Chapter 2
Cleveland State University, Cleveland 1959–1964

In my paper "The history of Multiphase Computational Fluid Dynamics" [1], I began the story as starting in Chicago. Upon reflection, since writing this paper, I realized that the story actually begins earlier. I decided to attend Fenn College in Cleveland upon graduating from high school in Dunkirk, New York, in 1959. It is necessary to begin the story in Cleveland because it was there that the chain of events began which I now refer to as predestination.

I graduated as salutatorian of my class with a female beating me out by several hundredths of a grade point average. I took science and mathematics electives including physics, chemistry, biology, and the refreshing course, solid geometry. I liked solid geometry because it expanded my mind from the obviously limited (or incomplete) schooling involving Euclidean geometry. Instead of triangles having angles summing to 180°, on a sphere they summed to *greater* than 180°. Parallel lines met and did not extend to infinity. I received a New York State Regents diploma with honors in science and mathematics.

My parents were not wealthy. I was the eldest of four children with three sisters coming after myself. My father worked mostly at the Dunkirk plant of the Allegheny Ludlum Steel Corporation which manufactured specialty stainless steels in the form of rods, wire, and sheets. In the late 1950s, there was at least one other location for the Allegheny Ludlum Steel Corporation in Watervliet, New York. Sometimes when layoffs occurred and some production would be transferred to Watervliet, he would work at the Dunkirk Radiator factory or at the ALCO Products, Inc. These Dunkirk industries are either shuttered and long gone or repurposed in the rust belt constituting Western New York. The movement of steel manufacturing subsequently essentially exiting the USA eventually doomed these industries.

My father attended a local technical high school where he must have acquired the skills he would use in his future employment. My mother never graduated from high school and never really worked except during the Great Depression since her mother died when she was a youngster. She had three sisters and two brothers. To make ends meet, she and her sisters worked at the local Van Raalte garment factory which she always referred to as "the silk-mill" (long shuttered). Her brothers went

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into the army. Their father worked at the American Locomotive Company often shortened to ALCO. Apparently, it closed and was torn down around World War II and eventually morphed into ALCO Products, Inc. My parents would moonlight at a local nightclub to make ends meet. In addition, my father would moonlight as grounds keeper and maintenance man for the St. Hedwig's Catholic Church, a couple of blocks from our home. I would sometimes accompany him as an unpaid assistant. The history of my father's parents is much murkier than my mother's. It is similarly tragic in that his mother married twice with both husbands dying relatively young before I was born. She had three children by her first marriage and three more by her second husband. So, I had a lot of uncles and aunts!

But enough of this part of the distant past—on to continue my story. As I already mentioned, upon graduating from Dunkirk High School I was determined to go to college. I should put into perspective that my desire was to become an engineer. This was because of the greatly increased interest in science and technology sparked by the Soviet Union successfully launching Sputnik 1, the world's first artificial satellite on October 4, 1957. I was a junior in high school, and the excitement over Sputnik 1 was my *raison d'etat* for going to college and becoming an engineer. I applied to a good number of colleges a reasonable distance from Dunkirk in Western New York, Pennsylvania, and Northern Ohio having engineering schools and to Rensselaer Polytechnic Institute (RPI) which had a prestigious engineering school. I subjected my parents to filling out endless forms in an attempt to obtain some sort of financial assistance since they had accumulated nowhere enough savings to pay for my college tuition and dormitory housing expenses. I took the New York State Regents Scholarship examination in my senior year for which the scholarship would have been applicable only for the New York State colleges I had applied to, including RPI. Unfortunately, I was not on the top list of recipients of a New York State Regents Scholarship which was quite disappointing to me and my parents. Several of the senior year students did receive one. Financial aid was not materializing for me from the colleges I had applied to maybe because of the large crush of students entering colleges due to the effect of Sputnik 1.

What follows now constitutes the first on a chain of events in what I refer to as predestination. I ultimately decided to attend Fenn College in Cleveland, Ohio, where I applied and had been accepted. The college had a Cooperative Training Program (known as co-op), later called the Cooperative Education Program, wherein students would alternate between the classroom and practical work experience in their major field. I figured that if I didn't get any financial assistance, I could struggle through the freshman year which had three quarters (Fenn was on the quarter not the semester system) with help from my parents to pay for tuition, books, dormitory expenses, and meals. Thereafter, I figured that I could then earn enough money to cover these expenses doing my co-op. Nonetheless, I still applied for financial aid.

In January 1959, I traveled by train to Cleveland to take scholarship examinations for financial aid at Fenn College. Travel to Cleveland was easy in the 1950s and 1960s since there was a train station in Dunkirk with a direct connection to

Cleveland. This would be my first travel away from home, and I went alone. I was interviewed by Dr. V. Richard Gulbenkian, Director of Admissions and Records. I carried with me the paperback I started to read on the train by F. Scott Fitzgerald titled "Tender Is the Night." When we met, Dr. Gulbenkian noticed the book and was curious as to why I was reading this particular book. I don't remember my response, but I think he was impressed that a kid just 17 years old would be reading such exotic material. I returned to Dunkirk by train the same day and awaited the results of the tests and interview. That spring, lo and behold, I received financial assistance for the freshman year, September 1959 to June 1960. The total amount of the award was $1,000 of which $750 was a scholarship and $250 was in the form of a low-interest federal loan for which my father had to cosign a promissory note. The loan would have to be paid back starting 1 year after graduation. At which time the interest on the loan at 3% would start. For the summer quarter, 1963, I received further financial assistance in the amount of $500, $375 of which was a federal loan. The conditions for the loan were the same. The award portion was provided by the Fenn College Alumni Association.

This government-backed student loan was made available under the National Defense Education Act. These loans were only available to select categories of students such as those studying for an engineering degree, so I qualified. This act was established as a direct consequence of the Soviet Union's launch of Sputnik I and the perception that the USA was falling behind in science and technology during the Cold War.

I decided then and there to attend Fenn College and accept the scholarship. But a complication arose. It turned out after I decided to attend Fenn, I *was* awarded a New York State Regents Scholarship on the alternates list. I could have gone to RPI where I was accepted but had not been offered financial assistance. Unfortunately, it was becoming too late in the year to change my plans and decided to not to accept it.

During the nearly 5 years I was at Fenn, 1959 to 1964, I was fortunate to be able to hold several part-time jobs during the academic year, which supplemented my co-op earnings. More about the co-op experience shortly. I also worked as one of the operators of Fenn's antiquated PBX telephone switchboard located on the ground floor of Fenn Tower. It was a classic, with long braided wire plugs which had to be inserted into the proper receptacles to connect the outside and inside callers to their desired recipients. I was also employed as one of the operators of the elevators in the Fenn Tower which housed offices, dormitories, classrooms, gymnasium, swimming pool, and book store. I would fill in for the full-time PBX operator and elevator operators (they were "manned" by three women, one for each of the elevator) in the evenings when the evening school was in session and on weekends. Fenn Tower is a 22-story structure originally designed and built to be the ill-fated National Town and Country Club Building in 1929. This gave Fenn College the name "Campus in the Clouds" when it opened in 1938 [2].

If that wasn't enough, at the request of Dr. Frank Bockhoff, Chair of the Chemistry Department, I also worked part time as an assistant in the stock room which served the general and inorganic chemistry laboratories. They were situated in Stilwell Hall, which also held classrooms, offices, a multifunctional auditorium,

as well as the library. Stilwell Hall opened in the fall of 1959, the year I enrolled at Fenn as a freshman. The library which had been located on the third floor of Fenn Tower had been transferred to the third floor of Stilwell Hall. Stilwell Hall was spanking new throughout, a $2 million renovation of the old Ohio Motors Building diagonally across from the Fenn Tower on East 24th street. I would dispense chemicals, glassware, and equipment to the students working in these two laboratories. At the beginning of most quarters, I served as part-time help for day and night school registration in several capacities including assistant cashier. During my residency in the dormitory where I lived, I was also a proctor (which either eliminated or defrayed my housing costs) for several of the floors in the dormitory, which was situated, as I remember, on the 11th through the 18th floors of the Fenn Tower. A proctor was a person who was retained by the "house mother" to keep the students on his floor (no females!) under control. The dormitory rooms, which held about 200 men (no women) contained bunk beds, a desk for each student, and were unique in that the single rooms, occupied by two students had their own showers in tiled bathrooms. These dormitory rooms were converted from the guest rooms meant for members of the National Town and Country Club but were never occupied. The exceptions were the end suites which contained two rooms held four to six students who shared the single bathroom. The college provided sheets, blankets, pillows, bedspreads, and drapes and, to top it off, weekly maid service was furnished. These dormitory rooms were originally meant as living quarters for members of the National Town and Country Club. My grade point average may have suffered because of these part-time jobs, but they were enriching experiences. For those interested in the history of Fenn Tower, the Ohio Motors Building, Stilwell Hall, and much more, the reader is encouraged to refer to "A History of Fenn College" [3] authored by Dr. G. Brooks Earnest in 1974, the president of Fenn while I was enrolled there and who presided over the transition of Fenn College to Cleveland State University (CSU) in 1965. I could find no similar comprehensive history of CSU written since the publication of Dr. Earnest's book in spite of its celebrating its 50th anniversary in 2014. Consequently, I had to resort to searching the Internet using Google for information.

Fenn College officially became CSU on September 1, 1965, with the School of Engineering named the Fenn School of Engineering [3]. I graduated in 1964 the second to last year degrees were granted by Fenn College, the last graduating ceremony being June 13, 1965. In 1967, CSU awarded diplomas to graduates from Fenn College, so I can claim I have two undergraduate diplomas, one from Fenn College and one from CSU.

By the late 1990s, Fenn Tower was only housing administrative offices. It was closed in 2000 and slated for demolition. In 2004, the CSU Board of Trustees approved entering into a lease with American Campus Associates to develop Fenn Tower into student housing. Fenn Tower was saved, and a $27.7 million bond allowed the conversion into modern two and four student suites [4]. The restored building was reopened in 2006 and has been registered as an historical landmark. Figure 2.1 shows photographs of Fenn Tower before and after the restoration. The inscription "Fenn Tower" is now emblazoned above the renovated entrance.

Fig. 2.1 Fenn Tower before restoration c. 1965 (*left*) and after the 2006 restoration (*right*). Source:https://www.google.com/search?q=Fenn+Tower&rlz=1C1GPEA_enUS315US382&espv=2&biw=1024&bih=677&tbm=isch&tbo=u&source=univ&sa=X&ved=0ahUKEwiI1vqVjOLNAhVCWSYKHUbuBksQ7AkIQA&dpr=1

Donald Washkewicz, president and chief executive officer of Parker Hannifin Corporation and his wife, Pamela, gave $5 million, and the Parker Hannifin Foundation provided $5 million to CSU [5]. The gift, which equaled the largest in CSU history, went toward scholarships and renovations to the 1920s Stilwell Hall building that housed the Fenn College of Engineering. In November 2013, CSU Trustees then voted to rename the Fenn College of Engineering the Washkewicz College of Engineering. Shortly thereafter, Stilwell Hall was renamed Fenn Hall ensuring that the name of Sereno Peck Fenn, one of the founders of Sherwin-Williams Company [2, 3, 6], past President of the Cleveland YMCA, and benefactor of the YMCA Educational Program, the predecessor of Fenn College, would be enshrined in addition to Fenn Tower.

In addition to engineering, mathematics, and science courses taken while I was at Fenn, I took a generous number of humanities courses. These courses included three quarters of English composition, courses in psychology, sociology, US history, English literature, classical mythology, and music appreciation! Fenn's Music Department consisted of precisely one person, Dr. Julius Drossin, who would supply students of his music appreciation class, on a first-come-first-served basis, 50 cent tickets for the Cleveland Orchestra which at that time was led by George Szell. I believe it was the three courses in English composition which helped me in writing my work reports required for the Cooperative Training Program. The total six quarters of courses work alternated with the total of twelve quarters of classes over a 5-year calendar period. I was fortunate to gain employment with Arthur G. McKee & Company. When I worked there, the headquarters were located

at 2300 Chester Avenue, right next door to Stilwell Hall. To get to work, all I had to do was take the elevator down from my dormitory room in Fenn Tower and walk to the main entrance. All of my co-op work was with McKee which proved to be an extremely valuable experience in future years.

When I read these reports now, I am amazed at how detailed and polished they are. The coordinator to whom these reports were submitted graded them, and they all got "A" grades which did not show up on my transcript. What follows is the beginning paragraph from my very first cooperative work report covering a two-quarter period after the first consecutive three quarters of classes in 1964–1965.

> This, my first Cooperative work report period at Fenn, began on the morning of June 29, 1960, at the Arthur G. McKee & Co. As I remember, the day was rather warm and sultry as I approached the revolving door at 2300 Chester Avenue. It was a day which foreshadowed many more to be much warmer, and indeed, much more sultry. With resolution, I pushed through that revolving door at approximately 7:45 and found a cool feeling washing over me as I glanced about me. Seating myself along with several others who had arrived before me, I awaited the receptionist's arrival. [7]

While at McKee I sat in the "bull pen" with the other co-op students at a collection of desks on one side of a broad hallway around the corner from the Process Engineering Department. Most of the roughly two dozen process engineers had their offices in two rows of cubicles having metal partitions with windows between them. The supervisor and presumably more senior process engineers had their offices facing the rows of cubicles with windows facing Chester Avenue. The bull pen had no partitions between the desks and was located directly across the broad a hallway from two draft persons, one a man and one a woman who sat at their drafting tables. These two draft persons served the Process Engineering Department. Upon occasion, I would be called upon to do some drafting which I did at one of the spare drafting tables preparing flow sheets. Other times I would work in the basement helping an elderly gentleman assembling documents into loose leaf binders bound with metal posts. These books were more than likely operating manuals for the plants designed by the process engineers. My most interesting job, however, was working with an engineer who was performing calculations of pressure–enthalpy relationships for various chemicals produced in the plants designed and constructed by McKee. These calculations were performed by him on McKee's Burroughs 205 mainframe computer using a program written by the engineer. I was assigned to draw up these pressure–enthalpy diagrams from the computer printouts and to rewire boards inserted into the computer. The computer's memory was stored on a huge rotating magnetic drum in one cabinet and data stored on a separate console having revolving strips of magnetic tape. This computer, installed at McKee around 1960, was shared through an agreement with Fenn and was used in the computer technology course which I took the last quarter in my senior year.

In April, 1964, the chemical engineering senior student research presentations were held at Fenn where I presented the results of what amounted to my B.Ch.E. thesis research, "Azeotropic Pressure-Composition Investigations" [8]. I then traveled from Cleveland to Terre Haute, Indiana, to the 14th Annual Mid-Central

Regional Meeting of Student Affiliates ACS held at Rose Polytechnic Institute (now Rose-Hulman Institute of Technology); I traveled by plane, for the first time in my life, on a propeller-driven DC-3 aircraft. The experience making this presentation helped me to polish my presentation given the next month at the American Institute of Chemical Engineers (AIChE) sponsored North Central Regional Student Chapter Meeting held at Fenn College. These presentations were the result of my investigation performed in the course chemical engineering research. My advisor was the Chemical Engineering Department Chair at the time, Dr. John T. Cumming. I ran a Colburn still and built my work on the research of a prior student who had worked on this problem but failed to satisfactorily document his results. My objective was to duplicate and extend his results definitively. Each morning I would carefully calibrate the solutions for the binary system chloroform hexane which I was studying. To my astonishment, I was awarded first prize. As I remember it, the then President of AIChE, Donald Dahlstrom, was present at this meeting and congratulated me. AIChE headquarters notified me by letter that I was to receive a year's subscription to the AIChE Journal and a certificate. My win may have chagrinned another member of the Chemical Engineering faculty, Professor Elmore S. Pettyjohn whose student he advised failed to win first prize. More will be related about Professor Pettyjohn in due course.

2.1 Elmore S. Pettyjohn, Former Director of the Institute of Gas Technology, is on the Faculty of the Fenn College Chemical Engineering Department

I took two quarters of unit operations and one quarter of chemical equipment design taught by Professor Pettyjohn and two quarters of unit operations laboratory supervised by him. I remember clearly that during the summer quarter of 1963, the unit operations laboratory was so hot that everyone retired to the bar at the Libido Restaurant and Lounge on the corner of Chester Avenue and East 24th Street. In the class room wherein his courses were taught, instead of the usual chairs, we sat on high stools, which were none too comfortable, at what appeared to be drawing boards, similar to those used in the graphics course classroom, so that we could perform design calculations and drawings.

Pettyjohn was a rather large man, somewhat portly with a belt tightly cinched around his rather large waist, and had greying hair, severely combed back and parted smartly in the middle. He would precede each class with anecdotes and stories that sometimes consumed most of the class time. During these endless and sometimes humorous rants, he would reveal snippets from his previous employment without giving any details. I recall his saying once that he had decided to retire and so he decided upon accepting a teaching position at Fenn in the Chemical Engineering Department. This gave me the impression that he didn't think too much of his position there. I remember upon one occasion, he described, somewhat

misty eyed, a scene where well-dressed pretty colored girls would emerge from some building. Later I would learn that the building he described in his mind's eye was the MECCA a dilapidated overcrowded apartment building that was situated just north of the Institute of Gas Technology (IGT) on West 34th and State Streets in Chicago, on the IIT campus. So, that is about the extent I knew about his background. Another student would refer to him as the "Captain." Perhaps he knew more about his past by talking to him in more detail privately. But I never engaged Pettyjohn in any significant conversations since I was somewhat in awe of him. After Pettyjohn wound his stories down, he would suddenly say in effect, "OK now let's get down to work," and the class would suddenly be aroused from its languor. One time we had to design a pressure vessel based on the intricate and detailed American Society of Mechanical Engineers (ASME) standards manual or another time size a distillation column using the McCabe-Thiele method.

Why am I singling out my experience with Professor Pettyjohn in deference to any other faculty member which made an impression on me, like Professor Frank Bockhoff, Chair of the Chemistry Department whom I considered the best teacher I had at Fenn? Well, there is an ulterior motive on my part. I am convinced that he played a pivotal role in my enrolling at the Illinois Institute of Technology in the fall of 1964 upon graduation from Fenn College in June. What follows now is a summary of the second event in my predestination, the first being the events leading up to my attending Fenn College.

Since Fenn College had no graduate school in 1964, and I wanted to continue my education, I would have to leave for another school that had one. I applied to several colleges and universities including Massachusetts Institute of Technology (MIT), Pennsylvania State University (Penn State), RPI, the University of Rochester, Carnegie Institute of Technology (now Carnegie Mellon University), and IIT. My parents still had not accumulated anywhere near enough savings to pay for my graduate school studies, and so as a back up, I also applied to several companies for employment as a chemical engineer in case I failed receive any financial aid. One of them was B.F. Goodrich Chemical Company, located nearby in Avon Lake. I was invited for an interview at their Development Center in March.

I had garnered an exactly 3.0 grade point average which is not superlative, due in large part to the several part-time jobs I mentioned earlier that I held down while at Fenn. I was accepted at MIT, Penn State, RPI, the University of Rochester, Carnegie Institute of Technology, and IIT. I received offers of a graduate assistantship from the University of Rochester, a half-time research assistantship from MIT, and a third-time teaching assistantship with a stipend of $175 per month for 9 months plus tuition of $1,450 from Carnegie Institute of Technology. The only offer of financial assistance I received from IIT was, of all departments, the Civil Engineering Department. C. Fred Gurnham, Professor of Civil and Chemical Engineering, explained in his letter of April 9, 1964, that his department had seen my application because the Chemical Engineering Department had called it to his attention. That department liked my record, but their funds for financial aid were depleted. His group was in a better position because it had received a grant from the Public Health Service. He went on to explain that his program was keyed to the

problem of industrial wastes and to the chemical approach to sanitary engineering. All I had to do, to be considered for admission and a grant, because his department already had my application, was to express in a letter my interest in this field. The degree would be in Sanitary Engineering, "…which is recognized as a worthy endeavor for Chemical Engineers." I summarily declined it since I considered Sanitary Engineering be totally outside of my field of interest in Chemical Engineering. In April, I received an offer from B.F. Goodrich for a position at their Development Center at a salary at $625 a month. However, by that time I had decided that I really wanted to attend graduate school. So, I declined their offer and accepted the offer from Carnegie Institute of Technology because it was the best one I had and started to make preparations to travel to Pittsburgh in the fall. I told B.F. Goodrich of my decision and asked if I could be employed for the summer. However, they were unable to do so.

The dormitory rooms at Fenn had no telephones in the rooms for the students. However, each floor had one, and only one, pay telephone. When it rang, someone would answer it, and, if it wasn't for him, then he would yell down the hall for the intended recipient or run down the hall way to his room and inform him that he had a call. I was in the final stages of packing up and planning to leave Fenn for Carnegie Tech in the spring of 1964 with the promise of a summer job offer after graduating in June, which I will shortly describe.

Out of the blue, there was a telephone call for me on the pay phone from a Dr. Richard F. Bukacek, who described himself as the Chairman of the Gas Technology Department at the Institute of Gas Technology (IGT) at IIT. It was taken by one of the students who then contacted me to take the call. I didn't even know that IIT had such a department, and I certainly had never had any prior correspondence with the man. I almost hung up on him. I had eliminated IIT from further any consideration after receiving the silly offer from the Civil Engineering Department. Dr. Bukacek proceeded to describe an offer for me to enroll in the Gas Technology Department and proceeded to explain it to me in detail. It was for an IGT Fellowship leading to the degree of a Master of Science in Gas Engineering. This Fellowship would carry a stipend of $335 per month on a 12-month basis amounting to $4,020 per year. He went on to say that this Fellowship ALSO included a full tuition Fellowship. By 1969, IIT full-time tuition for graduate students amounted to $900 per semester. I was stunned since it was better by far than the off from Carnegie Institute of Technology. I estimate that this offer amounted to over $60,000 in 2016 dollars. I hesitated for a few moments and said that if I did accept his offer, I would have to decline the Carnegie Tech's offer after having accepted it and withdraw from enrolling. So, we agreed I would accept the offer contingent upon receiving permission from the Chemical Engineering Department at Carnegie Tech to do so. I received the IGT Fellowship offer in writing and proceeded to contact the appropriate official at Carnegie Tech. I delicately as possible described the situation, and the permission was granted. I then accepted Dr. Bukacek's offer of the IGT Fellowship, and since I had already applied to IIT, I assumed that he would inform the Graduate Office of my decision.

Thus, the second event in my predestination that propelled me to meet Dimitri Gidaspow and Charlie Solbrig was accomplished. The first event has been described earlier concerning the path leading to my attending Fenn College. But what precipitated this incredible out of the blue, so to speak, opportunity to be offered to me? It certainly wasn't any action on my part. My explanation for it will shortly be explained.

Before entering the Gas Technology Department at IIT, I was lucky to obtain a job working the summer of 1964 at the Durez Plastics & Chemicals (aka Durez) in North Tonawanda, New York, which became a part of Hooker Chemical Corporation in 1955. I had interviewed at Hooker while at Fenn and that is how I got the job at Durez. I had taken a night course in polymer chemistry taught by Dr. Frank Bockhoff, Chair of the Fenn College Chemistry Department. This course was sponsored by Arthur G. McKee & Co. and was made available for their employees. I got an "A," but this course never was recorded on my official resume for which I expressed disappointment. Because of taking this course, I became quite interested in polymer chemistry and expressed this information and desire to Hooker and that is how I landed up at Durez. By the time I joined Durez, it was the largest independent manufacturer of phenolic resins and molding compounds in the world. They also manufactured Hefron polyester resins and Hetrofoam, a rigid urethane foam. This facility manufactured phenol which was subsequently used in the production of these phenolic resins. I worked at a variety of positions at the phenol production facility including the laboratory which supported the distillation units that separated the monomer phenol from the chlorobenzene reaction side products. I also worked in the office performing miscellaneous calculations like designing pipe hangers for the piping which conveyed various chemicals.

As I mentioned above, when I was at Fenn, I had no knowledge of Elmore Pettyjohn's past. I had to piece it together during the research for this book. Fortunately, I found out the existence of a book that traced the history of the Institute of Gas Technology's first 50 years written by one of its employees, Wilford G. Bair [9], which proved to be very enlightening. Other details about him were obtained from the Internet. It turns out he was a former Director of the Institute of Gas Technology before he joined Fenn College! IGT was founded in 1941 and was selected to be situated in Chicago on the campus of IIT in May of that year. IGT's early history is recorded in Bair's book [9] to which the reader is referred.

What follows is a brief summary of Pettyjohns's 10-year tenure there obtained from Bair's book. IGT's Trustees selected Elmore S. Pettyjohn born in 1897, as Director Designate in 1945, but because he was still serving in the US Navy, he was unable to assume full control immediately, and Leon J. WiIlien served as IGT's Acting Director for a year. After receiving his Bachelor's and Master's degrees in Engineering from the University of Michigan in 1922, Pettyjohn spent 5 years in blast-furnace and coke-oven operation in Chicago. He subsequently held various positions within the gas industry for the next 13 years, as well as teaching at his alma mater. As a naval reserve officer from World War I, Pettyjohn was called to active duty in 1940 and served throughout World War II. He was discharged as a

captain in 1946, when he joined IGT as Director in May. This is clearly the reason some students and perhaps even faculty at Fenn referred to him as "captain." One of his first priorities was to establish a new building to house IGT. He was responsible for raising funds for construction of this two-story building which had to conform to the style developed by Mies Van der Rohe, the architect of the IIT campus at the time. It was built on the southwest corner of West 34th and State streets in 1949. It housed offices, classrooms for the Education Department, research laboratories, and the library. Pettyjohn directed IGT for 10 years, becoming Vice President and Director in 1952. IGT grew substantially under his leadership. However, questions were raised by the Board of Directors at the December 1954 meeting of IGT's Executive Committee concerning the relationship between the American Gas Association (AGA) and IGT. It was felt that IGT was not receiving adequate funding for utilization and distribution system research and that this funding could be increased by improving IGTs relations with AGA headquarters staff. A study was made to assess this relationship, and the report was submitted to the Executive Committee in November of 1955. The nature of the recommendations made in this study was not revealed in the record of this meeting. Pettyjohn resigned as Director the following morning at the Annual Meeting of IGT members. He stated that he had planned to come to IGT to serve a 5-year term and that although the job of getting the institute organized had taken twice as long as he anticipated, he considered that his work at IGT, now in the middle of its second decade, was now finished. Dr. Henry R. Linden, who would later become Director and President of IGT for nearly 30 years, became Acting Director until Dr. Martin A. Elliot became Director in 1956.

It seems clear to me by reading between the lines contained in Bair's book that something serious had been unearthed by the IGT Executive Committee report, thus creating a cloud of suspicion over Pettyjohn's behavior which resulted in his precipitous resignation as Director. It is not clear how long Pettyjohn remained on at IGT after resigning. He joined Fenn's Chemical Engineering Department in 1958. As I mentioned earlier, he stated in his classroom stories that he had "retired." He would have been only 61 years of age when he started at Fenn being born in 1897. By 1963–1964, when I took his unit operations and chemical process design courses, he was in his middle 1960s, and his hair was already mostly gray as shown in Fig. 2.2 taken in Fenn's unit operations laboratory.

Pettyjohn retired from Fenn in 1968. I drove to Cleveland from Chicago to help celebrate his retirement. I forget just how many of his former students, chemical engineering, and other Fenn College department faculty attended. As I recall, one of his students who cooped at Arthur G. McKee & Co. with me, Russell Sage, who graduated with me, was hired by the company after he graduated and remained in the Cleveland area. He helped to organize Pettyjohn's retirement party and was the one who contacted me about it. After the party, I attempted to find accommodations at the Cleveland YMCA a couple of blocks from Fenn. Since it was full, I drove back to Chicago!

Here is my explanation for Dr. Bukacek's infamous telephone call to me in 1964 offering me that generous IGT Fellowship. I am convinced that Pettyjohn

Fig. 2.2 Professor Elmore S. Pettyjohn in Fenn College Stillwell Hall unit operations laboratory. Photograph courtesy of Bill Becker, Cleveland State University Archivist

recommended me to Dr. Bukacek as being a good candidate for an IGT Fellowship. I didn't apply for it and I didn't know such a Fellowship existed. I got one "A" and the rest "B's" in Pettyjohn's courses and graduated as a "B" student with an exactly 3.0 grade point average. It's not a likely I would have gotten the Fellowship if I applied for it, which I didn't. Thus, the moving finger from Chicago plucked me from Cleveland and landed me squarely in the presence of Gidaspow and Solbrig in the Gas Technology Department at IGT! The next Chapter will chronicle my experience there in the years 1964 to 1970.

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