

# OTTAWA PC NEWS

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## Goin' Down Easy Street

by Jackson Hibler

Review of the June meeting

The June meeting allowed an attentive audience to see both a champion in the operating systems field, DOS 5 and a contender in the database field, DataEase.

### DOS 5

Bob Scowcroft, still flushed from the Windows campaign trail, arose before us again, DOS 5 in hand. Microsoft has decided to go "retail" and sell upgrades of its operating system direct to the user. The upgrade takes any DOS version 2.11+ (PC- or MS-) and as long as you have a minimum of 512 KB of RAM, converts it to MS-DOS 5. It can make a bootable floppy too—an important backup

consideration.

When you buy, warns Bob, buy the coloured box. The black and white boxes are OEM-machine specific, and although they will be the same as the coloured box (universal) system in many cases, in others they will be tailored to the quirks and features of the machine with which they are intended to be sold. Buyer beware! (The best street prices in June ranged from Mooney's Bay at \$88 to Inly's at \$79.)

At first blush, DOS 5 seems to give us a lot: it gives us a rewritten front-end shell similar to but not as good as Norton Commander. It may just work well enough, this time. It gives us a task-switcher quite like, but not as feature-rich as, Software Carousel. It gives 80286 and 80386

machines some upper memory management that is almost as comprehensive as Quarterdeck's version 5.12. Important for those who switch back and forth between DOS and Windows! (Read Chris Taylor's Message #26729 on the PUB for insight.)

DOS 5 borrows PCTools' undelete and unformat utilities and incorporates them directly into the operating system. About time, that! And it gives us large hard disk partitions supported directly (no SHARE.EXE needed) with a bunch of drivers supplied to help those who use Disk Manager or SpeedStor partitions on their systems. Drivers to support network users are supplied up front this time too...most helpful! And finally, BACKUP AND

*Continued on page 2...*

## Copy Files Using Fill

by Mark Edwards

A Review of an intelligent file copying utility

Copying files from your hard disk onto floppies when you don't want to use a backup or compressing utility can be made much easier with a nifty public domain utility called *Fill*.

*Fill* builds a list of the files you want to copy, sorts this list by size order and first copies the biggest file to the first floppy. Then it copies the biggest file that will fit into the remaining space and so on. When the first floppy is full, *Fill* will prompt you for another disk until the files are completely copied. This way, *Fill* uses your floppy disk space efficiently, makes the job easy and keeps your files in their original, executable

format.

To put the files back, or anywhere else, you can use a simple COPY \*.\* D: command.

*Fill* will also allow you to list (DIR), DELETE files, FORMAT a floppy and change, make, remove directories or label the target floppy without leaving the program. The only restriction is that the biggest file of your directory must fit on one floppy.

### Where to find Fill:

On the PUB in File area # 35, Disk Utilities (Hard Disk & Floppy Disk) FILL30.ZIP 37632 8-07-88 Backup files to a minimum # of floppies ☐

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RESTORE now work, although they still don't compress files.

Some throw-ins and -outs are probably just that. GWBasic has been replaced by the interpreter half of Quick Basic...and QB's editor does double duty as a substitute for EDLIN. But you don't get the compiler so you can't make stand-alone programs. And LINK.EXE has been taken out of DOS 5 so you had better hang on to your old one! A TSR command line review/processor (DOSKEY) has been added on. 2.88 MB floppies are supported. You can "quick format" previously formatted diskettes. You can even rename sub-directories...but still not delete them whole. And finally, you can search for mislaid files, change the sort key for directory listings and use lowercase, but are still stuck with 8 + 3 character filenames.

So what have we got? For those running a "plain vanilla" machine, Microsoft's flavour will be better! For the 35 million XT users, more features are built-in but not as abundant as add-ons from third-party suppliers. For those already equipped with utilities of their choice or with the more powerful Intel CPUs, changing to DOS 5's more comprehensive operating environment raises the

question of upgrades for those utilities, programs and devices already tailored to specialized needs. Experience will be an important guide for these users...watch the PUB and the press. Yes, DOS 5 is better and maybe it is a bit easier. But I think we had best resign ourselves to one enduring feature built into DOS: it ain't never gonna be that easy!

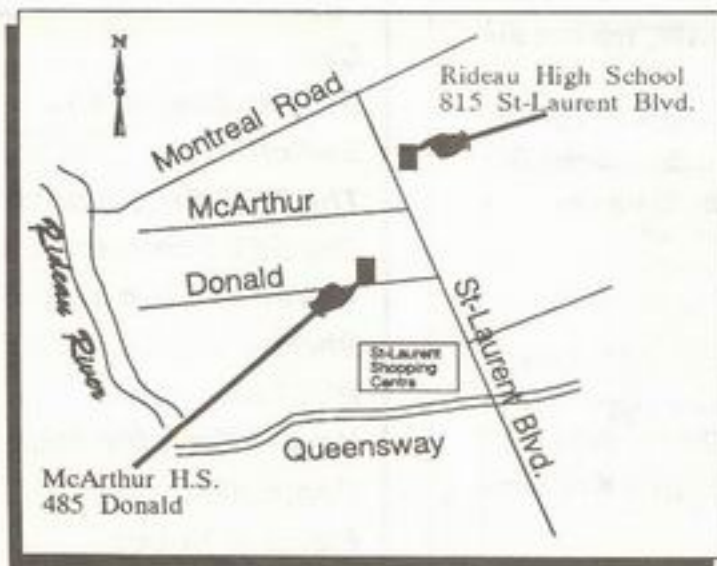
### DataEase

Why the database field should be so difficult to dominate is a poser. If any area needs consistency, this is it. If any area needs ease of prototyping, this is it. Partly it is the problem of size - databases are both very large and quite small. The complexity of this task is enormous, keeping the big deposit in order, making changes, serving a multitude of differing requests for differing parts of the whole. This can result in programs designed by minds that don't notice the complexity of the interface they build to use their product. (Even the databases on the Mac show the most interface divergence!) On the PC, dBASE II was the first to give us useful relational microcomputer databases--once they were laboriously prototyped and debugged. So an industry of prototypers and debuggers, and even cloners, grew up around it. Some folks have bucked this

trend and worked on the front ends of their programs as well as under the hood. DataEase is one of these...and from the comments from the floor at the June meeting...is one of the best. Its philosophy is to give the database builder a menu-driven practical prototyping facility. This makes it practical for the user to get into the data deposit quickly and confidently. From the reviews I have read, they have done it.

Peter Stenny of Computer Links gave us a quick demonstration of how forms can be designed by just "painting" them on the screen. Menus help novices build relations between fields and entire databases. Those who like to get "under the hood" to write parts of their program directly can do so and the program then checks the syntax of the results to flag errors up front...more than nice, essential! It's an impressive program, and it looks like DataEase has been "under the hood" itself making the LAN performance of their program second only to Paradox, and promising SQL and data security features second to none.

So why isn't DataEase number one? Maybe someday it will be, but an installed base has to be built, and even with a fading dBASE IV, that's tough sledding!



### Location of Next Meeting on September 3

We expect to have our next meeting at Rideau High School, 815 St. Laurent Blvd. However, renovations, as we go to press, are still in progress. So we are requesting that members check the answering machine (723-1329) or the PUB (747-7272) during the week leading up to September 3. If Rideau High is not ready, we will meet at McArthur High again. As September 3 is the first day back to school, we don't expect this will be necessary.



## The Operating System of Choice for the 1990's?

by Lynda Simons

On August 12, 1981, IBM released the first IBM-PC. There was the usual marketing hype, but at the time of its release it is doubtful that anyone realised the scale on which this free-enterprise initiative would bring power to the people. Now, ten years later, IBM-PC compatibles and clones are everywhere.

IBM's own micro's are thinner on the ground, however, which may be why IBM has been taking a less democratic approach to marketing OS/2. This next generation operating system has been hovering in the wings for a good three years now, ready to take over from MS-DOS in 286 and above machines, but has yet to take the personal computing world by storm.

Gord Giddings of IBM Canada believes this could change now with the advent of OS/2 version 2.0., "The Operating System of Choice for the 1990's", which he will be demonstrating at our next meeting, September 3.

It's not due out till later this fall, but beta versions have been around for a while attracting corporate interest. "Forget what you've heard about OS/2 in the past," says Gord. "OS/2 version 2.0 is radically different. It will run all DOS programs, all Windows programs and all OS/2 programs in one operating system. It takes full advantage of the 386 chip, unlike DOS which runs everything in 8086, or even the current version of OS/2 which only runs in 286 mode."

The price looks good, too. "Ball park, a list price of \$240, so probably a street price of \$180. We recognized that price was a stumbling block for people wanting to buy OS/2."

Price isn't the only hitch, of course: you have to have the power: at least a 386SX machine and 3 MB of RAM. But to be fair, if you didn't

have the power, you probably wouldn't be interested in the operating system. Will all users of 386SX's and above rush out and buy OS/2 version 2.0? Well, possibly, if they own an IBM or big-name brand machine. No-one else will be able to run it, according to Gord.

Gord says that OS/2 was and will be only available from your computer manufacturer who "has to spend a fair amount of money to make sure it works." "The big guys," he continued, "such as Compaq, ALR, AST, and IBM of course, mostly have it, but the unwashed



explained the apparent anomaly. They have tested the IBM OS/2 v. 1.3 on their machines and pronounced it compatible and will give customer support for it. They are currently testing version 2.0. and will modify their hardware if necessary. Indeed, there are no plans to produce an ALR OS/2.

Still confused, I called Microsoft. It turns out that IBM and Microsoft share responsibility for the development of OS/2. IBM is responsible for the development of versions 1.x and 2.0 and Microsoft is responsible for the development of version 3.0. We

won't, however, be seeing version 3.0 for a while because Microsoft is focusing on development

of Windows NT, which is (more or less) OS/2 without Presentation Manager, and is being touted as bigger and better than OS/2 version 2.0 and coming very soon. Are IBM and Microsoft about to go head to head?

Come and find out September 3. It'll be interesting to hear what IBM is up to these days, even if rather a lot of us fall into the "unwashed masses" category. (Gord didn't mention any freebies, but could you run OS/2 if you won it anyway?)

DOES  WITHOUT OS/2 =  ?

masses of Peaches and Prunes and all that kind of stuff, don't have it and never will."

I decided to put this to the test and phoned a few local ALR Dealers, (ALR being a "big guy"). Most of them couldn't help me at all. One explained that ALR doesn't support OS/2. My own dealer offered me a special on a "generic OS/2 version 1.3" at \$179. It turned out to be an IBM OS/2. (Not all that special, either, at one dollar less than IBM's list price!)

Confused, I called ALR who

### CALENDAR (subject to change)

Date	Location	Program
October 1	Rideau HS	RCMP on viruses & copyright
October 29	Rideau HS	WordPerfect for Windows
November 26	Rideau HS	OPCUG Members' presentations*

\*Members who are interested in making a short (5-15 minutes) presentation of either software they have developed or software they use, which they think would be of interest to the group, should contact Terry Mahoney at 225-2630.



## DOS 5.0: Should you Switch?

by Neil Brearley

Perhaps the question should be "Can you switch?" because Microsoft is marketing DOS 5.0 differently from previous versions. It used to be that DOS was only available to OEMs for bundling with their machines. Version 5.0 is being sold retail; but only as an upgrade kit. You must have a version of PC- or MS-DOS (2.11+) already installed on your machine. It will not install itself onto a non-bootable PC, nor can you boot from the distribution disks. Assuming that this presents no problem, the title question can be answered with an unequivocal "maybe". Let's first look at what's new, what's improved and what's more or less unchanged.

Brand new are memory management features that enable 286, 386 and 486 machines to make the most of memory between the 640 KB addressable by DOS and 1 MB. Many have, in the past, used programs like QEMM and 386Max to address the so-called RAM cram problem, but DOS 5.0 goes further adding the capability to load most of its own code, as well as TSRs and device drivers, into high memory. On a typical 286 (or higher) machine as much as 625 KB will be available for application programs.

Other new features are EDIT, a mouse-aware full-screen editor featuring copy, cut-and-paste and search-and-replace capabilities, which is simple and intuitive to use, and which makes the creation of batch and other text files a snap (although the infamous EDLIN remains); an on-line help utility which calls up descriptions of most DOS commands; DOSKEY, a utility that enables entries on the command line to be edited and recalled and which also incorporates a macro facility; several data-recovery programs such as UNDELETE, for deleted files; UNFORMAT, for accidentally-formatted disks and MIRROR, which stores the information used by the

two previous utilities and virtually automates their operation.

Turning to features improved over previous versions, the most significant is DOSSHELL which made its first appearance with DOS 4.0. The new version is a significant advance over that justly-derided product, offering in one integrated environment a menu system, a file manager and a task switcher. The components have a definite Windows feel to them, support a mouse and can be displayed in either text or graphics mode.

A new BASIC interpreter is included. The programming environment is based on Microsoft's QuickBASIC including the Hypertext help facility but there is no compiler so the programs cannot be compiled to stand-alone .EXE files.

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*"On a typical 286 (or higher) machine as much as 625 KB will be available for application programs."*

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DIR, now greatly improved, can perform recursive searches to find a file, can select files for listing based on their attributes and can sort files by name, extension, date or size. It will show the total bytes for the files listed as well as the bytes free on the drive.

FORMAT has a new "Quick Format" feature which merely erases the root directory and FAT of a previously-formatted disk, a "Safe Format" option saves information about the previous contents of a disk to facilitate recovery of accidentally-formatted disks.

Microsoft has made installation

of DOS 5.0 as simple and foolproof as possible. The program SETUP first checks your system hardware and asks for confirmation of what it finds. It then gives you an opportunity to back up your hard disk, asks you to insert a floppy and creates a "panic disk" containing your old system files plus your AUTO-EXEC.BAT and CONFIG.SYS. If anything goes wrong you can easily boot from the floppy and restore your old system. It then copies all the old versions of the DOS programs to a directory called "OLD\_DOS\_1" and prompts you to insert the distribution disks. Unfortunately, SETUP makes no attempt to optimize system memory. To do this requires close study of the "Optimizing your System" chapter of the manual.

To return to the first question, owners of 286 (and above) machines running DOS 4.0x should definitely consider switching. I've seen DOS 5.0 advertised at \$69.00 (Canadian) and at that price it's definitely worthwhile for the extra memory gained alone. Owners of 8088 machines will gain about 1 KB by substituting DOS 5.0 for DOS 4.01, but they will lose 10 KB if they install it over DOS 3.3, so it's a more difficult judgement call. Most readers will be aware that programs from third-party vendors, such as 4-DOS, Desqview and Norton, duplicate much of the functionality of DOS 5.0. If you have these it may not make much sense to switch as they will, in general, have more features than DOS's equivalents.

I have installed DOS 5.0 on a variety of machines and encountered no problems. The manuals, two paper-bound volumes titled *Getting Started* and *User's Guide and Reference*, are clearly-written and easy to use. All-in-all, the new version of DOS looks like a winner.

*Neil Brearley is Chief Librarian of the Carleton University Library.*



## The DOS Environment

by Robert Parkinson

*This month's excerpt from Robert's long article (available complete on the PUB as ENVIRON.TXT) is on the SET command.*

### The SET Command

I won't discuss the SET command in detail, as the many versatile uses for it are too well-documented elsewhere. But I will give you a couple of tips and some sources of excellent information on its advanced use.

You must exercise caution when using the SET command. Unlike some other DOS commands, SET is very sensitive to case and to spaces. Regardless of what you enter, the variable name (the part to the left of the equals sign) is always converted to upper case. However, the variable

itself (the part to the right of the equals sign) is entered just as you type it, in upper case, lower case or any mixture (including the ASCII values above 127): no other combination will later be considered equal. Note also that spaces immediately before or after the equals sign become an inherent part of the variable; if before the sign, they become part of the variable name and, if after the sign, they become part of the variable string itself. For example, "SET BLUE=NO" is not at all the same as "SET BLUE = NO". In the first case the name is "BLUE" and the variable is "NO", whereas in the latter the name is "BLUEace" and the variable is "ceNO".

The use of "SET" by itself will produce a listing of your current envi-

ronmental variables, but "SET;", "SET=" or "SET," (with or without one or more spaces between SET and the symbol) will do the same. With PATH and APPEND, the use of a semicolon after the command will delete the current setting, but not so with SET.

The SET command is extremely versatile. Your ingenious use of it can turn your batch files into masterpieces of creativity. For some advice on how to use the replaceable environmental variables to do this, look at the PC Resource article {"Raising Your Batch File IQ" PC Resource, Nov 88, page 81.} and pages 582 to 642 of the "DOS Power Tools" book {"PC Magazine DOS Power Tools" (1988) edited by Paul Somerson, chapter 11.} □

## A Way to Keep Your Path Short

by Orrin Kerr

*This article was submitted in response to the June issue excerpt from Robert Parkinson's article on the DOS Environment.*

To keep my PATH short, I run my programs using batch files which change the PATH variable to meet the program's needs and change it back again as the program exits. I keep all these batch files in a subdirectory called \BAT and include it as one of the first directories in the path statement in my AUTOEXEC.BAT file. My current AUTOEXEC.BAT contains this path statement: PATH=C:\;C:\BAT;C:\DOS;C:\PCTOOLS;

Here is an example of my batch file which runs the shareware program PC-Outline:

@ECHO OFF	prevents the following lines from echoing to the screen
SET ROUTE=%PATH%	saves the contents of the current path in a memory variable called "ROUTE"
PATH=C:\WRITING\PCO;%ROUTE%	changes the path
C:\WRITING\PCO\PCO %1	runs the program
PATH=%ROUTE%	sets the path back to its original state after exiting the program PCO.EXE
SET ROUTE=	erases the memory variable "ROUTE" by setting it to 'null'

The only time this will not work is when the called program uses files in its home directory. Then you will have to use the APPEND command in the .BAT file. □



## Selected messages from the PUB

*edited by Bonnie Carter*

### Device Drivers

*Query:* NORMAND LAVOIE

I recently installed a 3.5 in disk drive in my XT clone. I was told to add a driver to my config.sys file. The DOS manual says to add a "device=driver.sys.." line. This, however, adds a logical drive to my system (D). A friend gave me another idea. Add "drivparm= /d:01 /f:02 /h:02 /s:09 /t:80" to the config.sys file. It works and does not create a logical drive. The "drivparm" is not documented in the DOS manual. Does anyone know if it has any hidden problems? Any other comments?

*Reply:* DAVID SMITH

Assuming your new drive is an addition and not a replacement, there are generally dip switches (or very tiny switches which are not "dipped" but switched side to side) on the motherboard which may have to be configured to tell your XT that you now have two floppy drives. You may wish to refer to your Manual (pamphlet) to verify if this is the case. As far as drivparm is concerned, this will give you no trouble. The drive parameters configuration command defines the operating characteristics of a disk or tape drive.

### Computer Books

*From:* ERIC CLYDE

Just a short note to point out that a 'new' remainder bookshop has opened on the west side of Bank Street, a few doors north of Odyssey Books, and just south of Queen. They have a number of computer titles on sale. These seem to be current editions, and the costs seem to be about 30% less than the regular price.

### JOHNPUB

*From:* DOUG HEWKO

What is the maximum size of a message that can be posted on the PUB, and what would happen if we who use JOHNPUB exceed that limit?

*From:* JOHN WHELAN

The maximum message size on the Pub is 4,000 characters. If you exceed this on a single message, JOHNPUB will split the message into multiple messages, so you don't have to worry about it.

### Telephone Equivalency

*Query:* DEL HANSEN

What is "the equivalency"?

*Reply:* JEAN FORTIER

The equivalency or hunt function is a feature by which calls are automatically transferred to another line when the one you're calling is busy. On the PUB, calling the first number is like calling the four numbers at the same time.

### Shadow RAM

*Query:* DOUG HEWKO

What is SHADOW RAM? (Personally, I'd rather have the real thing instead of a mere shadow of what it is supposed to be.) Is it hard-disk based, or motherboard based?

*From:* ROBIN FORSTER

Shadow RAM is when your 386 motherboard remaps the physical addresses for your ROM BIOS into RAM in order to increase the speed at which software interrupts are processed (i.e. int 10h [display BIOS], int 13h [disk services], etc.). Some boards support video RAM shadowing which improves the speed of graphics-intensive software. Note that the video display speed doesn't improve much because the motherboard must still recopy the display to the physical address of video RAM. (The motherboard does this during

the memory refresh. Cycle-DRAM must be periodically renewed so it won't be lost). Don't confuse memory interleave with hard disk interleave, nor should you confuse shadow RAM with disk caches. Disk caches remember frequently accessed disk sectors (i.e. the sectors in which the FAT resides or in which an important database file resides). Some disk caches support READ AHEAD and WRITE BEHIND. Read ahead means that when user software requests a single disk block, the cache software may read a whole set of consecutive disk blocks at once in the hope that the software will request the blocks sequentially (as is usually the case). Write behind means that the cache software will buffer an entire set of consecutive disk blocks before writing them to the disk. The combination of read-ahead and write-behind means that delays due to rotational latency and head repositioning need occur for whole pages, not for each individual disk block. Write behind can be scary in areas prone to power failures.

### Emacs

*Query:* MICHELINE JOHNSON

What's an EMACS?

*Reply:* DOUG HEWKO

Emacs is a text editor. I use it to modify my CONFIG.SYS, AUTO-EXEC.BAT, my PUB messages and any other text files. Emacs is very powerful. It has multiple windows, multiple buffers and other things that I have not yet discovered.

### JOHNPUB Subject Lines

*Query:* DOUG HEWKO

How can you change the subject line of a reply when using JOHNPUB?

*Reply:* JOHN WHELAN

use "#send g john smith" instead of "#reply". □



## How to Care for your New Computer

*The research and writing for the Basics page is coordinate by Eric Clyde & Murray Kreisman. Eric Clyde hosts a Beginner's Session for new users (the old, but confused are also welcome!) at 7.00 p.m. on the same evening as the regular monthly meeting. Eric looks forward to answering questions arising from the article on this page at these sessions.*

**Y**ou have received a new computer system. Someone has set it up for you on a desk in the basement, or maybe on the dining room table, and you are not sure how best to take care of it. A computer system is really quite rugged, but there are a few precautions to take to keep your system running smoothly.

### Basic Moving or Handling

As long as you turn the power off first, moving your computer equipment should be no real problem. Even the occasional jostle is unlikely to cause any harm. Nevertheless try to set up the computer in a location where it won't get bumped. There are parts inside the case that are snapped together to stay in place, and severe bumping could loosen these internal parts.

### Plugging in - Electrical Considerations.

When a computer is plugged in and operating, it can be sensitive to larger than normal surges of electricity (called spikes). There are a few precautions that can be taken to protect your computer from problems caused by these very rare electrical spikes.

- If you turn your computer off at any time, wait about 15 seconds before turning it on again.
- It would be wise to turn your computer off, and to unplug it to avoid damage from the electrical surges which can occur in power lines during thunderstorms.
- Choose an appropriate outlet to plug into. Don't use an outlet on the

same circuit as any major appliance, such as space heaters, T.V. sets, and refrigerators. When one of these appliances is turned on they can cause surges of electricity to which a computer can be sensitive.

- If you live in the country or suspect that you may have problems with the power lines, invest in a surge protector, which is good insurance wherever you live.

### Temperature considerations

High temperatures can shorten the life of computer chips. Computers have vents and one or more fans to keep them cool. Keep the vents clear of dust and don't use your computer where it's too hot. If it's too hot for you it's probably too hot for your computer.

### Care of specific parts of your computer system

- **Monitors** - Monitors are like T.V. screens, and about as rugged. But don't leave your monitor on for days at a time with the same unchanging image. This may cause the image to be "burned in" and appear faintly even when the screen is showing something else.
- **Keyboards** - Be careful when you are having a snack near your com-

puter. Keyboards that have been doused with coffee and sprinkled with crumbs will probably give up in disgust. Excess dirt, dust, and grease, are likewise undesirable.

- **Floppy Diskettes** - There are areas on a diskette where the recording surface shows through the case. Don't touch these surfaces.
- Write on 5 1/4 inch diskettes with care - preferably write up your labels before you stick them on the diskette. If there is already a label, write on it gently with a soft-tipped pen.
- Put diskettes back in their dust covers and store them in a closed container to avoid getting dust on them.
- Don't place diskettes near magnets or objects that contain magnets such as the plastic paper clip holders found on many office desks or magnetized tools. Magnets damage the information on diskettes.

### Final Notes

Don't let all the warnings above make you afraid. Your computer is really quite rugged. By taking some of the minor precautions as noted above, your computer system should give you many years of satisfaction and enjoyment.

### Beginners' Corner

At 7:00 p.m., prior to the regular monthly OPCUG meetings, special sessions are held to help beginners with any problems they have been having. If there is enough time, there is generally discussion of some topic of interest, e.g. use of DOS commands, how to take care of your computer, organization of subdirectories on a hard disk, ect.

If you have a topic you would like to have discussed, call Eric Clyde at 749-2387



## OTTAWA PC NEWS

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The deadline for submissions is the last day of the month prior to publication.

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### Group Meetings

OPCUG meets monthly except in July and December. Check the answering machine and the newsletter for the date and place of each meeting. Meeting times are 8:00 p.m. to 10:00 p.m.

### Membership Fees

\$25 p.a.

### Disk-of-the-Month Subscription

\$25 p.a. for 5.25" diskettes and \$35 p.a. for 3.5" diskettes. ☐

## Election Notice

David Terroux, as Past Chairman, is in the process of forming a nominating committee which begins the process leading up to the Election of the 1992 Executive. Elections will take place at the Annual General Meeting in January of next year. The Nominating Committee will be canvassing the membership for candidates in the intervening period, so anyone who is interested in standing for election, or nominating someone should contact David Terroux.

So far Doug Poulter, our present Chairman, has expressed his intention to stand down in order to take up his position as Past Chairman.

## MEMBERSHIP APPLICATION/RENEWAL

Membership #  
(if you are renewing)

First name Last name (please use caps.)

Address Apt. #

City Province Postal Code Country

( ) ( ) ( )  
Home phone # Business phone # Fax #

I use the following equipment: ☐ XT ☐ AT-286 ☐ 386 ☐ 486  
(Check those that apply.) ☐ 300 baud modem ☐ 1200 baud modem  
☐ 2400 baud modem ☐ 9600 baud modem

I would like to help in the following club activities:  
(Check those that apply.)

- ☐ Programming instruction  
☐ Hardware techniques  
☐ Newsletter input  
☐ Software library  
☐ Promotion/Publicity  
☐ Bulletin Board  
☐ Other

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