THE MEISTER BOOK AWARD: its significance

By Jane Jackson, Co-Director, Modeling Instruction Program
Department of Physics, Arizona State University, Tempe (March 2013)

At each Spring meeting, the Arizona section of the American Association of Physics Teachers (AZ-AAPT) honors a high school senior with the **Meister Book Award** in remembrance of **Arnold Meister, Professor of Physics at Arizona State University (ASU)** from 1957 until his retirement in 1977.

What is the significance of the Meister book award?
Arnold Meister co-founded and was the first secretary-treasurer of the AZ-AAPT.

Who was Arnold Meister?
I am glad to tell about Dr. Meister, for he was my instructor and colleague from 1963 until 1970.

I became a graduate student at ASU in 1965, and Dr. Meister graciously gave me office space in a corner of the 'back room' of his long and narrow two-room adjoining offices in the basement of the B wing in the Bateman Physical Sciences Center at ASU. That was my office space for three years. In the room was a large optical bench and optical equipment, bookshelves, and storage cabinets. It was quiet; I could close the back door to his main office, and enter and leave through my own door without disturbing Dr. Meister. I studied many evenings and weekends there, as well as weekdays.

Dr. Meister was large-boned, wide (portly), warm and friendly in appearance, with a big grin and bright eyes; balding, gray hair – rather like a large German " jolly old elf". He was spry, quick in movement in spite of his girth. He was inquisitive and enthusiastic, and he loved to talk, about many things! I sensed that his talkativeness covered an inability to fully relate to people -- yet when he was in a happy mood and 'on a roll' about something that he enjoyed, he had a twinkle in his eye and was a delight to listen to.

He loved books! His main office had a long bookshelf wall: it was full of books, from floor to ceiling -- including books on Sanskrit, which he intended to teach himself after he retired. His desk was hidden from the door and faced those books – all those books!

A graduate student, Gary Newby*, had the other desk in his main office until fall 1966; Gary's desk faced the door (the bookshelves were behind it). Gary wrote in 2011, "**He had more books and journals than anyone I have ever known. Since he seemed to know where everything was located, he must have at least looked at them before shelving them. I seemed to remember him saying "you don't need to know everything, just where to find it".**

Dr. Meister taught me undergraduate mechanics (in 1963-64) and graduate mechanics (in 1965-66). He began the graduate mechanics course by having us do numerous conservation problems -- and go to the limit; i.e., consider limiting cases. That was a revelation and satisfying, for no undergraduate course had stressed that scientific practice.

Dr. Meister cared about my education, in that, when I was a senior, he suggested that I apply for ASU graduate school and a National Defense Education Fellowship; I did both and got both.

He was supportive when he told me, after I took the comprehensive exam in fall 1967, that my score was the highest ever achieved in ASU Physics. I had studied hard and long and had enjoyed synthesizing my coursework in preparation, but I had no idea that I could do well. I was

gratified that he would tell me. It increased my confidence that, with effort, I could understand. For that was my purpose in graduate school: to go as far as I could, to the frontier of understanding physical reality.

Dr. Meister loved to talk about his gardenias in his back yard; how he cared for them, how he protected them from frost in winter. He invited us to see them, and we did. They were beautiful.

He often described how he helped his wife, Bea, drive their car; he navigated while she drove: shopping, errands and the like. He did not drive. She came in occasionally; and she vocally shared his enthusiasm for doing these householder tasks together. They seemed a happy couple.

My husband would come to get me in late afternoon, and he and Dr. Meister talked about many things. My husband was a Ph.D. student in English, and he has the gift of gab, so he broke the ice in a way that I never could do, being shy. The conversations were insightful on a broad range of topics, but sometimes went on too long. Dr. Meister had strong opinions, and he did not draw out our thoughts well.

He was somewhat of a private person, actually. He didn't socialize within the physics department – didn't come in evenings to work and to talk physics, unlike younger faculty; he didn't go out for pizza with groups of students, as some other faculty did.

In sum, I remember him as kind and gentle at heart, with strong convictions and a quick mind full of thoughts that he readily expressed, sometimes forcefully, occasionally tumultuously, and sometimes with hearty joy and delight.

In fall 2011 I e-mailed others who were ASU physics graduate students in the 1960s, and I asked them to recollect Dr. Meister. Below are excerpts that give the flavor of his character and contributions.

Gary Newby* wrote: "**He was one of the best physics teachers I ever had. The thing I remember best was his thorough and logical presentation.**

Since I was in the same office as Dr. Meister for over a year (1965-1966), I ought to be able to tell you a lot about him (I apologize for my memory) but I can't. He came from IIT to ASU. He loved to talk. He was highly intelligent and talked about lots of things other than physics.

He did not seem to enjoy the laboratory part of physics and had little enthusiasm for equipment, instrumentation and experimental techniques (probably a good thing he had students like Pete Lysne). The department was very weak in laboratory courses so one semester he gave me access to the department's optics equipment and allowed me to play! I think he really cared about his students and didn't treat them as cheap labor.

He had more books and journals than anyone I have ever known. Since he seemed to know where everything was located, he must have at least looked at them before shelving them. I seemed to remember him saying "you don't need to know everything, just where to find it".

His family consisted of his wife Bea and a son (I believe his name was Cary). He was very proud and fond of his gardenias. Several times he invited Pat and me to walk over with him to his home to view and smell them. He lived close to the campus, just north of Apache Boulevard, so he walked to work. He did not drive. I drove him to several locations where he gave talks. He wanted to pay me for doing that but I refused. He eventually gave me a copy of the *Feynman Lectures on Physics* as payback.

Pat and I flew down for his retirement dinner in 1977. I really don't think he wanted to retire. I did call him a few times after I left but that became somewhat expensive so I wrote Christmas letters, which he answered, and then one year he didn't. In his latter letters, he was somewhat depressed. No, I didn't keep his letters!

I admired and respected Dr. Meister both as a teacher and a human being!"

Joe Swartzbaugh wrote, " I'm pretty sure he got his doctorate at IIT and was one of the first to use the Group Theory approach to quantum mechanics. I remember him saying that the only job he could get (during the Depression) was as a meter reader for the Chicago electric company.

IIT lists him as a faculty member (Assoc. Prof.) until about 1960. That would be about right for his coming to AZ. John Dowling and Al Brady began working with him on their dissertations about '62 or '63; and Jerry Dowling (no relation) finished before them. Jerry might have followed him from IIT to complete work he'd already begun there under Arnold as his advisor."

Pete Lysne** wrote: "Meister is an enigma to me. I took my first class from him fifty years ago, then did my dissertation work under him. In all the time that I was working with him we never had lunch together. Furthermore, we never talked about exciting scientific issues of the time -- continental drift, space science, etc. Basically, I never got to know him. Much of his talk was with students, and he never failed to state his opinion in a forceful manner.

I believe Arnold was a Fellow of the Physical Society and also a Fellow of a foreign society, perhaps British. He received these honors by popularizing, but not inventing, a method of diagonalizing large matrices arising from solutions for molecular vibrations. The idea was to transform coordinates into a space where only a few square sub-matrices were on the diagonal, and the remaining elements were zero. The effort was painful since the transform matrices were large, but necessary since any simplification was welcome in the era of Marchant calculators. Meister's method used group theory, but not in the sense of current quantum mechanical theories. It was Newtonian mechanics as applied to any vibrating system.

Here are some scattered remembrances:

* After class one day, Jeanette and I were walking on the sidewalk outside of the physics building that was decorated with orange trees. We picked some oranges to eat, and Meister, seeing us, laughed. The oranges were very sour, and he knew we were in for a surprise.
* I moved into Meister's lab in about 1964. When things settled down, Nick Passino's desk was across from mine in the spectroscopy lab, Gary Newby's (now retired from Boise State) in Meister's office directly in front of the door, and yours in the back room behind Meister's desk.
* Arnold's lab flourished in a post-Sputnik era when getting money was easy. Once $6,000 (two graduate students) came in from a proposal he had written and forgotten about.
* Arnold's brother was also a Ph.D. He became President of Eastern New Mexico University in the late '60s. I believe Arnold's wife's name is Bea, and he had a son who was studying Chinese.
* Arnold was not mechanical, so he revered Walter Forbes, the lab technician who, as Arnold exclaimed, knew the difference between a 6-32 bolt and an 8-32. Thus Arnold said nothing when Walter blocked the hall outside of the spectroscopy lab with junk. One night the junk was dumped into Walter's "hole" at the end of the hall."

Ken Jesse*** wrote: "All I know about Dr. Meister was that he was from Chicago, and yes he loved to talk. My only contact was that he substituted for Dr. Schroeder's E&M course for a few weeks. **He was a much better teacher**."

Dick Powell wrote: "I didn't work with Prof. Meister. I did take his course in undergraduate quantum mechanics and remember having to work hundreds of harmonic oscillator matrix element problems. Also I took a special graduate level course on molecular spectroscopy from Prof. Meister and it seemed like working the same problem over again many times. **He always seemed to be in a jovial mood and enjoying what he was teaching."**

Nelson Eddy wrote, "I remember him as the most approachable professor in the department**. He would lend you a book without thinking twice.** He was a supportive thesis supervisor, though some took a long time to finally make it through!"

Larry Corrado wrote: "I never had a class from Arnold Meister, but I do remember having a few conversations with him. He was a large, imperious man. Yes, he loved to talk. However, I was one of the "third floor" people, so I'm sure I didn't know him as well as many of you.

When he heard I was from Chicago, he asked if I knew a Frank Corrado, whom he knew in high school as I recall. Turns out Frank was my Dad's older brother. My uncle Frank would have been living in either the Little Italy or Austin neighborhood of Chicago at that time; but Little Italy would have been very convenient for one attending IIT.

I don't remember Meister taking part in Department social events, in line with what someone mentioned about him not getting along with the Physics faculty."

Notes:

* When Gary Newby moved out in fall 1966, Susan Kreuser had that desk until she earned her Master's degree. I found it a delight to have another female graduate student so close, for women in physics were rare. Susan was tall, lithe, and good-humored. We were usually too busy studying to converse much, but we had some fun study breaks across the hall.

Dr. Meister's spectroscopy research room was across the hall. It was a large room, and Dr. Meister's Ph.D. students had office space there. In 1966, Nick Passino and Joe Swartzbaugh were there; we took breaks from evening study and joked around; and they laughingly nicknamed her "cruisin' Susan". After Susan earned her Master's degree, she moved to California and married an engineer with the last name of Davis.

** Pete Lysne was sharp, quick and mischievous; he made us all laugh. Jeanette is Pete Lysne's wife and was a Ph.D. student in zoology; we enjoyed playing tennis together.

*** Ken Jesse was awarded his Ph.D. in 1966; Gary Newby, Pete Lysne, and Dick Powell in 1967; Nick Passino, Nelson Eddy, and Larry Corrado in 1969; Jane Jackson in 1970; Joe Swartzbaugh in 1971. Nick Passino passed away unexpectedly due to a freak accident in 2011. Dr. Meister's doctoral students during my graduate years at ASU were Pete Lysne, Gary Newby, Nick Passino, and Joe Swartzbaugh.

Postscript:

In October 2012 Dr. Meister's son Cary (in Yuma, AZ) and I talked on the phone. Cary told me that Arnold and Bea eventually moved to Friendship Village, a retirement community in Tempe, and that Arnold passed away in April 1995 and Bea in 1999. Arnold remained enthusiastic until the end, he said -- balanced with the depression that Gary Newby mentioned.

Cary said that the family moved to Tempe from Chicago in 1957, when Cary was in 7th grade. Dr. Meister's office and lab were in the old science building, which was re-purposed when the Bateman Physical Sciences Center was built.

Cary thought it important to say that **Dr. Meister enjoyed teaching undergraduates and NSF summer institutes for high school teachers, that he thought that undergraduates were not given enough attention by the physics department**, and that he did not enjoy departmental politics at all.

Cary mentioned that their cul-de-sac home was condemned and turned into a parking lot, and so they moved farther south, but close enough so that Arnold could still walk to work – and that he never learned to drive.

Cary sent me a copy of a letter to Arnold Meister in February 1993 from Howard Voss, ASU Professor of Physics and AAPT President-Elect that year.

In the letter, Howard Voss wrote, "When I consider all that has happened to me involving AAPT, AIP and APS, I am reminded that **it was through your work that the Arizona Section of AAPT was started** and I could become involved. I thank you for your encouragement then and over the years."

Howard included an editorial in the American Journal of Physics (**vol. 61**, page 103, Feb. 1993) that listed a 1946 paper by Arnold Meister among the 13 AJP papers that were most cited between 1945 and 1990.

A fond reminiscence by Cary Meister (received in January 2013); unedited because I like it all.

My father, Arnold Meister was born in Chicago in 1912 and died in Tempe in 1995. In Chicago he found work as a meter reader for the Commonwealth Edison Company and also had an office job with them. He decided that there needed to be more to his life than working for Commonwealth Edison and started attending evening classes at Crane Evening Junior College in 1931, when he was nineteen. Beginning in elementary school, he discovered that he loved math and in 1936 he got a Bachelor of Science degree in math from Central YMCA College in Chicago, which later became Roosevelt University.

He then started working toward his Ph.D. in physics, taking classes at Illinois Institute of Technology. Night classes made it possible for him to further his education, as he worked during the day. In 1942 he became an Instructor at IIT, and continued as Instructor until he received his doctoral degree in 1947. He would have loved to have become a pure mathematician, so great was his love and awe for the "Queen of Sciences," but felt he would be more employable by getting his degree in physics. His family, like so many others, had struggled through the Great Depression of the 1930s. After receiving the doctorate, he was hired as an Assistant Professor of Physics at IIT, and was promoted to Associate Professor in 1950.

He always said that he had too much going on in his brain to concentrate on driving, so he never learned to drive. In Chicago, he would ride the commuter train to Union Station, then transfer to the Clark-Wentworth streetcar after a walk of several blocks between the railroad station and the streetcar line. Since he often taught evening classes, some cold winter nights he wouldn't return home until ten or ten-thirty.

At IIT you could see Comiskey Park, home of the Chicago White Sox, from my father's office window. Sometimes he would go in to work on Saturdays and take me along. After lunch, we would walk over to the ball park and catch a White Sox game. Even though we lived in the part of Chicago where we were supposed to be Cubs fans, we enjoyed following and rooting for the White Sox, especially since they generally finished in second or third place in the American League while the Cubs were in the cellar in the National League.

I could go on about life in Chicago at IIT, but in 1948 or 1949, my father's younger brother, Dr. Charles Meister, had moved to Flagstaff, Arizona where he was an English professor at Arizona State Teacher's College (now Northern Arizona University). (Parenthetically, Charles Meister went on to become a dean, then a vice president, at NAU, and later was President of Eastern New Mexico University in Portales.) Several times my family took the train from Chicago to Flagstaff to visit my father's brother and his family. One year (1957), we drove down to Phoenix from Flagstaff with my uncle and his family and my father had an interview at Sky Harbor Airport with Dr. Alan Wager, who was then chair of the Department of Physics at Arizona State College (now Arizona State University). Dr. Wager was about to leave for a trip and this was the only time he had to interview my father. The next thing I knew, we were moving from Chicago to Tempe, Arizona, joining the great migration of Midwesterners to the land of no snow. In fact, my parents even found a house to purchase on the same trip. The move to Arizona was eased for our family knowing that we would have close relatives in Flagstaff, and in spite of the distance (and before the I-17 freeway was built), we often got together on holidays and took summer vacations together. When my cousins and I hiked with our parents, it was quite an education with two Ph.D.s leading us! It was always interesting to listen in on their conversations and ask questions.

My father always felt much gratitude and respect for Dr Wager. The position my father filled was (for him) a promotion to a full professorship and brought an increase in pay, as well as the chance to continue his research into molecular spectroscopy, which he had carried out at IIT with his mentor, Dr Forrest Cleveland. At this time (1957), the Physics Department was located in the old then-light green Sciences Building, opposite the Business School building. My father shared an office in the basement, which at various times was also occupied by Dr. Clifford Schroeder and graduate students. One of my favorites was Don Nagle, a real desert rat who took us hiking in the Superstition Mountains, packing a six-gun. Don also had a fake rattlesnake that he placed in the door of his office in the Science Building one day, getting rather immediate startled reactions from all who saw it.

Throughout the course of his career, my father received a number of honors. He became a Fellow of the American Physical Society in 1949 and a Fellow of the American Association for the Advancement of Science in 1961. He was elected a member of the Society of the Sigma Xi in 1945. He felt especially honored to be recognized by his colleagues as a Fellow of the Physical

Society of London in 1959. In 1977, he was granted status as Professor Emeritus of Physics by Arizona State University.

Of course, **he was involved in starting the Arizona Section of the AAPT** and participated in its activities for a number of years. I think this was also related to his involvement with the Academic Year Institute. He felt very strongly that teaching, especially of undergraduates, was of equal importance with research and publication, a position that put him at odds with some colleagues at the time.

He had many papers published in *The American Journal of Physics*, the *Journal of Chemical Physics*, and *the Journal of Molecular Spectroscopy*, as well as the *Journal of the Optical Society of America.* He presented or co-authored papers at meetings of the American Physical Society and the Arizona Academy of Sciences, and he was a regular participant at the Symposium on Molecular Structure and Spectroscopy at The Ohio State University in the 1950s.

My father retired from ASU in 1977; and I have a binder full of letters of appreciation that he received for the occasion. Looking at the names of the people who submitted letters, many are familiar to me from both IIT and ASU. I got to know some of my father's graduate students because I would sometimes hang out in his office when I was attending ASU rather than walk all the way home. He would often speak to me about his students--not so much about their research, since I didn't really understand that, but about their admirable personal qualities and the struggles and victories in their lives that they shared with him.

My father greatly enjoyed teaching, research, constantly continuing his education through wide-ranging reading (a devoted reader of the New York Times, Punch, current literature and nonfiction), listening to classical and swing music, talking with others, watching sports (especially ASU football, basketball, and track and field; we attended many games together), watching TV, teaching and attending adult classes at his church, walking, and hiking.

When ASU wanted to buy his house to tear down so the campus could expand to the east, he was not bitter but rather accepted that it was for the good of the university and expected only fair compensation for his home. The location of the home where I also lived is now part of the ASU Biodesign Institute. Moving to Balboa Drive, just off College Avenue, my father continued to walk the approximately four mile round trip from home to office to home until his retirement.

Eventually, he and my mother moved into Friendship Village, enjoying many of the activities there, and both lived there until their deaths in 1995 and 1999 respectively.
