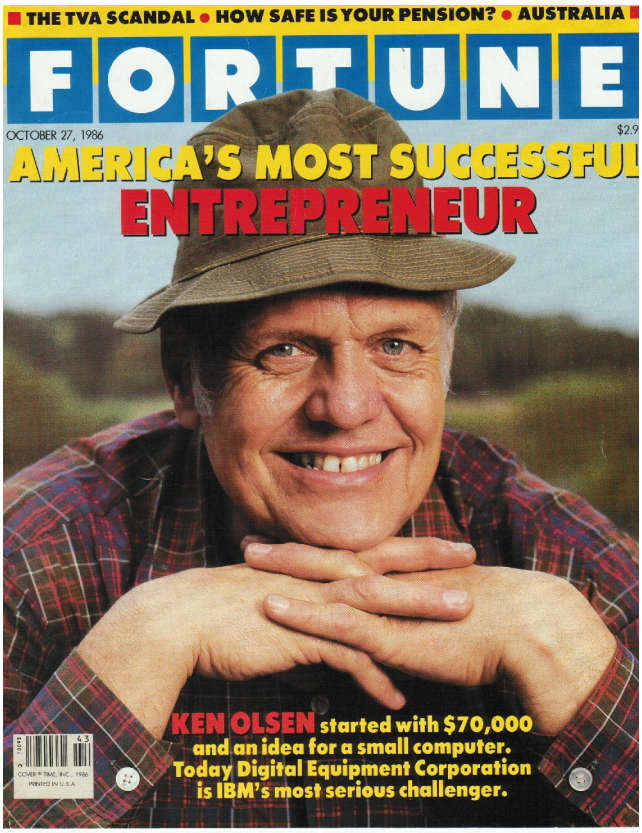

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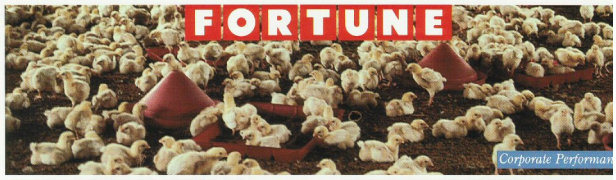


George Lange photographed Digital Equipment Corp. founder and president Kenneth Olsen in a rare informal portrait at the Sudbury River canoe landing near his home in Massachusetts. *See page 24.*

PROFILE

America's Most Successful Entrepreneur 24
Ken Olsen's DEC changed the way people use computers, and is IBM's most serious challenger. *by Peter Petre*

Some Impressive Also-Rans 29

People to Watch 32

THE ECONOMY

Fortune Forecast:
- **No More Help From the Big Spenders** 35
- **Housing Tops Out** 36

MANAGING

Nuclear Scandal Shakes the TVA 40
The agency hired a hotshot admiral from the nuclear Navy to make its troubled power plants work. Result: TVA is even worse off. *by Brian Dumaine*

EXECUTIVE LIFE

How Safe Is Your Pension? 52
The experts advise managers to worry —a little. *by Patricia O'Toole*

CORPORATE PERFORMANCE

ConAgra's Profits Aren't Chicken Feed 70
The Omaha-based outfit has prospered by reviving food companies others had given up for dead. *by Bill Saporito*

Daimler-Benz Conglomerates 84
In buying three giant high-tech firms, it bought trouble. *by Louis S. Richman*

Caterpillar's Triple Whammy 91
The company finally got the weaker dollar it was calling for—and got clobbered anyway. *by Dexter Hutchins*

Companies to Watch 92

SELLING

The Market Share Fight Over Auto Loans 93

MONEY & MARKETS

The Japanese Want to Be Your Bankers 96
Their pockets are bulging with yen and they are bent on attaining global power —to the chagrin of competitors and the delight of borrowers. *by Gary Hector*

New Yorkers Win a Few in Tokyo 102

POLITICS & POLICY

Coming: The Great Tax Reform of—Yes—1987 105

Is Workfare the Answer? 108
Experimental programs in the states show that it is a good idea. But more work is needed before it is declared national policy. *by Monci Jo Williams*

SPECIAL REPORT

Australia's New Tack 114
With the America's Cup festivities about to start, this seems no time for austerity. But the country is coming to realize it must trim its sails. *by Louis Kraar*

The Cup Runneth Over for Alan Bond 120

The Editor's Desk

News/Trends
The Big Bang echoes in the New World, Honeywell's computer gambit, Merrill Lynch drops real estate, help for U.S. chipmakers, and more.

Follow-Up
Federal Express unzips, Fiat and Libya break up, Hewlett-Packard's troubles with Risc, and more.

Letters to Fortune

Keeping Up
by Daniel Seligman

Personal Investing
Selling short. A prime hotel stock. Taxable munis. Portfolio Talk: Bargain hunter Geraldine Weiss

Other Voices
Why dollar bashing won't work. *by W. Carl Kester and Timothy A. Luehrman*

On Your Own Time
Fitness for your kids. *by Marilyn Wellemeyer*

Books & Ideas
Mr. Walkman talks. *by Irwin Ross*

FORTUNE

PROFILE/COVER STORY

AMERICA'S MOST SUCCESSFUL ENTREPRENEUR

An engineer, Ken Olsen learned how to manage by running a Sunday school. His Digital Equipment Corp. changed the way people use computers, and grew to be IBM's most serious challenger. Here's how Olsen did it and what makes him tick. ■ *by Peter Petre*

THOUGH he has not yet become a household name, Kenneth Harry Olsen is arguably the most successful entrepreneur in the history of American business. In 29 years he has taken Digital Equipment Corp. from nothing to $7.6 billion in annual revenues. DEC today is bigger, even adjusting for inflation, than Ford Motor Co. when death claimed Henry Ford, than U.S. Steel when Andrew Carnegie sold out, than Standard Oil when John D. Rockefeller stepped aside.

Olsen, 60, belongs to the lucky generation of entrepreneurs who experienced hard knocks as kids during the Depression and benefited as businessmen from the surge in prosperity that followed World War II. A few, like Teledyne's Henry Singleton and Wal-Mart founder Sam Walton, have done better for their shareholders or made themselves richer than Olsen (see box, page 29). But none has created as mighty or important an industrial enterprise as DEC. And on that basis FORTUNE considers him the greatest success.

Aimed at engineers and scientists, DEC's minicomputers changed the way people compute. Before DEC, all computers were big mainframes housed in special centers, mollycoddled by experts, and used to process large batches of data; DEC's small, rugged, inexpensive machines let individuals apply computing to an endless variety of everyday tasks. DEC laid the groundwork for the personal computer revolution, and many of the revolutionaries discovered the technology's possibilities on DEC products.

REPORTER ASSOCIATE *Alan Farnham*

Today DEC is the hottest computer company around. It introduced more than a dozen major products in the past two years and scored back-to-back revenue gains of 20% when most of the industry was in a slowdown. Following a strategy Olsen adopted 15 years ago, DEC has opened a wide technological lead in linking computers into networks. As a result DEC is taking business from the heart of IBM's market. It has captured orders for office systems from IBM customers in the past year that will be worth a stunning $2 billion, estimates Morgan Stanley security analyst Carol Muratore. Although DEC is less than one-sixth IBM's size, Muratore calls it "IBM's most serious challenger in 20 years."

How Ken's Little Company Grew

Without the aid of acquisitions, DEC sales shot up at a 30% compound annual rate for 19 years. Lately the rate has slowed—to just over 20%.

Computer entrepreneurs like Olsen usually reach their apogees in months or years, not decades. But Olsen did not succumb to the bad habits that claim many company founders. Early in DEC's history he taught himself to delegate responsibility, a discipline notoriously hard for entrepreneurs to learn. He devised a decentralized organization that earned DEC fame in management textbooks and helped it boom. Unlike many founders who seem trapped by past successes, Olsen keeps learning. A few years ago, when DEC faced a difficult shift from growth company to mature corporate giant, critics questioned whether Olsen had outstayed his usefulness. But in a remarkable about-face, he junked DEC's decentralized organization and transformed the company into the technical and marketing monolith that today plays David to IBM's Goliath. Nobody calls Ken Olsen a has-been anymore.

As a colossus of industry, Olsen seems cast naturally for the part. He's big—two inches over six feet, with big bones, a big skull, a big determined face. His career spans virtually the entire history of computers. Like a mythic figure dreamed up to inspire

Canoes, *not yachts, are Olsen's style. He likes roughing it on remote rivers in Canada.*

PHOTOGRAPH BY GEORGE LANGE

students, Olsen stays grounded in his engineering roots. On his passport he still lists his occupation as "engineer"; he wears clumsy, thick-soled black shoes below his expensive suits where the Ballys should be. It's not affectation. Olsen draws strength from nuts and bolts. He can spend hours sweating the homely, low-tech details of DEC's computers—making sure, for example, that the plugs and connectors on the backs of DEC machines are neatly laid out.

Olsen's unostentatious style has kept him from becoming a business celebrity, yet DEC bears his imprint much as IBM once bore that of Thomas Watson Sr. Like Watson, Olsen is intensely competitive and has enough stamina to work his subordinates under the table. Also like Watson, he thrives in complex business situations by reducing problems to monumental simplicity. But while Watson whipped IBM into an aggressive, high-strung organization that emphasized selling above all else, Olsen keeps the focus at DEC steadfastly on developing products.

His manner is what subordinates call technobumpkin. Before an audience he can be bumbling, obtuse, and given to digressions that mystify or annoy. On other occasions Olsen's speeches are full of homespun wisdom and he is surprisingly charismatic. "I've never seen a guy talk so much about philosophy in management meetings," says ex-corporate personnel director Dennis Burke, a former priest, who has written an as-yet-unpublished novel based on his experiences at DEC. "He was really brilliant at that. It was like church. There would be absolute quiet in the room."

Those who know Ken Olsen say that the psychological key to his success lies not in electronics but Christianity. A rock-ribbed neo-Puritan and churchman, Olsen thinks about morality and religion far more frequently than about microcircuits or finance. He sometimes invokes hymns to make a point about management. DEC is worth $11.5 billion in the stock market, and Olsen's 2% share would fetch more than $230 million. He has donated another 2% to a foundation that supports Christian philanthropies. For the past 12 years, on the first Tuesday of each month, he has participated in a little-known prayer breakfast organized by Thomas Phillips, the born-again C.E.O. of Raytheon Corp. The 40 or so breakfasters drawn from Boston's elite sit at round tables and begin with a prayer and a brief talk. Then they discuss spiritual and ethical questions. Olsen has addressed the group on such topics as the economic rewards of moral introspection.

Olsen has planted dense hedges around his personal life, where he likes things kept quiet and modest. He and his wife, Aulikki, occupy the same suburban Boston house they moved to shortly after DEC was founded. They raised three kids there (all are now grown; none works for DEC). They tend their own garden, do their own dishes, paint their own walls.

OLSEN LIKES constructive fun of the sort that counts toward Boy Scout merit badges. He takes pleasure knowing the names of wildflowers that grow along the stream next to DEC's headquarters, which occupies a refurbished 19th-century woolen mill in Maynard, Massachusetts. He flies a small plane and once a year takes a rugged two-week canoeing trip near Hudson Bay with old cronies. Olsen is also an auto buff, but not the kind who gets excited about shattering the double nickel in first gear. A favorite car: the unexciting 1963 Ford Falcon, which he says was well laid out and a cinch to maintain. Years ago he bought one and painstakingly restored it. A director of Ford Motor Co., Olsen drives an Escort station wagon to work and hates being seen in his wife's Mercedes.

Around Olsen's office are artifacts from the history of the computer industry—a core memory circuit here, an early minicomputer faceplate there—interspersed with such tokens of his woodsy side as photos of flowers and canoeing scenes. In a corner stands a stuffed beaver posed gnawing on a birch log, a gift from one of his sons. When Olsen talks to visitors about what is important to him, it is clear that values, not microchips, are foremost on his mind. Olsen's voice is far less imposing than the man, a quiet tenor, mumbling and restrained.

Olsen starts by speaking of science as a search for truth, and life as a pilgrimage, and humility as the key to business success. "It's easy to compete with people who think they know it all," he says. Pretty soon the discussion shifts to the Puritans. He calls them the "toughest men this world has ever seen," better equipped to cope with failure than people today. Their secret? Never expecting much of their fallen fellow man, and never blaming others for their mistakes.

Uncomprehending Yale business students practically booed him at a recent speech, Olsen says. He told them business isn't like the TV show *Dynasty*, that it has little to do with "conniving, arbitrariness, fooling around." He exhorted the students to pay attention to the honest-john virtues that used to be inscribed in the primers of colonial-age schools: humility, gentleness, peace, neatness, temperance—and long suffering. "I'm not sure," says Olsen, "that we've learned an awful lot more since we dropped these simple things."

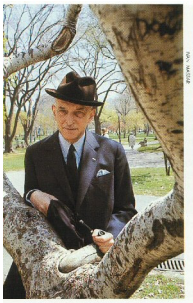
To hear Olsen talk, you might expect the climate at DEC to be as grim and punishing as a Maine winter. It isn't, but the inhabitants of the house Olsen built have to live with a quirky, contradictory, and demanding management style. Olsen is a democrat who eats in the company cafeteria, encourages executives to voice their differences, and seeks advice about product flaws from factory workers. He is often compassionate and generous with employees, as when he offered his vacation house and indefinite paid leave to an assistant who was grieving after a family tragedy.

Yet he is also an autocrat who at a company gathering in 1982 awarded four booby prizes to executives who displeased him.

COURTESY KEN OLSEN

An American Boyhood

Olsen grew up in this house in working-class Stratford, Connecticut. He worked summers at a machine-tool company, gave his parents no trouble, and became known as a neighborhood Edison by fixing radios in the basement. After graduation he joined the Navy.



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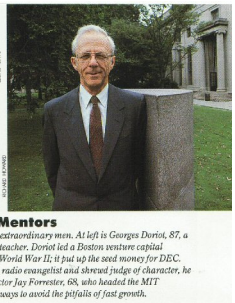


JOHN SOARES

A Computer Pioneer's Three Mentors

Olsen learned diverse but important lessons from three extraordinary men. At left is Georges Doriot, 87, a DEC director and legendary Harvard Business School teacher. Doriot led a Boston venture capital company formed to help keep business innovative after World War II; it put up the seed money for DEC. The late Harold Ockenga, center, was Olsen's pastor. A radio evangelist and shrewd judge of character, he gave Olsen his first management job. At right is ex-director Jay Forrester, 68, who headed the MIT computer lab where Olsen trained and helped him find ways to avoid the pitfalls of fast growth.

More recently he ordered 24 senior DEC officials to a warehouse where they spent a day armed with hammers and screwdrivers, uncrating and hooking up computers to learn just what customers had to contend with.

He rarely issues direct orders. In Olsen's view a well-engineered organization ought more or less to run itself. He declares: "A good manager never has to make any decisions at all." Olsen's favorite management tool is the committee. He resolves thorny business issues by subjecting the managers responsible to endless review sessions. Eventually the complexity wears away, and the issue yields itself up to a consensus solution of Resganesque simplicity. Explains Olsen: "If those responsible do thorough preparation, the necessary decision is almost always obvious—or else it becomes obvious with hour after hour of working over the details. The most important decision I make is when to break for lunch."

To get people thinking about what's important, Olsen solicits proposals from DEC's lower echelons and tosses out thoughts of his own. "Ken is always flying ideas around the company," says William Long, a former vice president. "Sometimes they're like little paper airplanes aimed at a particular person; sometimes they're like leaflets from the Goodyear blimp, aimed at anyone who picks them up."

Olsen's airplanes and leaflets often take the form of parables or essays about business practices (for a sampling, see page 31). When an Olsen parable appears on the electronic mail system that links DEC offices, managers often gather around the computer terminal like China watchers, trying to figure out who or what his allegory is aimed at. Occasionally the message is all too personal. Olsen shuns one-on-one confrontations, preferring to publicly ridicule subordinates who are not performing well.

Another favorite technique is what Olsen calls "pulse management." By this he means probing any area of the company that catches his interest. When he finds mundane engineering tasks left undone he may take them on himself to set an example. So it was in 1985 that Olsen, working nights and weekends, made himself an authority on electrical plugs. He had been irritated that DEC was using too many different ones in cabling its products together. Result: DEC has adopted a standard plug of its own design.

DESPITE Olsen's sometimes maddening management techniques, the company he created has won praise as the Gentleman Jim of the computer industry. It usually pays salesmen straight salaries on the theory that commissions might tempt them to sell customers more equipment than they need. DEC aggressively embraced equal-opportunity goals as early as 1962; it offers unusually liberal benefits, including a stock-option program that can extend, in some instances, down to factory foremen. It has a reputation as an engineer's paradise, open and honest as universities try to be, and full of opportunities. Says Long: "There are no barriers to someone with a good idea going out in the organization and making things happen. People feel a tremendous mobility to move across and up. It is like America."

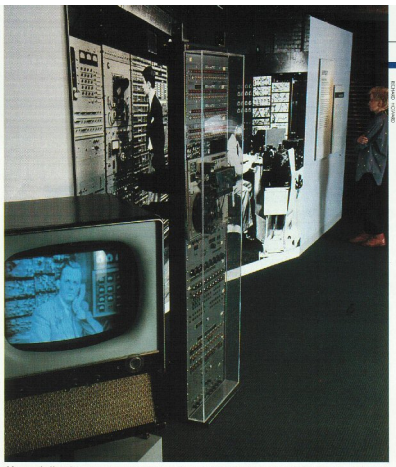
Olsen grew up during the 1930s in Stratford, Connecticut, part of the state's industrial belt. His father designed factory equipment—a safety pin machine, a machine for making universal joints for cars—and held several patents. Later he became a machine salesman and had a reputation for advising customers against ordering equipment they didn't really need—the attitude Olsen likes to cultivate in DEC salesmen.

According to Olsen's older sister, Eleanor, Kenneth was by far the best-looking of the four Olsen children. His blond hair and blue eyes "attracted people to him, and I think that warmed him toward other people," she says. The family house, in a working-class neighborhood with tough people of Norwegian, Polish, and Italian descent, smelled "like apple pie baking," she says, and echoed on Sunday nights with the sounds of Jack Benny on the radio. Olsen's grandparents lived next door, and out back was a vegetable garden that helped save money in the difficult Depression years.

Olsen's parents were strict disciplinarians and religious fundamentalists—his father taught Bible class, and his mother played the piano at the local church. Unlike his sometimes rambunctious siblings, Kenneth always seemed to conform naturally to his parents' wishes and standards. Says a boyhood chum: "Ken was down-the-path. He didn't do anything that would raise your eyebrows." A high school teacher remembers him as "quiet, dreary, and smart."

He showed his technical bent early. His younger brother, Stanley, who was DEC's first employee and who worked for 25 years as a marketing executive, says that Ken preferred technical manuals to comic books. A family friend, an electrical engineer, made sure that the boy was well supplied with technical literature.

By the time he was in high school during World War II, Olsen was spending a great deal of time alone in the cellar, tinkering and



Memorialized *in a Boston museum, the Whirlwind was MIT's first computer. Olsen worked on it under Jay Forrester. The monitor shows Forrester answering questions from Edward R. Murrow.*

inventing. He gained a reputation as a neighborhood Edison by fixing radios for free, and wowed a girlfriend by rigging up a metal detector to find a watch she had lost at the beach. When Ken was 14, he and Stanley built a radio station and broke in on local broadcasts. They put on the air a singing commercial, written by Stan, called "Murphy's Meatballs."

Olsen picked up his first formal training in electrical engineering after joining the Navy in 1944; when he entered MIT in 1947 his talent soon proved out in fast company. The computer age had just dawned and the research team building MIT's first machine recruited as many student helpers as it could. MIT was pursuing a vision of computing radically different from the one that had shaped the first big number cruncher, the University of Pennsylvania's ENIAC. Originally intended for use in a flight simulator, MIT's system was interactive—it used small, fast, simple circuits designed to respond quickly, so that a programmer could sit before a keyboard and have something like a primitive dialogue with the system. Its nickname was the Expensive Typewriter.

He quickly gained recognition as a "first-class practical engineer," in the words of MIT professor Jay Forrester, who headed the computer lab. One of three powerful mentors who shaped Olsen's career, Forrester later sat on DEC's board and helped devise strategies for coping with the company's explosive growth. Norman Taylor, one of Olsen's supervisors, describes Olsen as extraordinarily self-contained. In the spring of 1950, recalls Taylor, Olsen asked for six months' leave, and vanished from the campus without explaining his plans. When he came back, he had a wife. He had met Eeva-Liisa Aulikki Valve, the daughter of a Finnish minister, when she was an exchange student in his hometown. During his leave, Olsen had followed her back to Scandinavia, and taken a job as an electrician at a Swedish ball-bearing factory to pay his way while he courted her.

In 1951 Forrester's laboratory took on the design of a massive Cold War project known as SAGE, the nation's first air-defense system. Intended to coordinate radar stations, fighter squadrons, and antiaircraft batteries in the event of Russian attack, it was the 1950s forerunner of Star Wars.

SAGE brought Olsen his first exposure to IBM, then an important maker of business equipment trying to leapfrog Univac, which had jumped into computers first. IBM won the contract to manufacture MIT's SAGE computer, and Forrester assigned Olsen, by then a graduate researcher, to the liaison team. He spent 13 months in Poughkeepsie, New York, at IBM's plant, mediating the sometimes stormy relations between MIT's cocksure young engineers and IBM's grizzled manufacturing experts and bureaucrats.

Olsen was shocked at the regimentation and insularity of the culture Thomas Watson had created. "It was like going to a Communist state," he says today. "They knew nothing about the rest of the world, and the world knew nothing about what went on inside." Olsen also was incredulous at what he saw as IBM's production inefficiencies. One night Olsen stood outside his house under the stars discussing IBM with Taylor, his MIT supervisor. As Taylor recalls it, "Olsen said, 'I can beat these guys at their own game.' "

OLSEN had nonetheless given little thought to actually managing a business until his pastor intervened. Harold Ockenga, a fiery preacher who ran Boston's Park Street Church, was another mentor. Ockenga's highly conservative ministry recalled the fundamentalist church in which Olsen grew up, and he joined the congregation as soon as he arrived at MIT. Olsen also admired the way Ockenga, one of the first radio evangelists, seized up-to-the-minute technology to promote fundamentalist values. "He was very practical in his admonitions," Olsen says. "He opened a broad world for us, not narrow at all."

Superintending Ockenga's Sunday School was Olsen's seminal management experience. The school was disorganized and neglected, Olsen recalls, "because everybody in the church management was old." Determined to make a good showing, he pored over all the management theory books he could find in the local library. He set up a committee system and, by aggressively marketing the school to the congregation, won the funds to help absorb the sudden influx of baby-boomers that began in his two-year ten-

ure. His work won him a seat on the church governing board. Having put management theory into practice, he says, "I was willing to admit to myself that I wanted to manage."

In 1957, the year IBM's revenues topped $1 billion for the first time, Olsen founded DEC with Harlan Anderson, his assistant at MIT. Their idea was to manufacture transistorized circuit boards and computers for engineers. Olsen was one of the few engineers of the day to realize that such computing jobs as monitoring a scientific experiment or keeping an inventory list were simple and required no mainframe. Olsen figured that if he supplied small, rugged, inexpensive machines—fundamentalist computers, so to speak—ordinary engineers would find uses for them.

LIKE THE Silicon Valley garage startups that would follow 20 years later, DEC began with scraps—$70,000 in venture capital, some lawn furniture, an old roll-top desk, and space rented in the defunct mill that still serves as headquarters. The founders, along with Olsen's brother Stan, did DEC's manufacturing and selling themselves; Aulikki swept the floors. According to Anderson, Olsen's frugality and mania for simplification helped the company survive. "Ken had thousands of ideas for making things simple and cheap," he says. Olsen figured out, for example, that plastic bottle caps worked just as well as expensive custom-built insulators for the tiny pulse transformers in DEC's first products. He also determined that doors were the most costly component of office partitions, so DEC had no doors—not even on the bathrooms.

Olsen and Anderson did not know it then, but they lost their chance to become billionaires when they made their deal for the $70,000 in start-up money. Olsen got 13% of DEC's stock and Anderson got 9%, portions later diluted by public offerings. The venture capitalists, a conservative Boston firm run by Harvard professor Georges Doriot, got 77%. Despite his firm's dominant ownership, Doriot promised not to interfere with the running of DEC. Remarkably enough for a venture capitalist, he kept his word. Doriot became a lifelong friend and Olsen's third mentor. At age 87, Doriot still advises Olsen on such delicate issues as choosing a successor.

With characteristic economy, Olsen decided DEC could do without organizational structure. Much like MIT's computer laboratory, the company consisted largely of bands of engineers who would form fluidly around

SOME IMPRESSIVE ALSO-RANS

■ Ken Olsen is but the most notable of a notable crowd. The latter half of the 20th century has produced dozens of giant new companies and a number of new billionaires. With venture capital flowing freely and business start-ups at a record rate, more are sure to follow.

Samuel Walton, like his hero J. C. Penney, grew rich by bringing name-brand merchandise to small towns—950 so far. Wal-Mart expects sales of $11 billion in the current fiscal year, and it is still the fastest-growing retailer in the country. Walton isn't finished yet: Now he intends to create a chain of "hypermarkets"—vast, warehouse-like convenience stores offering clothing, groceries, drugs, and other retail merchandise—in a joint venture with Texas-based Cullum Cos. Walton has probably amassed a larger fortune from a start-up company than anybody else in the world. His family's Wal-Mart stock was recently worth $4.7 billion.

An Wang, an immigrant from China, devised a magnetic-core memory for computers at 28 and sold it to IBM for $400,000. Wang Laboratories sold over $2.6 billion of computers, software, and services in fiscal 1986; revenues have grown 30-fold in ten years. Wang has given immense sums to charitable and cultural organizations but still holds stock worth $570 million.

H. Ross Perot set out to be the first supplier of turnkey data-processing services back in 1962 with a stake of $1,000. When he sold Electronic Data Systems to General Motors in 1984 for $2.5 billion, GM Chairman Roger B. Smith welcomed him as a man who might inject a little entrepreneurial spirit into the world's largest industrial corporation. He has been trying, vociferously, to do just that. Perot's estimated net worth these days: $2 billion.

Postwar Japan produced entrepreneurs by the dozen, including Sony's Akio Morita (see Books & Ideas). Perhaps the most remarkable is **Kazuo Inamori,** 54. Because he did not graduate from a prestigious university, he founded Kyocera Corp. without help from Japan's old-boy business network, a potentially crippling disadvantage. Nonetheless, Kyocera's 1985 sales of $1.3 billion make it the world's dominant manufacturer of ceramic packages for microchips and a feared competitor in high-tech markets of the future.

In Italy **Carlo De Benedetti** has transformed nearly moribund Olivetti into one of Europe's most profitable companies. His own business ventures range from financial services to food (FORTUNE, April 14). In Germany the late **Heinz Nixdorf** founded a computer company that through careful attention to its customers' needs was able to stand up to IBM. Nixdorf's sales reached $1.3 billion last year.

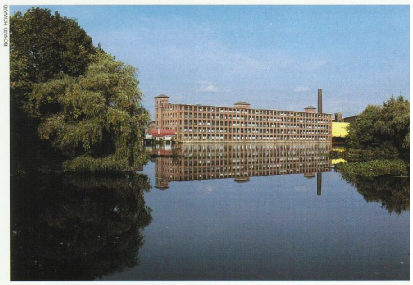
In deciding on Olsen as the most successful entrepreneur, FORTUNE gave great weight to the fact that he started from scratch and has made virtually no acquisitions. Other worthy characters have made shareholders and themselves wealthy through shrewd portfolio management. Among them: **Henry Singleton** of Teledyne, **Warren Buffett** of Berkshire Hathaway, and **Lawrence Tisch** of Loews. Still others, like **Armand Hammer,** nursed a tiny enterprise to enormous size. When Hammer stepped aboard Occidental Petroleum in 1957, it had three employees and a net worth of $34,000. Thanks to savvy exploration, the oil price rise, and many acquisitions, Occidental now ranks 19th on the FORTUNE 500. **— Alan Farnham**

Inamori *Walton* *Perot* *De Benedetti* *Wang*

projects. That worked fine for seven years. But by 1964, with annual revenues over the $10-million mark, matters were getting out of hand. DEC had several minicomputer models on the market and other designs in the works, all competing willy-nilly for funds. The biggest headache was a large "time-sharing" computer meant to serve many users at once. The first few had been delivered to customers, and engineers were laboring to get the bugs out; in Olsen's opinion the whole project was soaking up more than its share of funds.

Olsen was counting on the board to kill the machine once they learned about its problems. But when the issue was finally raised, the directors thought DEC should persevere. Furious, Olsen gave up trying to get the board to do his managing for him and began brooding about responsibility. Before long Olsen hit upon an organizational remedy that was to guarantee DEC prominence in *In Search of Excellence*.

Each senior person, Olsen proposed, should take very broad responsibility for one product line—developing it, marketing it, making money. Each manager would stand before DEC's operating committee facing his peers and propose an annual budget and plan; if the proposal was accepted, it became his responsibility to carry it out. If something went wrong, the same procedure would be called into play: The product manager would propose a solution to the committee and be responsible if it said yes. DEC would maintain a centralized manufacturing force and a sales force from which the product managers could "buy" services.



DEC was born *in this once-decrepit woolen mill near Boston. It still serves as headquarters.*

AS SIMPLE AND ELEGANT as the Golden Rule, Olsen's idea was good for 19 years of 30% annual revenue and profit growth. Alone among senior managers, Olsen had no product line to look after and was free to roam around the company, overseeing the cooks and stirring the pots as he chose. The chance to run their own operations galvanized engineers into acting like entrepreneurs, and jolted mediocre managers into looking sharp. "It was a miracle," remembers Olsen, not a man to use that noun lightly. Not everyone was awed. Anderson, to whom Olsen assigned responsibility for the floundering time-sharing project, soon left, as did other engineers who liked the anarchy of old.

For more than a decade DEC sprouted new branches as entrepreneurially minded managers championed new products and pioneered new markets. DEC's success attracted a school of competitors: By one count more than 70 minicomputer manufacturers had entered the market by 1970. But none could dislodge DEC from its dominance of the engineering and scientific marketplace. IBM belatedly joined the race in 1975 and, by concentrating on commercial customers such as insurance companies, quickly built a minicomputer business as large as DEC's. But it too had little luck at luring away DEC's scientific and engineering customers.

In 1978 the organization by product line reached full flower. That year DEC consisted of more than 30 semiautonomous groups, and when all the profit-and-loss statements were tallied up, DEC had earned $142 million on revenues of $1.4 billion.

Though the growth was phenomenal, Olsen saw problems brewing. For one thing, DEC's computer technology was evolving faster than the rest of DEC. In 1979 the company's chief engineers won the approval of the board to bet billions on developing an ambitious new generation of VAX superminicomputers. (The name is short for Virtual Address Extension, computerese for a design feature that greatly boosts a machine's performance.) Ranging from small desktop machines to computer clusters that could compete with mainframes, DEC's new VAXes would all play the same software and share data over networks.

The new plan was risky. To succeed, DEC had to master exotic engineering disciplines in which it had little experience, such as manufacturing its own microprocessors, building large disk-storage units, and writing software to run networks. Olsen was willing to bet DEC could build the new gear but worried whether the company could market it. The new VAXes would be capable of automating entire companies. To win customers, DEC would have to mount a massive corporate selling effort, much like IBM's. Olsen decided that DEC's opportunistic, scattershot style of product development and marketing was ill equipped to handle the job. While the VAXes were on the drawing board, Olsen set out to transform DEC into a unified marketing organization that would be worthy of the new products.

INVESTOR'S SNAPSHOT

DIGITAL EQUIPMENT

SALES (LATEST FOUR QUARTERS)	**$7.6 BILLION**
CHANGE FROM YEAR EARLIER	UP 14%
NET PROFIT	**$617.4 MILLION**
CHANGE	UP 38%
RETURN ON COMMON STOCKHOLDERS' EQUITY	**12%**
FIVE-YEAR AVERAGE	10%
RECENT SHARE PRICE	**$89.50**
PRICE/EARNINGS MULTIPLE	**19**
TOTAL RETURN TO INVESTORS (12 MONTHS TO 9/26)	**66%**
PRINCIPAL MARKET	**NYSE**

Explanatory notes: see Letters

Olsen reshaped DEC by teasing, goading, and teaching employees, by sermonizing—and by remorselessly pillorying those who stood in his way. For example, when Olsen decided that DEC's European operation had too little autonomy and demanded proposals about how it should be reorganized, Theodore Johnson, Olsen's top sales executive, found himself mired in committees and meetings. He hired consultants and spent endless hours presenting ideas for reorganizing. None of them satisfied Olsen, who hounded Johnson relentlessly for two years, meanwhile whittling away at his responsibilities and encouraging underlings to make proposals of their own.

Neither Olsen nor Johnson, a 20-year veteran who revered him, would give up. But Olsen's nerves proved stronger: Johnson finally quit the company, his confidence shaken. Other lieutenants departed during the long campaign, among them Olsen's own brother, Stanley. Not one was fired, but some left wounded, with heart problems, ulcers, or wrecked nerves.

Olsen's reliance on indirection helps explain why the massive job of dismantling the product line organizations took five years to complete. Critics questioned whether DEC would ever emerge healthy from such struggles. DEC's earnings were sapped by the changes and by delays in many parts of the VAX program.

FINALLY, in 1983, DEC's operating committee formally voted to shift profit and loss responsibility away from the product managers. The move, which should have been a triumph for Olsen, at first seemed a catastrophe. Accounting snafus triggered an embarrassing 72% plunge in earnings in a quarter the company had predicted would hold steady. The same year, DEC's highly publicized efforts to enter the office personal computer market bombed, in spite of Olsen's conviction that America's desktops belonged rightfully to DEC computers, not IBM's or Apple's. DEC's stock plunged, and critics speculated that Olsen had succumbed to founder's disease.

A year later, however, DEC's new VAXes began rolling out. The computers and networks leapfrogged the competition; an influential security analyst hailed DEC's smallest unit, the MicroVax II, as "the reached full flower. That year DEC consisted of more than 30 semiautonomous groups, and when all the profit-and-loss statements were tallied up, DEC had earned $142 million on revenues of $1.4 billion.

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PARABLES FROM PRESIDENT OLSEN

■ Olsen's homespun moral tales, known around DEC as parables, are a favorite management tool. They go out to senior managers over the company's electronic mail system. They teach lessons, stir debate, and blast sinners. Many unfold at a leisurely pace; these parables have been boiled down.

I am in the market for a backhoe. The other day I stopped at a Ford place to get literature on tractors. They had colored brochures with beautiful pictures and glowing descriptions, and plain black-on-yellow data sheets filled with numbers.

The four models which I think may cover my needs seem to be made by four different product organizations that compete with each other in who can make the most expensive and beautiful brochure. But no way would the brochures explain why one Ford tractor might have advantages over another. The data sheets vary from two to eight pages, and there is no consistency in the way data is presented. There is no way to compare the four tractors.

If I don't get tired of the whole idea of a backhoe, I'll try seeing the salesman next time. But I am not sure he would understand the difference between the models, and I would feel intimidated by my lack of knowledge. I am always embarrassed when salesmen act surprised that I don't know how deep a ditch I want to dig, how heavy a load I want to lift, or how high I want to lift it.

Sometime I'd like to have you explain whether there is a parallel at Digital in this or not.

There are two ways of making a jigsaw puzzle. One is to look at the parts and anytime two seem to go together, put them together. The other is to insist that people look at the puzzle and never move until you're convinced the pieces fit together. This has great appeal. It sounds so businesslike to say it is wrong to move until you see the whole path to the end. An intimidating critic could embarrass people out of ever wanting to do it a step at a time.

An engineering project is often the same way. It has gotten to the point where the worst possible crime is to build hardware without having the software and the marketing plans completed. But history doesn't support this elegant-sounding approach. People have made a beautiful piece of hardware, caught the imagination of software people and marketers (or if not marketers, customers), and had great financial success. But projects that have to be negotiated before a move is made discourage putting hardware together. The result is absolutely devastating to the design because all inspiration is gone.

During one of the big wars, a conference was held at headquarters behind the lines. After great turmoil, it was decided to take a certain hill. One lieutenant went back to his company and said, "Synchronize your watches. At seven o'clock we are leaving the trenches. We are going to plant our flag on top of that hill." The next lieutenant came back to his company and said, "Oh, what a terrible meeting, no two generals could agree. Some said that taking the hill would be suicide, some said we should take another hill. They finally agreed that at seven o'clock we should take that hill over there, but I think that around seven o'clock I will go back to headquarters and raise the whole issue again, because they obviously don't know what they are talking about."

The first officer was lucky. He had simple goals. Everyone sympathized with the second officer: clearly it wasn't his fault that his men didn't get out of the trenches. But how could this be? They both got the same orders from the same headquarters at the same meeting.

ILLUSTRATIONS BY RANDALL ENOS

most important new product since the IBM PC." Olsen's revamped sales and marketing forces pumped the new hardware out the door and scored big gains in IBM's commercial market. Meanwhile a new system of financial controls helped boost DEC's return on equity from 8.5% in 1983 to 12% last year.

One of Olsen's prayer-breakfast friends calls the reorganization Olsen's "sojourn in the desert." Olsen remembers working in a frenzy, dictating memos at home into the night, keeping four secretaries swamped during the day. The stress of constant clashes with his longtime lieutenants gave his musings during that period a bruised, paranoid tone. "Being boss offers no advantage in getting anything done," he told a gathering of executives. "Everyone is out to prove the boss is wrong."

EVEN TODAY Olsen seems to smart at what he sees as the inability of his product line managers to perceive the need for change. "I owe it to the world to write a book about entrepreneurs," he says. While he avoided founder's disease, Olsen thinks many of his vice presidents fell victim to it, becoming complacent, building fiefdoms, ignoring changes in the business climate. "Not many people can tolerate success," he says. "I thought I could generate future leaders by giving them entrepreneurial responsibility. But my theory didn't work."

The new DEC, organized much more conventionally along functional lines, won't automatically create leaders either, Olsen says. His solution: shifting executives with promise from job to job and sometimes even temporarily demoting them so they can learn particular skills. Recently Olsen elevated three vice presidents who survived the reorganization to the newly created post of senior vice president. He says he will test them by heaping them with responsibility.

But there is so far no heir apparent. George Rideout, former president of Babson's Reports Inc. and another of Olsen's prayer-breakfast friends, prefers not even to speculate about Olsen's retirement. "The good Lord's hand is on the guy, and He's going to prosper him until He sends for him," Rideout says. Olsen, who is healthy, warns employees half-jokingly to expect him to put up a fight before stepping aside. But picking a successor, Olsen admits, will be the toughest management call he will ever make. If he stays true to form, Olsen will engineer a way for the decision to make itself, automatically. F