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TREASURER
Bill Eckert
6632 Lisamarie Road
Columbus, Ohio 43229
614-891-9785

VICE PRESIDENT
Dr Warren Lieuallen
1652 Hess Blvd.
Columbus, Ohio 43212
614-488-3977

MEMBERSHIP CHAIRMAN
Tim Adcock
7544 Satterfield Road
Worthington, Ohio 43085
614-764-9492

PRESIDENT
Sheldon Wesson
444 North Pearl St.
Granville, Ohio 43023
614-587-2716

DISK LIBRARIAN
Charles Lusco
Channing Terr. #C
Columbus, OH 43232
614-863-4016

NEWSLETTER EDITOR
Mark Shuter
1854 Solera Drive
Columbus, Ohio 43229
614-899-9473

ADDRESS ALL MAIL TO
ACE of Columbus
P.O. Box 849
Worthington, Ohio 43085

DISK FIXER
From APX

I would like to review an old, but good, program for you. This program was published by the Atari Program Exchange, which is now obsolete. Recently we have seen some old APX programs come out under the ANTIC/APX label. I am reviewing this program in hopes that it will become available again. Disk Fixer is a very good utility program.

In case some people don't understand how the disk functions, I will give a brief explanation. In a normal single density disk you have 720 sectors that data is stored in. Each sector can hold 128 bytes of information. Then you have the bit map or volume table of contents (VTOC). The VTOC tells DOS the status of each sector,i.e. whether it is in use or not. Then there is the directory where the file names and file information is kept. You also have to account for the boot sectors which contain the information needed to boot the disk. In DOS 2.0 there are 3 boot sectors. All the remaining sectors are free to store data in.

When you boot the Disk Fixer disk the DOS menu will come up, you must (L)oad the program to get to the Disk Fixer menu. The program is menu driven and I will try to explain each of it's functions. The first function allows you to get a detailed listing of the files stored on the disk. You have to tell it which files you want to see by entering the numbers in hexadecimal format. This listing will show you the following information for each file: file number, file name, beginning sector, total number of sectors, and current file status. The status will show you if the file is deleted, locked or normal.

Function B is the sector chain trace. This function will trace through a specific file and show you which sectors are assigned to that file. It also shows where any bad links are (if any). This proves to be very useful when trying to recover a damaged file.

The C function modifies the directory entries. After you enter in the specific file number, you will be able to change all the information pertaining to that file. You can change the file name, starting sector, total number of sectors or the status. For example if your file has a D to show it's status is deleted, all you have to do is remove the letter D and your file is recovered (as long as you haven't written over the assigned sectors). You can also lock a file by putting an L in the same spot.

By choosing the D function you will be able to check the allocation map. The program will go through and check each sector to see if it is in use or not. Then it will check the VTOC to verify each sectors status. If there is a mismatch it will show you where the mismatched sectors are and give you the option to write the correct bit map to the disk.

With the E function you are able to modify the sector links. After entering the number of the sector you want the program reads the sector link information. By using the cursor control keys you can change the file number,number of bytes, or the forward pointer to be whatever you wish. If you put an E to right of the forward pointer, it will make that sector be the end of the file. This powerful tool can also help salvage lost files.

Function F will let you choose which drive you want to use, and the G function ends the program by sending you back to the DOS menu.

As you can see this program is very powerful and easy to use. you

are able to do a wide variety of useful things such as recovering lost or deleted files. I hope Antic will add this to their list of 'revived' programs, because there are probably many people that would like to have it.

by CHARLES W. BROWN

KENNEDY APPROACH
by Micro Prose Software

I feel that many of the games coming out for the Atari are getting better.This game I am going to tell you about is one good reason.The game is called Kennedy Approach.This is an aircraft controller simulation.If you ever wondered what it's like to be one.This game will give you an example.One nice feature of this game is that it talks.It has a built in speech synthesizer.

When you boot up the disk you will be given a choice of 5 skill levels.When you have chosen your skill,you will then choose your cities.You have a choice of 5 cities that you have control over.They are Atlanta,Dallas Fort Worth,Denver,Washington D.C.,and New York City.You also have a choice of different job offers.They are trainee,graveyard shift,afternoon shift,morning shift,and the prime time shift.When you have chosen the cities and your shift desired and entered the secret code from the book.You will then begin the game.

When the game starts you will be shown your area map.On it there will be grid marks.Each one equals one mile.There are white marks which are the designated paths for you aircraft.On top of the screen is your aircraft information display.It shows each aircraft and it's status.The aircraft are called by letters of the alphabet.You first have the aircraft ID letter.Then the origination city letter.Then the destination city letter.Then the planes altitude.Around the outside of the screen are the different cities that the planes come from or leave to.

When you want to command a plane you can use your joystick to move a cursor over it and press the button.Or you can type in the planes ID letter from the keyboard.Think that using the keyboard is faster.Once you have chosen the plane it will turn to an arrow on the screen.Then you use your joystick to raise or lower it.Or You can turn the plane with the joystick.Once you pushed the joystick button to enter your command.You will hear a voice giving the actual command to the aircraft.You will also hear the pilot giving a roger for an answer.You will be raising and lowering the planes.You also will be turning them in all sorts of directions.I am going to give you a tip.When you turn a plane,only turn it 45 degrees at a time.You will have to give more commands but I think it will be easier.You will also have planes taking off and landing.You might even have a plane passing through your area to another destination beside your airport.

When you play this game you will begin to understand the rules of aircraft control.All planes must have a minimum margin of separation.They either must be 3 miles apart horizontally.Or They must be at least 1000 feet apart verticaly.You could have 3 planes going over the same spot as long as they are at different altitudes.You also have the different hazards to play with.You can have a storm that your planes must avoid.Then you also could have planes that get low on fuel.Then you have to get them landed fast or they will crash.You also Have mountains to fly over.You even have secured areas that you can't fly over.You can even have planes going in to the famous holding patterns.

After a certain amount of time the game will stop.After some disk activity you will be evaluated.You will be scored on amount of conflict time(planes too close together),flight delays,or bad exits(plane leaving at the wrong altitude or going the wrong way)or if you had any crashes or not.If you get a good enough score you will be allowed to go to the next level.If you don't the game will end.

I enjoy this game for several reasons.One it is different from the rest of them.Also it makes you think rather than just moving a joystick back and forth.The real reason I like it is that it shows me what the job of the air traffic controller is like.They say that is the hardest job to have.This game helps me to believe it.

I hope that I have given you a little insight into this new game.I also hope you can use it to determine whether or not you will be interested in it.I hope you will be,maybe we can help each other out and take it all the way.

by CHARLES W. BROWN

A Piece of the ACTION!

By Dave Beck

What good is a personal computer if you can't program it? Sure you can run pre-programmed software, but there isn't always a package to do what you want. Besides, sometimes it's more fun to 'do it yourself'. What most of us want is a way to get the machine to easily and efficiently do what we want it to, not what someone else thinks we want. So let's talk about programming languages.

Basic is by far the most common user language for ATARI computers, with assembly/machine language a distant second. There are, of course, several different versions of BASIC and assemblers other than the standard ATARI versions. In addition to being the most popular, these two languages represent pretty well the opposite ends for speed and ease-of-use of programming languages on ATARI 8-bit computers.

BASIC is a relatively easy-to-learn language having variations for virtually every computer made. In it's simplest form it is machine independent, commands that interact with a specific operating system are extensions to the original language. PLOT, DRAWTO, SOUND, USR and even PEEK and POKE are examples of these extensions. This high-level flexibility brings with it a reputation for being very slow. Unfortunately, at least for ATARI basic, the reputation is deserved. Anyone who has waited on a character set redefinition or a load of machine code from data statements knows how unbearably slow even the simplest of repetative tasks can be.

Assembler, on the other hand, is a machine dependent language many people find difficult to learn and use effectively. Even those who work with it on a regular basis often find themselves wishing for an easier way to do things. What they gain by going to all the trouble of using assembly/machine language is the ability to write the fastest, most efficient programs possible for the machine. In addition, some things, particularly interaction with the operating system, can be done only in machine language.

We don't have to stick to just these two languages though, ATARI computer users are fortunate in that the machine has several different languages to choose from, each one having it's strong and weak points and nearly all of which fall somewhere between BASIC and assembler in terms of ease-of-use and execution speed. LOGO and PILOT are good for educational purposes but are limited in versatility and tend to be on the slow side. Forth is a flexible language that allows a reasonably high execution speed from it's interpreted code, unfortunately it's stack-oriented reverse polish notation format requires an upside-down way of thinking. (I find it works best when I stand on my head and type with my toes.) The C language is finding a great deal of use on 16-bit machines such as the IBM , Macintosh and 520 ST. This powerful, structured language is compiled to produce fast-executing programs. However, the 8-bit ATARI versions of this language are limited subsets of the full language and can be as difficult to use as a good

assembler.

Recently a new language has come on the scene, giving an alternative to the existing language base. ACTION! is a high-level language similar to C in structure and concept, it's features are: execution speed, size, ability to interface with the OS, modularity and logic constructs. Disadvantages are: Not immediate, disk oriented, needs a greater understanding of the ATARI, No built-in floating point and treatment of arrays/strings.

1. Execution speed: ACTION! is a compiled language, meaning that the easily understood source language is converted to machine language all at once for the whole program. This machine language can then be executed directly. Interpreted languages such as BASIC and Forth are converted to machine language one statement at a time every time a statement needs to be executed. Compiler languages tend to be faster than interpreted languages, but this can vary depending on the efficiency of the compiler or interpreter. The ACTION! compiler is very efficient, producing tight machine language code with little overhead to slow down execution.

2. Size: Due to the small amount of overhead that the ACTION! compiler generates, the size of the executable program is kept to a minimum. Also, since the program is compiled before execution, the source need not reside in memory during execution.

3. Ability to interface with the Operating System: ACTION! was designed specifically for ATARI computers to merge almost effortlessly with the operating system functions, giving easy and understandable access to the most powerful features of the computer.

4. Modularity: This feature of a language allows a task to be written in one or more groups of subtasks. These can then be put together to create the whole program. Because ACTION! does not use line numbers and sends variables between modules by value rather than by name, modules can be included in programs a great deal more easily than in a non-modular language such as BASIC.

5. Logic constructs: These are language facilities allowing use of built-in commands to create logic structures. They include IF/ELSE and the ability to DO a block of code WHILE or UNTIL a condition is true. A language which has these commands built in as ACTION! does, is generally more easily understood than one which requires simulation of the constructs using IF/GOTO or conditional branching.

6. Not immediate: BASIC users have become accustomed to the ability to edit and run a program with no intermediate steps. ACTION!, like all compiled languages, adds a step between these. Unlike some of its compiled relatives however, the ACTION! editor is built into the cartridge. A small program can be edited, compiled and run without having to store and

re-load the source. This makes the compile step somewhat less painful than it could be.

7. Disk oriented: ACTION! is a cartridge-based language, meaning that it does not require a disk, but to obtain the full benefit of the language a disk is almost a necessity. To run a large program on a tape system, the source must be saved and then compiled from tape before it can be run. On a disk system, the program can be compiled and then the compiled machine language can be saved to disk as a binary load file.

8. Greater knowledge of the machine is required: This isn't exactly true, the language can be used effectively without a strong understanding of the ATARI computer or it's operating system. However, ACTION! works so well with the system that such knowledge proves itself invaluable.

9. No built-in floating point arithmetic: This could be a biggie depending on what you want to do. Floating point arithmetic is what gives BASIC its ability to handle very large or very small numbers with ease. There is a way to build floating point arithmetic into an ACTION! program, but it is not particularly straightforward or simple as it is in BASIC.

10. Treatment of arrays/strings: ACTION! handles arrays and strings somewhat differently than BASIC does, but this can almost be called an advantage to the language because it provides a great deal of power to the advanced programmer. Unfortunately, if you are not careful, your program may not be doing what you think it should.

Russ Wetmore, the author of *HomePak* (which was written in ACTION!), has called ACTION! "a programmer's dream come true", In future articles I will delve into the intricacies of this "dream" language to show the power and flexibility of this relatively new way to program your ATARI.

Printer Utilities Documentation

Compiled by Dr. Warren G. Lieuallen

The following is the documentation for several of the printer utility programs which were demonstrated at the Atari Computer Enthusiasts of Columbus' SIG meeting (June 29, 1985). Some of this material was included with the original programs; I've indicated my added comments.

AWDISK is an AUTORUN file for use with the AtariWriter cartridge. It allows you to redirect output to a disk file instead of the printer. You can use this to create pre-formatted disk files that can be dumped directly to a printer by someone who doesn't have AtariWriter, or you can create and edit 'DOC' files with right justified margins, automatic centering, etc....

(The best use of this program is to create the text files to be used by CUSTOM.PRT, as discussed in the next documentation. - WGL)

To use this file, rename it AUTORUN.SYS (already done - WGL) and put it on your AtariWriter files disk. The AUTORUN file will only initialize if you hold the SELECT key down while booting (hold it the entire time - WGL). Otherwise you will have normal printer operation.

* DUMPING TO DISK *

When you select menu option 'P' (print), the output will go to a disk file called "DISKPRT". You must rename this file before you dump another one or it will be overwritten.

If your file is intended to be read on the video screen, select #3 (Atari 820) when asked which printer you are using. This will prevent printer control codes from winding up in your output file. You should also delete any formatting characters that are not needed (print style, etc.). The following block header was used to originally print this DOC file (use CTRL key on letters).

L1 R37 J1 T0 B0 I3 Y2

(The normal AtariWriter default formatting commands work just fine, also. - WGL)

* SOME HINTS *

Hitting SYSTEM RESET will cancel disk output and let you use the printer.

To dump the output file to a printer, you can use the C (copy) option from the DOS menu. When prompted 'COPY - from,to', type 'D:DISKPRT,P:'.

Do not try to print the disk directory with the handler installed. AWDISK sends ALL printer output to disk.

This file loads into location $2000(hex) and is NOT relocatable. Any other (relocatable) AUTORUN files you use will have to be appended to it.

If you have any comments or suggestions please leave me some E-MAIL. (Do not leave E-MAIL for Warren Lieuallen, as I don't yet subscribe to CompuServe! However, I have just purchased a modem, so mail on the ACEC board should reach me. - WGL)

Thanks,

Mike (last name unknown - WGL)

CUSTOM PRINT

With Custom Print you can make printouts of your LISTed programs or text files using any Atari character font. This BASIC program works on all Atari computers with 32K, BASIC, and a disk drive. It is compatible with the Epson, Gemini and, with the modification listing, the NEC or Prowriter printer. (I have modified this program so that it is now compatible with the STAR SG-10. It may need modifications for your particular printer. - WGL)

To begin, RUN the program "D:CUSTOM.PRT". The program will ask if you want to print with a custom character set (c-set), Atari's c-set, or the last set loaded. If you load a c-set you will be asked for the disk drive number 1-4 that your c-set file is on. A directory for that disk will be displayed on the screen.

You are then prompted to input the filename of the c-set to load. Type the name only, do not type the device ('D:'). If the file selected is not there, the error is flagged and the filename is requested again. To refresh your memory, or to get a directory of a different disk, just press [RETURN] to go back to the drive number prompt. (Occasionally, the program will claim that a c-set is not valid, even though it is. Somebody should fix this [hint, hint!] - WGL)

Once a good c-set in loaded, all of the Atari's character set is printed to the screen. The new c-set is then loaded and displayed (very briefly! - WGL). The next prompt is for the drive number that the text file is on. If you chose not to use a custom c-set, this will be the next input after bypassing the c-set loader routine. Press the key for the desired disk drive number 1-4. The directory of the disk will be displayed and you will be requested to input the text filename of the file you wish to print, (which will usually be DISKPRT, from the AUTORUN.SYS file discussed previously. - WGL).

The file must be either a LISTed program file or a text file with a carriage return at least every 255 characters. An Atariwriter text file SAVEd to disk in formatted form works well, (as constructed by the AUTORUN.SYS - WGL). When formatting the text file, keep in mind that the graphics dot densities of the printers limit the number of characters possible per eight inch line. The NEC has only one graphics dot density, which works out to 60 characters per line using Custom Print. Epson owners have a choice of either 60 or 120 characters, and Gemini owners, 60, 120, or 240 characters. 60 characters per line appears to be the most readable (except for lucky SG-10 owners, who have several intermediate densities available. 80 characters per line is normal pica spacing. - WGL).

Custom Print will prompt you for the number of characters per line if it is an option for your printer. You will then be prompted for vertical line spacing. With 'stacked' printing, one line is printed above the next as it would appear on the Atari screen. A second option is to select single spaced print, which is most commonly used for program listings.

Next you are prompted for text positioning. Centering of text, block left, and block right of each line are the options available.

You are next prompted for a title. If you do not want one, press return. If you do input a title it will be printed at the top of each page along with the page number. Next you will be asked if you wish to skip perforations. If your answer is yes, the listing will be paginated without title or page numbering. Suppressing perforation skipping allows you to print continuous labels from preformatted text files.

Finally, you will be asked to double check your printer and disk drive. Pressing return will begin printing. Pressing ESC will abort printing. If a custom c-set was chosen, this c-set will be enabled as the file is printed.

Note: This file was originally successfully printed on a NEC using Atariwriter modified to save formatted text to disk (via AUTORUN.SYS - WGL). The single line option in Custom Print resulted in a printout of 50 lines per 11 inch page. The stacked option resulted in 99 lines per page.

(presumably written by Matthew Ratcliff,
the original program's author - WGL)

ST STATUS: October, 1985.

by Norman Knapp

This month's information about the ST is a series of files downloaded from CompuServe, courtesy of Dick Brudzynski. We have this month first hand experiences of Atari enthusasists at SIGGRAPH and the Third Annual PC Faire in San Francisco.

Where's the software for the ST going to come from? According to Popular Computing Weekly (the British InfoWorld), it may be coming from Europe: powerful languages, exciting games, and applications.

Other files are concerned about a new GEM, the rebirth of MPP, and the possible partnership of Atari and AT&T.

CORRECTION: my comment last month about the book for CP/M 86 needs to be clarified. CP/M 86 is for the 8086 microprocessor. To my knowledge, there is no book available for CP/M 68, the operating system for the 68000 microprocessor, which is in the Atari ST.

CompuServe ANT-1120

BY GIGI BISSON, ANTIC ASSISTANT EDITOR

ST OUTSELLING MACINTOSH?

Bay Area Computer Currents columnist Wendy Woods reports that the ST has sold better than the Macintosh did in its first six weeks on the market. According to "an informed source close to Atari," she wrote, "50,000 machines have been sold through 1,000 retail outlets in the first six weeks." The Macintosh, with heavy advertising, sold only 70,000 units in its first 10 weeks. When Antic tried confirm this, we got conflicting reports in a random survey of dealers.

"It's selling fairly well, we've sold ten in four weeks," said User Friendly in Minneapolis. But at Access to Software in San Francisco, a representative was disappointed.

"They're not selling as well as we'd like," he said. "The ST would sell much better if we had software on the shelves."

Scott Heath of the Mile High Atari Club in Denver, CO says that lack of programs available does not seem to be hurting sales in Denver and "Local stores sold out of ST computers almost as soon as they came in."

"In mail order, the ST definitely outsold the Mac during the first two weeks ," said a representative at SoftRac, a direct mail retailer in Springfield, Ohio. "But in our retail stores, we can't even GIVE the ST away."

He said other mail order firms offering the ST at a discount are also doing very well. The booming mail-order sales are most likely a result of Atari Corp's. lack of a widespread retail distribution network, especially in remote areas.

According to SoftRac, "One guy ordered one from us because he said he refused to drive six hours to buy an ST."

Mail order sales notwithstanding, those 50,000 STs may reflect an INTERNATIONAL sales figure. After all, the ST was released in Canada and Europe one month before it was distributed in the U.S.

Even Japanese, Israeli and Yugoslavian developers are already producing ST software products.

MORE MAC VS. JACK

The most important difference between the Macintosh and the "Jackintosh" may have nothing to do with the price. These words from Jack Root in the July 1985 issue of St. Mac" thought comparing the Apple II to the Mac, shed some light:

"Hobbyists like to take something apart and figure out how it works, then put it back together in a slightly different way. They like to think of it as "making improvements." The Macintosh doesn't let you do that. You can't even take it apart, let alone modify it... The hobbyist has been shut out. You never use the Mac as a Mac, only as a thing to turn MacProgram on. There is no entity there, only a superb pipeline! The computer is nothing, the application is all."

THE LONE ATARI

This is the future of computer graphics -- a world so synthetic, brilliant and hard-edged that you need to squint to look at it. Screen after screen of rotating orbs, pulsating colors, three dimensional graphs, charts, and lush scenery all zip and flash to the beat of synthesized music. This is the video arcade of the future, but with nary a joystick or home computer in sight.

In the vast exhibition hall, elaborate chrome and neon-lit booths were set up by mainframe corporation giants Cray, IBM and DEC. Hollywood image merchants Abel Image Research displayed their stunning "Sexy Robot" commecial for the aluminum industry. Lucasfilm, the graphics pioneer that redefined standards for special effects with "Star Wars", was creating impossible fractal landscapes and blades of grass that seemed to grow at random on the screen.

These are the alternate realities realized this summer at SIGGRAPH. The influential annual world showcase for computer graphics took place at San Francisco's Moscone Center, a stone's throw from Antic's editorial offices.

In the midst of this glowing space odyssey sat one lone, battered and well-used Atari 800.

Next to the Atari was a mouse-driven monitor displaying a computerized aquarium of fish that appeared to swim on the screen. By selecting certain factors like water current, season, mating habits or food supplies with the mouse, a viewer could watch the computerized fish change their behavior patterns. This is the work of Ann Marion, a designer from Palo Alto, California who is fascinated with little worlds that she can create inside a computer.

Though the aquarium was programmed on a Cray super-mainframe computer, Marion began designing her underwater environment while working as a programmer at Atari. The predecessor of the aquarium was the display on the Atari 800 -- a similar study of attraction and repulsion in nature. As if captured behind the monitor glass, geometric butterflies were flitting around, like moths near a flame. By pressing different keys on the terminal, one could alter the ways the butterflies were attracted to each other based on different variables. For any computer, certainly for an 800, it was a technical wonder. Yet it was also art.

Elsewhere at SIGGRAPH were impressive graphics and animated

cartoons created on Apple II and Macintosh computers, but certainly nothing that a battered Atari 800 isn't capable of, given its fantastic graphics and redefined character abilities.

To submit color slides of your computer graphics work, or disks of animated programs for consideration for the Art Show at the 1986 SIGGRAPH, August 18-22 in Dallas, Texas, contact Patric Prince, 160 W. Jaxine Drive, Altadena, CA 91001. (818) 797-7674. Deadline is March 7, 1986.

IN SEARCH OF ATARI

In spite of the rave reviews the new Atari computers are getting, trying to find mention of one at a computer show can be a sobering experience. After finding only one Atari at Siggraph, I continued to search for the Atari in September at the Third Annual PC Faire in San Francisco.

Aparently, exhibitors must think PC means IBM PC, because Big Brother -- er... Big Blue -- was everywhere. I roamed through a sea of navy pinstripe suits, past uninnovative business applications. I trekked through a dense jungle of hype, and got lost in the Tallgrass booth. The makers of 60 megabyte hard disk drives had salesmen in safari suits, canned jungle sounds, a fake waterfall, plastic palm trees and green shag carpet so dense that it squished underfoot. Watch out for quicksand...

Finally, in computer show Siberia, (where they give the users groups free space) I heard strains of "Do You Know the Way to San Jose," in synthesized stereo. Had I walked halfway to San Jose already? No, it was an Atari 520 ST with a synthesizer hooked up to the MIDI interface, and a color keyboard display onscreen. Atari Corp. was busy at another show in London, but the Bay Area Atari User's Group (BAUG), had set up this display, along with a 130XE hooked up to Computer eyes and a video camera.

ABACUS, another local users group, was showing a Sundog Frozen Legacy demo on the ST, along with Lucasfilm's QYmsets. So much for overcoming the not-just-a-you-know-what machine image... But the crowds continued to clog the aisles around the Ataris, and one of the blue-pinstripe-suit-type guys asked me where he could get one of those "Atari Safari" pith helmets.

"The user group demo of MIDI was probably the most interesting thing in the whole show," Jack Starr, director of publications for the PC Faire told me. Desperate to jazz things up at the lackluster event, he also tried to lure a Commodore Amiga. "I searched for a users group, anything...I would have given free space," he said.

RISING FROM THE DEAD

Adam Osborne is back. He was strutting around the PC Faire displaying the braggadoccio that made him notorious in the computer industry. His newest company, Paperback Software, has released VP Planner, a $99 Lotus 1-2-3 clone. Osborne claims it will be "a runaway hit." A representative from Paperback said that because V.P. Planner is written in FORTH, it would be easy to port over to the 68000 machines "like the Macintosh and the ST." Funny, how software companies are starting to identify the ST as a Mac-alike and not as a new Atari...

NO MAJOR DEVELOPERS?

I ran into Philippe Kahn, President of Borland International

Software, at their glitzy, neon-lit booth.

Borland is the super-successful company responsible for the best-selling programs Turbo Pascal and Superkey. Their controversial policies include "not copy protected" software and 60 day warranties.

The 33-year old Kahn, until recenty an illegal alien from France, is just as famous for his flamboyant exploits, like playing his saxophone at a company toga party.

Sweating profusely at the PC Faire, he sported an expensive tailored pinstripe suit with no necktie. His monogrammed shirt was unbuttoned halfway, revealing tufts of chest hair.

Why won't Borland develop any programs for the Atari 8-bit computers?

"That's impossible!," he said in an accent that was more Californian than French. What about the ST?

"The ST is an good machine," he said. Sig Hartmann came to Borland's offices in the Santa Cruz mountains and tried to convince Kahn to port some of his programs to the ST, he said. But Kahn was insulted when Atari Corp. wanted him to purchase a $5,000 ST development system.

"They should make it as easy as possible for the major developers, they should give me four or five machines, then maybe I'll consider it," Kahn said. Atari promised the systems, but so far, according to Kahn, they have not arrived.

He insisted that there are "no major developers writing for the ST." What about Broderbund and Synapse, I asked.

"Those are just games," he said. Perhaps Kahn hasn't heard of best-selling Printshop and SynFile+.

Kahn is open to changing his mind in the future, however. I told him that Antic readers -- through letter-writing efforts -- managed to convince Broderbund to release Championship Loderunner for Atari. I hinted that they'd love to see, perhaps, Turbo Pascal for the Atari.

Kahn said he would listen to a deluge of mail. "If I see enough of a demand, I'll certainly think about it," he said.

WARNING--ATARI JOKES AHEAD

Alan Kay, the former Atari genius-in-residence, and present Apple genius-in-residence, tried to shake up the Big Blue Mentality. He opened his keynote speech at the PC Faire by displaying on an overhead projector, "WARNING: IBM JOKES AHEAD."

Kay advised anybody who might be offended to leave the room. Nobody left.

He then proceeded to rip the entire personal computer industry. He called developers "High Priests of a Low Cult," and said "Silicon Valley tends to Alpha Test on the end user." Kay says that what we need is "Personal Computing as If People Mattered."

Kay showed film clips of programs developed ten and twenty years ago that have still not been surpassed by current technology.

For example, the pencil is still better than a PC, he said. "Would you put your grocery list on a PC and carry it into the grocery store?" he said. "What that means is personal computing hasn't arrived yet and it won't until we stop settling for less."

Kay says even intestinal bacteria have more advanced information storage capacities than microcomputers. "One E coli bacterium contains 100 gigabytes," he said. "That's 12 million Atari game cartridges." Kay said he used this as an example once during an argument with an Atari executve.

"He said, 'Where can I get one of them E coli?,'" Kay recalls. "I told him to look at yesterday's stock report."

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CompuServe ANT-1292

EUROPEAN ST PRODUCT BONANZA SOFTWARE GALORE COMING SOON
by GIGI BISSON, ANTIC ASSISTANT EDITOR

No software for the ST?? Think again.

In the September 12 issue of Popular Computing Weekly (sort of the InfoWorld of the U.K.) an article stated that "The star of this year's PC World Show -- the most exhilarating in several years -- was unquestionably Atari. They threatened to take over virtually the whole exhibition floor with well over fifty 520STs and a prototype 260ST encased in a vast glass enclosure. The new low-cost 520ST stole the show with strong software support."

PC Weekly also stated in a separate story that "over 170 titles are being written for the ST."

Antic Publisher James Capparell and Marketing Director Gary Yost returned from the PC World Show in London with armloads of British demo software and press kits...

UNDERSTANDING THIS SURVEY

The software discussed in this article is in various stages of development. For each program, we will specify whether Antic has seen a FINAL Marketed version, near-final BETA Test version, earlier ALPHA Test version, incomplete DEMO segment, or PRESS Release announcement.

Suggested prices listed this article are given in U.S. dollars when that information is available. Otherwise the prices are specified in English pounds (L) currently worth about $1.33 each. Prices are subject to change, and purchasing information for most of the following packages is not yet available, because many of the programs must be licensed by stateside companies prior to U.S. release.

** METACOMCO LANGUAGES **

Metacomco is a leading supplier of systems software for 68000-based computers. The company develops proprietary languages for computer marketers. For example, Metacomco developed AmigaDOS for Commodore International and a BASIC interpeter for Digital Research Inc.

These professional development tools are being adapted for the ST and will soon be available from the Antic Catalog. Each package includes language software, a screen editor, and a user manual. The languages come with run-time licenses and will be supported by Metacomco's technical staff viatoll-free numbers.

The following languages are coming from Metacomco

ASSEMBLER/EDITOR/LINKER -- A high-specification macro assembler, originaly developed for the Amiga. Full Motorola specification and screen editor. Available October 21. $109.95.

BETA.

PASCAL -- Full ISO 7185 standard Pascal compiler, already widely used on the Sinclar QL. Compiles to native code. Available in early December for $109.95. ALPHA.

LATTICE C -- Originally developed by LATTICE for 8086/88 microcomputer systems and later adapted to the Sinclair QL. This implements the original C language developed by Bell Laboratories, and follows C features and functions as described in Kernighan and Ritchies' text "The C Programming Language." Available in December for $159.95. ALPHA.

CAMBRIDGE LISP -- full mainframe implementation of the LISP development environment used in artificial intelligence research worldwide. PRESS.

IBM PC CROSS DEVELOPMENT SYSTEM -- A complete system for programmers wishing to transfer IBM PC software to the Atari, or to develop on the PC and download to the ST. Includes cross assembler, C cross compiler and linker. Scheduled for early 1986 release. PRESS.

PASCAL & MODULA -- TDI Software Ltd. has FINAL versions of Modula-2 and UCSD Pascal for the ST. Both are now available at a price of L195 each, from TDI at 29 Alma Vale Road, Bristol BS8 2HL, England. Modula-2 is the successor to Pascal as envisioned by its creator, Niclaus Wirth. It is considered to be the best language for modular programming, utilizes the GEM interface and includes a full screen editor linked to a compiler. UCSD Pascal is the industry standard used on home and multi-user micros. It includes a screen editor and utilities.

PRO FORTRAN 77 -- Prospero Software of London offers an ANSI Standard Fortran compiler for 16-bit 68000 microcomputers. Cost is under $300. BETA.

PC COMPILER -- GST unveiled a C Compiler with a "near word-processor quality" assembly editor and linker for L59.95. Originally developed for the Sinclair QL, it includes a 73-page user manual. This is a small C without floating point, but it includes GEM bindings, making GEM development. FINAL. Also GST has a CP/M 2.2 emulator in final BETA test.

** ENTERTAINMENT SOFTWARE **

BRATTACAS -- Psygnosis Ltd. calls Brattacas an "interactive video" -- the first of a generation of "electronic leisure products" for the Atari ST.

But Brattacas really is an animated graphic adventure that looks and handles like an interactive cartoon. You can use a mouse, joystick or the keyboard to control the protagonist, Kyne, as he jumps, rides elevators, duels with robots, walks smoothly -- in richly animated sequences as good as a cartoon movie.

When Kyne stumbles or falls, you even see little thought balloons like "Ouch!" Brattacas also includes a beautifully illustrated, 78-page novel to "prepare you for the world of Kyne" -- an oppressive Orwellian metropolis replete with video cameras and thought police. We have a fascinating DEMO disk of this, but it probably won't be released in the US until January, 1986.

COLOURSPACE LIGHT SYNTHESIZER -- The successor to Psychedelia from a truly strange company, Llamasoft (the folks who brought Mama Llama and Sheep in Space to the Commodore 64). This program does for light what a synthesizer does for sound. An acid trip for your Atari?

As creator Jeff Minter describes it: "You can curve the screen, reflect it with hardware, interlace it, even change the

resolution as the program is running. Each colour within the colour flow can be made dynamic, oscillating with a definable amplitude and frequency. By offsetting each step of the flow you get the most amazing bands of metallic fire rippling up and down the entire lightform...If you really want to burn your brains, you can kick in the stroboscopics. This is amazing in a dark room -- variable frequency slices of hi-energy photons to really freak you out."

Available for the Atari 800/XL in England now. ST version available from Antic Catalog in early 1986. BETA.

LOST KINGDOM OF ZKUL -- Zkul (pronounced "skull") is an advanced adventure game. According to the manufacturer, Talent Systems of Glasgow, players should expect it to take many months to solve. The game was originally released on a miniscule 1 x 1 1/2 inch cassette for the Sinclair QL. It seems to be a J.R.R. Tolkien kind of saga -- with the usual ancient dwarves dwellings, wizards, secret treasure, etc.

The QL version of Zkul is sold for L24.95 as a package with West, a game of (what else?) notorious bank robbers in an abandoned mining town deep in Indian territory. Events -- rattle-snakes slithering past, charging Indians -- happen in real-time outside your control. FINAL.

MISSION MOUSE -- A multi-level platform game with impressive high-resolution graphics: Paradox Software of Essex, England. Available mid-December from Antic Catalog. DEMO.

LANDS OF HAVOC -- The manufacturer, Microdeal, calls this unusual game an "arcade adventure." With 2000 screens of mazes and multitudes of characters, Lands of Havoc is very complex and very fast. Available in early November from Antic Catalog. FINAL.

MURRAY AND ME -- One minute he was enjoying a lean pastrami in a deli, the next -- POW! trapped inside a 520ST. Meet Murray, a lovable born-loser kind of guy who actually likes his classy address -- after all, the rent's cheap and he has you to keep him company. Murray is the first of a new generation of ST Biotoons -- living, computerized cartoon characters who utilize the memory and graphics ability of the ST to deliver artificial personality, not artificial intelligence. Created by Israeli cartoonist Ya'akov Kirschen. Available in December from Antic Catalog for $39.95. BETA.

MOM AND ME -- When's the last time your computer made you feel guilty? When's the last time it made you laugh, for that matter? Mom, a hilarious Jewish mother, will nag you until you roll on the ground in fits of laughter. (You might even start eating your vegetables, who knows?) Another ST Biotoon by Ya'akov Kirschen. Available in December from Antic Catalog. $39.95. BETA.

** BUSINESS APPLICATIONS **

ATARINET MAILBOX -- Software Punch of Liverpool, England is to release AtariNet, an electronic mail utility that works through the RS-232 interface and utilizes windows and icons. The AtariNet Note Editor is a text editor that allows you to write and file a message. The AtariNet MailBox lets you mail it and notifies you when a message is received. BETA.

DESK DIARY -- Paradox Software is working on Desk Diary, a desk/time management system and database for the ST that features yearly memos, daily appointments, a pull down calendar, and client database. Available mid-December from Antic Catalog. BETA.

K-CALC -- From Kuma is coming an easy-to-use spreadsheet

calculator that utilizes GEM, mouse-driven icons and windows. It has a "wide view" zoom function, and is compatible with serial and Centronics parallel printers. It is supposed to use the ST's full RAM, and is compatible for data transfer with upcoming business packages from Kuma -- word processing, database and communications -- slated for Winter release. Available in October. L49.95. BETA.

FLEXFILE -- Talent Computer Systems announced Flexfile, a database and report generator for the ST that runs under GEM. It handles mailing lists, personnel histories, credit control records, stock records, etc. It automatically keeps track of commonly used "strings" (such as names, addresses and telephone numbers). These are then formed into a menu that allows single keystroke data entry. BETA.

TIMELINK -- This "Temporal Database" allows you to do almost anything with information relating to time. For example, hairdressers could keep their appointments in order, financial executives can keep track ofinvestments, or scientists can log experimental data. See day, week, month or year at-a-glance. Calculate time between dates. Originally for Macintosh by SofTechnics of London, and soon available for the ST. $99.99. ALPHA.

RHYTHM -- Rhythm is part spreadsheet, part calculator. With this combination of functions, you can do what-if analysis or use its number-crunching ability as a programmer's calculator. It also integrates with other standard GEM application programs. $49.99. BETA.

STACCOUNTS -- STAccounts is an integrated, small business accounting package from Silicon Chip Ltd. that includes a sales ledger, purchase ledger, stock control and nominal ledger. All functions are written within GEM and feature mouse control and drop-down menus. A hard disk version will be available during 1986 and will support approximately 15 times more information than the 500K floppy version, according to the manufacturer. $299. ALPHA.

BOS SOFTWARE -- Atari Corp. has purchased rights to offer BOS (Business Operating System) a popular British operating system. BOS may soon be bundled with the ST or available as an option. BOS National offers a complete line of business software and 40 vertical applications packages including BOS/NET, a local area network operating system. BOS software is expensive, (in the $500 range) however, and aimed primarily at the corporate market. FINAL. Towngate Software of Dorset, England launched Cash Manager, a business accounting package that controls cash book, bank reconciliation and cash flow spreadsheet projection. It is completely integrated with BOS, and written in COBOL. Towngate is sort of the Lotus of the U.K., with software widely distributed in 20 countries worldwide. FINAL.

** VERTICAL APPLICATIONS **

WASP -- Printers Costing is a software package for professional print shops. It will log individual job reports by client, representative and work type. As jobs are invoiced, their profit and margin are automatically calculated. Printers Costing is a member of a library of WASP specialist applications for Vets & Farmers, Legal Accounting, Insurance Brokers, and Real Estate Agents. It runs under BOS. FINAL.

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** APPLE GOES AFTER GEM
** IBM DESKTOP CHANGES FORCED??
by Gary Yost and Jack Powell

10/1/85 - The San Jose Mercury News today reported that Digital Research, Inc. has agreed, under pressure from Apple Computer, Inc., to alter their GEM Desktop software.

According to the Mercury News, Apple approached DRI in June with claims that the GEM software copied the "look and feel" of the Macintosh computer software and violated Apple's visual copyright.

Digital Research, the piece goes on, "bowed" to pressure from Apple and has agreed to present a final, changed version of GEM for the IBM by November 15.

ANTIC immediately contacted Irving Rappaport, Associate General Counsel for Apple Inc., and the attorney responsible for discussions with DRI. He told us that the situation is based on visual copyrights and not on patents. "Copyright law protects features and expression, which has nothing to do with the underlying concept."

Rappaport went on to say, "We've assembled (in the Macintosh) a series of features, and what is protected is what you see on the screen. When you look at the original GEM product, you see a copy of the Mac interface."

Rappaport told ANTIC that DRI already made a number of changes and had recently provided Apple with a preliminary altered GEM. He added that Apple considered it "up to DRI to make sufficient changes" by the November 15 deadline.

He also said that the situation -- which has not gone into litigation -- was strictly between Apple and DRI. As far as Apple was concerned, it was DRI's obligation to keep Atari informed.

"It isn't a question of this feature or that feature. It's the overall appearance of the product. We're going to be looking at Microsoft's Windows and the Commodore Amiga too, and if there is a similar problem we'll address it."

Rappaport would not tell ANTIC how Apple felt about the Atari 520ST, except to say they found the nickname "Jackintosh" to be objectionable and that any use of the phrase by Atari themselves may represent a trademark infringement.

According to Michael Reichmann of Batteries Included, independent software vendors have been told by DRI to go ahead and ship products now under GEM version 1.2. But they must convert those programs to GEM 1.3 as soon as it becomes available.

ANTIC next spoke with Bill Higgs, GEM Marketing Manager at Digital Research. He told us he did not feel that DRI was infringing on Apple's copyright, but DRI's position was that they could not afford the time involved in litigation. "Given the window of opportunity for establishing DRI as a leader in interface technology, we don't want to tie up GEM in the courts for a couple of years."

Higgs went into some details of the projected changes. ...But remember, these changes currently affect ONLY the Desktop -- and ONLY the IBM Desktop at this time!

Tentatively, the IBM GEM Desktop will boot up with only two

windows taking up the entire screen. There can never be more than two Desktop windows. Disk icons must be inside the windows. The "close" button has been redesigned as a rectangle and moved next to the upper right diamond button. There is no sizing of the Desktop windows and there is no trash icon -- files must be deleted from menu selection. There is also no longer any horizontal scrolling. Again, remember that so far this only applies to the IBM, not the Atari.

Higgs went on to say that DRI was moving toward a multi-tasking GEM system that would work very well with the new changes. "The basic elements of the visual interface are there. The changes are primarily cosmetic. Functionality is all there."

Higgs would not say if DRI had been in communication with Atari. Richard Frick of Atari also had no comment.

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CompuServe ANT-981

MICROBITS WARRANTY CHANGES
by GIGI BISSON Antic Assistant Editor

8/5 --The new Supra (formerly MPP) customer service phone number is (503) 967-9081. New product orders may be placed at (503) 967-9075. The company has moved to smaller quarters at 1133 Commercial Way, Albany, OR 97321.

Supra will continue to honor the 90-day warranty for all MPP products sold after July 1, 1985, the date when Microbits Peripheral Products was purchased by Supra Corp.

But Ackerman says that for MPP products sold earlier, "Some formerly free warranty work will now have a handling charge." Warranty repair charges vary according to the product's retail price and range from $15 to $35.

It will also be harder for users to get through to the customer service department. "Be patient," Ackerman says, "There aren't as many phone lines as before."

A previous ANTIC ONLINE bulletin described Microbits Peripheral Products (MPP), of Albany, Oregon was purchased by Supra Corp. -- which is run by Alan Ackerman and John Wiley, the 22-year-old founders of MPP.

Legally, MPP went out of business. Supra bought the Microbits name from the bank that shut down MPP at the end of May and was threatening to liquidate the company's assets.

However, the MPP product line and even the brand name will live on as a Supra subsidiary. Microbits had been the top independent manufacturer of plug-in modems, printer buffers and memory expanders for Atari computers.

Ackerman and Wiley paint MPP as yet another victim of the computer shakeout. "It's been a tough time for some third-party Atari manufacturers, Ackerman says. "No stores were ordering anything for the old Atari computers. They're all waiting for the 520ST to come out."

Supra still plans to release the new MPP products that were under development this spring. Orders are currently being taken for the MPP 1200A plug-in 1200 baud modem and the MicroNet

resource sharing network that will enable up to eight Ataris to share printers and disk drives.

September shipping was anticipated for the MicroPort expansion port. Supra says the announced 10-megabyte $800 hard disk is still on the way, although delayed. Supra offers a 20% discount on for users group purchases.

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CompuServe ANT-1092

ATARI-AT&T DEAL IN WORKS STs TO SELL IN PHONE STORES?

9/6-The headline of today's lead business story in the San Jose Mercury News was, "Atari, AT&T hammering out sales deal. AT&T reportedly would peddle ST computers."

The story, which was credited as originating in the Washington Post, said an agreement is under negotiation which would give Atari a major customer for the ST while giving American Telephone & Telegraph a low-cost entry into the home and small business personal computer market. The ST would be a natural fit into AT&T's upscale consumer phone marketing pipeline.

Naturally, both Atari and AT&T responded with a big "No Comment" when asked to confirm that negotiations were going on. But that's standard operating procedure at this stage of the game.

;Here's the 1 Meg upgrade directions:

I have brought this over un-editted from the arpanet info-st mailing list. I TA
E NO RESPONSIBILITY FOR ITS CONTENT OR ACCURACY. I HAVE NOT TRIED THIS MODIFIC
ION ON MY OWN ST AS YET. I AM PASSING THIS ALONG TO THOSE WHO DO WISH TO TRY IT
FOLLOW THE DIRECTIONS AT YOUR OWN RISK.

--Dwight McKay (75776,1521)

From: gert@pescadero

WARNING: This is a hardware modification that will void the warranty of your 52
ST. If you do not have the appropriate tools or experience you have a substant
al chance of ruining your 520ST. Proceed at your own risk! This modification h
s been in my 520ST without any problems for 6 days now. However, I have (of co
rse) not checked with knowledgable sources at Atari to verify if this modificat
on endangers the long term machine reliability and/or software compatibility (I
suspect it may endanger their software compatibility if enough of us do it!)

Tools & components needed :

16 256K * 1 RAM chips, 150 ns access time type, e. g. NEC 41256C-15 (avilable a
e. g. Fry's Electronics, Sunnyvale, CA for $2.77 each)

A good quality, preferrably temperature controlled soldering iron, with a minat
re tip (tip should be narrow enough to avoid touching 2 I. C. pins at the same
ime). E. g. Weller type soldering station.

Good quality resin core solder (thin).

Approximately 4 foot of wire-wrap wire and a good stripper for it. (you will ha
ve to route 3 wires over a sequence if I.C. pins. The easiest way to do this is
t have a stripper allowing you to shift the insulation forward over the wire, s
older the next point, measure new length, shift over insulation, etc. until the
endpoint). The "No Nik" 0.014 (dark green handle) wire wrap stripper is the bes
t tool for this. Available e.g. at Jensen tools, Phoenix, AZ (602) 968-6231 cat
alog no. H4B305.

Desoldering wick and solder suction tool.

A steady hand and self-confidence.

Explaination of the modification :

(Please read the rest of this document before starting. It may save you time an
d an 520ST)

The current memor inside the 530ST consists of 16 256K*1 RAM chips. Address (A0
..A8) lines are common to all those chips. The WriteEnable line is also common
to all chips. Data (in and out) lines are of course individual. The RAS (row-a
ddress strobe) line is common to all chips. The 8 chis foring the high order by
te group have one common CAS line, and the 8 forming the low order byte group ha
ve one common CAS line (CAS is used as enable for write operations, such that Wr
iteEnable can be common to both groups). The high order group from MSB to LSB c
onsists of U45, 44, 43, 42, 38, 34, 33, 32. The low order group of U30, 29, 28,
25, 24, 28, 27, 26. Note that all chips are adjacent, though the numbering has
gaps. RAS0, CAS0H, and CAS0L are supplied from U1 pin 8,6 and 7 respectively (
The 0 indicates bank 0)

Bank 1 that you are going to build in will be "piggy-backed" on top of the curre
nt chips, where all pins of the new chips EXCEPT RAS (pin 4) and CAS (pin 15) ar
e soldered to the old chips equivalent pins. Thus they will end up sharing a dr
esses, data, WriteEnable and power and ground with the existing chips.

All RAS pis of the new chips are wired together and will be supplied with the "R
AS1" signal generated on pin 18 of U15 (the memory controller, marked 3H-2119C o
r so). The CAS pins of the 8 new high order byte chips (on top of U45..U32) ar
e wired together and supplied from the "CAS1H" signal generated on pin 22 of U15
. Analogously, the CAS pins of the new U30 to U16 are wired together and suppli
ed with "CAS1L" from pin 21 of U15.

How to go about it:

Step 1: Open up your 520ST, pull off the keyboard connector and remove the main
circuit card from its top and bottom shielding. Make sure to remember which sc
rews go where and note the keyboard connector orientation.

Step 2: Desolder all of the capacitors adjacent to the existing RAM chips. (DO
NOT SKIP THIS STEP. You'll lose time if you do, and worse, the modification wi'l
no be reliable since you can't solder pins obstructed by the capacitors relia
y (if at all)). To desolder them, I found it easiest to heat the island on the
non component side, and bend the wires straight. After doing that or each capac
itor, turn over to the component side and heat the islands wile pulling the capa
citor out with the tweezers.

certain holes are difficult to open up, you may want to use a wood splinter. (pu
sh it through while heating). Be carefull to remove all solder debris!! THE RE
ASON for opening the holes NOW is that they will be less accessible once you've
done the other steps! Patience is a virtue.

OTE: Step 2 & 3 are the only ones that may damage your ST PC board. Be sure no
to use excessive force while pullling out the capacitors. If you damage your P
C board anyway, cure the problem now and not later).

Step 4: In this step we will piggyback the new RAM's on top of the old oes. Be s
ure to connect all pins except pin 4 (RAS) and 15 (CAS). The best way to go abo
ut this is to do chip by chip. First, bend the pins of the new RAM's suchthat he
y are perpendicular to the package (instead of having slightly spread "cowboy le
gs"). Use pliers to bend pin 4 and 15 suchthat it comes out of the I.C. package
horizontal, and cut off the excess length of pins 4 and 15 (I mean part of the
pin, you still need to be able to solder to it!). Make sure that the new RAM fit
s snnugly on top of the old one (in the same orientation!!!), without intervenin
g space and with the new pins touching the old ones. Now solder each pin (excep
t the non-touching 4 and 15) to the other RAM's. The best way to do this with th
e least chance of damage is to touch both the new RAM's pin and the old RAM's pi
n. Heat them both for a second and add A LITTLE solder then. Wait till the sol
der flows. After each I.C., check all pins carefully to assure a good connectio
n. (use a magnifying glass) NOTE: This step is crucial for the long term relia
bility of the memory extension. A badly soldered joint may show up later as spor
adic memory errors. TAKE YOUR TIME.

TE: until step 6 is finished, do no in any way apply power to your ST. This
ermediate state of affairs will damage your memory chips!!)

Step 5: Remount all the desoldered capacitors. Bend the pins like they were befo
re resoldering, suchthat they will not touch the lower shielding. Solder from t
he non component side.

Step 6: In this step you will route the 3 wires mentioned earlier. The first wir
e connects pin 4 (RAS) of all the new RAM's to pin 18 of U15. The second wire c
onnects pin 15 (CAS) of the new U45 to U32 to 22 (CAS1H) of U15. The third wire
connects pin 15 (CAS) of the new U30 to U16 to pin 21 of U15. The best way to
do this is to use the stripper to remove 5 inches of insulation. Solder the fir
st IC pin to the end of the blank wire, measure the distance to the next pin in
sequence and shift over that amount of insulation. Continue in this fashion unti
l all the pins in sequence are done. Work from U45 to the left, soldering direc
tly to the leftover pins on the new chips. Make sure that no wire or solder stic
ks out above the the top plane of the new chips, since they will almost touch th
e top shielding! Route the wires through the PC board hole below and to the left
of U15 to connect to U15 on the non component side.

Step 7: Sit back. Use Brain. Do you feel confident about the quality of your wor
k? No mistakes? Check evrything once again if you are but a little uncertain. Ap
plying power with errors might make your ST into a decorative, nonfunctional pie
ce of art. OK. Either rebuild your ST into its shielding and cabinet, or put it
onto a surface clear of wires and solder remians and connect it to monitor, dis

It it boots, you're probably there. Test if the new memory works by looking at the phystop variable ($42E) with SID if you have the developer stuff. It should read $100000 (1M hex). Also note that memcntlr ($424) now holds 5 instead of 4, and that v_bas_ad ($44E) now holds $F80000 (screen bitmap origin). If you don't have the developer stuff, try a single drive copy and check that you get t w hole disk in one buffer instead of two.

If the new memory does not seem to exist, use SID to deposit and retrieve words on locations $80000 and up (1/2 Meg hex). If bit errors occur, the ST bootROM di d not detect the extension (it checks all bits of 512 locations by testing a pse do random sequence, before accepting a memory bank). Try to pin point the faulty chip(s) and remove the error.

If it doesn't boot, you're in trouble. I'm sorry. It is difficult to give hints on what to do here. So many possibilities. Desoldering the new chips probably won't work (if the old ones were functional, the ST would still boot). Check f or hidden short:circuit on the RAM pins. May also be that you have a flaky new pin connection.

That's all there is...

PLEASE REMEMBER THAT I HAVE NOT TRIED THIS AND I AM SIMPLY PASSING THIS ALONG 7 R THOSE WHO WOULD LIKE TO TRY DOING THIS.

--Dwight McKay (75776,1521)

ACE OF COLUMBUS NEWSLETTER
P.O. BOX 849
WORTHINGTON, OHIO 43085