**First-Hand: History of an ASEE Fellow – Thomas REGAN**

**Birthplace:** New Orleans, LA

**Birth Date:** November 28, 1941

**Family**

I was born in New Orleans and christened on the day Pearl Harbor was bombed. Dad was Secretary/Treasurer of the Longshoreman’s Union and Mom ran our home. New Orleans was an amazing adventure. We lived “downtown”, which means below Canal Street. Our ‘hood was called Bywater, because it was adjacent to the Mississippi. Most of downtown was Catholic and second generation immigrants from Ireland, Germany and Sicily. We celebrated everything! St. Pat, St. Joseph and of course, Mardi Gras. Food was important and always personified as in, Aunt Anna’s red beans, or, Uncle Pete’s gumbo. New Orleans was out of the way before air travel and tended to be very provincial, unique and earned its nickname, The City that Care Forgot. I had a wonderful family who taught me to be nonjudgmental as I grew up. This included the difficult southern transition from segregation to integration, the acceptance of men and women who were homosexual and freedom to practice any religion or none at all. These lessons have stayed with me and I am forever grateful.

**Education**

I went to Holy Cross High school on a scholarship. It was the first time I was meeting kids from other neighborhoods in New Orleans! The school had a strong science and math program. We had an Operation Moonwatch program. Explanation: When the USSR launched Sputnik, the first man made satellite to obit the Earth; the USA didn’t have a sophisticated tracking system so high schools were recruited to participate in a “tracking “ system. We had to be at our grid of telescopes at sunrise. It’s amazing to think we went from that to a man on the moon. I got a scholarship to Tulane University and studied Chemical Engineering. My best friend had a brother-in-law who was a Chemical Engineer who worked for Kaiser. I thought he was rich compared to my parents so that’s why I chose Chemical Engineering! I learned what ChE really was, liked it, and stayed on for a PhD at Tulane with an NDEA Fellowship. The NDEA was the National Defense Education Act. This was a government response to the perception that our country was behind the USSR and we had to strength our universities in science, mathematics and engineering. It was determined that we also had to dramatically increase our numbers of PhDs in those fields of study. This led to the emergence of “research universities” as defined by the Carnegie Foundation. As an aside, this trajectory continued until about 2000 when ABET, the NAE and the Carnegie Foundation worked to adjust engineering education back to a design base and less of a curriculum of engineering science.

**Employment**

I spent summers working for Ethyl, Esso and Esso Research and Engineering. One summer I worked for Boeing at the facility where we build the Saturn booster rocket. This was 1965 and thrust power was restricted to the then design limits. My contribution was to use a mathematical model to predict the added weight of the accumulation of frost on the tanks as they were filled with liquid oxygen. I was based in New Orleans but twice a week I’d fly to the main NASA computer center in Huntsville, Alabama with my two boxes of punched cards because the computer facilities were too small to handle the program at my site. That same program would now run easily utilizing Mathcad on a laptop!

My favorite interaction with industry was with Butler County Mushrooms in Pennsylvania. One of my PhD students modeled their composting methods for preparing the growth medium to produce mushroom commercially. Even in sterile, isothermal growing conditions, they were observing seasonal variations in yields. We were able to show that the composting process, which was done on large cement platforms outside, was a heat transfer limited “reactor” and in summer, the increased ambient temperatures led to different composting reactions and hence different substrates for the growth medium. By increasing turning times to release accumulated heat related to external temperatures we were able to assure a growth pattern that was invariant throughout the year.

**Research and Scholarship**

I began by making application of my dissertation topic of multi component multi driving force ionic diffusion. I interacted with the University medical school in some of the early development in dialysis. Because of the limited usage of hemodialysis, the membranes used were not being produced for this specific segment and hence lacked quality control. One aspect was to develop techniques to test some characteristics of membranes to guide clinical practice. The “Regan Technique” was one of those adopted and recommended by the NIH in the 60’s.

My research continued in biomedical application of blood gas exchange with added chemical reactions to the membrane transport; the CO2 buffer system in the blood.

During the last third of my career, my focus switched to engineering education. The University of Maryland was a partner in one of the first NSF Engineering Coalitions, ECSEL. I served a director of that collation during its second 5-year period. Our focus was in introduction and integration of design throughout the curriculum. A critical component was directed at the first two years of engineering education. Boeing named our team at the University of Maryland Outstanding Educators of the Year in 19??

**Philosophy of Engineering Education**

My philosophy of Engineering Education evolved from focusing on what and how I taught to what and how students learned. I began to appreciate how much students could learn from each other if I guided small groups rather than lecturing to all. An accurate syllabus is critical. The student should be aware of what is expected and what will be accomplished if those expectations are met. Sort of knowing why 101 was required before 102 and how will that lead to 103, etc. and finally to a degree in engineering. I found that having a holistic view facilitated students to get over some unpopular curriculum requirements.

**ASEE Activities**

I promoted membership in ASEE, attended the annual meeting, presented and chaired sessions, and participated in local section activities.

**Other Professional Activities**

I was a founding member of the first LBGT Commission at the University of Maryland

Taught short courses for NSF on engineering design