

POWER SWITCH

Bob Stempel, consummate "car guy," engineer and former GM chairman, finds life with Energy Conversion Devices — and after General Motors — bright and, well, electrifying.

BY TOM HENDERSON

What is Bob Stempel — once head of General Motors — doing at Energy Conversion Devices? From the largest company in the world, with hundreds of thousands of employees, to a little Troy outfit with 300 workers? From a manufacturing giant who, in a good year, makes billions in profits to a traditionally under-performing company that broke stockholders' hearts on and off for 30 years?

Bob Stempel had his pick of Fortune 500 jobs, and despite his unhappy departure from GM, he is still considered something of an engineering legend and a leader who, by all accounts, was unsurpassed at instilling loyalty and a sense of teamwork. So what in the world is he doing working with electric batteries, of all things, or solar panels?

Well, for one, having the time of his life.

And two, doing what he set out to do when he quit his high school job tuning up cars at Ed Uniss' New Jersey repair shop to head off to Worcester Polytechnic Institute near Boston: Fundamentally changing the way automobiles are made.

Stempel was a boy on a mission when he left Uniss in 1951, and today he's a man on a mission. He assumed the role of chairman of ECD in January, and before he's through there — he will eventually succeed company co-founder Stan Ovshinsky as CEO — he wants to see an electric vehicle in every garage and an ECD nickel-metal hydride battery pack in every EV.

To a large extent, Stempel fulfilled his youthful goal at General Motors, working on, or heading up, many of its major design and product breakthroughs of the '60s, '70s and '80s. As an up-and-comer whose mentors at Oldsmobile had already pegged him for big things, Stempel designed the offset front wheels on Olds' revolutionary (for GM) front-wheel drive Toronado, which debuted in the fall of 1965 — "me and my pencils and my triangles," jokes

Stempel, wryly referring to that low-tech, no-computer era of automotive design. The design project sounds rather routine, but it was crucial.

Other projects that helped change GM, and hence the industry, were his design work on the chassis of its first generation of small cars, plus his work on catalytic converters, anti-lock brakes, shoulder safety belts — and a program he pushed as GM president, much to the surprise of many within the company. This project — the 1957 Sunraycer — would change his view of the auto's future forever, for the GM solar-powered car, piloted by a young Chevy engineer named Molly Brennan and five other GM teammates, easily won a much-ballyhooed, 1,950-mile race across Australia.

When Stempel finally sat atop the summit of the world's manufacturing mountain on Aug. 1, 1990, and was named GM's chairman, there was no reason to think he'd finish his mission or his career anywhere but General Motors. The announcement of his appointment at company headquarters was greeted with loud cheers and a sense of euphoria by employees, who had chafed under the autocratic and irascible reign of his predecessor, Roger

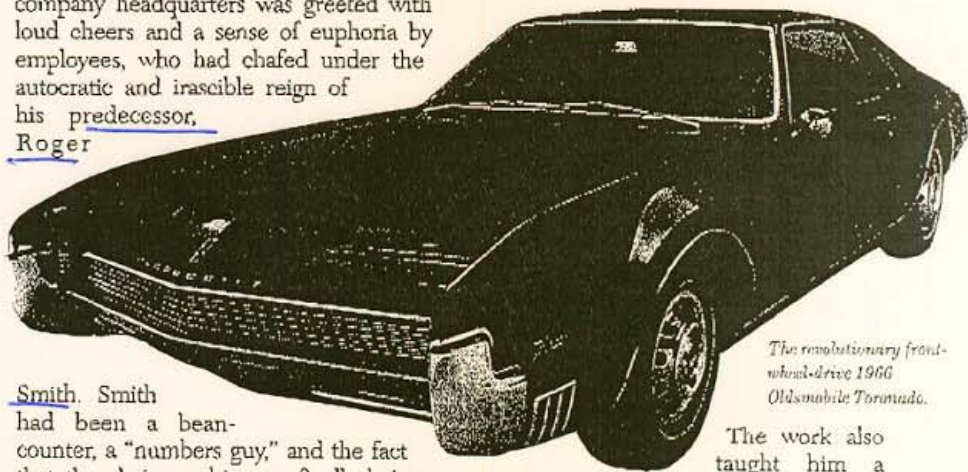
Smith. Smith had been a bean-counter, a "numbers guy," and the fact that the chairmanship was finally being turned back over to a mechanical engineer and car guy after a 37-year reign by a succession of accountants and MBAs was seen as having lasting portent.

Stempel was a car guy through and through. In high school he bought an old

Model A for \$100 — "my parents were upset at how many pieces it was in" — but when he rebuilt it, had it in one piece and looking snazzy, and then sold it, it helped finance his college education. (Even today, he'll take a stopwatch to Michigan International Speedway and, doing the math himself, he'll say, "I can tell you what the lap speeds are.")

Summers, Stempel worked at Ed's, a 10-man shop where he learned to do everything from tune-ups to electrical work to rebuilding engines. "Those were the days when you invested in a good set of sockets and wrenches and feeler gauges, and you could make anything run," says Stempel. He liked the work so much he thought briefly of forgetting college and making a career of Ed's.

But as he learned his trade with Ed, Stempel had begun to see cars and engines from an engineer's perspective, not a mechanic's. There were design problems he kept spotting, things he knew could have — and should have — been done better.



The revolutionary front-wheel-drive 1966 Oldsmobile Toronado.

The work also taught him a lesson he would remember throughout the many career ledges during his climb at GM: "Ed's shop taught me the value that when the boss asks you to do something, you do it. You might ask 'How?' But you didn't say, 'That's not my thing.'"

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As Stempel briefly wavered about going away to school, Uniss told him: "You can do this the rest of your life, but if you want to make a difference with automobiles, you don't do it in my shop — you do it in Detroit."

■ *When Stempel finally sat atop the summit of the world's manufacturing mountain, there was no reason to think he'd finish his mission or his career anywhere but General Motors.*

Stempel majored in thermodynamics en route to his degree in mechanical engineering, and began his career path with a stint at GE's wire and cable division

in Bridgeport, Conn., working on the machines that made the first Teflon-coated wire. This was followed by two years as a second lieutenant in the Army Corps of Engineers.

Always, though, he had one thought in mind: Detroit. In 1958, Stempel had arranged an interview with Chevrolet, but got a telegram saying a hiring freeze had been instituted and the interview was canceled. But then came a "yes" resulting from a successful interview at Oldsmobile in Lansing.

To this day, Stempel is an Olds man. He speaks with delight of those early days — of the seasoned engineers who took him under their wing, of the (sometimes exasperating) lessons they taught him.

George Jones, for example. Jones was in charge of the design and drafting department at Olds, where most of the young engineers began their careers. One day soon after Stempel was hired, Jones asked him to design a car wheel.

"I think, 'Hell, the wheel's been around since the caveman.' I did it, but it was like, 'Come on — what's this all about?' I learned afterwards that he had done this a number of times with some fairly simple

things. It might be a clamp joint. It might be a gasket joint. You're young and you're impatient and you just do it without giving it a second thought. 'Heck, I learned that in school.'"

Stempel did design the wheel. Quickly. Without enthusiasm. Without seeing the point. Jones then came back to him and asked him what he'd learned designing that wheel. (The honest answer, of course, from Stempel's point of view, was *nothing*.)

And then Jones proceeded to give him a monologue on the modern steel wheel: what a supreme invention it was. How it held up amazing stresses on turns at high speeds. Hits a pothole and keeps the tire on the rim. How it doesn't flex and what that means. What happens to the physical stresses when you leave a lugnut off. About its concentricity. How it relates to other systems. About how there is so much more to a simple wheel than meets the eye of a young, know-it-all engineer.

"I was being told I really messed up on my first job. And I thought to myself, I'm not going to get in trouble again on this. I'm going to learn more about wheels than anyone else!

"And I did. I did a lot of homework. Years later it would stand me in good stead," says Stempel, referring to his work on the front wheels of the breakthrough Toronado. "It had the right spring rate. It had the right deflection. It worked just fine."

That first job at Olds carried the title senior detailer. Later came stints as transmission engineer, motor engineer, assistant chief engineer, assistant to GM president Ed Cole, assistant chief engineer at Chevrolet, director of engineering at Chevy and, in 1978, his anointment into the upper echelons of management — that firmament you reach only if you have the right stuff to perhaps one day lead the company — by being named general manager of Pontiac and GM vice president.

What seemed to the world like his final posting at GM when he was named chairman to succeed Smith turned out to be just that — but not in the way everyone would have expected. Under Smith, GM had grown more swollen and cumbersome than even the world's largest corporation should be. It had far too many plants, far too many workers (at least 50,000 too many in the U.S. alone, if it was to match Ford's productivity); and after years of making money anyway, soon found itself awash in red ink. In 1991, GM lost \$4.45 billion paying for its past excesses.

Stempel's Stance

ECD president Bob Stempel speaks out on his GM departure and his current company choice to his concerns about Japanese competition in the EV market.

On his highly-publicized resignation from GM: "You have to be true to your principles. If you have a particular plan that you think is going to work, and this is the way you're going to execute it, and you've considered the impact on people and cities... (But the board) said, 'Well, we have to accelerate it, do it faster.' If you have an honest difference, you part ways."

On whether he got over the pain of his departure, and whether the board had unfairly hung him out to twist in the wind: "I never thought about it. You make the decision you're going to leave, you leave and you don't have regrets about it. You do what you're going to do next."

"And that's the way I did it. I sat down with my wife and discussed it. I said, 'We've seen a company that's going to change. They don't like the way I plan to do it. They want to do it faster. I have some reservations about that. I've committed my word to some people. They want to speed things up and we're at loggerheads. We can see this kind of media mish-mash going on for months, or we can end it.' So we ended it."

On why, of all the options open to him, he chose to work on batteries for electric cars: "People say, 'How can you go to electric vehicles? You know they don't work. That's a dumb idea. What are you doing?' We thought you might go to another car. I know a couple of guys who left the industry and did another car. But another car is easy. Heck, there are people all around the world who can do another car. I want to do something different. I think electric vehicles are the next step and that's where I want to be."

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Stempel — whom everyone seems to have liked and respected during his rise to the top; whose ego never seemed to get in the way and who was famous for



ECD owner Stan Ovshinsky and chairman Bob Stempel.

delegating authority, urging bottom-up leadership at a corporation where that was not always encouraged — was given the dirty task of downsizing the behemoth.

But Stempel wanted to do it in a way you might not expect from a "suit" in a white shirt and silk tie looking at the bottom line. He worried about the repercussions on cities where plants were closing. He worried about the men and women on the factory floor. So Stempel's plan was to get to the optimum levels of productivity by 1995 through early retirements and attrition, rather than by wielding the meat ax.

GM's suddenly proactive board of directors — whose spiritual head was John Smale of Procter & Gamble — wanted to see the ax swing and heads roll. The board forced the demotion of President Lloyd Reuss in March of 1992. Smale later replaced Stempel as head of the board's executive committee. The public perception was that Smale was now running the company.

Leaks and rumors began seeping out of the GM boardroom. On Oct. 21, *The Washington Post* wrote that GM's 11 outside directors might soon fire Stempel and eliminate his beloved Oldsmobile division.

"I think there's going to be a shift, and I'd rather be on the front edge of that shift as opposed to being a follower... When Mobil runs an ad every two weeks that the electric car is a bad idea, it makes me think we're onto something."

On his fears that the Japanese will conquer the EV market the way they captured the small-car market a generation ago: "I don't want this industry, as we did with small cars, to come in after the fact. It's very nice that we have a Chrysler Neon and a Saturn and a Chevrolet Cavalier, and Ford's got a couple of nice small vehicles. But it's about 30 years after someone else took the market right away from us... I go back to the fellow at Bell Labs who looked at the transistor that Sony put in this little device that was fastened on your belt and it had a pair of headphones. And the fellow at Bell Labs said, 'Now, who would want to walk around listening to the radio? Nobody does that!'"

"The EV market is going to go. Just look at those guys in Japan, I mean, they are aggressive. They are building very good [electric] vehicles and we don't want to let them get that toehold. We want to be right there, introducing the vehicles ourselves."

Honda? Who did they put on it? Did they put on their small-car guys? Did they put on their second-best engineers? "They took the guys that developed the Honda Formula 1 racing engine that's been winning hands-down, they took that team and said: 'Guys, you're going to build an electric vehicle.' That's pretty fierce competition."

On ECD's reputation and that of company co-founder Stan Ovshinsky, until recently, in the local investment banking community: "I get, 'Gee, what are you doing with Stan? Don't you know he's got this track record?'"

On why that reputation didn't dissuade him from joining ECD: "My answer was, and still is: 'To make an electric vehicle practical, I need a battery with a range of more than 200 miles. And ECD has that kind of battery.' (And) after you've run the world's largest corporation and done everything with conventional vehicles, why not do something you've always wanted to do? I've always been fascinated with developing clean cars."

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That same day, the board hung Stempel out to twist in the wind, saying in a deliberately vague press release in response to the *Post* story — a release widely seen as a repudiation of Stempel — that the directors were "considering the wisest course for assuring the most effective leadership" of the company.

On Oct. 26, the car guy with gasoline in his veins and an Olds carburetor for a heart, resigned.

"You have to stay true to your principles," says Stempel. Of the board's demands for downsizing, he says he had to "consider the impact on people and cities, and how it's going to be. [Regarding] people [the board] said, 'Well, we have to accelerate it, do it faster.' If you have an honest difference, you part ways."

GM's loss was soon to become ECD's gain.

Shortly after Stempel's departure, an old friend, Walter McCarthy, the former chief executive of Detroit Edison and a long-time member of the ECD board, asked Stempel to come take a tour of ECD. Stempel was then doing some consulting for GM and had assumed the chairmanship of a lobbying and research group called the Great Lakes Council of Industries, which he still chairs.

ECD had been running into brick walls trying to convince people that its nickel-metal hydride battery, while too expensive then to be practical, was still clearly the best battery for future electric vehicles. It was far more robust than traditional lead-acid batteries and could go far more miles between charges. Stempel still had ties to the auto industry, and if Stempel could be convinced, well, so much the better for ECD.

■ *Under Roger Smith, GM had grown more swollen and cumbersome than even the world's largest corporation should be.*

Stempel had run into Stan Ovshinsky at functions over the years and knew him by reputation as a visionary and inventor, but he didn't know much about the company. He remembers being immediately impressed by Stan's

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straightforward ways. He didn't try to bamboozle him with physics or chemistry — and there is a world of potential bamboozlement in the complicated chemistry and physics that go into the nickel-metal hydride battery.

Instead, Ovshinsky, the one-time machine builder (see sidebar, page 17),

A thought was forming in Stan's head. A short time passed. One day, he called Stempel and told him they'd converted a van into an EV and had powered it with ECD batteries — and would he like to take a spin?

Ovshinsky may have known about Stempel's involvement with the Sunraycer project, which he'd given the go-ahead — an expensive project that had doubters at

expectations, and the look of a manager whose team had performed brilliantly.

"A lot of us said, 'Hey, this is a historic moment,'" says Stempel. "In 1986, when they talked about taking a car across Australia, I thought: 'You've been in the sun too long'... I had worked on the electric vehicle in the '78-'80 time period, and I was dismayed by the [energy] losses we had, the lack of distance. But this vehicle was such a change in technology. All the things that had defeated us, we were now solving

"I'd been struggling my whole life with gasoline engines and here was an electric vehicle with 99-percent efficiency. For me, in terms of thinking the electric vehicle would work, it was a real turning point."

At some point after Stempel had driven the converted EV van, Stempel, caught up in Stan's vision, asked: "What can I do to help?"

"How about joining the board?" Ovshinsky responded.

Returned Stempel, "I was just waiting for you to ask."

It was 1993, but the stint on the board was to be brief, though the impact immediate. Stempel was still under a consulting contract with GM and served as intermediary in establishing a joint venture between the auto company and ECD called GM Ovonic, which builds battery packs for EVs and begins product delivery in November. To avoid a conflict of interest during the talks, he resigned from the ECD board, but when his contract expired with GM at the end of 1995, he rejoined ECD as chairman.

"It was the quickest negotiations that we ever had," says Ovshinsky of the joint venture. "His leadership made GM Ovonic possible."

Ovshinsky is the idea guy, the scientist whose favorite item of office decor is the periodic table of elements. Ovshinsky has assembled a team of scientists headed by Steve Hudgens. Many of them have been with ECD for years. Stan will continue concentrating on the science — trying to get the cost down on the car batteries, establishing a process for making and selling positive terminals, which it currently buys from suppliers, trying to get the efficiency for the solar panels above 10 percent and continuing the cutting-edge research into programmable-rewritable memory of incredible capacity (see sidebar, page 17).

Stempel's manufacturing role will be well-suited to a man who oversaw the production of millions of cars and trucks a

On Ovshinsky's perseverance and cutting-edge science: "All of a sudden, the world has caught up to where Stan was. It's one thing to be ahead of your time. It's one thing to be evolutionary. It's another to have brought about a sea change... I think he's pretty amazing, to keep on going through what he's gone through. I give him a lot of credit for hanging in there. I think it's marvelous Stan has been doing this for 35 years.

"It's amazing that for someone without much formal education... we have meetings here with half a dozen Nobel Prize winners and they're here at the feet of the master."

On what it's like going from a cumbersome elephant like General Motors to an entrepreneurial, creative, fluid place like ECD: "It's part of the fun. I've had to relearn skills I had years ago. It's been doubly nice. I've always been hands-on and here there are no restraints."

"In a small business today, entrepreneurs need to move and move quickly. They don't have the option if plan A doesn't work to say, 'We'll go to plan B. That gets expensive...'

"I have a greater understanding of smaller companies' complaints with the auto companies. I sound like them today. I want a decision today. Time is money. Even if it's not the decision I want, just give it to me."

On his mission of trimming ECD's reliance on royalties and licensing agreements and increasing revenues from manufacturing: "That's the focus here: How do we get it on the shelf? How do we produce it? You have to make something in this world today. The money is made because you make something people want to buy. Stan understands that. But this company had some real financial constraints (that made focusing on licensing and royalties a necessity)."

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and Stempel, the engineer, took the batteries apart.

"As an old mechanical engineer, I didn't see anything I didn't understand," says Stempel.

"His bulls--- sensor is like mine. A lot of people talk. There are always people who make claims..." says Ovshinsky, adding that there was a mutual respect that was apparent from the start.

"I'm an engineer myself and I've always worked with engineers, but I've never known anybody who has his ability to look at something and understand it and have a good critical sense of it. I noticed a similarity in how he attacks these engineering problems and the questions he asks. He asks the questions I would ask."

GM wondering why they would spend millions to send a bunch of kids out of college racing across Australia in a car powered by solar panels. But Ovshinsky didn't know how epochal that project had been for Stempel.

There is a book on the Sunraycer and the race across Australia — a coffee table book filled with wonderful photos of the strange collection of vehicles and the weird terrain they traversed — that sits atop the bookcase in Stempel's ECD office. He proudly brings it out.

Near the end of the book, after the race has been easily won by the GM team, there is a picture of Bob Stempel with what can only be described as a look of sheer, unbridled joy on his face, his mouth open in laughter. It was the look of a born engineer marveling at a technological accomplishment that surpassed his

year. For too many years, cash-starved ECD was forced to focus too much on licensing fees and royalty agreements, with more in up-front fees and less in royalties down the road. It paid the bills but it didn't provide much of a return to investors.

Now that ECD is finally on firm financial ground — the marketplace took three decades to catch up to the technology — the focus will be to dramatically beef up manufacturing: the making and selling of EV batteries, solar panels, solar shingles, and negative and positive electrodes, which are sold to licensees for final assembly.

Explains Ovshinsky: "Bob has a real good knowledge of engineering. You can say that's true about a lot of people in the automotive industry, but there is one difference. And that difference is absolutely critical. That's where you cross the Rubicon.

"Those people are wedded to what they've learned in school. Or how they advanced in the company. They're good engineers, but they're good engineers for power trains, or engines, or catalysts or what have you. The sign of a great engineer and scientist — as well as a manufacturer — is you look at this in terms of what it's supposed to do and does it work? Can you make it? How do you make it? And how do you improve it?"

Stempel's mission at ECD is to answer those questions. The answers are the same for ECD as for GM, says Stempel: You increase automation, reduce variance and scrap, increase volumes, hustle up business, work your tail off, believe in the product. And, boy, does Stempel believe in the product!

As for why he returned to ECD as chairman after the earlier stint on the board, Stempel says: "I wanted to continue with Stan because their batteries will make electric vehicles practical. I said, 'This is too good an opportunity to let go by.'"

Of the wide range of research going on at the relatively little company and how he, as an engineer, responds to it, Stempel says: "It's like a kid in a candy store."

And of the people doing that research: "The accumulation of talent [Stan] has surrounded himself with fascinates me. ... In any organization, you're going to have a bell curve distribution of talent. While we have a distribution of people, a lot of them are at the high end. These are people that are given room to work. To be creative. To be thoughtful."

Of the chances that EVs will succeed in the marketplace: "The auto companies, frankly — all three of them — aren't sure. Is it really going to be accepted? Is it going to take off? Will the customer say, 'No, I don't really want that?'"

"Some of us are convinced that once you drive these cars, you begin to like them. And for my money, I'm willing to bet the market is going to get fairly big fairly fast."

Of ECD's solar panels, made in a joint venture with Canon called United Solar Systems Corp, Stempel says: "Stan was one of the few people I talked to who could show me a process to make photovoltaics that made sense. And I've been around photovoltaics a long time."

And of the portable solar kits USSC also markets: "People around the world want power. There are villages in India that have never had a light. There are places in Mexico where the [power] grid will never get to because the villages are up in the mountains."

In addition to focusing on manufacturing, Stempel will also use his reputation to keep ECD improving its investor relations and to serve as a spokesman in Lansing or Washington. (In July he met with Secretary of State Warren

happen. GM Ovonic is on line, though admittedly in tiny early volumes. Stempel is ramping up the amount of nickel-alloy mesh the company sells to the makers of rechargeable consumer batteries from 400,000 feet a month to nearly one million, and in the next few years would like to expand solar panel production at the Troy plant from seven megawatts a year to 100.

As Nancy Bacon, ECD's senior VP for government contracts, bluntly says: "All the inventions in the world are great, but you gotta put them into production. We didn't hire Bob because of his credibility or PR — we hired him to build our business."

There is a sudden knock at Stempel's office door. ECD is suing a major electronics manufacturer over patent infringement and a favorable settlement may be at hand. The lawyers need to engage him and Stan in a conference call. It is the second time Stempel has been summoned to talk to them in the last hour, and he leaves the room with sincere apologies.

It gives one time to look around. You wouldn't have to know Stempel's background to perceive that he is a car guy. On the wall behind his desk is a large framed painting of a 1957 Chevy hot rod,

On whether, when he took over as ECD chairman in January, it was with the intention to give it a year and see how it went, or if there were always some plan for Stempel to eventually succeed Ovshinsky as CEO: "We've talked about it. He's certainly very young (for 73). He takes care of himself physically. He's a man on a mission and he's going to get it done before he goes."

"But like he says, he won't last forever. Stan worries about his people. He wants this company to be on its feet and ongoing. And that's the sort of thing I think we can do. And I'm going to work with him to make it happen."

"Stan wanted a commitment. ... When I came on board, it wasn't with the idea I'd like to join you for six months and then walk away. My vision is I want to see electric cars, affordable and practical and on the road."

(Note: Ovshinsky says, for the record, that he plans for Stempel to eventually take over as president and CEO of ECD.)

On whether, like a lot of entrepreneur/founders, Stan has had any trouble turning over power: "I have to tell you: Stan knows everything about everything in this company, so he doesn't let go easily. But he is finding more time to spend with his colleagues to focus on (the science) that needs to be done. I think that's the best use of his talent, and we want to be sure he can really spend more time in that area. If I can contribute by helping out in the business end and the manufacturing end, that's my niche."

—Tom Henderson

Christopher in Washington to discuss renewable energy.)

But the main task is increased manufacturing, which has already begun to

to the left, a large schematic drawing of the GM Impact, later rechristened the EV1, which GM will be bringing slowly to market later this year. (The first cars sold will have lead-acid batteries; as GM

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Ovonic ramps up, the EV1 will be powered by ECD's nickel-metal hydride.)

Sitting atop the large desk at one end of the office are six or seven neat stacks of paper. The message is that this is a busy executive, neat but hardly compulsive about it. It's the office of a worker. Opposite the desk is a conference table next to a fully stocked bookcase, with such titles as E. Edwards Deming's *Out of the Crisis*; David Halberstam's epic on the auto industry, *The Reckoning: The Start-Up Entrepreneur*; *The Japanese Power Game*, *Workplace 2000*; *Reinventing the Corporation* and several others on amorphous materials and solar photovoltaics.

Left on the conference table where Stempel was sitting is a white legal pad. He carries it to all of his meetings. He likes to take notes, to keep focused on what is being said. At the top of the pad he has written the interviewer's name. When you talk to him, there is a lot of eye contact and the use of your first name.

Knowing his reluctance to participate in interviews, the visitor expected reticence, shyness perhaps, laconic answers.

What he gets is eloquence sometimes, candor always; a composed thinker who speaks in a deep, richly mellifluous voice, in complete sentences and paragraphs, without any of the normal verbal ticks—the *uhs* and *ohs* that punctuate many conversations, especially those of people answering questions they may not have expected.

When Stempel returns from the lengthy conference call, he apologizes again, saying, "That's not my style." (Later, when the two-and-a-half hour interview finishes, he grabs the visitor's hand firmly and says, "Many thanks.")

Of course, eight months into Stempel's tenure at ECD, no one there is going to say to someone from the press: "You know, this just isn't working out." One expects to hear the right things. But *these* right things are so obviously sincere that it doesn't take much convincing to see that Stempel and ECD might be the best ECD match since, well, Stan and Iris, Stan's wife and company co-founder.

Says Bacon, "I have never seen two people work so well together. They're like a symphony. It's been beyond anyone's wildest dreams. Better than we hoped." It is, she says, a clear case of the whole being greater than the sum of its parts.

(Bacon's story is typical of ECD's loyal staff. In 1977, she was a CPA with Touche Ross and ECD was one of her clients. Stan offered her a job. "What did a profit-oriented CPA want a job here for?" she says today. She drove out in person to give Stan the courtesy of a "no" in person. Nineteen years later, she has yet to say no. "I could easily be making three or four times what I'm making here, but the experiences here are mind-boggling.")

ECD has prided itself over the years on its advanced science and research as a small, fluid company — in many ways the antithesis of a bureaucratic giant like GM. If there were any doubts by long-time ECD staffers about why they were bringing an old-line car guy on board, Hudgens says they quickly dissipated.

"To call Bob Stempel a car guy is to call Bill Gates a

"I have no agenda. He has no agenda. We just work together. Even though we're different in background and personalities, it's remarkable how similar we think about things. I trust his judgment implicitly. I trust him absolutely."

Which isn't to say there is always full agreement. When the California mandate — which would have required the seven largest automakers to sell a fixed percentage of electric vehicles beginning in 1997 — was recently put on hold, Hudgens was livid. Stan called it a "cave-in" to the oil and auto industries.

Stempel, however, says it was the right free-market decision and while it will hurt ECD short-term, it will greatly benefit the company long-term. For example, he says, Japanese manufacturers were going to sell EVs with lead-acid batteries that they knew would disgruntle consumers with their lack of charge-time and frequent need for replacement. "To say you have to sell x amount of vehicles just isn't possible. I can't force something down your throat. There's got to be a market need," says Stempel.

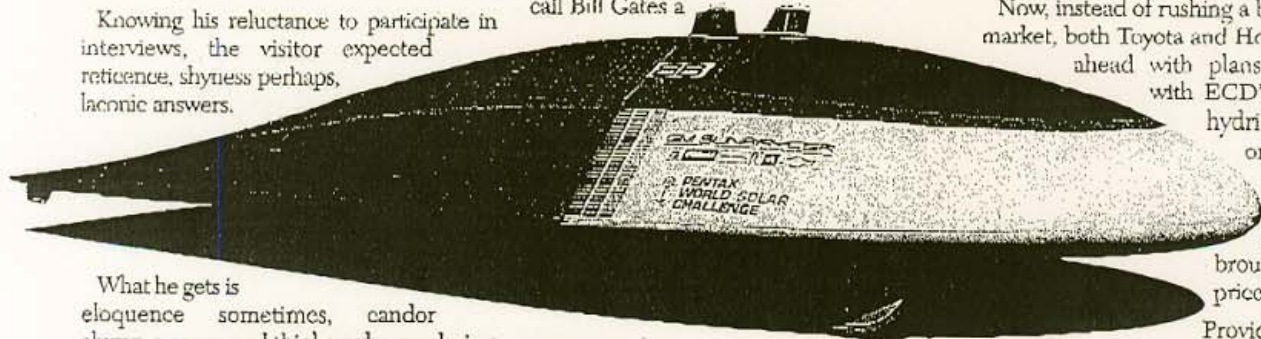
Now, instead of rushing a bad product to market, both Toyota and Honda are going ahead with plans to sell EVs with ECD's nickel metal hydride batteries, once volume and further improvements have brought down the price.

Provided they can get the cost down. "That's my business plan," says Stempel. "There's no doubt we're going to be effective. On a life-cycle basis, we're going to beat the lead-acid battery. This battery is going to go for 100,000 miles without a replacement. It's robust.

"I can tell you the auto companies have done testing you can't imagine to abuse it. They've done some pretty horrific things, and like the Energizer bunny, it keeps on running."

Concludes Stempel, "Some of my friends reminded me that when I went to GM, my objective was to change the way cars were built. And they said, 'You've never really gotten over that, have you? You still want to change it.' ECD has a future and I can have a hand in making it happen. That's what I'm doing.

"And I don't mind saying, I'm having a hell of a time." ■



computer hacker. He's a car guy, but he's also the father of the modern electric vehicle. Thanks to him, GM developed the EV1 and the EV1 is the best electric vehicle in the world."

Nonetheless, Hudgens says he expected something very different from Stempel than what he got. "I expected him to be in this GM mold — an accountant type, mealy-mouthed, boring. But he isn't. And I've never heard him be short or rude with anyone. It's a kick to watch this guy get excited. To talk about transmission gear ratios on a '36 Chevy with some guy in the plant."

Adds Stan: "This is one of those rare instances — and I've never had it happen before — where two people get together who understand each other, respect each other and share the same vision.

"It's the perfect way to have a partnership of equals.