

Biography



Mr. Joseph E. Shigley

It is a blustery day on Higgins Lake. Whitecaps crash on the beach, driven by a heavy, inshore wind. Few boats are seen. Most skippers are indoors, drinking or complaining about the weather. However, down the shore near the Shigley home, two men are rigging a 20 ft Tiger catamaran, a sleek craft best described as a highly engineered racing machine. One of the men, evidently the skipper, is calmly completing his work and issuing occasional directives to the more nervous crewman.

Soon the sails are hoisted, thrashing and snapping in the wind. The men cast off and go plunging to windward, shoreline receding like an airport runway after takeoff. Clutching his hat, the skipper advises the crew to move aft since the only real concern is that the bow may submarine, causing the boat to pitchpole. This is an interesting sort of motion cycle which finishes with the mast pointed straight down. Not that it would be dangerous, just that it is a nuisance to correct...

The skipper is Joseph E. Shigley, husband of Opal R., distinguished professor of mechanical engineering and 67 years of age, in avid pursuit of a new interest—sailing. Opal gives up on explaining his behavior, but does offer a summary: "something, always something!"

Joe Shigley was born in Delphi, Indiana on 10 April, 1909. He completed high school and college in Indiana, with bachelor degrees in both electrical and mechanical engineering from Purdue, in 1931 and 1932. These were depression years, but Joe found a variety of positions in engineering design, including two years (1935-36) with the Electric Switch Corporation, Columbus, Indiana. During this period, Joe met Opal. They were married in 1934. Much of the joy of Joe's subsequent accomplishments is due to this vivacious and warm-hearted lady.

In 1936 Joe became an instructor in engineering in the Clemson Agricultural College, Clemson, South Carolina. This began a 21 yr career with Clemson, with advancement to assistant professor in 1943 and associate professor in 1945. Ultimately, in 1948, he was promoted to full professor and chairman of the then-named Department of Drawing and Design. He held this position until his appointment at the University of Michigan in 1957.

During the years at Clemson, Joe laid the foundations for his later monumental contributions to the literature of mechanical engineering design. Just as design is complex, creative and multidisciplinary, so were his activities.

He performed research on such topics as “the design and construction of an automatic twist counter for textile yarns”, “the dynamic cutting forces on sawteeth”, and “the mechanical and preservative properties of bamboo”. (During World War II, bamboo was evaluated as a substitute for steel reinforcing rods in concrete. Part of the Clemson stadium was constructed in this way, and had not yet collapsed as of this writing.)

During summers he worked in industry in a variety of practical design situations. This included pulp and paper mill design with the J. E. Serrine Company, textile machinery design with the Hunt Loom and Machine Works, and design of mechanical equipment on the Martin Seamaster Jet Seaplane.

During the academic year he consulted widely in the machine design industry. Clients included Pacific Mills, Deering–Miliken, Industrial Machine Corp., Owens–Corning, Boeing Aircraft and The Upjohn Co.

He developed his academic background by completing a masters degree in engineering

particular genius to accommodate a variety of approaches and at the same time heighten the excitement and accomplishments of the creative process.

Joe's principal personal research at Michigan was on the *Mechanics of Walking Vehicles*, sponsored by the U.S. Army Tank Command, Land Locomotion Laboratory (1960). The work was a valuable contribution but unfortunately attracted the attention and misrepresentation of the national press (blue sky interpretations by artists of walking vehicles). This experience reconverted Joe to authorship, in this instance authorship of disclaiming telegrams.

Joe has been honored for his contributions by election as Fellow of the ASME (1967) and by the Mechanisms Committee Award (with Professors Hall and Hartenburg in 1974). He has announced his plans to retire from the University of Michigan in May 1977.

In recent years he has overcome a tough cancer problem, authored the new mechanics text, established a new home at Higgins Lake, and as mentioned earlier, developed an interest in high-performance sailing. He is intrigued by the possibilities for using the new pocket-sized stored program calculators in mechanical design, and has begun authoring programs in this area. Whatever happens from this point, his closest colleagues agree there will be "always something".

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