

The Genius behind HyperCard: Bill Atkinson

An exclusive interview with Quick Connect

He is a dreamer, an inventor, a software artist, and one of the biggest names in personal computing. Best known as the author of MacPaint®, Bill Atkinson has a penchant for pushing the frontiers of the Macintosh™ dream: to put the power of the personal computer into every user's hands. First, he gave all of us the power to create sophisticated graphics on a computer. Now, he's given us the power to become software developers without having to know a single word of programming code. HyperCard™ is already pushing the outer limits of this dream farther than anyone thought possible, except, of course, Bill himself.

We asked Bill to tell us his story of HyperCard and to make a few predictions about the future. Here's what he had to say.

How did you get the idea for HyperCard?

Actually, HyperCard is a descendant of two ideas. One was the give-away Rolodex program that I wrote just to keep track of my own journal articles. The other was a research project I did on what the new generation computer should look like. In this project, we knew what we wanted to build, but we knew we couldn't build it within ten years. Part of HyperCard is an extraction from that project that could be done on today's technology.

When did the product get underway and who was on your team?

I've been working on HyperCard for the last three years. Two years ago, I showed a working prototype of it to John Sculley. He got excited about it and wanted to make it a real product. And I did, too. So a team was put together at Apple which today numbers about 30 people. Four people contributed to the code: Dan Winkler worked closely with me writing the language portion, Adam Paal did the printing code, Ted Kaehler did the sound code, and Carol Taylor played a big role in the interactive, on-line help system. Chris Espinosa is my product manager and I was very fortunate to have him. He basically enabled me to just keep working to make it happen while he worked on the political connections, including the planning and the rollout. Mike Holm is currently the product manager while Chris is on sabbatical.

What breakthroughs were made over the last three years?

There were a lot of breakthroughs. One was when we first got from the smaller-sized cards that were the same size of the MacPaint window to full-screen ones. That really opened up the ability to use HyperCard as an authoring tool to make something that was an end application that didn't have to look like HyperCard.

A big breakthrough was when we went to bit-map packing. We really wanted to use the richness and lush detail that you can get with a full bit-map in the graphics, but they're very expensive—the cost of each shared graphic and card-specific graphic was 44K, uncompressed. So I worked out a new packing algorithm. I remember waking up at four in the morning and going downstairs to work on it. Basically the algorithm I came up with worked. It allowed us to pack many many more images per disk that we would have been able to otherwise.

Another breakthrough was working out the technology for fast searching. In my research, I had already figured out that, at least theoretically, the searching could be speeded up 100 times. When I actually got to doing it, the measured performance was 700 times faster! This breakthrough allowed us to search the Los Gatos town library card catalog—which had 100,000 cards or 15 megabytes of text—in 2 seconds instead of 10 minutes. We were really pleased. It was very exciting when that first broke.

How would you compare your work on HyperCard with MacPaint?

HyperCard is much more open and much more ambitious. Unlike MacPaint, HyperCard is something that you build on top of. It's going to open up people because there are so many things you can do with it. In terms of ambition, HyperCard is about 15 times as big as MacPaint. The assembly language alone in HyperCard is bigger than that in QuickDraw. It's certainly the largest thing I've attempted, and I think its the most significant in terms of what it will do to the computing community as a whole.

What will HyperCard do to the computing community?

All the people with great ideas or specialized knowledge of information won't need access to a professional Macintosh programmer with time on his hands to express themselves. Making stacks is no big deal. It's easy. The great ideas that are yet to come in the Macintosh world are mostly going to be from people who

aren't programmers but who have great ideas. HyperCard is going to enable them.

You've said that HyperCard is part of the original Macintosh dream. Could you explain what you mean?

The Macintosh dream has really been putting the power of the personal computer into an individual person's hands. We succeeded to some extent by using graphics and menus, and a consistent user interface and direct-manipulation metaphors to make the software more usable and accessible. The end user didn't have to learn all the control characters and all the command sequences and bits and bytes and stuff like that. You didn't have to be a computer jock to use the Macintosh.

But at the same time, we made it harder for the programmers to create Macintosh applications. It really takes not only a professional programmer, but also someone who has spent a year or so learning the *Inside Macintosh* handbook to understand how to use all the Toolkit features, the graphics, the menus, etc. So the Macintosh dream wasn't really complete because the individuals couldn't get all the power of the personal computer. They could only use canned pieces of power.

HyperCard, acting like a software erector set, really opens up Macintosh software architecture to where individual people can make their own customized information environment, and interactive information and applications without having to know any programming language. It takes the creation of software down to the level of MacPaint images that you like, then pasting buttons on top of them to make them do what you want. HyperCard puts this power into the hands of any Macintosh user.

What is the most exciting thing about your work as a software designer?

The art of creating software that is usable by individuals is a communication skill. It is not a programming skill. Programming and what a software artist does is analogous to a pianist who needs to know how to move the keys and have that down cold so that he can concentrate on the feeling and message that he is portraying in his rendition of this music. So slinging the bits is an enabling technology for me to express and communicate and teach. The most exciting thing for me is when I see people amazed and pleased at the newfound power they got from a program—when they say, "Wow, I

can do this!" That's the feeling people got back in 1984 when they saw MacPaint and started using it. It's the same kind of feeling that is going to happen here with HyperCard. But that feeling will be magnified, because the amount of power you get out of HyperCard is really so much greater. HyperCard is going to open up the whole meaning of what personal computers can be.

Can you make any predictions about the future?

I think if we look a year from now, I'll bet there will be 20 times as many people making interactive information for the Macintosh as there are now. A lot of people are going to get opened up, enabled, empowered to control their computer. That's really what we're trying to do. It's the same dream. Nothing's changed. It's the original Macintosh dream of making the power of personal computer accessible to individuals. HyperCard is just unfolding another layer of Macintosh. It touches all the people who now own Macintosh computers, and a lot of people who are going to own them because of this.

SIDEBAR

"The great ideas that are yet to come in the Macintosh world are mostly going to be from people who aren't programmers. . . ."

"Slinging the bits is an enabling technology for me. . . ."

A New Connection Says Hello!

You can't have too many good connections. Nor can you have connections that are too good. So Apple is pleased to introduce the User Group community to another supporter—and one of the best kind. She's Sue Goodin, Technical Support Engineer in Charlotte, North Carolina, and creator of the dynamic Tech Tidbits document now sent to all Apple User Groups.

Like many User Group members, Sue has been a long-time Apple advocate. In fact, she has aspired to work at Apple since putting her fingers on her first Apple® II. Today, she's mousing away at her office in East Coast Technical Support, providing technical and troubleshooting support to Apple's authorized dealers, national accounts, universities, and other direct customers, and assembling valuable technical insights in a spirited, easy-to-understand document now being distributed to User Groups.

Much of Sue's new job—she officially joined Apple in August after several months of contract involvement—is dedicated to answering her share of the 2,500 technical inquiries that her group fields each week.

But Sue wanted more. She wanted to feel the satisfaction of knowing her work improved Apple's connection with end users. That's when she discovered that the newly born Tech Tidbits newsletter could be expanded to address a larger audience. So she approached the Connection to determine how this growing resource could be used.

Needless to say, her question fell on eager ears. Within a week, back issues of Sue's documents were being formatted for User Group distribution, and ASCII versions were being posted to the User Group Bulletin Board System on AppleLink®.

"I'm committed to the User Group community, and to extending Apple's outreach to them however I can," Sue affirms. "In addition to my other responsibilities, I plan to 'hang out' when possible on the AppleLink User Group Bulletin Board, responding to User Group technical inquiries and other things my office can provide." She stresses, however, that she is a finite resource, and will not be able to get directly involved with User Groups outside of her geographic

region. "But Tech Tidbits and my AppleLink presence will be available to all groups," she adds.

Sue requests that any interested groups place her on their newsletter mailing list using the address below. Also, if your group runs a Bulletin Board, let her know so that she can make the appropriate referrals in her area.

We're sure you'll extend the same warm welcome to Sue that we have. Let her know that you appreciate her contribution by sending her your newsletter and corresponding with her on AppleLink. She can be reached the following addresses:

Sue Goodin, TSE
Apple Computer, Inc.
5130 Parkway Plaza Boulevard
Charlotte, NC 28210

AppleLink GOODIN2
CompuServe 70007,3141

SIDEBAR

". . . Tech Tidbits and my AppleLink presence will be available to all groups."

[Sidebar Story]

On a Personal Note

Sue's personal life involves Apple, too. She met her husband—you may know him as the Primary Sysop on the Apple II/III Forum on CompuServe's MAUG—through her involvement with Apple computers. But the real apple of their eye is daughter Barbara, age 2, whose favorite phrases include, "Mommy, 'puter NOW!" and "Daddy, Mac! Do balloons!".

Sue's technical expertise came in handy when Barbara tried a user interface experiment on her Apple IIe: drizzling iced tea onto the keyboard. A command followed: "Clean keys, Mommy!" Hmmm. Sounds like multitasking is no problem for Sue!

Making an Impression with Desktop Presentations

As a User Group, you probably give presentations all the time. So you already know the value of using visuals to get your point across. But you may not know about the host of new tools and techniques that can help you prepare your materials quickly, cost-effectively, and beautifully using Apple technology. It's all part of Desktop Presentations—a major new applications area that Apple is addressing to help people like you communicate more effectively.

In both large corporations and small professional firms, Desktop Presentations is rapidly becoming one of the hottest applications for the Macintosh and LaserWriter®, particularly in the areas of sales, marketing, education, and training. Workgroups everywhere are discovering that these two tools are ideal for creating high-quality visual aids for everything from small, informal business meetings to large-scale, slick sales and marketing presentations. Here's a sampling of how Apple technology can help make any presentation take on a whole new dimension.

With a Macintosh and LaserWriter alone, you can produce exceptional quality black-and-white overheads just by loading the paper cassette with transparencies and clicking on Print. Charts and graphs, illustrations, and text-only outlines come out looking professionally done in near typeset quality. And if you want to get fancy, there's a new software product that's opening up new possibilities in preparing presentation materials. PowerPoint, developed by Forethought (now owned by Microsoft Corporation), not only allows you to create overheads by cutting and pasting graphics, text, or scanned images from other applications, but allows you to add borders, designs, or your company logo to your materials. Once you design a template, it can automatically be transferred to all your overheads. The program also gives you the capability of adding speaker notes below each overhead and printing mini versions of each one—up to six per page—to use as handouts.

For those of you who want to add a bit of drama to your presentations, PowerPoint features a "slide show" capability so you can present your materials right on the Macintosh screen. If you need to project your Macintosh images for large audiences, there's Macnifier by Comtrex Ltd. This small LTD device, which connects to

the Macintosh through the video out port, sits on top of your overhead projector and magnifies images from the computer screen to a large screen or on a wall.

Another new entry into the world of Desktop Presentations is a desktop slide-making machine called ImageMaker by Presentation Technologies. With ImageMaker, you can create 35mm slides from any image on your Macintosh screen. In fact, you can create *color* slides even if you don't own a Macintosh II. How? By selecting fill patterns for the different colors you want in your slide. So even if your screen is black and white, ImageMaker can produce slides in living color. And, to produce your slides, you pay only for the cost of film and developing—quite a cost savings over the \$50 to \$100 per slide typically charged by professional service bureaus.

These are just a few of the Desktop Presentations solutions currently available for creating materials that make you look your best. As the market continues to grow, you'll see more and more new products that can help you produce some very impressive presentations from a desktop.

SIDEBAR

New tools and techniques . . . help you prepare your materials quickly, cost-effectively, and beautifully using Apple technology.

Connecting with Joan Tabb . . . The right kind of encounter!

Chance encounters happen all the time, but how many of them change your thinking, your job, your lifestyle? Joan Tabb has had three such encounters in only two years' time. But then, synchronicity has always been a part of Joan's life. She seems to meet the right people at the right time—in hallways, in parking lots, in elevators. And this propensity will serve her well as the new Program Manager for Government and Business User Groups. In this role, Joan's job is to bring people and ideas together in mutually beneficial ways. Here's a look at how Joan connected with the Apple's User Group team and how Apple's government or business User Groups will soon be connecting with her.

Two years ago, Joan made her first connection with Apple. At the time, she was managing the new sales training program at Memorex and producing video tapes on the company's new products. She was also the program chairperson in a professional group of instructional designers and training specialists—the Silicon Valley chapter of the National Society for Performance and Instruction. The president of this organization happened to be Bob Loftis of Apple's Customer Publications group. Bob was Joan's first connection with Apple. As Joan describes it, "He tapped me on the shoulder at one of our meetings and said, 'I know the company you should be in.' Two months later, I was at Apple."

Her first mandate in Apple's Training Support group was to develop sales training programs for two channels: national accounts and VARs (Value-Added Resellers). But it wasn't long before a second chance encounter added another responsibility. "One day I was walking down the hall," Joan recalls, "and literally bumped into Bob Hall—one of the architects building Apple's government sales program. We began discussing training for this group and one thing led to the next. Before I knew it, I had become the training person for government sales, in federal as well as state and local channels."

Training Apple's government sales reps was perhaps one of Joan's biggest and most rewarding career challenges. "My task was to develop training for these people—to teach them the products, how to work with Apple corporate, how to write Apple contracts, and how to maximize the Macintosh." And train she did. In this one-week

training, Apple's entire government sales force learned the basics of everything from A to Z about Apple products and opportunities for them in government applications. And from them, Joan learned a lot about working with the government.

It was Joan's work in training that led her to her third chance encounter—this time with Ellen Leanse, the Connection's program manager. Joan tells it this way: "I realized that I wanted my next career move to bring me closer to our end users. I really wanted to work with those people who had real love and enthusiasm for our products. That's when Ellen and I bumped into each other in the parking lot. We already knew each other, because she often made presentations in sales trainings. So when I told her what was on my mind, she said, 'Call me when you get back to the office. Let's talk.' And that's how I got into the User Group Connection."

And that's where Joan is planning to take full advantage of her government and business sales connections, her training background, and what she considers her main skill: communicating.

As Joan explains, "I feel that above all else, I am a communicator, and my goal is to bring together three different groups to share information and support: Apple corporate, the government and business User Groups, and Apple field offices—the sales and support people who can provide the resources that User Groups want. These groups can generate new ideas just by being together, and my job is to facilitate that communication and coordination. I want to be a catalyst to create more momentum, more enthusiasm, more sharing of the resources from Apple and the ideas, strategies, and solutions that people have out there. My role is to be a clearinghouse for information and to connect all these people together to build new programs to facilitate these efforts.

"I have a tremendous enthusiasm for what's in front of me. Both government and business are markets that have hardly even been tapped, and I see User Groups as an integral part in helping Apple break new ground. The User Group community, in providing service, support, and training, has already become an important resource for the large numbers of new business and government Apple Computer users. I feel an overwhelming appreciation for them and am privileged to be a part of building the business and government User Group efforts.

I encourage anyone from these groups who is interested in participating or contributing their ideas and suggestions to drop me a note, or link me at AppleLink TABB1."

So, if you're a government or business User Group, don't leave your encounter with Joan Tabb to chance. Who knows? This may be just the connection you've been looking for!

SIDEBAR

"I want to be a catalyst to create more momentum, more enthusiasm, more sharing of the resources from Apple and the ideas, strategies, and solutions that people have out there."

Developing Your Own Training on the Macintosh

by Jeff Vasek

Suppose you've been asked to put together a training class for your User Group. Whether the class will teach geometry, wind surfing, or cooking, you decide that the best training program would be one developed and run on a computer. If you were ambitious enough to try it, you would probably sit down at your computer and start programming in BASIC, or Pascal, or even Assembler. After hours and hours of programming, you might have about five minutes worth of instruction that might or might not do justice to your topic. That's when you'd say to yourself, "There's *got* to be a better way!"

We at Apple arrived at the same conclusion. Our job is to develop computer-based training (CBT) to teach our customers how to use the computer. And our situation wasn't much better than the one described above. We'd begin with a concept, spend months committing our training to paper (which we called a script), then hand it over to a programmer who would go away and come back a couple of months later with a finished version of what *he* thought we meant to show. Then we'd correct it, maybe add a few graphics, and hand it over to the programmer again. This cycle would go on until we got it right, or until the training absolutely had to ship. We also decided that there had to be a better way.

And we found several. Thanks to a whole new kind of software that's now available for the Macintosh, we've discovered a variety of ways to develop high-quality CBT faster, more efficiently, and more economically. We'd like to share these new tools with you, as well as the ways we're using them here at Apple.

Storyboards

Because people learn better when concepts are presented to them visually, we decided a few years ago to develop graphic-based training programs rather than text-based programs. We wanted the graphics to be an integral part of the training rather than an illustration or two thrown in when there was enough space left on the disk. To show the programmers how the graphics and the instruction fit on the screen together, we started using storyboards. A storyboard is a kind of script that shows the text and graphics that

will appear on the screen. It also describes in words and graphics the action that will occur on the screen, whether it is some type of movement of the graphic or an action that the user should complete.

Unfortunately, sketching the graphics on paper, typing the words on a word processor, then laboriously cutting and pasting them (you remember the days of manual cut and paste, don't you?) into the storyboards was a real tedious operation. Then along came the solution in the form of desktop publishing on the Macintosh. We could now develop the sketches with a graphics package and the text on a word processor, then integrate them using a page layout package, such as PageMaker or Ragtime. For the first time, we were able to show the ideas we had for the training without using scissors.

Then we discovered we had another problem on our hands. No matter how detailed our storyboards were, and no matter how much we waved our arms in the air to explain what would be on the screen, people who didn't have a lot of experience with CBT couldn't envision what the final product would look like from the sketches and words we showed them on paper.

What we needed was a dynamic storyboarding tool, one that would allow us to show the graphics and text on the screen just as it would appear in the final product. Enter HyperCard, Apple's new system software product. With HyperCard, we could very easily import text from the word processor and sketches from the graphics package to individual cards, each representing a full screen. We could create buttons so the reviewer could move through the instruction, and even flip through several cards very quickly to simulate the animation we had in mind. For the first time, we were able to show the training exactly as it would look in final form, but without the months of programming time that usually went into developing a prototype.

Authoring Languages

After we'd found the tools to develop storyboards more efficiently, we still needed to expedite the production of the final version. Programming the training product in BASIC or Pascal took enormous amounts of time. Revising even the smallest part of the program—to fix a bug or to make a part of the training easier to understand—required rewriting a lot of the code, which took more time. And, as any programmer knows, fixing a bug in one place always presents the possibility of introducing more bugs somewhere else.

What we needed was an authoring language—a software program that would allow us to put the text, graphics, and interaction together in final form without having to resort to a programming language. What we found was VideoWorks Interactive (VW/I), a derivative of the original VideoWorks, co-developed by Apple and MacroMind. VW/I moved graphic "sprites" (or objects) on the screen and received user input—either from the mouse or the keyboard—and checked it against predetermined correct answers. The program allowed the training to branch in several different directions, depending on the feedback we wanted to give the user. This was the tool we used to develop such training disks as *Your Apple Tour of the Macintosh SE*, and *Your Apple Tour of the Macintosh II Applications: A Software Overview*.

But because VW/I relies on sprite animation, it requires knowledge of how to move objects across the screen, as well as some programming ability to structure the user interaction. Here at Apple, we use people who have both the graphic animation ability, as well as a bent for programming, and we call them instructional animators. The result of their work is near movie-quality training.

In addition to this authoring language, others are available with different features and flexibility. For example, languages based on graphic flowcharting allow each screen to be designed independently—complete with text, graphics, animation, and user interaction, then linked together in a sequence determined by a flowchart. HyperCard, too, works like an authoring language, since it allows cards, or screens, to be designed and linked together in any order to create the final CBT.

Conclusion

With these tools and others like them, we at Apple can develop and produce sophisticated CBT in less time than was ever possible before. And so can you. Gone are the days when you needed a background in computer science and computer programming to put together a training program that worked. But just like the old days, good CBT still requires research and planning, and results from a good design. If you don't know what you want to teach before you begin developing the training, you'll almost always end up teaching the wrong thing.

So the next time your User Group needs a computer-based training course, get your hands on the tools that will make the job easy. Because now, the power to develop CBT is where it belongs: in the hands of the people like you who have both the knowledge to teach and the ability to teach it.

Jeff Vasek is manager of the Interactive Education group within Apple's Customer Publications and CBT department. Jeff's department is responsible for producing CBT for all of Apple's products and has spent the last two years developing and using state-of-the-art CBT development tools for the Macintosh.

SIDEBAR

"What we needed was a dynamic storyboarding tool. . . . Enter HyperCard."

The result of Apple's instructional animators' work is near movie-quality computer-based training.

Apple Grantees and User Groups: Forging the Missing Links

by Sterling Speirn

As many of you know, Apple's Community Affairs program donates computers to charitable organizations throughout the United States. These "Apple grantees" are quite a diverse group of nonprofit organizations whose successful proposals have earned them donations of computer equipment. Included in their grant are three days of hands-on training to help them launch their computer projects. Trainees arrive at our lab in Cupertino in a curious condition. They are what we call "inexperienced experts." They have clearly become quite skillful in their service areas, be it food banks or AIDS projects, a program for disabled citizens or an arts consortium. But they are just beginners when it comes to using computers. Despite their years of experience, they are entering unknown territory. And they need help.

After more than five years of helping human service and arts groups adopt computer technology for their operations, we believe the critical factor for most nonprofit groups is ongoing local training and support. And that's why one of the first things we tell grantees is, "Join a User Group." Well, some do, but too many don't. I suspect our grantees resemble the majority of nonprofit organizations. They imagine that User Groups are just for pros, and they don't realize what a wealth of information and assistance they might find if only they would join.

At User Group University this spring, I was overwhelmed by the enthusiasm that User Group representatives seemed to have for helping nonprofit enterprises in their communities. I was interested to hear how various groups had taken on special projects to help local organizations or schools, and I wondered out loud in several conversations how User Groups could recruit more nonprofit people and help shepherd these new users and late adapters into the technological fold. I also wondered if the phenomenon reported by one User Group president—that he gets many calls from members who wish to volunteer their services—was common among all. And if so, how were User Groups identifying needs and opportunities in their communities where members' computer skills could make a difference?

This summer, our staff has been on the road conducting follow-up training workshops around the country. At every site, User Group representatives have been there eager to help train and conduct demonstrations, and to let Apple grantees know just how much the User Group has to offer them. It's that old story of the out-of-towners playing matchmaker. As soon as our grantees realize that the answer to a software glitch may be just a phone call away, or that a User Group member is actually excited about helping them get their modem hooked up or a template working, their eyes light up quicker than you can say "AppleWorks!"

If you have ideas about how these kinds of good connections can be fostered among User Groups and Apple grantees and nonprofit groups in general, we would greatly appreciate hearing them, and we would like to share them with others interested in undertaking similar projects. More than the hardware or software they are often identified with, User Groups also offer their communities something else, and that's humanware.

Sterling Speirn is the Program Officer for Community Affairs at Apple Corporate Grants. He can be contacted at SPEIRN1 on AppleLink.

SIDEBAR

One of the first things we tell grantees is, "Join a User Group."

Trivia Questions

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Who was the first celebrity spokesperson for Apple Computer?

page 4

What type of insect was the original computer "bug"?

page 5 top

What everyday office function were Apple employees once forbidden to do while standing up?

page 5 bottom

What was Mike Markkula, co-founder and one of Apple's early Presidents, doing for a living immediately before he came to Apple?

page 6 top

What was the name of the festival put on by a well-known Apple founder?

page 6 bottom

Who told The Wall Street Journal, "We believe this will be a two-horse race between Apple and IBM"?

[BULLETIN BOARD ITEMS]

Introducing the Apple Training Alliance Program

In response to the growing demand for Macintosh applications training, particularly for Desktop Publishing solutions, Apple will announce a new training program in October. We have established the Apple Training Alliance (ATA) to encourage and support successful training efforts by selected third-party training companies and authorized Apple dealers.

The objective of the program is to make Macintosh application training more accessible to our users. The first five applications will be:

- Aldus PageMaker 2.0
- Microsoft Word 3.01
- Adobe Illustrator
- Forethought PowerPoint
- Silicon Beach SuperPaint

For more information contact your authorized Apple dealer.

Trivia Teaser Answers

page 3—
Dick Cavett

page 4—
A moth

page 5 top—
Talk (It got too noisy, since offices were separated only by five-foot cubicle walls.)

page 5 bottom—
Nothing (He was retired.)

page 6 top—
The US Festival, by Steve Wozniak, 1982/83

page 6 bottom—
John Sculley

Did You Know?

John Sculley, Apple's Chairman, CEO, and President, is an author. His book (co-authored by John A. Byrne of Business Week magazine), entitled *Odyssey: Pepsi to Apple . . . A Journey of Adventure, Ideas and the Future*, will be published in mid-October by Harper & Row.

These Months in Apple's History . . .

SEPTEMBER

1976—Six months after Apple began, Jobs and Woz are splitting a monthly salary of \$250.

1977—The first Apple International Show opens in Paris.

1980—Apple's employee count has grown to over 1000.
The Apple III is introduced.

1981—The first Dealer Executive Briefing is held.

1984—The Macintosh 512K is introduced.

1985—The ImageWriter® II and HD-20 are introduced.
Steve Jobs resigns.

1986—The Apple IIgs™ and an enhanced Apple IIc are introduced.

OCTOBER

1979—Personal Software, Inc. releases VisiCalc for the Apple II. The spreadsheet is the first application to make personal computers a practical tool for people who don't know how to write their own programs.

1980—The Cork, Ireland, manufacturing facility opens.

1981—The National Accounts Program is launched.

1983—The Certified/Registered Developer Program begins.

1984—Apple's Corporate Grants Department is formed. It encompasses Education Foundation and Community Affairs, as well as the company's Employee Volunteer Action program.

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