

DEREK H. PAGE RECEIVES 2005 TAPPI GUNNAR NICHOLSON GOLD MEDAL

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Editor's Note: The TAPPI Gunnar Nicholson Gold Medal is the highest honor the Association bestows upon an individual. It is granted to those who have made preeminent scientific and engineering achievements of proven commercial benefit to the world's pulp, paper, board, and forest product industries.

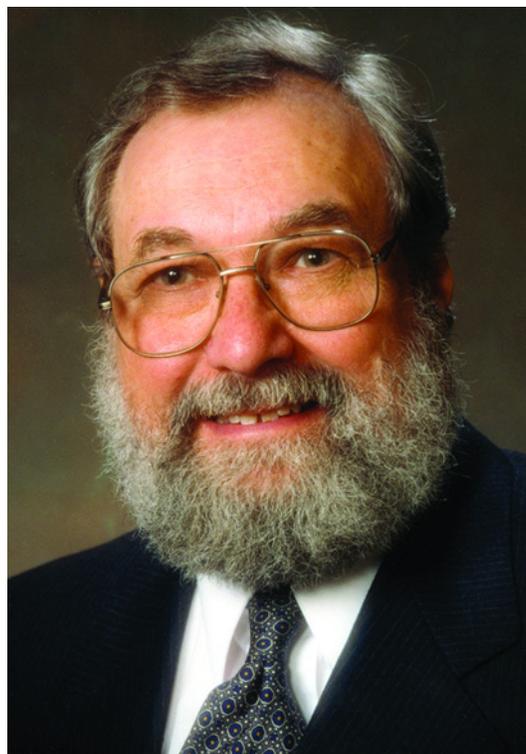
The 2005 TAPPI Gunnar Nicholson Gold Medal was awarded to Derek H. Page, who retired from PAPRICAN in 1993, at the TAPPI Annual Meeting in February. The following is an appraisal of Page's career by Don Meadows, followed by an interview with Page.

WHAT YOU WILL LEARN:

- How Derek Page has made an unparalleled contribution to the pulp and paper industry.
- How he chose a career in the pulp and paper industry.
- His leading role with the *Journal of Pulp and Paper Science*.

ADDITIONAL RESOURCES:

- For more information on the Gunnar Nicholson Gold Medal and for articles profiling past winners of this award, go to www.tappi.org and type in "Gunnar Nicholson Gold Medal" in the search field.



Derek Page

Every paper school graduate is familiar with the "Page equation" for tensile strength of paper. It—and many other insights from Derek H. Page into paper structure and performance—have significantly influenced how we make paper today.

During his career, Page has made an unparalleled contribution to the pulp and paper industry. Since 1955 he has led multi-disciplinary teams working on the physics of paper properties, pioneering the use of tools such as microscopy and image analysis, as recorded in more than 100 scientific articles. His work has always been characterized by a search for mechanisms that relate fiber and paper structure to properties, a search for quantitative relationships arising from those mechanisms, and the practical application of what has been found. As a consequence, his fundamental scientific work has had widespread application in the industry. His "Page equation" has been used in many industrial applications to correct for inadequate strength properties. His pioneering work on fiber curl, its measurement, and its mechanism of creation and removal has been applied to solving problems ranging from chemical pulp refining, to thermomechanical pulp

storage, to tissue production.

"Commercial processes, such as Clupac, were based on micro-compression theories proposed by Derek Page," noted Michael J. Kocurek, professor and head of the Department of Wood and Paper Science at North Carolina State University. "Designs of paper machine dryers are based on the knowledge of paper shrinkage theories articulated by Derek Page," Kocurek said. "He is one of our 'Renaissance Men.'"

A native of Sheffield, England, Page received his bachelor's, master's, and doctorate degrees in physics from Gonville & Caius College in Cambridge, England. Following a two-year spell in industry, he joined the British Paper and Board Industry Research Association (now PIRA) in 1955 and began his research into the structure and properties of paper. Page immigrated to Canada in 1964 to join the Pulp and Paper Research Institute of Canada (Papi-

can). He served as Director of the Materials Science Division and then Director of Research, Physical Sciences. After retiring from Paprican in 1993, Page served the next 10 years as Distinguished Professor of Physics at the Institute of Paper Science and Technology (IPST) in Atlanta. He is currently a consultant to the industry and scientific editor of the *Journal of Pulp and Paper Science*, which, with the support of PAPTAC, he founded in 1983.

Page has served TAPPI in many capacities. In 1963, he was a founding member of the TAPPI Paper Physics Committee, to which he still belongs. He served as its chairman and helped organize many of the early conferences on paper physics. For several years, he also taught the TAPPI Paper Physics and Paper-making Practices Short Course.

Page has received numerous honors and awards throughout his career, including the 1972 TAPPI Research and Development Division Award and the 1995 TAPPI Paper and Board Manufacture Division Technical Award. He was named a TAPPI Fellow in 1976. In 1980, he became the first recipient of APPITA's Visiting Speaker Award after a 5-week speaking tour of Australia and New Zealand. In 1999 he was awarded the John S. Bates Memorial Gold Medal, the highest honor granted by the Pulp and Paper Technical Association of Canada (PAPTAC). In 2003 he was elected to the prestigious Paper Industry Hall of Fame. In 2004 he was awarded the Silver Jubilee Medal by Britain's Paper Industry Technical Association (PITA). Page now adds the 2005 TAPPI Gunnar Nicholson Gold Medal to those accolades.

As many know, Page is articulate and entertaining. His bearded face and British accent are familiar to many. He was one of the most popular and effective teachers on the IPST staff, noted James L. Ferris, IPST president from 1996 to 2003. "I can personally attest to the fact that Dr. Page has the tremendous ability to go into a mill and



Derek Page and one of his many grandchildren.

develop an instant and credible relationship with operators that helps him solve operating problems with real, practical advice."

Some of those qualities are evident in the following interview with Page.

MEADOWS: What was it like growing up in Sheffield? What are some of your memories of surviving World War II?

PAGE: I was 10 when war broke out—old enough to know what was going on, to be scared by the bombing and concerned about my elder brother who was in the Air Force. I do recall being hungry, though rationing was effective and fair. When I first came to North America in 1962, I found that restaurants served individual portions of meat that would have fed a family of four for a week. Nowadays, people pay large amounts of money to put themselves on the same weight-loss diet that we followed during the war for nothing!

MEADOWS: How did you end up with a career in the paper industry?

PAGE: When I graduated from Cambridge University with a degree in physics, I wanted to get into industry and do research that might ultimately lead to improved methods of manufacture. I had no particular industry in mind. In those days, electron microscopes

were just becoming available commercially, though they didn't work too well and required a physicist to operate them. I took a position as an electron microscopist at the British Paper and Board Industry Research Association (now PIRA). For the first few years, I could have used my skills as a microscopist in any industry, but my fate was sealed when my boss left and I was appointed head of the research group. From then on, I was wedded to the paper industry.

MEADOWS: What prompted you to move to Canada?

PAGE: In the early 1960s it was becoming apparent that the paper industry in England would be going through difficult times. It was built on the old colonial model: import cheap raw materials and do all the manufacturing in England's "dark, satanic mills." Pulp was manufactured in countries that had forests. It was dried, so as to reduce shipping costs and fungal degradation, and then imported, slushed, and refined so as to restore the sheet strength. This was an inefficient process that was protected by tariff barriers against the import of finished products. With free trade, these barriers would be falling. Unfortunately, England didn't have any trees because Henry VIII had chopped them all down to build his navy. I decided that, for the long-term good of my family, we should move to a country that had trees. Canada had trees.

MEADOWS: Who were the three people who most influenced your life or career, and in what ways?

PAGE: I am very tempted to say the Marx Brothers, but I guess you want a more serious answer.

MEADOWS: Yes, please...

PAGE: I would have to put first my high school headmaster, Dr. A. W. Barton. He had been a graduate student of Lord Rutherford at Cambridge, and it was a privilege to be

taught physics by him. Secondly, Hector Emerton, my boss at PIRA who wrote the book “*Fundamentals of the Beating Process*.” He taught me how to write scientific papers by having the two of us sit down at the typewriter and compose. Thirdly, I would have to say Stan Mason of McGill University and Paprican. In 1964, when I decided to explore opportunities around the world, I wrote to four research laboratories in Canada and the United States to inquire whether there might be an opening for me. Within days I received a telegram from Stan Mason: “Fly over at our expense and let’s discuss.” That is how I came to Paprican. I am still waiting to hear from the other three.



Page trying to explain paper physics to his elder brothers without the aid of a blackboard.

MEADOWS: Please briefly describe the significance of the Page equation in our understanding of tensile and paper strength.

PAGE: The so-called “Page equation” relates the tensile strength of paper to fiber dimensions, the extent and strength of fiber-fiber bonding and the strength of individual fibers. I have yet to see a set of data that show it to be wrong, yet I have not seen a good theoretical proof of it (including the one I proposed in my original paper.**) Its great advantage is that engineers can use it, university professors can teach it, and undergraduates can understand it. One important application has been to the effect of aging on sheet strength. The Page equation shows it to be caused completely by loss of fiber strength, with no change in bonding. And we know how to stop that.

MEADOWS: Why and how did you found the *Journal of Pulp and Paper Science*? How has it (and its readership) changed since 1983?

PAGE: *JPPS* was the brainchild of Bert Joss, who was then head of PAPTAC. He realized

that scientists needed an outlet for their papers and that *TAPPI JOURNAL* (which was the sole North American pulp and paper journal at the time) simply couldn’t take in the excess of supply. He also recognized that scientists need a journal with a sound scientific reputation. He turned to me to be the first scientific editor. I, in turn, appointed some internationally recognized associate editors. It grew in stature and size and was for 10 years cosponsored by TAPPI, until they felt compelled to withdraw for budgetary reasons. Originally, most of our papers came from industry and institutes. Now they mostly come from university departments. This merely reflects the shift that has taken place in pulp and paper research from companies to universities.

MEADOWS: How did you become interested in magic and what have you gained from it? What other hobbies and outside interests do you enjoy?

PAGE: My fascination with magic began early, but developed while I was at Cambridge University. For me it was largely an excuse to entertain. As the years have passed, I have found that delivering papers and giving lectures are also excuses to entertain. If I read a paper to an audience and don’t get a few laughs, I consider myself to have failed. Yet entertainment is not a goal in itself. If the audience is bored, it isn’t listening. And if it isn’t listening, it isn’t learning. As for other interests, I have a sizable family, I enjoy traveling, and I play duplicate bridge with a partner once a week at our local club. Sometimes we win.

MEADOWS: What would you consider the highlights of your life?

PAGE: I have been fortunate to have had many, many highlights. How do I choose one? Hitchhiking with a friend to the South of France in 1948 ranks fairly high. Eating my first lobster at the age of 32 in downtown Montreal is another. How do I compare this with the satisfaction of taking my many children and grandchildren to Cape Cod and St. Simon’s Island for vacation? I can’t. It has all been good, so far. **SI**

**The Page equation was published in the paper “A theory for the tensile strength of paper” [*TAPPI JOURNAL* 52(4): 674(1969)].

ABOUT THE AUTHOR

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