Bringing a New Dimension to the Art of Civil Engineering...

Author Explores a Wider World Beyond the Concrete and Steel

by Samuel C. Florman, P.E., New York Alpha '44

"I became an engineer."

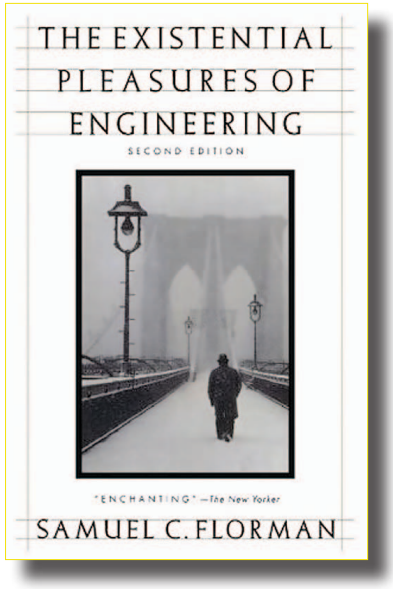
Thus begins John Hersey's 1956 novel, *A Single Pebble*, in which the narrator travels to pre-revolutionary China seeking a site for a dam along the Yangtze River. As he encounters a civilization little changed since the Middle Ages, the young man finds his faith in technology giving way to awe and self-doubt.

I, too, became an engineer and have spent my professional life in the construction industry, albeit in less dramatic settings than the chasms of the Yangtze, and with less pessimistic feelings about my profession.

I also became a writer, author of seven books and several hundred articles, papers, reviews and speeches. My main topic of interest has been engineering, and more broadly the relationship of technology to the general culture.

Writing about engineering, and technology in general, I have found myself a member of a small group. I know of very few practicing engineers who share this avocation, hobby, obsession, that has been such an important part of my life.

There are, of course, many graduate engineers who are authors, some of top quality. But most of these men and women are professional writers, known as journalists, researchers, editors, historians, even novelists. They may have been educated as engineers, but writing is their main line of work; that is how they identify themselves.



Also many practicing engineers write excellent prose: reports, essays, speeches and the like, but only as an adjunct to their main line of work. When it comes to active engineers who are also active authors—and who keep at it throughout their careers—I sometimes feel that we are members of a very small club. Three wonderfully productive engineer-authors whose writings are best known to me are **Henry Petroski,** Ph.D., P.E., *New York Xi '63*, **Robert W. Lucky,** Ph.D., *Indiana Alpha '57*, and the late **Richard G. Weingardt,** P.E., *Colorado Epsilon '60*. Others, past, present and future will doubtless make for a longer list, but I believe not much longer.

Other professions seem to produce many more writers. Lawyers, of course, have written countless volumes, as have scientists, and perhaps most notably, doctors. I was astonished recently to discover that Anton Chekhov, the great Russian playwright, was a doctor. "Medicine is my lawful wife," he wrote in a letter to a friend, "and literature is my mistress. When I get tired of one I spend the night with the other. Though it's disorderly it's not dull, and neither of them loses anything from my infidelity."

That is wonderfully witty, but my own approach to writing is expressed more accurately by the contemporary doctor-author, Oliver Sacks. "We write," said Sacks in an interview, "to better understand the complex ethical and emotional challenges of medical practice... And we write because we love language and good stories."

My path to engineering was fairly typical—a liking and aptitude for mathematics and the sciences, plus an attraction to gadgets and machines, spiced perhaps by seeing adventure movies about drilling for oil, and building railroads, and dams. And a belief, during the Depression, that engineering seemed like a sensible way to make a living.

But writing? Well, reading and writing were stressed and wonderfully taught at New York City's Ethical Culture Fieldston School which I attended for twelve years. I then went to Dartmouth College whose Thayer School of Engineering is one of the very few institutions in the nation that stresses the liberal arts as part of an engineer's education and requires five years of credits to qualify for a degree. Because of World War II I couldn't take advantage of this approach as originally intended. In my sophomore year I enlisted in a year-round navy program at Dartmouth that rushed us into the technical courses, and in early 1945 out to officers training school with a four year degree earned in less than three. Yet the Thayer ideal had made a deep impression, and during the year at war's end that I spent with the Seabees on a Pacific island, I took advantage of the long quiet evenings to read many of the books in the battalion's surprisingly well-stocked collection of modern library classics. And after leaving the service, thanks to the G.I. Bill, and responding to a sudden impulse, I spent a year at Columbia University earning a master's degree in English literature. This helped qualify me for the Thayer School 5th year degree; but more importantly, exposed me to the ferment of the Columbia campus and New York City at a very exciting time in the nation's intellectual history. I took courses with two of the cultural

giants of the age, Lionel Trilling and Jacques Barzun, and at Professor Trilling's suggestion wrote a thesis on *American Criticism of Franz Kafka*, exposing me to existentialism, Freudianism, Marxism, and the other "isms" of the day. Put it all together: the teaching and philosophy of the Ethical Culture Fieldston School, the heritage of Sylvanus Thayer's concept of the all-around cultured engineer, quiet evenings with books on a Pacific island, and the intellectual excitement at Columbia in the mid 20th century—my attraction to reading and writing evolved.

My first published article appeared in March of 1959 in *Engineering News-Record*, widely known as the "bible" of the construction industry. The topic was expressly industry-related: "Can You Anticipate Your Profits on a Current Job?" But I soon broadened my horizons, appearing in publications such as *Civil Engineering*, *American Engineer*, *Consulting Engineer*, and *Journal of Engineering Education* with titles such as "The Civil Engineer in Fiction," "Engineering and History," "Engineering and Music," and "Engineering and the Philosophy of Science." I edged my way into the non-engineering community with "Mr. Krutch and the Scientific View" in *The American Scholar*, "Socialism and the Man of Good Will" in *Monthly Review*, and in 1963 a real breakthrough into the outside world: "Wrong Way on the 8:10— The Commuter in Reverse" accepted for publication by *The New York Times Weekly Review*.

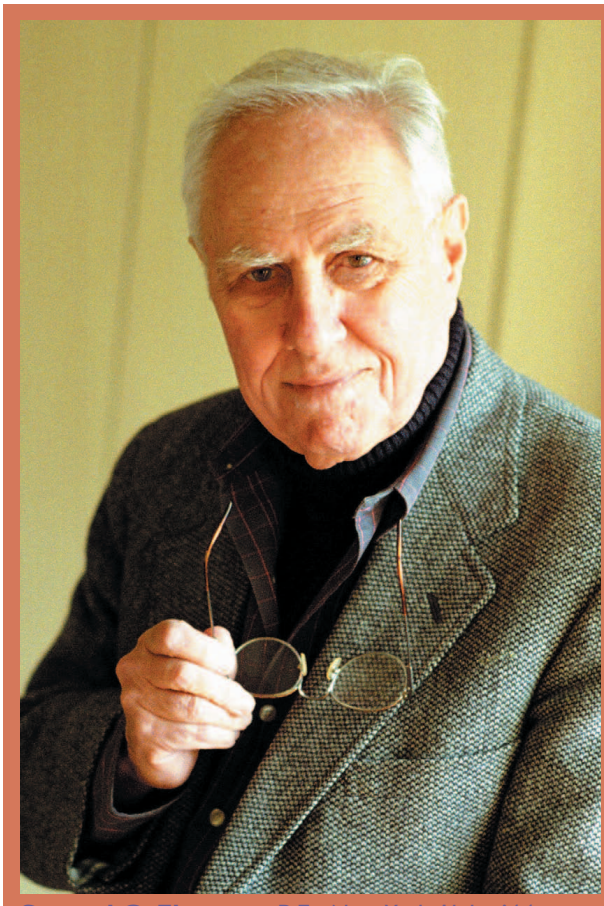
Began Submitting to Publishers

In the early 1960s, with a respectable dozen articles in my portfolio, and a theme summed up in a 1962 piece, "The Engineer and the Liberal Arts—A Crisis of Two Cultures," I found myself thinking about writing a book. I began submitting material to publishers, and after a frustrating two years of friendly rejections, ended up with a contract for *Engineering and the Liberal Arts*, published by McGraw-Hill in 1968.

The pleasure of acceptance and physically having a book in hand was followed by another delightful experience, receiving a friendly review. "What a welcome book!" came word from the respected journal *Technology and Culture*. Then, from The New York Public Library: "Well written, relaxing, interesting . . . Recommended for most libraries." And then congenial acceptance by American Library Association, The Library of Science, *Mechanical Engineering* and a few others.

Next, totally unexpected, and a mixed pleasure because it brought with it the prospect of additional work and pressure—invitations to speak. Off I went to colleges and universities in every part of the country, also to engineers' clubs, associations and joint councils.

By far the most important contact—indeed momentous in the evolution of my writing career— was a 1968 invitation to speak at a monthly meeting of the Engineering Division of the New York Academy of Sciences. What made this unique was the program director's request for me to consider engineering from a "philosophical" point of view. He wanted to avoid the usual dull platitudes and thought that I might be up to the challenge. Impetuously I agreed to try.



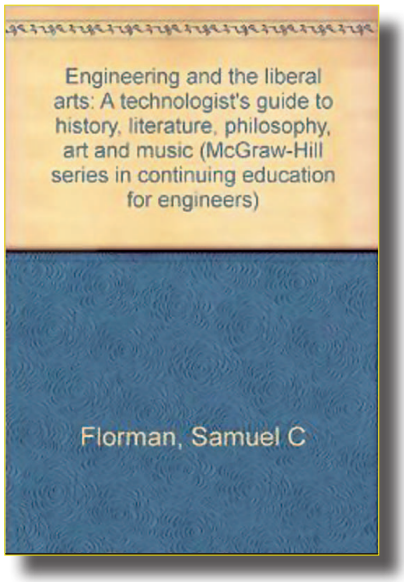
Samuel C. Florman, P.E., *New York Alpha '44,* is a civil engineer, general contractor and author, best known for his writings and speeches about engineering, technology and general culture. The most widely distributed of his seven books is *The Existential Pleasures of Engineering,* first published in 1976. According to one authority, "It has become an often-referred-to modern classic." His most recently published book is *Good Guys, Wiseguys and Putting Up Buildings: A Life in Construction,* published in 2012. Florman is chairman of Kreisler Borg Florman General Construction Company, of Scarsdale, NY. In 1995 he was elected to the National Academy of Engineering "for literary contributions furthering engineering professionalism, ethics and liberal engineering education."

This would have been a challenging assignment in the best of circumstances, but it was particularly daunting at that moment in our national history: 1968. War was raging in Vietnam and American college campuses were being wracked by student demonstrations. The protests were directed mainly at the war, but also more generally at a heartless materialism that was said to have taken hold. Technology had became a word with evil implication, identified with weaponry, greed, and environmental degradation. The soft songs of the "flower children" blended with the wrathful chants of campus militants, making for an atmosphere in which engineers could not help feeling uneasy. I was sympathetic with much that the students were saying, and troubled by the failings of the industrial "establishment" with which most engineers—myself included — were in some way affiliated.

Yet, as I set to work on my speech, guilt and misgiving yielded to a completely different state of mind. What is achieved, I wondered, by blind and angry protest? Surely, folksinging and "dropping out" are not adequate responses to life's challenges. Paradoxically, under the pressure of reproach, I began to conceive a new regard for the engineering profession.

When the designated evening arrived, my thoughts were still not fully formed, but I had written them down with such clarity as I could muster. My main theme was summed up in the title I chose: "The Existential Pleasures of Engineering." This phrase seemed to tickle the audience's fancy; the speech itself was received with friendly approval. And that for the moment was that.

The following year, 1969, my remarks were reprinted and widely circulated in the *Academy's Transactions.* I began to get communiques from all over the world. "Yes," engineers told me, "we, too, have strong, positive philosophical feelings about the work we do." Encouraged by that response, and animated by my own evolving interests, I resolved to explore the speech's ideas at greater length.



Looking back, it is hard to recall how events then tumbled on top of each other, slowly at first, gathering speed, and somehow changing my life. In the early 1970s, I started putting together a proposal for a book, and by 1974 I had an agreement with Tom Dunne of St. Martin's Press to write it. Several publishers had sent me suggestions about how to develop my concept, but Tom was the only one to say in effect, I like your ideas, go ahead and write the book. *The Existential Pleasures of Engineering* was published in February 1976.

The reviews were a wonderful surprise, not just pleasant approval from library associations, but honest to goodness plaudits from *The New Yorker*, *Time*, *The New York Times*, *The Wall Street Journal*, and many, many more. Invitations to speak arrived from leading engineering schools as well as Ivy League institutions, also Brookhaven Laboratory, IBM, ever more engineering society meetings, and eventually the annual dinner of *Engineering News-Record.*

Financial Returns Were Slim

Happily, I wasn't writing for a living, since the financial returns were slim. *Existential* sold 100,000 copies over a period of several years, and was issued in a second edition 18 years after publication, all very nice for the type of book it was. But none of the books that followed—although each had its respectable audience—sold nearly as well.

Yet the "success" of *Existential* exceeded anything I might have anticipated. Out of nowhere I found that my essay "In Praise of Technology," was the cover piece of *Harper's.* I became a contributing editor, and from 1976 to 1981 wrote a dozen pieces for that esteemed publication. I next took on the responsibility of columnist with MIT's *Technology Review*, writing four columns a year from 1982 to 1998, over sixty in all. There were a few radio and TV interviews, although I was happier writing or speaking before small groups than I was "on the air."

I also was invited to write reviews for *The New York Times Book Review*, eight in number, including, in 1981, a front page review of Tracy Kidder's Pulitzer Prize winner *The Soul of a New Machine.* I did a few articles for the Times real estate section, and in 1977 Ron Chernow, in the Times business section wrote an article about me titled "In Engineering, A Defender of the Profession." He said that I "might be described as the poet laureate of America's engineers," a quote that pleased my publisher.

None to Match It

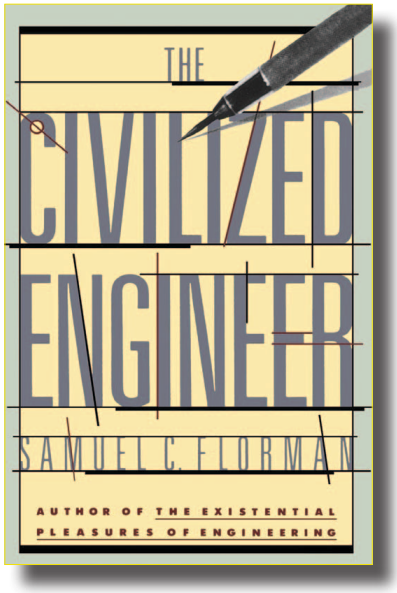
I've written five books since *Existential*, all received kindly, but none to match it in sales or impact. *Blaming Technology: The Irrational Search for Scapegoats* (1981) had its champions in a world where blame in general was too readily distributed with superficial rationale. *The Civilized Engineer* (1987), containing a mini-history of the profession and a look back at *Existential* "a generation later," is in some ways my favorite, except perhaps for the second edition of *Existential* (1994) which contains short segments from both *Blaming* and *Civilized. The Introspective Engineer* (1996) contains much material adapted from articles written for *Technology Review* and other publications, a warning perhaps that I had no more book-length epistles within me. *The New York Times Book Review* listed *Introspective* among the "New & Noteworthy Paperbacks of 1997," but that was a tepid reception to one who had been spoiled in earlier days.

So, was I ready to retire as an author of books? Well, no. I had always toyed with the idea of doing a novel, and had in mind one particular story: a group of engineers lead a rebuilding of civilization after the earth has been practically destroyed by collision with a comet. The idea wouldn't go away so I gave it a try. It was lots of fun doing the research, learning about earth-destroying comets, and identifying the place on earth with weather, plants, and metal deposits needed for a rebirth of technology. I selected the place to save—Kwa-Zulu Natal in South Africa—and arranged for a group of engineers to be off that coast on a sea-going seminar when the comet struck, far, far away. I am not, and never will be, a talented novelist. But *The Aftermath: A Novel of Survival* (2001) had a number of fans. *Booklist* said it was "compelling and entertaining," and *The New York Times* acknowledged that "Even skeptical readers may enjoy the can-do-spirit."

Finally—what else?—the memoir: *Good Guys, Wiseguys and Putting Up Buildings: A Life In Construction* (2012). It was pleasant—if a touch bittersweet—to be researching

a career of more than six decades. What I didn't enjoy was undergoing an extensive review by an attorney, retained by the publisher, intent on making sure that I wasn't guilty of libel, slander, or whatever in my recounting a few tales of wrongdoing. *The Wall Street Journal* made my day with a featured review on publication date, calling the book "engagingly informal, twinkling with bemusement."

I suppose that I have measured success mainly by the reception of my books, although there were other factors that were hard to ignore. Awards and honors came from academia and from each of the major engineering societies—mechanical, electrical and civil. More meaningful, perhaps, were selections for service on executive boards, advisory councils, and editorial boards for worthy institutions and publications.



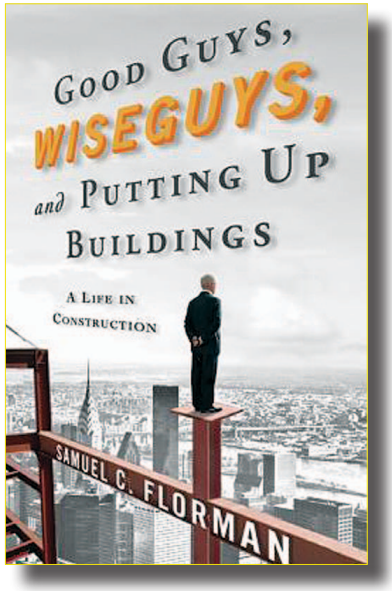
And most satisfying, I would have to say, was election in 1995 to the National Academy of Engineering. It would be ingenuous to imply that the recognition itself made no impression. But most meaningful, truly, was the opportunity to meet and work with outstanding people in my profession. The NAE takes seriously its role of advising the federal government, encouraging education and research, and operating programs aimed at meeting national needs. It was a privilege to serve on the board on engineering education, the building research board, the committee on the offshoring of engineering, and other such groups.

Facing Facts

The years have flown by. Although there are eternal verities, and I stand by and reconfirm most of what I have written, there are, I must admit, some changes in the world of engineering that I did not foresee. I have tried to "keep up" by writing occasional essays to take account of the new forces that I see at work. In the summer of 2003 I wrote in *The Bent of Tau Beta Pi:* "My Profession and My Nation: A Worrisome Confrontation," a consideration of globalization and outsourcing, an essay that was referred to and adapted by other professional periodicals. Then in the fall of 2007, again in *The Bent*, I wrote "Facing Facts about the Engineering Profession," noting how several wished-for changes had not occurred as I had expected they would—for example the evolution of fame and influence for engineers. Happily, a few disappointments were balanced by changes for the better such as increased community service and volunteerism among young engineers.

Getting older may entail problems for a writer, particularly in a rapidly changing field like engineering. But aging also presents an unanticipated source of satisfaction, the ability to bear witness to past events actually experienced, to celebrate anniversaries of historic events to which one has been witness. In a *New York Times* op-ed in September 2010, I reminded readers that 65 years before, as a Navy Seabee working with Japanese soldiers immediately after the end of World War II, I had discovered the unforeseen pleasure of friendship developing amongst recent enemies. And in an August 2013 issue of *Engineering News-Record* I recalled the 50-year-ago arrival of hostile affirmative action in the construction industry, and how negotiation and compromise served the industry and the nation.

In order to preserve and organize information about my writing—mostly my published writing—I decided to join the digital world and put together a web site. A professor from a far-away university once offered to establish an archive for my material, including correspondence, working drafts, and whatever else is usual in collections of that sort. I appreciated the offer, but felt that such an enterprise should be reserved for an elite of limited numbers. We are already in danger of drowning in a sea of written material. If I list my books, with date of publication and name of publisher, the chances are good that they will be available in libraries of the future. And even my articles, identified by periodical and date of issue, should be accessible somewhere in the electronic clouds. As for speeches and such, most are not available in written form. But what I had to say was mostly a reflection of what I wrote. In any event, a listing of when and where I spoke in public will take up little space and gives me a sense of filling out a picture. And if I slip in a few actual samples of my work, written or spoken, or even comments by others about my work, that will encourage me to dispose of voluminous paper files and surely will do no harm to the cosmos.



Let me close with the totally unexpected little pleasure that comes along for an author on a lucky day: A friend sends me a copy of the December 7, 2013, issue of *The Boston Globe.* It contains an interview with Richard Blanco, the young poet who composed and read a poem for the second-term inauguration of President Obama. Asked about how, as an engineering student in college, he ended up as a poet, Mr. Blanco answered, "There is one book that changed my life. *The Existential Pleasures of Engineering* by Samuel C. Florman . . . that book gave me permission to be an engineer and a crazy cat."