

MAKING IT

BY BRUCE E. BEANS

THE GRANDDADDY OF DATA

Eugene Garfield and his little-known Philadelphia firm are making millions selling scientific data all over the world.

Through the course of the day, as his long gray hair becomes unruly and starts to fan out, Eugene Garfield starts looking like Albert Einstein. It's a comparison Garfield probably won't mind.

In fact, among the half-million dollars or so worth of artwork inside the headquarters of Garfield's Institute for Scientific Information is a huge terra cotta tile mural called "The Cathedral of Man." It depicts many of the giants of science and culture: Aristotle, Newton, Gutenberg, da Vinci, Franklin, Picasso, Einstein and---Eugene Garfield.

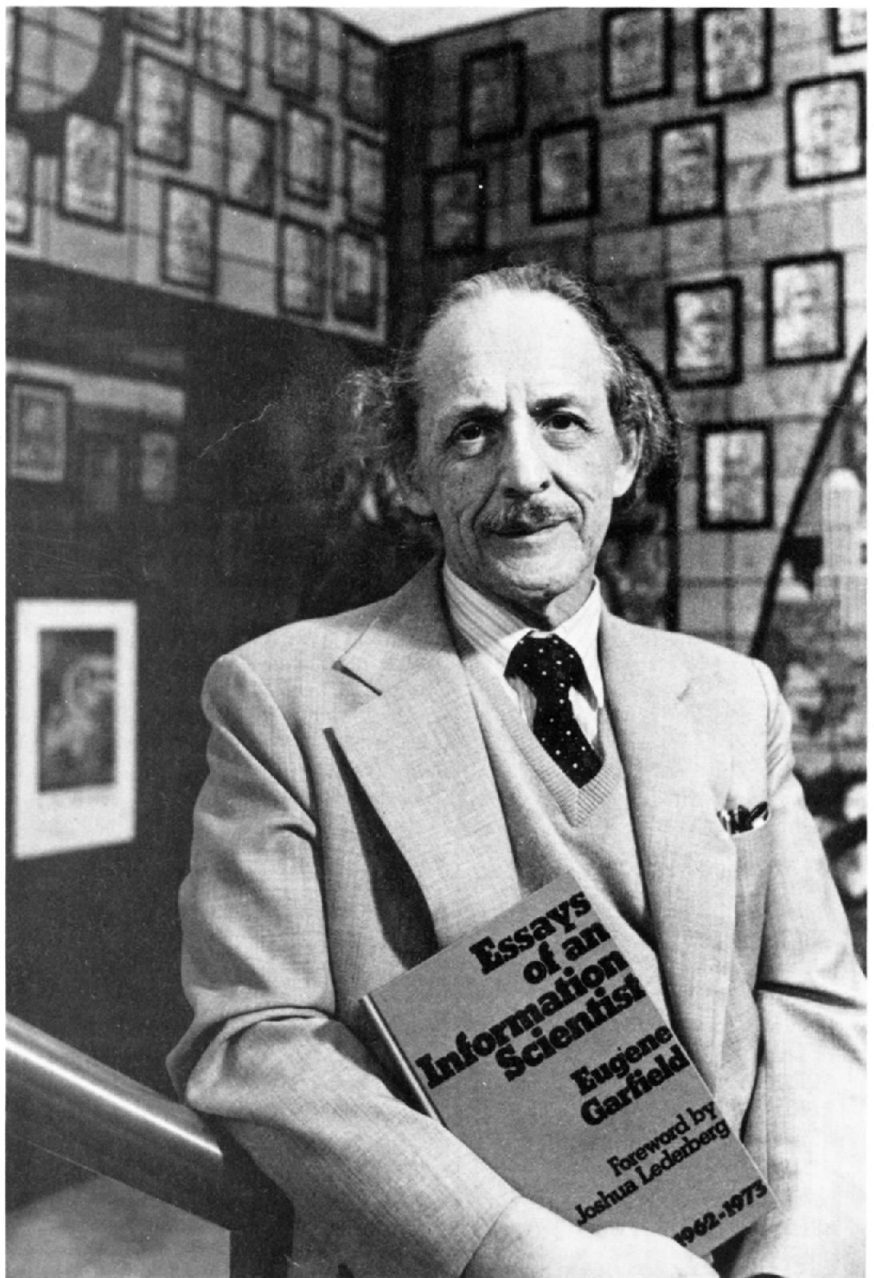
Well, there are *all* kinds of genius.

Today, when we're inundated with so many bytes of information that we throw money at anyone who can help us cut through the glut, Garfield has become a respected information scientist. The failed chemist's genius lies in the fact that, at the dawn of the Information Age, he understood the kind of information that scientists needed and figured out how to deliver it. Now ISI, the firm he founded 30 years ago, is the nation's (and perhaps the world's) largest commercial provider of scientific information, with \$30 million in sales last year split evenly between customers here and abroad.

As is the case with many great ventures, it began with an idea so simple that you have to wonder why someone didn't think of it before.

"The problem of being aware of and keeping up with the literature has been a problem ever since the invention of printing," says Garfield, a slight 60-year-old with an infant son and a chic wife in her early 30s. "Back as early as the days of Isaac Newton and the Royal Society, people complained about the need for keeping up with everything that was published. It's just that we *think* it's a new problem."

In 1955, drawing on experience he gained working on a medical information project at Johns Hopkins University, Garfield cooked up a new publication he



INFORMATION PLEASE! ISI founder Eugene Garfield keeps the world's scientists abreast of what their colleagues are up to.

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called--talk about *unwieldy--Management's DocuMation Preview*. It was, simply, a collection of the tables of contents from various management and social science journals. Inside a damp, converted log chicken coop in Thorofare, New Jersey, he printed the first issues with a Xerox platemaking machine and a small offset press.

A year later, with the help of a \$500 loan from Household Finance Corporation, he was able to expand and move the business to a tenement building on Spring Garden Street. The weekly publication was rechristened *Current Contents* by a public relations pro who briefly served as Garfield's partner (Garfield admits his ideas often outpace his marketing skills). Since then it has mushroomed into seven different editions for different subject areas, tracking the contents of more than 6,000 professional journals in fields ranging from biology, medicine and chemistry to social sciences and the arts and humanities. The combined paid circulation of *Current Contents* is 36,000 (it costs \$257 a year), with an estimated readership of more than 300,000 scientists and scholars. Printed in a 5-by-8-inch newsprint format, it's about as flashy as oatmeal. But it accounts for about 40 percent of ISI sales.

Its utility is obvious. In addition to scanning article titles, subscribers can also consult an index that lists all the significant words that appear in the articles listed.

"It presents an X-ray view of what's going on in science, which otherwise would be a big mass," says Gerald Holder, a Harvard professor of physics and the history of science who wrote the forward to Garfield's latest collected volume of his wide-ranging essays (one appears in each issue of *Current Contents*). "It enables researchers to zero in on what they are interested in at that moment. It's been hoped for ever since Francis Bacon, but it took Garfield to do it."

HE'S BEEN DOING it for most of his life. "It's a form of collecting," he says. "Some people collect things: I collect bibliographic references." So while other kids gathered rocks, young Eugene Garfield grew up in the West Bronx collecting book rifles. By the time he graduated from high school, he had scanned the titles on the spine of every book in the High Brodge branch of the New York Public Library. Why? "Because I never had the time to read them all." Back in New York during World War II (he had worked as a shipyard welder in Sausalito, California, studied engineering in Colorado and served stateside as a member of the U.S. Army's mountain troops), Garfield enrolled in Columbia University's chemistry program. Moonlighting as a cabbie, he killed time

by reading textbooks. His colleagues dubbed him "The Professor."

He graduated to a lab job at Columbia, but twice he caused explosions while mixing acid derivatives. And so Garfield leaped at a chance to join a pioneering automated medical indexing project at Johns Hopkins. It meant he could be involved with science without blowing himself up.

He became an expert in machine methods (that's what computers were originally called) of scientific documentation, took a master's in library science at Columbia and began work on his doctorate in structural linguistics at Penn. That's when Garfield--described by his boss at Columbia as a hard "but not very original" worker--invented *Current Contents*.

In addition to *Current Contents*, ISI's other big seller is the Scientific Citation Index, which tracks more than 3,000 journals, and indexes nearly 9 million citations, or footnotes, in 600,000 items a year. The SCI, which enables scientists and historians to chart how scientific research influences subsequent studies, nearly bankrupted Garfield in the early '60s when it was launched. Now it accounts for another 40 percent of sales. Roughly 1,200 customers, mostly libraries, buy the \$5,800 annual editions. Last year's 14-volume edition was nearly a yard thick.

ISI also updates chemists on about 16,000 new organic compounds *each month*; furnishes original tearsheets of articles; alerts customers, either on a one-time or continuing basis, of items of particular interest to them; and provides on-line databases and a software program, Sci-Mate, which can provide entree to a number of databases and conduct complex text searches. The Secret Service is using the latter in major criminal investigations.

And ISI has a small book publishing division, ISI Press. Its 21 titles include: a series on writing and editing; *Sex Signals: The Biology of Love*; a transliterated dictionary of the Russian language, edited by Garfield; and seven volumes of his *Current Contents* essays, which he produces with considerable help from his staff of writers, editors and researchers. His interests, if not his memory, are encyclopedic--the essay topics range from aging, allergies and animal research to Nobel laureates, parenting, science books for children (and ISI products).

Garfield met his third wife, Catheryne, while she was working in ISI's marketing department. She had a master's degree in information science from Drexel University, and now is consulting there part time. "He never had a woman before who understood business, someone he could talk with about the business, and that's what he likes best," says a longtime ISI board member.

The couple, who've been married three years, live in the Society Hill Towers with their infant son, Alexander Merton. At home, Garfield limits himself to a small reference library, but he scans an estimated 50 science-oriented magazines and journals, ripping out articles for his personal files or to send to others. He also scans *The New York Times* daily, or, failing that, catches up with the *Times*' weekly review. "All of us who read make such compromises," he says. "It's our built-in survival system against information overload."

Both Garfield's apartment and his office are chock-full of the wildly colorful, peyote-induced yarn paintings of Mexico's Huichol Indians (he may be the world's largest collector of the folk art). Garfield generally travels by subway or cab to ISI's \$6.5 million headquarters at 3501 Market Street, in the heart of the University City Science Center. Designed by Venturi, Rauch & Scott Brown, the exterior of the four-story, 6-year-old building looks to some like a computer punchcard. Instead of permanent walls, movable, free-standing partitions separate small office cubicles--the better to deal with frequent reorganizations brought on by new product changes. Thanks to elaborate sound-deadening systems, including some kind of low-decibel electronic hum, the place has an almost unnerving quiet about it, although some 450 of ISI's 625 employees work there.

The operation has a progressive bent. ISI sponsors one of the first on-site day-care centers in the country. There's also flex time, liberal vacation and no dress code. So while you find plenty of button-down shirts and penny loafers, you also find one of Garfield's most valuable assistants, Dr. Calvin Lee, a Chinese-American from San Francisco, with flowing black hair, wearing an abbreviated mesh T-shirt that exposes his navel, black shorts alive with fluorescent-pink banana leaves, a small teddy bear hanging from a belt loop, sandals, and an aluminum diamond glued to his forehead. No religious purpose, just likes how it looks, explains Lee, who says he helped sign David Bowie to his first major recording contract in London in 1970.

Nonetheless, there's considerable employee turnover. Ex-employees complain about low salaries and the eye-glazing nature of the fine print that makes up much of ISI's products. Then there's Garfield himself, whom most employees deferentially address as "Doctor."

"Part of it is him and his very hands-on style," says business consultant Peter K. Aborn, the son of one of Garfield's ex-wives and an ISI senior vice-president who

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left the firm last March after nearly 20 years because he desired more autonomy. "Some people bridle at it." Garfield must be getting the message: In February he hired a former McGraw-Hill executive, Martin Kennedy, to serve as ISI's chief operating officer and executive vice-president, in charge of the day-to-day running of the firm.

JUST BACK from a scientific meeting in Britain, soon to embark on a trip to Moscow, Leningrad, Helsinki and Heidelberg to lecture and chat up his firm's products, Garfield sits in his office with an uncomprehending look of a missionary who failed to convert a potential zealot.

He's talking about how, several years ago, *The Chronicle of Higher Education* pulled out of plans to produce jointly a science newspaper with ISI. Garfield has been dreaming about a sort of *Wall Street Journal* for scientists for two decades now. Doctors, lawyers, butchers, bakers and candlestick makers all have their own newspapers. But aside from the hundreds of professional journals that track scientific breakthroughs, the country's 4 million scientists and engineers have almost nowhere to turn for comprehensive information about the *business* of science--trends, policies, politics, funding.

"In a country that is so dependent on science and technology, it's absurd that there isn't a more active and logical place where you can seek the voice of the scientist in public affairs," Garfield says, waving his reading glasses through the air for emphasis.

"It's a needed enterprise," agrees Cobin Gwaltney, editor of *The Chronicle*. "It was then and it is now." But after ISI and Gwaltney each spent \$100,000 for development, *The Chronicle* withdrew because it felt a test mailing did not indicate sufficient interest for what was then planned as a weekly newspaper.

Garfield persisted. Then last year he convinced *The Economist*, the London-based bible of global financial news, to take a 40 percent interest in a jointly produced, bimonthly tabloid, *The Scientist*. But *The Economist* pulled out of the venture earlier this year. That occurred in the wake of an FBI probe and a private civil lawsuit filed against ISI concerning allegations the firm had copied, without authorization, a \$48,000 computer software package designed for commercial typesetting.

Pagetec Inc. of Westlake Village, California, claimed ISI made an unauthorized copy of the Versacomp software it owned for the Ralph Garner Associates typesetting house of New York. Garner, a half-brother of Garfield, has done photocomposition for ISI for years. The suit was settled out of court in January. Under the

terms of the agreement, ISI is continuing to use the software, while Garner is not.

But the FBI probe, which also uncovered evidence that ISI had made additional unauthorized copies of the popular WordStar word-processing program, was continuing when *The Economist* backed out before a scheduled mail solicitation for *The Scientist* in January.

"The suit didn't bother us so much, but the FBI thing bothered everybody," says Nicholas Valery, a former New York and Tokyo bureau chief for *The Economist* who was to be publisher of the new periodical. "There was concern that ISI could've become the standard case for software copy violations, just like E.F. Hutton for check-kiting. So we couldn't finalize the details while the cloud was hanging over ISI."

While the door has been left open for *The Economist's* return to the project,

Despite the fact that his partner pulled out during the FBI probe, Garfield is forging ahead on his own with the newspaper for scientists. Getting ISI's approval was easy: Garfield owns 80 percent of the firm.

Garfield thinks the magazine's withdrawal could also have been a result of recent management changes. Regardless, he says he's confident the federal investigation will also be dropped. "People have contract suits all the time; does that mean they're criminals?" asks Garfield, who declines to discuss the case but asserts no crime was committed.

Meanwhile, he's forging ahead with the delayed newspaper and hopes to launch it this July. "I've been delayed before," he says with a laugh. "It's not a major tragedy." With editorial offices in Washington, and business offices in New York and ISI headquarters, *The Scientist* will be a 24- to 32- page tabloid (cover price, \$1.95; annual subscription, \$29 to \$39) strictly earmarked for engineers, laboratory scientists, white-coated PhDs--not general consumers who read *Scientific American*.

Getting the approval of ISI's board of directors to bankroll the entire venture was easy. Garfield owns 80 percent of the company, controls about another 10 per-

cent and is the board chairman and CEO. He already pours most of his profits back into research and development of new product ideas and databases; in fact, ISI lost money in 1983, mostly due to the cost of developing on-line products. It turned a profit in 1984 and eked out a small one last year, Garfield says.

The main functions of the chiefs fellow board members are to advise Garfield and throw cold water on his wilder ideas. That hasn't happened with the newspaper. "This newspaper idea could be one of his better ones," says longtime board member Charles Tyroler II, a Washington consultant.

As *The Economist's* own marketing survey indicated, ISI subscribers have a strong loyalty to the firm--and the kind of demographics that could make scientific equipment advertisers pant. They have a median personal income of \$59,000 and median household income of \$71,000. That's significant not so much for their disposable income but for their job stature and control of lab purchases.

"They're in charge of some pretty fat procurement budgets," says *The Economist's* Valery, who still believes the concept has merit. "Clearly ISI has its fingers on the shakers and movers in science."

Garfield doesn't expect *The Scientist* to be an instant winner. In Britain, with one-fifth of the scientists the United States has, a 30-year-old newspaper, the *New Scientist*, has a weekly circulation of 77,000. "Our aims are very limited," says Garfield. "We're looking for a circulation of 20,000 to 40,000 and, over five to ten years, to build it up to a quarter million."

Those limited expectations don't come cheaply. The ISI business plan calls for losses of \$3 million to \$4 million before it begins to yield a return. Thinking back to his experience with the Science Citation Index, Garfield says: "If you really want to sell a new product in this business, unless you've got something absolutely phenomenal, you better count on many years before it's accepted."

And if it isn't accepted, well, Garfield has plenty more ideas where the newspaper came from. His staff is also working on an *Atlas Encyclopedia of Science*, which he likens to a graduate-level *Encyclopedia Britannica*. He also wants to see his indexes on compact disks; convert some of the citation updates into special-interest newsletters, on topics such as AIDS, for use by both researchers and general consumers; and develop copying machines (for which he has patents) that would be able to copy selected parts of an 8 1/2-by-11-inch page, instead of the whole sheet.

"Most entrepreneurial businesses," he says, "always have more ideas than they can implement." ●●