PCjr WORLD

April 1984

The Home Computer Magazine
for People with PCjrs and Compatibles

PCjr's Plug-in Software

News and Fun from The Source and CompuServe

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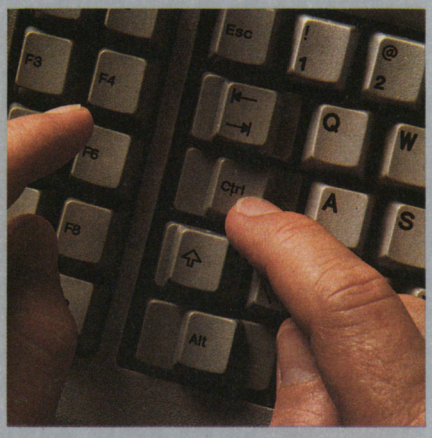

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PCjr WORLD

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Plug In a Program 2 ***Seth Novogrodsky***
PCjr's ROM cartridges make loading a program as easy as turning on a TV set.

Megabytes 6 ***Katie Seger***
News and notes for the PCjr community.

Dial Up News and Entertainment 10 ***Janette Martin***
Information at your fingertips from The Source and CompuServe.

Free and Simple BASIC 18 ***Adrian Mello***
Type and use this simple graphics program.

Photo-illustration credits: Dave Andrews, 3; Marc Rosenthal, 7.

PCjr's ROM cartridges are one of the most revolutionary features of the IBM personal computer family.

Plug In a Program

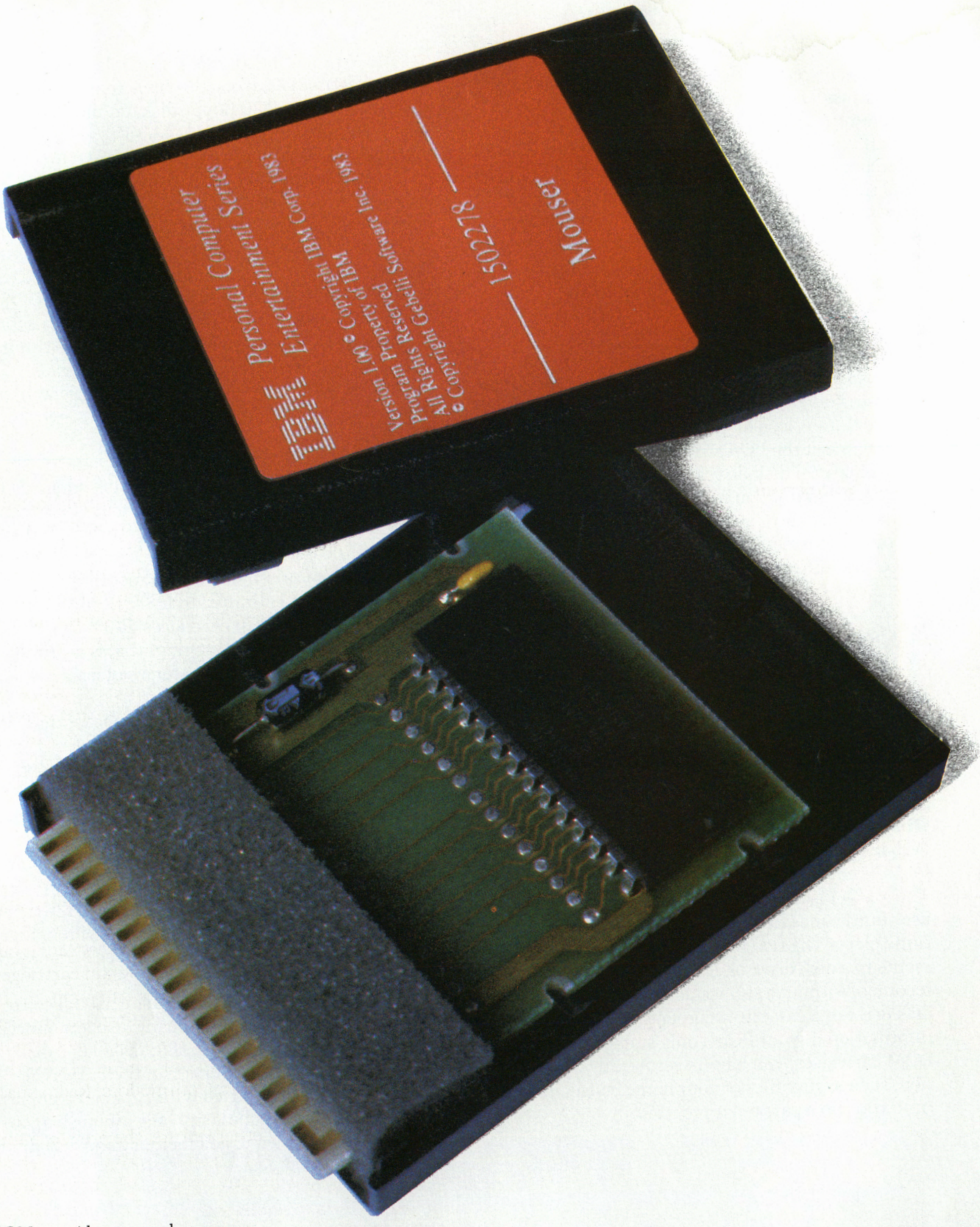
Seth Novogrodsky

A revolution in the home computer world started on November 2, 1983, when IBM introduced PCjr. Like other revolutions, PCjr's arrival had been predicted by many observers. Months before the announcement day, cryptic reports began appearing in the *Wall Street Journal* about a low-cost, high-performance personal computer, code-named "Peanut," that would be compatible with the IBM PC.

As in the case of the original PC, very little is new about PCjr technology. It is ironic that semiconductor giant Texas Instruments, fearing the aftermath of the inevitable IBM home computer takeover, abandoned the home computer market just a week before PCjr's official unveiling.

Back in late 1979, the Dark Ages of personal computing, Texas Instruments introduced a truly revolutionary home computer, the TI 99/4. Unlike earlier personal computers such as the Apple II and the TRS-80 Model I, the TI 99/4 had a 16-bit microprocessor and a provision for plug-in software modules, commonly called ROM or program cartridges. These cartridges enabled people to run programs by inserting a small plastic-encased cartridge into a rectangular slot in the computer. Although not a commercial success, the TI 99/4 set a trend followed by such companies as Atari, Commodore, Radio Shack, and, most recently, IBM.

More than any other feature, the provision for plug-in software sets PCjr apart from the PC. The two slots located directly underneath the single disk drive opening will have a profound effect both on how people use their computers and how software producers develop and distribute their programs.



A ROM cartridge exposed

A ROM cartridge functions something like a phonograph record. However, while records usually store music, ROM cartridges hold permanently stored programs ranging from languages to games. ROM, which is an acronym for read-only memory, is like an open book inside a glass case in a museum. You can read the displayed pages, but you cannot change what they say. ROM is sometimes referred to as firmware, since it is software that resides permanently in hardware; in ROM cartridges the hardware is specialized circuit boards that contain memory chips.

Because loading a program stored on a ROM cartridge is as easy as turning on a television set, the PCjr cartridges may help alleviate cases of computerphobia and related ailments. With a ROM cartridge program you just plug the cartridge into the slot, and the program is loaded. You bypass typing in the program name at the PC-DOS prompt and avoid waiting for mechanical disk drives or cassette recorders to load the program. You're also spared from using DOS to make a backup copy of your program, since the program is permanently stored on the ROM cartridge and cannot be erased.

Perhaps you are wondering whether ROM cartridges for PCjr have made your floppy disk drive obsolete. The answer is a resounding no.

Obsolete Disk Drives?

Perhaps you are wondering whether ROM cartridges for PCjr have made your floppy disk drive obsolete. The answer is a resounding no. Unless you wish to use your PCjr as little more than a glorified video game player, the two ROM cartridge slots are supplements to a disk drive or, less commonly, a cassette recorder. Without a storage device such as a floppy disk drive or a cassette recorder, you cannot save any information. If your PCjr's only storage medium is ROM cartridges, you have to retype all your information, such as text files or your home budget data, each time you run a particular program.

ROM cartridges for PCjr can hold from 8K to 64K, or from 8192 to 65,536 characters of information. A standard PCjr floppy disk, on the other hand, can store considerably more—360K.

So far IBM has announced five program cartridges for PCjr. Four of them are the games *Mouser, ScubaVenture, Crossfire,* and *Mine Shaft.* The fifth cartridge is IBM PCjr Cartridge BASIC, which supplements the Cassette BASIC that resides in PCjr's 64K of built-in ROM. Cartridge BASIC provides the features of BASICA, which is supplied with PC-DOS on disk, as well as graphics and sound commands for PCjr. Because Cartridge BASIC is needed to run IBM programs such as *Dow Jones Reporter, Bumble Games,* and *Home Budget, jr.,* many people will undoubtedly use it.

Making PCjr Useful

The greatest disadvantages of even the enhanced PCjr model when compared with the popular PC are the home computer's limited memory and single disk drive. While the PC is designed to be able to directly access 640K of user memory, or random access memory (RAM), PCjr is limited to 128K. (RAM is different from the ROM on PCjr cartridges. ROM cannot be changed, while RAM is memory that is available on the computer for temporary storage of data and programs.)

When a program stored on disk rather than on cartridge is loaded on PCjr, the program goes into the 128K RAM area. The problem is that many applications programs take up as much as 64K or 128K. With so much RAM given up to a program, little memory is left for temporary data or document storage.

One important advantage to ROM-based software is that when a cartridge is inserted, the program doesn't take up any of PCjr's 128K of RAM; the entire 128K is available for storing data. With a program loaded from a disk or cassette, however, some RAM is taken up by the program.

When IBM introduced its first personal computer in August 1981, the company also announced a configuration with only 16K of RAM and no disk drives. This low-budget version of the PC was designed to get people started with personal computing. The system gained popularity only among bargain hunters who planned to add memory and disk drives at lower than IBM cost.

The entry model PCjr, on the other hand, is practical even though it lacks a disk drive. The computer is useful because of its 64K of RAM and its two ROM cartridge slots. Games and educational software are two kinds of programs that can be put on PCjr ROM cartridges. With cartridge software, schools that can afford to purchase only the entry model will be able to enter the computer age with an inexpensive but useful machine.

With cartridge software, schools that can afford to purchase only the entry model will enter the computer age with an inexpensive but useful machine.

Cartridges and the Software Industry

Because of PCjr's memory limitations, software producers will have to take advantage of the machine's ROM cartridge capability in order to make some of the sophisticated applications programs developed for the PC available for PCjr. Developers of integrated applications software such as Lotus *1-2-3* and Context *MBA*, both of which require more than 128K, are likely to investigate putting their programs on PCjr cartridges.

For software publishers, ROM cartridges provide a mixed blessing. One advantage of the cartridges is that software piracy, the illegal copying and distribution of copyrighted software, becomes difficult. ROM cartridges, however, because of their plastic cases, printed circuit boards, and memory chip components, cost more than floppy disks. Cartridges also have a smaller storage capacity than floppy disks. Furthermore, because software is rarely free from errors, software publishers often provide updates for registered owners at little or no cost. Putting updates on ROM cartridges would undoubtedly be more expensive than putting them on floppy disks. However, PCjr's ROM cartridges can be opened easily. People conscious of the hazards of static electricity should be able to open a cartridge, remove old ROM chips, and insert new ones containing updated software without any difficulty.

Fortunately, considering the high price of software, manufacturing costs are unlikely to deter many software publishers from providing software on ROM cartridges instead of floppy disks. What will deter publishers, however, is that a ROM-based program designed for PCjr will run only on PCjr. IBM PCs and XTs cannot run ROM cartridges.

The Future

PCjr's two cartridge slots are sure to be a promising key to unlocking the full potential of the new computer. With the right programs, the cartridges can transform PCjr into an accountant, a secretary, a teacher, or an entertainer. Cartridges can also open the way for sophisticated programs, previously available only for far more costly machines, to run on PCjr.

PCjr has permanently altered the home computer world. The cartridge slots that differentiate PCjr from the PC are one of the most exciting features of the IBM personal computer family. Clearly, some time will pass before people begin to take full advantage of the cartridge slots. The home computer revolution has scarcely begun.

Seth Novogrodsky is a Contributing Editor to PC World Books.

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Megabytes

News and notes for the PCjr community

Katie Seger

Megabytes *reports about the people, products, and developments in the computer world. We give you up-to-date information on the events and trends as well as the occasional speculations that arise in this rapidly expanding world that PCjr has joined.*

And You Thought It Was an IBM Machine

Having found a manufacturing strategy that works for the Personal Computer, IBM is continuing the plan with PCjr. As with the PC, most of the parts and components for PCjr will be made by outside suppliers. Industry sources have named some of these third-party manufacturers.

Qume, of San Jose, California, has signed a contract with IBM to supply the half-height, 5¼-inch floppy disk drives for PCjr. The computer's infrared keyboard is made by Advance Input Devices, an Idaho company located in Coeur d'Alene. Texas Instruments is supplying PCjr's sound chips, which enable the computer to make sounds and music. And AMP, the Harrisburg, Pennsylvania, company that makes connectors (or sockets) for the PC, is also supplying connectors for the new home computer.

IBM is not continuing the PC assembly scheme with the new computer, however. Unlike the PC, which is assembled at IBM plants in three locations (Boca Raton, Florida; Greenock, Scotland; and Wangarata, Australia), PCjr will not be made in IBM assembly plants. Instead, the new computer is being assembled and packaged by Teledyne, a diversified company that produces, among other things, on-board flight control computers for military and NASA aircraft. The PCjr will be made at the company's Lewisburg, Tennessee, plant. An interesting footnote to Teledyne's role in the PCjr story is that Teledyne's chairman, Henry Singleton, is on the Apple board of directors.

A True Ever-Ready

Scientists at Hitachi Electronics in Japan have developed a battery that lasts 50 years and is as small as a baby's fingernail. The battery, which is as thin as a human hair and has a surface area of 4 square millimeters, can only power an electronic watch for ten days but can be recharged up to 2000 times.

A Hitachi spokesperson said the battery still needs "a lot of work," so it looks like flashlights, Walkmen, and PCjr keyboards will have to get along with old-fashioned alkaline batteries for a while longer.

PCjr Plays Vegas

COMDEX/Fall is the computer industry's largest trade show. Five COMDEX shows are held annually, three in the United States, one in Europe, and one in Japan. The autumn event takes place during the week following Thanksgiving in Las Vegas. At last fall's Nevada show PCjr was one of IBM's star attractions.

Since the trade show took place before PCjr demonstration models were in the stores, the computer crowd was anxious to try out the machine. IBM obliged by giving demonstrations and training throughout the five-day event. Hands-on lessons using 72 PCjr Enhanced Models and the *IBM PCjr Sampler* were available every half hour. Tickets for the training

were free, and the majority of the sessions had two people to each machine. At most training sessions PCjr played to a full house.

Life, Liberty, and the Pursuit of Video Games

The United States Supreme Court has ruled that local governments can ban or regulate video games. The decision set a precedent that can be cited in other disputes over video game restrictions.

In 1982 the town of Marshfield, Massachusetts, adopted a ban on video games. The town's ordinance prohibits the operation of "mechanical or electronic amusement devices, whether coin-operated or not." The ordinance exempts jukeboxes and video games used in private homes.

A group of Marshfield store, restaurant, and business owners who had video games in their places of business challenged the ordinance claiming that the ban was unconstitutional. Their suit argued that video games are a form of expression protected by the First Amendment's guarantee of free speech. The justices voted seven to two to reject the merchants' claim when the case was brought to the Supreme Court last November.

Perhaps the business people should take solace in the notion that if the Founding Fathers had played *PacMan* and *Donkey Kong*, they never would have had time to write the Constitution.

Bank on It

Home banking has long been hailed as a perfect application for personal computers. The subject of much testing and research, banking at home is now a reality for Bank of America customers. The California bank introduced its HomeBanking service in the last quarter of 1983 and expects to have 25,000 customers signed up by the end of this year.

The best feature of the Bank of America system is that it works with any personal computer equipped with a monitor and a modem. HomeBanking customers can pay bills, transfer funds between accounts, make account balance inquiries, and review current checking account statements—all without leaving home.

To use the HomeBanking service, a Bank of America customer fills out a request form and is given identification and code numbers. Using any communications program and a modem, the customer calls a local number, connects with the service, and performs banking and bill paying chores. HomeBanking is available between 6 a.m. and midnight and costs $8 per month in addition to regular monthly checking account charges. The system also includes an electronic mail service that allows customers to ask questions about their accounts and statements. Bank personnel respond to questions within 24 hours.

Bank of America is providing technical information about the system to independent software developers. You can expect to see some software packages that combine different applications like home budgeting and communications to make even better use of the HomeBanking system.

Kiosk Que C'est?

Computer kiosks are springing up all over. Most stands are making their appearance in computer stores and bookstores, but they're also showing up in record shops, grocery stores, and airline terminals.

After a successful experiment in the Washington, D.C., area, PC Telemart of Fairfax, Virginia, has placed more than 100 kiosks in computer stores and bookstores throughout the country. People can use the kiosk computers to search through PC Telemart's software data base to find program listings for their work and home needs. The data base contains descriptions and hardware requirements for more than 21,000 commercially sold software packages; reviews are also included for many listings.

Softsmith Corporation, a California company that licenses independent software and then rewrites the documentation and repackages the programs under its label, has more than 300 kiosks set up nationwide. Softsmith kiosks are found in computer and software stores, bookstores, record shops, drug stores, and even a Tennessee gas station. The kiosks are designed to encourage customers to try out Softsmith programs on a computer before they buy the product. At present Softsmith sells programs for Apple, Commodore, Atari, Tandy, and IBM personal computers. Its IBM library, which includes *Home Accountant+*, *Championship Blackjack*, and *MultiRAM*, will soon feature programs for PCjr.

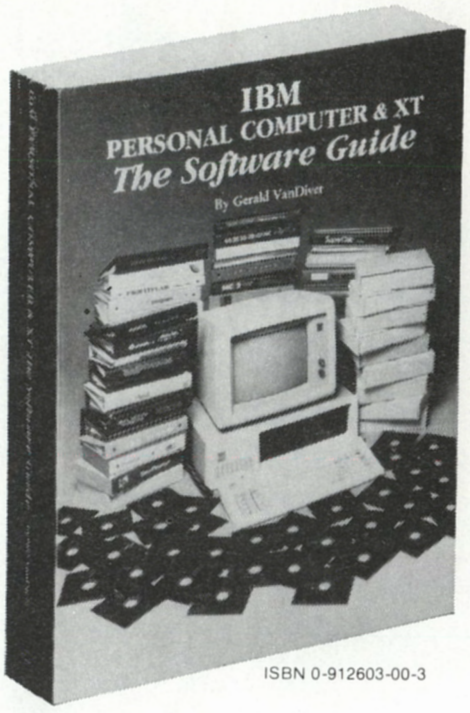
An electronic kiosk test being conducted in the San Francisco Bay Area may change the way consumers shop for noncomputer merchandise, too. Shoppers can view and order merchandise from national mail-order companies at 100 kiosk terminals set up in grocery and drug stores, health clubs, airline terminals, and hotel lobbies.

Each terminal combines a touch-sensitive video screen, laser-disc, microprocessor, keyboard, credit card reader, and printer. Shoppers view merchandise and place orders by pressing pictures of the items on the screen. Size, color, number, and shipping details are typed on the keyboard, and orders are charged to Visa, MasterCard, or American Express accounts. Shoppers receive a paper receipt of their purchases. The test, which is conducted jointly by Compufill, a division of McKesson Corporation, and ByVideo Inc., will run through the end of 1984. The two companies will then decide whether to expand the kiosk stations nationwide.

Don't Leave Home without It

American Express Company has published a new, computer-specialty mail-order catalog that allows customers to order computer hardware and business and game software through the mail. Called *The Best of the Best*, the catalog was sent to 400,000 American Express cardholders in the last quarter of 1983. An American Express spokesperson said that if consumer response is favorable, the company will publish another computer catalog this year.

Megabytes welcomes contributions of interesting items. Send them to Megabytes, PCjr World, *555 De Haro St., San Francisco, CA 94107. Please include your name, address, and phone number.*



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The Source and CompuServe link PCjr to other computers, major newspapers, Wall Street, and Dungeon and Dragon worlds.

Dial Up News and Entertainment

Janette Martin

Just as Aladdin had his magic lamp, home computer owners now have the power at their fingertips to beckon an obliging genie. The mythical genie materialized like a vaporous cloud when Aladdin rubbed his lamp. Today's genie comes not through a lamp but through computers when information services are called up over the telephone.

Two popular 24-hour information services are The Source and CompuServe. Both provide news, entertainment, mail, stock and financial reports, games, and other useful and fun electronic services. CompuServe is a subsidiary of H & R Block and claims nearly 86,000 subscribers after four years of service. The Source Telecomputing Corporation, a division of Reader's Digest, has been in business for almost five years and has approximately 40,000 subscribers.

HE WALL STREET JOURNAL, Thursday, January 5, 1984
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New highs
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To use the information services you either pay a registration fee or purchase a starter kit, and then you are given an identity number and a password that permit you to connect with the system. Thereafter, you pay monthly charges based on connect time to the service. Charges vary from $6 per hour at night and on weekends to $25.75 during office hours, which are prime time.

If you want to call up either service with PCjr, you must have an enhanced model equipped with an internal or external modem. You need a communications program such as *Personal Communications Manager, PC-Talk III,* or *Hostcomm* so that you can call the system using your regular telephone line.

Most subscribers to The Source and CompuServe call the services with a local rather than a long-distance phone call. Both services maintain numbers in approximately 400 cities in the United States and Canada. The Source provides an 800 number for subscribers who live outside covered areas. CompuServe customers who live away from those areas, however, must make long-distance phone calls to connect with the service.

CompuServe

When you call CompuServe, your computer screen displays the word 'CONNECT' once the system answers your call. You press the <Enter> key once, and the service displays the prompt 'Host Name:'. You type **CIS** (for CompuServe Information Service) at the prompt, and the service asks you to enter your identification number with the prompt 'User ID:'. After you enter your ID number, the prompt 'PASSWORD:' is displayed. When you enter your password, don't be alarmed that you can't see what you type; as a security precaution CompuServe doesn't display passwords. CompuServe checks your number and password and then authorizes your entry onto the system. Besides keeping nonsubscribers off the system, the record checking also ensures that you are billed properly for your telephone connect time.

Once the sign-on procedure is complete, CompuServe gives you a welcome message and tells you if any messages addressed to your identification number are on the electronic mail system. You can check these messages by using the Electronic Mail Menu, which is displayed along with the welcome message.

Both The Source and CompuServe use menus to present feature and program selections to subscribers. Successive menus offer a range of broad to increasingly narrow selections for each feature or program. CompuServe's Main Menu (see Figure 1), for example, offers six selections as well as the H option for information. You enter your number selection at the command prompt '!'. If you choose number 1 from the Main Menu, your screen shows the Home Services Menu (see Figure 2). If you choose selection 1 from the Home Services Menu to receive news, weather, and sports information, you get yet another menu (see Figure 3). By continuing this menu selection process, you can obtain and read individual news stories.

Both information services permit you to bypass menus and access programs directly by entering simple, usually abbreviated commands. With practice the commands can save both money and time. CompuServe allows you to call up selections with the page numbers that appear in the upper right-hand corner of each CompuServe screen. For example, if you want to jump directly to the News/Weather/Sports Menu from any part of CompuServe, you type **GO HOM-10** at any prompt. This command tells the system to go to Home Services page 10. Similarly, you can always retrieve the Main Menu by entering **GO CIS-1** or **T** (for top menu).

The CompuServe Repertoire

CompuServe's news service includes stories from the *Washington Post,* the *St. Louis Post-Dispatch,* and the Associated Press news wire. Some news service selections such as the *Washington Post* require a surcharge of $5 per month or $45 per year in addition to regular connect charges.

Serious programmers can call up the Personal Computing feature from CompuServe's Main Menu and write, compile, and run programming languages such as FORTRAN using CompuServe's software instead of buying their own.

Other features for CompuServe subscribers include Comp-U-Store, the department store of the telephone lines, where shoppers can order steaks from Omaha or buy marked-down items from the "bargain databasement." A 21-volume electronic encyclopedia, *Grolier's Academic American Electronic Edition,* is available through the service. Horoscope listings, biorhythm charts, soap

```
COMPUSERVE                          PAGE CIS-1

COMPUSERVE INFORMATION SERVICE

1  HOME SERVICES
2  BUSINESS & FINANCIAL
3  PERSONAL COMPUTING
4  SERVICES FOR PROFESSIONALS

5  USER INFORMATION
6  INDEX

ENTER YOUR SELECTION NUMBER,
OR H FOR MORE INFORMATION.

!
```

Figure 1: CompuServe's main menu

```
COMPUSERVE                          PAGE HOM-1

HOME SERVICES

 1  NEWS/WEATHER/SPORTS
 2  REFERENCE LIBRARY
 3  COMMUNICATIONS
 4  HOME SHOPPING/BANKING
 5  DISCUSSION FORUMS
 6  GAMES
 7  EDUCATION
 8  HOME MANAGEMENT
 9  TRAVEL
10  ENTERTAINMENT

LAST MENU PAGE. KEY DIGIT
OR M FOR PREVIOUS MENU.

!
```

Figure 2: CompuServe's Home Services Menu

opera summaries, and movie reviews are also popular with subscribers.

To sign off of CompuServe type BYE or OFF at any prompt. Signing off properly is important because you are billed for your telephone connection time. Although CompuServe automatically disconnects any call after 15 minutes of no activity from your computer, you will still be charged for those 15 minutes.

The Source

Logging onto The Source is similar to logging onto CompuServe. After you call and make a telephone connection, The Source displays 'CONNECT' on the screen. Wait a few seconds and then press <Enter> twice. The prompt 'TERMINAL = ' then appears on the screen. Type **D1** and at the prompt '@' enter your individual account number. When the prompt '>' appears, type **ID** followed by your identification number, a space, and then your password. Like CompuServe, The Source checks for mail and notifies you of any waiting messages.

To get a welcome screen (see Figure 4) that allows you to call up information, type **ENTRY** at the '>' prompt. If you want to bypass the welcome screen and call up the Main Menu (see Figure 5), type **MENU** at the prompt. At any menu screen you can type **QUIT**, and the command prompt '->' appears on the screen. Using the prompt and program commands listed in The Source's *User's Manual*, you can bypass menus and go directly to features or programs. The command MOVIES, for example, brings up current movie reviews. Like the GO commands of CompuServe, these one- or two-word commands can save you time and money.

Many help files are available on The Source to explain commands, menus, and files. Files such as HELP SYSCOM, which produces a list of all system commands, come in handy as you are weaving your way through the system's many features.

The Source Specials

The Source provides many services that are similar to CompuServe's, including electronic mail, games, Comp-U-Store, busi-

ness and financial news, and newspaper and press wire stories.

The By-line News Features selection on the News and Reference Resources Menu lets you track news information by title, author, date, or key word. This Source feature is an excellent way to research school papers or keep up with a news topic of special interest to you. For example, I used the feature to search by key word for news on Grenada. I then narrowed my search to news on Grenada during November 1983. Forty news items were reported for the month.

The Creating and Computing option from The Source's Main Menu is for serious programmers and people knowledgeable about computers. Financial management programs and programming languages are software resources that subscribers can use to their advantage. The extensive Financial Modeling program, for example, lets you analyze financial situations and project outcomes. The program analyzes profitability, cash flow, budgeting, and present net worth. Other options let you write and compile programs in BASIC, FORTRAN, and Pascal.

But The Source is not all work. An *I Ching* program, found in the Advice selection of the Home and Leisure Menu, looks into your future and gives answers to pressing personal questions. *I Ching*, or the *Book of Changes*, is the reference for an ancient Taoist divinatory system that involves interpreting

```
COMPUSERVE                              PAGE HOM-10

                  NEWS/WEATHER/SPORTS

NEWS SERVICES
1   THE WASHINGTON POST ($)
2   ST. LOUIS POST-DISPATCH
3   AP VIEWDATA WIRE

4   NOAA WEATHER WIRE
5   OFFICIAL PGA TOUR GUIDE
6   HOLLYWOOD HOTLINE ($)
7   AMERICAN SKI ASSOCIATION
$   INDICATES SURCHARGED SERVICE

LAST MENU PAGE. KEY DIGIT
OR M FOR PREVIOUS MENU.

!
```

Figure 3: CompuServe's News/Weather/Sports Menu

```
WELCOME TO THE SOURCE

1   USING THE SOURCE
2   TODAY
3   BUSINESS UPDATE
4   THE SOURCE MAIN MENU
5   WHAT'S NEW
6   COMMAND LEVEL

Enter item number or HELP
```

Figure 4: The Source's welcome screen

the throw of coins. The translation used by The Source for interpretations is *I Ching: Taoist Book of Days* by Khigh A. Dhiegh (Ballantine, New York, 1978).

The Source's *I Ching* asks you to concentrate on your question and then, instead of throwing coins, you press the C key. A diagram representing the heads and tails of the coin toss appears on the screen.

To log off The Source type **OFF** at any prompt. As with CompuServe, it is important that you correctly log off The Source so that you are not charged for extra telephone time.

Sign-up Costs and Service Charges

CompuServe

CompuServe subscribers sign up for the service by purchasing a Starter Kit from retail stores such as Radio Shack. Each kit includes a manual, identification number, and password, and costs between $19.95 and $39.95.

Connect charges are assessed by minutes of use with no monthly minimum connect time required. Subscribers pay by major credit card or through an account whose funds are electronically transferred from the subscriber's bank account to CompuServe's account.

Connect Charges	Prime Time *5 a.m. to 6 p.m.* *Monday–Friday*	Non-Prime Time *6 p.m. to 5 a.m.* *Monday–Friday* *All day Saturday,* *Sunday, and holidays*
1200 baud modem	$15 per hour	$12.50 per hour
300 baud modem	$12.50 per hour	$6 per hour

The Source

Registration fee for The Source is $100. Individual subscribers must have a major credit card to sign up for the service. Commercial subscribers can be billed through their business and pay by check.

Subscribers must complete registration contracts, obtained from The Source or independent retail stores such as ComputerLand. Upon registration subscribers receive an account number, identification number, password, and command guide. The Source's *User's Manual* can be purchased separately if it is not included in a registration package from a retail store. The Source charges a minimum of $10 per month for connect time, used or not.

Connect Charges	Prime Time *7 a.m. to 6 p.m.* *Monday–Friday*	Non-Prime Time *6 p.m. to 7 a.m.* *Monday–Friday* *All day Saturday,* *Sunday, and holidays*
1200 baud modem	$25.75 per hour	$10.75 per hour
300 baud modem	$20.75 per hour	$7.75 per hour

Let Your Fingers Do the Talking

Communications programs are among the most popular services available on The Source and CompuServe. The programs allow people in the same city or different states to converse with one another via their computers.

The Source and CompuServe offer several communications options. Both have electronic mail services that let you leave messages for other subscribers by directing correspondence to their user ID numbers. CompuServe has a bulletin board service that allows you to post general public messages for other subscribers, and The Source has a Post program that enables you to list classified ads under various categories. The Source also has a Mailgram Messages program provided through Western Union that sends hand-delivered messages to anyone in the United States. A message of up to 100 words costs $5.15.

One of the most popular communications programs is CB Simulator on CompuServe. CB Simulator is similar in format to CB radio; people "talk" with one or many other people, who are known by their "handles." The Source offers a similar service called Chat. However, Chat permits only two people to talk at one time.

If you want to confer on a specific topic, you can join a special interest group, known as a SIG, on either service. To join a SIG you use CompuServe's Discussion Forums program or The Source's Participate program. Discussion Forums on CompuServe include CBers, Hamnet (ham radio operators), and Work-At-Home (home-based businesspeople). Using the Discussion Forums program, you can leave and read messages and bulletins left by other SIG members, and you can participate in specially scheduled on-line conferences that often feature guest speakers. Unlike CompuServe, The Source has no permanently listed SIGs. Special interest groups change regularly; you simply join in a Participate topic that is listed. If you don't see one of interest, you can start your own SIG. Some of the topics listed when I used Participate were politics, PCjr, and the family and computers.

The Source's I Ching *program looks into your future and gives answers to pressing personal questions.*

At Ease On Line

It takes time to master The Source and CompuServe, so plan to spend several hours on line trying out and becoming familiar with either service. You'll want to keep a pen and paper handy so you can jot down for quick recall information such as commands and numbered selections on menus.

```
THE SOURCE MAIN MENU

1  NEWS AND REFERENCE RESOURCES
2  BUSINESS/FINANCIAL MARKETS
3  CATALOGUE SHOPPING
4  HOME AND LEISURE
5  EDUCATION AND CAREER
6  MAIL AND COMMUNICATIONS
7  CREATING AND COMPUTING
8  SOURCE*PLUS

Enter item number or HELP
```

Figure 5: The Source Main Menu

The Source and CompuServe can be used effectively with the help information presented on line, but you may want to print out this information for future reference so you don't waste connect time reading it. As useful as the help information is, a command guide and manual available from each service are essential tools for gaining a thorough understanding of the organization and features of both systems.

The Source and CompuServe information services provide a window to the world. The services extend home computers far beyond the home and enhance business computing with up-to-date facts and figures.

In the *Arabian Nights* Aladdin's genie brings Aladdin together with the sultan's daughter in an adventure that ends happily when the two are married. Last year two CompuServe users who met initially through the CB Simulator were married over one of the CB channels while CB friends participated in the event via computer. Now, how's that for a little magic?

Janette Martin is a Contributing Editor for PCjr World *and* PC World. *She also owns an information processing company in the San Francisco area that specializes in training for the IBM PC.*

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A graphics program to help you make bar charts of your monthly bills

Free and Simple BASIC

Adrian Mello

How would you like to add to your software collection without spending any money? You can take advantage of programs that appear in magazines and books simply by typing them into the computer and saving them. If you learn a few rules and follow simple procedures, you can start making graphs with the DATAGRAF program included in this article (see Listing 1). The knowledge you acquire in the brief time it takes you to type and use the program will enable you to build a collection of free software and also give you an introduction to computer languages and programming.

DATAGRAF lets you plot a graph that compares such things as monthly checking account balances, automobile expenses, or long-distance telephone charges. The graph in Figure 1 shows the use of natural gas over a one-year period.

First Remarks

The DATAGRAF listing demonstrates some of the conventions of BASIC. You'll notice that all lines begin with line numbers, which increase by ten with each new line. Line numbers can increase in increments as small as one, but programmers prefer multiples of ten because that numbering scheme enables them to insert corrections or additional lines. The computer follows the instructions line by line, according to the rules of the BASIC language.

BASIC statements are reserved words that tell the computer to perform a predefined task. DATAGRAF contains many BASIC statements, such as PRINT, COLOR, SCREEN, LOCATE, and INPUT.

Remarks, or comments, are another programming convention. These lines don't accomplish tasks, but they inform whoever is reading the listing about the intended purpose or significance of a particular part of the program.

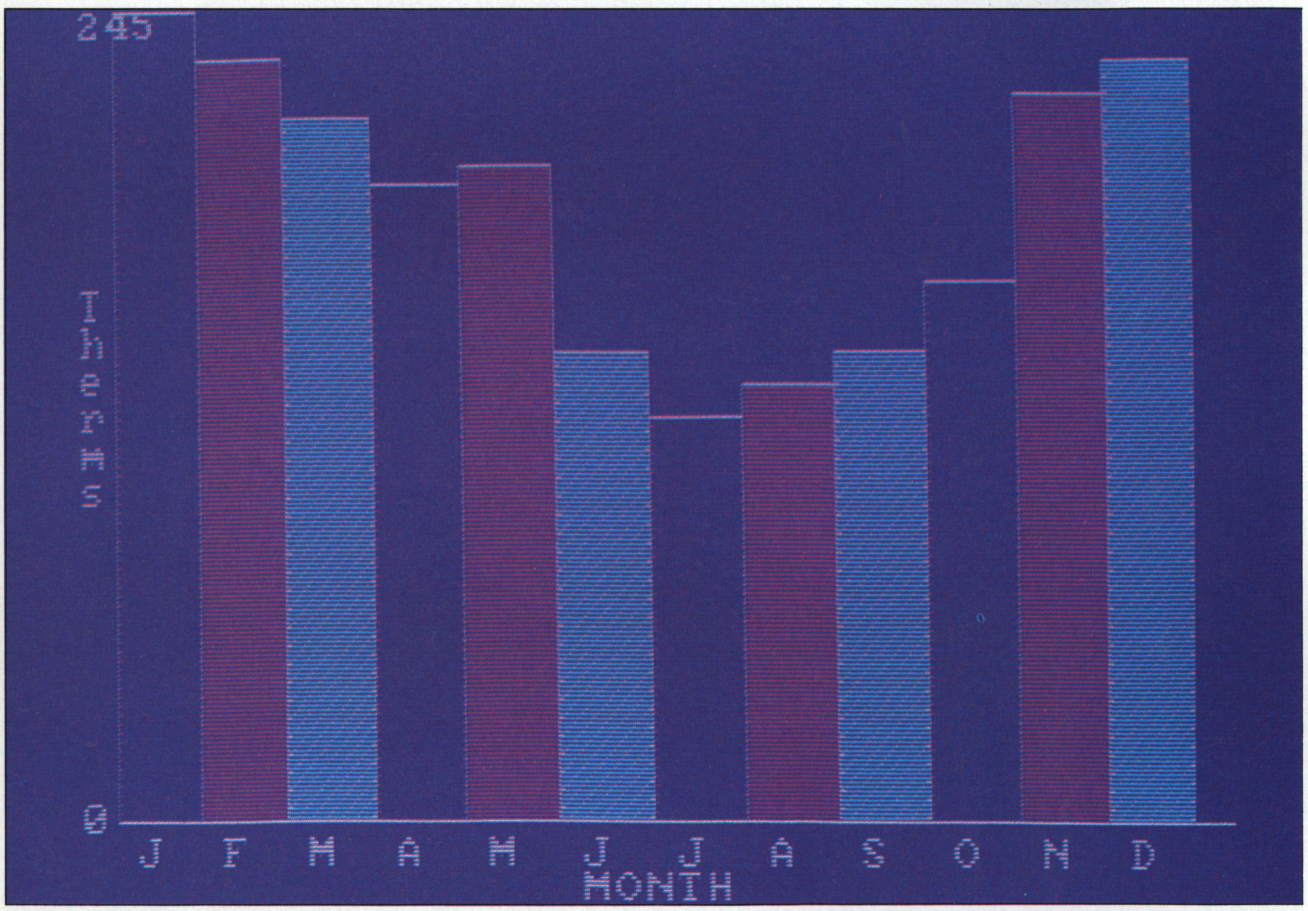

Figure 1: A graph of natural gas use over a one-year period

Remarks can be indicated in a number of ways. In DATAGRAF they're marked with a single quotation mark (') at the beginning of the phrase. Lines 10 through 90 are remarks that tell you the program's name and purpose. Line 120 tells you that the command WIDTH 40 sets the monitor screen width to 40 columns. Other remarks, such as lines 190 through 210, describe the purpose of an entire section of the program.

Typing the Program

To run DATAGRAF you need Cartridge BASIC. If you want to save the program, you'll need a cassette tape recorder or a disk drive. Turn on the computer and enter the date and time at the PC-DOS prompts. When the 'A>' appears, type BASICA and press <Enter>. The 'Ok' prompt in the upper left corner of the screen means that the computer is ready for you to enter information.

Start typing in the listing with the first line number, 10, followed by a single quotation mark and a series of asterisks. After you type the complete line, press <Enter>. Now repeat the process for each of the following lines. Type the lines exactly as you see them. Don't worry about the exact number of blank spaces or asterisks unless the spaces appear within quotation marks. Most spaces and asterisks function like remarks; they make the listing readable but aren't essential to the program's operation.

If you make a typing mistake, use the arrow keys to move the cursor backward or forward to make the correction. You can type over the mistake or delete it with the <Del> key. Additional

```
10 '************************************
20 '
30 '     NAME: DATAGRAF
40 '
50 '     PURPOSE: Plots a bar graph of
60 '              data for the 12 months
70 '              of a year.
80 '
90 '************************************
100 SCREEN 0,0  'Set for text mode
110 COLOR 2,0
120 WIDTH 40    'Set screen width to 40
130 KEY OFF     'Turn 25th line off
140 CLS         'Clear screen
150 COLOR 0,2 : LOCATE 3,16
160 PRINT " DATAGRAF"
170 DEFINT A-Z  'Variables are integers
180 DEFSNG S,V  'S & V can be fractions
190 '
200 ' - - - -Reserve Array Space- - - -
210 '
220 DIM VALUE(12)        '12 values and
230 DIM MONTH$(12)       '12 month names
240 '
250 ' - - - -Set Constants- - - -
260 '
270 FOR I = 1 TO 12
280   READ MONTH$(I)     'Read each name
290 NEXT
300 DATA January,February,March,April
310 DATA May,June,July,August,September
320 DATA October,November,December
330 'Textures for bar coloring
340 T$(1)=CHR$(213)+"W"+CHR$(93)+"u"
350 T$(2)=CHR$(34)+CHR$(136)
360 T$(3)=CHR$(170)
370 '
380 ' - - -Input & Verify Data- - - -
390 '
400 LOCATE 20,1 : COLOR 3,0
410 PRINT "Enter monthly amounts"
420 FOR X = 1 TO 12
430   GOSUB 650
440 NEXT
450 LOCATE 20,1 : PRINT SPACE$(39)
460 LOCATE 20,1,1 : COLOR 3
470 PRINT "Are these values correct?";
480 ANS$=INPUT$(1)
490 IF ANS$="y" OR ANS$="Y" THEN 780
```

Listing 1: DATAGRAF

```
500 IF ANS$="n" OR ANS$="N" THEN 520
510 BEEP : GOTO 450
520 FOR I = 1 TO 12
530   LOCATE I+5,1
540   IF I<10 THEN PRINT " ";
550   PRINT I
560 NEXT
570 LOCATE 20,1
580 PRINT"Enter the month # to ";
590 INPUT "change: ",X$ : X=VAL(X$)
600 IF X<1 OR X>12 THEN 450
610 GOSUB 650 : GOTO 450
620 '
630 ' - - - -Enter Monthly Data- - - -
640 '
650 LOCATE X+5,5 : COLOR 2
660 PRINT MONTH$(X);SPACE$(23)
670 LOCATE X+5,15 : INPUT "= ",V$
680 'Test for valid response
690 VALUE(X)=VAL(V$)
700 IF VALUE(X)>=0 THEN 740
710 'Erase an invalid entry, retry
720 LOCATE X+5,16 : PRINT SPACE$(23)
730 BEEP : GOTO 670
740 RETURN
750 '
760 ' -Find MAX and Enter Y-axis Label-
770 '
780 FOR I = 1 TO 12
790   IF VALUE(I)>VALUE(MAX) THEN MAX=I
800 NEXT
810 LOCATE 20,1 : PRINT SPC(39)
820 LOCATE 20,1
830 INPUT "Enter Y-axis label "; L$
840 '
850 ' - - - -Draw Graph- - - -
860 '
870 CLS
880 SCREEN 1,0  'Medium resolution
890 COLOR 1,1  'Blue screen-CMW palette
900 DRAW "BM18,180U180" 'Draw y axis
910 DRAW "BM18,180R300" 'Draw x axis
920 LOCATE 24,4
930 PRINT "J  F  M  A  M  J";
940 PRINT "  J  A  S  O  N  D";
950 LOCATE 25,19 : PRINT "MONTH";
```

(continues)

editing techniques and commands are described in the PCjr BASIC manual in the "BASIC Program Editor" section.

Saving and Loading

After you finish typing the program, you are ready to run it. Before you do so, however, you should save, or store, the program on a floppy disk or a cassette tape. If you don't have a storage device, the program will work only as long as it stays in the computer's memory. If you load another program or turn the computer off, you'll have to type DATAGRAF again the next time you want to run it.

To save DATAGRAF, type the command SAVE" or press the <Fn> key followed by the function key <F4>. Then type the name of the program, DATAGRAF, and press <Enter>.

A stored program can be recalled by typing the LOAD" command or <Fn> and <F3>, followed immediately by the program name, DATAGRAF, and <Enter>.

Viewing the Program

After you load the program, you can run it or look at the listing. If you want to look at the program to review what you have typed or to make corrections, type the command LIST and press <Enter>. When you list DATAGRAF you'll notice that the listing contains more lines than can be displayed on the screen at once. If you want to stop the listing to look at part of the program, press the <Ctrl> and <Break> keys together.

```
960 LOCATE 23,2 : PRINT "0";
970 LOCATE 1,1 : PRINT STR$(VALUE(MAX))
980 IF LEN(L$)>17 THEN LN=4 : GOTO 1000
990 LN=12-(LEN(L$)/2)
1000 FOR I = 1 TO 22-LN      'Print
1010   LOCATE LN+I-1,2       ' label
1020   PRINT MID$(L$,I,1);   '  sideways
1030 NEXT
1040 'Determine graph scale
1050 SCALE = 180/VALUE(MAX)
1060 'Draw blank move to graph origin
1070 DRAW "BM18,180"
1080 'Loop to graph data
1090 FOR X = 1 TO 12
1100 ' Determine bar height
1110   HEIGHT = INT(VALUE(X)*SCALE)
1120 ' Draw a bar
1130   DRAW "C3U=HEIGHT;"   'Left side
1140   DRAW "R24"           'Top
1150   DRAW "D=HEIGHT;"     'Right side
1160 ' Fill bar with a color
1170 '    Don't fill small bars
1180   IF HEIGHT<2 THEN 1270
1190 '    First, move inside bar
1200   DRAW "BM-12,-2"
1210 '    Select next bar color
1220   C = (X MOD 3)+1
1230 '    Paint bar with selected color
1240   PAINT STEP(+0,0),T$(C),3
1250 ' Move over to draw next bar
1260   DRAW "BM+12,+2"
1270 NEXT
1280 LOCATE 2,1 'Move cursor below HOME
1290 X$=INPUT$(1) 'Wait for keystroke
1300 END          'to end program
```

Listing 1: *(continued)*

You can also use the LIST command to look at a specific section of the program. Type LIST followed by the line number that begins the section, a hyphen, and the line number that ends the section. LIST 300-500, for example, would display lines 300 through 500.

Making the Program Work

When you're ready to start drawing graphs, load DATAGRAF, type RUN, and press <Enter>. To give the program the information it needs to draw the graph you must give it an amount for each month. Figure 2 shows the screen as it appears when you enter monthly amounts. The prompt 'January =' appears at the top of the screen followed by the blinking cursor. Enter the amount and press <Enter>. Type only the number at this time. The program will prompt you to enter the units later.

The program repeats the enter-amount operation for each month until 12 months of data have been input. If you don't want to enter an amount for a month, for example if you want to make a graph for summer or winter months only, just press <Enter>.

After you enter the amounts for each month, the program lets you make corrections. If you're satisfied with the amounts that you entered, answer the question 'Are these values correct?' by pressing the Y key for "yes." If you want to make any changes, press N for "no." When you press N, you are asked which month you want to change. Choose the number of the first month you want to change and press <Enter>. Then type the corrected amount and press <Enter> again. Repeat the process until all your corrections are made. Finish up by answering Y to the question 'Are these values correct?'.

The program next asks you to enter the units for your data. The units depend on the data you record. You can enter any kind of unit, from dollars to gallons to kilowatts. The graph in Figure 1 shows therms, the unit on your monthly gas and electric bill that measures the amount of gas used to heat your home.

After you enter the unit, the final step is to press <Enter>. The program will then draw a graph of your data. DATAGRAF prints the units along the y-axis on the left side of the screen. At the top of

```
DATAGRAF

January   = 269
February  = 253
March     = 225
April     = 198
May       = 185
June      = 155
July      = 130
August    = 140
September = 167
October   = 203
November  = 235
December  = 257

Enter Y-axis label ? Therms_
```

Figure 2: A DATAGRAF screen with monthly figures entered

the y-axis the program prints the number for the largest monthly amount. That amount corresponds to the graph's tallest bar. To run the program again press any key and type RUN. The program starts over and once again asks you for the January amount.

You can apply the procedures you learn by running DATAGRAF to collect other useful programs printed in computer publications. While you type the DATAGRAF listing to add to your software library, you also learn BASIC.

This tutorial shows that typing program listings is like following a new recipe: you not only learn something about cooking, but you also get to enjoy the results.

Adrian Mello is an Assistant Editor for PC World Special Editions.

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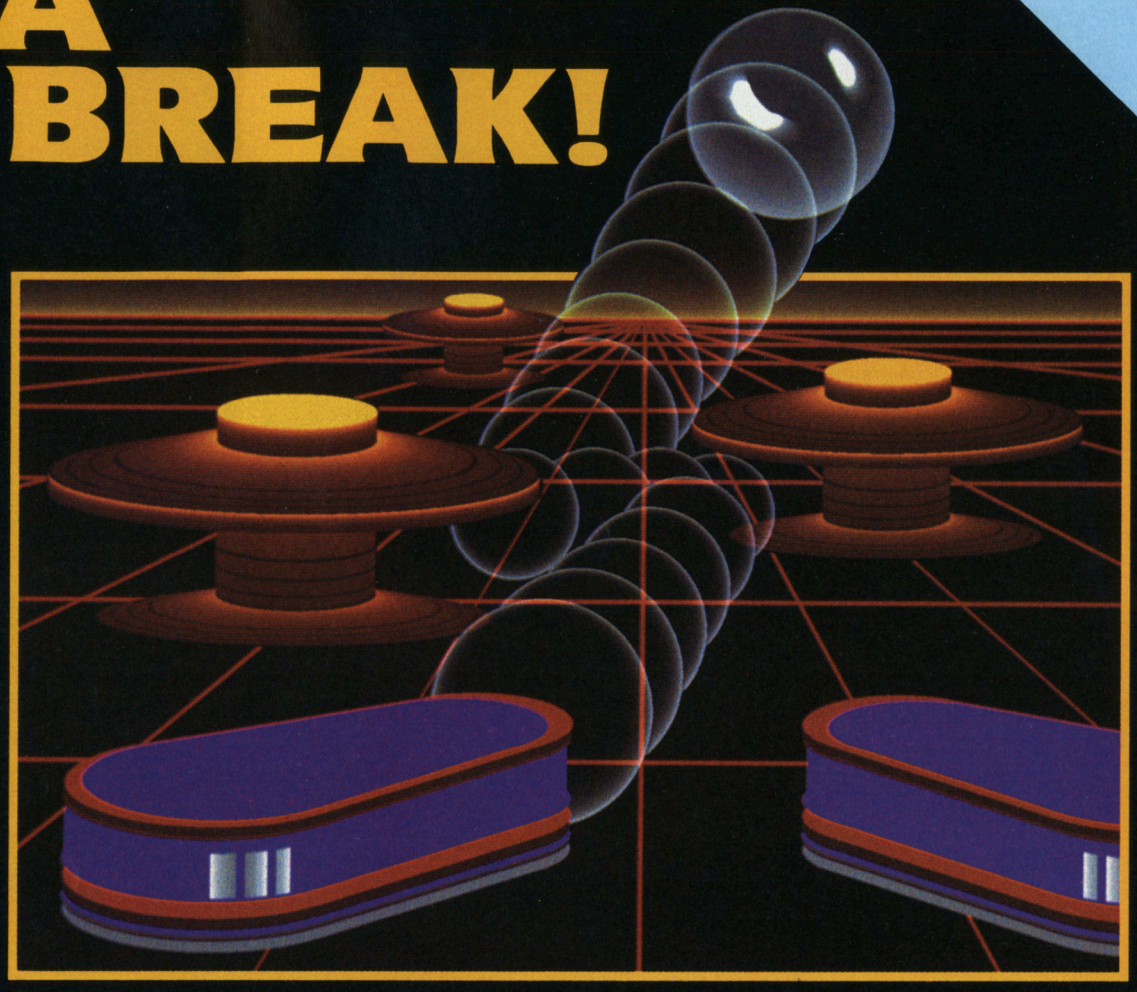

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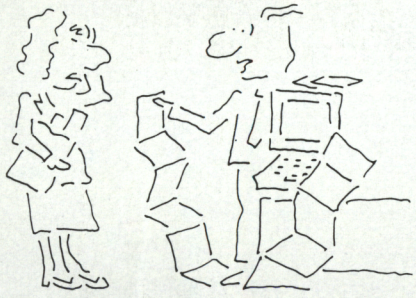

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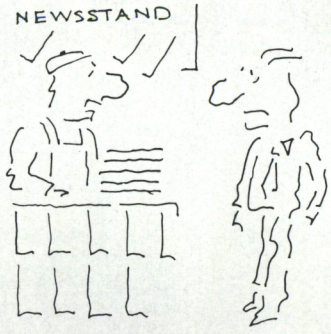

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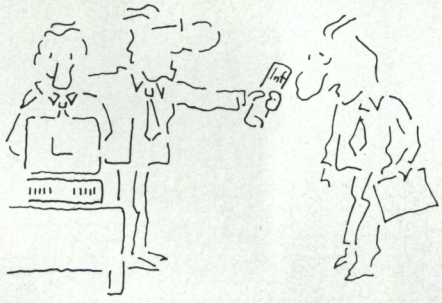

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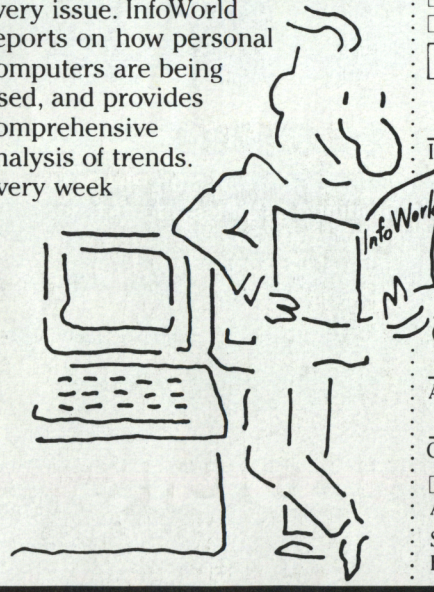

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