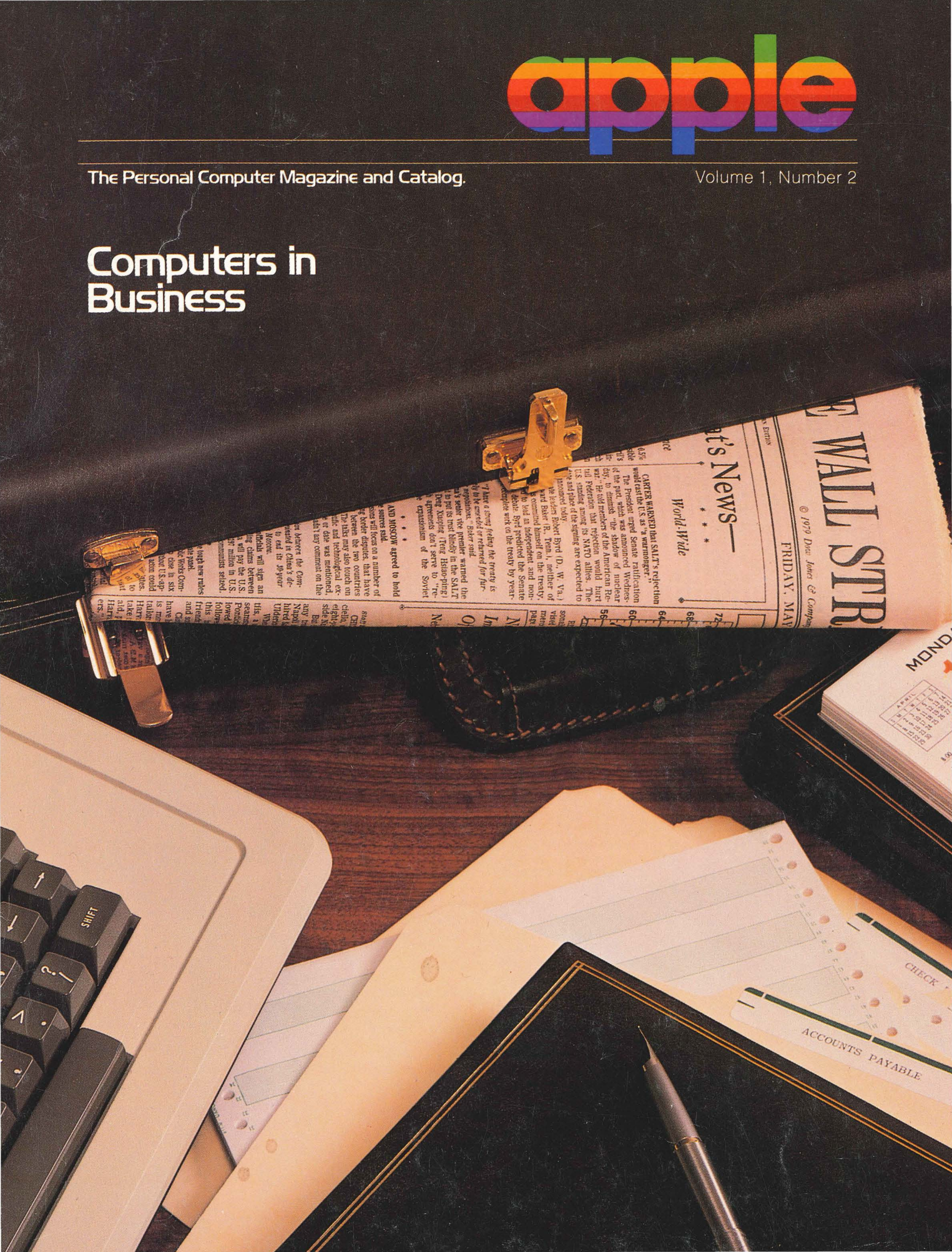
apple

The Personal Computer Magazine and Catalog.

Volume 1, Number 2

Computers in Business



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EDITORIAL

Getting Down To Business

Good new products tend to create new markets, and there is no better example of this in recent years than the personal computer. At first it was thought of only as a do-it-yourself "craze" made possible by low-cost microprocessor chips and other components which could be turned into a computer by knowledgeable hobbyists. The success of computer assembly kits created a market for fully assembled personal computers for less knowledgeable hobbyists. That's where Apple II came in.

Educators quickly recognized that these low-cost, easy-to-use systems could at last make computer-aided learning a reality, thus creating a new market.

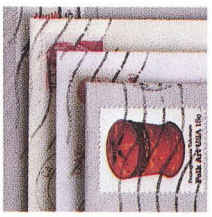
Now comes the business market. As recently as a year ago it was still being overlooked as a large market by many in the industry. Business users didn't agree, however, and began buying personal computers and finding their own ways to put them to work, learning to do their own programming if no existing programs would do the job.

This new market, created by the product itself with the help of business users who needed it, is an exciting and dynamic market because new applications are evolving daily. We have tried to reflect that excitement in this second issue of APPLE while also using it to tell the reader about some of our new tools for professional users, such as the Apple II Plus.

We have no doubt that these new products will quietly create new markets of their own, and we hope to hear about them from our readers.

—Walter Mathews

Table of Contents



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PERSONAL COMPUTERS IN BUSINESS: AN EMERGING COMPETITIVE EDGE

BY BILL LANGENES

Being competitive in business means getting important data quickly, when you need it. And this is what the personal computer does best of all.

Take, for example, a traveling insurance salesman who takes his personal computer in the car with him to keep customer and inventory information at his fingertips.

Or the senior partner in a Los Angeles law firm who calls his personal computer "my equalizer." His three-man operation uses the data and word processing capabilities of the computer to compete successfully in court with firms many times its size.

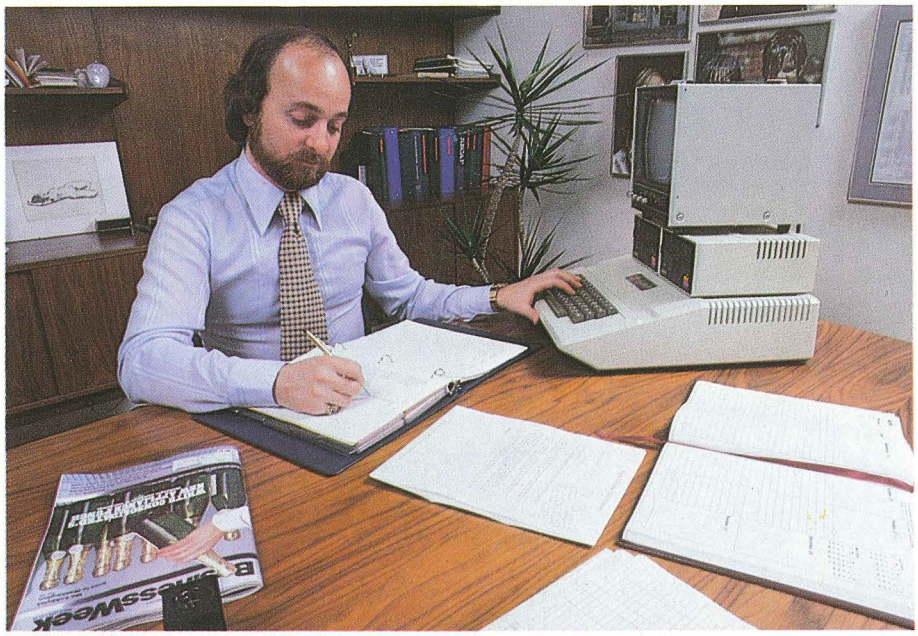
The chairman of the board of one of America's major industrial corporations has three personal computers that help him keep abreast of his company's diverse operations, while a financial analyst for a leading Wall Street investment firm uses his personal computer to keep his clients' portfolios.

These businessmen are the vanguard of a growing revolution being created by personal computers, which are bringing the power and efficiency of rapid data processing to small businesses and giving managers of larger firms "hands-on" access to business data when they need it.

Frankly, it is a revolution that is taking place faster than many of us in the personal computer industry really expected. Nearly three-quarters of a million business people are currently using small computers. They came into computer stores and made their purchases, all of which were originally identified in the "hobby" category. But, in truth, a large percentage of those hobbyists were business people learning to "do it themselves" so they could adapt the personal computer to their business needs.

As they did, they gained an advantage over their competitors who were still spending many man-hours on bookkeeping, record-keeping and report-making functions for which computers are so ideally suited.

Bill Langenes' professional involvement with personal computers began when he became Director of Marketing Communications for Byte, Inc. and then Associate Editor of *Computer Retailing,* the first retail trade magazine for the personal computer industry. He currently is with GRT Corporation as Director, Marketing Communications for the Consumer Computer Group, which is producing consumer-oriented application programs and system software for microcomputers.



Sharpening the Edge

Small computers are making new contributions to competitiveness by both increasing internal efficiency and improving customer service. A New Jersey industrial equipment distributor, Don Truesdell, discovered both benefits after installing his computer.

"For the first time in three or four years we were able to get each day's work done within a normal working day," he said. "Our computer has turned out to be an important sales tool as well. We can use the computer-generated product sales analysis reports to give our customers a comprehensive report on all the products they have purchased from us, which shows them we pay close attention to their requirements.

"The system also helps in our dealings with suppliers," Truesdell continued. "It gives us a good image, and they respect our operation. In fact, two of our leading suppliers have told us we are their most highly automated distributor."

Immediate results can often be seen from the use of a computer. An automotive parts warehouse installed a business system to handle inventory. In six months the inventory was reduced by $30,000 with no loss in effectiveness. Says the owner: "The computer more than paid for itself."

A South Carolina manufacturer's representative, Larry Kidd of CV Sales, Inc., found that his personal computer gave him more control of his managerial responsibilities, both financial and personnel.

"I feel that I know much more about the week-to-week progress of my business," Kidd says. He also wrote his own software programs—common among personal computer users—to produce semi-monthly sales summaries for his salesmen. "Now they know exactly what their customers are ordering . . . and so do I." Impressed with the possibilities of his computer, he says "I haven't yet begun to do what I can."

Personal Computer Characteristics

Business people have really just begun to discover the wide variety of uses for personal computers. And that is what makes these small computers so unique, especially in contrast with their larger cousins, the mainframes and minicomputers.

Unlike the larger business computers, which require a specially designed room environment and a data processing staff, a personal computer is designed to be used at an individual level. It is relatively inexpensive, can be as portable as a typewriter, fits on a desk or table with no special electrical or environmental control requirements, and doesn't need a data processing professional to operate it.

But, most important, a personal computer is easy to use. Nearly any person can purchase, install and operate his own. The only demand a small computer places on its owner is that he become involved, which isn't a problem judging from the thousands of business users.

The owner of a marine construction company had no computer or programming background when he bought a microcomputer. His first program handles cash disbursements, doing a week of clerical work in a day. His next program will standardize the bidding procedure to take out the guesswork.

An editor and freelance writer who exchanged his typewriter for a personal computer says: "At the risk of sounding overly enthusiastic, I honestly feel the use of a good word processing computer system will open up a whole new dimension for any writer."

A California psychologist, using his computer to administer and score personality tests, says: "No other group has as great a potential for microcomputer application as the private practitioners, most of all clinical psychologists."

Retailers are highly recommending personal computers too. Beverly Stereo and Electronics, a Los Angeles stereo store, has tightened up its operation with programs for payroll, general ledger, sales entry and inventory. To boost sales, it uses the word processing and mailing list capabilities for producing direct mail advertising. "At the price these things sell for," owner Harry Margulies says, "any retail store with more than three or four employees could use a computer. Maybe 40 percent of them could really profit from one."

Small Computers in Big Business

For the small businessman, personal computers mean that he can economically have access to the same kind of operating and accounting information previously available only to his larger competitors. Within large companies the small computer has opened up new capabilities for department heads and for managers at their individual locations.

It is within big business that computers are truly earning their "personal" dis-

"In six months the inventory was reduced by $30,000 with no loss in effectiveness . . . The computer more than paid for itself."

tinction. There are no programmers and no operators to go through to obtain computer-stored information. Managers themselves can get the information they need when they need it.

Deere & Company is finding that line managers want their own computers. At Ford Motor Company the treasurer's office uses three small computers. The marketing manager of a multi-million dollar California corporation keeps a personal computer beside his desk to help him analyze market data and develop plans.

Sometimes it is competitive pressure that motivates business people to computerize, as was the case of a printer. When he found that a competitor was using a programmable calculator to estimate printing bids, he went out to buy his own calculator. But he discovered wisely, that he could buy a microcomputer for not much more money and have an enormously more versatile machine capable of producing bids as well as handling general accounting.

Dollars and Sense

Obviously it doesn't take an accountant to figure out the benefits of a small computer in terms of dollars, but accountants have been some of the first effective users to enjoy the benefits.

One accountant who prepares about 1,500 tax returns annually switched from a computer service bureau costing $18,000 annually to his own microcomputer for a total one-time cost of about $11,000. It paid for itself in one tax season and is helping him prepare general ledgers for his clients all year long.

A recent analysis of the economics of small business computer implementation projected that an investment in a personal computer could, in some cases, cut manpower requirements in half and increase gross profits from 2 to 10 percent. Another way of looking at return-on-investment is to say that a personal computer would pay for itself if all it did was save 20 percent of the time of one employee for a year, which is a modest expectation indeed.

Before you go running, checkbook in hand, to your computer store, make sure you realize that no $600 computer is going to do all these things for you. In fact, some $6,000 systems might not do all of them efficiently. You should become a knowledgeable buyer and make certain you understand the system you look at. Its computing power shouldn't be too limited for your needs, and either software should exist for your purposes or you should find out how to get the assistance you need in programming the system.

The Business User's Needs

What are the special needs of the business user?

Software is certainly at the top of the list, and both manufacturers and independent software houses have reacted quickly with many new "canned" application packages.

There are also hardware considerations, some of which are discussed in this issue of APPLE.

Hardware expandability is a must. The business system should accept peripheral equipment, such as printers and disks, which are essential. The same system in other applications may require speech recognition capabilities, greater memory capacity, interfacing with a computer network, and so on.

Business system shoppers should also carefully check out the computer retailer to be certain the dealer can provide the training and after-sale service that are necessary for full utilization of the system.

Can you benefit from the use of a personal computer system? Only you can determine that for sure. Certainly current users provide a broad sample. The availability of low-cost computer power has led International Data Corporation, a leading computer industry market research firm, to predict that virtually any organization having $500,000 in annual sales will require a computer or computer services during the next few years if it is to improve its efficiency and remain competitive in the marketplace.

That's why the personal computer can truly be called "An emerging competitive edge."

NEED BETTER FINANCIAL PLANNING? YOUR PERSONAL COMPUTER CAN HELP

BY ART GARCIA

All of us do personal financial planning most of our lives, whether we realize it or not. It may be no more extensive than trying to figure out how to squeeze $1500 in monthly expenditures out of $1200 spendable income, but it is still financial planning.

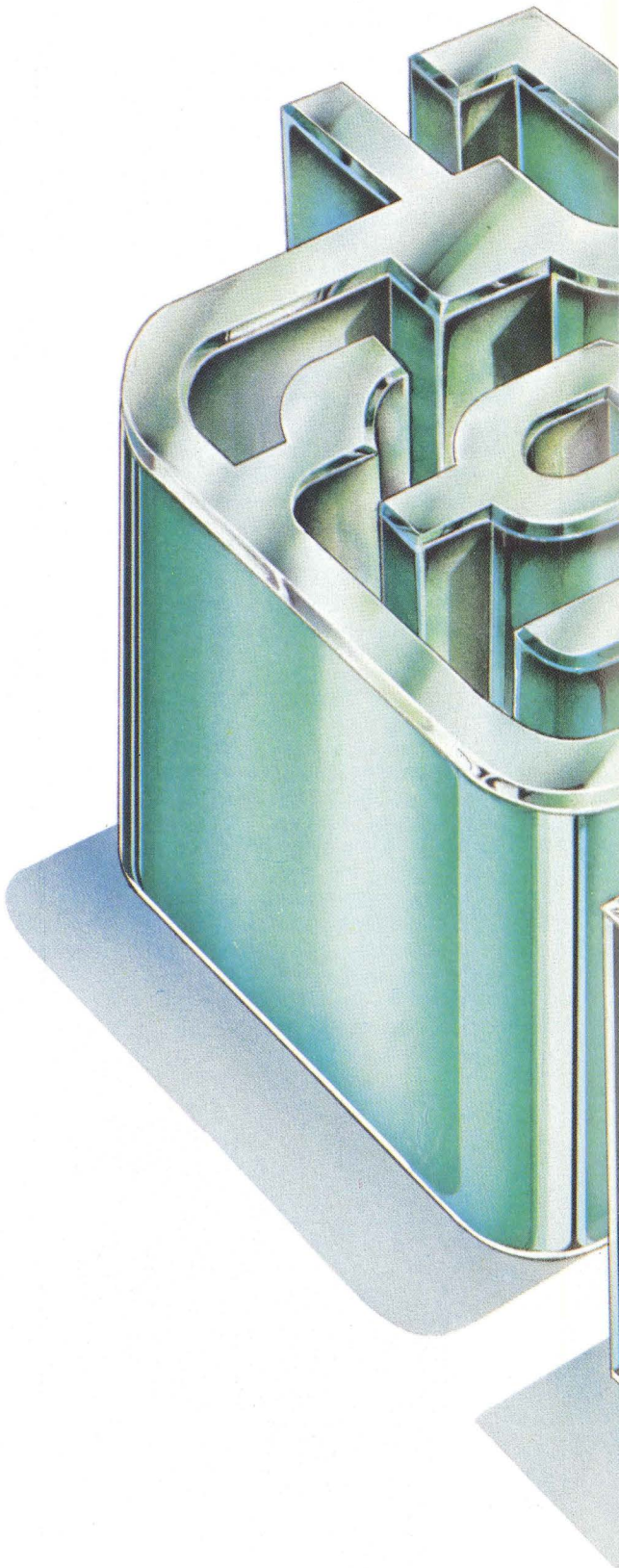
The problem is that too few people devote the time to financial planning that it deserves. That's why the personal computer offers hope for those who don't plan ahead well enough. It also offers a way for those who already plan ahead to do it even better.

No matter why you bought—or are considering buying—a personal computer, don't overlook the role it can play in financial planning both for your company and for you as an individual.

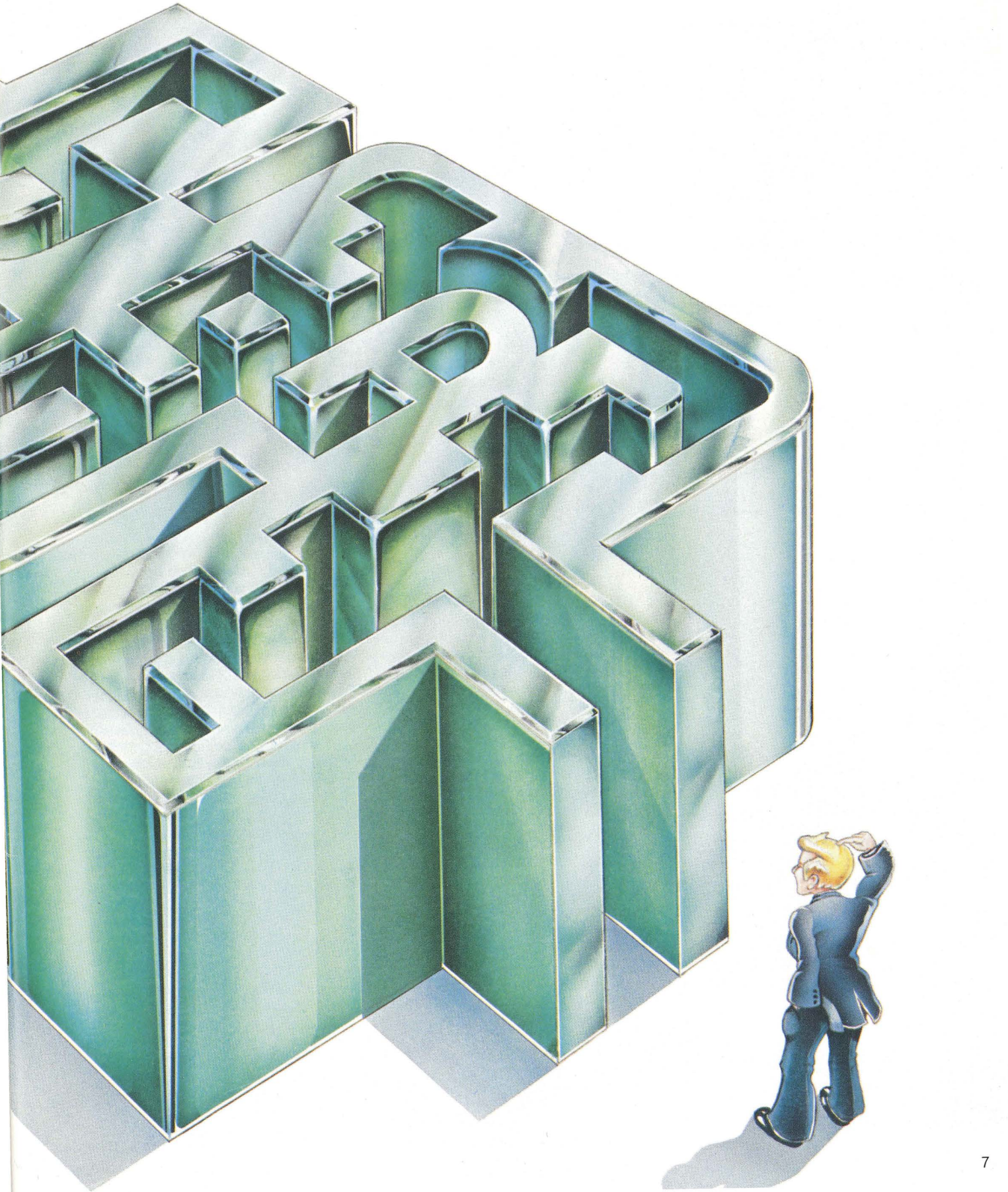
Because inflation is pushing most of us into higher tax brackets, experts agree that laying out a financial blueprint during our productive years will help provide financial protection in our retirement years. With the dollar purchasing only a fraction of what it bought 10 years ago, they say it pays to map out a program that takes into account what the dollar will buy 10, 20 or 30 years from now.

Once thought of as something for only the wealthy, long-term financial planning is important for persons at all income levels and is especially crucial for those earning $20,000 and up yearly.

"I've seen many executives earning $50,000 to $200,000 a year who spend every dime they make," reports Dr. Frank Scott, Chairman of Oakland Financial Group in Aptos, California, and a widely known financial planner who relies on computer analysis for his clients.



Art Garcia, former editor of California Business, *now contributes regularly to many magazines on business topics.*



"THE PERSONAL COMPUTER NOT ONLY PERMITS THE HOME USER TO KEEP A CLOSER WATCH ON SPENDING AND INVESTMENTS, BUT ALSO REDUCES THE COST AND UNCERTAINTIES OF RELYING ON THIRD PARTIES OR ADVISERS."

"They figure that as their careers rise, so will their salaries, and they count on their company benefits to protect them and their families in case of disability or death," Scott says. "They're convinced they'll always continue earning more money, so they'll invest tomorrow, not today." It's a familiar trap, especially when most of us would prefer leisure or family activities to fretting over investment plans, trust funds, and tax forms.

A good financial plan helps an individual identify his resources, goals, and risk attitudes, weaving them into an overall scheme that allocates and manages cash to meet future needs. Can this be a task for a personal computer?

"The personal computer is an ideal tool for personal financial planning," says Phil Roybal, Apple's Manager of Product Marketing. "It can act like a financial planning consultant, asking you questions about your financial needs and responding with a recommendation or plan. What kind of life insurance do you need and how much? Should your estate plan include a trust fund? What investments will insure college educations for your children? How can you reduce your tax payments? How much money should you keep tied up in checking accounts? With the right software programs, a personal computer can easily help resolve these issues," Roybal says.

RE International Systems in Los Angeles has developed a planning system called KISS (Kompact Insurance Sales Systems), which is based on the Apple II Computer. "We sell the system primarily to financial planners," says Mark Malovany, Vice President. "Working with their clients, they can quickly and easily determine insurance and retirement plan needs. The Apple II has been invaluable in helping these clients become more financially sound."

Personal computers can also be used to obtain investment information directly from another computer, as with Apple's Dow Jones Series (see inset). From your home you need only dial a local telephone number and plug the phone headset into an Apple peripheral. Your Apple then talks directly to the other computer, obtaining stock prices and other information. MJK Associates in Santa Clara, California, maintains commodities prices in a large computer data base, allowing Apple owners to "tap into" it for up-to-the-minute prices. "By using his computer the serious investor doesn't have to bug his broker every day for commodities data," says Michael Marriott, President of MJK. "The

Apple allows him to keep track of where he is in gains and losses on a day-to-day basis."

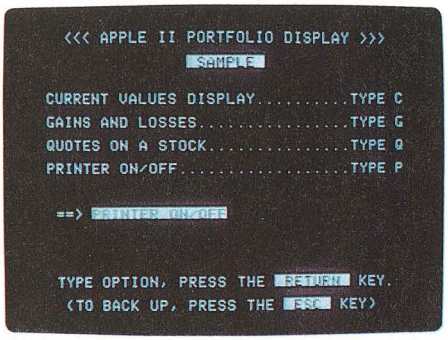
Many personal computer owners have found that they no longer need to rely on financial planners for consulting advice. "The personal computer not only permits the home user to keep a closer watch on spending and investments," says William R. Clabby, General Manager of Dow Jones News Services, "but also reduces the cost and uncertainties of relying on third parties or advisers." The user, in other words, becomes more of a master of his own fate.

In addition to home users, several professional investment analysts have caught the personal computing bug. A good example is Ben Rosen, Vice President of Morgan Stanley, the prominent New York investment firm. "I use an Apple to make earnings forecasts for the companies that I follow," explains Rosen. "I take the balance sheets and income statements from a firm's annual report and put them directly into the computer. Then I use the computer to massage the data." According to Rosen, the benefits of using the personal computer for financial planning are many-fold. "It frees me from doing complicated calculations. Instead, the Apple does them, without errors. I can perform sensitivity analysis, varying items like the tax rate to see how my assumptions affect the financial estimates. I don't have to use pencil and paper anymore," adds Rosen.

In the past few years, there has been a surge of banks, accounting and brokerage firms, insurance companies and independents jumping aboard the financial bandwagon. Their fees for asset management and financial analysis range from $6,000 and up for those with hefty net worth, down to $200 or less for basic programs.

Do you need those services? That depends upon your own individual situation. But chances are with a personal computer you can work up an effective do-it-yourself financial planning program.

For prudent individuals there's no better time than now to heed Abraham Lincoln's sage advice: "The future belongs to those who prepare for it."



DOW JONES AND APPLE

Working in conjunction with Dow Jones News Services, Apple Computer software specialists have developed a group of computer programs called the Dow Jones Series. The programs in this series make it possible for Apple to receive Dow Jones News stories and stock price quotations from computers in New Jersey via a *local* phone call. One of the programs—the Portfolio Evaluator—allows an Apple owner to analyze stock portfolios for gains and losses once stock prices have been "fetched" from Dow Jones. (The video display shown at left shows the Portfolio Evaluator in progress.)

To get an idea of how the Portfolio Evaluator works, imagine yourself being an investor living in California. The New York Stock Exchange opens while you are still asleep. With the proper peripherals, the Apple II can automatically telephone Dow Jones while you sleep and fetch the morning's new stock prices right from New York. These prices update your portfolio on the Apple floppy disk, and the Apple II automatically hangs up the telephone. Then, while you are eating breakfast, the Portfolio Evaluator summarizes your gains and losses and puts them on the screen for you to see.

APPLE MEANS BUSINESS

STAFF WRITTEN

In the short time since personal computers have come on the scene, manufacturers have been working at breakneck speed to keep pace with the new markets and applications that are constantly emerging. Microcomputer kits for hobbyists, who had to assemble and program the computers, grew into fully assembled personal computers on which ordinary folks with no programming background could have fun playing games and balancing checkbooks.

Soon, however, a trickle of business people and professionals recognized the potential for using their personal computers to solve work-related problems. Today that trickle has turned into a roaring river, establishing the personal computer in its new role as a business system.

A large percentage of Apple II computers are now sold for use in businesses, according to Trip Hawkins, Apple's Manager of Business Marketing. "The Apple wasn't originally intended to be a business computer, and in our marketing efforts we certainly haven't

advertised it as such," Hawkins says. "But our customers have figured out for themselves that the Apple II is so reliable and powerful for the price that they can use it to help solve serious business problems."

Having observed this trend in the marketplace, Apple Computer has given top priority in recent months to developing better products and services for business customers. The results of this new emphasis are now beginning to reach the market.

"The total package of products and service that we offer to business customers is much stronger now," explains Hawkins. "For example, with our new model, the Apple II Plus, you have the ideal foundation for a professional user to get started with. It has an extended BASIC language built in, thus making more sophisticated arithmetic calculations possible. It also has a special 'chip' that makes the Apple operate as a 'turnkey' system. That simply means application programs such as General Ledger start automatically when the computer is first turned on."

In addition, the Apple II Plus provides the primary building block around which the serious user can construct a larger system as his needs change. As with the original Apple II, the ability to expand is an important plus for the business user who doesn't want to outgrow his equipment. "Many other microcomputer companies have been unable to design their products with expansion in mind," Hawkins claims. "As a result, although you may pay less initially than you would for an Apple, you will find that your future needs require special expansion boxes, extra power supplies and cables, and so on. Apple has eliminated this problem."

"It's amazing how quickly relative novices become solid programmers and learn to apply the Apple to their unique problems."

Another important consideration for expansion is a computer's capacity for being able to operate in different languages. Say, for example, a businessman wants to run a program that's written in the powerful new language PASCAL (see inset). Most microcomputers can handle only one language, which limits their usefulness. Apple, however, has developed a special "Language Card" which, when plugged into any Apple II, allows a PASCAL program to run. This card also

allows use of Apple's two other languages, Integer BASIC and APPLESOFT II BASIC, a language that any businessman or professional can use for writing his own programs.

"It's amazing how quickly relative novices become solid programmers and learn to apply the Apple to their unique problems," says Hawkins. "But, still, it is our ultimate goal to eliminate the need for a customer to do his own programming."

Toward this end, Apple now offers the Apple II Plus Business System, a "turnkey" configuration consisting of both hardware and business applications software, selling for a retail price of $4,995. Included in the system is an Apple II Plus with 48K bytes of RAM memory, two disk drives, a video monitor, impact printer, and business software.

"Because the computer is so small, the customer can just carry it in to the local service center. It will then either be repaired on the spot or exchanged for a working unit through our Module Exchange Program."

The software system consists of General Ledger, Accounts Receivable, and Accounts Payable packages. Other packages are available as options.

"We've taken a long time to get this product to the market, because we wanted to do it right," Hawkins points out. "Many computers have been touted as 'small business systems' without being up to the task. This has made the business market very skeptical about microcomputers. We at Apple believe that this system is the first legitimate small business computer available for less than $5,000."

Who can use the Apple II Plus Business System? "There are two primary types of customers," Hawkins claims. "A small business, probably one with less than $2 million in annual sales, can use the Apple to automate many of its accounting procedures. The system allows a small businessman to better control his cash flow, reduce paperwork, produce reports and summaries automatically, and even print checks and invoices." The second type of customer, Hawkins points out, could be in any kind of organization including major corporations. "These

New Benefits for the Professional User*

Recent additions to the Apple II product line have been designed with two goals in mind: make the computer "friendlier" and easier to use, and enhance its ability to solve problems for the serious professional user. In addition to the Apple II Plus, the new products outlined below all contribute to making the Apple II the most sophisticated microcomputer that a professional can own and use today.

TURNKEY OPERATION: A plug-in Auto-Start ROM part makes the Apple easier to operate. That simply means that when the Apple is first turned on programs will run automatically without requiring any special commands.

TOTAL COMPATIBILITY: With the plug-in Language Card any Apple can be expanded to contain up to 64,000 bytes of RAM memory. This expansion allows the use of any of Apple's three programming languages (Integer BASIC, APPLESOFT BASIC, and PASCAL), thereby making it possible to use any program or application designed for the Apple II.

TIME AND DATE CAPABILITY: The plug-in Apple Clock and Calendar Card allows the Apple II to keep track of the time of day, thus making it possible to preprogram or time activities.

CHOICE OF APPLICATIONS: Business programs, including The Controller, Apple Post, Point of Sale, and Portfolio Evaluator, provide the business user with better tools for managing money and information. Also offered is the new Disk Utility Pack, including an improved disk operating system and an extensive, easy-to-use manual.

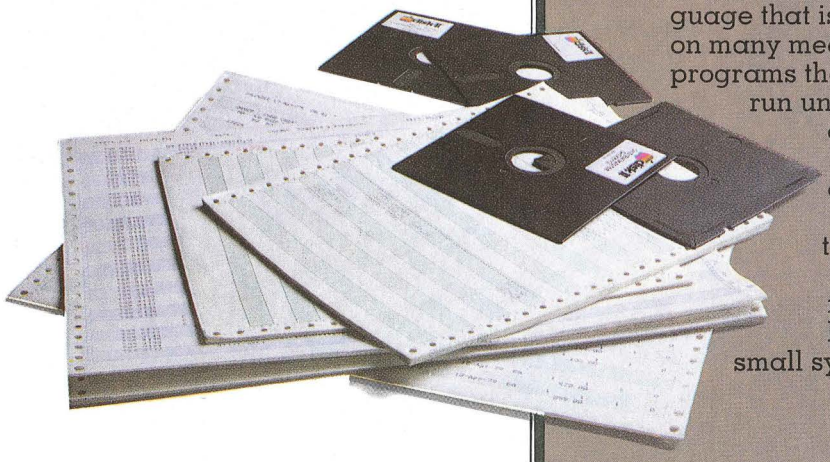
*For a more thorough explanation of these and other Apple products, see the product catalog starting on page 24.

customers look at the Apple II as a business tool for solving specialized problems. The Apple won't run the entire business, but it can tackle some pretty large problem areas, such as forecasting and record keeping."

Hawkins notes that hardware and software alone will not satisfy the business customer. "He also expects top quality service. For example, if the computer breaks down when he is printing invoices or checks, waiting even a few days to fix the problem can put him out of business." In order to remedy this situation, Apple has developed an Authorized Service Center program. Selected dealers have been trained and certified to operate the service operations, 50 of which will be in place throughout the country by mid-summer.

"Each center is stocked with a complete replacement inventory," explains Hawkins. "Because the computer is so small, the customer can just carry it in to the local service center. It will then either be repaired on the spot or exchanged for a working unit through our Module Exchange Program." By year end, Apple expects to have more than 100 of these walk-in service centers nationwide.

A growing number of businesses, both large and small, are discovering that personal computers are valuable tools for improving productivity, information flow, cash control, and overall management performance. "Although the Apple II Plus won't do everything a large business computer system will do, the relative price is so low for the problems it can solve that it has created an entirely new category of cost-effective business equipment," says Hawkins. "For this reason, we prefer to think of the Apple II Plus as a new small system for business."



WHY PASCAL?

JEF RASKIN EXPLAINS . . .

PASCAL is *the* up-and-coming computer language. Besides being available on many computers, both large and small, a version of PASCAL has been adopted by the Department of Defense as this country's standard language for new program development in the government.

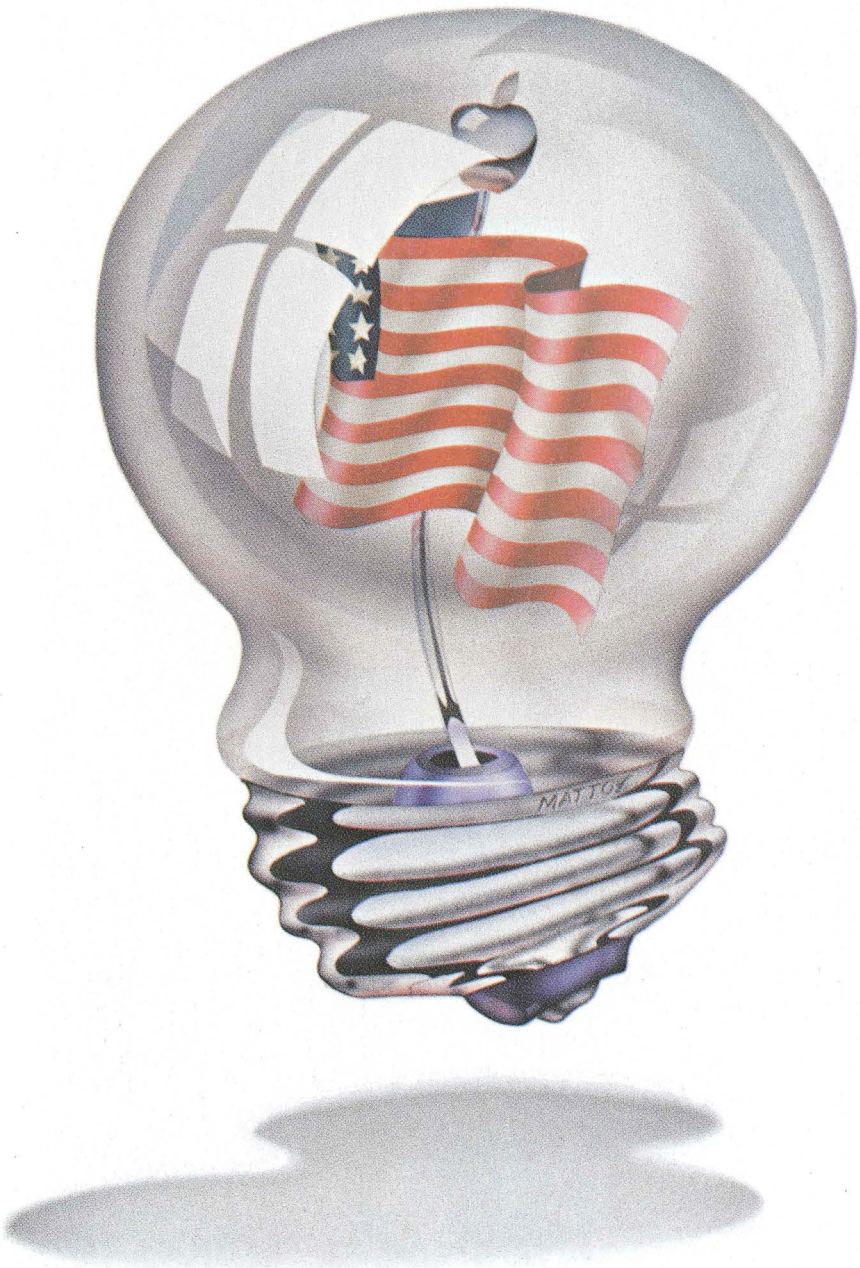
PASCAL's popularity is not due to whim or fashion but rather is a consequence of its powerful structure and data types and its clear readability.

For the business user, having PASCAL on the Apple II means that programs will take less space to run, will run faster, and cost less to create and modify (compared to, say, a program to do the same task in BASIC). Whether the user writes the programs or has them written, these advantages will save both time and money.

Much modern equipment is designed in a modular fashion, so that a technician need only replace a defective module to repair a malfunctioning device. PASCAL allows the same technique to be applied to programs. This means that a PASCAL program is more reliable and more responsive to changing needs than is a comparable program in BASIC.

The PASCAL available on the Apple II is not a mini- or micro-PASCAL. It is a full-fledged language that is identical with the PASCAL found on many medium and large computers. PASCAL programs that are written on the Apple II will run unmodified on many other computers and vice versa. In addition, Apple's PASCAL has extensions that allow easy use of the Apple II's graphics, analog inputs, and sound generation capabilities.

With PASCAL, the Apple II is much more than just an excellent hobby or home computer. It is also a serious small system for the computer professional.



A SALUTE TO YANKEE INGENUITY

America's inventive independent businessmen are using imagination to get more than they bargained for from their personal computers.

BY TERRY BERKE

Call it enterprise, call it "Yankee Ingenuity," or just chalk it up to good old American greed. Whatever you call it, the businessmen who are buying personal computers all over the country are astounding the experts by finding inventive ways of getting more out of the computer than routine business tasks.

For example, there's National Presort of Tulsa, Okla., which uses an Apple II in a machine that can sort by zip code 12 envelopes per second—the fastest such machine in the country. Core Labs of La Place, La., uses an Apple II-based system to monitor oil drilling operations. They claim it cuts costs by 15 percent, while improving rig safety.

This series of brief profiles focuses on five individuals whose experience might lead other users and potential users to apply the same imagination when it comes to harnessing the power of personal computers.

Terry Berke, a former communications specialist for the American Electronics Association, is a freelance writer specializing in high-technology subjects.

Dr. Nicholson's "Magic Dental Charts"

Dr. J. H. Nicholson, a dentist in Dallas, Texas, recently bought a personal computer to help out with office management functions such as payroll, billing and supply records.

With those routine programs easily accomplished, the enterprising doctor turned to his Apple II to help him bring patients back to his office on schedule. Now he's going a step further and devising a program to help make those office visits a little less intimidating.

Dr. Nicholson previously used a manual patient reminder system, but early this year he decided to check out the effectiveness of the system and was astounded by the results. In 1978 alone, a flaw in the system dropped over 90 patients from the recall process. Until then, he had assumed these patients either ignored their six-month reminder notices or had taken their business to another dentist.

The Apple II was programmed to see that reminder notices were mailed on time, and a follow-up mailing to those 90 "lost" patients produced new appointments for over 80 percent of them.

The greatest challenge for the system lies ahead, however. Dr. Nicholson and a software specialist are now devising a high-resolution graphics system on the Apple II. They hope it will lessen the anxiety caused by the nation's most disagreeable chore—visiting the dentist.

When fully operable, the system will enable Little Johnny to see a depiction of the "ideal" mouth with molars, bicuspids, incisors and the like lined up in perfect curvature.

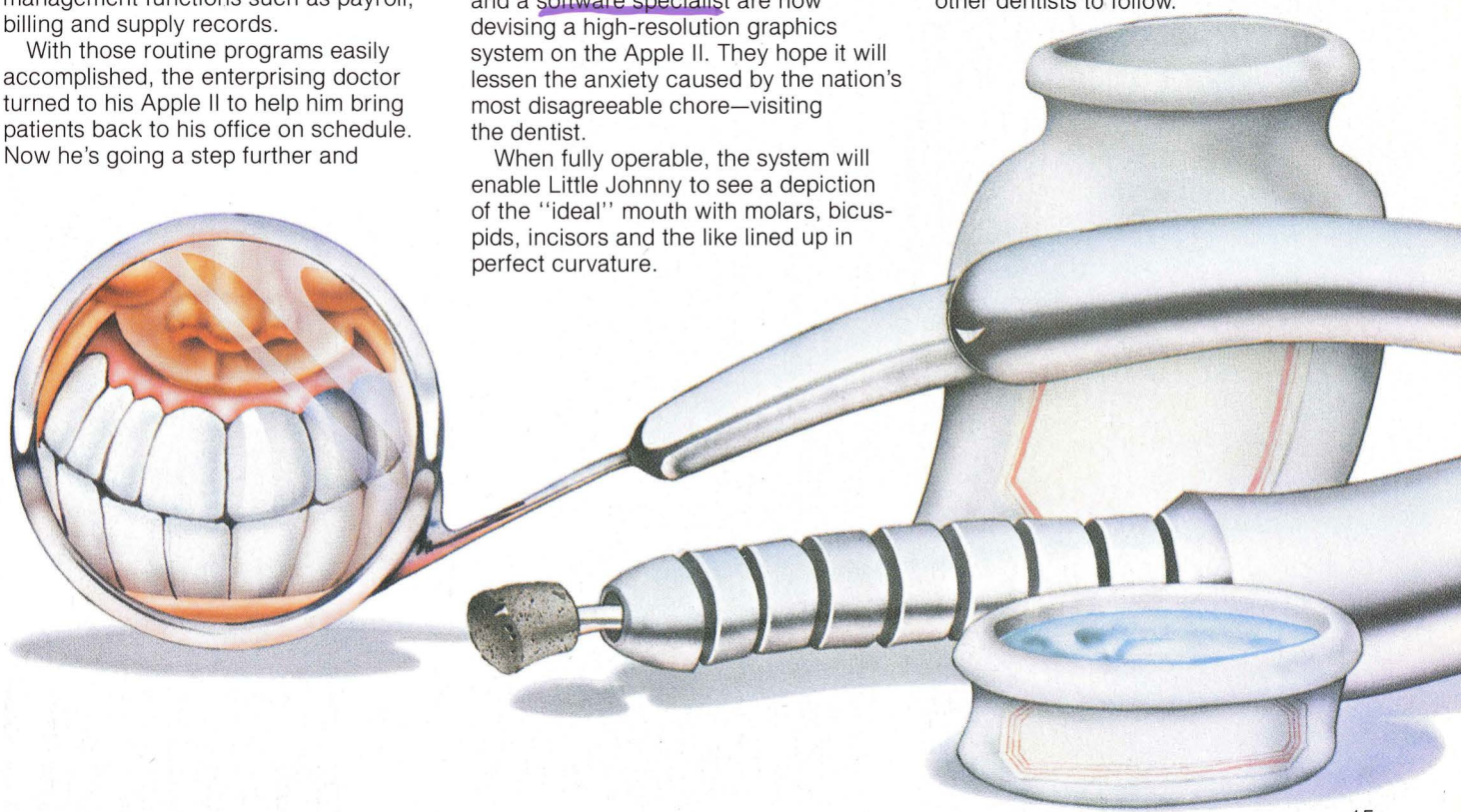
The Apple will then show Little Johnny his own mouth—less than perfect but still his—adding cavities, fillings, bridgework, extractions, etc., all color-coded to help the dentist explain what has been done, what needs to be done, and, hopefully, why it won't hurt a bit.

Admittedly, the graphics can't numb the pain. Dr. Nicholson believes, however, that they can help the patient to relax.

"The visual picture will be something they can relate to," he explained. "It should help put them at ease. At the very least, it is sure to get their attention.

"You mention the magic word 'computer,' put their chart on the screen, and they're going to watch, listen and, if they have any questions, ask them."

Dr. Nicholson and his "magic dental charts" may well become a hard act for other dentists to follow.



Jim and Kay Weir Reinvent the Wheel

A bilingual Apple II has taken a giant first step towards reinventing the wheel—or at least its first cousin, better known as the tire.

Retreading tires has traditionally been at best an imprecise procedure, relying on a trained eye to match a used tire to a proper size mold. That's changed, thanks to Jim and Kay Weir and their Matrix Selektor—a machine which utilizes an Apple II to make the perfect match.

The result is a better, safer tire, with a longer tread life.

"With the help of the Apple," Kay said, "we're making retreading the precision operation it has to be to succeed." The Matrix Selektor may also have applications for new tire manufacturers, but for now the Weirs are busy working with retreaders eager to try out their revolutionary device.

The Selektor is easy to use, and communicates in either English or Spanish. An operator mounts the used tire on the machine, which then measures its size, and identifies which mold in the shop (if any) should be used for the retreading. The Apple II then monitors the buffing, and shows the operator when the tire has been buffed down to acceptable parameters.

Their machine was conceived in 1977 during an informal gathering at the National Tire Dealers and Retreaders Association, which eventually helped finance the research and development costs. Kay explained that other attempts had been made to perfect this mold matching and buffing process, but none succeeded until the computer was applied.

Jim and Kay have been in the tire business for over 30 years, but stopped working fulltime in 1960 to do only occasional consulting work. Their invention has now ended that retirement in a big way, as they strain to keep up with the demand for their new product. So far they have manufactured and installed four systems. Their company, Tire Devices in Culver City, Calif., "is inundated with calls and letters from around the world."

Developing the Matrix Selektor was the Weir's first introduction to computer technology. Though they received programming help from Bob Bishop of Apple Computer, they also spent endless hours matching wits with each other and the Apple II in a variety of computer games. It was, they felt, the only way to really get to know their new business partner.

Wilbur Andrews Traveling Insurance Data Base

When Wilbur Andrews first heard about personal computers, he knew instinctively that he could use one to help him better manage the large territory he covers for Pilot Life Insurance Company.

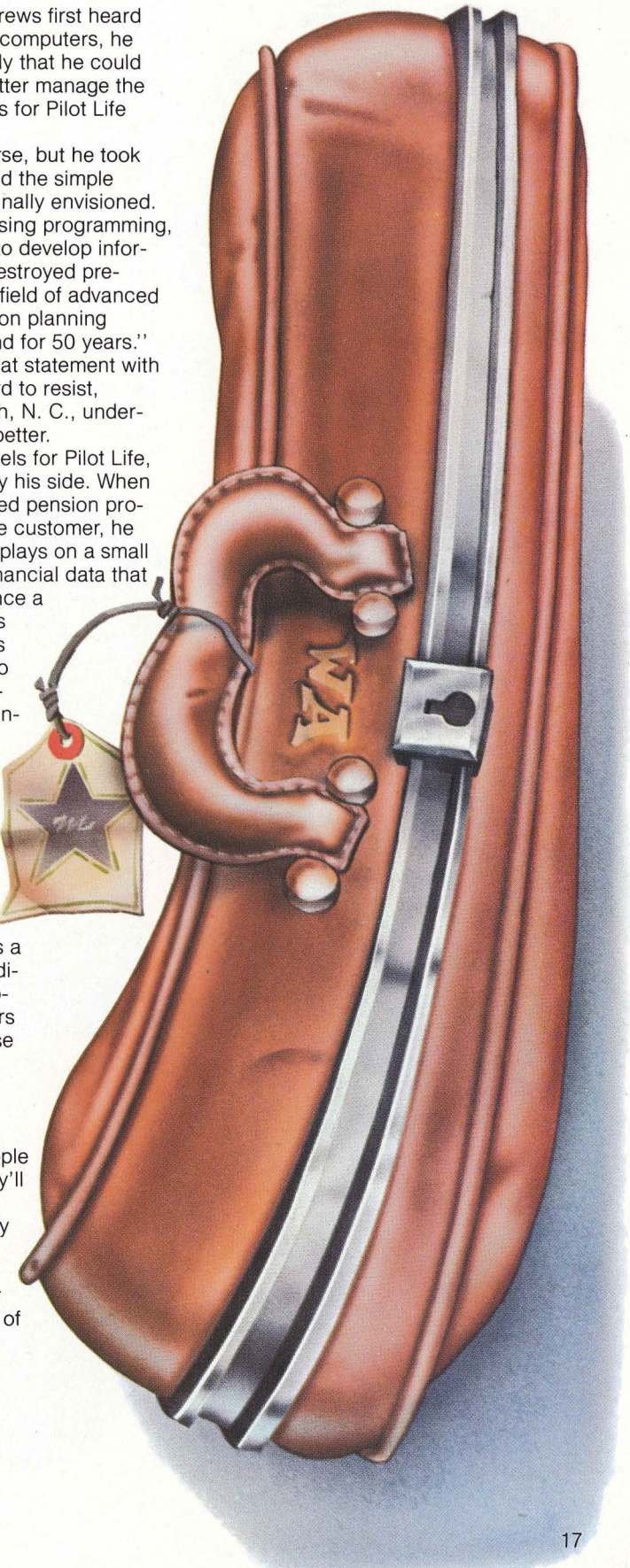
He was right, of course, but he took his computer far beyond the simple record keeping he originally envisioned. Out of his own enterprising programming, he used the computer to develop information he feels "has destroyed preconceived ideas in the field of advanced underwriting and pension planning which have been around for 50 years."

Because he backs that statement with data his clients find hard to resist, business for the Raleigh, N. C., underwriter has never been better.

Wherever Wilbur travels for Pilot Life, his Apple II is usually by his side. When discussing a complicated pension program with a prospective customer, he gets in minutes and displays on a small monitor the complex financial data that used to take weeks. Once a company has joined his client list, the Apple II is used at presentations to show the workforce exactly what their new pension plan offers.

Wilbur taught himself programming because of the diverse financial planning needs of his clients. "They range from farmers to broadcast executives" he said. "It takes a computer, and often individual programs, to provide the difficult answers and handle the immense volume of data we deal with."

Will other underwriter's follow this lead and begin using the Apple II as a sales tool? "They'll have to," he said, "because I believe anybody in my business who doesn't have access to a personal computer in five years will be out of business."



Jeff Leep's Leap from Engineering to Women's Clothes

Jeff Leep came out of Stanford University with a degree in engineering. Then he decided retailing sounded more interesting and, with partner Sandy Harper, became involved in the J. B. Harper women's clothing stores in Northern California.

It was natural, therefore, for Jeff's engineering bent to lead him to computers when the growth of the stores created enormous paperwork associated with order entry, inventory control and merchandise forecasting. He turned to Stanford, where he was able to use time on a large computer to reduce the paperwork and forecasting problem while he waited for a personal computer to come along that he felt was equal to the task.

A year ago Jeff bought an Apple II, but could find no software suited to the unique requirements of retailing. He sat down and wrote his own order entry program, which now keeps track of all orders placed with his suppliers and then manipulates that information in a variety of ways at his command. The system will tell him, for example, total orders in a number of categories of merchandise, which orders have been received and which are still outstanding.

"Just before we go to market," Jeff said, "we have the system produce all this information on nice, simple forms that fit neatly into a notebook, using our high-speed printer. All the information we need is right there, in order, and very accessible."

Jeff and Sandy also use the Apple II to determine which merchandise to order in any given month.

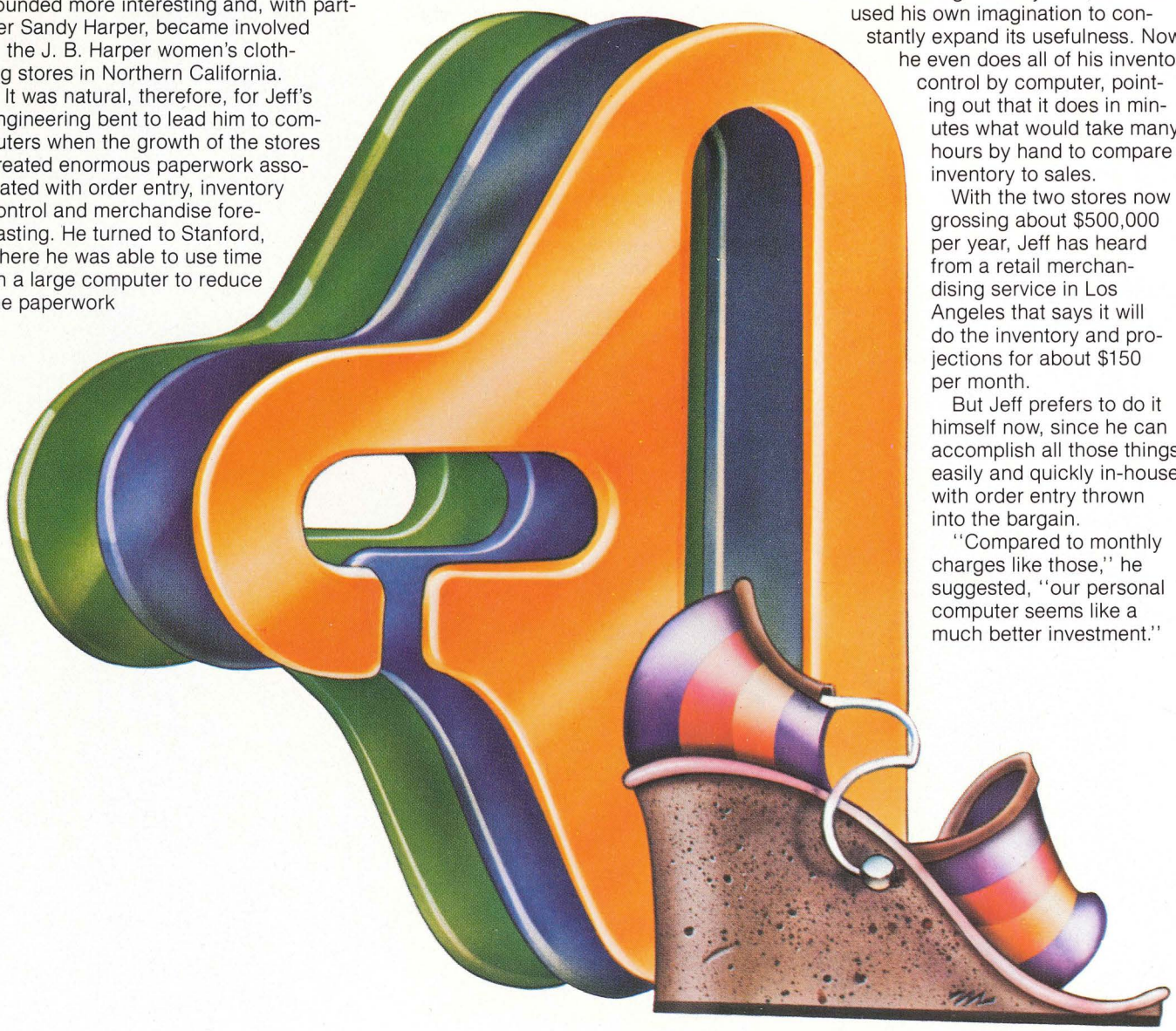
"I make sales projections, put this information into the computer, and then have the computer make adjustments as circumstances change. If I think we're going to sell more shoes this month, I hit the right button and out comes a report giving me revised order information based on what we expect to sell. These calculations, which the computer does in fifteen minutes, would represent an entire day's work by hand."

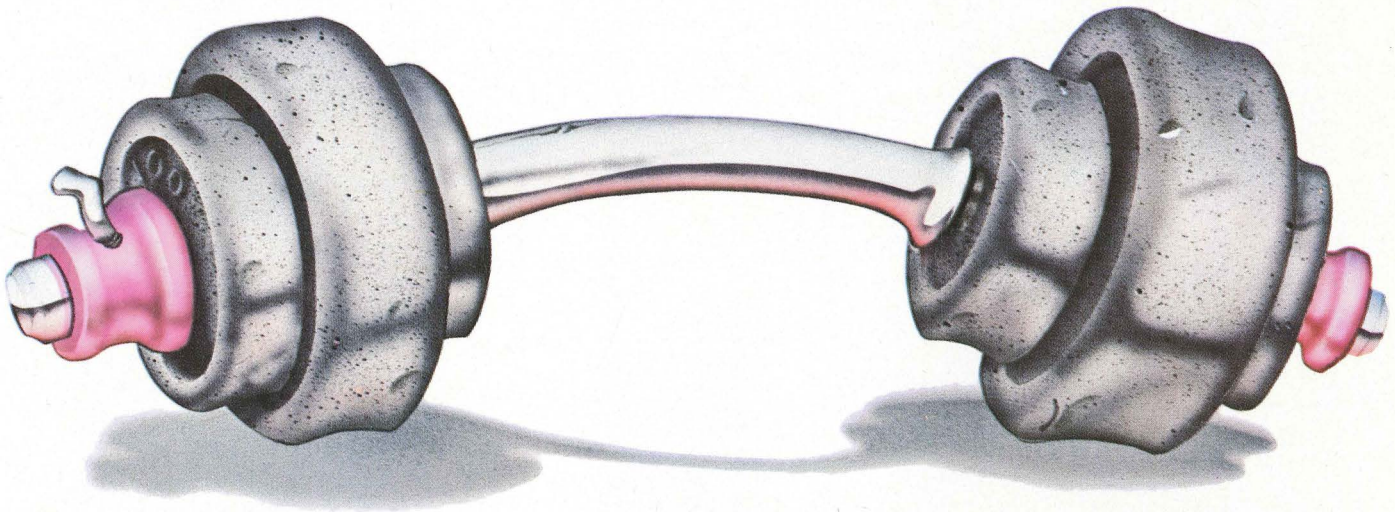
Since he bought the system, Jeff has used his own imagination to constantly expand its usefulness. Now he even does all of his inventory control by computer, pointing out that it does in minutes what would take many hours by hand to compare inventory to sales.

With the two stores now grossing about $500,000 per year, Jeff has heard from a retail merchandising service in Los Angeles that says it will do the inventory and projections for about $150 per month.

But Jeff prefers to do it himself now, since he can accomplish all those things easily and quickly in-house, with order entry thrown into the bargain.

"Compared to monthly charges like those," he suggested, "our personal computer seems like a much better investment."





Health Salon Owner Gives Computers a Workout

Jim Couch is a busy man who wears two hats for the Venus De Milo health salon chain. As a successful salon owner in Riverside, Calif., and one of only seven corporate franchise salesmen, he expects his new Apple II to ease his heavy workload and add some relaxation time to his hectic schedule.

No stranger to the world of computers, Jim was an electronic components engineer before joining Venus De Milo in 1976. With that background, it's no wonder he's planning to keep his Apple busier than any of his salon's exercise machines.

Right now, his personal computer is handling daily transactions and keeping track of inventory. Once the software is completed this fall, the Apple will become a full-fledged sales partner in addition to doing all the bookkeeping and financial records.

"We generally sell programs on a three-month subscription basis. The Apple will alert me when a subscription is about to run out. It'll be much quicker and much more accurate than the hand-purging system we use now," Jim explained.

"If after one week we still can't contact these members by phone, the computer will kick out a mailing list we can use for a reminder notice."

His plans for the Apple II don't stop there, because when he dons his franchise salesman hat, the potential applications seem almost endless.

In fact, he's so high on the importance of the personal computer to health salon management, he'll soon offer the Apple II as part of a sales package for franchise buyers.

"We're also going to install an Apple in the franchise headquarters office. That way, salon owners who decide not to buy a computer themselves will be able to tie into the system and still take advantage of the accounting and financial services they need. For the salons that have their own Apples, we'll set up another system that can give us instantaneous recall of data we can use to help individual owners improve their profits.

"By having access to these sales and marketing records, we can share our expertise with them, and see at a glance what they're doing right. It's certain to be an effective relationship for both parties."


TEP-
LOG
INC.

PROSPECTING BY COMPUTER

Prospectors of an earlier age may have been happy with a mule, a pick and a pan. Today's prospectors, however, are not individuals but corporations, and they are turning to computers to help improve the chances of a "strike."

Tep-Log, Inc., of Alice, Texas, is such a company and uranium is the treasure it is seeking throughout the Southwest. They do it by drilling test holes in the earth to determine the presence of uranium deposits. The probe measures a gamma radiation and relays its findings to the surface by means of electrical pulses at a rate as rapid as 100,000 per second.

Other factors are also involved, such as resistivity (the electrical resistance of the earth), and traditionally these data have been recorded on a strip chart recorder which must be evaluated later by hand.

Thanks to an Apple II and a program developed by Elbelco, an electronic design firm in San Antonio, Tep-Log has now found a way to get an instantaneous real time reading of the data so that the characteristics of a particular hole are known by the time the probe is withdrawn.

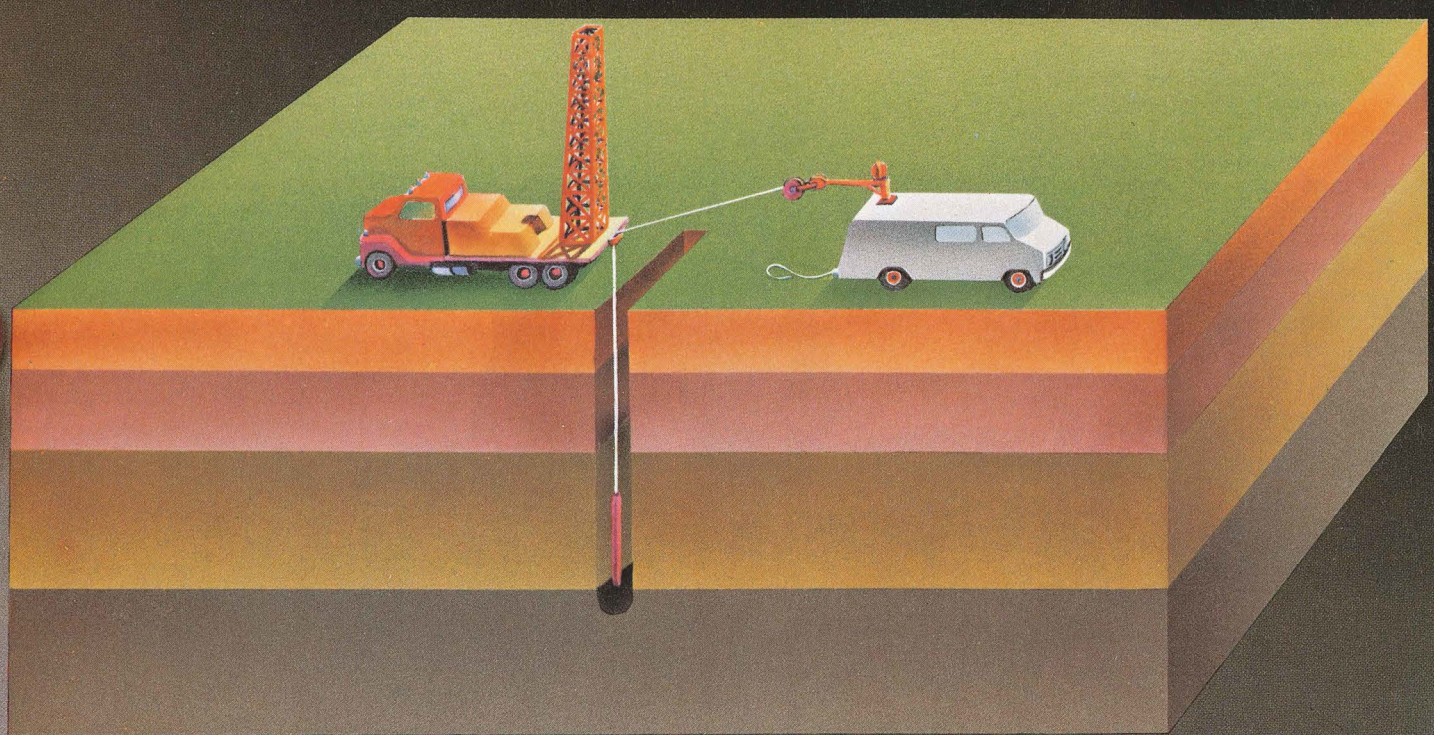
According to Charles Elbel, owner of Elbelco, his firm designed the Apple II into a ruggedized system capable of year-round outdoor operation. Equipment interfaced to the Apple include two six-digit frequency counters to accept the radioactivity pulses and measure their rate. The outputs are available to the computer for direct display and calculation.

Another interface, Elbel said, accepts the distance pulses and informs the computer exactly how far the probe has traveled.

A third element of the system is an analog-to-digital converter with two input channels to measure the spontaneous potential and resistivity factors.

Elbelco designed the software, all written in conversational BASIC so that field personnel can operate it easily with no prior exposure to a computer.

The end result? Improved speed and cost-effectiveness of the teams of modern-day-prospectors whose livelihood depends upon finding out whether "there's uranium in them thar hills."



The Belly Dancer Who Shakes, Rattles and Computes

Skeptics who still question the widespread applicability of personal computers in small businesses should bare their midriffs, if they dare, and stroll through Yassmeen's Belly Dance Bazaar, in Los Altos, California.

The bazaar is owned by Jakkee Bryson—belly dancer extraordinaire—entrepreneur and successful small businesswoman—whose Apple II has become more important to her career than finger cymbals.

Jakkee, whose stage name is Yassmeen Samra, is President of Beledi Enterprises, Inc., a thriving business that operates the bazaar and publishes, you guessed it, "Belly Dancer Magazine," which explains in print everything you ever wanted to know about belly dancing and a few things you never even thought about.

She bought her Apple two years ago to help out with bookkeeping, accounts receivable and payroll, but quickly found other uses. "I realized that when my son was born, I wouldn't be able to devote the necessary time to my business. That's when we decided on a personal computer.

"Everything in the bazaar, from exotic costumes to exotic music, is recorded in our computer inventory system. Labels that we run on the Apple are attached to the tags that go directly on the merchandise. It's all computerized, each item with its own number.

"As a result, my business is much more efficient, and I've saved an incredible amount of time. Now, it's simple to find out what's been selling well and what hasn't, which is one of small business's major headaches, inventory control."

When the Apple isn't handling financial and inventory matters, its printer is typing correspondence for her magazine staff writers, or promotional letters for her customers. It also maintains two mailing lists.

Which is all well and good, but doesn't explain how a high school Spanish teacher and counselor, mother and homemaker became Yassmeen Samra, belly dancer.

An avid athlete, Jakkee took up belly dancing in 1972 when a long spell of bad weather forced her off the tennis courts. "I was just looking for something to do. But when the rains stopped, I found that tennis threw off my timing for belly dancing, and vice versa. The choice was simple. I haven't been back on the tennis courts in seven years."

JEF RASKIN'S BRIEF DICTIONARY OF COMPUTERESE

Compilers and Interpreters

Instead of giving glib definitions of these two terms, we will break our pattern and explain these two in more detail. As you will see, the topics are interesting enough to deserve this extra attention.

Compilers and interpreters are needed because writing programs in "machine language" is a nuisance. (A few computers *do* work directly in some human readable form, but this improvement has yet to reach microcomputers. However, remember that anything is possible in this fast-moving field). To illustrate more graphically the trouble with "machine-language" programs, compare the ease of writing

PRINT "HELLO"

with the difficulty of writing

11Ø1Ø1ØØ1ØØ1ØØ111ØØ1Ø1ØØ11111ØØ1Ø
11Ø1Ø111ØØØØ1Ø111ØØ11ØØØ1ØØØ1

or whatever the computer needs to print that message. You do agree that PRINT "HELLO" is easier, don't you?

Compilers, Assemblers and Machine Language

Each different computer model or group of computer models has its own machine language. In general, all these machine languages are incompatible.

Counting human beings as higher creatures, and computers as lower, we define:

Low-level language
Machine language, or some simple language that is essentially the same as machine language.

The computer can directly perform any operation that is specified in a machine-language program. In jargon, we say that a computer can directly execute a machine-language program.

High-Level Language
A computer language designed to be easy for humans to use, independent of the computer's own language.

We can now, easily and glibly, define a compiler:

Compiler
A program that translates a high-level language into a low-level language.

A computer cannot execute a program in a high-level language directly. One way to make it executable is to compile it into a low-level language.

You can accurately picture a compiler as being similar to a human translator, who hears Armenian and shortly thereafter speaks Portugese (or any other pair of languages). With human translators, however, it would be in bad taste to speak of high-level and low-level languages.

Given this definition, we can define two more pieces of computer jargon:

Source Code (also called "source program")
A program written in a language which must be translated into a low-level language before it can run on a computer.

Object Code (sometimes called "object program")
The program after it has been translated into a low-level language—usually implying that it is now in a form which can be directly executed.

There are many different high-level languages, e.g. BASIC, PASCAL, and Fortran. It is possible (but not often done) to write programs that can change one to another, which gives us a definition:

Translator
A program that converts one high-level language to another high-level language.

Occasionally the term "translator" is applied to a program that converts a low-level language to some other low-level language.

Another specie of computer language, of which you may have heard, is called an "Assembler" or "Assembly Language." Assembly language is not quite so low-level as machine language, but close. It is not nearly so high a level as a high-level language. So we usually lump it in with low-level languages. Basically, an assembler merely provides simple and memorable words (called "mnemonics") that can be quickly and easily translated into the gibberish that the computer understands. For example, instead of having to write

11Ø11ØØØ ØØØØØ1ØØ Ø11Ø1111

you might simply say

ADD X,M

Certainly the programmer has an easier time remembering "ADD" than the string of zeros and ones. An assembler merely looks up what "ADD" stands for, and what "X" and "M" stand for, and then substitutes the appropriate string of zeros and ones. A compiler does a lot more—the high-level instructions, which the human sees, are not restricted to being close parallels to the underlying machine language which the computer executes.

Actually, due to the process called "creeping elegance," assemblers have come to be a bit more complicated than what has been described. Nonetheless, we have expressed the essence of what an assembler does. Now you understand why assemblers are lumped together with machine language under the rubric "low-level languages."

A translator from machine language to assembly language is called a "Disassembler." Similarly, a translator from machine language to a high-level language is called a "Decompiler."

Interpreters and Simulators

It is possible to think of a program that, when apparently told to add 2 and 3, would subtract instead. In other words, it would *interpret* "2+3" as defining the operation 2−3. It wouldn't *translate* "2+3" into "2−3," it would just calculate 2−3 when it saw the instruction "2+3." With this idea in mind we define:

Interpreter
An interpreter is a program that takes the high-level language program and leads the computer through the steps necessary to perform the operations the program specifies.

An interpreter does *not* translate the source program into an object program, it just runs along the source program, interpreting (carrying out the steps specified) as it goes.

An interpreter is a program that makes the real computer (which we will call Anastasia) behave like a new kind of computer, which we will call Hannibal. Hannibal is so designed that your source program, say in BASIC, is *Hannibal's* machine language. Anastasia's language can be entirely ignored in this process.

(Continues on Page 24)

Differences From The Point Of View Of The User

In using a compiler, the user must first write the high-level source program, and then—in a separate step—run the compiler to create the low-level object program. If there are any errors, the compiler may catch them and tell the user. Then the user must go back and change the source program, run the compiler again, and repeat the procedure until the program compiles correctly. Then the user can find out if there are any errors in the program (there usually are) that the compiler can't catch. Now the user usually repeats the whole process yet again to fix these errors.

That's the nasty side of compilers. On the other hand a compiled program usually takes up very little room in the computer (that is, the *object program* takes up little room) and usually executes very quickly compared to an interpreted program.

An interpreter must have the entire *source program* available in memory, and must go through the steps required to understand the source program, and break it apart into its components. The activity of breaking apart a program so that it can be understood is called *parsing* the program. A compiler must parse a program too, but it can do this once, before the program is executed—an interpreter must parse each statement every time that it is executed, and it must do this *while* the program is executing. This is the main reason that interpreters tend to operate more slowly for a given program. They have more to do.

On the other hand, most interpreters give error messages as soon as an incorrect statement is typed in. This speeds program development. In addition, no compilation step need be done, so that all you have to do to execute a program is type "RUN" or "GO" or some such command, and the program starts being executed.

Interpreters tend to shorten program development time, but they are usually slower in program execution. Compilers tend to be less pleasant to program, but they are faster in program execution.

If the same higher-level language is available in *both* an interpreted and a compiled form you can have the best of both worlds, developing the program with the interpreter and then running it with the compiler.

Interpreters are usually less expensive to produce (by a computer manufacturer) than are compilers. That is why most personal computers have an interpreted BASIC.

Simulators are interpreters whose source program is in a machine language for some computer other than the one which is doing the interpretation. Useful when developing a new computer, or trying to write programs for a computer that you can't get your hands on. Not a terribly common occurence.

Other Beasts

There are many systems that are somewhere between interpreters and compilers. A line-at-a-time compiler (often called an "incremental compiler") compiles each line as it is typed, giving most of the convenience of an interpreter and most of the speed of a compiler.

For reasons that are a bit outside the scope of this glossary, the high-level language, PASCAL, is usually compiled *and* interpreted. The source code is compiled into a low-level language. This low-level language (called P-code) is then interpreted. This compromise makes the system run somewhat faster than a pure interpreter, and yet be quite inexpensive to implement. This technique also makes it possible to fit a full-feature high-level language into a personal computer at a price most people can afford.

APOLOGIES TO TELETYPE™

The Glossary published in the first issue of APPLE improperly used the word "teletype" as a generic name for an older generation of terminals. Teletype Corporation assures us their trademarked product of today, the Teletype™, is widely used and is neither slow nor obsolete. As one trademark to another, apple apologizes.

LETTERS TO APPLE

THE LABOR-SAVING APPLE

My congratulations on the first issue of APPLE Magazine, a very attractive and colorful publication.

We are using the Apple II computer as an intelligent graphic terminal for an unusual application. Our equipment sorts wine bottle corks in several qualities after video inspection of their surfaces. This task is normally a very labor-consuming operation done by hand by the cork manufacturers in Europe.

Mike P. Humblet
President
Industrial Control Technology
Encinitas, California

RIGHT ON CUE

Congratulations on the first issue of APPLE and thanks for coverage of our work at Collins Junior High.

I would like your readers in Northern California to know about the formation of Computer–Using Educators (CUE). This group is exploring the uses already being made of computers in the area's classrooms and is looking for new ideas to be shared. The group makes it possible for members to share materials, explore sources of funding, and plan in-service training for newcomers to computer usage.

It is my hope that such groups will spring up across the country so that information can be shared among them.

Bobby Goodson
Collins Junior High
Cupertino School District
Cupertino, California

EDUCATORS AND TECHNOLOGY

I have just completed reading APPLE, and I was very impressed with the usefulness of the articles and the very attractive presentation . . . There is no doubt that your magazine will be an important addition to personal computer literature.

The AECT in the early 1960's (we were known then as the Department of Audiovisual Instruction) was a frequent publisher of information on computers in instruction. Interest among our members failed for a number of years but has now emerged with more enthusiasm than in the early days, microcomputers and lower costs being the prime reason.

We have established a microcomputer task force (and) have recently heard from members who are interested in a division of our association for new computer technology. We hope to involve Apple in this new interest.

Richard G. Nibeck
Deputy Executive Director
Association for Educational Communications & Technology
Washington, D.C.

THE HANDICAPPED AND TECHNOLOGY

Your article on "New Learning Aids Offer Help For the Handicapped" was very inspiring and just the lead I need to follow through for our daughter, Mary Lee Termina, who is a quadriplegic with a cerebral palsy–type disease called toxoplasmosis. The only controlled part of her body is her chest . . . a brace, a spout to hit the keys of an electric typewriter and a language board, which fits to her wheelchair, are her only means of communication with others.

I'm sure other parents who love their gift from God, as we do, will be remembering you in their prayers also.

Shirley Chesmer
Pulaski, Pennsylvania

"MEAN" MEANS EDUCATIONAL SOFTWARE

I thought you might be interested in our organization, Microcomputer Education Applications Network, designed to facilitate the development and dissemination of software applications for building-level use in public schools.

During January, our membership grew at a rate of 12 per day. We have identified hundreds of individuals in public schools who are developing software applications for numerous microcomputers, including Apple II.

School officials, individuals or groups can join MEAN at no cost. Users of the software systems will receive discounts on purchases of software; developers will receive royalties for useful and practical applications adopted by other schools or districts; and all interested MEAN members will be provided with current, up-to-date information on the emergence of microcomputer technology and applications designed for educational institutions.

Perhaps some of your readers or users would be interested in our MEAN group.

Charles L. Blaschke
President
Microcomputer Education Applications Network
Suite 800
1030 Fifteenth Street, N.W.
Washington, D.C. 20005

APPLE PERSONAL COMPUTER SYSTEMS

TABLE OF CONTENTS

APPLE PERSONAL COMPUTER SYSTEMS

APPLE PERSONAL COMPUTER SYSTEM

APPLE II will change the way you think about computers. That's because it is specifically designed to handle the day to day activities of education, business, financial planning, scientific calculation, and entertainment. It makes learning to use computers enjoyable and creative, by bringing to the user a new level of simplicity through design sophistication.

Getting Started

APPLE II is faster, smaller, and more powerful than its predecessors. And it's more fun to use too, because of built-in features like:

—BASIC—The Language that Makes Programming Fun
—Fifteen-Color Standard Graphics (in an 1,880-Point Array) for Spectacular Visual Effects
—High-Resolution Graphics (in a 54,000-Point Array) for Finely-Detailed Displays
—Sound Capability that Brings Programs to Life
—Hand Controls for Games and Other Human-Input Applications
—Internal Memory Capacity of 48K Bytes of RAM, 12K Bytes of ROM; for Big-System Performance in a Small Package
—Eight Accessory Expansion Slots to let the System Grow With Your Needs

You don't need to be an expert to enjoy APPLE II. It is a complete, ready-to-run computer. Just connect it to a video display and start using programs (or writing your own) the first day. You'll find that its tutorial manuals help you make it your own personal problem solver.

New Features—APPLE II Plus

Now APPLE has a new twist—the APPLE II Plus, with our extended APPLESOFT BASIC as the standard language. The APPLE II Plus is designed for the serious user, with 9-digit arithmetic precision and exclusive Auto-Start that can run programs automatically when you turn the computer on. Both APPLE II and APPLE II Plus provide the same exciting color graphics, sound, hand controls and computational features. And both systems can take advantage of PASCAL, APPLE's superlanguage, with installation of the new Language System (See Expansion Options, pg. C-9).

Color and Sound

APPLE's advanced graphics commands make brilliant color displays something even a beginner can master. Its color graphics can be used for applications ranging from business charts to architectural design. They make any program more effective.

APPLE's built-in loudspeaker prompts you for inputs, warns you of errors, and lets you explore synthesized music and speech applications.

A Learning Tool

APPLE will help you learn what computers are all about. Discover how easy it is to create your own computer programs. Introduce your children to APPLE, and watch them explore and master today's most exciting new technology. Use the Apple Software Bank to start your own library of programs that make learning fun.

APPLE Grows With You

Your APPLE is ready to grow when you are. Whether you choose APPLE II or II Plus, you can use all of APPLE's broad line of peripherals, accessories, and software. For example, a basic system can easily be expanded for business applications by adding two disk drives, printer, and General Business System software.

Introduce yourself to APPLE—advanced tools that set the standard of excellence in personal computers.

APPLE II AND APPLE II PLUS

TECHNICAL OVERVIEW

Two types of computers are presently available from Apple Computer Inc. They differ only in the language firmware, demo programs, and documentation supplied.

APPLE II—This computer system is supplied with Integer BASIC, hi-res. graphics routines, mini-assembler, disassembler, and system control firmware in ROM. Demo programs and manuals are oriented around Integer BASIC.

APPLE II PLUS—This system is supplied with Applesoft extended BASIC (including hi-res. graphics routines), disassembler, and new Auto-Start system control firmware in ROM. Demo programs and manuals are oriented around Applesoft extended BASIC.

Both APPLEs are self-contained computers based on the 6502 microprocessor. Standard features include: color graphics hardware, sockets for up to 48K bytes RAM, cassette interface, I/O connectors, typewriter-style ASCII keyboard, high-efficiency switching power supply, and rugged structural foam case.

BASIC Language

Both BASICs are available on either APPLE. Integer BASIC is included in the APPLE II, and Applesoft BASIC in the APPLE II Plus. Both BASICs are also available as plug-in card options. In addition, PASCAL and both BASIC languages are provided for use with the APPLE Language System (see Expansion Options, page C-9).

Integer BASIC is a fast language that is ideal for games and high-speed graphics. Applesoft BASIC is an expansion of Microsoft's popular floating-point BASIC that includes 9-digit arithmetic for business and scientific applications plus easy-to-use, high-resolution graphics commands. (See Apple Software Bank for more information.)

Video Display

The APPLE displays text, color graphics, or high-resolution graphics—software selectable. Its graphics commands allow either of two screen "pages" to be displayed, with 4 lines of text below the display area.

TEXT MODE
—40 characters/line, 24 lines
—5 × 7, upper-case characters
—Normal, inverse or flashing characters
—Extensive display control software in ROM
—Full cursor control—protected screen feature
—Fast display—1000 cps

COLOR GRAPHICS MODE
—40h × 48v resolution (40h × 40v with 4 lines text)
—15 colors

HIGH RESOLUTION GRAPHICS MODE
—280 × 192 resolution (or 280h × 160 with 4 lines text). Six colors: black, white, violet, green, blue, orange
—Software character generator available for lower case characters and labeled displays. (See Apple Software Bank.)

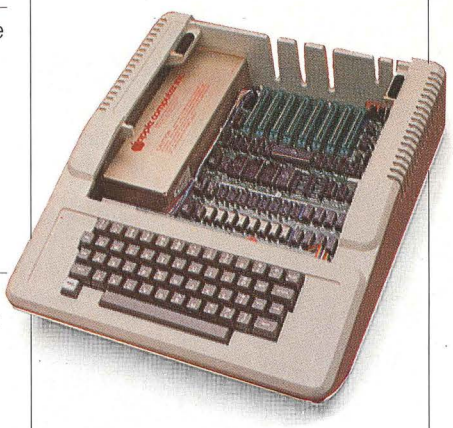
Memory

User memory (RAM) is organized in 16K byte increments, and may be easily expanded to 48K bytes of total RAM by inserting the memory elements into plug-in sockets on the motherboard. Language (ROM) memory is organized into six blocks of 2K bytes each.

System Control is a standard feature and uses 2K bytes. The APPLE II Plus uses the remaining 10K bytes to store Applesoft BASIC. The APPLE II uses 8K bytes to store Integer BASIC and utility routines (described under Programmer's Aid #1).

APPLE II AND APPLE II PLUS

TECHNICAL OVERVIEW



Inputs and Outputs

All APPLEs include as standard an ASCII keyboard, audio cassette interface, 8 peripheral board connectors, speaker, I/O connector and two hand controllers.
—Reliable, typewriter-style keyboard
—Fast cassette interface—1500 bps
—Peripheral board connectors
Fully buffered, with interrupt and DMA priority structure
—4 analog (0-150K ohm resistive) control inputs
—3 TTL inputs and 4 TTL outputs

Built-In System Control

The APPLE system control ROM brings your computer to life quickly and easily upon power-up. It offers these additional features:
—Disassembler (and single-pass assembler—APPLE II only)
—Automatic Input/Output device assignment
—Keyboard and screen editing features
—Register examine/modify and read/write cassette routines
—Hex add/subtract for relative branch calculations
—Simulated single-step and trace modes; breakpoint handling (APPLE II only)
—Automatic start-up in BASIC (APPLE II Plus only)
—Automatic execution of disk programs on start-up (APPLE II Plus only)

Ordering Information

Four APPLE computer options are available: APPLE II, APPLE II Plus, APPLE II EUROMOD, and EUROPLUS. Standard APPLE versions offer 110 VAC operation and provide an NTSC (American standard) composite video output. The EURO versions have been designed for European (220 VAC) power supply and video output requirements, and are available through Eurapple (international operations of Apple Computer Inc.) in Cupertino, California.

MODEL	BASIC LANGUAGE	POWER SUPPLY	VIDEO
APPLE II	Integer BASIC	110V,50/60Hz	NTSC Compatible
APPLE II Plus	APPLESOFT BASIC	110V,50/60Hz	NTSC Compatible
APPLE II EUROMOD	Integer BASIC	220/240V,50/60Hz	CCIR (625 lines)
EUROPLUS	APPLESOFT BASIC	220/240V,50/60Hz	CCIR EUROMOD

Each of the above four models is available with 16K, 32K, or 48K of memory, using the following order numbers:

Memory(RAM)	APPLE II (U.S.)	APPLE II Plus (U.S.)	APPLE II EUROMOD	EUROPLUS (EUROMOD)
16K bytes	A2S0016	A2S1016	A2S0016P	A2S1016P
32K bytes	A2S0032	A2S1032	A2S0032P	A2S1032P
48K bytes	A2S0048	A2S1048	A2S0048P	A2S1048P

DISK II FLOPPY DISK SUBSYSTEM

General Description

Disk II expands your computer horizons with fast, low-cost retrieval of programs and information. It makes inventory, address file, and recipe programs suddenly feasible. It means you can store a year's worth of financial records in one place, and sort through them quickly. And it allows you to handle many other applications that just were not practical before.

Features

—Powerful Disk Operating Software Supports up to 6 Drives
  —Name Access to Files for Ease of Use
  —BASIC Program Chaining to Link Software Together
  —Random or Sequential File Access to Simplify Programming
  —Dynamic Disk Space Allocation for Efficient Storage
—Individual File Write-Protection Eliminates Accidental File Alterations
—Loads an 8K Byte Binary Image in 6.5 sec. (1.2 sec. in Pascal)
—Storage Capacity of 116 Kilobytes (143K Bytes with Pascal) on Standard $5\frac{1}{4}''$ Diskettes
—Powered Directly From the APPLE (Up to 6 Drives) for Convenience and High Reliability
—Packaged in Heavy-Duty, Color-Coordinated Steel Cabinet

Specifications

PARAMETER	DESCRIPTION
Access Method:	Random or Sequential—arbitrary record length
Track Access Time:	Varies with number of tracks crossed. 200msec (avg.), 600msec (max. across 35 tracks)
Disk Capacity:	116K bytes (formatted), soft-sectored (143K Bytes with Pascal)
Controller:	Up to two drives per controller. Multiple controllers can be used.
Min. System Config.:	32K RAM Apple II or II Plus

Ordering Information

Order Number: A2M0004. Supplied with:

—Floppy Disk Interface Card
—Bootstrap in ROM
—Disk Drive and Connecting Cable
—System Software on Diskette
—Manual
—Blank Diskette

Order Number: A2M0003. Supplied with:

—Second Disk Drive and Connecting Cable

TELECOMMUNICATIONS

Modem IIB

Modem IIB is a communications package that extends the power of your APPLE by allowing it to tap the resources of timesharing services, computerized bulletin boards or your office computer from the comfort of your home. It allows you to transfer programs to a friend's APPLE over the telephone network. It even permits you to control an APPLE in San Francisco from another computer in New York. And, with programs like our Dow Jones Portfolio Evaluator it makes your APPLE an intelligent terminal, able to request and process information from large remote data bases.

The Modem IIB package consists of an acoustic coupler (modem) and a Communications Interface Card. The coupler is a 103A-type asynchronous device, suitable for data communication at 110 or 300 baud (10 or 30 char/sec). It operates in either the Originate or Answer modes. Connection to the phone system is accomplished by placing the telephone handset in position on top of the modem. No permanent connection or wiring changes are required.

Order No. A2M0017-U.S., A2M0017P-European. Supplied with:

—Communications Interface Card
—Connecting Cable
—Demonstration Tape
—Documentation

Communications Interface Card

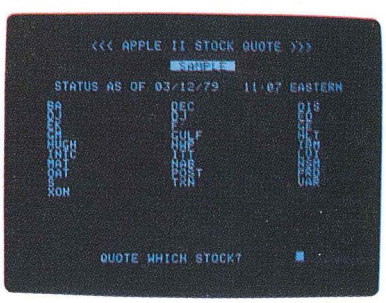
The Communications Interface Card is available separately to allow you to connect your APPLE to modems, CRT terminals, and other devices employing a serial RS-232C interface. The card's built-in intelligence lets you control these devices easily, in BASIC.

Features

—Firmware Control Programs—No Software to Write
—Easily Controlled from BASIC using Simple Commands
—Communicates at 110 or 300 Baud, Half- or Full-Duplex
—RS-232C-compatible Serial Interface

Specifications

PARAMETER	DESCRIPTION
Signal Level:	EIA RS-232C
Data Word Format:	1 start bit, 1 or 2 stop bits, 7 or 8 data bits; odd, even or no parity



Ordering Information

Order No. A2B0003. Supplied with:

—Firmware in ROM
—DB-25 Connector and Mounting Bracket
—Demonstration Tape
—Operating Manual

PRINTERS AND INTERFACES

Two printers are available to meet your needs for reports, listings, and label generation.

Printer IIA (Centronics 779)

Printer IIA is a medium-speed impact printer for home and business applications requiring low-cost, multi-copy printing. It prints 80 to 132 (5 × 7) dot-matrix characters per line, at 60 characters per second. This printer is capable of reproducing the 64-character, upper-case ASCII set; and its tractor paper feed allows printing of five-part forms in widths to 9.8″. The mechanism is packaged in a low-profile, desk-top cabinet. Printer IIA is supplied with a Printer Interface Card, cable and connector, operating documentation, and warranty. (Order No. A2M0011)

Printer II (Centronics Microprinter-PI)

This compact, desk-top printer employs electric discharge technology to print up to 80 characters per line at 150 lines per minute. The printer produces 5 × 7 dot-matrix characters at 5, 10, or 20 characters per inch. It prints the full 96-character ASCII set, including lower-case letters. It is quiet and reliable and uses no toner or ribbon. It prints on 4.75″, aluminum-coated roll stock. The printer is supplied with a Printer Interface Card, cable and connector, operating documentation, and warranty. (Order No. A2M0010)

Interfaces

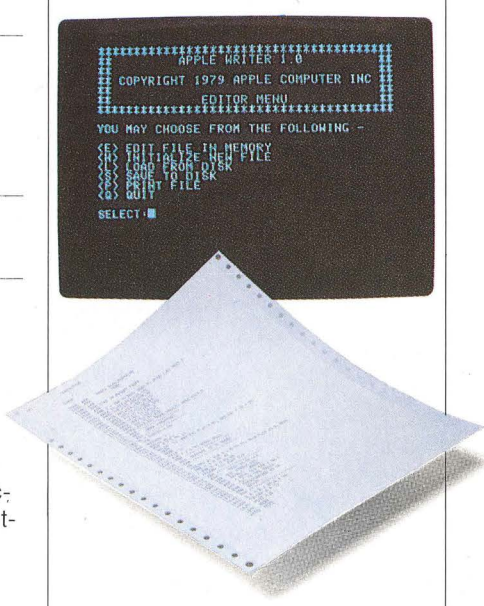
The Parallel Printer Interface Cards are also available separately, to allow the use of other parallel printers with your APPLE computer.

Features

—Built-in Firmware Allows Printing With Simple BASIC Commands
—Prints up to 255 Char/Line for format flexibility
—High Speed—up to 5000 Char/Sec (3700 LPM @ 80 Char/Line
—Easy to Use with Most Popular Printers (Axiom, Centronics, SWTP, Selectric conversions)

Specifications

PARAMETER	DESCRIPTION
Data and Control Signals:	7–8 Parallel Data Bits, STROBE and ACKNOWLEDGE
Print Line Width:	40–255 Char/Line. Automatic formatting of BASIC listings



Ordering Information

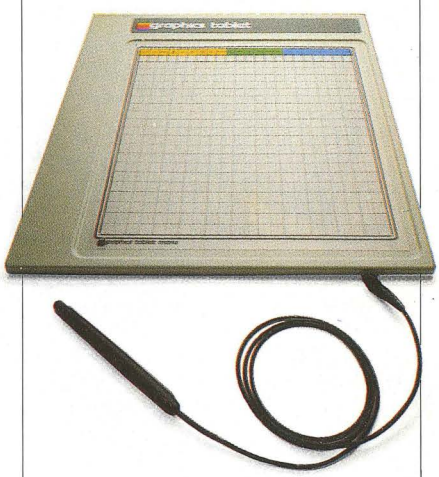
Standard Card (A2B0002), for general purpose use.
Supplied with:
—Configuration Jumper Block
—Ribbon Cable (User supplies connector)
—Manual

This version of the card issues a Line Feed after receiving a Carriage Return character.

Centronics Card (A2B0007), for use with Centronics 779 and Microprinter.
Supplied with:
—Pre-wired Configuration Jumper Block
—Ribbon Cable w. Centronics Connector
—Manual

This version of the card does not issue a Line Feed after receiving a Carriage Return character. It is for use with Centronics (or other) printers that automatically line feed after they receive a Carriage Return character.

GRAPHICS TABLET



General Description

The Graphics Tablet is an image input device that allows the user to enter pictorial information directly (by sketching or tracing) from:
—maps and photographs
—logic diagrams and schematics
—histograms
—architectural drawings
—fine art

Tracing a shape on the tablet surface converts the image to digital values. This information is displayed on the video monitor and may be stored on disk for later processing by the Apple.

The 11″ × 11″ tablet surface area facilitates entry of large and complex figures. Line segments may be specified by their endpoints, allowing lines to be accurately drawn by hand. A reducer function assists the user in doing detailed work. Area and distance calculations (in user-specified coordinates) may be performed on the resulting figures.

Powerful software provides a comprehensive set of functions selected with the stylus from a menu. This software is written in Applesoft BASIC so the user may easily change or add menu functions to suit a particular application.

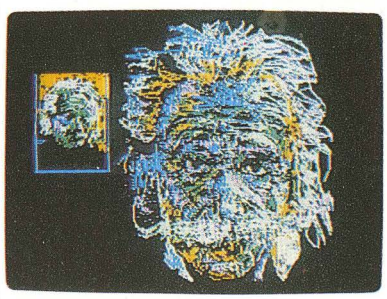
Features

—Direct Input Simplifies Production of Complex Images
—Hand Calculations of Graph Coordinates And Figure Dimensions are Eliminated
—Coordinated Cursor Allows Function Selection From Command Tables on Tablet
—Control Program in Applesoft BASIC makes for Easy User Modification
—Tablet provides 167 points/inch Resolution For Detailed Figures
—Allows User Specified Functions

Specifications

Unit consists of stylus, external digitizing tablet, and plug-in interface card.

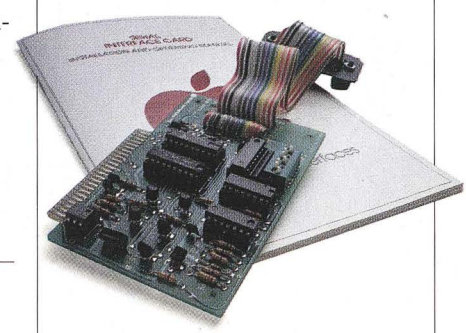
Tablet Size: 15″ square (11″ square active area), 1″ high
Resolution: 167 points per inch
Input Modes: Continuous or upon command
Data Rate: Up to 100 coordinate pairs per second
Scaling: User selectable
Minimum System Requirements: 48K RAM, Applesoft BASIC, Disk II



Ordering Information

Order Number: A2M0029. Supplied with:
—Tablet, Interface Card, Connecting Cable and Stylus
—Manual and Transparent Mylar Overlay
—Control Firmware in ROM
—Software Programs on Diskette

SERIAL INTERFACE CARD



General Description

The Serial Interface Card allows an APPLE computer to exchange data with computers, printers, and other devices in serial format (one bit at a time). It is intended for use (in place of the Communications Interface Card) in applications that:
—Use data rates other than 110 or 300 baud (10 or 30 char/sec)
—Involve serial printers that don't require "handshake"

The Serial Card features on-board firmware that provides BASIC control in both block-data-transfer and printer-operation modes. A number of hardware and software switches on the card serve to adapt it to a wide variety of applications, yet it remains simple to use because of its built-in intelligence.

Features

—Permits BASIC Control of High-Speed Printers and Plotters
—Quickly Transfers Large Blocks of Data by Telephone (through a modem), or Directly to Local Equipment
—Handles Half-Duplex Communication from 75–19.2K Baud
—Programs Easily with Switch-Selectable Preset Conditions for Speed, Line Length, Auto Line Feed and Carriage Return Delay

Specifications

PARAMETER	DESCRIPTION
Signal Level:	EIA RS-232C or 20mA current loop
Data Word Format:	1 start bit, 1 or 2 stop bits, 5–8 data bits; odd, even, or no parity. Checksum is optional.
Character Handling Options:	Lower-case characters optionally converted to upper-case or passed through unmodified and displayed in inverse video.

Ordering Information

Order Number: A2B0005. Supplied with:
—Interface Card
—DB-25 Connector and Mounting Bracket
—Manual

EXPANSION OPTIONS

A wide range of products are available to expand the capabilities of APPLE computers.

Language System

This package includes the Language Card, which allows APPLE users to take immediate advantage of the powerful PASCAL language as well as the Integer and Applesoft BASIC interpreters. The Language Card's 16K bytes of RAM memory electrically replace the ROM firmware built into each APPLE. Upon start-up, this RAM memory is automatically loaded from disk with the user's choice of languages, then electrically protected from change. The loading is controlled by the AUTO-START ROM, also contained on the card. The complete system also includes diskettes containing a language selection "Hello" program, PASCAL, Applesoft BASIC, and Integer BASIC. The reference manuals for all the above languages are also included. (Order No. A2B0006)

Applesoft Firmware Card

The Applesoft Firmware Card provides access to the library of programs written in this extended BASIC language. It contains hardware and software controls that allow it to electrically replace the existing Integer BASIC firmware in APPLE II computers. (Order No. A2B0009)

Integer Basic Firmware Card

This card provides access to a library of programs written in the Integer BASIC language. It contains hardware and software controls that allow it to electrically replace the existing Applesoft BASIC firmware APPLE II Plus computers. (Order No. A2B0010)

Auto-Start ROM

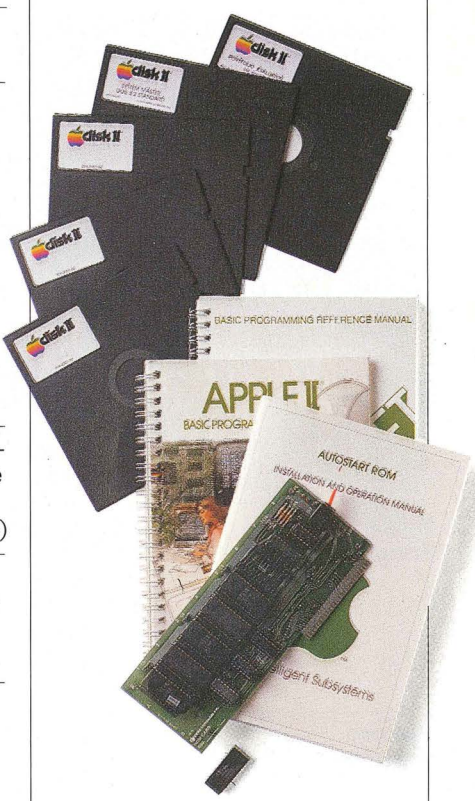
The Auto-Start ROM makes any APPLE II friendlier and easier to use by adding such features as:

—Automatic Start-Up in BASIC For Systems Without Disks
—Automatic Disk Program Loading When System Turns On
—RESET Protection—RESET Key Halts Program, Returns to BASIC
—Easy Screen Editing, With up to 90% Fewer Keystrokes

The device is a plug-in replacement for the existing monitor ROM. It is included in APPLE II Plus systems, Applesoft ROM Cards, and the Language System. (Order No. A2M0027)

16K Byte Expansion Memory Module (RAM)

This module allows user memory expansion in 16K byte increments for any 16K or 32K APPLE computer. The module contains 8 RAM devices, installation instructions, and a test program to insure that installation was done properly. (Order No. A2M0016)



APPLE EXPANSION OPTIONS

EXPANSION OPTIONS

Clock/ Calendar Card

This plug-in card provides a 388-day calendar and clock, with resolution to 1/1000 second. The clock is crystal controlled to yield .001% accuracy. A built-in rechargeable battery keeps the clock on time up to four days without system power, and external batteries may be used for longer periods. Optional interrupt capability simplifies control applications. Supplied with complete operating instructions and rechargeable battery. (Order No. A2M0024).

Monitor II

This 9-inch (diagonal) video monitor is the ideal display for the APPLE when color output is not required. It sits neatly on top of the computer, and provides a very clean and sharp picture. It accepts direct video input from the computer. Monitor II comes complete with cable adapter and documentation. (Order No. A2M0005)

Tape Recorder

A tape recorder is the basic program and data storage mechanism for the APPLE. This one offers the convenience of pushbutton operation; and it runs from either batteries or the AC line. (Order No. A2M0018)

Hobby/ Prototyping Card

Create your own APPLE interface boards with this wire-wrap card. The 2-3/4″ × 7″, double-sided circuit board includes a hole pattern (on 100-mil centers) that accepts all conventional IC's and passive components. It plugs directly into any APPLE expansion connector, and fits entirely within the computer case. Supplied with complete bus documentation to aid the interface designer. (Order No. A2B0001)

System Furniture

Apple offers an attractive desk and side return combination to support your computer system hardware. Both units have Apple beige sides, chocolate brown legs, and contrasting teakwood-grain formica tops. Their design keeps equipment well organized and cables out of sight.

Order Numbers:
Desk (30″ × 48″)—A2M0034
Left Side Return (18″ × 30″)—A2M0035

SYSTEM FIRMWARE/SOFTWARE

PASCAL

APPLE PASCAL, incorporating UCSD PASCAL™ offers extended features in a complete, interactive package employing today's most sophisticated structured programming language. It provides advanced capabilities that boost performance and cut development time for large business, scientific, and educational programs.

The software package provides a powerful set of tools for the serious programmer:

Editor

—Fast, screen-oriented editor for program development and word processing
—80-character lines (upper/lower case) available with external CRT terminal
—80-character lines supported in standard APPLE using horizontal scrolling.

Compiler

Standard PASCAL plus extensions for strings, disk files, graphics, system programming:
—Hi-Res:
"Turtlegraphics":
INIT turtle, PENCOLOR, TURNTO, TURN, MOVE, TEXTmode, GRAFmode.
—Text:
—GOTOXY procedure for cursor addressing
—Split screen or horizontal scrolling
—FUNCTION Keypress tells whether character available
—Library Routines:
—FUNCTION RANDOM
—PROCEDURE RANDOMIZE
—FUNCTION PADDLE
—FUNCTION BUTTON
—PROCEDURE TTLOUT
—FUNCTION KEYPRESS
—And more . . .

Relocatable Assembler

Permits relocatable assembly language routines to be generated and linked to PASCAL programs.

Filer

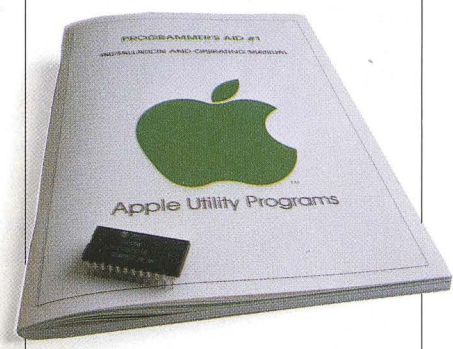
General purpose program for manipulating all system disk files.

System Utilities

—**DESK CALCULATOR**—performs basic calculations
—**PARAMETER**—allows examination and modification of system operating environment.

PASCAL operates in a 48K APPLE II or II Plus with one to six disk drives and the APPLE Language System. An external 80-column terminal can be attached. The package includes:
Language Card
5 diskettes, including
Integer BASIC
Applesoft Extended BASIC
PASCAL System
IC puller
3 PASCAL manuals
3 BASIC Language manuals
Installation & Operation manual
(Order as the Language System: Number A2B0006)

SYSTEM FIRMWARE/SOFTWARE



Programmer's Aid #1

Programmer's Aid #1 is a ROM-based library of routines to simplify and enhance your Integer BASIC programs. Its capabilities include:
—High-Resolution Graphics Generation
—Program Renumbering and Linking
—Tape Verification
—Musical Tone Generation (12 timbres and 5 octaves)
—RAM Testing
—Machine Language Program Relocation

Programmer's Aid #1 is packaged as a single 2K-byte ROM to be inserted in a socket of the APPLE II. The routines upon which it is based are completely documented in the manual which accompanies the package. (Order No. A2M0019. Note: this ROM is now included in APPLE II computers.)

Disk Utility Pack

The Disk Utility Pack includes exciting new software for disk-based APPLEs, designed to make your programming life easier . . .
—Disk Operating System (DOS)—With all the latest features
—Update—Updates Existing Diskettes to current DOS And Preserves Their Contents
—Applesoft CHAIN—links Applesoft programs together
—Applesoft Renumber/Merge—Renumbers and merges Applesoft routines into a single program
—DOS Manual—Over 170 pages of examples and detailed user information

Order No. A2D0010. Supplied with:
—System Master Diskettes (Integer & Applesoft versions)
—Blank Diskette
—Manual

The package is included in A2M0004 disk drives and Auto-Start ROM packages.

Integer Basic

This language is a fast integer BASIC that includes the following features (in addition to normal BASIC capabilities):
—Any-length variable names (ALPHA, BETA$)
—Syntax and range errors indicated immediately when entered
—Multiple statements on one line
—Integers from −32767 to +32767
—Strings to 255 characters; Single-dimension integer arrays
—Graphics Commands
—Paddle read function
—TEXT and Graphics Commands to set display mode from BASIC
—Immediate execution of most statements
—Break and Continue program execution
—Debug commands: line number trace and variable trace
—Switchable I/O device assignments
—PEEK, POKE, CALL, POP commands
—Auto line number mode
—RND, SGN, ASC, LEN and ABS functions
—GOTO expr, GOSUB expr allowed

Integer BASIC is supplied as on-board ROM in the APPLE II and is included with the APPLE Language System. The language is also available on the Integer BASIC ROM card.

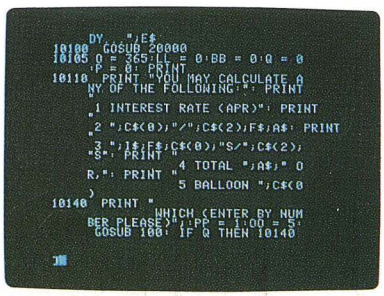
SYSTEM FIRMWARE/SOFTWARE

Applesoft II Extended Basic Language

Applesoft II is an expanded version of Microsoft's popular floating-point BASIC. Its 9-digit arithmetic and large function library make it ideal for business and scientific applications. Features like high-resolution graphics routines and user-programmable error messages make the language both powerful and easy to use. Capabilities include:

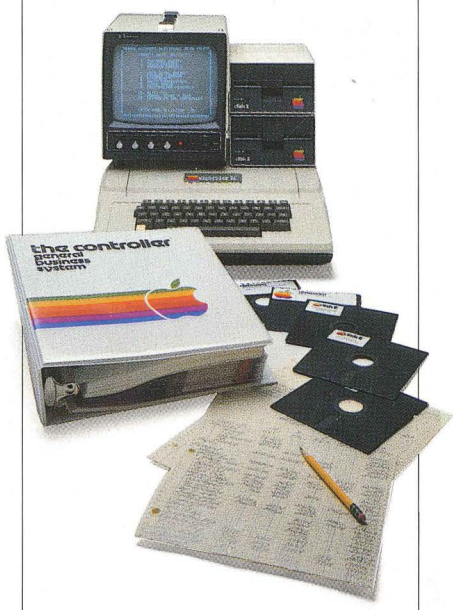
—3 Data Types—Real, Integer, and String
—N-Dimensional Arrays and N-Letter Variable Names (first two letters significant)
—Extensive Mathematical, Logical and Scientific Capabilities
  —EXP, LN, SQ. RT., SIN, COS, TAN, ARCTAN
  —AND, OR, NOT, ABS, INT, RANDOM, SIGN
—String Operations to Aid the Business Programmer:
  —Compare: =, >, <, >=, <=, ><
  —Concatenate: +
  —Variable Type Conversion: ASC, STR, VAL
  —Substring Separation: LEFT, RIGHT, MID, LEN
—Graphics Statements that Simplify Display Programming:
  —Print Format Control: NORMAL, INVERSE, FLASH
  —Graphics Control: COLOR, PLOT, POSN, LINE DRAW, SCRN, GRAPHICS, TEXT, HIRES, ROT, SCALE, SHAPELOAD
—General Operations that Include and Extend Upon Dartmouth BASIC:
  —Program Manipulation: CLEAR, NEW, LIST, RUN, CONT, LOAD, SAVE
  —Variable and Function Definition: DATA, DEF. FUNCT, DIM
  —Data Handling and Storage: READ, RESTORE, STORE, RECALL
  —Loops and Branching: FOR . . . NEXT, IF . . . GOTO, IF . . . THEN, ON . . . GOTO, ON . . . GOSUB, ONERRGOTO, RESUME, GOTO, GOSUB, RETURN
  —Input/Output and Format Control: INPUT, PRINT, IN#, PR#, VTAB, TAB, HOME, PADDLE
  Machine Level Statements: PEEK, POKE, CALL, POP, LOMEM, HIMEM

Applesoft II is supplied as a diskette, tape, or plug-in ROM card; and is included in APPLE II Plus systems. The diskette version requires 32K RAM (48K for high-resolution graphics). The tape version requires 16K of RAM (32K for high-resolution graphics). The ROM version requires 16K RAM if high-resolution graphics are used. A comprehensive reference manual is included. (Order Numbers: A2B0009—card, A2T0004—tape.)



APPLICATIONS SOFTWARE CATALOG

The Apple Software Bank supplies programs to handle a wide range of applications. Program medium is indicated by the model number. Numbers starting with A2D are supplied on diskette, and those starting with A2T are supplied on tape. All programs run on 16K, Integer BASIC systems unless otherwise noted.



Business and Finance

General Business System—The Controller (GBS I)

THE CONTROLLER gives a business control of its revenues and expenses through General Ledger, Accounts Payable, and Accounts Receivable computer software. THE CONTROLLER is designed for a non-technical manager or clerk. It handles accrual bookkeeping, and can easily maintain the ledger, customer, and vendor accounts of many small businesses. THE CONTROLLER provides better control of cash flow, reduces paperwork, eliminates last-minute "catch-up" accounting, prints checks and monthly account statements, and provides information in concise summary reports that allow a manager to make better decisions.

THE CONTROLLER has been designed with failsafe operation in mind. Its unique data entry system signals typing errors with an audible warning. It automatically makes copies of data files for historical purposes, in case of loss of the originals. And it automatically prints reports before the system will allow the user to close out the monthly books.

THE CONTROLLER Business System consists of three program modules:

The GENERAL LEDGER module maintains a file of up to 250 types of journal accounts with up to $90 million in any one account. Up to 750 journal entries can be made per month, and a unique feature allows customer and vendor account transactions to be created and posted to the general ledger automatically, without redundant typing. The system produces detailed, easy to read management summaries of journal accounts, revenues, and expenses; as well as balance sheets and income statements.

The ACCOUNTS RECEIVABLE module maintains up to 250 customer files per data diskette (up to 3 diskettes can be used). Each diskette can handle 750 sale and payment transactions per month, and the balance-forward system automatically summarizes transactions into account ageing periods at month end. Individual transactions can be for up to $90,000 each. The system produces a detailed summary of receivables, organized by the number of days each bill has been outstanding (aged trial balance). Monthly account statements are printed automatically for customer billing purposes, with optional finance charges added to overdue accounts. The system also produces mailing labels, customer lists, and sales commission reports by salesmen.

The ACCOUNTS PAYABLE module maintains a file of 100 vendors and allows 300 invoices for up to $1 million each, or $90 million cummulative. Payables are organized by due date, so that in planning cash flow a business can customize bill paying to take advantage of discounts and varying net terms. Checks are printed automatically, along with summaries of case requirements by due date and vendor. The system prints summaries of checks paid, new accounts, and a list of vendors.

THE CONTROLLER is packaged in an attractive 3-ring binder with a manual and diskettes. It requires 48K RAM, dual disk drives, Applesoft BASIC language, and Printer IIA. (Order No.: A2D0012)

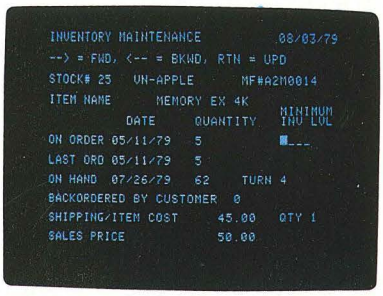
APPLICATIONS SOFTWARE CATALOG

The Cashier

THE CASHIER is an inventory control and cash register simulation system. It simplifies the retailer's job by eliminating redundant work in filling out lists and forms. Once a customer account is entered, the information is automatically used to generate sales receipts, billing records, mailing lists, and accounting summaries. THE CASHIER also gives a retailer better control of inventory, resulting in reduced shrinkage.

THE CASHIER can process backorders, down payments, and refunds, managing an inventory of more than 800 stock numbers.

The system is packaged in a binder with a manual and diskettes. It requires 48K RAM, dual disk drives, Applesoft BASIC language, and Printer IIA. (Order No.: A2D0025)



Apple Post

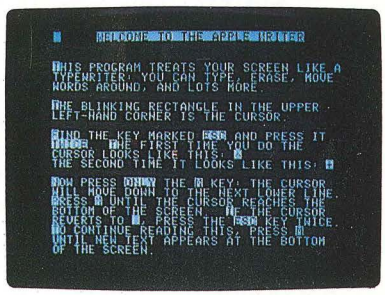
APPLE POST is a data base system that handles the creation and maintenance of mailing lists of up to 500 names per diskette. It allows for easy entry and editing of names, addresses, and phone numbers, and can print lists or actual labels in order by name or zip code. APPLE POST makes it possible to locate names and phone numbers quickly, and uses a unique "phonetic search" feature to locate names even when correct spelling is not known.

The mailing list system is packaged including a manual and program diskette. It requires 48K RAM, 2–6 disk drives, Applesoft BASIC language, and Printer IIA. (Order No.: A2D0013)

Apple Writer

The APPLE WRITER gives you the ability to edit memos, letters, programs, or even a novel. You can enter text, delete mistakes, move blocks of text, save and insert segments from a diskette, and search throughout the text to replace letters, words, or phrases automatically. Using the APPLE WRITER with a printer, you can print your edited material on paper, letter-perfect every time.

The APPLE WRITER is packaged with a manual and a program diskette. It requires 48K RAM and one disk drive. For printing out documents, a printer and interface are necessary. (Order No.: A2D0026)



Portfolio Evaluator

Maintain up to 50 stock portfolios on a diskette, analyzing each to provide summaries of short and long term gains and losses, current values of each portfolio, and shares held. Disk II, 32K RAM, and Applesoft BASIC required. (Order No.: A2D0007)

Checkbook With Financial Data Base Management

Maintains a data base of transactions: the date, amount, recipient, and classification code for each item. It allows check records to be saved, sorted, searched, and displayed. Trial balances can be run, and the account can be reconciled against a bank statement. The program eliminates most of the drudgery associated with checking account management. (Order No.: A2T0001)

Education

Education Series: The Shell Games

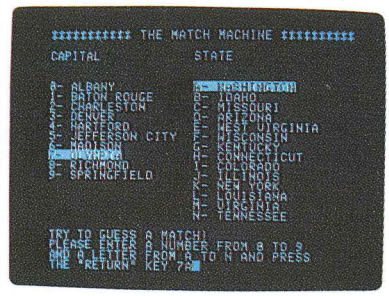
THE ANIMATED APPLE

The intriguing story of how APPLE grew from a tiny flower . . . See it all in this engrossing cartoon.

MATCH MACHINE

The Magnificent Match machine displays two columns of words that match. One of the columns is scrambled. Your job is to straighten them out! When you have matched every match, make up your own list on any subject. The Match Machine will help you make them a permanent part of the program.

APPLICATIONS SOFTWARE CATALOG



PROFESSOR TRUE — A true/false quiz at its finest, Professor True will ask you interesting questions and then tell you something more about it. For example: The most famous naval battle of the Civil War was between the Monitor and the Virginia. True or False?

When you've mastered what the professor has to offer, create your own quizes; the Shell Games editor makes it fun and easy.

MR. MULTIPLE — When did the first nuclear reactor go critical? Who played the dog on TV's Cosmo Topper? How should you dress for 15 degrees Celcius? If the answers to these burning questions are keeping you awake nights, Mr. Multiple is for you.

And if you know all the answers, how about making up some questions, using the built-in Shell Games Editor.

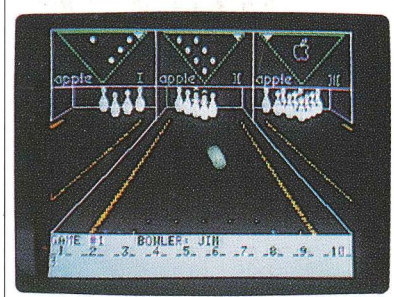
THE SHELL GAMES is packaged to include a manual and a program diskette. It requires 48K RAM, Integer BASIC, and one disk drive. (Order No.: A2D0014)

Utility

RAM TEST — A test program that provides peace of mind during RAM expansion by testing the installed RAM (Order No. A2T0006)

DATAMOVER — A program used to move data and programs from one APPLE computer to another over the phone lines (Order No A2T0012)

Entertainment



APPLE TREK SPACE WAR — Apple's version of the popular galactic warfare game. Supplied with: Man the guns of a rebel starship and try your marksmanship. (Order No. A2T0002)

BRICK OUT — Knock all the bricks out of the playing field and you're a winner! (Order No. A2T0003)

CHESS — Try your skill at this ancient game of strategy. Plays at eight levels of skill, so you're always evenly matched. (Order Nos. A2T0013—tape, A2D0009—disk)

APPLE BOWL — Enjoy this realistic simulation of a bowling alley. You have complete control of the ball; APPLE keeps the score. (Order Nos. A2T0015—tape, A2D0018—disk)

CONTRIBUTED SOFTWARE

The Contributed Software section of Apple Software Bank supplies programs to handle a wide range of applications. Currently available programs are supplied on an "as-is" basis in a series of five volumes (Contributed Software Vol. I–V).

The volume number to consult for each program is shown in parenthesis right after the program title.

Business

FILE CABINET (3) — General data base for storing, searching, and sorting lists of all types of data.

Education

COLORMATH (1) — Color/sound quiz in basic arithmetic

HANGMAN (1) — Color/sound guessing game that builds word skills

APPLE SOFTWARE BANK

CONTRIBUTED SOFTWARE

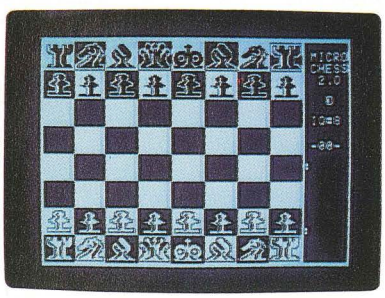
MASTERMIND (1)	A popular strategy game that builds logic skills.
THE INFINITE NUMBER OF MONKEYS/ Integer Basic Subroutine Package (5)	Combining an enjoyable animated story with a serious exploration of advanced programming techniques in Integer BASIC.
ENGINE (3)	HI-RES animation of an automobile-type gasoline engine, including a manual step-through mode.
THE GREAT AMERICAN PROBABILITY MACHINE (5)	Intuitive exploration of the laws of probability through LO-RES animation.
CALIFORNIA DRIVING TEST (5)	A practice test for California drivers and a fine example of educational programming for all.
HAMMURABI (1)	A fascinating economic simulation of a small agrarian country. The lives and prosperity of its inhabitants depend upon the player's decisions.
MORSE CODE (1)	APPLE II now has a perfect fist over a wide range of speeds, for those who want to build their skill at Morse Code.

Scientific Calculation

BONE TUMOR DIFFERENTIAL DIAGNOSIS (1)	To assist qualified medical practitioners in the diagnosis of bone pathologies.
AIRFOIL (3)	HI-RES graphics program that will plot the shape of an aircraft wing given the parameters.

Utility Programs

HI-RES GRAPHICS (3)	A package of graphics routines to assist the user in plotting on the HI-RES screen.
HI-RES CHARACTER SET (3)	A program to put characters on the HI-RES screen.
HEX CONVERTER (1)	Converts numbers between bases 10, 16, and 2. Simple sums and differences in these bases can also be computed.
INTEGER BASE CHR$ FUNCTION (1)	This program gives you the same ability in integer BASIC that the CHR$ function delivers in Applesoft BASIC.
INTEGER BASIC RENUMBER AND APPEND (5)	A programmer's aid to renumber entire programs or "glue" one program to another.



Entertainment

BLACKJACK (1)	SHOOTOUT (3)	PINBALL (1)	NIGHTMARE #6 (1)
CHASER (5)	INTERCEPT (3)	SINK THE SHIP (1)	23 BRICKS (1)
KALEIDOSCOPE (3)	APPLE-VISION (3)	CATCH (1)	YAHTZEE (1)
MISSION: U-BOAT (5)	SLOT MACHINE (1)	CURVES (1)	MAGIC LANTERN (2, 4)
APPLE ORGAN (5)	BIORHYTHM (1)	SEVEN (1)	INTERCEPT (3)
ADD-LIBS I (5)	OTHELLO (1)	TOWERS OF HANOI (1)	

APPLE DOCUMENTATION

	APPLE products come with complete documentation for users at every level of technical expertise.
APPLE II Integer BASIC Programming Manual	This manual starts from the beginning and guides the user's first programming efforts. A humorous style and abundant examples make this the ideal textbook for newcomers to personal computing. (Order No. A2L0005, 125 pages. Supplied with APPLE II systems.)
APPLE II Reference Manual	This manual addresses the details of the system: hardware schematics, firmware listings, special system features, and use of the monitor. It is aimed at the user who is comfortable with BASIC and wishes to become familiar with the advanced features of APPLE computers. (Order No. A2L0001, 151 pages. Supplied with APPLE systems.)
Applesoft BASIC Reference Manual	This extended BASIC reference manual is written for the user who is familiar with the BASIC language. (Order No. A2L0004, 170 pages. Supplied with APPLE II Plus systems.)
Applesoft BASIC Tutorial Manual	This manual is for the extended BASIC beginner. It provides programming examples and a detailed explanation of the language. (Order No. A2L0018. Supplied with APPLE II Plus systems.)
6500 Microprocessor Hardware Manual	This manual is directed at the hardware designer who wants detailed information about the 6502 microprocessor used in the APPLE. (Order No. A2L0002, 165 pages.)
6500 Microprocessor Programming Manual	This manual addresses the internal structure and assembly language programming of the 6502 microprocessor. It assumes that the reader is moderately familiar with computer concepts. (Order No. A2L0003, 239 pages.)
Disk II Reference Manual	The Disk II Reference Manual explains the installation and operation of Disk II Hardware. It also provides a comprehensive introduction to Apple's Disk Operating System software. (Order No. A2L0012. Supplied with Disk II and Disk Utility Pack.)
APPLE Pascal Reference Manual	This manual provides complete information on those elements of the Pascal Operating System that are particular to the APPLE implementation. It is written for readers who are already familiar with the Pascal language. (Order No. A2L0019. Supplied with the Language System.)

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