

## Timoshenko and Lampkin Found Their Park Benches . . . You Will Too

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A few years ago, I mentioned Stephen Timoshenko's name to a young professor, and he asked me who he was. It was as though a dagger had been stuck through my heart. With that reply, from time to time I would later ask other young engineers if they had heard of Timoshenko. More often than not I received a negative reply. Having attended engineering school in the 1960s, Timoshenko's works were routinely referenced in my classes. Before I introduce him to those of you without gray hair, let me first tell you about Les Lampkin.

At the age of 21, now 46 years ago, I hired on at the Environmental Testing Directorate (about 350 people in size) at Sandia National Laboratories (Sandia Corp. at that time). The work environment was fairly austere. In my organization we had gray, well-worn, linoleum-topped desks butted side by side in a "bull-pen" arrangement. I was overwhelmed during the first months of my work by the vast array of drop machines, shakers, climatic chambers, static test frames, actuators, test tracks, cable towers, explosive and rocket test locations, and other test facilities.

Soon after my arrival, I was invited to meet the director of environmental testing – Les Lampkin, who was probably in his late 50s then. I have no idea how big his office was, but it appeared palatial by my bull-pen standards. In addition, Lampkin sat behind a mahogany desk. I have no recall of the substance of our conversation, but I knew surely that I had been near the throne of God.

Over the next 10 years, I got to know him a bit more and traveled with him as part of a larger group several times. I learned how he had arrived at Sandia shortly after the Manhattan Project, how much personal energy people had expended during those early years to develop the initial nuclear stockpile, and how our massive environmental test complex had come into existence piece by piece. Lampkin retired in the early 1970s.

A few years later on a family picnic in Albuquerque, I saw an elderly man in Levis walk over and sit down on a park bench. It was Les Lampkin. I left the picnic and walked over to say hello. He was glad to see me, and we had a nice conversation. Among other things, he told me that his wife had passed away. It was apparent that his office was now the park bench. I walked away reflecting on the difference between that meeting and the first, "before the throne." Now I'll tell you about Stephen Timoshenko, the father of modern engineering mechanics.

Timoshenko was born in the village of Shpotivka in the Chernigov Governorate of the Russian Empire (now located in



Professor Stephen Timoshenko was honored in 1998 in his native Ukraine with the issue of this commemorative postage stamp.

Sumy Oblast, Ukraine). He studied at a "real school" in Romny, Poltava Governorate from 1889 to 1896. In Romny, his schoolmate and friend was future famous semiconductor physicist Abram Ioffe. Timoshenko continued his education toward a university degree at the St. Petersburg Ways of Communication Institute. After graduating in 1901, he stayed on teaching at his *alma mater* from 1901 to 1903 and then worked at the St. Petersburg Polytechnical Institute under Viktor Kyrpychov from 1903 to 1906. In 1905, he was sent for one year to the University of Göttingen, where he worked under Ludwig Prandtl.

In the fall of 1906, he was appointed to the chair of strength of materials at the Kiev Polytechnic Institute. The return to his native Ukraine turned out to be an important part of his career and also influenced his future personal life. From 1907 to 1911, as a professor at the Polytechnic Institute, he did research in the earlier variant of the finite-element method of elastic calculations, the so called Rayleigh method. In those years, he also pioneered work on buckling and published the first version of his famous *Strength of Materials* textbook. He was elected dean of the Division of Structural Engineering in 1909.

In 1911, he signed a protest against Minister for Education Kasso and was fired from the Kiev institute. In 1911, he was awarded the D. I. Zhuravski prize of the St. Petersburg Ways of Communication Institute that helped him survive after losing his job. He went to St. Petersburg, where he worked as a lecturer and then a professor in the Electrotechnical Institute and the St. Petersburg Institute of the Railways (1911-1917). During that time, he developed the theory of elasticity and the theory of beam deflection and continued to study buckling. In 1918, he returned to Kiev and assisted Vladimir Vernadsky in establishing the Ukrainian Academy of Sciences – the oldest academy among the Soviet republics other than Russia.

After the royalist troops of general Denikin had taken Kiev in 1919, the Ukrainian Academy of Sciences was closed, and Timoshenko lost his job. In 1920, after the Bolshevik takeover of Kiev, Timoshenko immigrated to Yugoslavia, where he held

a professorship at the Zagreb Polytechnic Institute. He is remembered for delivering lectures in Russian while using as many Croatian words as he could; the students were able to understand him well.


In 1922, Timoshenko moved to the U.S., where he worked for Westinghouse from 1923 to 1927. He later became a faculty professor at the University of Michigan, where he created the first bachelor's and doctoral programs in engineering mechanics. His textbooks have been published in 36 languages. His first textbooks and papers were written in Russian, but he later published mostly in English. From 1936 on, he was a professor at Stanford University.

In 1957, ASME established a medal named after Timoshenko; he became its first recipient. The Timoshenko Medal honors Timoshenko as the world-renowned authority in the field of mechanical engineering and it commemorates his contributions as author and teacher. The Timoshenko Medal is given annually for distinguished contributions in applied mechanics.

In 1960, Timoshenko moved to Wuppertal, West Germany to be with his daughter. He died in 1972, and his ashes are buried in Palo Alto, CA. I am proud to have two of his original textbooks from the 1930s and '40s on my shelf at the university where I now teach (Texas Christian University, Fort Worth). I could carry either one into a classroom today and teach an excellent course.

Now how do Lampkin's and Timoshenko's stories tie together? Despite the heroic work that Lampkin did, his career ended on a park bench. The fact that my young colleague didn't know who Timoshenko was indicated to me that, at least figuratively, Timoshenko also found a park bench.

What might be observed here is that we all have but a brief time to contribute to advancing the cause of analytical and experimental mechanics, along with its supporting test and evaluation activities, before we find our individual park benches. However, what I learned from knowing Les Lampkin and being familiar with all of his and Timoshenko's work is how important it is to document our own work. Whether writing test reports, conference papers, or textbooks, it is crucial that we leave the lessons learned from our professional experiences for those who follow us. It is not important that we be recognized as individuals, but rather that our efforts are documented to advance the disciplines in which we work.

And may Stephen Timoshenko's memory endure a bit longer among those of us with gray hair. 

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