Which is why I used the colored cable. Also I would suggest that the connections made between the edge connector and the centronix connector use the same color as the ribbon cable. That is, if the /C1 signal is on a red strand use a red wire to connect the /C1 signal between the edge and centronix. This is easily done by using the left-over ribbon and stripping off single wires as needed. I aligned ribbon strand 1 with centronix pin 1. Since I used a snap-on type connector the rest lined up in a predefined order. If you're soldering every wire to the connector, you can use any arrangement. But I advise you to keep it orderly or it may come back to haunt you. The rest of this article assumes the arrangement in Table 2.

ARRANGEMENT

As far as the physical layout is concerned you can arrange it any way you choose - as long as you do not exceed the maximum cable length of about 8 inches. You need to consider where the system will be located and where you want the Flicker Fixer housing to sit, where the monitor will be and what might be next to the Flicker Fixer. My arrangement has the 1000 sitting on the right hand side of my desk with the Flicker Fixer box on top along with the external drive. The monitor sits on the left side of the desk. The Flicker Fixer is mounted so the output is on the left

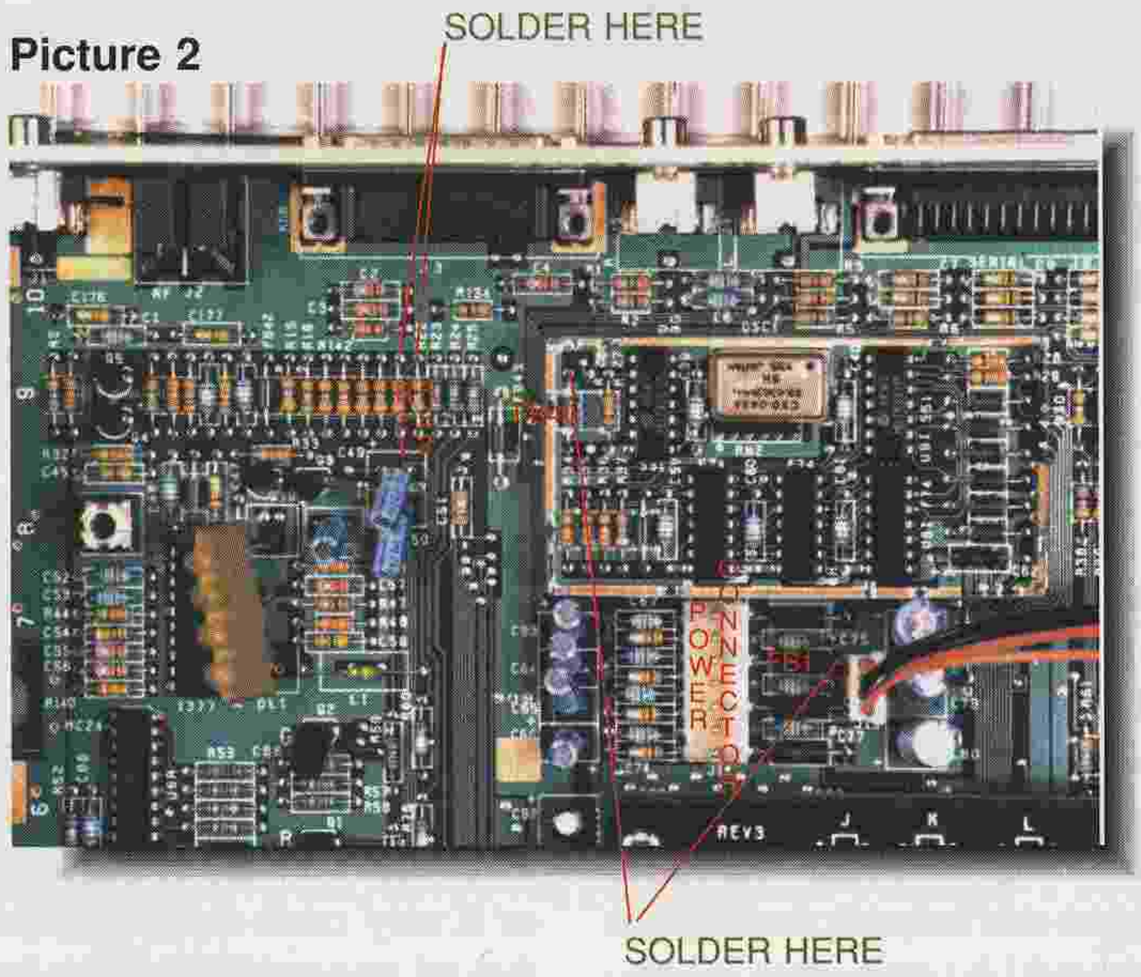
side as to not get in the way of the drive. It is easy to get a connector on backwards and end up with the box in the wrong orientation. Think it through before connecting anything.

Now measure out the length of ribbon cable you will need. I have extended the length to 12 inches before running into problems. However, Mr. Selverstone suggests that 8 inches should be the maximum length. Then connect the centronix connector to one end of the ribbon cable. Mark which wire is #1. Make out a checklist in the form of Table 2 and write down the color of each wire (if you are using colored ribbon cable). This can be helpful if you have to trace down any bad connections. At the bare end of the cable, pull the strands apart to a length of about three to four inches, then strip the ends and tie them. This solves the problems caused by pulling on the cable while strands are connected to your motherboard.

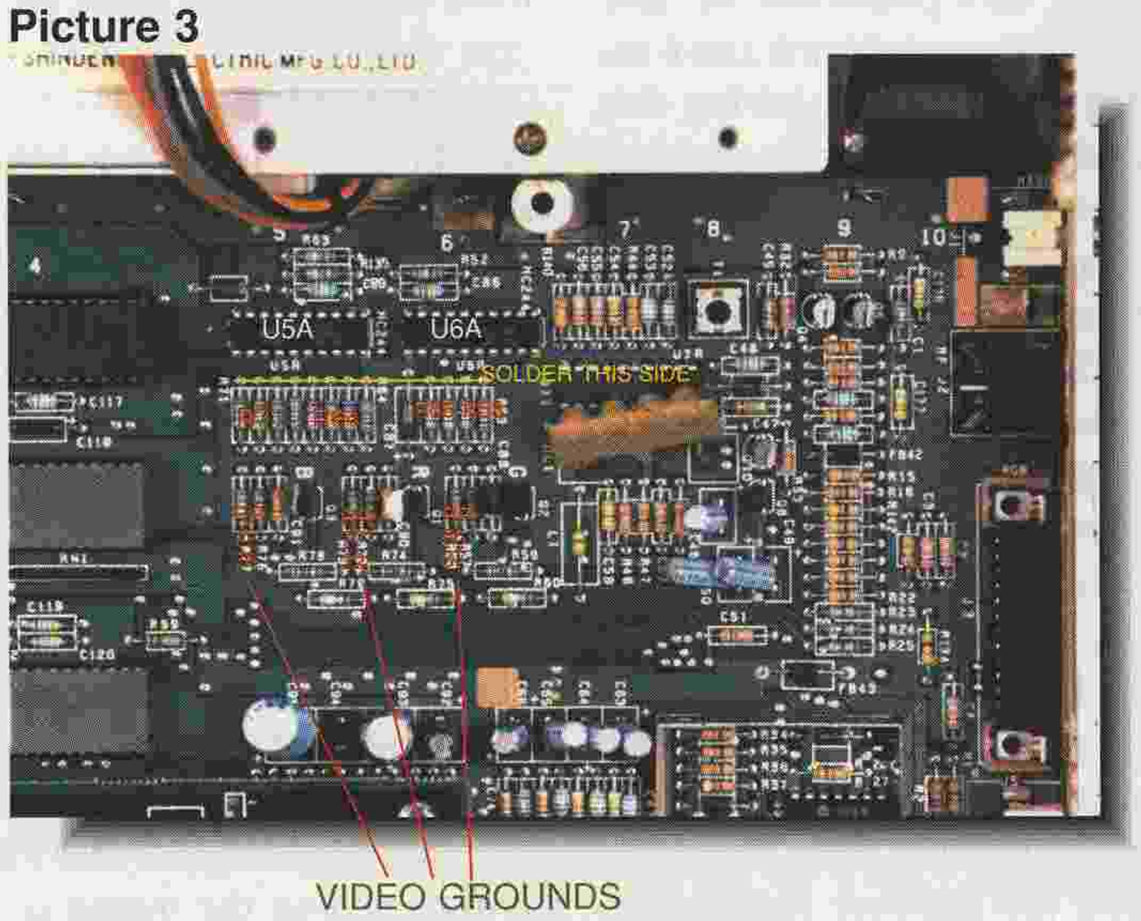
Cut another piece of cable about four inches long and separate all the strands from each other. These will be used to connect the centronix and edge connectors.

AMIGA 1000

Picture 2



Picture 3



Once you have decided on your arrangement mount the vector board in the box. I mounted mine using four one inch standoffs. Then mount the edge connector according to drawing 1. You can use two 18 pin dual edge connectors or one 50 position dual edge connector. If you choose the two 18 position connectors you must get them without mounting ears, since they have to be rather close together. If you choose the 50 position type you must carefully keep track of which pin goes where. There is a 3 pin spacing between the front and rear connectors on the Flicker Fixer. Knowing this and lining up pin 1 on the edge connector to pin one on the rear connector then F-1 (front connector position 1) would line up with position 40 on the edge connecter. Next, mount the centronix connector box keeping pins 1-18 on the same side as the odd numbered pins on the edge connector. Cut the hole to pass out the 9 pin connector from the Flicker Fixer and drill the holes to mount the Flicker Fixer to the box. Finally solder the two connectors together using Table 2. Use the same color wire between the connectors as on the ribbon cable. Carefully check the connections by ohming each wire to make sure you did not connect to the wrong pins. Always double check your counting to be sure you are at the pin you think you are. Picture 1 shows my arrangement.

THE AMIGA 1000

Now we're ready to break the warranty on your system, if you haven't done so already. First decide where you want the ribbon to exit your system, then cut the shield to allow it to come out. Make sure and file away any sharp edges. Otherwise it may cut into the ribbon cable.

When making the connections to the motherboard start with the ones closest to the exit point of the cable. This way you will not end up trying to solder underneath another cable. This means starting with the vertical and horizontal syncs.

The vertical and horizontal syncs are picked up at R22 and R21 as shown in Picture 2. The next signal out is the

clock pulse. This is inside the RF cage on the motherboard. Remove the cage top and thread the wire through one of the holes, then solder it to FB40 as shown in picture 2. Also shown in Picture 2 is FB1 where you need to solder all four +5V lines.

The ground lines can be distributed between three capacitors and six resistors (Picture 3). Be sure to connect the correct side of these components, otherwise you are connecting to +5V instead of ground! The correct side is the side opposite from the buffer chips U5A and U6A.

The last set of connections are the digital video signals. As with the ground signals it is important that you solder to the correct side of the resistor. The connections should be made on the side closest to the buffer chips U5A and U6A as shown in picture 3. The signals are numbered 0 to 3 within each color and each number has a specific value of resistor. These values are shown in Table 3. By reading the resistor you can tell that /R0 comes from resistor 67. This is practical if you need to troubleshoot.

The last connection is the chassis ground. This should be connected to one of the screws holding the shield in place. I used the one next to the video port.

Now you have wired your 1000 so skip ahead to the Finale.

FOR THE 500

As previously stated the 500 is much more difficult to work with on the component side of the board. Picture 4 shows the components being connected to while Picture 5 shows the underside of the board where the actual connections are to be made.

Remember, on the 500 it is even more important to have a good soldering technique. The denser packing and the necessity of having to solder directly to chips make it easy to heat damage components.

After providing an exit for the ribbon cable and insuring it will not be pinched or cut, you are ready to solder away. Begin soldering the connections closest to the exit point to avoid having to solder under any wires. If the cable exits out the back, you would start with the vertical and horizontal syncs.

Both sync signals are pulled off from RP403 (Pictures 4 & 5). The digital video signals are next. These are pulled off either from the inputs to HY1 or the outputs of U40 and U41. The clock signal can be obtained from RP103 or U33, although I would use it from the resistor pack.

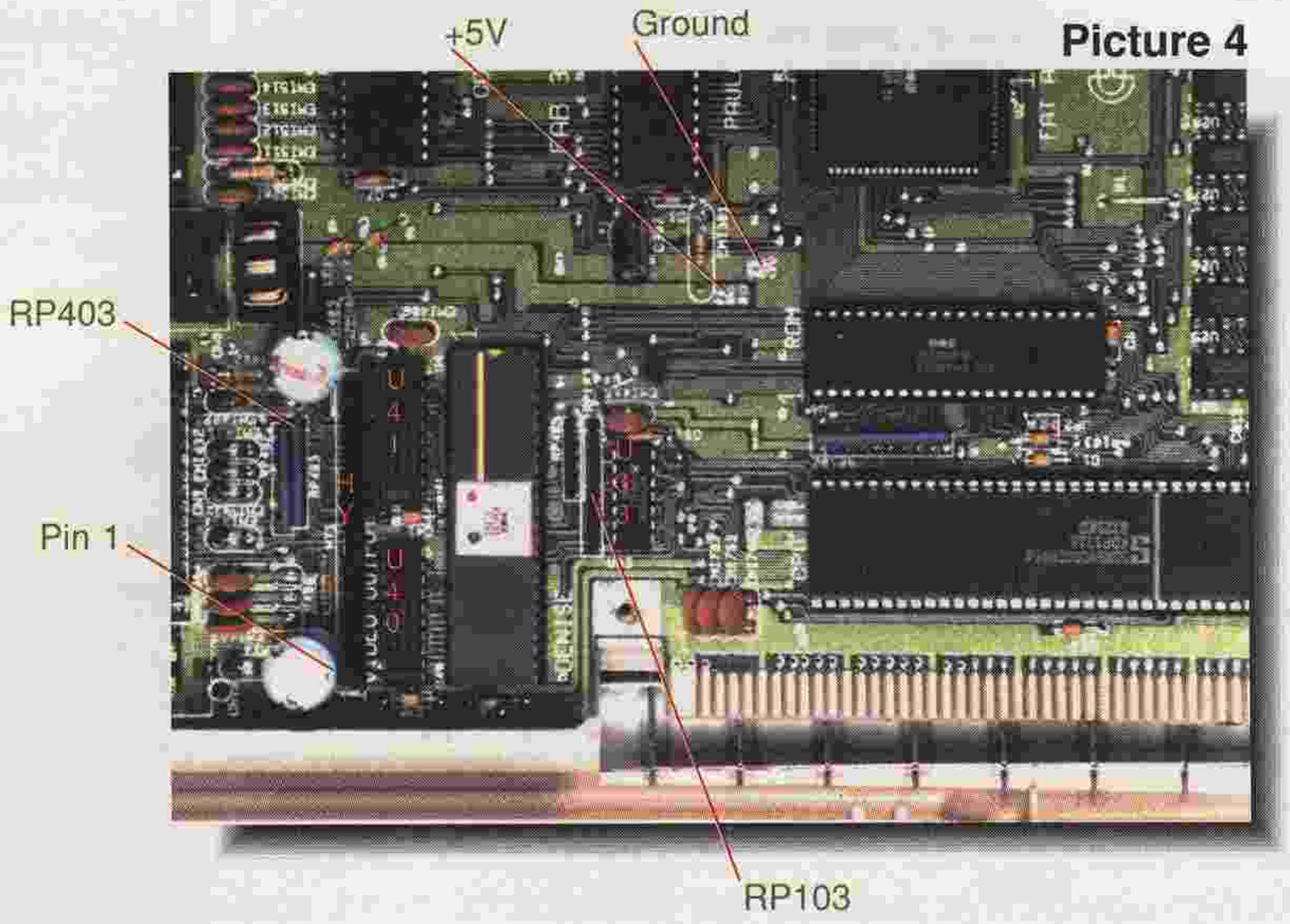
The power and grounds can be obtained from two major pass-through points on the motherboard, as well as from the capacitors used to filter the power. However these capacitors (C811-C815) are spread out. If you use the pass-through points shown in Pictures 4 and 5, be sure not to break the pass-through by heating the solder too much, and letting it drop out of the holes. Finally connect the chassis ground to a screw connection on the shield and you are ready for testing.

FINALE

Before you turn anything on, check all your connections. This is best done by ohming from the test points in table one to the appropriate pin on the edge con-

AMIGA 500

Picture 4



Picture 5

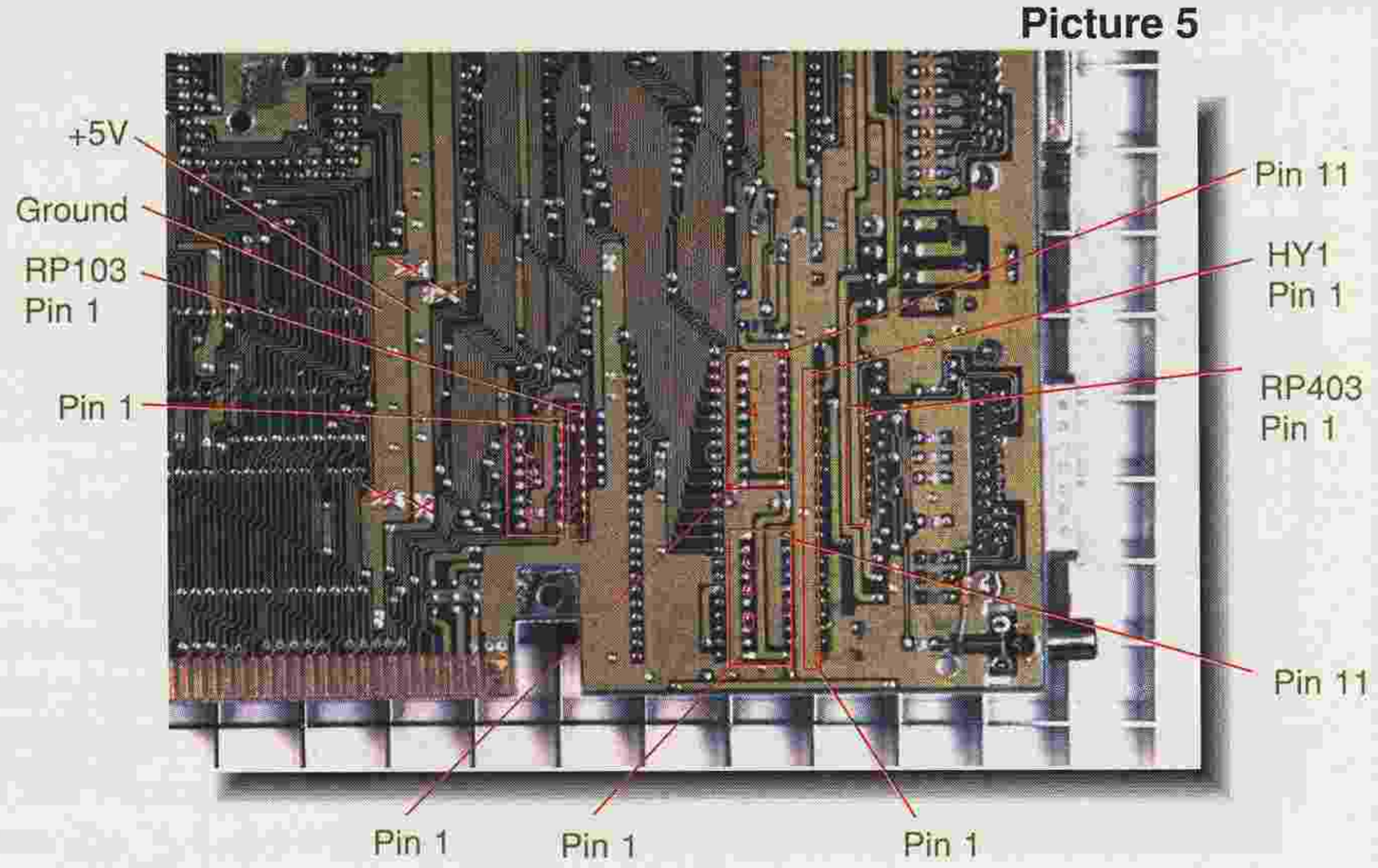


TABLE 1: Signal Locations and Test Points

Signal	A1000	A500	Test Points
/R0	R67	U40-15/HY1-6	DENISE-20
/R1	R66	U40-16/HY1-5	DENISE-21
/R2	R65	U40-17/HY1-4	DENISE-22
/R3	R64	U40-18/HY1-3	VIDEO-9/DENISE-23
/G0	R56	U40-11/HY1-11	DENISE-28
/G1	R55	U40-12/HY1-10	DENISE-29
/G2	R54	U40-13/HY1-9	DENISE-30
/G3	R53	U40-14/HY1-8	VIDEO-8/DENISE-31
/B0	R71	U41-15/HY1-16	VIDEO-6/DENISE-24
/B1	R70	U41-16/HY1-15	DENISE-25
/B2	R69	U41-17/HY1-14	DENISE-26
/B3	R68	U41-18/HY1-13	VIDEO-7/DENISE-27
/Hsync	R21	RP403-4	VIDEO-11
/Vsync	R22	RP403-6	VIDEO-12
/C1	FB40	U33-4/RP103-6	VIDEO-15
+5V	FB1	pos side C811 thru C815 or board pass thru	VIDEO-23
GND	R57,R72,R76 R58,R73,R77 C88,C90,C91	neg side C811 thru C815 or board pass thru	VIDEO-16 thru 19
Chasis GND	shield connector for 23 pin video plug		

/ indicates signal label
- indicates pin number

Table 3: Resistor Values

Signal #	Resistor Value
0	8060
1	4020
2	2000
3	1000

Drawing 1:

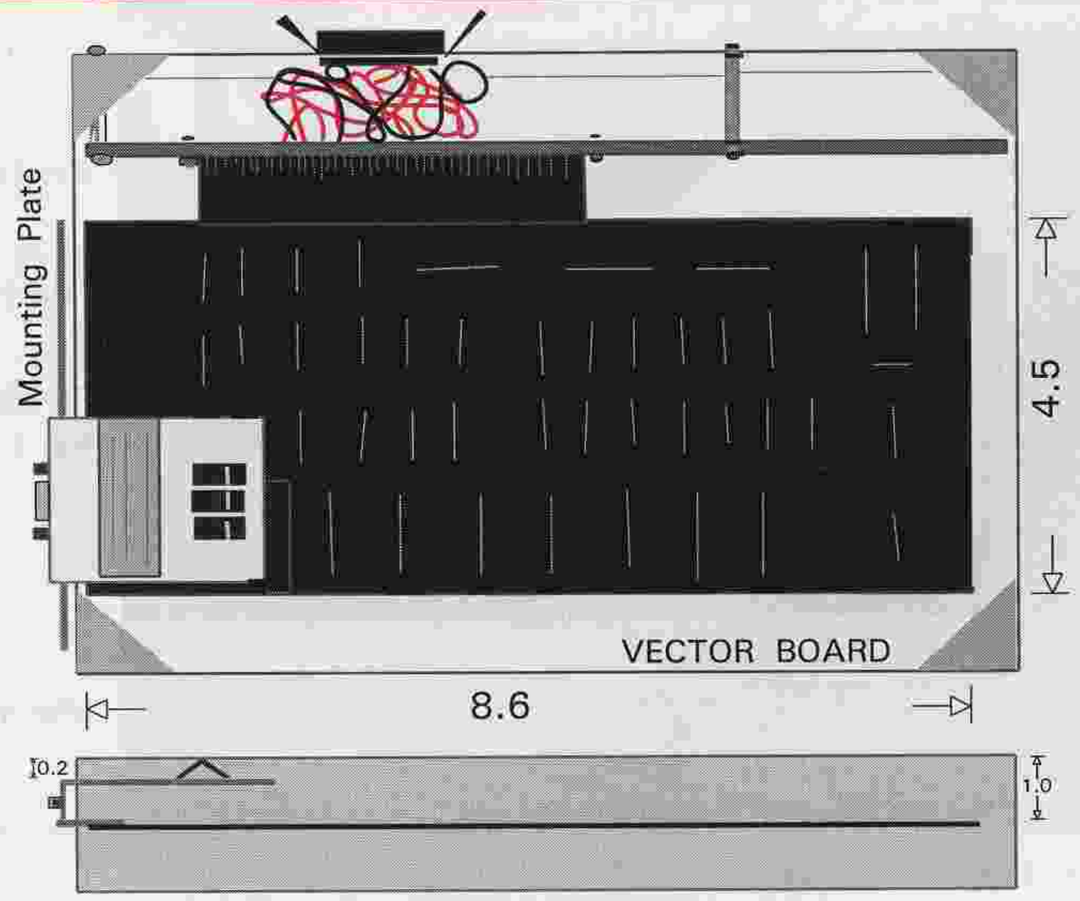


TABLE 2: Cable Connections

Ribbon Cable Wire #	Signal	Centronix Pin #	Edge connector Pin #
1	/B2	1	F-11
2	/B1	19	F-10
3	/G1	2	F-7
4	/G2	20	F-8
5	/R1	3	F-4
6	/G0	21	F-6
7	NOT USED	4	
8	/R2	22	F-4
9	NOT USED	5	
10	/R0	23	F-2
11	NOT USED	6	
12	NOT USED	24	
13	Chasis Ground	7	Box Casing
14	/C1	25	R-34
15	Chasis Ground	8	Box Casing
16	NOT USED	26	
17	NOT USED	9	
18	Ground	27	R-32
19	NOT USED	10	
20	/Vsync	28	R-26
21	/R3	11	R-29
22	Ground	29	R-24
23	/G3	12	R-27
24	/Hsync	30	R-22
25	/B3	13	R-25
26	Ground	31	R-20
27	/B0	14	R-23
28	Ground	32	R-12
29	Ground	15	R-21
30	+5V	33	R-8
31	Ground	16	R-17
32	+5V	34	R-8
33	Ground	17	R-13
34	+5V	35	R-6
35	Ground	18	R-9
36	+5V	36	R-6

F- indicates Front edge connector
R- indicates Rear edge connector

nector (Table 1). Also check against ground to be sure something isn't grounded when it shouldn't be. As stated earlier, you will get readings in the thousands of ohms because of the circuitry present, but on a good connection you should see between 0 and 5 ohms.

Put your system together. Check all your cables and power cords and turn it on. You should see the appropriate screen appear on your monitor.

TROUBLESHOOTING

A small amount of jitter may be due to the phase adjustment. To fix this, please refer to your Flicker Fixer manual.

For other problems it is helpful to keep your old monitor plugged into the video port.

If you get a picture on your old monitor, but not the Flicker Fixer, then the clock signal or power is not getting through.

If you don't get any picture on either monitor, TURN YOUR SYSTEM OFF. Check all connections thoroughly and try it with the Flicker Fixer unplugged. If it still doesn't work check all your solder points for cold joints or solder bridges.

If you get a picture, but it's the wrong color verify your video signals. Make sure that they are all in the right order.

If you get a wild picture check your sync connections. Also make sure your monitor is in the right mode. (Refer to your owner's manual on how to set TTL versus analog for your monitor.)

If the picture on your old monitor is the wrong color, weak or unsteady, you are probably grounding some of the digital video signals, or you are connected to the wrong side of the resistors supplying the video signals. Check all video signals along with all power and grounds.

THE END

Remember working slowly and methodically will help you avoid problems. Do the mental work first then put the tools to work.

I would like to thank Peter Selverstone and MicroWay for the technical help they gave me in completing this project. I would also like to thank Ken Armour and CPU Inc. for all the support and equipment.

If you encounter any unsolvable problems feel free to drop me a line via CPU Inc. at 5143 East 65th, Indianapolis IN, USA, 46220. ❑

Flicker Fixer
Microway
P.O.B. 79
Kingston
MA 02364
USA

(617) 746-7341
$595 (US)

BUILDING A flickerFIXER/AMIGA VIDEO SWITCH

For the enthusiastic gamer there are some minor problems with using the Flicker Fixer. In fast action games you can get a ghost image. This is because the Flicker Fixer buffers one half of the screen so that half of the image gets updated 1/30 of a second slower than the other half. This gets rid of all flicker but can be anoying to those playing Crystal Hammer or any other fast moving game. Another problem lies with the use of light guns or 3D glasses (not the red blue type). both of these rely on timing the display and must be used with the standard Amiga video. There is an easy solution to this problem. Since you will most likely be using a multisyc monitor (a VGA monitor will not work since it cannot adjust to the different syncs) you can easily put together a switchbox that allows you to switch between normal video output and the Flicker Fixer output. You need an AB switchbox with 9 pin connectors, which can be ordered from your local computer store, A 9 pin male to male cable. You then need to make a 23 pin to 9 pin cable with the connections as follows.

23 pin connector	9 pin connector	Signal Name
3	1	Red
4	2	Green
5	3	Blue
11	4	Horizontal Sync
12	5	Vertical Sync
16	6	Ground
17	7	Ground
18	8	Ground
19	9	Ground

(Editor's Note: This switch works on the NEC MultiSync monitors. Some multi-scanning monitors will not work properly if the hsync and vsync of the Amiga are directly attached to them. If your Amiga does not boot properly then you must use a buffered cable; such a cable is available from REDMOND CABLES in REDMOND, WA tel. (206) 882-2009.)

Connect the video port to one of the inputs on the switcthbox using the 23 pin cable. Then connect the output of the Flicker Fixer to the other input. Finally connect the output of the switchbox to your monitor using the cable specified by the Flicker Fixer manual for your specific monitor. Now you can switch between the normal video output of the Amiga and the Flicker Fixer output thus freeing up your Amiga monitor (unless you used it as a trade in for your new monitor) for use with a VCR and or Digi-View.

MICROFICHE FILER PLUS

A GREAT PRODUCT IMPROVED

Take your favorite car, stuff in a bigger engine, bolt on a turbo-charger, Recaro seats, radar detector and a cellular telephone. It looks the same but it goes a lot faster and it's more comfortable and fun to drive.

This is the kind of metamorphosis that has occurred with Software Vision's Microfiche Filer database program for the Amiga. The original Microfiche Filer, which debuted a couple years ago, was a uniquely innovative database. As good as the original was, its new big brother, MFF Plus is improved in just about every way. It's turbocharged.

Microfiche Filer Plus does not replace the original MFF. The two will be sold side by side but an upgrade path for owners of the older MFF is available.

THE INNOVATIVE INTERFACE

Microfiche Filer Plus's user interface is wonderful. It's designed to mimic an actual piece of microfiche - flat film containing miniaturized photographs which is read under a viewer. Fiche film and viewers are in common use - your local library probably uses them for their card catalog or to archive back issues of newspapers and magazines. The beauty of fiche is that unlike strips of film the flat surface, when moved under a magnifying viewer provides very fast random access to any point on its surface. You just grab the viewer handle and whip it around in any direction until you have zoomed in on just the piece of information you're searching for.

With MFF Plus this microfiche metaphor is used to skim and search the records in your database. It's a computerized translation of real-world machinery that makes perfect sense.

DATABASES DON'T HAVE TO BE INTIMIDATING

You run MFF Plus the program in different ways, depending on how you wish to start, but WorkBench and CLI are both supported.

A previously created database can be opened which will launch MFF Plus immediately bringing in that database's records for viewing or manipulating. Starting MFF Plus by itself brings up its file requester, unlike any other you've seen. Although visually distinctive this requester, called the File View is powerful, enabling you to select a database, copy it, delete it, rename it, create directories, and so on but the requester has no device "gadgets" as do other more conventional requesters, which requires you to type in drive and directory path names when you want to switch disks.

File View is equipped with its own "Preferences" window where you can customize how your Microfiche Filer Plus will act each time you start it. For example, to avoid screen clutter you might want to tell Microfiche Filer Plus to just show you its database files instead of every file on your disk. There are many other possibilities. An improvement in MFF Plus over its ancestor is that the program may now be started on a custom screen instead of on the Workbench screen - this makes screen updates much faster and the entire operation of the program less confusing since Microfiche Filer Plus is not competing with any windows you may already have open on the WorkBench. With an appropriate palette tool this also lets you use a completely different set of screen colors on MFF Plus' custom screen.

Microfiche Filer Plus's screen may be clicked or pushed to the back of any other screens you have open. This program multitasks beautifully.

Opening a database reveals a screen full of windows (see accompanying screenshots). The large window is the magnification of the records in your file - the magnified "fiche." The small window in the upper right hand corner is where you grab the "magnifying glass" and slide it over a miniaturized version of the entire database. As you move the glass around you'll see the view in the magnification window change very quickly - in fact you can move it as fast as you like - the movement will never bog down or hang on you. One other window opens initially: the Forms List. Here you'll set up or find the choices of how you wish to view or print your database, each choice completely configurable by you at any time.

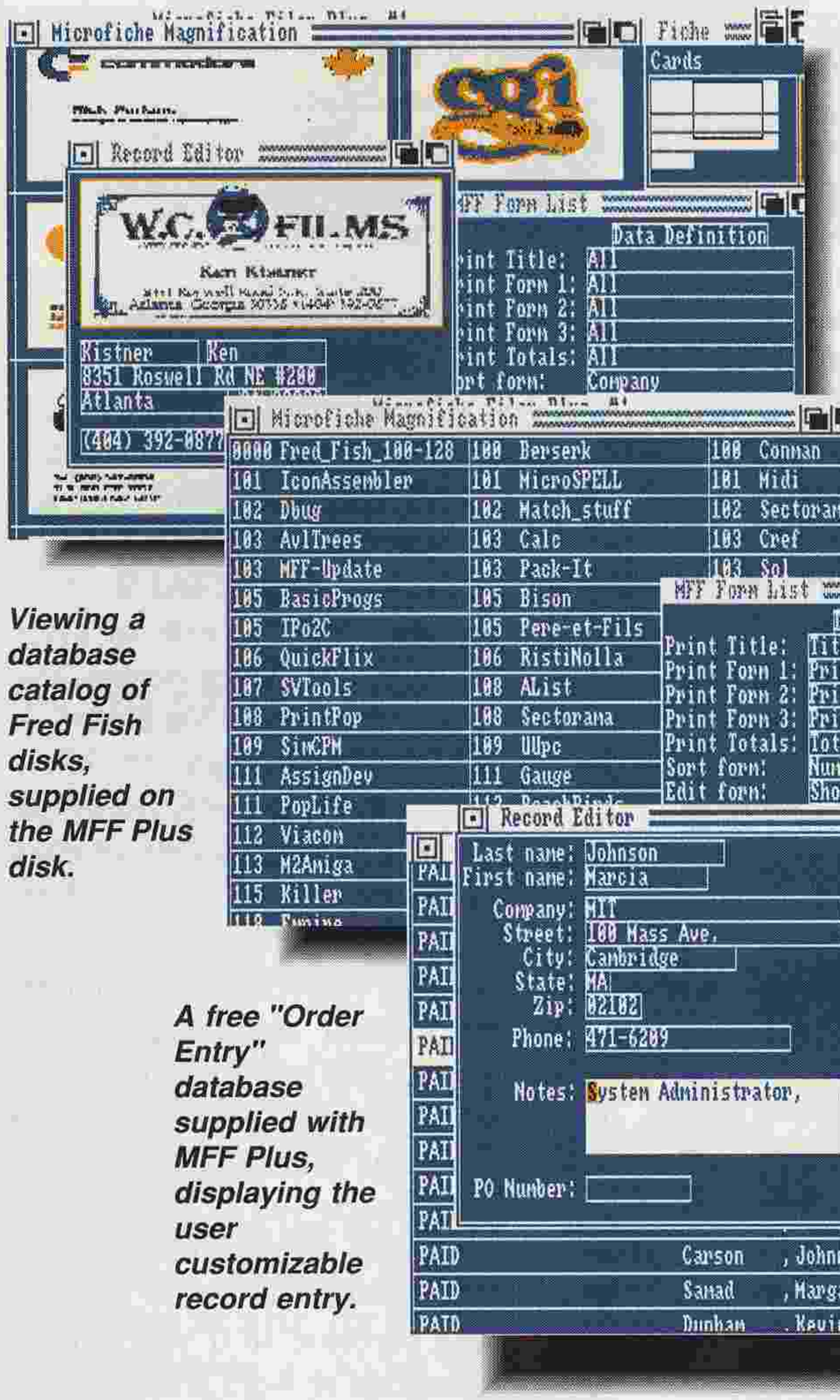
Forms List is a powerful tool. Suppose you've created a database address book of your friends and business asso-

---

By Harv Laser

ciates. Each person's record is made up of various fields - their first and last name, home and office address and phone numbers, and perhaps some notes about them. You have a virtually unlimited range of ways in which to view this information. You can pack the data very tightly on the screen giving one line to each record or expand it so that each person's entire entry is displayed. This is all controlled by the Forms List selections for that database and making a new form is as simple as duplicating a previous one and then modifying it to suit your tastes. When you wish to view your data in a different way simply grab the form by its name and plop it down in the "display" area and before you can say Abracadabra you've changed the magnification display.

Your data can be sorted in many logical ways on multiple fields and the display changed to reflect a new sort strategy in the blink of an eye. Microfiche Filer Plus adds the capability to enter numeric data and automatically format it and perform instant field calculations as you type it in.



A database of digitized business cards with one selected for record editing.

Viewing a database catalog of Fred Fish disks, supplied on the MFF Plus disk.

A free "Order Entry" database supplied with MFF Plus, displaying the user customizable record entry.

MORE POWERFUL

With improved programming comes more power too. How many fields can a single record have? There's no limit. How big can a field be? Any size you like. How many records can a database hold? The only limit is the your Amiga's available memory. There are no artifically-imposed restrictions in this program.

MFF Plus also handles the printing of your data intelligently. Just set up another form for the way you wish your database to look when it's dumped to paper - the same as or totally different from the view on-screen. No problem. Print all the records of each file or just a select few. Your choice.

Text-based data manipulation is just one of Microfiche Filer Plus's strong suits. Amiga graphics of all types are also food for database creation and here is where MFF Plus takes a giant stride above the original MFF.

IFF files of all types including HAM, overscan, brushes and even icons may be cataloged and viewed in a database. This facility is terrific for creating visual indexes of disks full of pictures of any type. There's even an example database on the disk to show how one company uses MFF Plus to do storyboards for preplanning filmed advertising.

Microfiche Filer Plus incorporates sophisticated picture file squeezing and remapping code so that you can make miniaturized displayed versions of your IFF files look as good as possible in the magnification window.

Take a look at the accompanying screenshot which shows a database made of digitized business cards.

Admittedly, it takes some experimentation with the "Picture Attributes" requester to find the right combination of settings that will make a given picture look "correct" on Microfiche Filer Plus's magnification. The algorithms provided are quite intelligent but there's only so much a computer can do when reducing a 4096 color HAM picture down to the two or four colors allowed on Microfiche Filer Plus's screen. What looks good with one Amiga Preferences color setting might look awful with another. Read the manual's instructions and try the example pictures' suggested settings to make this part of the program work best with your own graphics.

The ability to manipulate large amounts of graphical information is dependant on the amount of memory your Amiga has but Microfiche Filer Plus does not load graphics into precious CHIP memory unless you tell it to.

AREXX PROGRAMMABILITY

Potentially the most powerful new fea-

ture in Microfiche Filer Plus which was lacking in the original MFF is programmability.

Macros can be programmed on two levels: using a built in macro editor you can write a series of commands to replace a lot of mouse clicking. Or using your favorite text editor you can write extremely long and complex macro instructions to make Microfiche Filer Plus talk to other programs, importing, exporting, and interchanging data in more ways than I can possibly cover here.

Microfiche Filer Plus's disk comes with a number of handy macros to get you started. The rest is left to you but purchase of Microfiche Filer Plus by itself does not enable the program's ability to be automatically controlled.

Enabling MFF Plus' macro features requires purchase of a separate piece of software: The ARexx Language for the Amiga published by William S. Hawes. ARexx is a programming language not unlike BASIC in structure. Microfiche Filer Plus's macros require ARexx to be present and running before macro execution is possible.

While the macro facility like the rest of the program is powerful and well-documented, one enhancement I'd like to see here is the ability to name individual macros. As MFF Plus implements it now, each macro is given a number and it's up to you to remember which one does what. It would be more intuitive to be able to give each macro a name and then see those names appear in the menu when the database which uses those macros is loaded. Software Visions advises this will be implemented in the next revision of the program.

(While I'm noting a complaint, there's one more small one - almost every Amiga program uses the right Amiga key in combo with the "x" key to clear an active string input requester. MFF Plus uses this combination to close a requester and the escape key to clear them. Although this is consistent with the original MFF I still found myself constantly closing requesters when I meant to clear them).

Microfiche Filer Plus is still fully functional without the addition of ARexx but the purchase of that inexpensive language will not only give MFF Plus more power, but more programs with ARexx capability are being released all the time and it's not a terribly complicated language to learn. Using ARexx with Microfiche Filer Plus opens up whole new vistas of database flexibility and control.

CAN A DATABASE BE FUN?

This is the only database program for the Amiga that I've ever used that I would say is actually fun to use. Microfiche Filer Plus practically begs you to experiment with it. The program has so many unique features and its Intuition interface is packed with so many innovative tricks that even people who cringe when the word "database" is mentioned will enjoy using it.

This is not to say that a beginner can jump in and create award-winning databases in minutes. Microfiche Filer Plus like any powerful program does have a learning curve, but the documentation is excellent and the program's disk comes packed with many truly useful example databases which should be used not only as teaching examples but as templates when you're ready to get down to some serious business. A handy import/export utility is also included with purchase so if your current database program or word processor can save its files as ASCII text you'll be able to bring them into Microfiche Filer Plus with very little manipulation or massaging. This import/export utility does not require ARexx.

THIS PROGRAM IS SOLID

Like its predecessor, MFF Plus is amongst the most solid pieces of Amiga programming I've ever used. Software Visions proudly boasts about the thousands of hours of testing and debugging that went into Microfiche Filer Plus's creation. This is obvious. In all of my time spent with the program, no matter how fast I manipulate its menus and windows and gadgets and requesters, I've never been able to make it crash or GURU. Not once.

Microfiche Filer Plus is a logical and powerful upgrade to the original MFF. Just about every important operation has been improved or enhanced. If you are already an owner of the original MFF and decide to upgrade, all of your current databases will be readable with Microfiche Filer Plus. The opposite is not true, however, as the older program can not read the new MFF Plus format's files.

MORE GOODIES TO COME

At the end of March 1989 Software Visions began shipping their series of "Designer Database" disks, beginning with Home and Business and followed later by Video Graphics and Sound disks. These professionally programmed databases offer a complete, ready-to-run database environment to suit specific needs. Data definitions, forms lists already set up for printing and editing, and many fancy macros are featured on these disks.

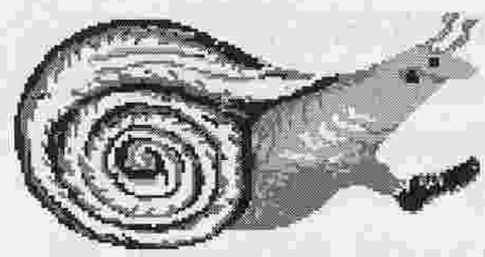
This is a good idea and something which many powerful Amiga programs currently lack. As good as a piece of software might be, there are many instances in which a buyer simply does not WANT to or have the time to delve into the depths of learning all the nuances of a program.

Well written templates and packaged solutions are a boon to the user who just wants to buy what he or she needs to get the job done with the least amount of fuss. Microfiche Filer was innovative. Microfiche Filer Plus is even better. I highly recommend it. ❑

Microfiche Filer Plus
Software Visions Inc.
P.O. Box 3319
Framingham, MA 01701
USA
(508) 875-1238
(800) 527-7014
$179.00 (US)
not copy-protected
Upgrade from Microfiche Filer available.

Optional for macro programming:
ARexx
The REXX Language for the Amiga
William S. Hawes
P.O. Box 308
Maynard, MA 01754, USA
$49.95 (US)

SHELLS



Among the many enhancements included in Workbench 1.3 is a much-improved Command Line Interface. When the Amiga was first released, working with the CLI could be somewhat of a pain - if you were typing a long command and got one character out of place, you had to delete everything you had typed after the mistake to fix it, or just re-type the entire line.

ENTER BILL HAWES

Eventually, William S. Hawes came to the rescue with his shareware utility ConMan, a replacement console handler which added full command line editing to the CLI. Now, if you made a mistake, you could simply use the left and right arrow keys to position the cursor at the mistake and correct it.

ConMan also added a command line history to the CLI. This feature lets the user move through previous commands using the up- and down-arrow keys.

Perhaps the biggest flaw with ConMan was the fact that many users didn't have the program. Not all Amiga owners have easy access to shareware programs, and many were stuck with the standard CLI editing capabilities (or lack thereof).

COMMODORE'S SOLUTION

The release of Kickstart/Workbench 1.3 addressed many of the complaints that Amiga users had about AmigaDOS. One of the most noticeable additions is the SHELL program.

The SHELL is an upgrade to the CLI environment that adds a number of functions, including many of those first available with ConMan. ConMan made using the CLI comfortable - the shell makes it almost enjoyable.

Along with command-line editing, history, and search functions almost identical to those included with ConMan, the shell also adds command aliases, resident commands, startup files, and support for the script protection bit.

BY ANY OTHER NAME...

Command aliases allow you to create shortcuts for commonly used commands. These can range from examples as simple as

```
ALIAS CTP CHANGETASKPRI
```

which would allow you to type "CTP 1" instead of "CHANGETASKPRI 1" to alter the priority of your CLI task.

You can also use the "[]" characters to substitute a filename or other instruction within an alias. For instance, if you were formatting a number of disks in your external floppy drive, you could create an alias using

```
ALIAS FORM1 "FORMAT DRIVE DF1: NAME [] NOICONS"
```

and simple type

```
FORM1 DISKNAME
```

for each disk you wanted to format. The ALIAS command will substitute DISKNAME for the brackets, so the command will be executed as if you had typed

```
FORMAT DRIVE DF1: NAME DISKNAME NOICONS
```

on the command line.

Aliases are specific to the shell that they were issued from. If you issue a NEWSHELL command, the new shell won't inherit the aliases that you set up in the first one. There is a way around this, however.

START ME UP

Another new feature of the SHELL (and the 1.3 NEWCLI command) is the startup file. Opening a new SHELL from the command line or by double-clicking its icon will automatically execute the commands contained in the file S:SHELL-STARTUP. Similarly, the NEWCLI command will automatically execute the S:CLI-STARTUP script. These files can contain any commands that would normally be found in an EXECUTE script. However, they are most useful for setting up the SHELL environment by including commonly used aliases and your prompt command.

FOLLOWING THE SCRIPT

Many Amiga owners have found the usefulness of EXECUTE scripts. These are simply text files that contain a list of commands to be executed in a certain order. These scripts can automate long, repetitive processes, such as compiling a C or Modula-2 program, or issuing a number of ASSIGN commands and running a program.

When using the SHELL you can avoid having to type EXECUTE before the script name. If the "script bit" is set on an execute file, you can start it by just typing the file name, just like a CLI command. For instance, if you had created a script file called "S:COMPILE" to compile a Modula-2 program, you would set its script bit by typing

```
PROTECT S:COMPILE +S
```

By Denny Atkins

and you would then simply type COMPILE to execute the script.

TAKING UP RESIDENCE

One feature of the 1.3 Shell is of particular interest to floppy users, particularly those with only one disk drive. The RESIDENT command works with the shell to allow commands to be made memory resident so that they don't have to be loaded from disk each time they are executed. Using the RESIDENT command is more memory-efficient than using the command from the ram disk.

For example, suppose you use the LIST command often. If you copied LIST to the ram disk, it would occupy 9972 bytes of memory. When you execute a LIST command, the program is copied from the ram disk into another area of memory and run, using an additional 9972 bytes, along with whatever memory is allocated for variables used by the program. If you made the program resident it would occupy about 9972 bytes of memory, just as if you had copied it to the ram disk. The difference is that when you execute a LIST command, the shell will simply run the program directly from the resident list, where it is stored in memory, using about 10K of memory instead of the 20K that would be required using the ram disk approach.

Also, if a command is written properly, the same copy can be used by more than one shell simultaneously without using more memory.

A resident command must be "pure" to be executed more than once simultaneously. This means it can't make changes to its own code, or store data within the program. You can tell if a CLI command is pure by using the LIST command and checking if the "p" (pure) bit is set. For example, the copy command is pure:

```
copy9848 --p-rwed 28-Oct-88 08:42:39
```

The RESIDENT command also can be used to add new features to the Amiga operating system. Part of the shell itself is invoked with the resident command.

PUTTING IT ALL TOGETHER

Their shell actually consists of two separate programs that work together, the NEWCON-HANDLER and SHELL-SEG. The NEWCON- HANDLER is a replacement for the console handler built into the AmigaDOS. When mounted, it creates a NEWCON: device that adds the command-line editing and history features that aren't available in the normal CON: console handler. The SHELL-SEG handler adds the resident command, prompt, alias, and script bit features. The shell is invoked by the following commands in the S/STARTUP-SEQUENCE file:

```
resident CLI L:Shell-Seg SYSTEM pure add
mount newcon:
```

CUSTOMIZING

The modular setup of the shell allows you to use the parts individually. Once the SHELL-SEG is made resident, any command line window you open will have the resident, alias, and script bit features, whether it is a CLI or a SHELL window. Why would you want to use SHELL-SEG without the NEWCON-HANDLER? Because of the first replacement console handler I mentioned- ConMan.

While the NEWCON-HANDLER adds most of the command line editing features that were introduced in ConMan, the latest ConMan release has a few extras that make CLI work even easier, including flow control (the ability to start and stop a listing using the CTRL-S and CTRL-Q keys), deletion of words and resizing CLI windows using the function keys, and the capability to move from word-to-word on a command line using the shifted arrow keys. ConMan can be used in conjunction with SHELL-SEG to give you an even more powerful CLI environment.

MAKING THE CHANGES

Using ConMan with the SHELL-SEG handler is fairly easy. Unarc ConMan (included on this month's AmigoTimes disk) and install the files using the command

```
EXECUTE ARCINSTALL
```

This will put the needed files for using ConMan in their respective directories on your boot disk. Then, you must make a minor change to your S/STARTUP-SEQUENCE file. Delete the line that reads

```
MOUNT NEWCON:
```

and add the following line in its place:

```
CONMAN -c
```

ConMan replaces the standard CON: handler, so remember to use the CLI icon or the NEWCLI command instead of the SHELL icon or NEWSHELL command. You will have all of the capabilities of the 1.3 SHELL, and the added features of ConMan!

WHO SELLS C SHELLS?

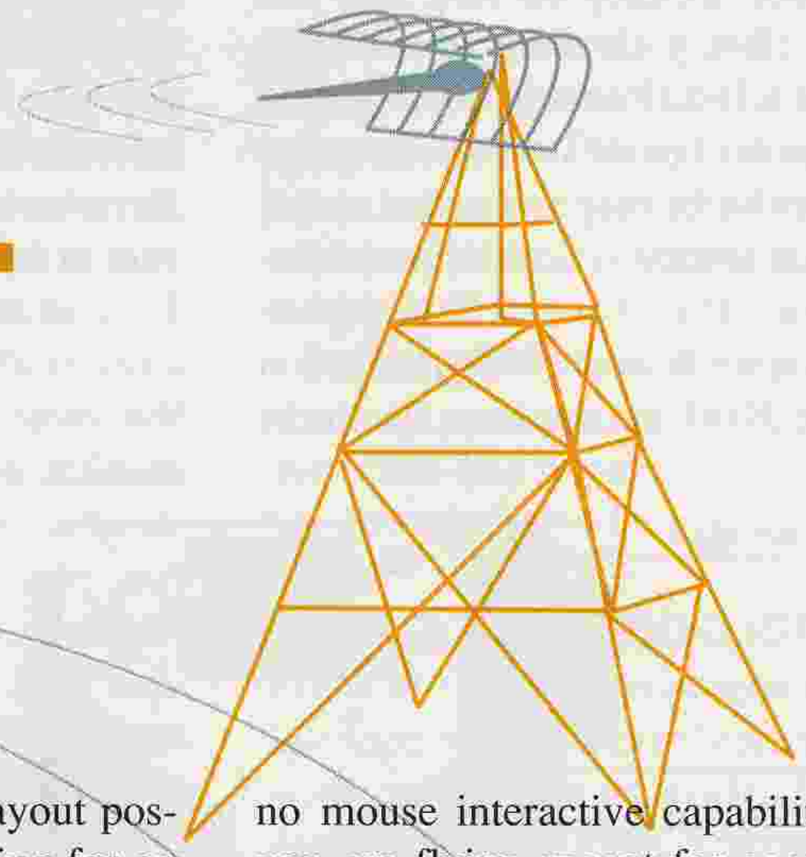
"Power CLI users" who need even more features in their command line environment should look into WShell, from the author of ConMan. This commercial CLI shell works with ConMan to add all of the features of the 1.3 shell, plus ARexx support, concurrent command piping, an implicit CD command, extended prompt and title bar strings, and the ability to assign a logical directory to multiple directories or disks.

Amiga users who have used computers running the UNIX operating system might also want to look into Matt Dillon's public domain Shell program, which is similar to the various UNIX C shells.

WShell
William S. Hawes
P.O. Box 308
Maynard, MA 01754
USA
$49.95 (US)

Dillon Shell
Matt Dillon
891 Regal Road
Berkeley, CA 94708
USA
Public Domain

JET INSTRUMENT TRAINER



PRE-FLIGHT BRIEFING

The package I received came in a white 8" X 9" binder. Needless to say I was very anxious to see all the advertised features in action for myself. Such features include:

Close simulation of the characteristics of a B-727 simulator
Complete capability to perform different approaches
ILS, VOR, NDB
STARS and SIDS
Holding patterns
DME arcs.

Other features include:
Position set
Pause function
Altitude set
Wind direction and velocity set.

I was pleased to see that all area charts and approach plates used were made by Jeppesen. This is a world recognized standard for airline pilots. Considering there was no chart familiarization required, I was ready to buckle myself into the cockpit and commence with the Before start scan.

BEFORE START SCAN

The keyboard replaces the conventional knobs, levers and switches found in cockpits. Although different types of aircraft have different cockpit layouts, all manufacturers strive to obtain the most logical and systematic layout possible. This is what I was looking for on the keyboard.

Although the package did not come with a keyboard overlay, the manual did contain several pages of 'keys to description' relationships. This is very helpful. The first of these pages illustrates the keyboard with arrows pointing to the keys along with their respective descriptions. An even more helpful illustration is a page in which the flight instrument screen is displayed along with arrows pointing to the keys along with their respective descriptions. As a matter of fact when I'm flying, I keep this page handy as a quick reference.

I was quite content with the layout chosen. The numeric keypad is used for levers such as gear handle, speed brake, flap and thrust levers. The arrow keys are your trims and four of the ten function keys are used to increase or decrease your bearing to or from the station. This can be done in increments of one or ten. I was not that pleased with the radio frequency "knobs." I wonder why they elected to use alphabetic keys when there are several function keys still available. The number two Nav keys are to the left of the number one Nav keys. Actual cockpits always have the number one on the left and the number two on the right. It would have been nice to have the ability to click on the screen on a radio panel and then simply type in the frequency. However, there is no mouse interactive capabilities while you are flying except for accessing the menu items.

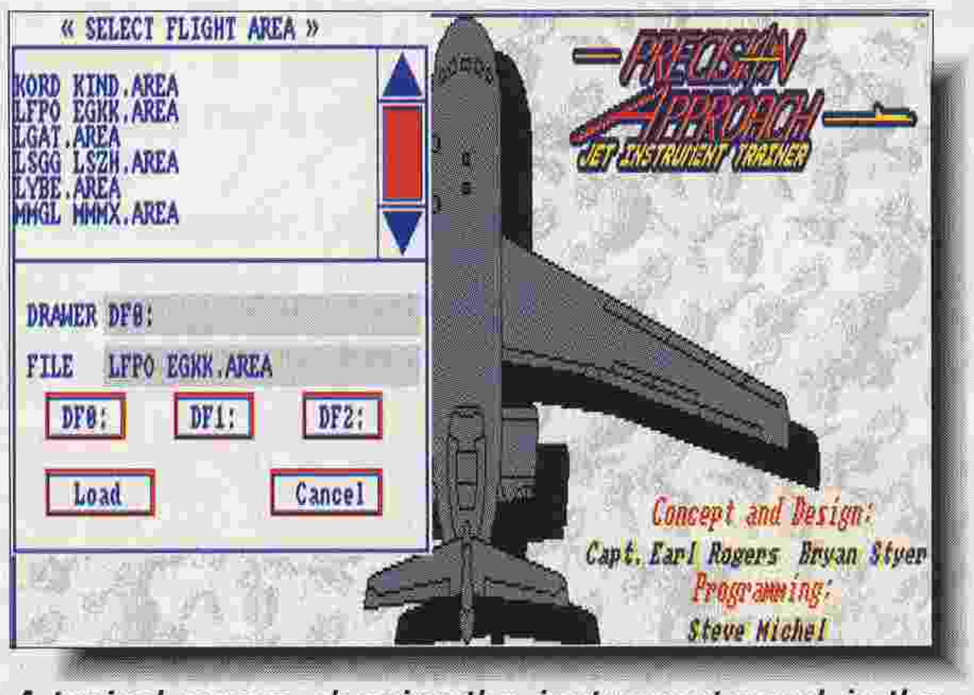
A unique feature is the turbulence mode key. On large jet aircraft, the turbulence knob is located on the autopilot. This feature dampens the response of the flight control movements when receiving signals from the auto pilot roll and pitch channels. The program however, does not use it in the same way. It simply allows more control by smoothing out the air. I would love to see this feature on real aircraft (especially while I'm having my dinner).I had trouble at first keeping the wings level. The aircraft would continuously bank to the left and the closest I could get to level flight was a four degree left bank. I did however discover that the problem was in my joystick. I have an auto fire switch on it and when it is selected "ON" the controls do not respond normally. It works fine with it "OFF."

Another feature that I miss is the "heading select" capability. This enables you to maintain your current heading automatically. An "altitude hold" feature is also missing, however, they do have an altitude set capability but once you resume flight you are on your own. Although these are not necessary, they would not only be helpful but are standard equipment on all airliners. All holds would also be done with at least the altitude hold engaged. Neglecting to incorporate these features reduces

By FIRST OFFICER R. SULPIZIO

the realism of the "real cockpit environment." After all, they do state that this program "closely simulates the characteristics of a B-727 simulator." The auto pilot is standard in all airliners. (weather it's serviceable or inop is another story)!

The last feature is a realistic simulator function. This is the ability to position your aircraft over either navigation facility or NDB at any time. It works well.



A typical screen, showing the instrument panel, in the Jet Instrument Trainer program by Precision Approach.

Now it's time to scan and familiarize ourselves with the instruments. Although the basic IFR instruments are all here and are all properly placed, I feel there is a lot left to be desired when it comes to the graphics. Especially since it is using an Amiga computer that is capable of much more. Nevertheless, we must do with what we have.

The Attitude Director Indicator (ADI) is one of your primary flight instruments. It is quite realistic in this program with regard to instrument location and markings. This includes pitch roll markings in 5 degree increments. It measures approximately 4 inches (10.2 cm) in size which is just a bit smaller than an actual ADI found in the Boeing 737, 727 and DC-9s. (FD-108 or 109 models).

The Horizontal Situation Indicator (HSI) is located just below the ADI. I was not happy with this instrument for two reasons. First, the compass card is not displayed in a standard azimuth format. The azimuth is replaced with two horizontal lines, one at the top and the other at the bottom of the instrument, each displaying 180 degrees of compass heading information. In addition, you have a 90 degree heading, one greater than and one less than your current heading, displayed at either side of the instrument. Although not impossible to fly, it certainly takes a lot of familiarization to feel comfortable with it. Second, I found that the Course Deviation Indicator (CDI) which is superimposed over the compass-card should rotate as the azimuth rotates. It should also rotate by changing the course pointer or OBS as it is called in this program (Omni Bearing Selector). Unfortunately, this CDI is fixed making it very difficult to visualize intercept headings and holding pattern entries.

The Radio Magnetic Indicator (RMI) is located to the left of the CDI. It was also difficult to read. I would define this instrument as a standard ADF. The reason is simply that there is no compass card behind the ADF needle. The ADF needle points to a station where as a RMI needle points to a station enabling you to get a bearing either to or from that station. This bearing can be read off the compass card which the needle is supposed to be superimposed on. The bearing information is however provided for you in the form of two displays. A To and From bearing is indicated just below the instrument. Although the end result is the same, this method does not provide you with the ability to again visualize your intercept and holding pattern entries without having to refer to your HSI compass. Welcome back to the good ol' ADF days Orville! The display also shows the frequency of the station tuned in, also, the bearings are color-coded to match the RMI needle.

The other instruments are quite simple and straight forward. Very little familiarization is required to use them. A clock is also provided and is a requirement to have on board all aircrafts. It has the ability to be reset however the program freezes while the reset routine is being called for.

It is unfortunate that Precision Approach Inc. does not use the Amiga's awesome graphic capabilities considering there is only one screen in the program that exists (aside from the title screen which incidentally is quite nice). Page one of the manual states "All who flew the Jet Trainer adapted quickly and in a few minutes were able to successfully complete instrument approaches..." This is absolutely true however I only felt comfortable after several hours of use.

If I could be greedy and ask for more instruments, I would like to see a radio altimeter and a flight director. These would be nice to have but are certainly not "no-go items!"

CLEARANCE DELIVERY

Now let's get a clearance and go flying. The first thing we must do is choose a destination. This is easily accomplished by loading an area in from either the diskette, ram or hard drive. Once loaded, you are able to tune in all ADF, ILS, VOR and Localizer frequencies in that area. All frequencies are sequential and you can select the next or previous at any time. Another very nice feature is that when an ILS frequency is selected, the inbound course is automatically set-up for you.

I loaded several areas through the course of this review and they all loaded with little difficulty. Precision Approach really did their homework when they designed the area loading capability because they allow you to program your own area, routes, stars, sids and approaches. That's right! I was very impressed to see this feature. I have programmed many airports where I presently fly into and both programming and loading worked flawlessly. I certainly tip my hat to the guys for this one. Now that we know where we are headed, let's go

CLEARED FOR TAKE-OFF

Once the area has loaded, you would expect to see a runway in front of you, select your flaps to take-off position, apply take-off EPR and blast-off. Well, you won't get it! The program will start you off in flight at an altitude of ten thousand feet. I was surprised to see this

but very happy. After all if you wanted to fly this off the ground you should get a standard simulator program. This is not a game but a tool for professional pilots to assist them on air work including approaches. Although there are some possible simulations you could experience on take-off such as V1 cuts, aborted take-offs, wheel well fires etc., the simulation would not be realistic on a computer because you would not have the "seat of the pants feel" to it.

Approaches and some airwork are another story. I say some airwork because manouvers such as stalls and steep turns are not that realistic. There is no stick shaker provided and although Boeing profiles are included, I feel they are provided only to educate pilots that are not familiar with the B-727. One thing that puzzled me was the fact that Precision Approach went through all the trouble of providing these profiles specifically for the B-727 and at the same time they include a "Prop" mode feature. So much for the professionalism. An excellent job is being done to avoid becoming just another flight simulator. I hope they keep this objective in mind when implementing future enhancements.



A typical screen, showing the instrument panel, in the Jet Instrument Trainer program by Precision Approach.

CLEARED FOR THE APPROACH

Now that we have loaded our area, we are ready to tune in the appropriate beacons and frequencies and execute the approach. There are six pre-programmed areas for you to start out with however not all approaches to these areas are available. I would like to have seen the ability to not only tune but also identify the selected frequencies, unfortunately there are no identification features provided.

After familiarizing myself with the approach plate to the runway I selected, I established myself on the procedure outbound heading. I then positioned myself over the beacon and executed a full procedure ILS approach. I followed the published aircraft profiles and found myself established inbound on the localizer below the glidepath. I selected gear down and flaps 25. The response to gear and flap selection seemed to be a little hesitant. The keys had to be held down for almost a full second. All I was hoping for at this point was that there was some sort of flat hard surface ahead of me to land this thing.

CLEARED TO LAND

Being inside the outer marker, I selected final landing flaps and continued the approach. An interesting feature to mention at this point is that the ADI becomes your cockpit window if you so desire, as long as you are (1)- established on the ILS, (2)- below the selected ceiling and (3)- depressing a numeric key. I found this to be a nuisance especially when landing in heavy crosswinds. This is no time to leave the controls and look for keys to press! It is a wonderful feature to be able to see the runway however, this should definitely be automatic. After all, you preselect your ceiling beforehand and if the cockpit view is black at DH then just execute your missed approach.

Once I depressed my "visual" key, I saw the runway and lead in lights. One tip here is to remain on your instruments until very short final. Everyone knows what it's like flying into a "Black Hole" without the aid of VASIS! I decided that there would be no attempt to be fancy on the flare for the first landing. As long as I could walk away without a reboot, I would be very content. As it turned out, the Amiga has a sturdy landing gear tolerance and the message "Good Landing" appeared.

Once you are on the ground, you are able to take-off after reducing some flap, advancing the thrust levers and rotating the nose. There is no need to depress a numeric key this time as the ADI automatically returns to the ADI mode.

Although I wanted to please crew sked and continue onto another leg, my duty time had expired so I had to shut her down.

SHUT DOWN CHECKLIST

I flew this simulation program for many hours on many different approaches and areas (only in the Jet mode). I found the controls to be quite responsive. The drift angles with correponding crosswinds were not exaggerated and the reduction in airspeed resulting from the deployment of gear, flaps and speed brake was realistic.

I am very pleased with the objective of this program and all instrument pilots could definitely benefit from it. There is a lot of room for improvement but then again this is a new product and I feel Precision Approach is well on their way to achieving their objective which will eventually be a very serious and powerful tool to any instrument pilot!

If you are looking for an arcade action game to play along with the kids, I suggest you keep looking. If, on the other hand, you have or are about to obtain your instrument rating, this program is highly recommended. I hope Precision Approach respects the noble supporters who buy this version of the program and offer an excellent upgrade policy when the new version is released. If you don't want to gamble on their policy, I suggest you wait until the next version becomes available with better graphics that not only make it easier to fly but would add to the realistic "characteristics of a B-727." ❑

Jet Instrument Trainer
Precision Approach, Inc.
P.O.Box 3116
Oak Park, IL 60303
USA
(312) 524-0909
$89.95 (US)

Idem Sama

AMIGA MUSIC, or "Why I don't sleep anymore"

When you finally admit that you are obsessed with manipulating and creating sounds, can a relationship with electronic music be far behind? For many musicians, the obvious answer is "certainly not." For those of us who own the astounding Amiga, the answer is "definitely not!" There are certainly other computers in the world that open the realms of electronic and digitized music to the creative artist and I'm not going to bother to attack any of them. The Amiga can stand on its own and gains an acceptance in the music guilds day-by-day with the addition of more and more professional software. There are several types of Amiga software:

1. There are dedicated composition programs (like DeluxeMusic, Sonix, and Music Studio) that allow the musician to compose on screen and then to audibly preview the music using the digitized sounds compatible with the compositional program.

2. There are programs that allow you to design and manipulate actual soundwaves (AudioMasterII comes to mind most readily).

3. There are sequencers, dedicated on-screen tape-recorders, that make it possible to sandwich several tracks of a composition together for recording and performing purposes. Many exist, but the most familiar is probably SoundScape by Mimetics.

4. There is software that allows you to play the keyboard as if it were an electronic piano.

5. There are programs dedicated to interfacing with one of the MIDI synths on the market (Dr.T's wealth of pieces and CZar to name a few).

Of course, many of these packages will do several of the operations listed above, and more software becomes available with each passing week. Some of that which is available is difficult to manipulate and some is geared to the beginning digital musician. The professional, not wanting to miss a trick, usually opts to purchase every available package. The Amiga musician soon realizes that comparatively, the present cost of setting up a minimal professional working studio is far less than it was even a few short years ago. The capability for producing professional recordings in a home environment, the most democratic of creative dreams, is now possible and within most musicians' reach.

MIDI is almost a separate category and as a current buzz word, it receives most of the attention in the music publications. In this article, I'm not going to focus on MIDI, but on the ways that the Amiga itself can help you create amazing and lasting pieces of music. I will do that by relating to you some personal experiments and productions that I have created, with the help of this wonder machine. Because many of you will not enter the MIDI realm in the near future, this might help you to realize at least a portion of your musical dreams.

There are two projects that I'd like to tell you about. The first concerns a number of pieces used as backgrounds in PSAs (Public Service Announcements) for some Amiga graphics and animations that were designed to play on local TV stations, and also a piece done for a short Hollywood documentary "The Gym" by producer Glenn Mack. The second is a tape that I have released called "Secret Dream Variations." Each posed unique problems and creative parameters, each might also give you some necessary motivation to experiment with the Amiga's sound options. Creatively, each makes use of some unique Amiga software, while none of the works mentioned here was produced with MIDI help. It is not necessary to use MIDI devices in order to achieve some wonderful professionally sounding results with your Amiga.

As the manager of the Graphics Service of the University of Vermont, I am often called upon to produce small animated segments for either instructional use, titling/credit effects, or PSAs to be shown on local and regional television. I have a background in animation and music, so that when the Amiga first hit the market, I was ecstatic about the possibilities. I have never been sorry that I invested in it and it continues to amaze me as a creative tool. Although I look forward to using the fabled MusicX from MicroIllusions once released, Electronic Arts' DeluxeMusic serves

(continued on page 110)

By R. Shamms Mortier, PhD

An Introduction To MODULA-2

Part Two: Data Elements

The objective of all computer programs is to process information. A computer is usually used to numbers, alphabetic characters or strings, or data that can be viewed in terms of these simpler kinds of data. In a computer program, this data is stored in variables, like empty boxes, into which we can put our own data or values. In Modula-2, variables have two basic attributes: name and type. The name of a variable identifies it to the program. The type of the variable determines values the variable may store, and which operations may be performed on or with that variable.

Modula-2's strictness for variable names, types and operations on variables are rules to help you avoid many common errors. If you make errors when specifying or using variables in a Modula-2 program, the program won't even compile, let alone execute, and thus you avoid wasting your time testing and debugging bad code.

All variables in a Modula-2 program must be explicitly declared before they can be used. A variable declaration begins with the keyword VAR, and is then followed by the name of the variable, a colon, and the type of the variables. If you need to declare more than one variable of the same type, you can declare them all on the same line of the declaration. An example of a variable declaration would be,

```
VAR

    Index : INTEGER;
    Ch    : CHAR;
    A1,A2 : CARDINAL;
```

This block of code declares four variables: Index, which is of type INTEGER, Ch, which is of type CHAR, and two variables, A1 and A2, which are of type CARDINAL.

The definition of Modula-2 states that variable names must consist of only alphanumeric (A-Z, a-z, and 0-9) characters. The Benchmark implementation also accepts the underscore ('_') character, probably because some programmers convert many C programs to Modula-2, and the underscore is used extensively in C. If you are writing new programs, I do not recommend using the underscore in your variable names.

Note also that the case of the letters in your variable names does matter; the names ch, CH, and Ch are different to the Modula-2 compiler.

SIMPLE DATA TYPES

All variables must be declared by name and type before they can be used. Mod-

Table 1: Simple Variable Types

CARDINAL
Variables of type CARDINAL are numbers. CARDINAL numbers are non-negative integer numbers (i.e. they have no fractional parts. The value of a CARDINAL numbers can be from 0 (zero) to MAX(CARDINAL). MAX(<type>) is a Modula-2 procedure that returns the maximum value allowed for a variable of a particular numeric type. In the Benchmarkimplementation, MAX(CARDINAL) returns 65535.

LONGCARD
numbers are, as the name suggests, long cardinal numbers. Like CARDINAL numbers, LONGCARD numbers are non-negative. The value of a LONGCARD number can lie in the range of 0 to 4294967295 (which is the value returned by MAX(LONGCARD))

INTEGER
Variables of type INTEGER are numbers. INTEGER numbers can have negative values, but cannot have any fractional part. The value of an INTEGER variable can lie in the range of -32768 to 32767.

LONGINT
Variables of type LONGINT are, like INTEGERs, whole numbers. The value of a LONGINT variable can lie in the range of -2147483648 to 2147483647.

REAL
*Variables of type REAL are also numbers, but unlike the CARDINAL and INTEGER types, REAL numbers can have fractional parts. In addition, REAL numbers can hold a much wider range of values than even LONGINT or LONGCARD variables. The range of a REAL variable is between -9.22337177*10^18 and 9.22337177*10^18.*

CHARA
variable of type CHAR can hold a single character. You can specify a particular character, like 'A' or '' (note that single characters must be surrounded by single quotes) or specify the character by using the CHR() function with the ASCII value of the character (i.e. CHR(65) would signify the character 'A'). If you use the CHR() function, the argument must be in the range of 0-255.*

BOOLEAN
A variable of type BOOLEAN can hold one of two values: TRUE or FALSE.

By Jim Shields

ula-2, referred to as a "strongly typed" language, checks each operation to be sure that the variables involved are the correct type. Modula-2 has seven simple variable types. (Table.1)

CONVERSIONS BETWEEN UNLIKE DATA TYPES

Because Modula-2 is a "strongly typed" language, assignments between variables of different types are strictly controlled. If an attempt is made to give a variable a value that is incompatible with that variable's type, the Modula-2 compiler will signal the error and fail to compile the code. For example, the perfectly legal C language assignment

```
ch = 65;
```

would assign the variable ch (which is assumed to be of type char) the value of 65. Now ch would contain the letter A (ASCII character 65 is upper case A). The Modula-2 equivalent of this assignment,

```
ch := 65;
```

would be illegal, so the compiler would catch it.

If you are wondering if there is some way of doing those assigmnents, you're right. In the case of the previous example, the code,

```
ch := CHR(65);
```
or
```
ch := 65C;
```

would work just fine. The point here is that the strong typing features of Modula-2 require the programmer to think about and clearly state what the program is supposed to do with the data. In the case of CHAR variables, the conversion is trivial, and may become a trifle annoying. In the case of POINTER variables (which will be explained in a later installment), Modula-2's strong typing features will save you from many visits to the Guru.

Most of the numeric types are assignment compatible. Variables of type INTEGER, CARDINAL, LONGCARD, and LONGINT may be mixed freely. However, the result of certain assignments may not always be what you expected. The problems begin when you start assigning variables values that the variable was not meant to hold; assigning a CARDINAL variable a negative value will yield less than useful results. Problems can also arise when you try to stuff a LONGINT or LONGCARD into an INTEGER or CARDINAL. If the LONGINT or LONGCARD variable contains a value that is greater than the maximum value the INTEGER or CARDINAL variable can hold, the value you will end up with will be meaningless.

You can avoid these incompatability problems by thinking your program's design out ahead of time. If your INTEGER variable might hold negative values, don't assign the value to a CARDINAL variable. If the value of a LONGINT or LONGCARD variable exceeds the maximum of an INTEGER or CARDINAL, don't try such an assignment.

MATHEMATICAL FUNCTIONS

Assignments to literal values (values that are explicitly stated in your program) can also cause you problems. Appending the character 'C' (for Character) on the end of a value allows you to directly assign an ASCII value to a variable of type CHAR. Likewise, you must append the character 'D' (for Double) on the end of a numeric constant before assigning that value to a LONGINT or LONGCARD. For example, the assignment,

```
L := 1;
```

would be illegal if the variable L were of type LONGCARD. The proper assignment would be,

```
L := 1D;
```

Variables of type BOOLEAN can be assigned one of two literal values: TRUE or FALSE. In addition, BOOLEAN variables can hold the result of a comparison for later use. The expression,

```
B := (Num=0);
```

would be perfectly valid if B were of type BOOLEAN and Num were an INTEGER or CARDINAL variable.

Variables of type REAL pose the most problems for the Modula-2 programmer. Simple assignment between REAL variables and other numeric variables (INTEGER, CARDINAL, LONGINT, or LONGCARD) is not allowed. To perform such an assignment, the LONG(), real(), and entier() functions are used. LONG() converts an INTEGER or CARDINAL variable to a LONGINT. The real() function returns the value of a LONGINT variable, expressed as a REAL. The entier() function returns the value of a REAL variable, expressed as a LONGINT.

In the examples that follow, the variable R is of type REAL, I is of type INTEGER, C is of type CARDINAL, LC is of type LONGCARD, and LI is of type LONGINT. The VAR statement is included to show you how these variables would be declared in a program.

```
VAR
    I : INTEGER;
    C : CARDINAL;
    LI : LONGINT;
    LC : LONGCARD;
    R  : REAL;

(* perform the correct equivalent of the the assignment R := I *)

(* first, convert I to a LONGINT using the LONG() function. Then convert the result of that to a REAL, using the real() function *)

    R := real(LONG(I));  (* real() only works with LONGINTs *)

(* perform the correct equivalent of the assignment R := C *)

    R := real(LONG(C)); (* do the conversion *)

(* perform R := LI *)

    R := REAL(LI)   (* that's an easy one   *)

(* perform R := LC *)

    LI := LC;  (* get LC into LONGINT format *)
    R  := real(LI);

(* perform LI := R *)

    LI := entier(R); (* entier() returns a LONGINT *)
```

Table 2: Simple Mathematical Operators

OPERATOR	OPERATION	EXPLANATION or RESTRICTIONS
+	addition	Simple addition; Valid with all numeric variables, regardless of type
-	subtraction	Simple subtraction. Valid with all numeric variables, regardless of type.
*	multiplication	Simple multiplication. Valid with all numeric variables.
/	division	REAL division. Valid with REAL variables only.
DIV	division	Integer division. Valid with INTEGER, CARDINAL, LONGINT, and LONGCARD variables
MOD	modulus	Modulus operation. Valid with INTEGER, CARDINAL, LONGINT, and LONGCARD variables.
OR	conjunction	Logical Conjunction. Valid only when used with BOOLEAN arguments.
AND	disjunction	Logical Disjunction. Valid only when used with BOOLEAN arguments.
NOT	negation	Logical Negation. Valid when used with one BOOLEAN argument (NOT is a unary operation).
-	negation	Numeric negation. Valid when used with one variable of any numeric type (this use of - is a unary operation). Even though the negation symbol is the same as the subtraction symbol, the meaning of the symbol should be apparent when you see it in use.

```
(* perform LC := R *)

    LC := entier(R); (* LONGINT and LONG-
CARD variables are assignment compatible. *)
(* I := R *)

    I := entier(R);  (* same for INTEGER and
LONGINTs   *)

(* C := R *)

    C := entier(R);  (* and for CARDINAL
and LONGINTs   *)
```

Be careful when doing conversions between REAL variables and other numeric types. Conversions like the expression 'C := entier(R)' above can return very strange results and cause you vast amounts of grief.

Finally, assigning literal values to REAL numbers can be tricky. The expression,

```
R := 1;
```

is illegal; 1 is an integer. All REAL literals must include a decimal point. The correct version of the above code would be,

```
R := 1.;
```

Note that 1. is a REAL literal. 1.0 could also be used, but the trailing zero is not required.

In short, when dealing with REAL numbers, all numbers in an expression must be REAL, whether they are variables or literals. The functions real() and entier() help convert non-REAL numeric types to REAL numbers.

MATHEMATICAL FUNCTIONS

Modula-2 supports several simple mathematical operators. (Table.2) As with simple assignments, rules define which variables can appear in an expression. The basic rule is simple; only variables with the same type can appear together in an expression:

(INTEGER) + (INTEGER)is valid.
(CARDINAL) + (CARDINAL) is valid.
(REAL)+ (REAL) is valid.

(INTEGER) + (CARDINAL)is not valid.
(INTEGER) + (REAL) is not valid.
(REAL) + (CARDINAL)is not valid.

Similar rules exist for LONGINT and LONGCARD variables.

If you need to use different types of variables in a mathematical expression, you will need to use one of the following conversion functions:

INTEGER() **Takes a CARDINAL argument and returns an INTEGER number.**
CARDINAL() **Takes an INTEGER argument and returns a CARDINAL.**
LONGINT() **Takes a LONGCARD argument and returns a LONGINT.**
LONGCARD() **Takes a LONGINT argument and returns a LONGCARD.**
LONG() **Takes an INTEGER or CARDINAL argument and returns a LONGINT.**
SHORT() **Takes a LONGINT or LONGCARD argument and returns an INTEGER.**
real() **Takes a LONGINT argument and returns a REAL.**
entier() **Takes a REAL argument and returns a LONGINT.**

The simple data types CARDINAL, INTEGER, LONGCARD, LONGINT, REAL, CHAR, and BOOLEAN can be combined to form new, more useful data types.

ENUMERATIONS

When you declare an enumeration, you are creating a new type of variable. An enumeration declaration tells the compiler all the individual values that variables of that type may have. Enumerations are useful when describing things that are not numeric and have a small number of discreet values. Days of the week, months, and colors are the kinds of things that are usually part of an enumeration.

You declare an enumeration with a TYPE statement, which must come before any VAR declarations that use the enumeration type. An example of an enumeration would be,

```
TYPE
    Day = (Monday, Tuesday, Wednesday,
Thursday, Friday, Saturday, Sunday);

VAR
    Yesterday,Today : Day;
```

With this declaration, the expression,

```
    Today := Friday;
```

would be valid. The expression,

```
    Today > Friday
```

would tell us if today is part of the weekend, because only Saturday and Sunday are greater than Friday .

Note that no real mathematics are allowed with some enumerations; (Monday + Wednesday) or (Blue DIV Green) are meaningless expressions.

SUBRANGES

Subranges define a smaller range of another type of variable, either one of the simple types or a previously defined

enumeration. Like enumeration, use a TYPE statement to define a subrange. Here is an example of an enumeration, and a subrange defined over that enumeration:

```
TYPE
    Day = (Monday, Tuesday, Wednesday,
Thursday, Friday, Saturday, Sunday);

    Workdays = (Monday..Friday);
```

All subranges are defined in a (<low value>..<high value>) format.

Subranges can be defined over a simple type, as well. Here is a subrange defining a two digit number:

```
TYPE
    TwoDigit = (10..99);
```

If a subrange is defined over a numeric type, as in the previous example, variables of that type can be part of a mathematical expression, provided that the other operands in the expression are of the same base type as the subrange. In the previous example, the base type of type TwoDigit is CARDINAL. Thus the following code would be valid:

```
TYPE
    TwoDigit = (10..99);

VAR
    TD : TwoDigit;
    C : CARDINAL;

C := TD + 2;   (* Adding a TwoDigit number
with a CARDINAL
    literal is valid *)
```

ARRAYS

Arrays are "data structures" that arrange other types of variables (includingother data structures) into arrangements that have some meaning to the programmer.

If you think of a simple variable as a "box you can put a value in," you could think of an array as "a series of boxes, laid end to end." Each "box" in an array is called an element, and each element has a number. A TYPE declaration is usually used to declare an array. Here is the declaration for an array of INTEGERs:

```
TYPE
    IntArray = ARRAY[1..10] OF INTEGER;
```

Note that the syntax of the declaration is

```
ARRAY[<low value>..<high value>] OF
<type>
```

In fact, the expression [<low value>..<high value>] can be repeated (theoretically) as many times as you want; the following declaration would be valid:

```
TYPE
    MultiArray = ARRAY[1..10],[1..10],[1..10],
    [1..10], [1..10],[1..10],[1..10] of CHAR;
```

This declaration would define a 10 X 10 X 10 X 10 X 10 X 10 X 10 array of characters; this array would have 10,000,000 elements, and would require just under 10 megabytes of memory. Usually, multi-dimensioned arrays are two or three dimensional.

The most common use for arrays is when representing character strings. A Modula-2 character string of N characters is defined as:

```
ARRAY[0..N] OF CHAR
```

This array actually has (N+1) elements. The last element is to hold the null character (CHR(0) or 0C) that terminates the character string. Character strings begin with the 0th character, not the 1st.

Any type of variable can be arranged into arrays. You can even use the types you define in your programs in arrays. The type Day we defined in the Subrange section could be used in an appointment calendar program like this:

```
TYPE
    ApptDays = ARRAY[1..50] OF Day;
```

This would define an array of 50 variables of type Day.

COUNTING AND LOOPING

Let's see how variables are used by discussing a common function of computer programs: looping.

One of the greatest uses for computers is in performing boring, repetitious tasks. We just perform the same calculations on a different set of values. Loops allow you to write a code to perform calculations, and include that code only once in the program. Loops provide a way of repeating the calculations, inserting the appropriate values into those calculations.

As an example, if you wanted to calculate the square of the first 20 numbers. You could run the following Modula-2 program:

```
MODULE Squares;

(* calculate the square of the first 20 numbers
*)

(* This program is provided for you on the disk
that comes with AmigoTimes. The source file is
called Squares.MOD, and the  executable program is called Squares. *)

FROM InOut IMPORT WriteString, WriteLn,
WriteCard;

VAR
    I,X : CARDINAL;

BEGIN
FOR I := 1 TO 20 DO
    X := I*I;
    WriteString("The Square of ");
    WriteCard(I,2);
    WriteString(" is ");
    WriteCard(X,2);
    WriteLn
    END(* FOR loop *)
END Squares.
```

The section of code that calculates and prints the numbers is specified only once, but that section is executed 20 times, each time calculating and printing the square of a different number. The FOR loop provides the correct values to the block of useful code.

A FOR loop is the simplest type of Modula-2 loop. The syntax for a FOR loop is:

```
FOR <variable> := <low limit> TO <high limit> BY <number> DO

    <block of code>

END;
```

where <block of code> is the useful code you want executed. Here's another simple FOR loop, which counts to 100 by fives:

```
FOR I := 1 TO 100 BY 5 DO
    WriteCard(i,1);
    WriteLn
END;
```

(continued on page 98)

Professional ScanLab Professional Page v1.2

....and some other 24-bit stories

Even though color scanning and 24-bit color separations are new to Amiga DeskTop Publishing (DTP), our favorite computer has taken several big steps forward in the world of DTP on all personal computers. As you know, AmigoTimes is created on the Amiga using a host of different software packages (see page 3). Since our previous issue (AmigoTimes v1.4) we have been using ASDG's Professional ScanLab to drive the SHARP JX450 300 dpi (dots-per-inch) color scanner. Using Gold Disk's Professional Page v1.2 and ASDG's ReSEP, we have been able to typeset and color separate these 24-bit (i.e. 16 million color) scans. In this issue we have color separated scanned photographs, a scanned water-color painting, and even some 24-bit ray-traced images.

Contrary to popular believe, the Macintosh II does not have any typesetting software that will color separate bitmapped or scanned images, they will only separate Illustrator drawings or structured drawings created within the programs. There are a few paint programs that will separate these bitmaps, but this means that the different separations still have to be stripped up.

JAGGIES? WHAT JAGGIES!?

Before I get into the heat of talking about scanning and separations, I want to clarify a popular myth about resolution and printing bitmaps. Many people wrongly believe that bitmaps are limited to screen resolutions and that jaggies are always visible when bitmaps are printed on a Linotype L300 imagesetter. Even though the Lino 300 has a maximum resolution of 2540 dpi, bitmaps are always printed at a much lower resolution unless they are made up of just two colors, namely black and white. To be able to print several shades of grey the Lino 300 (or any laser printer for that matter) uses a grid of dots to represent each shade. For example, to show 16 shades of grey the Lino uses a 4x4 dot grid to represent one bitmapped pixel. This reduces the resolution of the Lino from 2540 dpi down to 635 dpi (2540/4 = 635). Most Lino output is done at 1270 dpi because the maximum resolution of 2540 dpi is more expensive (usually double the price), requires more time, and uses four times the amount of memory on the Lino's Raster Image Processor (RIP). At 1270 dpi the resolution of a 16 grey shade bitmap is reduced to about 300 dots per inch.

Now imagine a 1000x800 image drawn with Deluxe Paint or PhotoLab being printed in a 3 inch by 2 inch area; as you can see the resolution of the bitmap is higher than what the Lino is outputting, i.e. no jaggies. You are probably thinking that there will be jaggies if you print that image in a 6 inch by 4 inch area. Well there is another problem: most printing presses cannot handle screen densities higher than 133 lpi (lines-per-inch) and a few, like the one AmigoTimes is printed on, can go up to 150 lpi. By the way, the lines-per-inch value represents the resolution that bitmaps (or screens) will be printed at.

If you look at the scanned painting on page 86 you will see that the pixels or jagged edges are not very evident, the page is a 876x1132 bitmap, that was color separated at 150 lines-per-inch. At 150 lpi, using a 16x16 grid for each pixel, the Lino can only represent 256 shades of grey, which is just enough to correctly display a 24-bit (16 million color) image. Each of the three films (Cyan, Magenta, and Yellow) in a color separation can have these 256 shades of grey therefore producing 16,777,216 (256x256x256) different colors. As you can see, at 133 to 150 lpi (which is considered typeset quality) it is quite easy to create images on the Amiga that do not show jagged edges when printed.

JX-450

The SHARP JX-450 flatbed color scanner is capable of producing high-quality scans at resolutions up to 300 dpi in black & white, 256 grey, or 16 million color. The JX-450 hooks up to the Amiga via ASDG's Twin-X board with the GPIB module attached. Installation is quick and simple and just involves inserting the Twin-X board into the Amiga and plugging the cables into the JX-450.

A mirror unit is available as an option for the scanner, this allows it to scan transparencies and slides. I was not

By Eyo Sama

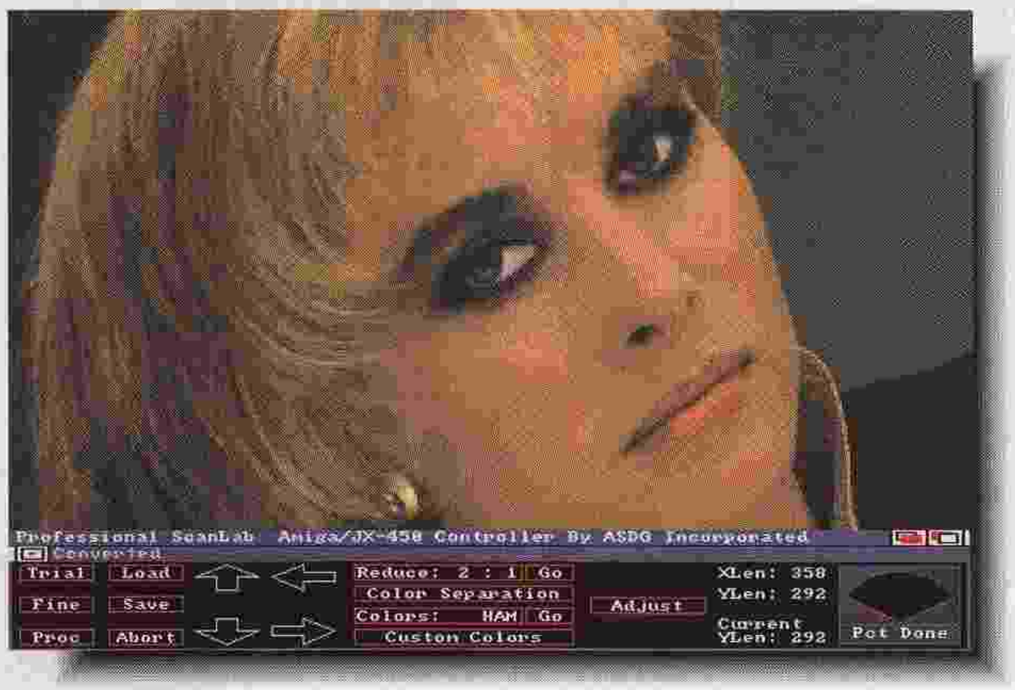
totally satisfied with the scans I obtained from transparencies, it was very difficult to balance the contrast between the dark and light areas (the light areas came out brighter than they should be). With prints though, the quality obtainable is astonishing and very quickly proves that at even 300 dpi you can easily take the resolution and halftone accuracy of an imagesetter to the limit.

The JX-450 scans quite fast; a 8.5"x11" page at 150 dpi takes less than a minute to be scanned. The JX-450 creates scans which are slightly darker than the originals, but this is no problem since Professional Scanlab, the software interface to the scanner, allows you to automatically alter the brightness and contrast of your scans.

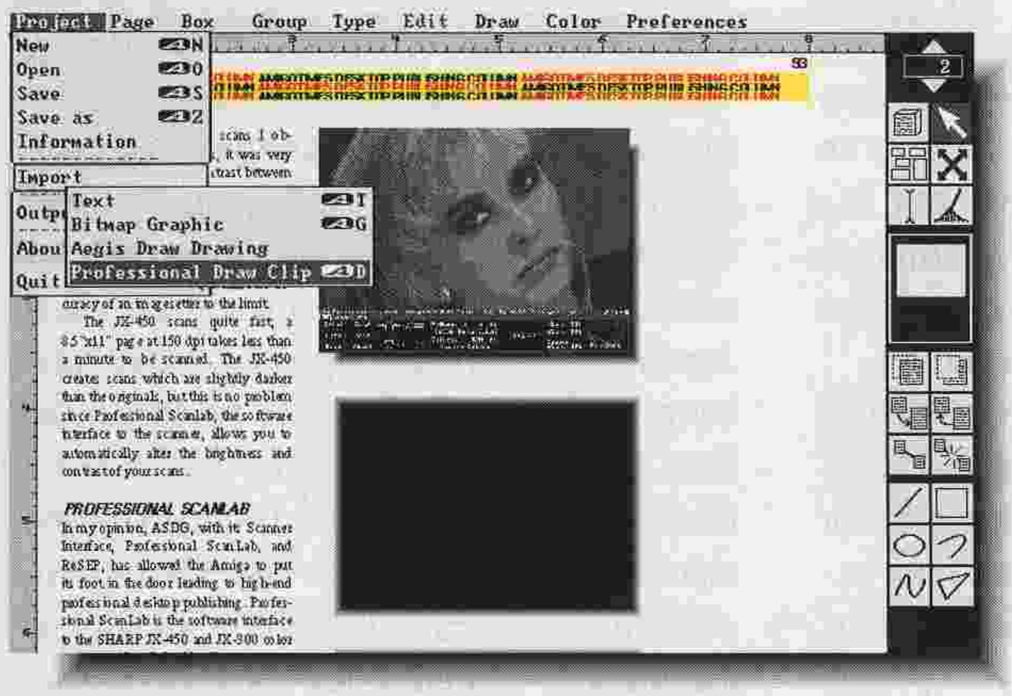
PROFESSIONAL SCANLAB

In my opinion, ASDG, with its Scanner Interface, Professional ScanLab, and ReSEP, has allowed the Amiga to put its foot in the door leading to high-end professional desktop publishing. Professional ScanLab is the software interface to the SHARP JX-450 and JX-300 color scanners (ScanLab/100 allows you access to the SHARP JX-100 hand-held color scanner). Professional ScanLab not only excels as an Amiga program, but it is also the fastest and most versatile interface to the SHARP scanners. The Macintosh II implementation pales in comparison to the very quick HAM bitmap scrolling of ScanLab, which of course can be attributed to the graphics co-processors of the Amiga, even though I have never seen HAM scrolling this quick on any other Amiga application.

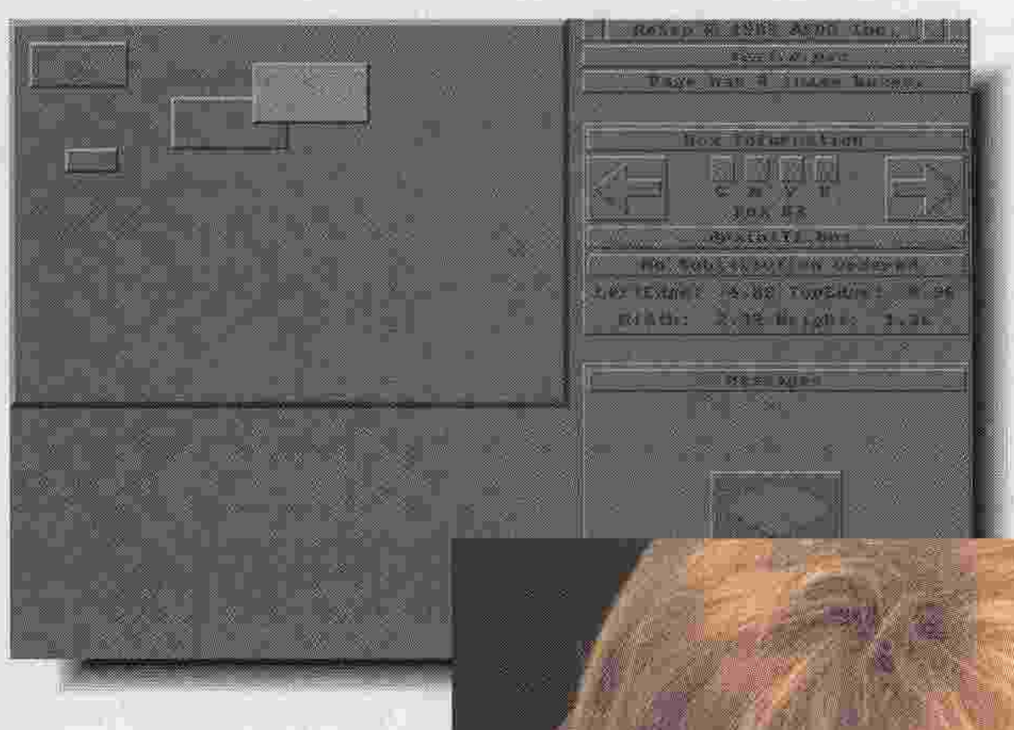
Professional Scanlab allows you to initially do a fast black & white scan, called the trial mode, where you have the ability to select and scan a subrange of the total scan area. Once you have the exact cropping of your image, you can go into the fine mode where you then select the resolution (from 50 to 300 dpi) and color quality of your scan. Scans can be mono (1 bitplane), 3-bit, 8-bit grey scale (256 shades of grey), and 24-bit (i.e. images that have 16 mil-



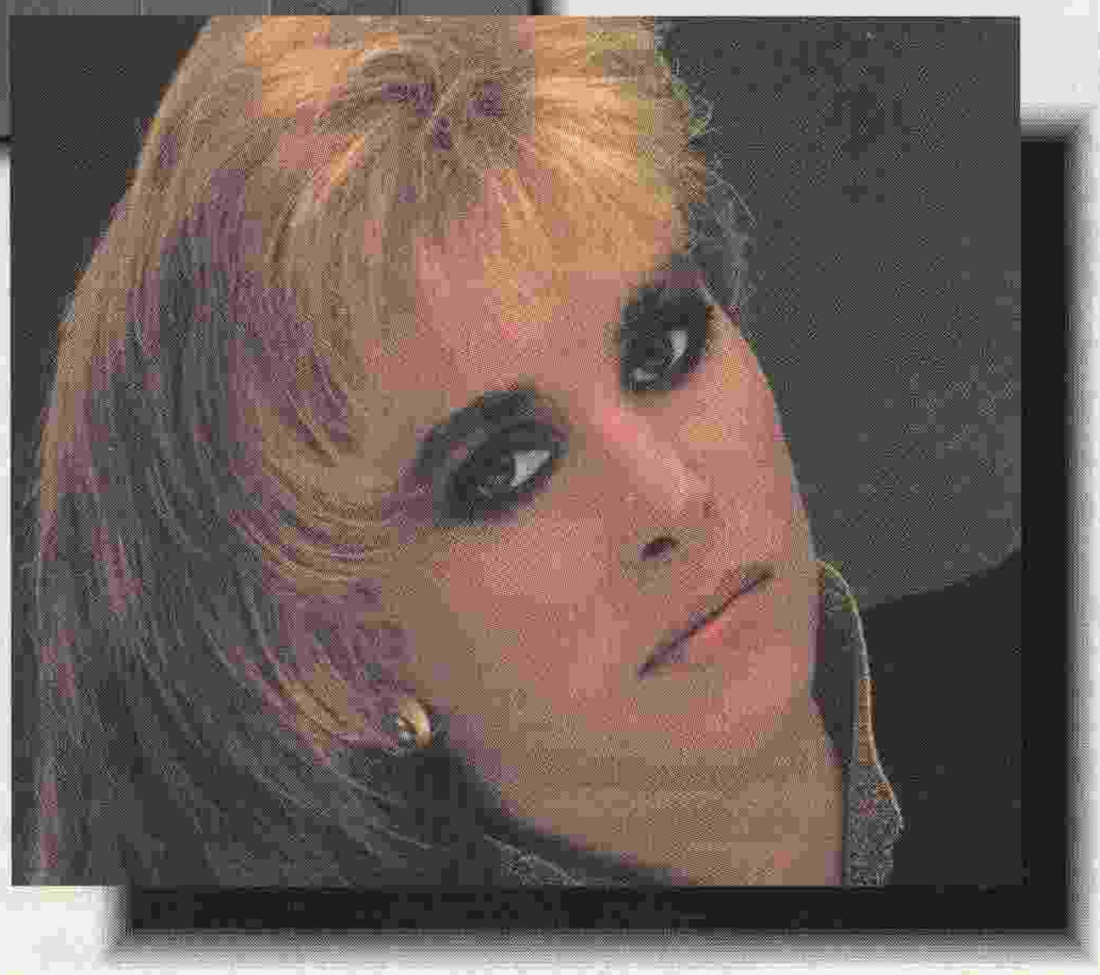
Professional Scanlab is the software interface to the SHARP JX-450 color scanner and allows you to scan artwork, photos, etc. with a maximum size of 11"x17" at up to 300dpi (dots per inch). ScanLab gives you a HAM representation of the 24-bit (16 million color) image it has in memory.



Once you have scanned an image you should save it as a 24-bit and as a HAM file. The HAM file is then loaded into Professional Page v1.2 and color-separated to a disk file. As you can see here, Professional Page v1.2 allows you to load drawings created in Professional Draw.



ReSEP, from ASDG, loads PostScript files generated by Professional Page v1.2, allowing you to replace HAM separations with 24-bit separations done with Professional ScanLab.



The final result; this page (as are all the pages of AmigoTimes) is printed on a Linotronic imagesetter. This picture is a 24-bit image which was scanned with Professional ScanLab and the SHARP scanner.

lion colors available to them). After you click on the scan button, the scanner starts its job and transfers the scanned image via the GPIB interface to the Amiga. As you may know, the Amiga is not yet capable of displaying from a palette of 16 million colors, therefore Professional Scanlab shows you a HAM representation of the 24-bit image it has in memory.

There are several different procedures you can undertake before you finally save your 24-bit IFF image, everything from changing the brightness, contrast, and color balance of your scan, to color separating it into its printing colors. It would have been nice to have a function to soften or sharpen the images (selecting edge detection can sharpen the image to a degree but it's not the same thing). Scanned images can be saved as 24-bit or 8-bit, and also in the Amiga's HAM or hi-res modes.

Color separations are done very fast (in fact faster than any publishing software I know), they also include a color correction algorithm that takes into account the impurity of printing inks. Judging from the color keys (proofs used to verify the accuracy of color) that we produced, it seems that ASDG has solved a problem that has been plaguing electronic publishing systems for a long time.

On the down side of things, high-resolution 24-bit images use up a lot of memory, a 8.5" x 11" page scanned at 100 dpi requires you to have about 3 MB of memory just for the image itself. At 150 dpi you would need over 6 MB for the 1275x1650 bitmap. It would be useful if Professional Scanlab could optionally scan directly to a hard-disk, according to ASDG, this may be implemented in a future version of ScanLab. Another option I think may be useful is having a ruler, a grid, and also a box with handles to aid the accuracy of selecting subranges in the trial mode.

PROFESSIONAL PAGE v1.2

Gold Disk's newest version of Professional Page, version 1.2, now allows you to import bitmaps with resolutions greater than the 1008x1024 version 1.1 was limited to. This makes it possible to load the larger scans created by Professional Scanlab and Gold Disk's own b&w Canon scanner interface. Professional Page v1.2, with the aid of ASDG's ReSEP, makes it possible to publish in full 24-bit color, as we have done with this issue of AmigoTimes. Professional Page v1.2 also allows you to load drawings created with Professional Draw which can then be scaled, cropped, and placed upon your page just like any other box.

On the color separation side, the quality of separations have been greatly increased by giving the user control of the Under Color Removal (UCR) and Grey Component Replacement (GCR) values used. The UCR determines how much equivalent color is removed from the cyan, magenta, and yellow films, while the GCR determines how this removal is replaced on the black film. Apart from several bug fixes there have been some enhancements to the interface of Professional Page, that make it faster and easier to use. For example, screen refresh can now be aborted by pressing the escape key, bitmaps are automatically scaled when they are loaded into a box, the file requester has a sort button. The greatest new features are of course the support for ReSEP's 24-bit separations and the Professional Draw support which allows us to create headings such as the one on page 60.

ReSEP

This small and very easy to use utility, bridges the gap between scanning color pictures and publishing them in 24-bit color. When you scan an image you save both the 24-bit and HAM versions, the 24-bit file is separated in Professional Scanlab while the HAM version is loaded and then separated within Professional Page v1.2. ReSEP searches through the PostScript output from Professional Page v1.2 and then replaces the HAM separation with the 24-bit separation.

The interface is very well put together and gives you a visual representation of what the output page looks like. It does this by drawing a page and boxes where the images are positioned. You only need to replace those images that you want in 24-bit color, the rest are left as they were. The only annoyance is the fact that you have to keep the original 24-bit file, the HAM file, and the 4 color separations on your hard disk, which comes up to about 5 MB for the image on page 86. It would make more sense to have ReSEP separate the 24-bit files itself.

CONCLUSION

Using Professional Scanlab, the JX-450 color scanner, Professional Page v1.2, and ReSEP, the Amiga desktop publisher has the weapons he needs to successfully compete in the DTP and graphic design markets. What the Amiga may lack in font utilities and typographic special effects programs, it certainly makes up in cost-effective and quality color publishing.

Look at the b&w photo on page 51, the painting on page 86, the pictures in the Genlock article starting on page 16, and all the other color and b&w pictures in the magazine, they were all scanned, typeset, and color separated with these tools. In future columns I will go into more details on how we actually use all these tools to create the pages of AmigoTimes. ❑

Professional Scanlab
ReSEP
ASDG Inc.
925 Stewart St.
Madison, WI 53713, USA
(608) 273-6585
$995 (US)

JX-450 Color Scanner
SHARP ELECTRONICS CORP.
Sharp Plaza
Mahwah
New Jersey 07430-2135, USA
(201) 529-8200
$6,995 (US)

Professional Page v1.2
Gold Disk
P.O.Box 789
Streetsville, Mississauga
Ontario, CANADA L5M 2C2
(416) 828-0913
(800) 387-8192
$395 (US)

(continued from page 35)

there are many more options at your disposal to simplify even the most complex object creation. Aside from serious drawbacks in the manual (frequent typos and a few upside-down screenshots), Modeler 3D is probably one of the best 3D modeling programs available for the Amiga. Here at Pixelight, we have found it to be very easy to use and very fast and efficient in the creation of objects for the various commercial jobs we do.

ANIMATING THE LOGO

Exiting Modeler 3D, we load in VideoScape 2.0, and through the CLI, using ED, we write the appropriate motion and camera files for the various objects. After checking the motion on each object in lo-res wire-frame mode, verifying that they are all together as a unit, and fine-tuning the movements until we're satisfied, we're ready to render the frames. We set VideoScape in HAM mode, with the Z-Buffer on, and render one frame to check the chosen lighting. A digitized image of sky and clouds is chosen for the background and we proceed to have the 60 frames rendered and saved as IFF.

Just over two hours later, the frames are all done. The next program in our sequence of logo creation is Deluxe Paint. We enter into Interlace mode (this is the resolution most of Pixelight's commercial work is done in), and again, using the Easyl, we render the Bubblegummers cartoon characters: Amy, Tim, and the Cat. Each character is saved as a brush, and brought back into DPaint, so that using the perspective mode, we could simulate a flat 3D rotation of the characters. The brush is saved at various degrees of rotation, leaving us with 20 brushes of each character.

Since the VideoScape frames were rendered in HAM, we can move on to a HAM paint program: Photon Paint. We find Photon Paint to be the handiest of the HAM paint programs to use for several reasons, among them the interface and keyboard equivalents are similar to that of Deluxe Paint, and that you can manipulate two HAM screens easily. It is here that we add the sequence of brushes we created in Deluxe Paint II to the frames of the logo animation.

Finally, with the completed artwork, it's time to compile the frames as a single file animation. For this we use PageFlipper Plus, which gives us the ability to add timing, edit the animation after it has been compiled, and gives us the maximum real-time playback speed available on the Amiga. In about five minutes the frames are compiled and the job is done (See Figure 9).

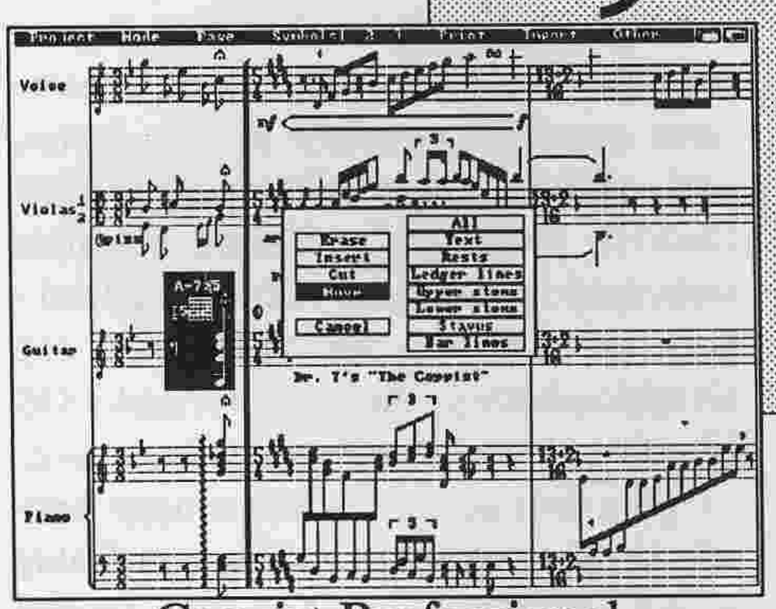
OUTPUT

Since the logo was created for use with video applications, the final output went to BetaCam SP (which is equivalent in quality to One Inch video), directly from the Amiga, through SuperGen (from Digital Creations).

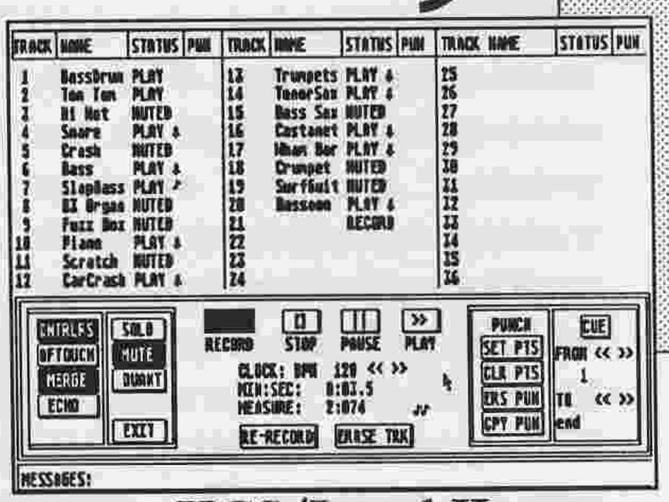
In all, the entire job, from initial object creation to final output took a total of 6 hours. ❑

Modeler 3D
Aegis Development Inc.
2115 Pico Blvd.
Santa Monica, CA 90405
USA
$99.95 (US)

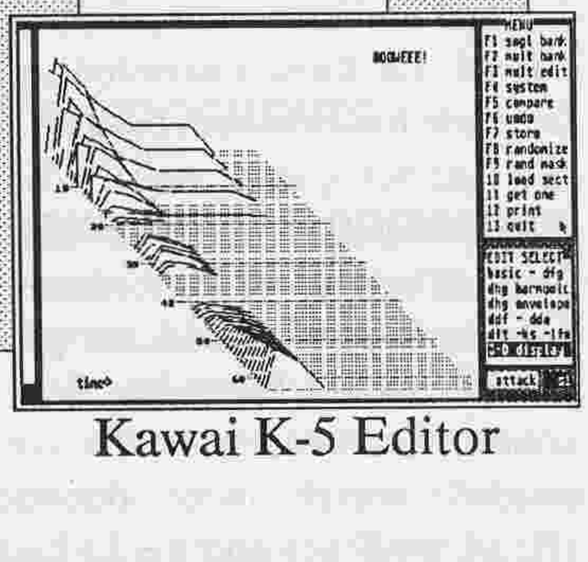
One, Two, Three



Copyist Professional



KCS/Level II



Kawai K-5 Editor

Whether music is your job, or you do it just for fun, we have the music software tools that will help you make music faster and easier than you ever dreamed. And now with the release of the Level II sequencer you can find out just how much of a partner a program can be in creating your music. Try us and see why thousands of Amiga users choose Dr.T's. Call or write for our free catalog.

We define MIDI music software!

Dr.T's
MUSIC SOFTWARE, Inc.
220 Boylston St. #206
Chestnut Hill, MA 02167
(617) 244-6954

Printer Drivers Under AmigaDOS 1.3:

A Better Deskjet Driver

By Gerald Hull

One of the great areas of improvement in AmigaDOS 1.3 consists of the printer.device and the new printer drivers. There is an entirely new screen in Preferences, Graphics 2, replete with options for printing out graphics. Not only can you do more, you can do it faster; the new drivers are three to 30 times faster than was possible with 1.2.

However, the new printer drivers still fall short in some areas. I discovered that the official Commodore HP_DeskJet driver did not let me take full advantage of my new Hewlett-Packard printer. Fortunately, this is something an enterprising programmer can do something about.

Included with this article is the complete source for Better_DJ, a significantly augmented printer driver for the DeskJet. I will talk about where and how I have introduced various improvements. The generic differences between 1.3 and earlier drivers also will be discussed, for those interested in adopting the code for their own printers.

EXPANDED PREFERENCES

The 1.3 version of Preferences supports a wide range of options for printing out graphics. With 1.2 and earlier, the only control available over the size of the printed image was through Pitch (Pica/Elite/Fine) and the Left and Right Margin settings. (Not realizing this, I was sure something weird was going on when I discovered during tests that choosing Ellite would reduce the size of graphic printout.)

With the new Preferences, you can choose the resolution (if your printer has this capacity), specify the size of the left offset, choose among various types of dithering methods, determine the size of the printout in many different ways, specify that the conversion to printed dots be an exact multiple of the image dimensions in pixels, and so forth.

From the perspective of designing and coding a printer driver, however, most of these new capabilities are invisible. They are taken care of by the printer.device. Nonetheless, there are some significant differences between the modules required for 1.3 printer drivers, and earlier versions of the operating system. Printer drivers written for 1.2 AmigaDOS simply won't work with 1.3.

SEVEN BASIC MODULES

Generally speaking, seven code modules are required for a 1.3 printer driver: printertag, init, data, dospecial, render, transfer and density. The last two are new, to accommodate the speed-up in printing graphics and to handle multiple-resolution printers.

The wait routine that was required with pre-1.3 drivers generally is no longer necessary. It was used to impose a delay after resetting printers prior to printing graphics. This practice is no longer recommended. In the case of the DeskJet, for example, it fatally sabotages multiple graphic dumps. However, some printers, for example the CalComp ColorMasters, still need to wait to avoid communication mix-ups.

The printertag module contains an assembler embodiment of the PrinterExtendedData structure that defines the capabilities of the printer and makes the constituent functions of the driver accessible to the printer.device. For 1.3 it contains three additional longword fields: a pointer to the ExtendedCharTable, a PrintMode flag, and a pointer to the ConvFunc routine (if any.)

The PrintMode flag allows the other modules in the driver to signal if the Close routine should issue a page ejecting formfeed. For example, if one has been sent by the graphics Render routine, you don't want to issue another. The ConvFunc routine provides a capability for replacing characters with other characters or sequences. One suggested use would be to implement underlining for printers that can't do it automatically.

The init code, also typically in assembler, is largely unchanged. It contains the Init, Open, and Expunge functions required in every printer driver, and perhaps also Close. (For the DeskJet, Close is more than a simple stub, so it has been moved to dospecial.) However, for 1.3, in addition to the Graphics library, the Intuition and DOS libraries are also made available.

The data module, most simply written in C, contains the CommandTable which translates the ANSI-type control sequences that the Amiga accepts into printer-specific commands. With AmigaDOS 1.3 it now contains an ExtendedCharTable as well, for printers (like the DeskJet) with the capacity for 8-bit

character sets.

The DoSpecial function has changed little from earlier printer drivers. It provides additional logic for those ANSI-type sequences that cannot be handled by simple substitution. For the Hewlett-Packard DeskJet, the dospecial module also contains the Close function, expanded to contain a check to see if a formfeed is required to eject the current page. This module is usually written in C. You can downcode it to assembler, but the speed-up gain will be negligible.

RENDERING GRAPHICS

By far, the biggest changes in the code for printer drivers under 1.3 are in the graphics Render routine. The different cases have been moved around, changed in function, and augmented (see Table One.) In addition, the two new modules, transfer and density are both invoked from Render.

All three modules are usually coded in C. As you can see from the listings, I have rewritten Transfer in assembler. Alas, this did not make printing graphics with the DeskJet significantly faster, though apparently there could be substantial improvements with other printers. I had to be content with a size reduction of some 250 bytes.

A great deal of the graphics' speed improvement in the 1.3 drivers can be attributed to the fact that drivers no longer have to deal with one pixel at a time. Instead, the Render routine is called only row by row, reducing overhead by a factor of up to 640, depending on the width of the graphic.

In particular, the Transfer code now has the responsibility of rendering a row of pixels into a form appropriate for downloading to the printer. The important input to Transfer consists of an array of longwords (colorEntry) containing a breakdown of the intensities of component colors for each pixel, plus an array of words (ScaleX) indicating how many times each pixel should be replicated for the printer.

Depending upon whether Black and White or Gray Scale have been chosen in Preferences' Graphics 1, the Transfer routine either thresholds or dithers these pixels into the data buffer that will download the row to the printer. By controlling the starting X position, width, and scaling factor, the printer.device determines the size and placement of the resulting graphic printout.

The density module is called during the Pre-Master Initialization stage of Render. With the DeskJet printer you have the choice of printing out 75, 100, 150, or 300 dots per inch by selecting Densities of 1, 2, 3 and 4 respectively. Choice of a greater value defaults to the maximum of 300 dpi. Since the code for this module is relatively simple, I have assimilated it into case 5 of Render.

USING THE BETTER_DJ DRIVER

In writing a printer driver it can be difficult to balance all the competing requirements of printer, printer.device, and software. This shows up in how the Better_DJ driver handles the margins for graphics. Immediately after reset, the top margin will be 1/6 of an inch. But for every subsequent graphic, the margin will be approximately 5/8 of an inch.

However, with a program like DeluxePaintII you will have to reset the printer before printing out every graphic. This is because the program downloads five extra linefeeds after every graphic. If you don't reset, there will be a 1 1/2 inch margin at the top of the next graphic, with messy results.

Because the DeskJet panel provides full control over font sizes, including most of the font cartridges, I have made the Better_DJ driver ignore the more limited Pica/Elite/Fine control in Preferences. However, when you download Left and Right Margins the printer will interpret them in terms of the currently chosen font.

If one of the proportional font sizes have been chosen, those margins will be interpreted in terms of the least wide character, the space. Since the size of those fonts is expressed in points, we use that to figure out the number of spaces required to produce a given length in inches:

spaces = (294 * inches) / points.

Consequently, if you want a half-inch Left Margin and an eight-inch Line Length with a 10 point proportional typeface, you would calculate

LM = (294 * .5) / 10 = 15,
LL = (294 * 8) / 10 = 235, therefore
RM = LM + LL = 250.

Finally, determining page size with the DeskJet can be confusing because of ambiguities in the way in which key terms are used. In the Owner's Manual, Page Length is 66 for a standard 8 1/5" x 11" sheet at six lines per inch. It is broken down into Top Margin plus Text Length plus Bottom Margin.

However, the Length setting in Preferences is not the same as Page Length, but is regarded by the Better_DJ driver as Text Length plus a default Top Margin of two lines. So if you set Length to 63, the driver downloads a Top Margin of two and a Text Length of 61. By elimination, this sets the Bottom Margin to three, which is required because the DeskJet physically cannot print on the bottom half-inch of a page.

Be forewarned, however, that some word processing software treats Top and Bottom Margins as blank lines which also get sent to the printer. In this case, they would have to be included in the total 61 lines of text that the DeskJet is expecting per page.

ACKNOWLEDGEMENTS

A complete source listing for the Better_DJ printer driver accompanies this article, along with the makefile used with the Lattice LMK utility in generating it. I have not gone into many coding details in this article. The design of printer drivers is relatively standard, and there is in-line documentation in the code.

A complete source listing for the Better_DJ printer driver accompanies this article, along with the makefile used with the Lattice LMK utility in generating it. I have not gone into many coding details in this article. The design of printer drivers is relatively standard,

and there is in-line documentation in the code.

Invaluable information on writing printer drivers can be found in the ROM Kernal Manual on Libraries and Devices, though of course it predates the latest version of AmigaDOS. Up-to-date information for 1.3 can be found in the Conference Notes for the 1988 Developers Conference, most of which was reprinted in the January/February, March/April, and May/June issues of AmigaMail (the Commodore technical support publication) during the past year.

No one writing printer drivers for the Amiga could get very far without that information, not to mention the sample drivers that were distributed at the Developers Conference. A testing program called PrinterTest has also been extremely useful, despite its tendency to crash my system. The name David Berezowski crops up frequently on this code and documentation. I am greatly indebted to him, and all the other members of the Commodore-Amiga Technical Support staff. ❑

(continued from page 91)

MODULA-2

FOR loops are useful if you know how many times you want to go through the loop. If you know when you want to stop looping, you must use conditional loop", because the loop may or may not execute, depending on the conditions you set up and the data in the program. There are three kinds of contitional loops: the REPEAT..UNTIL loop, the WHILE..DO loop, and the generic LOOP..END loop. The syntax of the REPEAT..UNTIL loop is:

```
REPEAT

    <block of useful code>

UNTIL <condition>
```

Note that the block of code will be executed at least once. Depending on the condition you set up, the code may execute more than once. Depending on the condition you set up and the values of the variables in your program, the REPEAT..UNTIL loop may execute forever. This "endless loop" behavior is possible if you are using any of the conditional looping structures, and is usually an error. The example program Repeat.MOD uses a REPEAT..UNTIL loop to count down from a number you enter:

```
MODULE Repeat;

FROM InOut IMPORT ReadInt, WriteString,
WriteLn, WriteCard;

VAR
    X,Y : INTEGER;

BEGIN
WriteString("Enter a positive number (less
than 50000) -> ");
ReadInt(X);
WriteLn;
WriteString("Enter another positive number -
> ");
ReadInt(Y);
WriteLn;

REPEAT
    WriteCard(X,1);
    WriteLn;
    X := X - Y;
UNTIL (X <= 0);

END Repeat.
```

The REPEAT..UNTIL loop checks your condition (in the example, if X is less than or equal to zero) after each iteration of the loop. If the condition evaluates TRUE, the loop ends. If the condition evaluates FALSE, execution begins again after the REPEAT statement.

The block of code inside a REPEAT..UNTIL loop will execute at least once, because the condition is not checked until the end of the loop. If you want to check the condition before you execute your block of useful code, you need to use a WHILE..DO loop. The syntax of a WHILE..DO loop is:

```
WHILE <condition> DO

    <block of useful code>

END;
```

You could rewrite our first example, calculating the squares of the first 20 numbers, using a WHILE..DO loop:

```
MODULE Count;

FROM InOut IMPORT WriteString, Write-
Card, WriteLn;

VAR
    X : CARDINAL;

BEGIN
X := 1;
WHILE X < 21 DO
    WriteString("The square of ");
    WriteCard(X,2);
    WriteString(" is ");
    WriteCard(X*X,2);
    WriteLn;
    INC(X)
END;
END Count;
```

The final kind of loop is the generic LOOP..END loop. This loop structure allows you to exit the loop at any point during the execution of your main body of code, via the EXIT statement. The general syntax of a LOOP..END loop is:

```
LOOP

    <useful code>

    IF <condition> THEN EXIT; END;

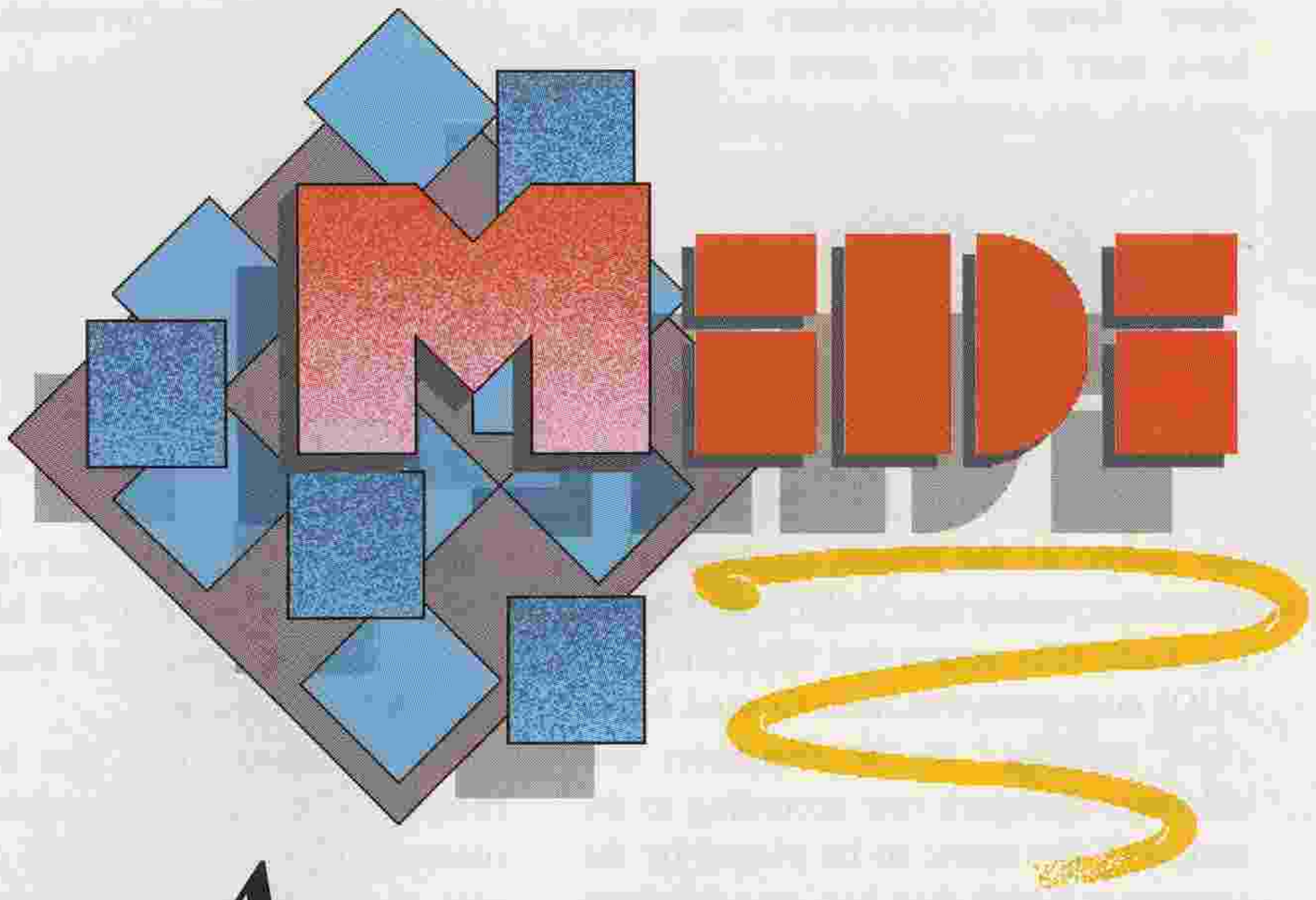
    <more useful code>

    IF <another condition> THEN EXIT;
END;

    <and so on...>

END
```

LOOP..END loop gives you any number of opportunities to exit the loop, whereas the WHILE..DO and REPEAT..UNTIL loops give you a single exit point. I recommend that you stay away from LOOP..END loops; a WHILE..DO or REPEAT..UNTIL loop will usually do the trick, and is easier to debug and modify than a LOOP..END loop. ❑



Synchronizing Video and MIDI

As this issue of AmigoTimes focuses on desktop video and how the computer is making its place in the video production business, it is only fitting that the MIDI column follows along these lines. We already know how the Amiga with the help of MIDI can become a great tool to create music, so it comes to no surprise that this kind of setup is now used to help score films and videos. But there needs to be a link between the music and the video setup to produce the final product composed of both images and sounds.

What is now the standard for this purpose is the SMPTE time code. This code recorded along with the video, will be used as a way to synchronize the music and sound effects with the actions in the video. Although this type of time code was designed for the film and television industry, it is also used in music only applications. It can be used as a way to synchronize tape to tape, or sequencer to tape. But before we look at how this is done, let's take a look at the time code itself.

S.M.P.T.E.

SMPTE (pronounced simp-tee) is an acronym for the Society of Motion Pictures and Television Engineers. This society, in answer to the need to find a precise way to time and synchronize events in the film and video media, created a time code now simply called the SMPTE code. This code measures time not only in hours, minutes and seconds, but also by the number of frames so each frame will have its own unique time stamp. Like you know, the impression of movement in film and video is given by successively displaying still pictures at a very fast rate. The frequency at which the images or frames are displayed is measured in frames per second. For example, the frame rate for film is 24 frames per second. A single frame's time stamp could look like this,

01:05:50:19

This would mean that this frame will be shown 1 hour, 5 minutes, 50 seconds and 19 frames after the start of the projection. It's a straightforward method, but things get a bit more complicated.

Film and video have different frame rates, and to make things even worse, the rate for video depends on the kind of video used. There are two different standards for video, NTSC (National Television Standards Committee) and PAL (Phase Alternate Line). NTSC mostly used in North America and Japan has a rate of 30 frames per second

By Serge Boucher

(black and white video) while PAL used in Europe and around the world uses 25 frames per second.
So if you've followed me so far, you probably guessed most American systems use a 30 frames per seconds rate: well yes and no. Because of compatibility problems between color and black and white video when color video was introduced, the rate for color video is just under 30 frames per second at 29.97. But SMPTE is still based on a rate of 30 but skips frame counts 108 times every hour, this is called drop frame SMPTE. So this is why there are four types of SMPTE, 24, 25, 30 and drop frame (25 frames per second code is sometimes called EBU code after the European Broadcast Union which developed it).
As if things where not complicated enough, there are two different ways that SMPTE code can be put on videotape. It can be either part of the video or the audio tracks. When part of the video, the code is hidden in the vertical blanking period of the video signal. This is called Vertical Interval Time Code or VITC (vit-see) for short. When on the audio track, it is then called Linear Time Code or LTC, and is recorded as an audio signal of shifting frequencies. Let's concentrate on this type of SMPTE as this form of coding is also used in the music industry.

IN THE STUDIO

As we have said earlier, SMPTE can be used either to synchronize video and music, or to accurately time events, like having sound effects go off at the right time. For either purpose, it is clear that SMPTE must be present on the two media, picture and sound, to be able to link the two. The first step is then to stripe the audio tape. Striping simply involves recording the LTC code on one of the tracks of a multi-track tape recorder.
Once this is done, we will now have a way to make sure the audio tape follows the videotape or other audio tape. This is done with a device called a synchronizer. This machine reads the code from one tape and makes sure that the other one follows along, one tape being the master, the other one the slave. Some synchronizers can even have more than one slave so you can multiply the number of tracks available.
Because MIDI is now an important part of the music recording process, there must also be a way to sync with a MIDI sequencer. But this is not as simple as it may sound. SMPTE measures real time, this is not the case with MIDI. It uses a MIDI clock to time events, but in music the clock rate will change depending on the tempo of the music, so there is no direct way of tying SMPTE and MIDI together. This means that the SMPTE to MIDI converter will have to send MIDI clock messages to the sequencer and calculate the clock rate according to the tempo of the music to be played by the sequencer which then becomes the slave device.
But the tempo of a song may vary, so some converters have tempo maps which are a list of the timings and tempo settings. When the proper time is reached, the converter adjust the MIDI clock rate to fit the required tempo. MIDI also provides information for positioning inside of a sequence. This is called a Song Position Pointer, which is simply a beat count that is reset to zero each time the sequence is restarted again from the beginning. The converter can also calculate the right starting point when the video is started somewhere in the middle of the video sequence and will send the required Song Pointer, the sequencer will then start at the right place.

MIDI TIME CODE

The MIDI Time Code as only been introduced recently and is tailored to work with SMPTE code. It measures time much in the same way SMPTE does, but it is sent as digital information through standard MIDI cables. Because the MIDI band width is not wide enough, it is not possible to send a full frame count every 30th of a second like the SMPTE code does. To compensate for this, two different types of MIDI Time Code messages where implemented, Quarter Frame and Full. As their name implies, Quarter Frame messages are sent four times per frame, this is used as a clock signal but it also carries time code information. Because a Quarter Frame message is only two bytes long, the first byte being a status byte and the second containing the data, it takes eight messages to send the full time code message, two data bytes each for hours, minutes, seconds and frame count. Quarter Frame messages are sent by the master device while it is running, if for example you must rewind the videotape, the SMPTE to MTC converter will stop sending Quarter Frame and will send a Full Message to tell the sequencer where it must position itself before restarting.
A Full Message is a ten bytes long message containing a complete timing message like in the SMPTE code. It is sent as a System Exclusive message so the sequencer will know where the tape has been repositioned. When every device is ready to start from the right place, the converter will resume sending quarter frame messages and all the devices will start from the proper point and in sync, including the MIDI sequencer. Set-Up messages also have been defined with the MTC standard, they are used to send information to prepare a set-up before starting the system. These include timing offsets, enabling or disabling event lists and many others.

THE SOFTWARE

Because the Amiga is a relatively new computer and the MTC as only been introduced recently, there is not a lot of software that can handle time code on the Amiga. Some sequencers however do use Song Position Pointers, a good example of this is Dr. T's Keyboard Controlled Sequencer, it can therefore be used with SMPTE to MIDI converters. As for SMPTE code itself, I have heard that MicroIllusions will release a software capable of striping the code to tape, but at this point it is just a rumor. I hope we will see new software in the near future that can use time code, it is a must in the pro studio environment, and is used more and more in the home studio. If you know of such software please let me know so I can spread the news. ❑

TELECOMM

THIS MONTH: ...IN PCPURSUIT OF SAVINGS

We've come a long way since our first installment and by now, if you've been following along and educating yourself on all the tricky nuances of life "on-line" you've probably found many others out there like yourself who have a yearn to learn and share information by modem. In the process of calling Bulletin Boards and national services (also known as networks or "the nets") you've probably melted your credit card with some outrageous network charges.

This time we're going to discuss a specialized service designed for computer hobbyists whose purpose is to give you flat-rate access to computer Bulletin Boards across the USA for one reasonable monthly charge (there are over 1000 Amiga-dedicated BBSs now) and also get you some incredible discounts if you're a People/Link subscriber.

Unfortunately, this service is currently available only for residents of the USA so you loyal Canadian readers will probably not get much out of this article.

PCPURSUIT

This flat-rate service is called "PCPursuit" and it's run and maintained by Telenet which is a division of the long-distance telephone carrier, U.S. Sprint.

PCPursuit is designed to carry only computer data, not voice communications. It originated about three years ago when the management of Telenet, which operates a vast network of dedicated data lines criss-crossing America realized that their lines were sitting idle during evening and weekend hours when their business customers weren't using them. They decided they could make some extra cash by opening these lines up to home computerists for evening and weekend use. Thus, PCPursuit (we'll also refer to it as PCP - no drug connotations intended) was born.

The existence of PCP spread mainly by word of mouth although the service was advertised a bit during its infancy. In the intervening years PCP has become enormously successful, so much so that as of early 1989 Telenet began to claim that the service was actually losing them money and a whole new rate structure was proposed, but more on that near the end of this article.

NUTS AND BOLTS

Here's how PCP works: You call Telenet and get yourself a PCP subscription. As of this writing, this costs $30 and you must have a major credit card - no checks or direct billing are currently allowed. A few days later in the mail you receive your PCP signup kit including your personal ID and Password and a couple small brochures instructing you on usage and providing you with a list of available cities and phone numbers of Telenet nodes one of which is probably local to you if you live near any major metropolitan city.

Using your normal software you instruct your modem to dial your local Telenet node. After connection you instruct the Telenet modem to dial out to another city. This is done using a series of "mnemonic" codes in which the names of cities are abbreviated. For instance, Los Angeles, CA is known as "CALAN" on PCP. After the state and city code you indicate the baud rate you wish to use and follow that with your PCP ID and Password. So a typical city login mnemonic might look like:

C D/CALAN/24,ABCD12345,XXZ222.

The Telenet node will attempt to connect to the destination city's Telenet modem.

Once you've reached the other city you then send commands to that city's instructing the Telenet/PCP modem to

By Harv Laser

dial out to another board. If you've finished that city, you can try a new city destination and, after reaching it, call BBSs in that new city. And on and on through the night. All of this for a flat $30 per month.

Sounds almost too good to be true, doesn't it? Guess what, it is. Oh sure you get what's advertised - virtually unlimited non-prime time (evenings and weekends) computer dialing for about a dollar a day. But then if I offered you a brand new exotic low-production European sports coupe for $5000 and when you got to my house you found I was selling a Yugo, would I have lied?

PROS AND CONS

PCPursuit has some major limitations and you must weigh these in your own mind before you decide the service is something you want to have. Here are its major drawbacks as I view them:

1) It's a flat rate per month. Good if you use it a lot, but you'll pay the $30 each and every month even if you don't use it at all. You can only decide if this is a good value depending on your own telecomm needs and habits.

2) Dialing out from your local Telenet node to a remote city's node can be extremely frustrating. Those other cities are often busy. Yes it's non prime time and the business side of America isn't hogging the lines, but thousands of other PCP-ers are merrily dialing away the same time you are. Popular cities are the hardest to get into.

This means you need to get yourself an Amiga terminal program that has scripting capabilities so the scripts can watch for busy signals and then keep hammering away at the city until you get through. Believe me, even having your destination city mnemonic, PCP ID and Password on a function key it gets tiresome hitting that key again and again, forcing you to sit staring at the screen until you reach a city. Even after you're in to your target city you have no guarantee that the BBS you want to reach is going to be free. So you have to set up more scripts to hammer away at modem and tell it to dial out to the BBS of your choice. After connecting to your target BBS you conduct your business as usual, just as though you called the BBS direct - log on, read some notices, maybe download a file or two, do an upload if you have something new you want to share, and then log off. At this time you're still connected to that same city and if you have other BBSs you wish to visit there you can try to connect to them too by again the BBS' phone number till you get a connection.

"Even after you're in to your target city you have no guarantee that the BBS you want to reach is going to be free."

Which terminal program should you use? I've had great success using "Online!" by Micro-Systems Software, widely available at Amiga dealers. Although Online! doesn't currently feature my favorite file transfer protocol, WXmodem (except in their "Platinum version"), which we use on People/Link for fast up and downloading, it does have an excellent scripting language.

To use Online! with PCPursuit isn't even that big a chore since a fellow named Jack Radigan wrote a very complete set of PCP scripts just for Online! owners to make city and BBS connections, and they work fantastically to achieve this goal. Jack's scripts were later revised by Kevin Davidson to include more cities added by PCP and it is this set of scripts which you want to find and use if you decide to go with Online! for your PCP chores.

Diga! from Aegis, Dr. Term Professional from Progressive Peripherals and Software, ATalk III from OXXI, and Keith Young's shareware Access! terminal software (and probably others) also have their own script languages but to date I have not seen a freely distributable set of scripts for any of those programs that even remotely compares to the power and ease of use of the Radigan/Davidson scripts for Online!. (Jack and Kevin's Online! scripts are available for downloading from the AmigaZone on People/Link of course).

Recently a whole new approach to making PCP dialing less painful has appeared: Bill Fischer has written and released, again as shareware, a novel program he calls "AMNIX" which is based on a similar PC program by his friend Wayne Wolf called "ICEX."

Rather than a set of scripts, AMNIX is a free-standing Amiga program which presents you with screen full of gadgets. After setting up a disk file of phone numbers for the BBSs you wish to call, you run AMNIX which connects you to your local Telenet node and issues your PCP ID and Password. Then you just click gadgets representing the cities and BBSs you want to visit and AMNIX does the rest. AMNIX itself is not a terminal program but you use it to make the connection, and then it calls and runs your terminal program where you carry out your BBSing, only popping back to AMNIX when you're ready to call a different BBS or city.

(Your AmigoTimes disk accompanying this issue contains the demo version of AMNIX for you to try - this demo version limits you to dialing three cities: Hartford CT., Phoenix AZ, and New York NY. If you like the program and decide you want the full-blown uncrippled version just follow the instructions in the documentation and send a shareware check to Bill Fischer. He gives some of the best shareware support in the Amiga community and is constantly upgrading AMNIX making it more powerful and easier to use.)

3) PCP can be slow. By this I mean jerky scrolling text to your screen and slow during up and downloads. Why? Well for starters, you're going through four modems to reach the BBS you're

after. Your own modem, the Telenet node's modem in your city, the Telenet modem in the other city, and the BBS' own modem. Add to this the fact that Telenet is what is called a "packet switched" network, it sends data in both directions in small gulps instead of a constant stream which is rather like walking into your kitchen, filling a drinking glass with water, walking outside and pouring it on your lawn instead of just using the garden hose to do the watering.

To perform file transfers with a faraway BBS over PCP you need to become familiar with protocols such as WXmodem, Ymodem and Zmodem which can overcome this slowness and give you the highest effective baud rate for the speed at which you're connected. Good old Xmodem performs terribly over PCPursuit.

Again, PCP is a tradeoff: economy accompanied by some convoluted usage procedures versus the higher cost but better speed of a direct long distance modem connection.

There's nothing to stop you from signing up for a PCP subscription, using it for a few months, and then, based on your determination as to whether it's worth it to you or not, continue on or cancel at any time.

GOOD NEWS & BAD NEWS

Besides making long distance BBS connections economical, there's another distinct advantage to having a PCP subscription. People/Link, the national dialup network where you'll find our AmigaZone Club is known as a PCPursuit "DAF" or "Dedicated Access Facility."

With your PCPursuit subscription you can log into Plink without doing the Telenet indial/outdial city dance, and get very big savings on your Plink connect charges. No need for scripts or redialing or macros or frustration. Just connect to Plink as usual but feed your Telenet node your PCP ID and Password after Plink's address. By doing this the normal non-prime-time (evenings/weekends) Plink rate for 1200 baud of $4.95 (US) per hour is reduced to $3.00 per hour. That's about 40% off. But it gets even better if you use 2400 baud since Plink's normal $11.95 per hour non prime rate also drops to $3.00 per hour, and that is 75% off! Even if you don't plan to call remote cities and BBSs with PCPursuit you can easily make a PCP subscription pay for itself by using it just to connect to People/Link at 2400 baud after 4 hours of Plink usage per month!

None of PCP's normal jerky slowness applies to using it to connect to Plink since the log in is strictly a billing change.

Your PCP account also gets you free 24 a day access to PCPursuit's own bulletin board, "The Net Exchange" where you can leave and read messages in over a dozen different areas concerning PCP usage tips and tricks, and billing problems. Here too you'll find system bulletins, and there's also a special area for Amiga chatter. David Purks, a Telenet employee, sysops the Net Exchange and he is extremely well versed in all the subtleties of using PCP.

Now for the bad news. Remember earlier I mentioned that PCPursuit was going to have a rate increase? I started writing this column about five times and had to revise it as many times since Telenet has been waffling on this price change. Here's what they propose to do: As of May 1, 1989 they plan to impose a "cap on usage" on PCPursuit. This means that for your $30 a month subscription you will get 30 hours of usage. After that they plan to charge $4.50 per hour up to 60 hours of PCP-ing and then bump it up to an even higher rate after that!

When this price increase was announced on The Net Exchange there was an enormous roar of complaint from the callers of that BBS. In a matter of just a few days, literally thousands of messages were posted, most quite strongly-worded decrying the proposed increase which was to have taken effect on February 1st. A week or so passed and the management of Telenet, probably having seen the errors of their ways, pushed the cap on usage fees back to May 1st but left the new basic monthly rate of $30 (up from $25) in effect as planned. They countered the subscribers' arguments saying that PCP had become too popular and they were actually losing money running it as a flat-rate service so it was either a rate increase or no more PCP.

Where things stand now as I write this in early February is that the cap on usage fees are still slated to go into effect on May 1st, 1989, but just today a new bulletin was posted on PCP's BBS saying that the management was still plowing though the thousands of angry complaints, so it's entirely possible that the cap may be further modified (hopefully to some less drastic fees) but it's doubtful it will go away altogether.

Depending on when you read this article, Telenet may have reached their final decision on PCP's rate structure. At any rate, no usage cap will take effect until at least May 1st so you have until then to enjoy PCPursuit at the flat $30 per month charge and then keep or cancel your subscription by that date depending on what happens. It's also possible that DAFs like People/Link will be exempt from the cap on usage fees or be subject to much lower excess fees which would still make getting a PCP account strictly for Plink usage a very good deal. We'll know in a few months.

A phone call to Telenet's customer service department will get you the latest details. ❑

ABOUT THE AUTHOR

People/Link: CBM*HARV
USENET: <anybackbone>!hrlaser
Harv Laser, is the Founder and Senior Chairman of the AmigaZone Club, and an Amiga owner since October, 1985.

PCPursuit
a service of Telenet
A US Sprint Company
12490 Sunrise Valley Drive
Reston, VA 22096
USA
PCPursuit signup
info by voice: 1-800-TELENET
in Virginia: 1-703-689-5700

(continued from page 55)
black screen, which enhances the intensity of colors, I chose black shirts. I also felt that it added a touch of drama to the design. The effect was best accomplished by using brighter, clearer colors. So, I included all three colors in the word "Amiga," and then segregated the two other lines of information by assigning them two different combinations out of the three, using the white outlines to help definition.

PRODUCTION METHODS

The design was created using DeluxePaint II in the medium interlaced resolution mode. I frequently use this particular mode with Dpaint, since I find that it's a nice compromise between detail and numbers of color in the palette. Silkscreen is sometimes not capable of reproducing as fine an image as other printing methods. It depends on the particular equipment used and the surface upon which the transfer is made.

In my experience, silkscreening on heavier or cruder fabrics does not always succeed in maintaining finer details and subtleties. It is true that silkscreening technology has become very advanced and often can produce remarkably good results. This will most likely hold true with any competent commercial supplier. But, when attempting it yourself or using a new source, you may do well to keep in mind that simpler, bolder designs stand the best chance of reproducing well. Since we were going to print this design on sweatshirts and t-shirts, I thought it wise to stay on the safe side.

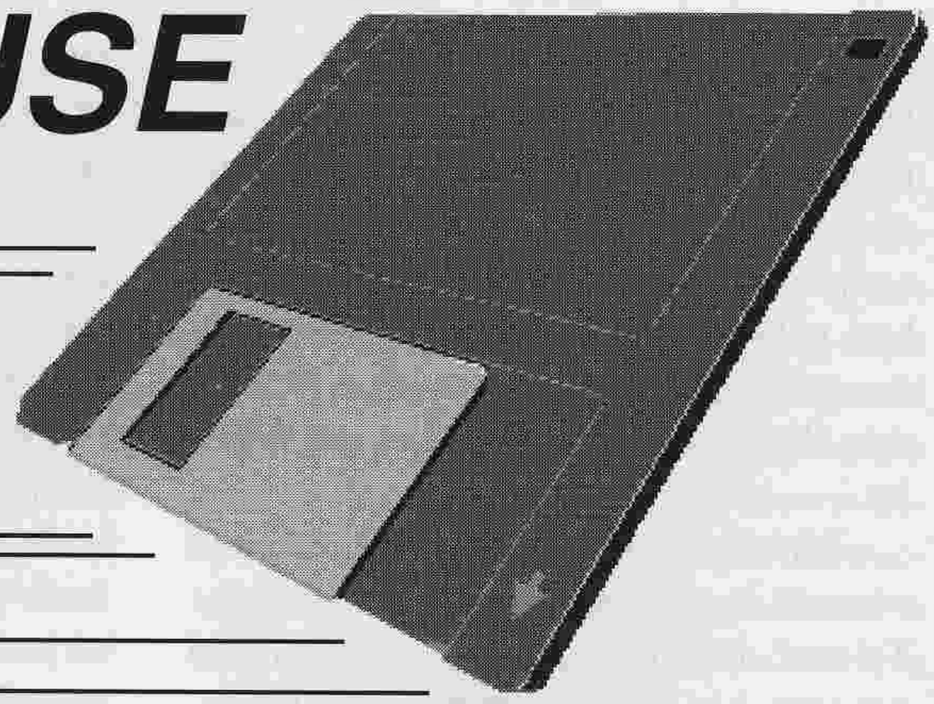
Once I'd completed the final image in Dpaint, I needed to output hardcopy versions of the three colors I'd used: red, white and blue. These would then be used by the silkscreener to make the three film positives from which three different silkscreens would be made. There are several different options one can use with the Amiga in order to produce these color separations from a color image, depending on which particular programs you may have.

Some programs can automate this process, offering you a choice of which kind of separation you prefer. For instance, for four-color offset lithographic printing you would choose a separation that would produce four different printouts: cyan, magenta, yellow and black. I wanted simply to separate the three actual colors, since we would be relying on the inks to provide the specific hues.

You might not have one of the programs that offer this type of option, or you may not be familiar with the various types of separations in order to select the correct one. However, with DeluxePaint, it's a very simple matter to manually separate colors.

Once I invoked the Stencil function, I then protected one of the colors and did a Clear Screen. This removed the other two colors, leaving only the one I had protected in the Palette. I then called up the basic palette and changed the remaining color to black, leaving the background pure white, and printed it out. I called the original image up again and did the same routine to the two other colors. This gave me the three black

MAISON DU LOGICIEL SOFTWAREHOUSE



We have the largest selection of **Amiga Software**

* Plus Hardware and Peripherals
* Authorized Commodore Dealer
* Authorized Amiga Service Centre
* Educational Dealer
* We accept VISA, MasterCard AmEX, COD and money orders

13635 Sherbrooke E.
Montreal, Que, H1A 1C3 CANADA

(514) 498-3614

and white prints, one for each of the colors.

A Xerox 4020 color ink jet printer was used for the printouts, even though these were black and white prints. This printer has very deep, crisp blacks. Any good dot-matrix printer that is capable of graphic output should suffice. The important thing is to get a clean print for each color. It's useful to get a high contrast image. This will help in maintaining the image quality through reproduction.

Be sure to label each printout with which particular color it represents. This can be handwritten on the back, along an edge or on a protective overlay like a tissue. This will cue the silkscreener to which stencil and ink to use. It's also a good idea to name the image and label all these materials accordingly.

Your silkscreener should have some charts of samples showing the various ink colors available. If it's important for you to match any particular colors, then be sure to show an example of it. Otherwise, regardless of which colors you used onscreen when creating your image, you can choose any of the ink colors you wish. It may be useful to print out a color version of your image to use as a reference. This way, the silkscreener will have a better idea of how the finished image should appear.

PROMOTING THE PRODUCT

Since we produced these shirts for our club, we had announced the project to the membership while it was still underway and had offered advance orders. This also helped us by giving us some idea of what quantities and sizes to order.

Shortly before one of our user group's general meetings, I created a short series of screens (once again using Dpaint) to produce a promotional presentation. I then wrote a script for using the freely distributable program, DPslide (by Paul A. Biondo, copyright 1986.) This is a program that will display IFF screens in sequence and which allows a choice of transitions, timing and effects. It was written and distributed quite some time ago, and I've used it occasionally since then. It originally did not work well with expanded memory, so I always use MemGrab (another freely distributable program, by Mitchell Jareo IV, copyright 1986) or some other program disabling expanded ram before running it. I put all the IFF screens, DPslide, its script file and the memory-grabbing program on one disk.

There are several commercial programs which do the same, or similar. Some of these are much more full featured, but I had some DPslide scripts on hand already for other uses. So it was a simple matter for me to call up one of the scripts in my text editor and adapt the existing routines to this presentation.

I brought the disk to our meeting and we ran the cyclical presentation while one of our club officers gave a verbal announcement of the project. This way, we had a method of describing, and showing, the shirts and designs before they were completed. And it

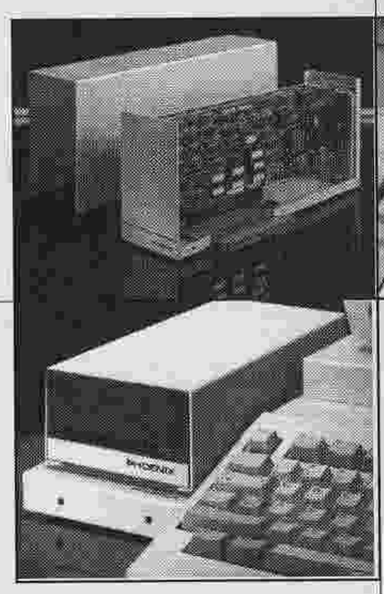
(continued on page 112)

A500 MUSCLE UP! A1000

EXPANSION!

- Two 100 pin expansion slots
- With or without power supply
- Complete auto-config and pass-thru
- Runs all major A-2000 cards
- Attractive design
- Sturdy metal casing

Only $345.00 w/power supply



FLOPPIES!

PFD-135 external w/ 30" cable
Spring loaded dust door
Compact metal casing
Fully 1010 compatible
PFD-135i internal for A-2000
PFD-235A DUAL Ext. Drive

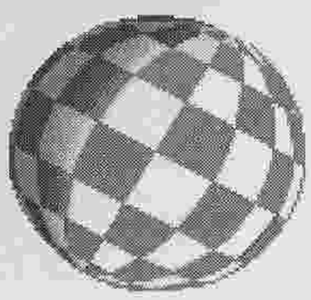


ONLY
PFD-135 $249.95 PFD-135i $194.95
PFD-235 $469.95

HARD DRIVES!

SCSI drive and controller
Internal power supply
Compact
Pre-formatted w/FFS and w/pd software
Pass-thru
Fast 28 msec drives

Only
PHD-22 22mb $995.00
PHD-32 32mb $1155.00
PHD-48 48mb $1335.00
Larger capacities Please call



All prices Canadian funds
Visa / Master card add 3%
Shipping and C.O.D. charges extra
All products **1 year warranty**
Dealers inquiries welcome

Products manufactured by Phoenix Electronics

DISTRIBUTIONS DATACORP
P.O. BOX 7
PIERREFONDS, QUÉBEC
H9H 4K8
514-620-6318

Data Manager's PD REVIEWS

SID (System Information Display)

By Mike Berro
(AmigoTimes v1.3)

SID is a well behaved little program that can be activated from the CLI or Workbench. It will display system lists currently active on your Amiga. The menu allows you to choose between EXEC, Intuition or DOS libraries.

From within the EXEC library you can view: Tasks, Libraries, Devices, Ports, Interrupts or Resources. From within the Intuition library you can view: Screens or Windows. From within the DOS library you can view: Devices, Directories or Volumes.

The window display updates itself automatically with each screen refresh or after you click the mouse within the display window. You can even print or save a list of active tasks to a file which is automatically sequentially numbered.

KING'S KORNER SOLITAIRE

By David F. Downing
(AmigoTimes v1.4)

King's Korner Solitaire is a simple little solitaire game, played with a standard 52 card deck. The program can be loaded from a Workbench environment and contains several levels of difficulty. The graphics are pretty clean, even though you can't have too many graphics in a card game.

To play the game you turn cards over from a deck, by clicking on the deck with the mouse or depressing any key on the keyboard. Be careful when selecting cards from the deck, because once a deck card is face up, it must be placed onto the 4 x 4 grid according to the game's rules. Once cards are placed on the grid they can only be moved to the discard pile. Illegal moves are indicated by beeps. You lose if the grid is full and no discard is possible or if a face card is drawn and its space is occupied. You win if all cards have been played and all non-face cards have been discarded.

BUTTONS

By Udo Pernisz
(AmigoTimes v1.4)

Another game written in AmigaBASIC. Well, yes and no. First of all it is written in Basic, but it's not just another game it's a computer version of "Mastermind." You know that age old game that most of us grew up with. You used to play it with a friend who would select and hide four colored pieces from a collection of six different colors and place them in some random order. You would win if you could duplicate the arrangement.

In this version, either the computer can choose the four pins randomly or you could set them manually. Aside from now being able to play the game without having to look for a partner, you no longer have to worry about losing those little plastic pins and pegs.

After each guess (with a maximum of 10) you get two different kinds of hints: Receiving a black peg for a correct colored pin placed in the correct position, and a white peg for a correctly chosen color, but in the wrong position.

DAD

By Guru
(AmigoTimes v1.4)

Dad is a neat little puzzle that will test your spatial orientation abilities and require a little deductive reasoning to solve. Hey, it's no Rubic's Cube, but it will keep you entertained for a while.

There are nine colored blocks of varying shapes that you must slide around in a contained area until the largest block arrives in the upper right corner. The catch is that you should be able to find find a solution in under 99 mouse clicks.

STAR TREK TRIVIA

By George Broussard
(AmigoTimes v1.4)

"Space, the final frontier. These are the voyages of the starship Enterprise, her five year mission to explore strange

---

By Ernest N. Nagy

new worlds, to seek out new life and new civilization, to boldly go where no man has gone before."

Calling all Trekkies! Are you out there, and are you a real Trekkie? Here is your opportunity to prove it to yourself and your friends.

The game is entirely mouse-controlled, but remember it is only trivia, no battle sequences. All you have to do to win (and become a real Trekkie) is to correctly answer 100 questions related to the TV series. Even if you can't answer all of them, your high score will still be saved.

This version (Volume I) has 100 questions to test your TREK-TRIVIA knowledge. There are 9 more volumes available from the creator of the game. Star Trek Trivia volumes 9 & 10 are "Masters" editions. ❑

AMIGA BBS UNIVERSE

by ERNEST NAGY

If you are unaware of the immensity of the online world you might be shocked to learn it has about 50 times as much software, games, utilities, pictures and animations available over commercially software. As a matter of fact, many PD programs are eventually sold commercially! Larger BBSs also offer regular online conferences, where online help is provided from commercial software concerns to debates with Commodore officials focusing on the future of the Amiga, along with live online interviews with key Amiga figures. So if you are interested in reading about the online community AMIGA BBS UNIVERSE might be a good place to start.

AMY TODAY

Amy Today, published by John Rydell, is a public domain text file-based magazine for Amiga users and can be downloaded from either PLINK or GENIE. The publication even encourages you to upload it anywhere you can and pass copies to friends, so long as the original ARCed file is not tampered with.

Amy Today is published every three weeks and its uploaded file is kept under 15K ARCed, making up and download time minimal. Mr. Rydell encourages reader-support in the form of articles or short programs that you would like to share with the Amiga community. This provides budding Amiga writers the opportunity to air their wares to the Amiga community.

The publication regularly contains contests, reviews on PD and commercial programs, but its strongest asset lies in providing its readers with the latest Amiga news. Since it is published every 21 days, the information is quite up to date.

Amy Today
ATTN: John Rydell
640 Willowglen Rd.
Santa Barbara, CA 93105
USA
GEnie code: J.Rydell1
Plink code: J*Rydell

PUBDEX & MAGDEX

Do you spend most of your spare time online looking for PD programs or wasting your time flipping through old Amiga magazines trying to find a specific article? If so, two disks are available that will prove invaluable to you. PUBDEX will allow you to spend your log on time more efficiently and MAGDEX allows you to easily cross reference all articles written in the major Amiga magazines, including AmigoTimes.

On the PUBDEX disk you will find an index of the majority of the public domain programs available for the Amiga (excluding pictures, songs, and textfiles). The index is composed of the following fields: Program Name, Size, Author, Source, Date, Keyword, and Comments.

On the MAGDEX disk you will find an index of the seven leading Amiga specific magazines. This index is composed of the following fields: Article Name, Keyword, Author, Magazine, Year, Volume Number, Issue Number, Month, Page Number, Type of Article, and Comments.

Files for both PUBDEX and MAGDEX are listed in a text file and can be viewed with the text reader supplied on the disk or any other text reader. Each record is allocated two lines, with the second line slightly indented. Using the text reader provides you with a fast and dirty method of accessing the information, but viewing the information via the demo database supplied on the disk (SoftWood File IISG) is more efficient.

Using the database, you can view the file line by line, or as individual records in formatted form. You can even sort the information by any field and include and/or exclude specific records.

The only thing that might restrict you from not using the database might be the fact that you need at least one megabyte of memory in order to view either index disk. If you have one meg, simply click on either the "PUBDEX" or "MAGDEX" icons (which ever you happen to have) to run the database. ❑

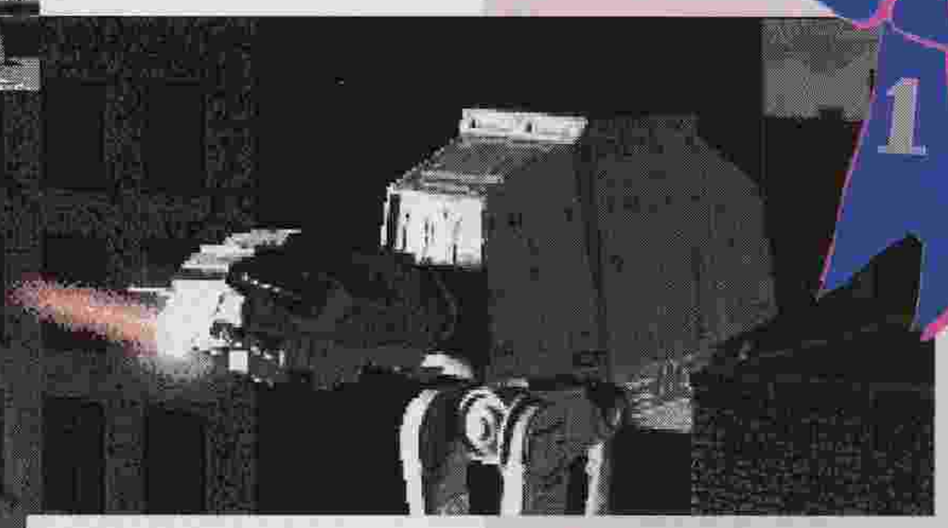
Stan S. Spence
Selectronics
5147 S. 37th St.
Lincoln, NE 68516
USA
(402) 423-3856
$5 (US) MAGDEX
$5 (US) PUBDEX

AmigoTimes Animation Contest



First Prize Winner

"Walker II Demo"
by Brian Williams





Second Prize Winners

"F-16 Bank to Bank Roll"
by Paul Sorokowski



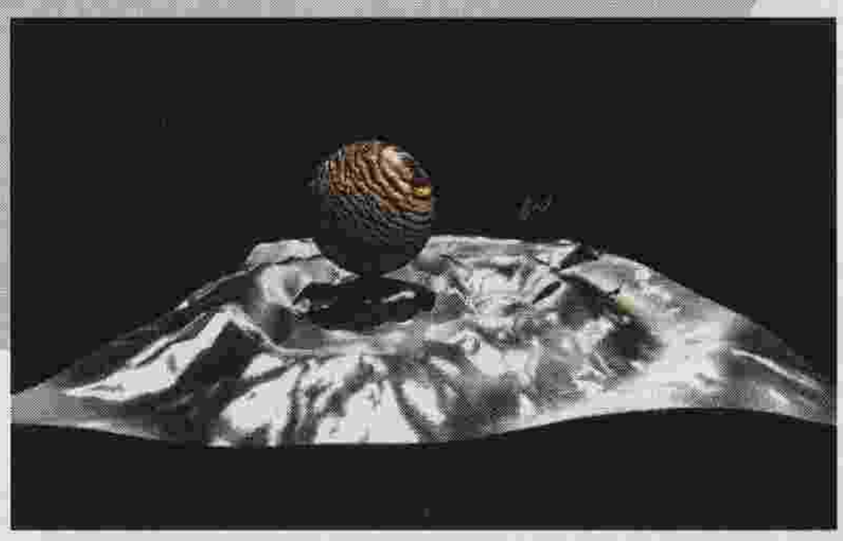
"Track Ball"
by Eric J. Fleischer, M.D.
(Dr. Gandalf)



"Trek"
by Leo Martin



"8Wave"
by Stephen Menzies



Third Prize Winners



"Space Disk"
by Daniel Vinet

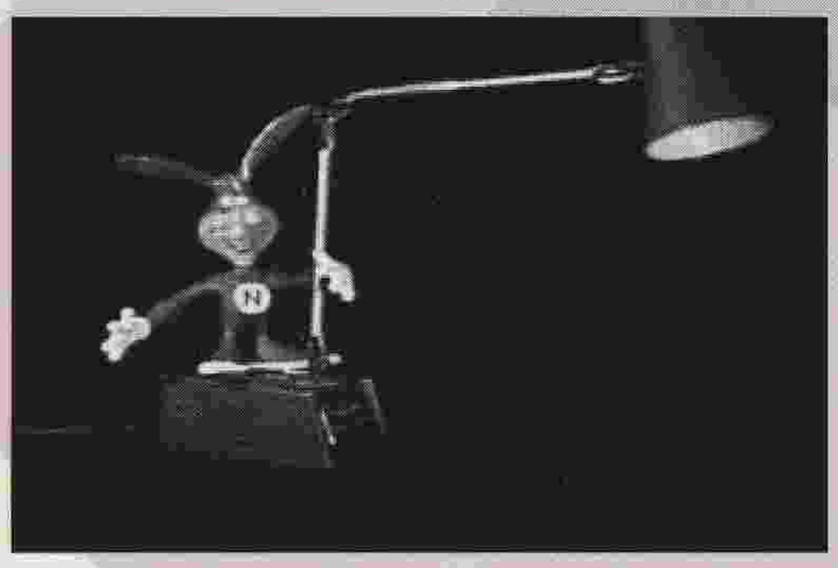


"Thor"
by Brad T. Bowman



"AmigoTimes Desk"
by Michel Feugeas

"Noid - Cleaning Up Your Act"
by Brian Zupke





"Dice Toss"
by Olaf Haakonstad

(continued from page 87)

me well as both a compositional and recording tool. The only irritation I find is its demand for rather small digital sound parameters, which sometimes makes a digitized instrument sound tinny as the harmonic range is stifled. It also does not address stereo.

Even with these limitations, though, for the work mentioned above it seems to suit most of the occassions fairly well. This is because most of those situations require music as a secondary sound source (layered beneath a narrative) or the music required is fairly short in duration. Not that I haven't used it in some very dedicated and lengthy recording situations, I have. This is because some of the on-board options (tremolo, staccato/legato, etc.) are very useful in recording some tracks. One great limitation it has is that looped sections (repeats) cannot be set by the composer. You have to live with only two, although some tricky nested loops can suffice in many situations. There is a host of beautiful sounds included on a host of sound libraries that are designed with the DMusic limitations in mind, as well as the ability the individual has to record and manipulate unique sounds with dedicated packages. Perhaps some future DMusic 2.0 or 3.0 will address some of these limitations. A great advantage that competition has in the marketplace is to set new minimum standards for the user. Yesterday, visual overscan was only a dream, now it's an expectation. Many packages produced after the release of DMusic include a similar audio overscan, which will force the older packages to catch up if they want to maintain a market share in the future.

Probably the most extensive quasi-instructional piece that I've yet been engaged in was to produce an animated piece for high-school students centered upon atomic orbitals for MacMillan and Company of New York. The piece was not meant to be a finished product, but rather a demonstration of ways that the subject matter could be handled. All the music and sound effects were generated with DMusic. Then they were plugged in at proper moments with the aid of a professional editing studio. I realize that many of you might not have geographical or economic access to such a facility, but there are alternatives. The first would be that you could time a visual very carefully and then record your sound tracks all at once on audio tape. Those wishing to multi-track the sound could use a multi-channel mixer. I sometimes use a REALISTIC four channel stereo mike mixer which I purchased at Radio Shack for about $80.00 (US). After the entire sound portion of the tape has been recorded, it could be inserted into the audio track of your production.

The music that I use in the production "The Gym" made use of another set of techniques and circumstances. For much of it, I wanted a strong funky backdrop and wanted to combine some live tracks with computer generated sounds. I was less interested in space-like qualities of sound, so I looked for a package that would handle the sounds that I was interested in without the necessity of importing others.

I realized what I needed in Activi-

Color Separations from Professional Page on Linotronic 300. From Canada's Imagesetting Professionals.

Photocomp RB, Canada's leading Linotype Imaging Centre, is pleased to announce our full PostScript output service support of Gold Disk's Professional Page 1.1.

This means that Amiga users can obtain Linotronic output service at the same low rates other personal publishers have enjoyed for years.

And as new Amiga applications support PostScript, we'll be ready to service your requirements for paper or film output and color keys from 8 a.m. to midnight Monday to Friday.

Photocomp rb

Authorized Linotype Imaging Centre

1478 St. Catherine Street West, Suite 200
Montreal, Quebec, Canada H3G 1R8
Montreal area phone (514) 933-8154
Toll-free from Eastern Canada 1-800-363-6061
Modem 933-2921 • Fax 933-6953

MasterCard VISA

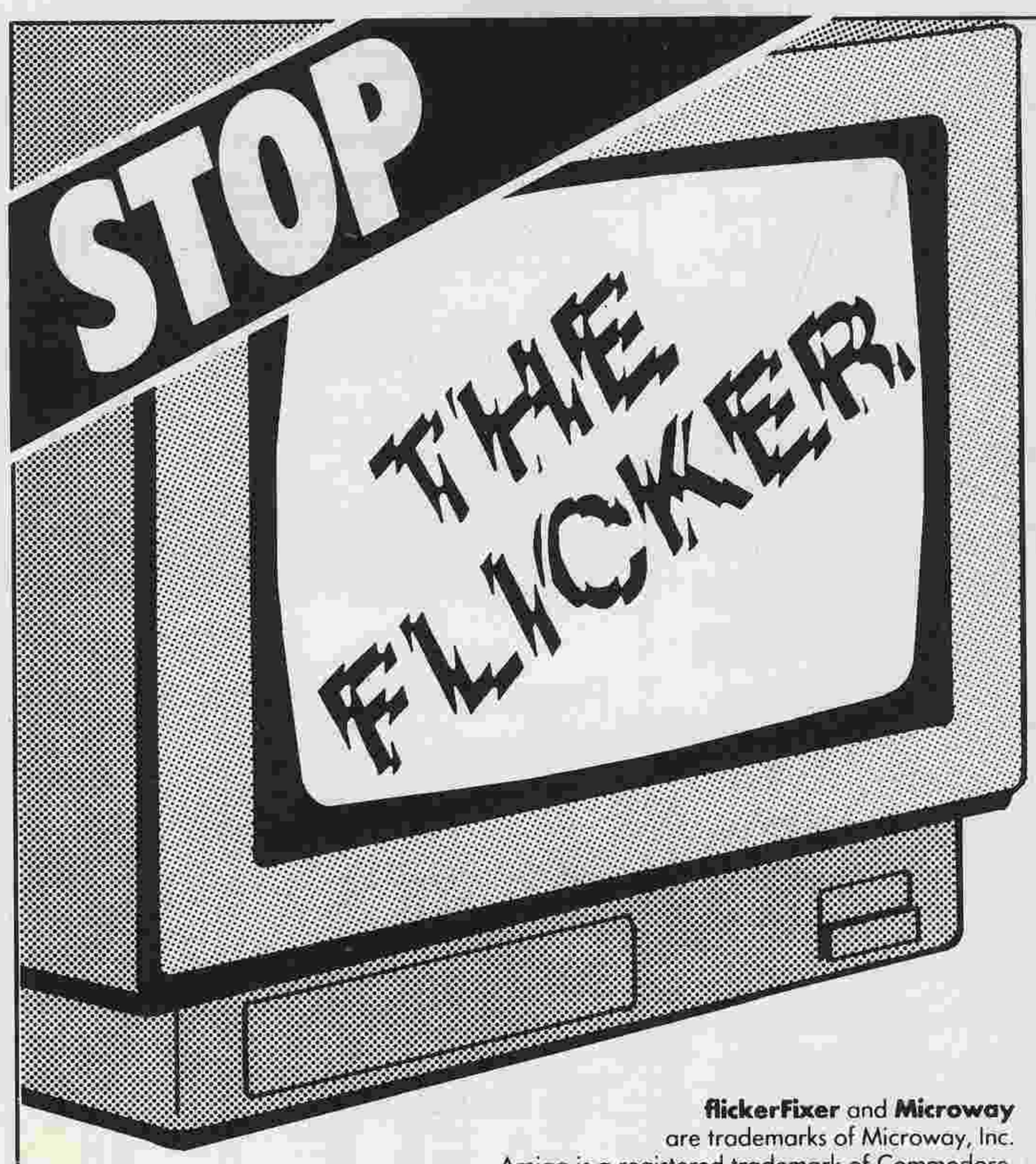
sion's Music Studio. Version 1.0 did not have the capacity to access digital sound libraries except those that were included with the package. Those included sounded very electronic and ring-modulated, which in that instance, was fine. Music Studio also had the capacity to do what no other package offered, to allow me to input exactly how many times I wanted sections (whether one measure or a hundred) to repeat (loop). In this instance, that was just what the music doctor required, since the plan was to combine variations with multilayered live instrumentation. I recorded the main sections from Music Studio compositions and placed them on one track of my Fosdex four-track recorder. Then I went back and added live drums and saxaphone. By editing the tracks later, I was able to adjust various volumes, and the finished product satisfied both myself and the producer.

Still in this first area, but utilizing very different Amiga parameters, some tracking was done to accompany an American animated short (produced and directed by animator David Ehrlich) that was an entrant in the World Animation Festival in Yugoslavia in 1987. What was needed were very short melodies and sound effects exactly matched to time sequences in the piece. For this (not having an onboard time-code capacity) I used a stop-watch and Aegis Sonix. Sonix is special because it allows you to have control over the tempo and key of the music while it's playing. For one of the pieces, I digitized my own voice (with the Mimetics digitizer) and then turned it into a chorus of voices in Gregorian style. All of this was recorded in little snippets with an ordinary recording system (Sharp RT-W800).

The second method centers around a piece of music I wrote for an animated film that I produced called "The Secret Dreams of Older Men," a symbolic that was supported by a grant from the Boston Film and Video Foundation and the American Film Institute. At the time the only computer music machine that was available to me was my Commodore 64 and the software I used was the original Music Construction Set (which later became the basis for DMusic). The film was animated by hand over a period of four years and is some twenty minutes long. MCS allowed me to compose a short piece of music that had the sound quality that matched the visuals. I also used a C-64 program called Euphony, a great program that I'd still like to see ported to the Amiga. Euphony was written by Jim Raymond of TCO Software in Fairbanks Arkansas in 1984. It is very different than other music generation programs in that it greets you with a programming structure much like BASIC and allows you to actually program the music.

A third system that I experimented with for this film was the Musicware series by Sequential Software of San Jose, California. These packages come with a small keyboard that plugs into the Joystick port of the C-64, and some very interesting looping effects can be designed in compositions. The film was completed with music generated on my C-64. The Amiga was as yet not in my toolbox.

The whole concept of the music in



flickerFixer and **Microway** are trademarks of Microway, Inc.
Amiga is a registered trademark of Commodore.
Multisync is a registered trademark of NEC.

flickerFixer eliminates your Amiga 2000's interlace flicker and visible scan lines. The result: **superior quality color or monochrome graphics and text** — for a full range of demanding applications, including CAD, desktop presentation, graphics, animation, and video.

Reviews are impressive: Commodore Magazine 12/88: **Best of 1988 Award.** AMIGAWORLD 12/88: **#1 Readers' Choice Award.** Amiga GURU 5/88: *"The display is fantastic . . . It is the best display we have ever seen on any computer system."*

flickerFixer fits into the Amiga video slot, is fully compatible with all user software, and does not modify the standard Amiga video signals. The board upgrades the Amiga 2000 with a flicker free 4096 color palette, has an overscan mode that features a screen size of 704 x 470 pixels and drives most of the popular PC Multiscan and VGA monitors, including the NEC Multisync and Zenith ZCM1490.

flickerFixer™

Advanced Graphics Adapter For The AMIGA® 2000

flickerFixer is priced at $595. It is made in the USA and is FCC Class B approved. For more information or to order, call Microway Sales at (508) 746-7341 or your Amiga Dealer.

Microway

P.O. Box 79
Kingston, Mass. 02364 USA
(508) 746-7341

32 High St.,
Kingston-Upon-Thames, U.K.,
01-541-5466

58 Atchison St.,
St. Leonards, NSW, Australia
02-439-8400

"Secret Dreams" was that a single theme would be repeated over and over again, and that variance would be introduced by the qualities (instrumental timbres) of the sounds. I created what I thought were some interesting and relatively appropriately bizzare soundtracks, and the film was thought to be done. But then, after about three Amiga obsessed years, I began looking and listening to the film again. I took the theme, a sad little baroque song, and wrote it out in DMusic. Then, after saving it as a SMUS file, I dumped it into Mimetics Soundscape. Soundscape makes use of much fatter, and therefore more harmonically rich, digitized instrument files than does DMusic. With some instruments that I digitized myself, and a host of others provided by the Sonic Spectrum Library by Datasound, I rerecorded the theme in a number of variations. By doing no more than varying the instrumental colors, and in some cases altering the way that the songs repeat internally, I produced a cassette tape with some unbelievable and unexpected tonalities as well as emotive directions. The tape has been on sale in local and regional music stores, in this category, entitled "Secret Dream Variations." This project has motivated me to consider experimenting with a whole new direction of creativity. It has also motivated me to consider reworking the visuals with the help of the excellent new software/hardware capabilities of the miraculous Amiga, a project I will begin in the near future.

If you own an Amiga, you have at your disposal one of the most advanced tools for creative work ever produced. The extent of those tools is continually under revision and expansion, and the future promises to be even more creatively rewarding. Digital experimentation has not deadened my appreciation for the acoustic instruments that I play, nor has recording killed my love of live performance. On the contrary, I am planning ways to integrate the two. The only thing that's missing now is a portable laptop Amiga. And you'd better believe that I just can't wait to work with the magic that's comin' round the bend! ❑



(continued from page 105)

helped generate orders.

Other methods for promoting such a project might be to print a flyer showing the design(s) available. The Amiga, and its various products, can be very useful in all these activities.

For instance, one could use a desktop publishing program to design and produce a flyer or advertisement for publications. The original IFF file of the design can be brought into the publishing program and placed in the layout. Those programs that are able to combine text and color graphics will even allow you to produce designs in full color! A program like Professional Page will give you a very cost effective way to produce actual color separations for four-color printing of impressive promotional literature, like flyers or brochures.

Once the shirts were completed and delivered to us, they were brought to meetings and put on display. We also took them to other shows and events that our club produced and participated in, offering them for sale to our membership and the general public.

IN CONCLUSION

The Amiga proved itself capable of quickly, easily and effectively producing this kind of application - and compared quite favorably to other methods of doing the same, in terms of time, effort and cost.

You, too, might like to use your Amiga to decorate garments. This can be purely for your delight and as gifts to family and friends. Or, perhaps you belong to an organization like a user group or some other club that could benefit from this type of promotion and fundraising. Or, you may even wish to join the enterprising individuals who are pursuing this opportunity by selling original designs to silkscreeners, clients or producing their own original products. After all, if you got it, flaunt it! ❑

ADVERTISERS INDEX

AmiExpo	23
AmigoTimes	44
Anakin Research	47
Antic Software	15
Centaur Software	18-19
Cinemaware	7
Creative Computers	32-33
Datacorp Distributions	105
Discovery Software International	CIV
Electronic Composition & Imaging	39
Gold Disk	2
Microway	111
Mindware International	CII
NewTek	1
Photocomp rb	110
Progressive Peripherals & Software	31
SoftwareHouse	104
SONY Corp.	42
The Hunter Group	11
Visionary Design Technologies	CIII

SUBSCRIBE TO...

AmigoTimes
News and Information Resource for the Commodore Amiga

☐ Yes! **BEGIN** my subscription to AmigoTimes for:

	Canada ($CDN)	U.S.A. ($US)	Foreign Air Mail ($US)
6 Issues	☐ 49.95	☐ 39.95	☐ 64.95
12 Issues	☐ 87.00	☐ 72.00	☐ 118.00
24 Issues*	☐ 158.00	☐ 131.00	☐ 223.00

* Free T-Shirt with every paid 24 Issue subscription. (While supplies last)

Begin my subscription with issue _____

☐ Yes, Please include *AmigoTimes* **Designer Disk Set**
☐ Animations
☐ Utilities
Each 3 disk set at:
US $12.95 (CDN $14.95)

TO:

Mr./Mrs./Ms. Please Print Full Name

Company

Address City

State/Province Postal Code/Zip Country

Please allow 30 to 60 days for all deliveries

Enclose Check or Money Order Payable to:

AmigoTimes
5124 St. Laurent, Suite 100
Ville Ste. Catherine
Quebec, J0L 1E0,
CANADA
tel. (514) 638-6303

***AmigoTimes* Back Issues**

~~SOLD OUT~~
☐ AmigoTimes Issue 1.1
☐ AmigoTimes Issue 1.2
☐ AmigoTimes Issue 1.3
☐ AmigoTimes Issue 1.4
US $10.95 EACH
(CDN $11.95 EACH)

AmigoTimes Reader Survey:

1. What type of machine do you own?
○ Amiga 500
○ Amiga 1000
○ Amiga 2000
○ Amiga 2500

2. Where do you use your Amiga?
○ At Work
○ At School
○ At Home for business
○ At home for recreation

3. What peripherals do you own?
○ Printer
○ Second disk drive
○ Hard disk drive
○ Modem
○ Expansion Memory
○ Sidecar
○ Genlock or Digitizer
○ Musical Equipment
○ Accelerator Board
○ Other

4. Which do you plan to purchase within the next 6 months?
○ Printer
○ Second disk drive
○ Hard disk drive
○ Modem
○ Expansion Memory
○ Sidecar
○ Genlock or Digitizer
○ Musical Equipment
○ Accelerator Board
○ Other

5. What are your interests?
○ CAD
○ Music
○ Desktop Publishing
○ Desktop Video
○ Graphics
○ Games
○ Other

6. Which other computer magazines do you read?
○ AmigaWorld
○ Amazing Computing
○ Amiga Transactor
○ Amiga Sentry
○ Robo City News
○ Info
○ Byte
○ Other

7. What topics would you like to see in future issues?
○ More Programming
○ More Reviews
○ More Features
○ Applications for the Amiga
○ Hardware Projects
○ More Columns
○ Other

8. What are your favorite parts of AmigoTimes?
○ Tricks 'n Tips
○ The Amiga Monitor
○ Art Gallery
○ Telecom
○ Midi
○ Programming
○ Reviews and Features
○ Video Production
○ DTP Column
○ WOMAN by WOMAN

9. How would you rate this issue:

	Magazine	Disk
○	Terrible	Terrible
○	Poor	Poor
○	Fair	Fair
○	Good	Good
○	Very Good	Very Good
○	Excellent	Excellent

10. Where do you purchase your Computer Products?
○ Dealer
○ Mail Order
○ Direct from Manufacturer
○ Department Store
○ Other

11. From which of these categories do you plan to purchase software?
○ Financial
○ Desktop Publishing
○ Desktop Video
○ Programming Tools
○ Entertainment
○ Music
○ Education
○ Word Processing
○ Communications
○ Painting
○ Database
○ Spreadsheet
○ Productivity

12. Do you log onto any of the following BBS's?
○ Plink
○ Compuserve
○ GEnie
○ BIX
○ Other

13. What age group do you fall into?
○ Below 19
○ 18 - 25
○ 25 - 35
○ 35 - 45
○ 45 and above

14. What is your sex?
○ Female
○ Male

PUBLIC DOMAIN LIBRARY

CAM Club Amiga Montreal

Indicate your order with a small ✓ or an ✗ beside the appropriate disk number.

Note: The following disk numbers are double(2) disk sets; 17, 84, 86, 101, 106, 107, 123, 126, 129, 143, 146, 151, 155, 163, 168, 170, 176, 178, 183, 185, 189, 193, 213, 214, 217

☐ 1	☐ 38	☐ 66	☐ 94	☐ 121	☐ 147	☐ 172	☐ 197	☐ 222
☐ 5	☐ 39	☐ 67	☐ 96	☐ 122	☐ 148	☐ 173	☐ 198	
☐ 6	☐ 40	☐ 68	☐ 97	☐ 123	☐ 149	☐ 174	☐ 199	
☐ 8	☐ 41	☐ 69	☐ 98	☐ 124	☐ 150	☐ 175	☐ 200	
☐ 9	☐ 42	☐ 70	☐ 99	☐ 125	☐ 151	☐ 176	☐ 201	
☐ 10	☐ 43	☐ 71	☐ 101	☐ 126	☐ 152	☐ 177	☐ 202	
☐ 12	☐ 44	☐ 72	☐ 102	☐ 127	☐ 153	☐ 178	☐ 203	
☐ 13	☐ 45	☐ 74	☐ 103	☐ 128	☐ 154	☐ 179	☐ 204	
☐ 14	☐ 46	☐ 75	☐ 104	☐ 129	☐ 155	☐ 180	☐ 205	
☐ 15	☐ 47	☐ 76	☐ 105	☐ 130	☐ 156	☐ 181	☐ 206	
☐ 16	☐ 48	☐ 77	☐ 106	☐ 131	☐ 157	☐ 182	☐ 207	
☐ 19	☐ 51	☐ 78	☐ 107	☐ 132	☐ 158	☐ 183	☐ 208	
☐ 20	☐ 52	☐ 79	☐ 108	☐ 133	☐ 159	☐ 184	☐ 209	
☐ 21	☐ 53	☐ 80	☐ 109	☐ 134	☐ 160	☐ 185	☐ 210	
☐ 22	☐ 54	☐ 81	☐ 110	☐ 135	☐ 161	☐ 186	☐ 211	
☐ 24	☐ 55	☐ 82	☐ 111	☐ 136	☐ 162	☐ 187	☐ 212	
☐ 25	☐ 56	☐ 83	☐ 112	☐ 137	☐ 163	☐ 188	☐ 213	
☐ 26	☐ 57	☐ 84	☐ 113	☐ 138	☐ 164	☐ 189	☐ 214	
☐ 27	☐ 58	☐ 86	☐ 114	☐ 139	☐ 165	☐ 190	☐ 215	
☐ 29	☐ 59	☐ 87	☐ 115	☐ 140	☐ 166	☐ 191	☐ 216	
☐ 30	☐ 61	☐ 88	☐ 116	☐ 141	☐ 167	☐ 192	☐ 217	
☐ 31	☐ 62	☐ 89	☐ 117	☐ 142	☐ 168	☐ 193	☐ 218	
☐ 34	☐ 63	☐ 91	☐ 118	☐ 143	☐ 169	☐ 194	☐ 219	
☐ 35	☐ 64	☐ 92	☐ 119	☐ 144	☐ 170	☐ 195	☐ 220	
☐ 37	☐ 65	☐ 93	☐ 120	☐ 146	☐ 171	☐ 196	☐ 221	

Please send me:

☐ _____ Single disk(s) at US $5.95 (CDN $6.95)
☐ _____ Double disk sets at US $7.95 (CDN $8.95)
☐ _____ Ten (10) disks or more at US $4.95 (CDN $5.50) each
☐ _____ Catalog Disk(s) at US $2.95 (CDN $3.50)

The available disks vary in content, from Utilities to Slideshows; Animations, Communications utilities, Music, Games, Tutorials, and Fonts. To aid you in your selections, a Catalog Disk is available.

N.B. Disk numbers missing from the list on the left are an indication that they are presently unavailable.

CUT ALONG DOTTED LINES WITH CORRECT REPLY CARD ON OUTSIDE - Seal with Tape or staple, but do not glue please

NO POSTAGE
NECESSARY
IF MAILED
IN THE
UNITED STATES

BUSINESS REPLY MAIL
FIRST CLASS PERMIT #26 CHAMPLAIN, NY

POSTAGE WILL BE PAID BY ADDRESSEE

AmigoTimes
P.O. Box 1158
Champlain, NY 12919-9962

△ Fold Carefully Along Dotted Line. This side facing out for **CANADIAN** postage △

Business Reply Mail

No postage stamp necessary
if mailed in Canada.

Canada Post Postes Canada 06

AmigoTimes
5124 St. Laurent, Suite 100
Ville Ste. Catherines
Quebec, J0L 1E0
CANADA

▽ Fold Carefully Along Dotted Line. This side facing out for **USA** postage ▽

DATASTORM ©

From
The Makers
of **Don Bluth's Dragon's Lair**™
Come TWO Exciting new Games:
Vortex from the author of **C64 ZOOM**™
and
Datastorm from the author of **Sword of Sodan**™.
Now available through your
Local Amiga™ Dealer

Amiga is a trademark of Commodore-Amiga, Inc. Dragon's Lair and Bluth Group, Ltd. are trademarks owned by and used under license from Bluth Group, Ltd. © 1983, 1986 & 1987 Bluth Group, Ltd. Character Designs © 1983 Don Bluth. All rights reserved. Zoom and Sword of Sodan are trademarks of Discovery Software Intl.



Blow'em to Bits!

VISIONARY DESIGN TECHNOLOGIES INC.

TO ORDER – CALL OR WRITE TODAY!

Distributor and Dealer enquiries welcomed.

HEAD OFFICE: 45 Whitehorn Cres., North York, Ontario, Canada M2J 3B1 ☎ (416) 497-0833 Fax (416) 497-3077

Product of Canada
Copyright© 1988, 89 Visionary Design Technologies, Inc. All rights reserved. Design by Ulticon Productions Inc.
Printed in Canada

SWORD OF SODAN™

Grasp the Sword of Sodan and feel the true power of arcade action!

Creaking, groaning, shrieking,
teeth clenching arcade realism.
Deep dark forests.
Misty, eerie graveyards.
Treacherous, guard-filled streets.
Dare to enter the evil castle,
Craggamoore.
Wield your sword through
its winding corridors
and rank rotting dungeons.
Your story will be
the greatest ever told
— Your reward will be
the greatest ever known!

FEATURES:

- *Battle with massive animated characters that stand 2/3rds the size of the screen.*
- *Fight as Hero or Heroine through 11 incredibly challenging levels!*
- *Study your past performance in Replay Mode! (extra memory required)*

Packed into 3 disks with more than 4 MEGABYTES of detailed graphics and digitized sounds!

Available for Amiga™, Coming soon for IBM® and compatibles, Apple II GS.





AMIGA screens shown.

DISCOVERY SOFTWARE

Fight your way to your local software retailers. Or, call 1-800-342-6442 for VISA and MasterCard Orders. For check or money orders, send $49.95 plus $3 shipping and handling to DISCOVERY SOFTWARE INTERNATIONAL INC. 163 Conduit Street, Annapolis, MD 21401. Allow 4-6 weeks for delivery. Sword of Sodan is a trademark of Discovery Software International, Inc. Amiga is a trademark of Commodore Amiga, Inc. IBM is a registered trademark of International Business Machines, Inc.