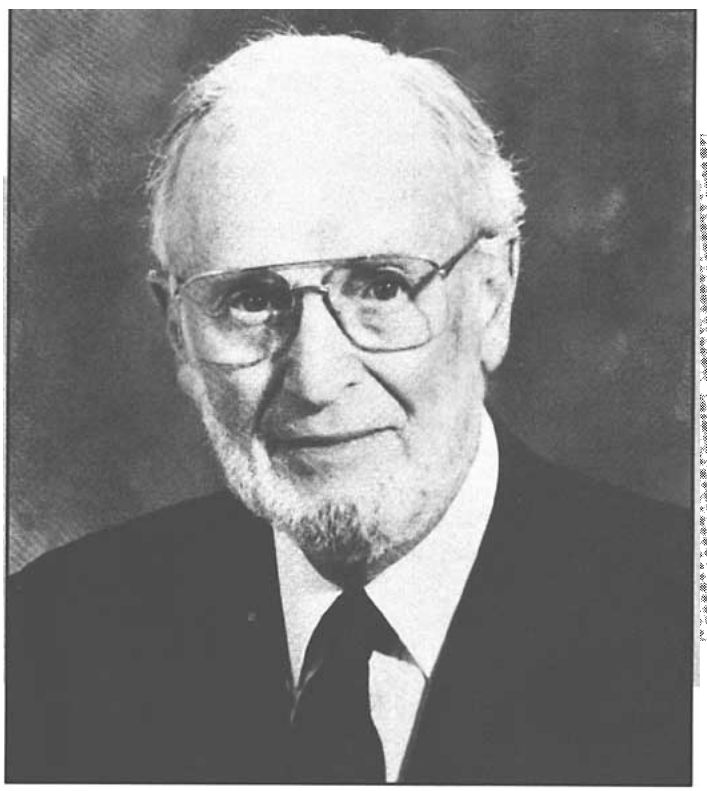
A. Thomas Luey awarded 1993 Gunnar Nicholson Gold Medal

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"I always wanted to be a scientist."

Tom Luey traces back more than five decades to pinpoint the origin of his interest in the boxboard industry.



A. Thomas Luey, retired manager of the Boxboard Research and Development Association (now the Recycled Paperboard Technical Association) in Kalamazoo, MI, is being honored by TAPPI with the Gunnar Nicholson Gold Medal Award. The Award is the highest honor that the Association can bestow upon an individual for preeminent scientific and engineering achievements in the world's pulp, paper, board, and forest product industries. It is accompanied by a cash prize of US$ 63,800, made possible by a gift to TAPPI from the late Gunnar W.E. Nicholson, who was a leader in the industry and TAPPI for nearly five decades. The Gunnar Nicholson Gold Medal Award will be presented to Luey at the awards ceremony during the 1993 TAPPI Annual Meeting in Atlanta, GA, April 19.

Luey is a pioneer in research and development of scientific and technical innovations for the paperboard, boxboard, and folding carton industries. His leadership and foresight have enabled the multi-ply combination boxboard industry to progress and remain viable today. His work has encompassed the technology and production of paperboard from recycled fibers and the use of recycled boxboard for folding cartons. Through his efforts, most recycled board mills now have improved wet end formers, press sections, coating processes, and finishing equipment, resulting in better-quality products and increased productivity.

Conscious of the critical need to improve manufacturing techniques and upgrade quality standards cost effectively, Luey focused on developing printability, scorability, stiffness, and brightness tests. Once adopted by plants, these tests provided a standard measurement system for increasing quality at lower costs. He was instrumental in creating the BRDA Score Test Bender, an instrument used to predict performance. This instrument and other test



methods he developed are used today by the solid bleached paperboard, combination boxboard, and folding carton industries. Luey also initiated technology for wet pressing to improve drying productivity and invented the BRDA Former, a pressure forming device for achieving fourdrinier quality on a cylinder machine.

Luey made other contributions to the success of the paperboard industry such as clay coating dark body stock which eliminated the need for using bleached pulp. He worked to establish the safety of combination boxboard for food and drugs and showed manufacturers how to distribute the available raw materials among several plies to develop desired board properties. He issued a series of technical bulletins explaining the physical qualities of recycled boxboard that were republished by the packaging industry. He was responsible for all definitions regarding paperboard in *The Dictionary of Paper.*

Luey has been a TAPPI member for over 50 years and has chaired the Kalamazoo Valley Local Section. He was named a TAPPI Fellow in 1975 and dubbed "Mr. Paperboard." He has been a speaker at TAPPI and other industry meetings and has published more than 30 articles in industry journals. He organized the Boxboard Research and Development Association (BRDA) Production Technical Seminars and participated in all BRDA committees.

After earning a B.A. degree at Dartmouth College in Hanover, NH, and attending the Institute of Paper Chemistry (now the Institute of Paper Science and Technology), Luey joined International Paper Co. as a lab technician. In 1939 he became assistant technical director for American Coating Mills, and in 1946 he was named technical director after returning from four years of service in the U.S. Navy. He worked for Sutherland Paper Co. as staff technical advisor for three years before joining BRDA in 1953. He served as manager for BRDA for more than 25 years, retiring in 1979.

During a recent interview with *Tappi Journal,* Tom Luey reflected on his career, his contributions to the boxboard industry, and the significance of receiving TAPPI's highest honor.

TJ: What initially sparked your interest in the boxboard industry?

Luey: I always wanted to be a scientist. Physics and chemistry always appealed to me, and you can always find reasons to support your desires. Whatever you want to do, you can dream up all kinds of good reasons to do it.

I was influenced a great deal by the Great Depression, and I saw people who were out of work having a tough time, and I thought, "If I can establish myself as somebody really worthwhile in the scientific field, I'll have a degree of security that I wouldn't have otherwise."

There are a lot of flaws with that analysis, but that was what influenced me while I was working my way through college. As the saying goes, a good man—I don't care if he's a salesman, manager, scientist, author, actor, or football player—will make out in this world one way or another.

TJ: Did someone encourage you to consider the paper industry?

Luey: Two people. Harry F. Lewis, the dean of the Institute of Paper Chemistry, met with me in Hanover at Dartmouth where I was going to college. As a result, I was offered a fellowship at the Institute.

My first contact with TAPPI was shortly after that. I thought it would be nice to learn a little bit about the industry and I met with R.G. Macdonald, who at that time was secretary of TAPPI. That was in early 1936.

TJ: What were the early years of your career like?

Luey: I only spent one year at the Institute and then I took a job with International Paper. I earned 48 cents an hour. Room and board was 11 dollars a week, so on 20 dollars a week, I had enough left over for a few beers.

A few years later, I joined the American Coating Mills in Elkhart, IN. American Coating Mills was the largest producer of clay-coated boxboard in the world at the time. They made all of 200 tons a day and this was an operation that was really run just by years of experience.

They didn't have a brightness tester; they had hardly any tests. They would take a sheet out of the drop box as it came off the machine and they would weigh the whole sheet to find out what the basis weight was; they operated on a ream basis in those days.

Of course, they would make a caliper test; if it was a little heavy, you would pound the caliper gauge a few times more and get it down a little and that was it. Weight and caliper were the only tests they made.

One of my earliest recollections was watching the paperboard superintendent bend a sheet of paperboard over his finger and announce solemnly it was a good bender. From a standpoint of testing and finding out what was going on, we were starting almost at the bottom of everything.

The war interrupted my job there for four years.

Just before I left, I got them to put in a brightness tester, one of the early ones, and I remember developing other tests and kind of

wondering if anybody was paying attention to them until I got a call from the shift supervisor one night. An instrument that measured the top liner strength of a sheet had gone on the blink. How, asked the operator, could they make a good sheet of board if this instrument wasn't working? That made me feel pretty good.

When clay coatings were developed about 100 years ago, the purpose was to improve the smoothness of the sheet for printing. The paper to which it was applied would be as white as needed and the coating as light as possible.

In coating boxboard, however, it is possible to apply much heavier coating weights and the brightness of the top liner was not so important. We gradually shifted to 100% waste papers with a brightness of 50 and made a substantial reduction in material costs.

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In 1946 I coated some unbleached kraft test liner with excellent results. This was kept a secret for many years for fear the kraft industry would enter the business.

I recall a conversation I had with Wes Race, the first president of BRDA, in which he said that if I could show the members how to save a dollar or two a ton, it would be considered a success. Thinking of the potential of clay coating, I told him I could show them how to save US$ 10/ton today.

I was concerned about what would happen after that, but Race told me, "Don't worry, something will come along." I retired from BRDA in 1979, after 25 years, and started my own consulting business.

I was amazed at how fast the industry began using clay coating to improve brightness. You could take a sheet that had only a 50 brightness and with coating, get it up to 78 to 80 brightness, save ten dollars a ton, and improve the quality of your sheet.

Typically everything happened very slowly in the industry but this thing just swept the industry like a storm. A year or so later when we were trying to conduct some tests on old grade patent coated news, we couldn't get any; everyone was making coated board.

TJ: What was it like to be involved with the BRDA during its infancy?

Luey: At the start, I was the only employee of BRDA and used a public stenographer for about a year. Our R&D projects were placed with organizations such as the Institute of Paper Chemistry, A.D. Little, Forest Products Labs, Battell and IITRI in Chicago.

I really had a golden opportunity. The BRDA trustees virtually gave me unlimited support. I had about 30 companies that were involved in the association. Technical directors, mill superintendents, chemists, and engineers provided ideas and input. Coordinating their ideas and mapping a direction for the association was a lot of fun.

Before I started working at the BRDA, I had a conversation with a colleague whose opinion I respected. "Do you think there's a future in an organization like this?" I asked. He compared the position to that of a country club manager. "The life expectancy will be three to five years," he predicted, "and by that time, some factions will develop and they will be looking for somebody else to run the thing."

In three to five years, I recall thinking, I'll find out which one of these companies I want to work for, so that's all right. I ended up staying there 25 years.

TJ: Would you say you've achieved the level of success you sought as a young man?

Luey: I feel pretty happy about it. I was sort of self-satisfied. I have to tell you, getting this award is the biggest ego-booster in the world you can give a 78-year-old.

TJ: What does receiving the award mean to you?

Luey: It's a recognition by your peers that you did a good job. That's the biggest thing.

It's funny though, the things that people remember that I did in the past, that they thought were great and the things that I did that personally, I thought were pretty good—there is a difference, but that's all right.

TJ: What do you consider your greatest achievement?

Luey: One that's kind of buried in the books is the work I did on pressing and the formulas that I developed for pressing to predict just exactly how a press would operate and how much water it would remove. I always considered that my greatest scientific achievement.

When I started developing the equations, I was able to conclude that a double-felted press was equivalent to four single-felted presses. This conclusion just threw some of my colleagues. But there was one chap who said, "I'm not sure I understand it but I can do it."

He changed two single-felted presses on his machine to one double-felted press and the results came out to be exactly what I told him they would be. Nobody talks much about that, but that's one thing that is in the back of my mind that was sort of a breakthrough.

Then from a scientific point of view, I developed an equation to predict the brightness of clay coating on dark body stocks. The

Luey equation based on opacity turned out to be just a bit more accurate than the Kubelka-Munk equation and it was much easier to use. All the theory existed at that time. It was just a question of putting it all together and applying it using formulas for radioactive decay.

TJ: To what do you attribute your success as a scientist?

Luey: The success I've had is due, in no small measure, to the trustees of BRDA who formed the organization and nurtured it along such as people like Jim Morris of the old Ohio Boxboard and Fred Chrysler who came along later from Container Corporation. They were really a big help. And I had 70 men from various companies working on different committees. All this was a tremendous assistance to me for what I managed to accomplish. Actually they all accomplished it. I want to give full credit to the trustees of BRDA who formed it and all the men on the technical committees that worked over the years and helped bring all these things about.

TJ: How has the industry changed since you've been in it?

Luey: It's gotten more productive; they watch everything a great deal closer today, and have much more sophisticated testing equipment. There's on-line equipment to measure various physical properties while you're actually producing the sheet.

In the early days, the whole operation had a bottleneck of the forming equipment which limited speed. Of course everything was designed to run at lower speeds. There wasn't any sense of building a machine that could go 500 feet per minute when you couldn't run the forming equipment more than 250 feet per minute.

When I had the idea of the dry vat, that was the first change in forming. It sped things up some and improved the quality. When I developed the St. Anne's BRDA Former, it enabled machine speeds of 500-600 feet per minute with very simple equipment.

I also designed a simplified former for a client over in Bangkok, Thailand. The company liked it so much that they replaced some prototypes made by another manufacturer with these simplified formers. They have eight of them over there, and they are making a good sheet at top speed.

But the speeds are getting faster and faster. Now they want to be able to run 1000 feet per minute and the old BRDA Former won't go up to that speed. You have to go to suction formers; the new trend now is to use multiple fourdriniers.

TJ: From your vantage point of having spent several decades in the industry, what do you see as the future of the boxboard industry?

Luey: I can't see anything taking its place, and it's continued to grow. The boxboard that I was involved with was completely built on recycled paper: 100 percent. I used to have friends in pulp, but after I managed to eliminate all virgin pulp in the sheet, they didn't visit me anymore.

The future of the recycled paperboard industry is very sound. There are a tremendous number of uses for recycled paperboard, and today, the means exist to make a better sheet.

Improving stock cleaning equipment to handle the increasing number of contaminants that keep coming down the line is an ongoing challenge. I can remember the days when you could tell your waste paper supplier what you wanted and you'd get it; it would be clean. The amount of cleaning equipment you had to have in a paper mill was very slight. We kept hearing reports from our English friends and members of the association over in Europe about problems they were having with plastics and stickies; "pernicious contraries," our English friends called them. Those "pernicious contraries" began appearing in the United States and people started getting more and more involved with centrifugal cleaners and fine slotted screens.

When I started in the industry, the only screens you'd have would be some old flat screens on the machines with 0.025 in. slots, and today they're down to using screens with 0.010 in. slots, and 0.012 in. slots, and with all kinds of centrifugal cleaners.

TJ: What do you think of the recycled content hullabaloo facing the industry today?

Luey: This is the second wave of attention paid to recycled content. We went through the whole thing back in the 1970s when people were trying to claim they had so much recycled material in their papers.

The General Services Administration put out edicts whereby anything they purchased would have to have a specified recycled content. They had the fun and games of trying to define what was recycled material and what wasn't.

I recall getting a call from a chap out in New Jersey. His company manufactured corrugated containers and he was wondering what was going to happen when the company started using test liner and corrugated medium that had all this "recycled stuff" in it.

I assured him that before the kraft industry started up down south, "recycled stuff" was all we used in test liner and medium. "Is that so?" he asked.

"Rest easy," I said, "There isn't anything to worry about. It's the virgin stuff that's the newcomer."

TJ: Do you have a personal philosophy that you can share with us?

Luey: Just be inquisitive and find the answers to everything if you can possibly do it. Be yourself and do what you feel like doing as much as possible.

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