

Boca Diary

by David Bunnell

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Christmas. The
charter issue of
PC Magazine
is in a mad
flurry of
typesetting,
proofreading,
& production.
It is in a
state which I
call "flying upside down."*

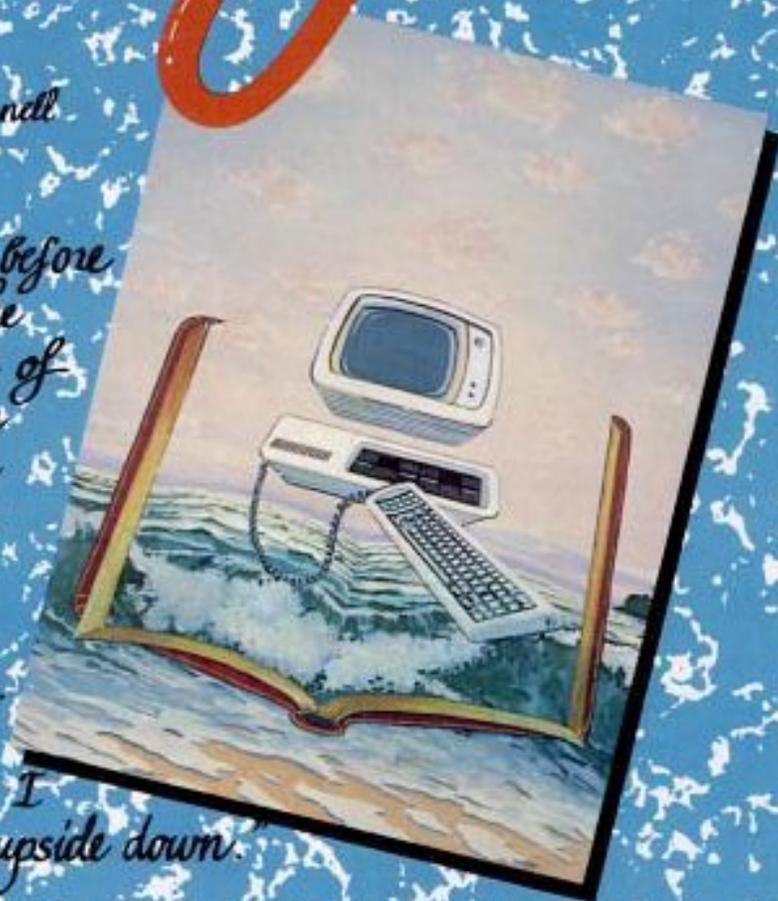


Illustration: Michael Starkman
Art Direction: Tim

Thursday, December 17, 1981—

It's the week before Christmas, and the charter issue of PC magazine has reached that frenzied stage of production which I call "flying upside down."

However, two lucky PC staffers, the publisher and the photographer, have won a reprieve: we are flying—right-side-up—to Boca Raton, Florida, a resort area north of Miami. Many of the passengers seated around us are wearing palm tree prints and oversized, frivolous hats; it's easy to see that they're on their way to a vacation or a holiday reunion. However, we have a much more serious purpose in mind: we are on assignment to visit the birthplace of what could turn out to be the most dynamic electronic product of the decade—the IBM Personal Computer.

Actually, I find this turn of events somewhat strange, although certainly in keeping with the gyrations of the personal computing business. Last August, when IBM announced the Personal Computer, I was sitting in my office at Osborne/McGraw-Hill, in Berkeley, California, staring out the window at people wind-surfing in the neighboring recreational pond. I was thinking about how much I liked being a book editor and how I might stick it out for a few years.

To tell the truth, the announcement didn't exactly cause me to jump out of my chair with excitement. "IBM, ho-hum," I thought. "Just another computer company jumping into the personal computer market."

What finally awakened my curiosity, however, was the attention the IBM Personal Computer was getting in the press and the impact it had on the people around me. None of my associates wanted to talk about the Apple III or the Osborne I computer anymore, nor did they want to fantasize about writing the next super-selling program. They didn't even care about the movies.

All they wanted to talk about was the IBM Personal Computer—what it was, its potential and limitations, and, most of all, the impact IBM would have on the business of personal computing. Would the major shareholders of Apple quickly sell their stock and retire to Hawaii? Would Tandy go back into the leather business? Did Commodore even know yet? Those were the burning questions of the day.

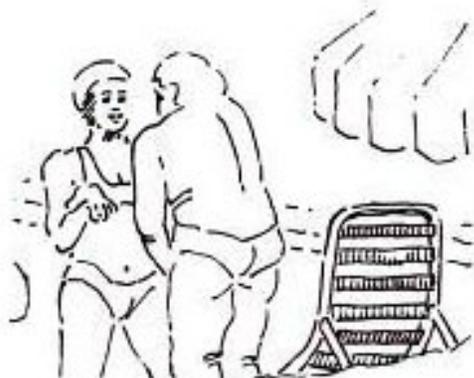
Friday, December 18, 1981—

I am blown away. What to me is a hurricane, but to Floridians would be a mere wind storm, is shaking the walls and windows of my ocean-front motel room far more fiercely than a California earthquake. Also, the phones are out, but that's not what I'm talking about.

What I am talking about is our visit to the IBM Personal Computing division, which has turned out to be a major event and one which I am very pleased and somewhat surprised about.

First of all, the place itself is a standard gray IBM building situated in a rural setting just off the freeway on the inland side of Boca Raton. We were there from nine in the morning to around six in the evening, during which time I talked with many of the top people involved in the design, production, and marketing of the IBM personal computer. We also got a fascinating tour of both the "old" IBM factory (where the PC is currently manufactured) and the newly built IBM PC factory, which, by all appearances, will be in operation within a few months.

Our guide and hostess for the day was Jeanette Maher, the Senior Information Representative for the Personal Computer division. Jeanette is a



very competent professional who knows how to conduct business in a friendly manner. In fact, all the IBMers I met that day seemed to be cut from the same cloth: entirely professional but neither stuffy nor arrogant. Also, I noticed that they really care about excellence, taking pride in both their individual and the company's accomplishments.

Jeanette and her associate, Hal Jennings, Marketing Support Representative (no relation to "HAL"), greeted us in the reception area and led us to the nearby Personal Computer demonstration room. There we spent the morning in meetings with the key members of the development team that made the IBM Personal Computer. (In between these visits, we played with the new IBM math games, including *Beano* and *Rockets*.)

Our first two visitors were Bill Sydnes, Engineering Manager, Entry Systems Business, and David Bradley, Manager of Entry Systems Business Architecture. I asked them about the open-bus structure of the Personal Computer and how they felt about third-party companies selling such things as IBM PC-compatible memory boards. Sydnes told me that the PC was definitely "designed to be open." He and Bradley were very interested in hearing about these products and they were fascinated that so many were already available.

They were particularly intrigued by Tecmar, the Cleveland engineering company which, at that time, had already developed more than 20 options, including a PC expansion box. I confess that I was taken aback by this. Although I came to Boca with few preconceived notions, I was surprised to learn that IBM would welcome competition.

Then Sydnes said something which I found stunning: "The definition of a personal computer is third-party hardware and software."

I told him that I appreciated the open-bus design but questioned there being only five slots for plug-in boards. He said that it was a "design trade-off" having to do with the size of the power supply in relation to its capacity.

Sydnes pointed out that the IBM Personal Computer has the capacity to emulate the IBM 32/70 mainframe, and thus he expects the IBM Personal Computer to find its way into many major corporations where it will be used both as a stand-alone unit and as an intelligent terminal hooked to the 32/70.

Obviously proud of the PC achievement, Sydnes said that the PC has been designed for maximum flexibility and that it could easily be interfaced to any kind of printer or display. (Some PC users might dispute the word "easily.")

Following my conversations with Sydnes and Bradley—whose most memorable quote was that he was "not at all surprised" by the success the IBM PC is having—I met with Senior Programmer Mel Hallerman and Dave Stuerwald, Manager, Entry Systems Business, Programming and Publications. These two gentlemen threw some light on the operating system question. I asked them which of the three operating systems—DOS, CP/M-86, or p-System—would be used the most. Without the slightest hesitation, Stuerwald replied that the "great majority of users will use DOS" because they will want to take advantage of its "native interpreter," Microsoft BASIC.

"If code is written in Microsoft BASIC, then it doesn't matter what the CPU is," Stuerwald further explained.

Hallerman added that while all three operating systems "have value for us" and that there will be "a nice market for all of them," the "overwhelming majority will be DOS-based."

Next, I met with the man who actually designed the IBM Personal Computer: David O'Connor, Manager of Systems Architecture. Mr. O'Connor, who is an extremely bright and articulate fellow,



seemed proudest of the "human interface" aspects of his design, such as the fact that open manuals can rest on the keyboard and that it fits into office furniture (the main unit can be installed in a drawer, which explains why the keyboard cord is plugged in at the back).

I asked him when they started the Personal Computer project and he said that it was in July, 1980.

— He volunteered that there was an "unbelievable level of enthusiasm" during the time of the project and that indeed, there were lots of days when "I had to tell people to go home."

The design of the IBM PC is a "conservative design" and O'Connor freely admitted that when designing physical packaging, there are always "compromises" to be made.

I asked O'Connor why IBM chose to use a 16-bit microprocessor rather than a standard 8-bit machine. His answer to this question was that there isn't anything very challenging about 8-bit machines. "Can you find anything they haven't tried?" he asked. "On the other hand, 16-bit machines have the potential for far more commercial and design applications."

O'Connor believes that color graphics will rapidly become important in business applications. He is hoping someone will design a color-card adapter with an attachment for a light pen so that users could paint or draw color directly on the screen.

— "If color is so important," I asked him, "how come it wasn't included as a standard option? Why does it require a separate interface board?"

O'Connor's answer was that it was done separately so that the PC can have two monitors operating in tandem. The color monitor would be used for graphics while the monochrome display would be used for menus.

Before departing for his busy office, he pointedly took time to express his belief in the importance of third-party software authors' employing a keyboard usage consistent with that in other programs. I assured him that I would make our readers aware of his concern, and that PC also believes in maintaining keyboard standards.

— Following the meeting with O'Connor, we left the gray building to have lunch with Jeanette at a nearby restaurant, where I learned that she had been an IBMer for 12 years and that she had a wealth of experience in the public relations field. Jeanette moved from New York to Boca Raton for the Personal Computing Project, and we discussed the drastic change in environment that this had brought about.

Upon returning, I had a fascinating interview with Philip D. (Don) Estridge, Division Director, Entry Systems Business Unit, who is in charge of the entire project and who presently heads the Personal Computer division. Estridge, who is a lanky, imposing figure, seemed as though he had a thousand things on his mind, which I am sure he did. Still, he projected a take-charge attitude and quickly warmed to my questions. In fact, he was ready with his answers much faster than I was with my questions. I found him such an interesting person that the minute I returned to the motel, I had to play the tape and transcribe the highlights of our conversation, which follow:

PC (that's me): Why did IBM enter the personal computing market?

Estridge: The simplest reason is that it represents an opportunity for business. With the explosion that occurred between 1977 and 1979, it became enough of a business to be interesting.

The second reason is a little more difficult to pin down. We believed we could build a machine that would be something special—so special that people who hadn't used IBM equipment before would use it. Also, our own employees would have access to a personal computer; it would give an outlet to the programming creativity that was inherent in the IBM population.

Estridge





Building lots of PCs

PC: Why did you decide to go with third-party software?

Estridge: We believed that a very wide array of software would be one of the key factors in the widespread use of the Personal Computer. There is no way that a single company could produce that much software; even if it were possible, it would take too long. So we needed to have the participation of other software authors and companies.

Another reason was a little more pragmatic: we didn't think we could introduce a product that could out-BASIC Microsoft's BASIC. We would have to out-BASIC Microsoft and out-VisiCalc VisiCorp and out-Peachtree Peachtree—and you just can't do that. They have established good products and it didn't make any sense for us to ignore that. Quite the contrary; we really wanted their participation.

PC: Are you surprised by the response to the IBM PC?

Estridge: We wanted to fit into what we believed was the existing infrastructure of software houses, authors, hardware vendors, and retail distribution channels that had arisen. We were very anxious to get people to understand that we really did want to fit in and that we weren't trying to set rules for others to live by. We are very surprised that this view seems to be getting across well. No, "surprised" is not really the right word; "pleased" is better.

From the standpoint of the success of the machine, the demand for it is very strong. We always thought it would be, and it is every bit as strong as we'd hoped for.

PC: How many machines will you ship in 1982?

Estridge: Lots!

PC: Well, I tried.

(Things may be different at IBM with regards to the Personal Computer project but getting projections of, or information about, future products is impossible. Jeanette scolded me mildly for persisting in asking such questions, but I continued to do so in the hope that something might slip out. It didn't.)

PC: In developing your strategy, did you closely examine Apple's strategy and the reasons for their success?

Estridge: No, we didn't. We didn't look closely at any single product. Instead, we looked closely at what purchasers were doing. We asked these kinds of questions: Why did the customer buy? What machine capabilities were the customers using? Why would people want to buy a personal computer in the future? If you hadn't purchased one yet, what was it you were waiting for?

PC: Nonetheless, many industry analyses conclude that the IBM Personal Computer is a "Super-Apple" because it has high-resolution graphics, music, and other similar features. Also, it seems that IBM's promotional campaign is similar to Apple's, is perhaps following Apple's lead.

Estridge: Well, we certainly would not call it a Super-Apple. We think there are a lot of features in the machine that stand on their own. It has some similarity to other machines but there are significant differences as well.

As far as promotion goes, we wanted to make sure that people knew we had this machine, so we began our advertising effort with the most eye-catching, appealing awareness campaign we could devise. If that makes our promotion look like someone else's, it is an accident.

PC: Some of our subscribers have commented that they wish IBM had provided better word processing, that is, a more advanced package than EasyWriter.

Estridge: We wanted a middle-of-the-road word processor, one that would function relatively well for a private individual and also offer a minimum level of function for a professional. We also wanted one that would be affordable. We knew there were packages that had more functions and were more expensive, and we knew there were packages that had fewer functions and were less expensive. We just made our choice.

PC: Can you share with our readers some more about the project itself and how you were able to put it together in just a little over a year?

Estridge: Gee, it seems like only yesterday. There were a lot of people at IBM—not just in the technical areas, but throughout the company—who wanted IBM to build a personal computer. There was a high level of enthusiasm; if you became a member of the project that enthusiasm carried over into the project. From the beginning, we knew what we wanted to build so we didn't spin our wheels asking, "Is this the thing we really want to do?" I think it has already been shown that we were more on the track than off it. Then we just went to work—and didn't eat or sleep for a year.

I don't remember the exact quote, but someone said that it was "One percent inspiration and 99 percent perspiration."

[Note: It was said by Thomas Edison, who doesn't work for IBM.—Ed.]

PC: Can you share with us any of your fears before IBM made the announcement?

Estridge: Well, you never know for certain how people are going to react to a product, so there is a great deal of uncertainty about its probable success. We received a great deal of support from people in the software community, such as Microsoft and Personal Software, who told us, "You've got a good machine," and our advertising people told us we had a good machine. But, what about the people who were going to express their support in terms of dollars and cents? That part we didn't know.

Also, what if we couldn't build it? The Personal Computer constitutes a lot of product and a lot of volume in a short time. Never before has any division of IBM tried to build so many computers. What if we couldn't do it? What if one of our suppliers ran into a problem that none of us had anticipated? There were any number of unknowns.

PC: Aren't you still facing some of these manufacturing and supply questions?

Estridge: No, the question today is how quickly we can build them, not IF we can build them. We are shipping them and the quality is just superb. Our attention has turned to building enough so that there can be off-the-shelf delivery.

PC: Will IBM continue to build the machine in Boca Raton or will there be other locations?

Estridge: Well, we do build at Boca right now. We are always asking ourselves whether we are doing the best job. I would say "forever" and "always" are things that never happen at IBM.

PC: That is a quote you could apply to the whole PC project.

Estridge: We are very quick to change our plans if we find a better way.

PC: Tell us why you called it the Personal Computer.

Estridge: Because that's what it is.

PC: Why doesn't it have a model number?

Estridge: We thought that putting a model number on it would cause confusion about what the machine was for, so we just didn't do it.

PC: But doesn't that create a problem with future machines?

Estridge: It doesn't bother me. Someone asked me what the next IBM



personal computer would be called, and I said, "The IBM Personal Computer." I don't know why there should be anything but the name.

PC: Were there alternatives?

Estridge: There are always alternatives.

PC: Can you tell us what some of the other leading candidates were?

Estridge: We never talk about the others.

PC: Are you concerned about software piracy?

Estridge: Our plan is to protect the software in a simple way: by impressing users with the fact that unauthorized copying is illegal. If we were to find it being done flagrantly, we would probably take clear action. It is against the law, and it is stealing our assets. Beyond that, software piracy takes all the fun out of the very reason software authors want to participate, which is to be creative and to have a chance to strike it rich through royalties. It doesn't make sense.

PC: Still, even with copy protection, it is pretty easy to copy a diskette.

Estridge: But it is wrong, and it is disappointing to me to think that there are people who knowingly do it. It is just a form of thievery. I think it is the single greatest threat to the viability of these machines.

PC: Do you think the price of software is a factor?

Estridge: I don't know if you were at the recent Boston Computer Society meeting, but Mike Markkula, from Apple, talked about something that turned out to be somewhat controversial. He said, in effect, "Why don't we forget about having copy protection, let's just don't do it. That way, we'll implement—that is, we'll not copy protect—the code but price everything the same. We could price it on the basis of the cost of manufacturing the diskettes rather than on the basis of the value of the material stored on them." This approach would be similar to that used in the record industry and there is a lot of merit to this idea, but none of the software authors will agree to it.

PC: Maybe when the volume goes up?

Estridge: Only when people stop copying. It has nothing to do with volume. People have to stop copying.



That was an intense interview; following it, I was pretty depleted. However, the highlight of our Boca journey was yet to come.

Next there were brief discussions with Manager, Entry Systems Business, Sales and Service, "Sparky" Sparks, and Staff Communications Specialist Dave McGovern. We talked mostly about the new market directions IBM is taking with the PC. Sparky assured me that IBM will soon be announcing new retail outlets for its Personal Computer, but he was careful not to say when or where—or especially, how many.

Then Jeanette introduced me to Dan Wilkie, a tall, athletic-looking man who is the Manufacturing Manager. He was in a very relaxed, jovial mood. I discovered the reason for this attitude when I shook his hand, as he happily announced that that very day, the IBM PC manufacturing division had reached its production goal for 1981.

Naturally, I asked him what the production goal was and with a smile he declined to tell me. But he assured me, and I later verified with my own eyes, that (as Estridge would say) it was "a lot."

Wilkie had come to take us on a tour of the two manufacturing facilities, both the new plant (recently constructed but not yet in use) and the old, which was in triple-shift production.

Both manufacturing plants are approximately five miles from the division's headquarters. We drove to the sites in three cars, caravan-style. Wilkie lead the way in his Corvette Stingray—not the kind of car I'd expect an IBM executive to drive, but then, the Personal Computing division, I'm finding, is really something quite special and unorthodox, especially for IBM—and I mean that in a totally positive way.

Jeanette followed Wilkie in her car, and we followed Jeanette. It was a good time to collect a few good thoughts and clear some of the old memory locations which, in my mind, are well under 256K.

"This is really exciting," I remember thinking.

Our first stop was at the new plant, a big, long, gray concrete building with lots of windows but otherwise nondescript as far as other manufacturing facilities I have seen.





Dan Wilkie was waiting for us at the front, and he let us in by slipping a plastic card into a slot on the door. The building was empty and we were the only ones there. From the looks of it, only the finishing touches need be made before they could move into it. They were still setting up portions of the assembly lines, which Wilkie told us would begin with one "fully automated" line and one semi-automated one which will be converted when all the automation bugs are worked out. Dan told us that the interior of this building was 100,000 square feet, including 25,000 for manufacturing (concrete figures at last! I wrote these down feverishly).

Wilkie began our PC tour in a huge parts room where he explained to us that the manufacturing procedure at the Personal Computer plant is a lot like a kit-building process. In other words, it is not done from the ground up—the circuit boards and the keyboards come preassembled from other plants. Here they are packaged together with the IBM chassis, single-disk drive, and 48K memory. All IBM PCs currently begin in this stage, which should tell you something about the number being sold with cassette interfaces to hook to home tv sets.

Next, we walked the length of the automated line, where Wilkie stopped at various key points to explain how IBM Personal Computers are made, tested, and packed in boxes ready for shipping (there are nine full-size loading docks in the back of the building and as he talked, I fantasized one semi-truck after another loading up with PC's).

Interestingly enough, each IBM PC is built by a single worker who, more or less, has his signature on it, since IBM can use the bar codes on the back to identify the worker who assembled the machine.

The first part of the process is the CPU assembly, which involves installing the CPU circuit board along the bottom of the chassis.

Once the units are assembled, they are plugged into a robot tester which does an automatic power test under the watchful eye of an IBM Series 1 computer. Here a keyboard simulation test is performed and the printer interface is tested. Next, the PC is moved by a "pick and place" robot and placed on a huge, metal-frame carousel where up to 750 machines can be "burned in" at one time. This test includes a "high pot" test which should identify any weak components.

Following the burn-in, the machine is removed from the carousel (again, by a robot) and plugged back into the robot test for a second automatic power test. Following this, it is transferred to the end of the line, where yet another robot picks it up and puts it into its shipping box. (This carton is designed to withstand a 36" drop on all sides and corners.)

Following our tour of this fascinating new factory, we went to the old factory. While it lacked the automation features of the new building, it was nonetheless remarkably efficient and productive. As a matter of record, the first part of this building we saw was the large shipping area, where several thousand PCs were in stacks ready for shipment.

Eh gads, I thought, IBM is really serious about making these things.

The biggest treat for us at the old facility was watching IBM technicians as they assembled and tested Personal Computers, doing very much the same assembly procedure that will be done in the new building. Though I have little basis by which to judge, in my view, they appeared to be extremely competent and proficient. Many of them joked with Wilkie as we went down the line and they posed for photographs.

Our IBM day concluded in the parking lot of this manufacturing plant as the sun was setting. It was past six on a Friday evening, and I'm sure Dan and Jeanette were anxious to get home for the weekend. We thanked them on behalf of ourselves and our readers—who will hopefully benefit from this Boca trip at least half as much as we have.

The wind is still shaking my windows. It is 6 a.m. and as I peer out the curtains I am astonished that it is a clear day. The morning sun is rising over the Atlantic. It shines brightly on Boca Raton.