

SAN LUIS OBISPO PC USERS

HARD COPY

What's New _____

By Bob Ward

I don't do windows at home, I don't do car windows unless it's with the windshield washers, I don't even do my glasses... but after the last meeting, I'll have to admit, I DO Microsoft Windows 3.0. No, not all the time, as it doesn't lend itself to all its potential power on my lowly 286, 8Mhz machine but the Solitaire game, Wow! The Macro Recorder, double WOW!

George devoted both the early meeting and the regular meeting to a full house of enthusiastic members and guests. He methodically went through installation, customization, and application of Microsoft Windows. If you took careful notes, you shouldn't have too many questions about the program and how to use it.

George started with installation and then went to each of the windows; the Accessories Window with Editor, Paint, Macro Recorder, Notepad, Cardfile, etc.; the Main menu with File Manager, Clipboard, Setup, Print Manager, etc.; and the Games window with Solitaire and Reversi, showing how each program worked, its good points and

not-so-good points. Then we took a break to ponder all that was said.

After a brief intermission, we hesitated for something lighter... our bi-annual swap meet. Lots of software, lots of hardware and a few connections between sellers and buyers. Some went home with less money and more computer "stuff" while others just left.

Then it was back to Windows (is it time for my pane joke?) and how it functions while being stressed to the max with several programs running simultaneously on George's 386 "gray mean machine". Things didn't work quite as expected but darn close. I'll attest to the fact he had his screen at home divided into four quadrants; one with Word for Windows, one with Ami Professional, one with Wordperfect, and the fourth with Procomm. The RAM was a "huff'n and a puff'n" but managed to handle all four without a crash or even a little fender bender. Amazing program! Mr. Power

Continued page 3

Save Your Hard Disk Setup

By Charles Viescas
SLO Bytes PCUG

Although seemingly trivial and definitely one of the first things that should be learned in the computing arena, is the need to watch and protect the system files on your hard disk.

One of the most frequent things that I get calls for in my business is a computer that is failing at start up. Approximately 80% of the time I find that either AUTOEXEC.BAT, CONFIG.SYS or COMMAND.COM are missing or have been butchered. Quite a few installation programs can change your AUTOEXEC.BAT and CONFIG.SYS files, and under normal use COMMAND.COM gets reloaded and used quite a bit. It is truly amazing the amount of people that install something new, and suddenly find a problem the next time they start up or try to use a frequently used program.

Continued page 4

CONTENTS

What's New	1
Save Your Hard Disk Setup By Charles Viescas	1
A Message From Our SYSOP By George Campbell	2

SLO Bytes Library	2
Bits 'n Bytes	2
DOS Tip By H. Sani & L. Shellome	3
Hard Disk Glossary By George Rea	4
Calendar	4
Connect - USA!!	5
Replacement Toner - Too Much By Charlie Reis (Part 1)	6

New Members	8
Treasurers Report	9

Club Officers

President George Campbell
Vice President Sam Powers
Treasurer Teri Sorgatz
Secretary/Editor Bob Ward

A Message from our Sysop

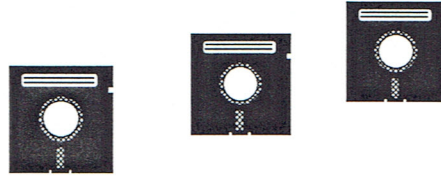
George
Campbell...



Recently, I received a message regarding a commercial program someone had uploaded to this BBS. That message came from the company which owns that software. While I have straightened things out with them, the situation could have been much worse! All my hardware and software could have been confiscated...ALL OF IT!

Please check your files before uploading them. If this situation happens again, I will close the board to uploads, and I'd hate to do that. Anyone uploading a commercial program will lose access to the BBS immediately.

What I don't understand is this: Some user of this BBS called the Software Publisher's Association and reported the fact that this file was on the BBS. The SPA then called the publisher of the program. As you all know, I am very careful to keep commercial programs off this BBS, so I simply don't understand why someone would do this. If there's a problem with this BBS or a file here which shouldn't be...LEAVE ME A MESSAGE! Don't get all twisted up and start making phone calls. It is the policy of this BBS never to have commercial software available. If I discover the name of the user who did this knee-jerk informing, I will certainly remove that user's access and inform all area sysops of that user's name. I run this BBS as a service to the community, and believe that it is the most open and easy to use BBS anywhere in the area. I will not, under any circumstances, however, subject myself to the possibility of prosecution and confiscation of my other computers, just to provide this service for the SLO Bytes User's Group.



SLO Bytes Library

We have some interesting programs this month. Take a look and see which ones are suited for your needs.

#008 **GRAFWK31** - Graphic Workshop is a versatile graphic editor, viewer & converter. One of the best around. **PAL_V6** is a Printmaster/Printshop art librarian. It also converts Printmaster graphics to other formats. **PMLIBMAN** creates your own custom Printmaster graphic libraries. **PS-PM-BB** is a Printmaster / Printshop converter.

#020-W Windows 3.0 programs. **ICONDRAW** & **IE** are both small graphic editors that allow you to make your own custom icons. **KLOTZ** - a windows game similar to Tetris. **UNICOM14** - a telecommunications program that runs under windows. Still won't do background transfers with a 286 though. **MULTIP** - create multiple windowed card file with this one.

#021 Utilities: **XTREE200** - XTree has gone shareware with one of their early version of XTREE. **DIRMATCH** - displays two directories side-by-side for comparison. **DE12** - give your file-names different colors depending on their extension. **FAT109** - matches clusters or sectors to their given file. **LH113C** - LZH compression system. **MAXFIND2** - scan for several files on your hard disk at one time. **HIPZIP10** - tag only those files you want to squeeze with PKZIP. **PRUNE** - Move or relocate whole subdirectories. **SUPRCOPY** - similar to XCOPY but more powerful. **USE** - add or remove subdirectories from your path without retyping the whole thing.

#022 **HLRB10** - Handy Little Reference Book for your wallet. **SM114** - learn Morse Code with this one. **HDACCESS** - track hard disk use. **RCOMM20** - TSR communications program. Do other things with your computer while downloading in the background. (It works, I use it, even on a 286!)

Updates

#381 **VSHLD62** to **VSHLD64**, **NET-SCN62** to **NETSCN64**

#354 **COPYQ202** to **COPYQ221** (**C-VOICE** moved to disk #021)

Demo Programs

We are adding several demonstration programs to the library this month. They are as follows:

From Broderbund; Prince of Persia, Where in Time is Carmen SanDiego?, Where in the U.S.A. is Carmen SanDiego?, Where in the World is Carmen SanDiego?

Quest Authoring System 3.01 by Allen Communication (2 disks) CamDes 3.11

DesignCAD 2D & 3D from American Small Business Computers

drafix Cad by Foresight Resources (2 disks) dGE by Bits Per Second, Ltd.

dBFast Compiler

SmartWare II by Informix (2 disks)

###

Bits n' Bytes

- Since it appears Windows might be around with us a while I will try to compile all windows programs together on our library disks. They will be designated SLO Disk ###-W. So with a quick glance you will know a particular disk contains only Windows programs.
- Two individuals have volunteered to take over publication of our

Next Page

What's New

Wizard finished by showing us how to install programs, make our own personal ICON's and move windows all over the place. OK, so MAC people have had ICON's for a long time, but give us a break, we're having fun and it's costing us a lot less.

George will conduct the DOS inquiry meeting as usual starting at 1:30. This month will be strictly a question and answer session so if you felt "cheated" by all the emphasis on Windows last month, come to the next meeting and have all those question answered by Dr. DOS or someone in the audience.

At our general meeting another long standing member of our group will present one of his favorite software programs. Bob Hunt from Hunt's Air Conditioning and Refrigeration in Atascadero will show us a program that does a couple things like Windows - Software Carousel. Now you say what has air conditioning got to do with computers... well, not much, unless you live in north county and can't figure why your computer keeps overheating in the middle of summer. Plus look at the perks you get for volunteering to stand up before us and show us some software; a free business ad. Thanks Bob for saying yes (I did give you a choice didn't I?)⁸ And exactly what does Software Carousel do? It loads several programs into a state of "readiness" so you can quickly switch from one to another. Software Carousel has been around for several years and is a favorite among many power users. Come see it in action

\$\$\$ - 4 -Sale - \$\$\$ - 4 -Sale - \$\$\$

PC Tools Deluxe Ver 5.1..... \$15.00

Call Ben Brown @ 239-2527

###

Bits

newsletter. They are John Ewing and Bruce Leonard. Both live in Los Osos and knew each other before joining the club. It is up to all of us to support them in their endeavors. There is still typing to be done, perhaps sorting for bulk mail, etc. Any and all volunteers will be graciously accepted. We hope the transition will be complete by November (the present editor finds it difficult to attend Comdex and crank out a newsletter the same month). I will continue as librarian for the time being.

- Please note! Because our September meeting falls on Labor Day weekend, the meeting will be postponed until the SECOND Sunday of that month, September 9th.

###

DOS Tip

By
Hamid Sani
&
Laurie Ann Shellome

Space Coast PCUG

Often I have typed a long command and just before pressing the Enter key, I realized that I had mistyped one or two letters. I used to delete and retype the whole line. No more!

After reviewing my DOS manual, this is what I do now. Press F5 before pressing the Enter key. This creates what DOS calls a template. Then, using the F1 or right arrow key, redisplay the line one character at a time until the error is reached. Press the Insert or Delete keys to edit the command. Insert toggles between the insert or overtype mode. Delete can be tricky because you cannot see the deletion

taking place until the entire command line has been edited. Then press the F3 key to redisplay the rest of the command.

Pressing F2 and a character will displace the template up to, but not including the character. The opposite function is pressing F4 and a character. This skips over and does not copy the template up to the specified character. For safety, after you have edited the line, press F5 again before the Enter key, to make it the new template.

The F6 key can also save you time. Use it in place of control (Ctrl-Z) to enter an ASCII end-of-file marker, properly ending a batch file.

A command line editor is another way around the command editing hassle and has the added value of a command stack. Several public domain programs such as DOSEEDIT and CED, as well as the Norton NDE feature, have this capability.

Here's a function key summary. Use these keys before the Enter key:

- F1 Copies one character from the template on the command line.
- F2 Copies characters up to the character specified in the template and puts these characters on the command line.
- F3 Copies all remaining characters in the template to the command line.
- F4 Skips over - does not copy - the character in the template up to the character in the template specified.
- F5 Makes the new line the new template.
- F6 Puts a Ctrl-Z end-of-file character in the new template. Delete skips over - does not copy - the character in the template.

Esc voids the current input and leaves the template unchanged.

###

Hard Disk Setup

These can be quite easy to remedy, but for someone that is not prepared, it can take some time. Of course since you back up frequently, you can restore your files that are bad. (If you know which they are!). But, if you really want to get going fast, you will have a few things ready to go for just this case.

First on the list is a formatted bootable floppy disk that has either directions, or a batch file to make the required changes. Second you need to make copies of the three files to some other name that will not be looked for by most programs. (Something like COMMAND.SAV CONFIG.SAV and AUTOEXEC.SAV work very nicely.) These files can be on the floppy, but that means if you change one on your hard disk you have to remember to copy it to the floppy. A better idea is to keep it with the originals, in the root directory.

That was pretty painless. And in the event that you suddenly find a hostile startup, or things going wrong, you can reboot using the floppy, check and see if any of those files have changed, (Or are missing) if so, replacement is as easy as copying the .SAV files back to their original names.

This is of course, is not going to cure a problem involving the boot files on your disk, and it will only work if you remember to change the .SAV files, if you change the originals.

One more thing worth mentioning. How many of you know what type of environment variables are set in your system ? AND What they are set to? It makes very good sense to have a file with the actual settings of those variables, just in case you start running into strange problems. I once spent seven hours trying to find out why a favorite piece of software would not run properly. After restoring the program, rereading the manual, reinstallation of the original program and countless attempts, I found the culprit was a variable that had been set up in my environment by another program and was conflicting.

Thirty seconds and the command SET ENVRMNT.VAR will log all of your environment settings into the file ENVRMNT.VAR for reference if you ever need it. (You might periodically check your settings against this and see if anything has changed. No reason to panic if they have, but I would try to find out what changed them.

Although this is pretty standard stuff, and I can hear a few of you groaning out there. If your AUTOEXEC.BAT and CONFIG.SYS files look anything like mine, this is all GREAT stuff to have sitting at your fingertips when things go haywire at two o'clock in the morning.

###

August 1990				
Sun	Mon	Tues	Wed	Thur
			1	2
5 Meeting	6	7	8	9
12	13	14	15	16

Calendar

- August 5th Bob Hunt will demonstrate Software Carosel
- September 9th "Chest-Top Publishing" will be demonstrated by Lynn Boisen

Note

Our September meeting will be held the 2nd Sunday of the month due to Labor Day.

Hard Disk Glossary

By George Rea

Bits & Bytes, April 1990

HARD DRIVE = An IBM type Winchester-technology hard disk. A disk unit that has one or more platters and read/write heads in a sealed environment. The disk can be either fixed into the drive or a removable unit. The more common fixed unit consists of one or more platters, one or more read/write heads per recording surface. It has a motor that rotates at 3600 RPM and some electronic circuitry.

CLUSTER = The basic unit of data storage for DOS. A common cluster size on IBM PC and compatible hard disks is 2K (2048 bytes). 1 cluster = 4 sectors.

CONTIGUOUS FILE = A file in which all clusters are numerically in sequence.

FRAGMENTED FILE = A fragmented or non-contiguous file is a file that is larger than one cluster and one or more clusters are numerically separated from other clusters in the same file.

PLATTER = The platter is a rigid non-magnetic metal (usually aluminum) disk coated with a thin plating of a magnetic material. A hard disk consists of one or more platters stacked. The number of platters is relative to the capacity of the hard drive.

CYLINDER = A cylinder is a collection of all tracks that are located the same distance from the outside edge of all the platters on the drive.

TRACK = Each recording surface of a platter is divided into concentric rings called tracks. Each track is divided into several sectors.

SECTOR = The basic unit of data storage on a disk. A sector is typically .5K (512 bytes). 4 sectors = 1 cluster

INTERLEAVE = The interleave factor minus one is the number of sectors the computer will skip before it reads or writes the next sector.

###

Connect - USA!!

During the next few months, Galaxy Telecomm Corporation will be building an all new data network across the United States known as CONNECT-USA!!

CONNECT-USA will consist of 9600 baud access and outdial facilities in the 60 largest cities. The first twelve cities to have full access and outdial ability are:

- ATLANTA, GA
- BOSTON, MA
- SAN FRANCISCO, CA
- DALLAS, TX
- HOUSTON, TX
- SAN JOSE, CA
- LOS ANGELES, CA
- FAIRFAX, VA
- PHOENIX, AZ
- FAIRFAX, VA
- CHICAGO, IL
- HONOLULU, HI

In addition, to the above cities, the following national BBSes will be directly connected to the network:

- EXEC-PC (Milwaukee)
- CHANNEL ONE (Boston, MA)
- GALAXY (ABQ, NM)
- RUSTY & EDIE'S (Youngstown, OH)

These "direct connect" systems will be accessible directly through the network without going through an outdial port.

During "Phase One" of the network development, the "direct connect" systems will be the only systems reachable through the network. We expect the "Direct Connect" systems to be online and accessible by July 15th, 1990.

These "Direct Connect" systems will be accessible by calling any CompuServe local access number in the United States (800 service not included) at 2400 baud. CompuServe will be adding 30 9600 baud access numbers no later than September 30, 1990 and another 30 before the end of October, 1990. At that time, all "Direct Connect" systems will be accessible at 9600 baud.

During the next six months, the twelve cities mentioned above will become accessible as both access and outdial ports at both 2400 and 9600 baud. As this happens, CONNECT-USA members will stop using the CompuServe access numbers and start using the CONNECT-USA numbers.

The charges for using the CONNECT-USA service is as follows:

- Access to CONNECT-USA from a city with NO CONNECT-USA ACCESS via CompuServe access numbers: \$3.00 per hour.
- Access to CONNECT-USA from any CONNECT-USA Access number \$3.00 per hour.
- Access to CONNECT-USA via CompuServe from a city WITH CONNECT-USA ACCESS: \$6.00 per hour.

Basically, this translates to mean that if your city has a CONNECT-USA access number, you are expected to use it. If you do, you will pay \$3.00 per hour. If it doesn't have one, you may use the CompuServe access numbers at the same price. If your city has a CONNECT-USA access number and you continue to use the CompuServe access number, you will pay \$6.00 per hour.

THESE RATES ARE 24 HOUR PER DAY RATES! There is no such thing as "prime time" and "leisure time" with CONNECT-USA!! There are also NO Character charges or "telco" charges associated with the use of CONNECT-USA!!

All outdial ports will be located in the "central city" area of each city and any call that is a local call to that telephone number can go through. If the call has any sort of "telco" charge associated with it, the call will be rejected. We will shortly make available a list of telephone exchanges that may be reached from each outdial port. Each outdial port and access number will be connected to both 2400 and 9600 baud NMP5 modems that support V.32, V.42 and V.42bis. We cannot guarantee that the 9600 baud modems will be in operation before September 30, 1990 although they will become available after testing.

During the initial "startup" period, the signup fee for CONNECT-USA will be \$15.00. After the "startup" period is over, the signup fee will be \$35.00. There is a monthly maintenance fee of \$10.00. Monthly charges will be charged to either VISA, MasterCard or direct checking account debit. Certain corporate clients may qualify for direct billing (with substantial deposit).

If you would like additional information about CONNECT-USA you may call 1-800- 477-1788 (voice) between the hours of 9AM - 5PM Mountain Time. No information will be given out over the phone. It will be mailed to you.

This service is operated totally separate from Galaxy Telecomm Corporation's other network service, StarLink although StarLink members may sign up for CONNECT-USA with NO signup fee.

BBS Sysops are invited to inquire about becoming "Direct Connect" CONNECT-USA systems.

###

Replacement Toner Too Much

By Charlie Reis

Silicon Valley Computer Society,
November 1989

Have you ever wondered why you must pay so much for your re-placement toner? This article attempts to answer that question.

Several weeks ago I had the need to purchase another toner cartridge for my Hewlett-Packard LaserJet printer. The high price I paid for this simple item made me a little curious about its origin. In researching material for this article, I discovered it a difficult task to get verifiable and accurate information. I was the intrigued by the lack of genuine information among the dealers and distributors who sell laser printer supplies and copiers. It took days to sift out science fiction from the science fact. One organization, Diamond Research of Ventura, California appears to be a clearinghouse for information dealing with printing technology and more in particular, electrostatic printing, laser printing, toner and photoconductors.

I am grateful to them for leading me to where I could find my information. My search for reliable facts finally lead me to a few internationally recognized companies. They had people knowledgeable in this field. Most of these individuals are active in current research and new development on toners and photo-conductors. The real experts on toners and photoconductors are a very small group of people in that industry and they all seem to know one another.

The manufacturer of the cartridge (Canon/Hewlett-Packard) rates its useful life as approximately 3,000 prints. The actual number depends upon the type of printing the user is doing, such as text, graphics, or a com-

bination of both. At \$120 per cartridge this calculates out to be four cents per print. On the surface this price doesn't appear to be too bad considering what a laser printer can deliver in terms of better quality and performance. Laser printers produce a much better quality text/image and do it faster than most of the standard 24 pin, dot-matrix printers. Users don't usually question the high price they must pay for the dry ink (toner) cartridges because, up until now, there has not been any alternatives.

According to the Director of Research at Toner Techniques, within the next few years all new laser printers and copier machines will be designed around some sort of replaceable toner cartridge. The reason for this isn't only for better design or ease of use by the user, but for greater economic benefit by the manufacturer.

As is readily known, most film manufacturers could give cameras away free and still make a tremendous profit by selling photographic film as a replenishment item. Likewise, Canon has a similar analogy with their laser printers and copy machines. The initial cost of the engine is a few hundred dollars and most of the using vendors, including Canon, build a complete laser printer or copy machine around it. Laser printers using the Canon SX engine sell for \$1,500.00 or more. Manufacturing cost of the SX engine is a small fraction of this figure. The real money in the laser printer and copier market isn't really in the machines themselves, but in the replaceable supplies.

Development and manufacture of toner cartridges makes an interesting story. It appears Canon started developing the basic concept of using a replaceable toner cartridge over 12 years ago. The Japanese, being intelligent business men, soon came to realize greater profit could be obtained from replacement supplies. In the late 70's, Canon started to obtain a series of patents dealing with the 'cartridge-technique'. They were granted patents for their developments not only in

Japan, but throughout the rest of the world. Their strategy was to corner the basic key patents dealing not only with the cartridge mechanism but also the photoconductor and the matching toner to go with it. To date, several hundred patents issued over a ten year period protect Canon's position world wide. The research and development behind the cartridge applies equally to laser printers and to copy machines as well. Canon did their job well. Today most of the laser printers and copy machines have Canon's technology built into them. The results of this technology have been felt throughout the entire industry. The wide spread acceptance of a simple, easy to use method for the changing of toner has been a revolution among the end users. An item not to be overlooked is the tremendous profit made on the toner cartridges by Canon and the licensees of their patents.

Canon's toner cartridge is made up of several basic elements associated with electrostatic printing. The current crop of toner cartridges have a 'dust' bin for the toner, a photoconductive drum, a charging blade, an erase lamp and a series of patented geared drums and depending upon the toner, a magnetic brush. Next to the toner, the single most important element in the cartridge is the photo-conductor.

Quietly, Canon, like Xerox and IBM, has developed a series of organic photo-conductors (OPC). These OPCs can be designed to have a very long or a limited operational lifetime. According to Mr. Bill Murphy of X-Solve Corporation, organic photoconductors are designed to have limited lifetimes. The limitation is caused by 'photo-redox'. Photo-redox is the radiant light energy reduction-oxidation of the sensitizing organic dyes used in the OPC. Information on this degradation process was further backed up by Mr. R. C. Durbeck, Polymer and OPC Department of the IBM Almaden Research Center in San Jose, California.

Toner

Durbeck states that IBM is currently making organic dyes and protective co-polymers allowing the use of OPCs with 50,000 or more prints. The diameter of the photoconductive drum is related to the total number of prints a cartridge can produce before replacement. Durbeck's data is based upon OPC drum sizes of 2 inches or more in diameter. More about the making of the OPC later.

Dataquest Corporation has a report on the laser printers and copiers which estimates the total market for toner cartridges. Market sales of slightly more than 10 percent account to personal computer's use of laser printers. The remaining 90 percent is spread among the copier machines and general office duplicators. Since its introduction into the U.S. during the last half of 1987, over 2.5 million Canon SX laser printers or engines have been sold. The personal computer user consumes, on the average, three cartridges per year. The remaining computer market is dominated by the commercial users. These industrial and commercial users employ up to 12 or more cartridges per year. This means that 250,000 laser printer users use a total of 3 cartridges or 750,000 per year. Commercial users have 2.25 million machines consuming some 12 cartridges per year or 27 million cartridges! At a retail price of \$120 for a new toner cartridge, the price paid comes to approximately 3 billion dollars a year. It must be remembered, this is only for laser printers. The money for the copier machine cartridges hasn't been included in this figure. Several sources have estimated the copier market to be 8 to 9 times larger than the laser printer market. If this is true, then this would give us a figure in the 25 to 27 billion dollar range for the retail market in copy machine cartridges.

A new industry, toner cartridge refilling, has sprung up as a result of this lucrative new toner cartridge market. Cartridge refilling seems to be a part of both the laser printer and the copier market. Last year it was es-

timated that refillers in the U.S. accounted for about 5% of the total user needs. Although this may appear to be a small segment, it isn't small in terms of total dollar sales. The average retail price of a refilled cartridge is \$45 to \$55.

Each section of the country has several refilling companies that make their services available to both the personal computer user and the commercial establishments. Considering what these vendors are charging for both the new and the refilled toner cartridges, it should become embarrassing to the manufacturers when you discover just how much it cost to fabricate these devices. From two sources I found out that, depending upon quantity, the manufacturing cost ranges between \$3.50 and \$6.50. This price includes the toner as part of the cartridge. Toner Techniques has broken down these costs into the individual elements making up the total cartridge. The largest cost is that of the photoconductor drum. When you tack overhead and the other related items on to this figure, the price rises to \$8 to \$12. As you can see, the profits from this simple little device can be tremendous. More conservative figures on the manufacturing costs come from Bill Murphy who states that the manufacturing cost with overhead is close to \$16.

Either way, the profit is still pretty darn good. All of the above data appears to right. If you based the markup in price as 100 percent, then Canon would be selling this item to Hewlett-Packard for around \$30 to \$32.

Hewlett-Packard usually marks their supplies up 100 percent, so this would mean that the distributors and dealers pay \$60 to \$65 per cartridge. Checking with the HP dealers verifies this price. The HP distributors/dealers in turn use an 80 to 100 percent hike. This would put the retail price in stores at about \$100 to \$120. So you can see, everyone down the line get their piece of the action.

Companies generating huge amounts of paper such as financial, legal, schools, and other related activities are the biggest buyer of the refilled cartridges. Refilling toner cartridges isn't without its pitfalls, both for the refiller and the user as well. If the purchaser buys a refilled unit that had not been pre-tested by the vendor, they stand the risk of poor print quality. Likewise, the refiller must get their used cartridges either from the buyer or pay for them from some where else. Not all of these used cartridges are usable. Some have scratches on the surface of the photoconductive drum making them unusable. Some cartridges have 'ghost' images permanently stored in the photoconductive coating due to the sensitizing dye breakdown.

Even though some users swear by them, refilled cartridges do NOT perform as well as new cartridges. Unless the user of the refilled cartridge is willing to make a compromise, print quality will never be the same as what is found in new units. The main reason refilled cartridges do not produce great prints is due to degradation of the photo-conductor.

Although there may be users who are perfectly willing to accept prints which are inferior, most users can perceive the differences quality. It all depends upon what the user will accept as being of usable quality. Some people are willing to accept anything provided the price is right. In any event, the photo-conductive coating starts to deteriorate immediately after making its very first printed page. The sales people will tell you that the print quality improves in time over the first hundred prints - but this isn't true. What is really happening is the photoconductor is degenerating. As it does, it loses its ability to loose charge when light strikes its layer. When this happens, the amount of electrostatic charge left is greater and the amount of toner attracted to it is also greater. As a

Toner

result of all of this, the printed page appears to be darker. The print is darker only because the photoconductor has changed its physical property and is producing an apparently wider dot size.

Just how the OPC is applied to the substrate is a very critical item. The organic chemicals used together with the specific organic sensitizing dye determine the photoconductor's electrical characteristics. Not all types of OPC behave the same way when used with the same toner compound. Each OPC formulation is matched to a specific toner compound. Photoconductive coatings may be either one, two or three layers in depth. The current crop of OPCs are mostly three layer coatings. Unless you are a research chemist/physicist working in the field of photoconductivity, it would be extremely difficult to duplicate some one else's OPC formulations.

The OPC is usually embedded in a suitable plastic matrix or co-polymer. The exact amount of OPC, the amount of sensitizing dye and the type of plastics and their combined physical properties determine the characteristics of the photoconductive layer. The charge generation layer (OPC) may be on the top, middle or even bottom layer of the photoconductive sandwich. The top layer (charge transfer layer) is usually a clear plastic coating placed there to both protect the OPC and transfer charge. Its hardness determines part of the useful life of the toner cartridge.

Canon appears to have deliberately chosen a very soft plastic for the charge transfer layer. By doing this they made certain that it would scratch easily should the user wish to refill the cartridge with new toner.

Applying the OPC and its associated plastic layers is both an art and a science. From information obtained through Mr. Bill Murphy of X-Solve Corporation, Canon apparently applies their material by a dip coating method. By adjusting the viscosity,

type of binder and the solvents used, coating of an exact thickness (in microns) can be deposited. Not to be different, Toner Techniques uses a reverse roller coater method to apply their materials in uniform layers of the desired thickness.

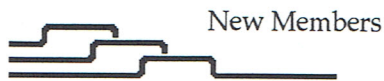
The one and two layer OPC photoconductors, although useful, have not proven themselves reliable in the commercial market place. Even though they work, the one and two layer OPCs are subject to other influences that do not make for a long, useful life.

The compounding of the matching toner is also a critical item. There are single and dual component toners. Each toner's formulation is matched exactly to a specific type of photoconductor. The polarity of the toner is determined by the materials and dyes or pigments making up the formulation. Quality control over all of the chemicals making up the toner helps to generate higher yields. The cost per pound of the toner is based upon its components and also the color of the dyes or pigments. Manufacturing cost of toner can be less than a dollar or as high as 20 to 30 dollars a pound.

Next month...

Part 2 - Some suprising facts dealing with the toner cartridge industry.

###



New Members

Welcome to the following individuals who joined us this past month.

Mark & Stevi Asire	528-5247
Scott Hendricks	481-3456
Ralph Jones	772-2947
Bruce Leonard	528-5379
Walter MacPhee	
David Miller	
Steve Stratton	541-6952

Time does fly. If you are listed below, you must renew your membership by the next meeting or you won't get this great newsletter anymore. You may send your renewal to either Bob Ward or Teri Sorgatz.

John Bryan
Frank Butz
Steve Derks
Shelley McGuire
Eric Schug
Richard Shaffer
Charles Viescas

###

FLOPPY DISKS 4-SALE at the meeting

Royale Grey DSDD 360K
Unformatted Floppy Disks
with labels, tabs, and sleeves
70 Cents Each

MEI DSDD 360K
Unformatted Floppy Disks
with labels, tabs, and sleeves
50 Cents Each

High Density Disks 1.2 MEG.
90 Cents Each

Sony 3.5" 720K
Unformatted Floppy Disks
90 Cents Each

New Library Disks
90 Cents Each

All Disks fully guaranteed against defects.

Club Information

The SLO BYTES Newsletter is a monthly publication of SLO BYTES PC User's Group located in San Luis Obispo, California. Information in this Newsletter is derived from both our own membership and other PC User Group Newsletters. The purpose of this publication is to inform our members of meetings and provide information related to the use of IBM PC's and compatible computers.

Membership: Dues are \$18 per year. Newsletter only is \$10 per year. Full membership entitles you to our monthly newsletter, full use of the public domain software library and discounts at local computer stores.

Article Submission: Deadline for submission of articles is the 15th of each month. Articles should be provided in ASCII format without any type of formatting from your wordprocessor including tabs, indents, extra spaces, or highlighting. We prefer articles on disk but will accept hardcopies if necessary.

Disclaimer: Neither SLO BYTES PC User's Group, its officers, editor, or contributors to this newsletter assume liability for damages arising out of this publication of any article, including but not limited to the listing of programming code, batch files and other helpful hints.

Reprinting of this Newsletter: Articles from this newsletter may be reprinted by other user groups if credit is given to both the author and newsletter from which it was taken. Reproduction of articles with a specific © Copyright notice is prohibited without prior permission from the original author.

Advertising: Commercial advertisers, request ad packet from Bob Ward. Members may advertise personal computer equipment or software for free. Submit your ad to Bob Ward.

Direct all correspondence to Bob Ward, 2100 Andre Ave., Los Osos, CA. 93402. Call (805)756-2164 M-F 7:30am - 5pm and (805)528-0121 all other times.

Treasurer: Teri Sorgatz, 832 S. 7th Street, Grover City, CA. 93433 Phone 489-2516

Meeting Times

General meetings are held the 1st Sunday of every month, unless noted otherwise in the newsletter calendar, at 2:30 pm in the Cal Poly University Biology Department, Fisher Hall 286. Special Interest Groups (SIGs) meet at 1:30 - 2:15 pm.

New User's SIG - F.H. 286

Our Public Domain Library is in Fisher Hall 292. Hours 12 Noon till closing.

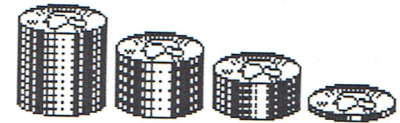
SLO BYTES BULLETIN BOARD

(805) 528-3753 2400/8/N/1

PC Files & Message Section

SYSOP: George Campbell

All Welcome - 24 Hours



Treasurer's Report

Beginning Balance	+\$1267.20
Expenses:	
Newsletter 6/21/90	\$93.08
Postage 6/22/90	\$150.00
Deposits:	
Deposit 7/9/90	\$359.40
Interest	\$19.24
Balance 7/9/90	+\$1402.76



DISCOUNTS

Paradise Computers 3485 Sacramento, unit B San Luis Obispo 544-7127	5%	All computers, peripherals and software.
Star Computers 855 Morro Bay Blvd. Morro Bay 772-7827	5%	Any software in stock.
Computer Logic 973 Foothill Blvd. #4 San Luis Obispo 544-8347	10%	Paper, ribbons, cables, and other supplies.
WITCO Computers 3563 Sueldo, Bld. B San Luis Obsipo 549-0811	10%	Off list - all computers, software, computer peripherals, and products. Contact Bruce, Paul or Dave for discount.
	5%	Off complete systems, peripherals, supplies but not including software.
	5%	Off computers alone.

Ziff-Davis User Group Magazine Discounts

PC-Magazine - \$24.97
 PC-Computing - \$14.97
 Have your mailing label handy for renewals
 Call 1-800-777-2547 and ask for your user group discount

