

**EXCUSE ME SIR,
WOULD YOU LIKE TO
BUY A KILO OF
ISOPROPYL BROMIDE?**

**Max G. Gergel
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Publisher's Foreword

There is a Max Gergel; I have seen him a few times a year for several decades. He is probably a great liar, though I never caught him outright. He is given to fanciful stories, such as claiming to be friendly with three ex-wives.

Like any other who has met Max, I was charmed out of my socks, impressed (very gradually) by his mind and elegant uses of it, rendered jealous of his amorous successes, and even awed by the grace with which he met unrequited love.

Max has a huge taste for life, any way it comes, and lives in great good taste—as chemist, philosopher, lover, raconteur, businessman—but, let the raconteur introduce you to those other nice folks.

Roy Oliver
President, Pierce Chemical Company

Dedicated to seven teachers who shared with me their wisdom:
Arvid Czarnitski, Atherton M. Whaley, Guy Fleming Lipscomb,
J. E. Copenhaver, E. Emmet Reid, Max Revelise and C. J.
Seideman.

Prologue

When I was a traveling salesman for Columbia Organic Chemicals a group of my friends would gather at American Chemical Society meetings. There was Sam Tubis, Micky Freed and Peter Russell from Wyeth Laboratories, Charlie Grogan and Tony Schrecker from the National Institute of Health, Ken Greenlee from Ohio State and Tom Osdene, about to become Director of Research at Philip Morris. Most people attended the lectures given by distinguished scientists. Our group sat in the lobby or gathered in one of the hotel rooms. Tubis and Grogan smoked cigars and there was always a haze of smoke. We exchanged gossip, discussed our experiences making chemicals and lied about our amorous adventures.

Ken was leaving the American Petroleum Institute to start ChemSampCo. I was fighting the usual battle for survival; all were customers of Columbia Organics. They brought their friends to our get-togethers and the friends bought from then on. ACS meetings were my meat and bread.

At one of them, probably in Boston, Ray Dessy who had left the University of Cincinnati to teach at V.P.I. asked me to visit his university and address his graduates. He suggested that I title my talk "How to run a small chemical company profitably." I amended this to "How to run a small chemical company unsuccessfully" and the talk was so successful that I repeated it many times at other universities. Students clad in bluejeans, bearded and skeptical, filled the amphitheatres and I told them about Preacher, my former employee, about our fifty cats, and our work on the Manhattan Project. I threw in "pitches" for Columbia Organics and recruited Summer help. After about twenty of these talks the ACS picked up the tab and sent me all over the country, to the Prairie Section, the North Central Section, the Marquette and Middle West circuits. I visited Omaha and Duluth and Fargo, North Dakota. Industrial concerns, Phillips Petroleum Corp., Pfizer and Upjohn wanted to hear how we had spent thirty years losing money. I knew that all of us cherish memories of making chemicals and many of us are latent entrepreneurs, with a secret desire to be our own boss. Inevitably I was asked "Are you writing a book?", and I would say that I was. "What is the title?" was the inevitable next question and I would say: "Excuse Me, Sir, Would You Like To Buy A Kilo Of Isopropyl Bromide?" "It's a bit long", was the inevitable comment, and this is true, but it's the story of my life.

Chapter 1

In 1936, forty-one years ago, I was the smallest member of my class at Columbia High School, probably the smallest member of the student body, certainly the loudest. Having decided to be a lawyer I was a very vocal member of the Calhoun Literary Society. The leading debaters were Lee Baker and Sidney Duncan. The debating team traveled around the state, meeting in competition other high school teams. I was first alternate but since the members of the team were healthy my talents were exercised mainly in our club where I argued that the several states should *not* enact a unicameral system of legislation and opposed the establishment of a system of socialized medicine. My genius uncle, Max Revelise, helped me write my speeches which I delivered falsetto. I had not reached puberty; a cause for much concern to me and my parents. My class members considered me a mascot and rejoiced when I was ordered to join John Foard in a debate with Memminger High School. Lee Baker had developed croup. I sent him a dozen roses. The opposing team was female; both of the girls were budding women's libbers. One, safe in her position as final speaker, in rebuttal, told a laughing audience that sarcasm was a tool employed by large women and small men. She was small—but deadly. The judges voted for Memminger. The sarcastic small one slunk home, dissolved in mortification and alternating in thought between changing his future profession and taking his life.

Columbia High School had a large cafeteria in which the students and the faculty ate together. Shortly after the disaster one of the teachers sat next to me and asked what I planned to do when I “grew up.” I told him that I was resigned to being a dwarf and would join a carnival and be exhibited as a freak. He smiled and told me that he was the Chemistry teacher, his name was Arvid Czarnitski and he would like to have me visit his laboratory that afternoon. He had sandy hair, blue eyes and the build of an athlete; he was, in fact the assistant football coach. His brother, Bill Czarnitski was the Boy

Scout Commissioner in Columbia. I had hiked for miles hoping the exercise would make me grow. I had already accumulated some experience in Chemistry.

Two years earlier and gnome-sized, I was a student at Wardlaw Junior High School and I spent late afternoons visiting the Chemistry department at the University of South Carolina. There was a large garbage area back of the Pharmacy and Chemistry labs and I recovered broken flasks, cracked mortars and pestles and test tubes containing all manner of gunk. The harvest was gathered and transported four miles to our home on Calhoun Street where I carefully washed the containers and added them to my own stockroom, our spare room which I had converted to a laboratory. Wearing my apron, every inch (few, alas) a scientist I carried out my research in the production of phosphorus from human urine (my own), the generation of hydrogen sulfide gas (to the annoyance of our neighbors) and the mixing of explosives (my most successful endeavor). For two years I had been a dedicated research scientist but considered it a hobby, like stamp collecting and the gathering of Indian arrowheads. Until this meeting with Mr. Czarnitski I had never considered making Chemistry my life's work.

I presented myself at room 312, the Chemistry laboratory, that very afternoon. Mr Czarnitski was busy with students so I began washing down the desks and cleaning the stockroom. Later in the afternoon a young man came in, put away the books he was carrying and walked over. He asked me who I was and what I was doing. His name was Atherton Mikell Whaley and he was a sophomore at the University working as an assistant to Mr. Czarnitski. For this he got a salary which he offered to share with me if I would take over his duties since he needed to devote time to research. I was hired at \$5 per month.

Mr. Crow, the principal, had the only telephone in the school. I rushed to his office, called my mother and told her that I had taken a job. When I got back to the lab Atherton and Mr. Czarnitski explained my new duties; to set up the equipment for the lectures. I was taken to Mr. Crow's office and enrolled in the Chemistry class which had started two weeks early. Mr. Czarnitski gave me the textbook to study at home and Atherton promised to take me to the University and show me what he was doing in their research program. So much had happened so fast that I forgot to call home and half way there, a long walk for short legs, I met a search party consisting of my stepfather, Jules Seideman, my uncle Tom Revelise and our neighbor Mr. Richbourg.

During the next few weeks I studied the elements, the gas laws, halogens and balancing equations. I was not one of the brighter students but was louder and carried more books. I purchased a slide rule which fastened to my belt. I did not know how to use it but impressed my peer group. I was 4'10½" tall, fifteen years old, a weaver of horn-rimmed glasses and already

the possessor of a noticeable tummy. In reflection, little has changed during the years.

We formed a chemical club: I was the president and the members included Warren Irwin who is now one of Columbia's foremost heart specialists, Olin Crouch (who became a detective), and my close friends Albert Ragsdale and Pete Todd. We dissolved old radio tubes in acid, ignited thermit (a mixture of iron oxide and aluminum with a magnesium ribbon fuse—guaranteed to fuse rails or ignite laboratory benches) and generated noxious gases. We had water fights by diverting rubber hoses from the petcocks and flooded Mr. Crow's office. Our chemistry initiation, including branding with silver nitrate solution which produced a black semi-permanent stain and the use of a Ford induction coil to electrocute the novices, taxed the patience of both teacher and principal but somehow we were indulged. It took at least three afternoons, three hours per afternoon to clean Mr. Czarnitski's desks and set up the equipment for the next day's experiments. In order to have more time for my research I hired an assistant, Billy Wilson, who would later teach Chemical Engineering at the University, and paid him \$2.00 per month. Billy, who was a sport car enthusiast needing afternoons for his hobby, hired Joe Shway for \$1.00 per month and Joe in turn hired Richard Kahaley, now one of Columbia's doctors, who took the job "for experience." Richard was thus an assistant to an assistant to an assistant to an assistant.

In the early Fall of 1936, a series of thefts took place at the large Colonial-style building on the corner of Pickens and Pendleton Streets, known as LeConte College. This was named for Joseph LeConte, a Civil War chemist and teacher at the University. He had conceived a plan to produce nitrates, which were in scarce supply, by collecting urine from the folks who were not fighting and converting it to sodium nitrate, or "saltpeter" at the armory on Arsenal Hill. This led to an apocryphal statement by a Union soldier that it was bad enough to be hit by a Reb bullet but distressing to know that it was propelled by the patriotism of Southern women.

The Chemistry building, which also housed Pharmacy, Biology and Geology, consisted of four floors and a basement. The Pharmacy labs and lecture rooms were in the basement which also housed the toilets and served as storage area for carboys of acid and ammonium hydroxide. At night it was haunted by Abraham who had been janitor for many years. He had expired from cirrhosis of the liver, a noble and traditional demise for members of our profession, particularly those who drink. His headquarters was the men's toilet from whence he glided heavily at nightfall (Abraham even as a ghost was stout), past the laboratories of Dean Motley of Pharmacy, past the office of Professor Whitesell, who taught Physical Chemistry, up the stairs and along the corridor lined with show cases containing dinosaur bones. Ragsdale and I, co-conspirators, were aware of Abraham's nocturnal

vigil and after one confrontation which tele-transported us to the lawn in front of LeConte we usually let ourselves in through the window of Professor Moore's office (he taught Quantitative Analysis) which was reached by the fire escape.

On the second floor, Dr. Copenhaver, the professor of Organic Chemistry, had his office and laboratories. J. E. Copenhaver was a handsome man of forty, a bachelor (to the concern of the coeds) who had studied with Dr. E. Emmet Reid at Johns Hopkins University. In the afternoons after I had finished the work at Columbia High I drove to the University with Whaley who had a Model-T Ford. I cleaned his desk, learned my way around LeConte and met many of the upperclassmen, some of who would be famous. John Swearingen would be chairman of the board at Standard Oil of Indiana, Marvin Armstrong would have a brilliant career in Ohio as teacher and research chemist. Atherton was studying under Copenhaver who, seeing me, gave a nod from time to time. I collected nods and information.

There was always a bustle of students, the sounds from the lecture hall, laughter and conversation. Then there were the more subtle noises of the laboratory . . . the boiling flasks, the hiss of the bunsen burner. There was a wonderful conglomerate of odors, probably toxic and carcinogenic; since we did not know, we did not fear. I scrubbed flasks, maintained alert silence and rushed to pick up any dropped pencil, to clean off a desk, or at the nod of a graduate student to fetch a reagent from the shelf. Then back on foot to Columbia High School, eight blocks away, to supervise my minions, Wilson, Kahaley and Shway. The late afternoon was spent in a council of war with Ragsdale, the planning of our twilight visit to LeConte.

Whaley, Feagen, Hobson and Armstrong were working on the synthesis of alkyl chlorides using techniques originated by Dr. Copenhaver. They worked by day in the Advanced Organic laboratory and it may be noted that their results were published in "Organic Syntheses." At night they had two projects: one was the synthesis of 3-aminophthalhydrazide, the other—conducted quietly—involved the Geology office at the end of the hall, a telescope and the boarding house across Pendleton Street. In the evenings young ladies preparing for dates shared, without their knowledge, their boudoirs and personal habits with a rapt audience of students. I was given a peek but, pre-pubic, was more embarrassed than stimulated. While they competed for viewing privileges I checked their notes in the locked cabinet to which I had earlier made a key. I copied in my own notebook details of their progress with the synthesis.

The procedure was as follows: First one reacted phthalic anhydride with a mixture of nitric and sulfuric acids. This produces a mixture of 3-nitro and 4-nitrophthalic acids which can be separated since one drops out of the reaction media. Next the 3-nitrophthalic acid is reacted with hydrazine sulfate to make 3-nitrophthalhydrazide and this is reduced with ammonium poly-

sulfide to produce 3-aminophthalhydrazide. This fascinating compound dissolved in sodium hydroxide reacts with hydrogen peroxide and potassium ferricyanide to produce such a beautiful chemiluminescence that one can read a book by its cold blue light. So read the notes in Armstrong's cupboard which I dutifully copied while he was distracted.

I wrote all the steps on the blackboard in the Chemistry Lab at Columbia High, confirming my reputation as a genius, if obnoxious. We faced the problem that our high school stockroom did not have the reagents and apparatus for the synthesis, no flasks, stirrers nor filtering units. Ragsdale and I were chosen to represent the Chemistry Club, to visit the University and borrow the equipment and chemicals necessary for the production. The time chosen was the interim from the close of classes in the afternoon until the graduate students returned at night. The days were short and darkness came quickly. We entered through the basement window. Sitting on a carboy, was a large black man, white haired and bent with age. He wheezed with the effort of getting up and walking over to the window where two horrified faces had been a minute before. All he saw was two behinds, one immense and the other not small. They belonged respectively to Albert Leonard Ragsdale and Max Gustave Gergel who, seeing Abraham, or rather his ghost, had no desire to see him again.

The fire escape going up the South side of LeConte was perilous but a satisfactory alternate. It was rusty and obviously had never been used. It reached only the second and third floors. I assume that if a fire occurred in Biology which was housed on the fourth floor there would be real trouble, for the central staircase in the building would make a chimney for fires (I muse with the wisdom of age and experience). Ragsdale was large and strong and he pulled down the ladder and started up, beckoning me to follow. I was afraid of heights and proceeded up the ladder with deep misgivings, especially when it swayed pendulum-like. Soon we were at the window of Professor Moore, I had never met him but knew his office at the side of the building was never locked; neither, fortunately was his window and it opened easily. Albert, who was stout, crushed several beakers walking across the laboratory table, snorting with the efforts of the climb, with apprehension too, for his participation in this project had not been enthusiastic. Perhaps he had prescience of impending disaster.

Safely inside we collected flasks, condensers and a stirrer. Dr. Copenhuver's stockroom provided phthalic anhydride and other chemicals which we needed. The next day we ran the nitration and a week later had accumulated several kilos of crude 3-nitrophthalic acid. To do the crystallization we needed large beakers and thermometers which read as high as 150°C. It was necessary to make another trip to the University. Albert demurred, telling me of various important projects which conflicted; taunted with cowardice he consented to make a final trip. At dusk we made our way to

LeConte, climbed the fire escape and let ourselves in. The halls were dark and there was some fog from the chemicals but we had a flashlight and quickly loaded up with the chemicals and apparatus we needed. Unfortunately we could find no hydrazine sulfate and there was none in Armstrong's locker where the other team kept its supplies. I had seen some in Whitesell's laboratory downstairs in the basement. Albert was extremely reluctant to go downstairs because of the ghostly guardian. I offered to lead the way and we descended the steps to the purple shadows of the basement.

On the way I passed a side shelf in General Chemistry. There was a jar which I had not noticed before containing potassium metal. I knew that potassium was a silvery metal, but this was one inch spheres, green with the oil in which they were immersed. I removed two for a collection of elements we were starting at Columbia High, scraped off the oil and put the marbles in my handkerchief which I added to a collection of miscellaneous glassware in my back pocket. The flashlight revealed jars of mercury, a bottle of silver nitrate (which could be dissolved in water and used to silverplate pennies) and 200 grams of hydrazine sulfate. I put the conglomerate in other pockets then noticed that the handkerchief had grown warm, and its contents soft. I told Ragsdale that if would carry the potassium I would carry the rest of the chemicals and we made the exchange. Our mission was completed with the aquisition of a Variac transformer, a vigreux condenser and Lange's Chemical Tables. We started upstairs, unmolested by Abraham.

Albert led the way. He was a large burly figure in the dim light of the basement. I noted smoke coming from his back pocket, then a tongue of flame. "Albert," I cried, "you are on fire." He needed no warning, jumped up and down sending a shower of glassware and chemicals and making profane, uncouth sounds. Knowing nothing of the high activity position of potassium in the electromotive series, I ran into one of the labs and fetched a large beaker of water which I applied to his backside. There was a muffled explosion, more fire and a hideous scream from the tortured Ragsdale. He rose several feet in the air and for a full minute achieved levitation. Incongruously a silver stream of mercury poured from his britches. Despite my injunctions for silence he bellowed with pain; any moment a night watchman could appear. I led him downstairs and past the carboys to the window of the toilet. Mercifully Abraham was not there. We were alone on the campus. I led the injured up the pathway to Pickens Street, With my handkerchief I partly covered the large area inundated by fire. Albert groaned a pathetic "thank you." We were both crying, Albert with pain and I with apprehension. We hobbled together, I partially supporting his vast bulk. Somehow we made it to Marion Street where Dr. Hopkins was working late and knew what to do.

The next day I had a summons to visit with Mr. Crow and received a lecture on the evils of crime. The victim had told all. Mr. Czarnitski was

not smiling when I answered the summons to the Chemistry lab, but simply told me not to visit the University again; to tell him what chemicals and equipment we needed and he would get them—legitimately. My mother received a hysterical call from Mrs. Ragsdale who described in detail the fate of one hemisphere of Albert's gluteus maximus, and heartily predicted that I would burn in hell.

The test of the true scientist is zeal, self sacrifice and persistence. I had saved the hydrazine sulfate and had accumulated enough equipment to continue the project. No policemen came to my home, Atherton did not mention the incident. After a week I was back at the University, a loner, a "second story man" made wise and cautious by adversity. It was the day before Thanksgiving and there should be no students in the building. Unfortunately one sat at Professor Moore's desk. He was very tall, blonde and handsome. He had a toothy grin, I would learn later. When he saw me framed in the window he did not grin. "Who are you," he asked and I explained as best I could my science project at Columbia High School and my need for an analytical balance and a bottle of ammonium polysulfide. Gravely he opened the window, helped me into the office and searched the stockroom for what I needed. Holding my treasures, an old Chainomatic balance and a fresh bottle of the polysulfide, I was escorted to the main floor of LeConte, wished luck and invited to return during school hours. I had met Professor Moore.

The ammonium polysulfide was added to the 3-nitrophthalhydrazide and a yellow precipitate formed. I filtered this, dried it on large watch glasses and completed the project only a few days behind the University students. I was with Whaley, Armstrong and Feagan when they dissolved their yellow 3-aminophthalhydrazide in sodium hydroxide solution and added hydrogen peroxide and potassium ferricyanide. When the lights were cut off the flask glowed with cold blue light. That weekend Mr. Czarnitski, Mr. Crow and I duplicated the experiment at Columbia High. I still have some of this original material. It took months to make and started me in my profession.

Albert Ragsdale went on to study engineering at the University and left Chemistry forever. He carried the scars of our experience the remainder of his life. I have given the University of South Carolina to date some \$37,000 in grants, and therefore paid for, many times over, the supplies which they loaned me, unknowingly, for my first research.

Chapter 2

At the University of South Carolina Atherton was deeply involved in research. Dr. Copenhaver's students had discovered a novel synthesis of n-butyl chloride from the alcohol and hydrochloric acid using zinc chloride as a catalyst. The work was extended to other alkyl chlorides and Dr. Copenhaver had all of his bright people on the project. This meant that Atherton's visits to Columbia High School were rare; he would telephone to find out how things were doing and promised that this Summer he would let me help him on his project.

I was now a senior. I was 4'10½" tall and had not grown for two years. My height was never discussed at home; the subject was too painful. The consensus was that I was stunted and had taken after my grandmother who was only 4'8" tall. An appointment was made with Dr. Hopkins, a noted bone surgeon and after a careful examination he announced gravely that I would be small. Pressed, he predicted that I might be as tall as he. Dr. Hopkins was tiny. He told me all about the ductless glands and puberty and listlessly I told him how to make alkyl chlorides. We became great friends and when I began to grow he was very happy. Within six months we were the same height. Years later he contracted bone cancer, refused all treatment, and died with grace.

For some time a new school had been under construction. It would be named Dreher High and Mr. Alliston, the assistant principal at Columbia High who was my good friend, told me that Atherton's job would be expanded; his replacement, for Atherton would be leaving at the end of the Summer for graduate school, would have two schools to supervise. He suggested that I apply for the job and Mr. Czarnitski would recommend me. Since I would be entering the University in September and needed money for books and tuition, no urging was needed. With Shway and Wilson and Whaley at Columbia High there would be no problem in doing the work. I

would take over at Dreher where Mr. Czarnitski would now be teaching. Jack Alliston would teach Chemistry himself. He had taught me Physics and was a good friend of my step-father's. There was much work to be done packing and unpacking supplies for the new school, setting up the new stockroom and breaking in an assistant at Dreher. Atherton could not help for he was working hard at the University, and preparing to go off to Ohio.

The days were hectic. I had applied for one of the McKissick work fellowships which were fellowships in name only. One had to work the grant out at 30¢ per hour. Even this no-bargain fellowship was deluged with applicants and I had to get letters of recommendation and announce with my family that we were virtually paupers. My mother had to have an operation and Jules salary was barely enough to feed the two of them, me and our dog. That Summer I worked with George Fisher, the custodian of Columbia High putting locks on lockers and saved up enough, with the anticipated fellowship, to pay tuition and also my way to Boy Scout camp. I even had enough to buy banana splits for A. who was always hungry after successfully fending off a youthful organic chemist. Late in the Summer supplies came in for the new Science buildings at Dreher and I helped Mr. Czarnitski and Mr. Bristow, the Biology teacher, move their labs. I ran my first alkyl bromides with instructions sent by Whaley.

The time-honored synthesis was the reaction of bromine and sulfur dioxide to form hydrobromic acid in situ. Since sulfuric acid was a by-product and a known catalyst for the reaction of hydrobromic acid with an alcohol the yields were good and the process could be used to make most primary bromides; the secondary ones, and tertiary alcohols tended to dehydrate; further bromine presented a hazard and sulfur dioxide was not pleasant and had to be trapped. Our project was to develop a synthesis based on the reaction of sodium or potassium bromide with sulfuric acid and the alcohol and varying amounts of water which would cut down on side reactions; the optimal ratio varied from compound to compound in accordance with the activity of the alcohol. It was a fine, sensible research project. In order to get raw materials I visited the University by day and by night. Since it was Summer only a few graduate students attended. All of the professors were away.

The faculty, whom I would meet at registration, consisted of Dr. Lipscomb who had studied under Bunsen at Heidelberg, Dr. Willard Whitesell who taught Physical Chemistry, General Chemistry lab and Industrial Chemistry, Dr. Copenhaver in Organic and "Link" Moore, my friend and benefactor in Analytical Chemistry. Dr. Lipscomb taught General Chemistry and managed the affairs of the department with the help of "assistants" chosen from the ranks of upperclassmen Chemistry majors. It was a small department with only a few graduate students. Aside from the students of Dr. Copenhaver no one did research, except Dr. Lipscomb who had a small

office at the end of the hall on the first floor. The University turned out excellent graduates and these often went on to get additional degrees at other colleges. The students who wanted jobs more than additional knowledge were able to work for Grace in South America. Dr. Lipscomb's brother Edward was the Vice-President. I knew most of the upperclassmen and graduates from my visits with Atherton. I washed their test tubes, cleaned their desks, served as worshipful audience, and shared the telescope of evenings now that puberty had arrived. Slowly, lazily the Summer went by.

It was time to register at the University. First there was an entrance examination and the 1500 or more students were herded into Drayton Hall in groups of three hundred and given tests in Mathematics, English and Comprehension. The engineering students were separated from the others and led to Sloan College where we were addressed by the various professors. These were no-nonsense people who, staring at the 150 candidates, made speeches of cool welcome and predicted that the lazy and the stupid would soon switch to other fields. Dean Rowe, the head of the Engineering School remarked that the high schools were sending babies to college. He addressed this remark to me, and then his dog, a large sex-starved shepherd, Sandy, snarled at us. Back of the professors were the upperclass engineering students. They were old, some had small mustaches and all wore polyphase duplex sliderules. Their cool contempt was obvious. We were addressed by Professor Reuben C. Johnson who told us how hard Mechanics and Hydraulics would be, and predicted that few of us would survive. Professor Sumwalt described Graphic Statics and Strength of Materials, about which I knew as much as I knew of the composition of the moon. At this point we had our first dropouts, seven young men left for Drayton Hall to choose new careers and we were now 143. After Professor Black had spoken and Jim Reynolds had added a few more doleful remarks about our future, three more men gave up. We were a forlorn group with our small garnet and black skull caps called "Rat caps," which permitted upperclass engineers to spit on us or torture, depending on their mood. We were told one final time that Engineering School was different from any other department, and neither levity or laxness was permitted. We were dismissed and headed for the book store to buy texts and polyphase duplex slide rules. I seriously considered dropping Engineering and opt for a BS in Chemistry but my friends Pete Todd and Albert Hartin told me that they had heard the first day was the roughest. We took a special Engineering Algebra, designed (like the talks) to eliminate the unfit, Engineering Trigonometry, Mechanical Drawing, English and, for the true engineers, Surveying. Our five Chemical Engineers, Betts, Cantry, Hendley, Jumper and I all took German or French. We had been told by our faculty that our group would dwindle. It did. By the end of the first week we were down to 125 hardened, slide rule toting, crew cut novices determined to survive. We picked up the scorn of the senior engineers and

addressed sneers to the BA's and AB's. We studied like hell.

Flushed with a new maturity I made a savage frontal attack on A., managed to get one button loose and touched for the first time a titty other than my mother's. I became a beer drinker, dissolute.

The University of South Carolina in 1937 had about 4000 students. The president was J. Rion McKissick who had come up from the Journalism school. The Dean of Administration was Jack Chase, a friend of my family. I was assigned to Dean Chase's office to work out my fellowship, reporting to Miss Miriam Holland and Mr. W. Flinn Gilland. My scholarship was \$100 per semester for which I would work 300 hours filing and posting grades. It was tedious but easy. One could work as much or as little as one pleased. The Registrar's office was housed in one of the newer buildings which was also headquarters for the University telephone switchboard and its employee, Dixie Dugan. Dean Chase, Dr. Lipscomb, Dean Rowe and Miss Holland had all known my uncle Max when he was at the University. I gathered that they considered him brilliant but rather wild. On the other hand in the Engineering school my uncle Tommy had been one of Professor Sumwalt's favorites and had designed the football stadium where A. and I now necked on Saturday nights. All of them knew my mother who had been Gennie Revelise and my step-father C. Jules Seideman, and his brother, the formidable Si Seideman who had been a famous football player. Flinn Gilland had been a member of the Chantacleers, a hard drinking social society when Max Revelise had been its president and hardest drinker.

The Registrar's office was a cross roads store for the professors. They came to check on students, turn in grades and discuss university affairs with Jack Chase. Students wishing to transfer, salesmen, prospective new students all visited the registrar's office which was noisy, friendly and surprisingly efficient. Since I could come in at any time I wanted, and since everyone was so friendly, it was with regret that I transferred over to the Carnegie Music room. The music room offered a record player and records to those intellectuals who liked classical music, and it needed a night time attendant. Dr. Billy Woods of the French Department was in charge of the room which was used as a gathering spot, and located over the YMCA. I had a key and three evenings each week would unlock the room and play music for myself and those who wandered in. From downstairs would come the pious voices of the devout and the young sinners singing their repentance. I fought back with Beethoven and Bach.

The Engineering school was tough and efficient. Every week another face would disappear. The professors all had jobs on the outside designing buildings and roads and bridges and left much of the actual instruction to upperclassmen who seemed bent on harassing all newcomers and getting rid of them. Dean Rowe and his shepherd, Sandy, strode down the halls and freshmen hid or headed for the elevator. Sandy took a morbid fancy to me

and would lick my knee and try to mount it while my fellow students guffawed and Dean Rowe beat the knee and Sandy indiscriminately with a ruler. I studied late into the night and got up early so that I could study again. My diligence was not appreciated by my fellow students. "Gergel is an SOB" was carved deeply into my drawing board, someone stole my trig tables and the enemy made uncouth sounds when I got up to answer a question. Looking back I thoroughly agree with them. I was a perfect horror of conceit and a dedicated "apple polisher."

They perpetrated a successful hoax. I came to Algebra one morning to find a note on my desk from Professor Litman telling me that since he would be late and I was such an extraordinary student he would like me to teach his class. I should have known from the silence that something was wrong. I went over the day's assignment at the board and lectured on the Horner method of solving the cubic, a project which had long intrigued me. It did not intrigue the class who clamored for a "cut." The joke had backfired. I was hellbent on teaching the class. There was a barrage of erasers, old exam books and balled up writing paper, and in the midst of the clamor Professor Litman arrived. "What's up, what's up," he said, looking around the room. "silence, silence," he added. He was near-sighted and choleric. Students escaped on either side of him including the substitute teacher. Suddenly Litman, moving fast, passed me. Someone had told him there was a bomb in the room.

Classes began at 8:00 AM. My first class was Trigonometry and an hour before I would join the knot of students under the trees at Sloan College where the geniuses, Poole and Hasell Laborde, would help the slow students. My professor was Coker who had taught my mother and both uncles and told the class that genetically I was a superior individual, adding a few additional enemies to my collection. He told excellent stories to liven up mathematics including a fairy tale concerning a prince who had become involved in an arithmetic progression. It seems that galloping to Washington his horse cast a shoe. The shoemaker, or blacksmith, was an eccentric who struck a bargain that he would charge a penny for the first nail and two cents for the second nail. At this rate after paying up the Prince was a blacksmith and the former smith was on his way to Washington with the horse. Several of my friends who became criminals attended this class and were no doubt heavily influenced by Professor Coker. He is also remembered for planting many exotic trees on the campus, most of which have been destroyed as buildings have eaten up the available green. There remains a dell opposite Maxcy Gregg Park where he kept his most exotic flora, used extensively in my time, since it was back of the women's building, as a site for amorous activity.

I took Mechanical Drawing under Jim Reynolds. Reynolds was an old man of 24 who rode a motorcycle, worked Summers on a survey crew and was everything a budding engineer could idolize. He was also an excel-

lent draftsman. He disliked all Freshmen, especially the budding genius Chemical engineer who had adopted his clothes pattern, was desperately growing a mustache, and planning to buy a motorcycle. Such was the respect he commanded that when a tornado struck the tennis court next to Sloan and LeConte Colleges we all continued to draw while everyone else abandoned the building. For English I had Joe Norwood, a former Rhodes Scholar. This quiet, wonderful man was a friend of the family and at grade time exempted me from the final examination saying "I grade on capability rather than classwork—spend your time studying more essential subjects." I had another old family friend, Professor Cook, in German and we all relaxed while this cultured gentleman introduced us not only to the language he taught but to the court of Frederick the Great and his friend Voltaire as well. English and German were the only subjects we shared with the non-engineers and since no girls took engineering it was our only chance to meet a genuine coed.

My headquarters was LeConte, the professor of General Chemistry was Guy Fleming Lipscomb. He was a tall man, about 6'4", and a bit stooped. He had been in Heidelberg before World War I and came back to work in Chemical Warfare and ultimately to teach at the University under the legendary Dean Burney. He had studied under Bunsen and also under Ira Remsen, who had discovered saccharin. According to Lipscomb, Remsen worked with Fahlberg who did not wash his hands, noticed a sweet taste on his fingers and rushed to take out a patent. The more fastidious Remsen remained poor. Dr. Lipscomb had no intention of being poor. He had his own chemical company, Continental Chemical Company, where he made embalming fluid, paste and sand blast stencil. Between classes he was always in his little office trying out his mucilage on glass panes submerged in heated water baths.

Lipscomb was an amazing lecturer. With one hand he would write on the blackboard and with the other he would erase. To keep up you had to write fast or copy the notes of a faster writing neighbor. Lipscomb would stare at the desk, his feet, the blackboard and the ceiling and then suddenly whirl and, shrike-like, descend on a victim. "You, Mr. Thomas, on the 10th row, pay attention or get out." Mr. Thomas was then a marked man. Periodically, without lifting his eyes, Dr. Lipscomb would roar, "Is that right Mr. Thomas?" Mr. Thomas, who was a genial drunk, merely nodded. I recall that Thomas could kick a football two-thirds the length of a football field, barefooted. I also recall seeing him again four years later, a wreck of a man, soused in one of Columbia's beer joints. Lipscomb found other victims. He was a tall, stooped bird of prey, but he had a wonderful grin and very bright blue eyes.

I sat with Thomas and Pete Todd. Neither were good Chemistry students and, like the condemned, had a tendency to sleep. After a week Lipscomb

bellowed, "Gergel, come down to the front if you want to make an A in Chemistry." I did not realize he was aware of my existence. I left Pete and Thomas and two weeks later Thomas dropped the class. Pete dropped it, too.

As the hour progressed and reached its close Lipscomb became restless and hurried through the remainder of the lecture, answering questions absent-mindedly, intent on hurrying back to the office and his steaming water baths. The office was a horror of dust, junk, dead mice, roaches and spiders. Equipment of another era clogged the narrow passage between the desks. He stalked from reaction to reaction, a dedicated scientist, followed by a small shadow—his very vocal worshiper. I was in and out of his office, furtively removing the casualties attracted by the paste and poisoned by the fumes. When he was there we talked about his early days as a student and his son, Guy, and his daughter, Adelyn, and Continental Chemical Co. At night we were the last ones to leave the building. If he was in the office or the lab I would hang around waiting for the "Come in, Gergel—I know you are out there." The first time he called me in and gave me the marvelous Lipscomb smile which lit up his face and put a sparkle in his eyes and said, "Gergel, I know your mother and your uncle Max and your uncle Tommy. You work hard, boy, and I'll make you into a chemist." I grew an inch on the spot.

He was hardly ever in his office. It was used by the assistants, the old timers. They were upper classmen all of whom had fellowships. The chief assistant was George Waring who would become a doctor, and he had succeeded Whaley. The others, Fincher, Albert Taylor and J. C. Clarke ran the labs, graded papers and made up solutions. The conversations were meaty; their research, their plans for graduate school, coeds. Lurking in a corner, sliding gradually to a free chair, worshipping, was the novice. If anyone wanted a "coke" he sprang to get it. He was ready to help correct exams, sharpen pencils, clean desks. First he was ignored, then tolerated and finally accepted.

I ran five isopropyl bromides a day in the Advanced Organics lab. The yield, no matter how I changed the ratio of sodium bromide to acid to water to alcohol was no better than 70%. I would leave the reactions going while I was in class; somehow nothing went wrong and there were no fires, no explosions. In the afternoons when I didn't have labs, I would take the bus to Dreher High or walk to Columbia High and check on the supplies, the cleanup, whether apparatus was being set up properly; I mixed chemicals for the principal, Mr. D. Leon McCormick, and the head of the school system, Mr. A. C. Flora. Exhausted from school and the cleanup job I would catch a bus home to be met by our neighbor, Mr. Richbourg, who dolefully predicted I would be a bright dwarf. I bolted down dinner and if the weather was not too cold I'd go for a walk before studying, and on weekends would take A. out for a date.

I would start studying at 7:00, put in two hours and then go to the

University for an hour in the Advanced Organic lab or sit with the grad students, then back home for another two or three or four hours. Holidays and Sundays were excellent for more studying. I had to make good grades.

On the night before Spring Holidays I was in Lipscomb's office studying German and drinking beer. The only other person in the building was an upperclassman, Robbins, who had an experiment going in the P Chem lab. The door opened. Standing quietly, nervously twisting a cap, was a man about forty years old; his face reiterated the story of the faded and patched overalls. It was a plain, an unintelligent face but it showed lines of strong emotion, not the shyness peculiar to simple folk when circumstances place them in unfamiliar surroundings. His was actually fear combined with nervous resolution. "Come in," I said, "sit down and have a beer." He declined the beer, sat in front of me, reluctant to talk. I called Robbins. Robbins was in a hurry, he lived in another state and wanted to finish his experiments and leave, but he joined me and we waited for the visitor to speak. "Are you gentlemen married?" We assured him we were not. "Can you analyze for poisons?" Robbins told him that we could but that maybe it would be better to call the police who had a toxicology lab. The visitor assured us that this was a private affair, he just wanted to satisfy his curiosity. He produced a small greasy bag, and \$20, a veritable fortune in 1939. He told us about Sally. She was not good around the house, refused to cook or make up beds and generally showed little sympathy for her husband who was loving, hard working, virtuous and completely agreeable to her every whim. Lately she had taken up baking, had insisted that he take out heavy insurance on their lives with double indemnity should their demise be violent, and he had started having stomach aches. "About a week ago, boys, those pains got so bad that I woke up yelling and switched on the light. She was grinning at me." He had a rapt audience. We assured him we would analyze the pie which he had brought along in the greasy bag. It would take time for we had to digest it. He promised to come back the next day. We spread the contents in a beaker and poured in nitric acid to digest the white paste. Hours passed and Robbins left, taking \$15 as senior member of the team. I stayed past midnight. By then the single electric light revealed a sparkling heap of glass in the crystal liquid in the beaker. I came to the lab early the next day and waited hours but our visitor never returned.

I had been active in Boy Scouts until I was fifteen, then I joined the Sea Scouts and learned to sail and even had an old boat, the Loti, up at Lake Murray which we diligently patched and occasionally tried to sail. One of the students in Chemistry was Arthur Herman Von Spitz. He was reported to be fantastically wealthy. He had leased an island from the S. C. Electric and Gas Co., erected a house and built a mooring for his sailboat. It was known that he and his fraternity brothers had wild parties on weekends. At the end of the semester when our entrance into World War II was imminent, he left the

university to return to Germany. He also left the boat. Ragsdale, Dibble and I went to his island and sailed and rowed the boat to Ballentines and ultimately pulled her out at the Sea Scout base. On weekends Dibble and I would attempt to make the old boat seaworthy, caulking the seams and repairing the transom. My new freedom was due to a very sad occurrence. A. had found another sweetheart. I was 18 years old, 5'2" in height, underprivileged and lacking a car. My successor was 19 years old, 6'1" tall, worked for the railroad and owned a Lincoln Zephyr. Overwhelmed by this contrast A. succumbed and married him. I studied hard, worked the two high schools and made alkyl bromides at Columbia High and the Advanced Organic lab at the university.

Chapter 3

Attrition took a toll at the University. The first dropouts from Engineering were the dull, the unmotivated and then the “fraternity men.” By the end of my first half year our class had shrunk to less than a hundred. Engineers were responsible for building highways with super elevation on curves so that one did not run off making a turn, building bridges which would support static as well as moving weight and designing elevators that functioned all the time. The classes were designed to give background and we were prodded with tests to indicate how well we were absorbing the information. The casualties simply disappeared. It was the boast of the department that half of the engineering applicants would drop out the first year. We had achieved this by the end of the first semester. Tests were all open book so that your knowledge rather than your memory determined your grade. The grades were “curved.” Your neighbor was your competitor. At the registrar’s office where the professors turned in their work I asked for permission to help, and could get an advance peek at the results. I had made all A’s. When the grades were posted I lost half of my remaining friends.

The next semester was tougher. I took Physics, Descriptive Geometry, Plane Analytics, Chemical German and Industrial Chemistry. I had three lab sessions per week. The total was a nightmare 18 hours lecture and 6 hours laboratory, plus the inexorable demands of the high school labs. There was no time for research, for visits to the sailboat, for anything but attending classes and studying. Pete Todd quit Engineering and became an architect, Hartin went into the Navy, Vivian Lynn into the Air Corps. Whatever leisure time I had was spent with my old buddy Ragsdale who was taking Electrical Engineering and flunking out of a class in Thermodynamics which the victims called Thermogodamics. He was my lab instructor in Physics.

Albert’s father had a little cottage at Lake Murray back of Bullentines.

We had anchored our “flagship,” the Highland Mary, in this cove when I was first in Sea Scouts. When Friday came there was a desperate search for dates. With or without them we would go up to the lake, cook steaks and listen to Toscanini who was giving a weekly program of Beethoven symphonies. Close to the water’s edge we would build a bonfire and Billy Farmer, an upperclassman who usually came along, would sing. Usually there were three baritones and a soprano.

I began to grow and during 6 months added 4 inches. Another inch was added in the next few years. It could not have come at a better time. A steady diet of work and study rendered me desperate. Albert was dating steady and Farmer always had a date. They managed to get blind dates for me. After one evening of Beethoven and the future of Columbia’s rising Einstein, most opted for less culture and more togetherness. Luck is cyclical. I met J. H.

She was from a little town in the Southern part of the state and her father was a Baptist minister. He was a strict disciplinarian and rode herd on J’s nocturnal activities. She had spent a year as one of the few girl students at Furman and dated their famous quarterback, Rhoten Shetley. She was waiting in line for activities tickets and remarked to a friend “I don’t know what I’ll do tonight.” A voice, surely not my own but somehow issuing from my lips, answered “I can do something about that.” She turned and stared. What she faced wore a red sweater knitted by his mama and the garnet and black rat cap of the Freshman. It was short and scrawny except for a little pot belly. It had freckles and red cheeks. It pleaded with its eyes, and with women’s compassion for the motherless she said “Come by for me at Sims—7:00—I’m J. H.”

At 5:00 I left the laboratory “on the double” and had walked half way home before I remembered the family car, comfortably parked back of LeConte. Back to the university and half way home again, I remembered that I had not cut off the bunsen burner in the lab. Back to the darkened lab to find the burner cut off, either by Abraham, or Burney or more likely the night watchman. Home at last, too excited to eat. A mad rush to bathe, dress, undress, redress, try on one tie, replace it, try to tie a windsor knot when one’s fingers are shaking. Should I, or should I not, take a prophylactic in the highly unlikely event that J. was a nymphomaniac. Finally I was at the automobile and I secreted a heavy piece of iron, should we be ambushed. Then I could not find the key, back to the house. This time I forgot to bring my billfold. Time was passing and it was extremely close to 7:00. When I reached the Women’s Building, after a wild ride and much breaking of the law, my heart was thumping so loud that I was sure it must be audible to the maid when I asked her to tell Miss H. that Mr. Gergel was downstairs.

Girls at the Women’s Building and Sims always kept their dates waiting but I was lucky. Five minutes after I arrived the door opened and a perfectly

beautiful, voluptuous woman came out, gave me a large smile, took both my hands and whispered 'I can't kiss you now because they are looking.' They were indeed, all twelve wolves who had come to fetch their dates. There were several muted whistles and I noted with satisfaction the frank and unconcealed envy of my fellows. She was nineteen, an inch or so smaller (thank God) and fantastically feminine. She had a full bosom which stretched her sweater and nearly dislodged the gussets of my heart. She had brown eyes (they sparkled), dark brown hair and lots of rouge and lipstick and eye shadow. As we left she confided that the lipstick would not transfer. I said "I love you J.," to our mutual astonishment. She laughed a wonderful warm laugh and said "I love you too, Maxie" and we were out of the building and even before we got to the car she threw her arms around me (I observed that one hand curled back of my head) and gave me a kiss complete with a tongue which endangered my glottis. "Wait a minute," she said and went back in the building to my apprehension that she would not reappear—but she did—and told me that she had told the house-mother that she would be in late. Hand in hand we glided to the automobile and after a reckless drive to Calhoun Street, resulting from attempting to steer the car with only occasional glances, we were parked in front of Ragsdale's house. Balboa staring at the Pacific, Michaelangelo giving a "once-over" to the completed Pieta, neither could be as joyous as I. Albert and Farmer and their dates emerged and Ragsdale and Farmer jaws dropped simultaneously when they saw J. She was indeed something to look at.

Life had a new dimension. We were together every afternoon. When I had labs she would wait for me. When I went to Dreher and Columbia Hi for lab cleanups she went with me and helped. I had to study at night and assumed she did, too. Like Robinson Crusoe I ticked off the days until Friday. There is nothing like love to inspire industry. I studied like never before, cleaned Dreher and Columbia High so thoroughly that Czarnitski and Allison commented favorably on the positive effects of co-education and introduced J. to my mother, Dr. Lipscomb and the Carnegie set. We went sailing, attended "weenie roasts" and did a prodigious amount of petting. Despite her relish for petting she had a good moral background and unexpected strength; and Gergel, bent on overcoming, was frustrated.

Luck—and women—are fickle. The German's express this aptly "Ach wie betrügerisch sind weibe herzen." Verdi, whose Rigoletto took note of this quality, phrased it elegantly in Italian "La donna e mobile." When I was planning how many children we would have and whether she should convert to Judaism or I become a Baptist, the matter was settled for me. On successive Saturday nights she had intense headaches, or so she told me, which I treated by sending flowers and candy and several long passionate letters; then she went back to visit her folks—a first in her college career.

Albert broke down and told me that she was secretly dating the more aggressive Farmer and my domestic plans collapsed.

Course work at the university did not permit the doleful to mourn. Savagely I returned to study, research and my job at the schools. My new God was Dr. J. E. Copenhaver. He had studied at Johns Hopkins, under Dr. E. Emmet Reid, the celebrated sulfur chemist. He had the only active research group in the department. His little office adjoined the Advanced Organic Lab and on the door leading from the lab to the office was a picture of a smiling baby. Copie was extremely handsome and a bachelor. Lovely coeds whom I knew and lusted over would come and peek in the door and ask for Copie and the lackey would knock at the door and announce the visit and a roar from within would advise to use the other door. Actually the door to Advanced Organic was locked from within since the large sink into which we poured our residues was used by Copie for micturation. It was to prevent interruption and embarrassment that the door was by orders kept locked.

The fortunate would be admitted to Copie's "chambers" and the gallant Dr. Copenhaver would serve them Coca Cola (a roar from behind the closed door: "Gergel, go get us two cokes") and while they talked and laughed the small furious would appear with two cokes and be dismissed with a "that's all, Gergel." I would return to my reaction setup where I took out my fury on the suffering caked lumps of sodium bromide which I was preparing to react. We had a lovely freshman in our class named Jane T. She was tall, luscious and mature. She had tried several other colleges before coming to Carolina and was a regular visitor. They would chat and then from the office would come the hated call for "cokes." Once Copie was doing his bit at the sink when the outside door opened and Jane walked in. Copie was just completing the operation and with amazing deftness hopped to his office followed by the curious Jane who said "Dr. Copenhaver, do all Chemists do that?" I was severely reprimanded—the door henceforth was kept locked.

Some time earlier I had asked for and received permission to conduct my work in this laboratory normally used only by graduates and seniors. The older men accepted me as a scourge of God and privately confided their bitterness to Copenhaver. They gave me the "silent treatment" but their whispers and hostility were offset by the luxury of the well equipped laboratory. I had two reaction setups and a virgreux column for distillation. The setups were simple, a five liter round bottom flask with an up and down reflux, a gooseneck containing a thermometer and a downward condenser leading into a cooled receiving flask. I would break up small pieces of brick to use as boiling stones, grind up sodium bromide which has a tendency to lump on standing, mix my sulfuric acid and water and add this, still warm, to the bromide and then put in isopropyl or secondary butyl alcohol depending on which bromide I wished to make. I kept a notebook as all

chemists are supposed to do and varied the conditions and entered the information and the yields obtained. I corresponded with Whaley and had conferences with Copenhaver. There were five or six of us in the lab, all using the one refractometer to check purity and the one Fenske type fractionating column. We were crowded.

This was a heartsick period. Not only had I lost my sweetheart, but attending the classes had a set of problems, too. A number of the engineering students expressed their interest in my intellectual progress by artwork on my drawing board (Gergel in a variety of tortures) and Copie's assistant M., who shared the Advanced Organic lab, shared their enthusiasm. He was from the North and was taking a Master's in Chemistry. His field of research was the production of esters of furoic acid and he was always busy with his preps and lecturing. I offered to clean up his desk, help him set up equipment, help grade papers. He was coldly hostile. He told the other graduates in my hearing that there were too many Jews around (since I was the only one the inference was clear). I kept out of his way, worked in silence and heartily wished him a cancer. One problem was solved at the end of the second semester when most of my enemies in Engineering flunked out.

My sex life consisted of "catching" Miss Park once every two weeks. She was a pre-med student taking qualitative analysis and was hypersensitive to H_2S , which we made in the hood using an old Kipp generator and used to precipitate Group II metals as sulfides. Dr. Lipscomb was the teacher but the lab was run by J. C. Clarke and Foster Smith and although I was just a student I helped them and was rewarded by turns at catching. She would dally at her bench, her lovely soft blonde hair piling over the back of the apron, her innocent blue eyes looking desperately around the room; then, resigned to her fate she walked back to the Kipp, followed by one of us, ran in the H_2S and fainted. The lucky appointee caught her, helped her to Lipscomb's office where there was a couch and consoled her when she revived—verbally. In my day dreams she opened her eyes and instead of "Jesus how long must I take Qualitative" she would look at her small admirer and say "Darling—you are always here when I need you." Sometimes I purchased a catch from one of the two assistants by correcting test papers.

Lipscomb lectured to the much smaller Qualitative Analysis class. He stooped over his desk so that much of the conversation was lost to the cluster of students on the front rows; he was alert and his blue eyes would catch the furtive glance of the cheater, no matter how clever, (the coeds wrote answers on their knees and crossed their legs, some carried "ponies," sheets of paper with valuable information). "You, Spyropolis" (he knew every name). "Get out of my class." He wore a lab apron, his trousers were shiny and contained the holes of the dedicated scientist. After class he chatted with the confused and those who wished further information—then

back to the lab. The same routine as his lecture in General Chemistry, just fewer and more intelligent students. He was every inch the head of the department, a man of vast dignity and rigid discipline. As we became friends he let me teach the class once when the assistants were busy and he had to be away, then suggested that I give coach class in General Chemistry, a job usually assigned to one of the graduates.

It was the end of the first year. I offered to work at the registrar's office and this gave me an advanced "peek" at the grades. I had made 3 A's and 2 B's. A check gave the sad news that Ragsdale had flunked Thermo again—his second time. After the grades were posted there was a wholesale departure for the military. The ranks of rising sophomore engineers was drastically decreased.

I came home to announce the good news. Jules was alone. "Your mother has taken a train to New York. She has to have surgery." My mother had trained in nursing at Mount Sinai and had friends who were doctors. I knew she had not felt well but this was frightening. We pooled our money and there wasn't much. I had my tuition money saved up for the next year and I gave Jules this. He left to join mama and our dog Sinful and I had the house to ourselves, two victims of the economic crunch. Sinful had kept us going when I was very young. During the depression we used to collect dog bones, which my mother made into soup—giving him an equal share.

I went to see Dr. Lipscomb. He stooped over a water bath, testing with his finger a strip of paper glued to a glass pane. The strip held on tenaciously to his delight. The room was chaotic but had the warm wonderful smell of chemistry. He looked up, smiled, and said "Well Gergel, what can I do for you?" I told him that I had several choices, to take a third job, to drop out of college, or the Saluda River. He sat down, beckoning me to sit in the other chair, gave me the great Lipscomb grin and said "Congratulations, Gergel, you are my new assistant. Waring is leaving—and the job is yours." I was astounded and bubbled my gratitude. Lipscomb's assistantship was the supervising one given only to seniors. It paid \$30 per month, more than I made at the schools. I rushed to tell Dr. Copenhaver and to phone my mother and Jules. Mama had come through her operation successfully and they came back to Columbia that weekend. By then Waring was teaching me my new job.

School was over, Whaley would be arriving in a month. I worked at the Registrar's office posting grades. The pay was 30¢ per hour and since I was an anchorite most of it I saved. Every other night I went bowling—by myself. Albert was on a construction job with his father. He was a framing carpenter and while working in the roof of a building putting in rafters he methodically cut one board after another including several which were essential for holding up the roof—and fell two flights. This took care of his dating. Pete wrote from the Navy. I spent evenings at the Carnegie set listening to classical

music, and afterwards walked the moon-studded paths to LeConte, Sloan and Davis colleges. I visited the library, the high school labs and with Dibble spent long afternoons at the lake working on the Loti. Dibble had a sailboat, the Cavvy R, and we sailed this to Dug's Island and Baldy and other fascinating places at Lake Murray.

The Sophomore class was much smaller. Only three of us were left in the Chemical Engineering class and competition for grades was keen. I took Chemical German, Differential Calculus, Solid Analytics, Organic Chemistry and Strength of Materials. The Strength class was my first Engineering subject if we do not count Mechanical Drawing. It was taught by Bob Sumwalt who would later be head of the department and still later President of the university. There were three lab afternoons; inexorably the schedule was tightening. I was now Lipscomb's stenographer and general amanuensis. It was a busy time and exciting. M. was back after a Summer devoted to teaching General Chemistry. He had failed the entire class. They went in a body to Lipscomb and M. was made to grade on a curve. He was large, ominous and usually silent. I set up my equipment in the Advanced Organic lab next to his. I noticed that he was distilling in a closed system, that pressure could build up and cause an explosion. I mentioned this to him and he told me that there was a man in Germany who had developed a solution for my sort of people. This was spoken in a voice loud enough for all to hear. He then told me that the laboratory was not big enough for the two of us, that something might happen. I was speechless, I dared not go to Copenhagen who considered M. a genius; Lipscomb was at his farm in Alabama. I spent the next week in dread of a booby trap in my set up or a dark figure behind a tree with a gun or club. I quit eating and could not sleep. My stepfather asked me if there was anything wrong and I told him. He was very quiet. He went out to his car and disappeared. When he returned hours later he told me "Son, you can start eating, Mr. M. will not bother you again." I do not know exactly what Jules told him but my stepfather had played a lot of football and was as large as M. and very strong. He and his brother Sy were closely connected with politicians and members of the Board of Trustees at the University. M. never spoke to me again. He worked silently at his bench, withdrawing from even the graduate students for whom he had been a ring leader. He completed the semester and disappeared. I saw him many years later at an ACS meeting in Atlantic City, a large ugly, angry man.

Phi Beta Kappa, the top award in scholarship, was rarely given to Engineering students, partly because getting top grades in the required engineering courses was not easy and partly because the number of students who survived four years of study was so few. I wanted very much to make it—but competition for grades was acute. To impress Bradley, my professor of German, who was currently head of the Phi Beta Kappa committee, I memorized the first chapter of our Chemical German text and remember it

to this day. "Die veränderungen welche wir in der uns umgebende körperwelt vernehmen sind theils chemikalische, theils physikalische natur." He was fascinated and I recited seven pages and threw in the Goethe "Wanderer's Nachtlied" for good measure. My date-less summer spent with books had its reward.

I was still active in Sea Scouts and we met one afternoon each week. We always played basketball and there was competition between our "ship" and the "Viking." We recruited Billy Farrow as center for he was very tall. He left engineering at the end of the Junior year to fly a B-25 and, in the famous flight from the Hornet over Tokyo, was captured and executed. Another friend was Red McIntyre for whom our local Air National Guard base was named.

The classwork was tough, Calculus in particular. I sat on the front row, studied hard and dreaded the sessions at the blackboard. Jackson started calling from the back row which left me with one of the hard questions to answer. I moved to the back row—which got the easy ones—and he started calling from the front row. Desperate I moved to the middle and he started with the chap next to me and I was last again. I dreaded this class and attended the study classes under the tree in front of Sloan College where the bright students helped the dullards. Fortunately the other subjects were easier.

When I was a student at Columbia High I worked on the school newspaper, "Hi-Life." The editor was V. H. and she was tall, slim and had ash blonde hair. She loved music, poetry and long walks of late afternoons. Now I met her again at the Carnegie room where I came as a visitor, no longer as the operator. She was as beautiful as ever and we listened to music together, took long walks up the Congaree River to the Old Mill and double dated with Ragsdale. Then she met P.H., our one Engineering School Nazi and quit coming to the music room.

There was little time for research, but I continued making the research intermediates which Atherton needed for his work. Copie suggested that we should make organic chemicals and offer them to professors at other universities and it was decided that during the Summer we would start a University of South Carolina Chemical Research Foundation and make alkyl halides and derivatives. Unfortunately the paper which Atherton and I had written, "A New Synthesis of Isopropyl and Sec-Butyl Bromides" was not accepted by the American Chemical Society. I gave it, in abbreviated form, at the South Carolina Academy of Science meeting. The grades came out and I had made 2 A's, a B plus, a B and a C plus. The second semester would include Organic, Advanced Industrial Chemistry, Quantitative Analysis, Testing Materials and Spanish. Dr. Whitesell, who would be my teacher in Industrial had been my teacher in General Chemistry labs. He was an ardent Baptist, convinced that non-Baptists were doomed. As a holdover from his time spent in Chemical Warfare, he had a tic: his eyes blinked. In connection with course

work we visited various chemical companies in the state and at one of them, a gas works, he invited my friend Dimitri and me to look through the peep hole at the fiery union of sulfur and oxygen. "Observe, Gergel, observe, Dimitri, this is what Hell will be like."

I had known the professor of Chemical Engineering and Quantitative Analysis, J. Lincoln Moore from my high school days when he had helped me "borrow" a balance. He was a genius. He carried a slide rule but could work most of the problems in his head. When I fused my barium sulfate, weighed it and reported an answer approximately twenty times what it should have been he was tolerant and remarked that perhaps a bit of plaster had fallen into the crucible.

I reached 5'7" and stopped growing. I dated in sequence a number of coeds, falling in love with most of them. After an evening of poetry, music and a recitation of my ambitions the average girl was reluctant to grant another date. I corresponded with Whaley who was working on the synthesis of fluorine compounds for which I supplied raw materials. Already he was considering the possibility of our forming a company to make organic chemicals as our life's work.

His professor, Henne, had been a student of the eminent fluorine chemist Swarc in Belgium. Fluorine was an extremely active element and in the form of the hydride etched glass; accidental exposure produced deep, hard to heal burns, a bit under the fingernail was agony. Henne had developed the Freons, used in refrigeration and propellants. He had a dozen brilliant students elaborating his ideas for new fluorine-containing compounds. Whaley was only one of them, but his particular job was so secret that he could not discuss it; from the raw materials I sent him I could guess it involved the fluorination of hexachloropropene.

Through Atherton I met Ken Greenlee who, with Vincent Wiley, was running A.P.I. project 46 at Ohio State. Both of them used alkyl bromides in their work and since we had made dozens I wrote to Ken and he ordered 10 kilos of n-octyl bromide, my first large order. We made it from n-octyl alcohol, sodium bromide, sulfuric acid and water. The money we received was the first credited to the University of South Carolina Chemical Research foundation for which I was chemist, storeroom supervisor, packing clerk and secretary.

Dr. Reid visited the University. He was emeritus professor of Organic Chemistry at Johns Hopkins, already in his late seventies. He had early in the century taught at the Colleges of Charleston, Richmond and Baylor. Now he visited them to assist the brighter students who might be interested in research. He had taught Dr. Copenhaver; he was a close friend of Dr. Sampey at Furman University. He was the personal friend and confidant of Patrick who had started Thiokol. The YMCAs were his homes away from home, he traveled by bus, and would take only a pittance for the service he

gave to a large number of Southern universities. I was 19 and he 76 when we first met. He was tall and stooped and almost blind. His voice was soft and friendly.

“Copie tells me you are bright,” he addressed the small, breathless novice. This was the world’s authority on sulfur compounds, on esters and ethers. I was so overcome with awe, that at lunch he ate not only his plate but most of mine, and all of my dessert as well. Reid was a voracious eater. He commented that despite his failing vision he could tell that I had a tendency to overweight. He would tell me this for the next thirty-five years. Despite his amazing capacity he stayed slim. I told him all about my work with alkyl bromides and he said “Gergel, (He would call me Gergel until I saw him a few months before the end when he called me Max) why not react your bromides to mercaptans? You treat with thiourea and this gives the thio-uronium salt, and you free this with sodium hydroxide and you’ll know what you get by the odor.” Dr. Copenhaver, wiser than I, interrupted to say that he did not think it wise to make mercaptans in LeConte, that the professors and students would object. So it was decided that instead we would make sulfides, sulfoxides and sulfones. My first assignment would be the production of n-butyl sulfide; he would send me the details. Three days later I received a five page hand-written letter outlining his ideas and instructions. Dr. Reid did not see very well and the sentences crawled up the side of the page and frequently intersected. Later he taught himself how to type which was even worse until one learned to interpret the errors.

I made n-butyl sulfide that weekend. Something went wrong although I had added excess sodium hydroxide and alkyl halide to the thio-uronium complex. Students and faculty poured down from the Biology labs upstairs and joined those exiting the lecture halls on the second floor. The rush to get outside created a congestion on the stairs. Some puked; everyone was excited. The odor was traced to the Advanced Organic Lab where the culprit was discovered overcome by the stench. Copie’s door was opened and as quickly closed with a shout to abandon the building and he plunged down the stairs. Lipscomb dismissed his class and departed for Continental Chemical Company. He hollered up, “Cope, have you got a skunk up there?” My teacher and idol hollered back, “No, it’s only Gergel.” “Only Gergel” had the odor in his clothes, on his skin and in his hair. He stank of butyl mercaptan. So did the building; so did the graduate students and those so unfortunate as to have had Saturday classes on butyl sulfide day. Copie developed a bit of odor simply living next to the lab and carried it to a faculty meeting where he received tactful suggestions on personal hygiene, and banned the synthesis of mercaptans and sulfides thereafter.

I studied hard (helped by the fact that I was dateless) and at the end of the semester had 2 A’s and 3 B’s. I had completed my Sophomore year. Copie suggested that we form the USC Chemical Research Foundation and

make chemicals that Summer. He wrote letters to his friends and soon we had orders from Dr. Lutz at the University of Virginia, Dr. Quayle from Emory University and Dr. Gilman at Iowa State University. Dr. Gilman ordered n-butyl bromide in large lots and we had orders for methyl iodide, tert-butyl chloride and isopropyl bromide as well. We helped many research programs in the late 30's and Dr. Gilman gave us an acknowledgement when he wrote up his famous work on n-butyl lithium. All the money was turned over to the University. Copie was the executive staff and I was the chemist.

That Summer I worked with Newton Rosser Smith, one of the undergraduates. Copie took off some time from his fishing vacation and made us lovely vigrioux columns (he was an excellent glass blower) to carry out distillations. He taught us how to steam distill. Whaley was spending the summer in California but wrote regularly. Once more I worked at the Registrar's office. I spent weekends at Lake Murray sailing. The war clouds were ominous and the news from overseas was one disaster after another. Many of our engineering students were in the reserve and left to join the army and air force.

I signed up for Physical Chemistry, Integral Calculus, Hydraulics, Mechanics and Electrical Engineering. In addition I added, at the last moment, Thermodynamics. I had for professors Whitesell, Coleman, Reuben Johnson, Ball and Mercer. Ragsdale was taking it for the third time, and the class consisted mainly of Junior and Senior Civil and Electrical Engineering students. Attrition and the war had accounted for the dramatic decrease in the number of students. I was clinging to a B plus average. After a week I dropped Johnson's Mechanics and substituted Political Science. He was also my teacher for hydraulics but this was not as difficult and Ragsdale and I had constructed a mighty river with dams, weirs and power stations—all designed to demonstrate the application of the course work to real life flowing water systems. After three weeks of class work and construction of the Gergel-Ragsdale Amazon in miniature I asked Johnson if he could predict an "A" for me in the course. He said it was quite impossible so I dropped this subject, too, planning to take it in the Summer under an easier instructor.

The high school work was neglected for I didn't have the time. My \$20 per month was turned over to the assistants. I was carrying 18 lecture hours and 10 lab hours per week and moreover grading test papers and teaching Lipscomb's coach class. This was as well attended as the lecture, for Lipscomb was a fast speaker and eraser, eager to leave the University and hurry to Continental Chemicals whose business was booming. Miss L., one of the "slow learners," tarried behind one afternoon to tell me her problems. She was having trouble concentrating. We reviewed the lecture work and she confided that she had a more serious problem, *dismenorrhœa*. I didn't know

what this meant so we reversed roles and she told me all about painful menstruation. Her doctor had advised that frequent, vigorous sex was an excellent palliative and she was prepared to show her gratitude and solve her other problem simultaneously, and suggested that we start that afternoon. Teeth chattering (for I was still, alas, a virgin) I passed the several hours before our rendezvous. At the last minute she telephoned to advise that, because of her great need, she had enlisted the services of a young man on the track team who knew no chemistry but was an expert in handling her other problem. She even put him on the phone and we exchanged pleasantries. The next day she dropped Chemistry, opted for track and became a famed runner. Sic freat crustulum.

Chapter 4

Atherton wrote from Ohio State that they were using the Prins reaction to make heptachloropropane, dehydrochlorinating to hexachloropropene and then since three of the chlorines are allylic they were able to fluorinate to trifluorotrchloropropene. He wanted us to make plenty of the heptachloropropane and we began condensing chloroform and tetrachloroethylene with aluminum chloride to get the waxy, camphor-smelling product. It was an interesting reaction, the yield was always good if the starting materials were fresh and the flask, as the reaction progressed, turned a lovely emerald green. When washed and stripped of excess chloroform the hepta separated as white crystals. Whenever the reaction got “out of hand” the room developed a camphor odor and so did the chemist and such graduate students as were unable to escape in time. Under the instruction of Whaley we dehydrochlorinated our hepta and even fluorinated some of the hexa using antimony trifluoride with a little bromine as catalyst.

The exciting class was Thermo with Ragsdale and the other Engineers. Mercer, a formidable lecturer, suggested at the onset, “Mr. Ragsdale, you should be able to teach the first few lessons by memory.” Thermo was steam and water power and latent heat, entropy, Moliere diagrams, Otto and Rankine Cycles. It was not really hard and Mercer was a good teacher, but it was incongruous to study the theory of operating steam locomotives when the world had switched to diesels. The seniors were brilliant; they smoked pipes, used slide rules and ignored the chemical engineers and Ragsdale. They were ready for graduation and the engineering world or the military; some of them were married.

It was on a Mercer Thermo exam that an incident took place which would affect the rest of my stay at Carolina. We had all been asked to sign the Honor Code and some did and some didn't. Normally all engineering exams were open book, but for some perverse reason Mercer told us to put

away the books on this quiz. Fortunately I had all the equations written in my Moliere "tables" and while this was not exactly accepted neither was it outlawed. The test consisted of five questions and the formulae were absolutely necessary. When Mercer left the room there was a rush on my part and by all of my neighbors for the tables. As I jotted down the formulas I noticed that T. was in trouble. He had not brought his tables to class.

T. was on the opposite aisle. Next to him sat his good friend, another senior engineer U. who was a straight A student, probably the most brilliant in the entire senior class. Both of the men were officers in the air corps reserve and supposed to join the fleet at the end of the semester. T. appealed to U. who jotted down the formulae on a piece of paper which he passed over. I hoped I was the only observer; unfortunately I was not.

There was an observer who was bucking for the Algernon Sidney Sullivan award, which rewarded brilliance and participation in outside activities. This creep had seen all. After class he approached me. "Gergel," he said, "did you see anything illegal on the examination?" "Yes, I answered, I considered it morally illegal for Mercer to give a closed book exam without warning." "That's not what I mean," he answered. "Did you see U. help T.?" I told him that I had suffered from peripheral vision problems for years. He left.

From Thermo I went to the Hydraulics lab where Ragsdale, still sweating from the examination, was attempting to route water through the Greater Ragsdale-Gergel River but getting most of it on the floor. I asked him if he had seen or heard of cheating on the exam but he sat close to the front as a part of his effort to impress Mercer, and he could not have been aware of the incident. I went from student to student. No one had seen anything. Great. I was the only witness. As I left the lab P. was waiting and he insisted that I go to the honor council with him. P. led me into the room. There was assembled every do-gooder on the Honor Council, all thin lipped and virtuous. My professor of German, Bradley, presided. They looked like disciples of Savanorola.

Smiling indulgently, Bradley said, "Mr. Gergel, tell us what you saw in the Thermodynamics class." I told him that I had seen Mercer write five questions on the blackboard, I had seen my thermo book and my Moliere diagram, and I asked whether I was under indictment or simply called on to discuss the exam. As I talked I wondered how my mother and father and Dr. Lipscomb would take the knowledge that I had opened by Moliere diagram, copied down formulae and been expelled for cheating. Bradley tapped impatiently on his desk and said, "Mr. Gergel, you are not accused of anything, but we understand that you witnessed an irregularity in the Thermo examination." I assured him that I not only had been too busy to watch my neighbors, but did not feel that Mr. P. had been chosen by God or his peer group to judge his fellows. I asked Mr. P. his draft classification, receiving

no answer. I talked on and on. Dr. Bradley was annoyed; he interrupted to ask once more if I had seen any incident. I discussed my views on proctoring, cheating, eavesdropping, the Algernon Sidney Sullivan award, honor councils. They were not impressed, they were impatient. Once more Bradley asked me what I had seen, and with my chances of Phi Beta Kappa glimmering, for Bradley was on the board which selected candidates, I told them that I had seen a desk, my books, my exam paper and another student who had fetched me away from my vital project in Hydraulics for this waste of time. I was asked if I knew U. and would recognize him and I said no, and then if I knew T. and would recognize him and I said no to this, too. Bradley arose and said, "Don't you know that we must punish cheating?" and I replied that I was not my brother's keeper, quoting the scriptures of which he was an avid reader. The meeting broke up. Outside Mercer was sitting next to T. and two older people, perhaps his mother and father. U. was nowhere to be seen.

I walked to LeConte and the horseshoe where my car was parked. U. was sitting in the front seat. He motioned that I get in. Since the car had been locked I was prepared for anything. He had a gun in his lap and when I sat down he put the business end in my stomach and told me to describe what had happened. I told him and he put away the gun and said, "Gergel, I believe you. The next day, on the testimony of P. alone, he and T. were expelled. Dean Rowe arranged for them to take Thermo during the Summer Session, knowing that they would not attend, and with his help would graduate in absentio. The next day they left for Texas and the air force. P. tried to speak with me and I told him of his impending fate. He made the Algernon Sidney and U. and T. were by then heros in the air force. U. sank the flagship of the Italian Navy, the Bartollomeo Colleoni. I never saw him again. That summer I was the sole student in Mechanics and Hydraulics taught by the dean. The only other present was Sandy, his dog. We attended one lecture, turned in one paper (Sandy did not turn in a paper) and we both got A's. The dean gave U. and T. both A's in Thermo. I looked up U's. record—he made nothing but A's in his entire career at the University. He graduated "Summa Cum Laude." in absentia.

At the end of the semester I had made two A's, two B's and one C. This was not good enough for Phi Beta Kappa. Moreover the new subjects, Electrical Engineering, Differential Equations, Power Plant Engineering, Strength of Materials and Spanish would be rough for A's. Once more I had Reuben Johnson, this time for Strength of Materials.

He greeted me with great mirth. "Here is our genius." he said to an assembled group of very serious junior and senior engineering students. I went to see Dr. Copenhaver, who was Johnson's friend and asked him to plead for mercy. There was no time for the labs at the High Schools, no time for visits to the Carnegie music room—yet I had to spend afternoons

making chemicals in the Advanced Organics lab, for there was a small but steady demand for our products.

For months I had been dateless (not through desire), using the time to study and to memorize poetry *faute de mieux*. Then a great event took place on Calhoun Street where we lived. We had a neighbor, Aunt C. and she had a niece who was seventeen, nicknamed "Iceberg" by our friends. Now there was another niece, the sister of Iceberg also named C. who came to spend a month with her relatives. She was from Johns Island in Charleston, and had been exiled with Aunt C. by her mother and father for uncontrollable devilry (she confided to the rapt listener from next door). I was fascinated by the criminal. She was eighteen, a year younger than I, and she spoke freely. Aunt C. was a bore, Iceberg was a prude, Columbia was dead. She longed for action. "At home I was a hell-raiser and loved Citadel cadets." She described how she had once taken on an entire platoon. The site was Cat Island, a remote place, off limits to cadets. Her language was vivid and I fought for calm.

I told her that despite a reputation for studiousness I was rotten to the core, depraved, a seducer and a degenerate; she was fascinated rather than repelled and confided that I had been described as "safe—but not a Christian." Further she told me that Iceberg had told her that I was a drip, a bore and probably impotent. She was prepared to go out that very evening; said she longed for regular, violent sex; was happy that she had met a satyr. The "satyr" was taken back a bit by this and felt apprehension. With an established reputation I would have to perform. I developed the first signs of tachycardia, a condition which to this day recurs in moments of stress. I suggested that we postpone our rendezvous until Saturday night when Ragsdale, Farmer and I made the weekly hegira to Lake Murray. I proposed, instead, that we take Aunt C. to dinner that very evening. This would emphasize my moral stability.

She was dressed and ready an hour early, came over to our house, chatted with my mother and Jules and then suggested in a whisper to me that we have a "quikkie" in the garage. I had read about girls like this but did not believe they really existed. We did not go to the garage, rather the three of us went to Martin Robert's Chicken House and took a table and ordered the *Speciality de Maison*. As was the fashion, each kept one hand on the table. My free hand dealt with C., who was bent on exploration.

During the next two days I lost weight from simple perspiration. I spent the afternoons in the labs but exercised violently at the YMCA before supper, swimming the pool twice underwater to improve my wind. Before the appointed evening I ate lightly on the advice of Ragsdale and Farmer, chewed Lifesavers, bathed, applied deodorant and, feverish and close to collapse, went upstairs to fetch C. She was chewing gum. She was dressed in what is now called a jump suit. It had a zipper down the front and a loose blouse

with two unbuttoned buttons. While her Aunt was out of the room she unzipped, took my hand and showed me the "territory." I struggled for composure.

The horn tooted outside and we were on our way. On the Lexington side of the dam we parked the car and Farmer and his date disappeared down one path and Ragsdale and his date disappeared down another. We were alone. I opened the doors of the car so that we could see the lake and the stars and the moon and suggested that if she wished I would recite a poem. She gave a great laugh, leaped over the seat to the back, was naked in a flash, dragged me over and immediately undressed our hero. She sang a little tune, said "Thank God" and deflowered me.

Omnia Animal Post Coitum . . . The trip back was quiet. Farmer slept, his date slept, Ragsdale's date slept, C. was snuggled against me holding my hand—deep in sleep. Albert and I discussed Thermodynamics and the progress of the Y. We smoked. We said our adieus to Farmer and the girls, sat outside my house for a bit and then I was alone. I went in the bathroom and stared at the sophisticate. I stuck out my tongue—the mirror image stuck out its tongue. The evening was complete. I was now a man.

Everyone who was draft age was leaving Engineering school; few asked for or were granted deferment. The city was full of young men from other states chosen in the first draft. Many were college students and graduates. They visited the labs, dated the coeds, chatted with us and told us about life on the "outside." They never wore uniforms off base. I met George Krsek, who would be V.P. at Merck in later years; he was a tall, handsome draftee. I met Whitey Seinfeld who had driven an ambulance in the Spanish War and had met Thomas Wolfe and Ernest Hemingway. I met his cousin, "Jake the Plumber" who had been in Spain with Whitey in the International Brigade. I met their cousin Murray who was a communist. All were seasoned soldiers. I met Ritchie Krone and his wife Carla, B.G. Stern (who would die at Rabaul) and his buddy Hank Kogel, who was also an alumnus of the Spanish War. I took all of them home and mama and Jules fed them and they spent weekends with us. They liked to sail and we explored the coves around Ballentine's in a badly overloaded sailboat, the Dawn. They were beer drinkers, poker players and philosophers. C. spent a happy Summer entertaining her neighbor and his friends.

A minute draftee from Fort Jackson visited the Chemistry Department and introduced himself as Dr. Michael Pogorelskin. His was a tragic story of the errors of Selective Service. Pogie was a scientist, approximately 4'8" in height and prematurely aged. He looked like a gnome. Two months in the military was shattering; he did not have the strength to lift the M-1 rifle, much less carry it; his experiences on the obstacle course at Fort Jackson must have been traumatic. From a safe job at the Bureau of Standards he had been put into khaki and sent to Fort Jackson. I have always carried

home strays, so my mother put on an extra plate for supper, a pillow on our couch and we were adopted by Pogorelskin. He became a part of my life. The commanders, having the vision to realize Pogie more a liability than an asset to the army, had ordered him to stay away from the base. He had time on his hands, accompanied me to class and on at least one date with C. (she was quite vocal in her protests, calling him an “abortion” and vowing to give me up if he were part of the “package.” I talked with Pogie and told him that he could visit me at the University but not at my home.

He followed me home using Indian tactics, hiding behind cars and only appearing when I had reached our house and had opened the door. He popped up like a “Jack in the box” with his cheery, “Hi, folks.” This was to become a nightmare call. I borrowed Jules car and drove back streets to shake him, arriving home hungry and tired—he was already at the supper table. His wretched rodent face with oversize buck teeth was a nightmare haunting my laboratory and my sleep. There was nothing I could do. He was unfit for military service and the army would not send him overseas—the fate of other transients from Fort Jackson. He was bored, he had no friends, no hobbies. C. left for Charleston telling me that I was welcome to visit—if I did not bring my shadow. Stern, Seinfeld and Kogel proclaimed him a scourge of God and a punishment for my sins. I ordered Pogie to leave me, and especially not to come to the lab and never to Lake Murray where I double-dated with Ragsdale. He came to the lab and hitchhiked to the lake. I gave up. He was part of the background. He taught me how to run Grignard reactions, having studied with Parry Borgstrom at Hopkins. His song was a litany of sorrow on Selective Service and the Military. Finally he disappeared.

Twenty years later I was visiting NIH in Bethesda and saw a midget chemist in an apron, smoking a cigar in front of a cluttered lab. He recognized me at once, insisted on taking me home to meet his wife (she was very small) and his children (they were quite small, too). We ate an amazingly large lunch. Pogie had grown mellow, and laughed a great deal about the war years. He lit cigars for us. He promised to visit—that he might even join us.

There is an order at the plant, no chemist over 55 years of age, less than 5' tall and smoking a cigar is to be admitted.

Chapter 5

At the end of my Junior year I had one A and four B's. This was simply not good enough to make Phi Beta Kappa even if Bradley would forgive me for the incident in Thermo. Yet there was no time for additional study, and instead of getting easier my work load was increasing. I gave up on PBK and gave up on any hope of graduate school. I would finish my work at the University and either get a job in industry or take a position in Chemical Warfare. Already recruiters for the Army were visiting the university and signing up rising seniors. Whaley wrote of a fascinating new chemistry involving trifluorotrchloropropene and its oxidation. I made his raw materials, made chemicals for the Research Foundation, graded papers, taught coach classes and supervised the other assistants. When there was any time left over I visited the labs of Columbia High and Dreher to check on how the work was going. The Summer passed. I signed up for Economics, Advanced Organic, Principles of Chemical Engineering, Direct and Alternating Currents, Geology and Determinative Mineralogy.

There were less than forty students left in our class. They had melted away. Warren Beaumont and five other draft-wary junior engineers had joined a special platoon called the Mercer Brigade after its innovator, guaranteed to produce deferment. They were promptly drafted and shipped to the Pacific. My friend Dick Kidder, unique in that he took engineering and played football, looped a training plane and left forever. Vivian Lynn was lost in a mid-air collision in Advanced training; Albert Edward Hartin left for submarine school.

I had lost V. two years ago to our Engineering school Hitlerite H. This worthy conducted classes in Nazism and how to be a storm trooper to an avid group of the lunatic fringe. He wrote "Jude" on the doors of Litman and our other Jewish professors and made speeches at the Clariosophic Literary Society on what a fine gentleman Hitler was. He was in the National Guard

and his unit was subject to immediate call. His first sargeant, (H. was a lieutenant) was G. W. Daniels. G. W. was a very mean man who had spent many years in the reformatory (for beating up his mother and father and his sisters) and when we were kids he would eat glass. For a small fee, raised by Pete and me, he would grind up coca cola bottles and eat the powdered glass. He weighed about 250 pounds and was all meat and bones and general meanness. Our rendezvous was at the local Y where in his youth he had done the glass bit. We discussed H. and his politics and the danger he presented to Democracy. I gave him \$10 for tobacco and he promised to take care of H. when they got overseas.

I was almost 21 years old. My chances of graduating with honors were virtually nil, for me it would probably be the army—probably chemical warfare. I had reached 5'7" and would grow no more. Thanks to C. I was a man of the world, small but sophisticated. Through an error I fell in love.

I was taking Determinative Mineralogy under Dr. Stephen Tabor who was the world authority on earthquakes. He had an assistant M. who often visited the Carnegie music room for she was a lover of classical music and an intellectual. She wore glasses and did not use makeup. Everyone said she was brilliant. One day I went to Dr. Tabor's office to report the analysis of a specimen (we used blow pipes, hardness tables and a careful scrutiny of the samples displayed on the wall in making our decisions). With M. was a lovely slim blonde whom she introduced as her sister. There is a word in Jewish: "plotz", verb transitive meaning "to become weak-kneed, to sink to the floor." I plotzed. J. was gorgeous. She looked me over carefully and returned to the work M. was showing her. Obviously she had not plotzed; in fact she did not seem impressed. Careful inquiries revealed that she was taking her sister's place for two weeks while M. vacationed. She arrived at Dr. Tabor's office every afternoon at 3:00; she left every afternoon at 5:01. She walked up the Green in front of LeConte College via the old wall to the main campus and on to the Drama club, then to Steward's Hall where she and her sister shared a room. I knew the exact schedule for I followed her every day, darting through the bushes like a spy. At 5:02 she was 10 feet South of LeConte. A smiling, slim, handsome (in the eyes of his mother), successful man of the world waited, stared, gulped and then managed a weak "How are you J." After a week she looked over at my haven in the shrubbery to smile, then after two days to say "Hello," another week to say "Hello, Max" and finally invited me to walk with her. Perseverance pays off in love as well as in business.

She was interested in dramatics and was one of Dr. Christopherson's actresses in the University Players. She and her sister lived in Bar Harbor, Maine. Her family name Z. was derived from a much larger name incorporating the island from which her father had emigrated. He had achieved fame as a flying cannon ball in circuses. Her mother was Irish. She was an A

student. Her sister M. was Phi Beta Kappa. She liked sailing, reading and hiking. She told me that in a few days she would go back to Bar Harbor for the Christmas holidays. She mentioned fascinating places such as Mount Desert and Scoodic Point. She was a lovely, exciting girl and I shared ten minutes walking time every day. After a while she waited for me.

There were a half dozen students who worked in the labs over the holidays. It was warm and snug and smelly in the Advanced Organics Lab, my second home. Copie was off to Bel Aire, Md. to visit his sister; the coffee pot hissed and somewhere a radio played "Oh, Johnny, Oh, Johnny, How You Can Love." The postman brought a Christmas card. It showed a frigid Maine landscape and written on the back was "Dear Max, 0° lonely weather, J." I read it a dozen times and showed it to J. C. Berry and Foster Smith and the other graduates and we all agreed that it was l-o-n-e-l-y. I spent the next five hours composing a ten page letter which I sent airmail special delivery to Bar Harbor with a note to the postman attached that delivery was a matter of life or death. Months later, when we were sweethearts she told me that she had meant to write l-o-v-e-l-y. Sic freat crustulum.

I left right after Christmas to go to Ohio State and visit with Atherton. This was the first time I had ever been away from home. Atherton was deeply involved in fluorine chemistry and suggested that I come up and meet Dr. Henne and consider doing graduate work under his supervision. Earlier, Professor Evans who was in the Ohio State University Chemistry Department had visited Carolina and suggested that he might help me get a fellowship. The head of the department was Dr. Mack from North Carolina. Ohio State was known to be an outstanding college for graduate work.

Atherton's mother gave me a fruit cake to take along and as a gift I brought the Dvorjak "Symphony from the New World." I spent 25 hours on the "Carolina Special" which went to Columbus by way of Cincinnati. Whaley met me at the railroad station and took me to Mercaptan Manor where the grad. students lived. We ate the first piece of fruit cake and some lettuce (Atherton had some strange eating tastes) and listened to the symphony. Then we walked to the old McPherson building which housed Chemistry; I nearly froze for it was very cold, but Atherton walked along in only a light sweater. He was resistant to cold, aided perhaps by his lettuce diet. We met Ken Greenlee who was working for the American Petroleum Institute and Ed Plueddeman who was doing graduate work (he would later be a senior research chemist at Dow-Corning) and many other wonderful, bright, friendly fellows, all chemists.

I was in the Organic lab reacting a 12 liter flask with chlorine when Henne came in. He was small, dark and distracted. I was stirring the flask by hand. He looked at me and said "Rink." I thought this might be "hello" in Belgian, bowed and replied "A good rink to you, sir." He stared at me as if I had lost my mind and said in perfect English "Mr. Gergel, your rink

is about to break a flask.” I wanted to crawl away and die. He went down the hall and I did not see him again for 12 years.

Atherton told me that he had been sure that my first meeting with Henne would not be good. He was a practicing Rosicrucian and said that negative forces were at work. We spent a freezing evening at Mercaptan Manor for the heat had been cut off for the holidays. We played the symphony for the second and third time and ate a dinner of lettuce and fruit cake washed down with wine. After supper Atherton read and I studied Physical Chemistry and before bed we each had another slice of fruit cake. I was beginning to loathe fruitcake and after the fourth time the Dvorjak symphony becomes unbearable. It was decided that I would come to Ohio State in the Fall and work either with Henne or Boord. We visited Mack the next day and he took off his coat and told me to say something in “Southern” so he would feel at home.

It was to the accompaniment of the now detested Dvorjak symphony while eating the remains of the fruit cake that “Research Chemicals” was conceived. Whaley would spend the summer in California at the Rosicrucian college, AMORC, where scientists were converted to metaphysicians; I would hunt for a suitable location on Columbia where we could put a chemical plant where we would make organic chemicals. One of us would always be in the laboratory. We talked about financing, reaction routes and sales approaches. Whaley was wonderful. The subject turned to philosophy and forces of good and evil and I was less sure.

Back at the University I made a last stab at pulling up my average. I visited Johnson and told him I wanted an A in Strength of Materials. He asked me what I had done to deserve an A. I told him that there had been no tests, that I had attended class faithfully, refrained from obnoxious behavior and studied hard; I added that I was a protege of Copenhaver and the nephew of the famous Tom Revelise. He thought for a few minutes and said “Take the final exam and make a high grade and I will give you an A, or I will excuse you from the exam with a B plus. I went home and studied all night and came to class the next day for the exam with a wheelbarrow of books and found that I was the only person taking the test—the others had all taken B pluses. I took a B plus and wheeled the books back to the library. Johnson was the darling of the senior engineers. He was tough and mean. Later when I was chemist for Santee-Cooper, the South Carolina Public Service Authority, he designed a tailrace for water which had passed through the turbines of the Santee dam, consigned to the Cooper river. Its failure inundated the country for miles around. But by this time I had graduated and we were good friends.

My new friend on the faculty was Stephen Tabor. He was in his sixties, white haired and slightly stooped. He had a ready smile, many anecdotes and a vast knowledge of mineralogy. I blew my brains out with the blow pipe and performed hundreds of tests on the samples which he gave us to

analyze. He would sit opposite me and discuss my uncle Max and my mama, both of whom he had liked and my uncle Tommy whom he considered something of a prodigy. He expected equal intelligence in the son and nephew who accordingly blew and fused and scratched and acid-dissolved and managed to identify most of the unknowns without too many trips to the side shelves where the minerals were on display. His secretary, typing away in the adjoining office, kept a secret that we were in love.

We dated every night. She lived in Steward's hall which was the dining room used by those students who could not afford to eat elsewhere and those who did not care what they ate. The dietician was Ms. C. S. who met me often on the stairs, invited me to her office and to a small library back of the office to discuss books. After two visits J. met me outside or at the foot of the steps before Ms. S. could close in. We double-dated, went to concerts and lectures and on weekends took long wonderful sails. Ragsdale had dropped out of college and become a motion picture projectionist; we visited him in his little office above and back of the last seats in the theatre. His sanctuary was warm and quiet.

Dr. H. Willard Davis joined the Chemistry faculty, fresh from the University of Cincinnati. He would teach me Principles of Chemical Engineering in the last half of my senior year. Dr. Davis was a protege of Lipscomb and Copenhaver and a good friend of Whaley. He was extremely smart. We discussed his plans for updating the department and he and his wife, Mary, and J. and I went sailing. Being a senior had its privileges. Joe Bouknight joined the department. He was only a little older than I and we double dated. My friend Pete wrote that he had been made an ensign and assigned to Torpedo School.

Recruiters came from the Chemical Warfare Service and offered all of us who remained in Chemistry and Chemical Engineering instant commissions. The country was at war. My friend Billy Bernard of YMCA days was killed at Pearl Harbor. My uncle Maurice, with half of the males in Georgetown, S.C., was whisked into the Navy and put on a tanker somewhere in the Pacific, servicing the battleship *North Carolina*. My buddy George Dieter from Sea Scout days was in the Navy. I studied, graded papers and tried not to think of what would happen when I graduated. Lipscomb was very busy at his plant, Continental Chemical Company, which made embalming fluids and pastes and sand blast stencil. He left most of the chores to me. I recommended all the pre-meds for Charleston, trying to think of nice things to say about people I hardly knew. Later, when I needed medical attention or surgery I prudently sought older men who had not received their education in the years immediately following this period.

My mother and I were shopping and met Monsignor Murphy of the St. Peter's Catholic Church. "This is my son, Max," she said, and he replied without a pause, and with humor, "Why, Mrs. Gergel, I hear about him

every week.” (J. was a staunch Catholic.) One evening after Mama and Jules had gone to bed she and I were listening to the Beethoven Eroica when the telephone rang and it was Copie telling me that I had been elected to Phi Beta Kappa. He said that Tabor had made a speech suggesting that my borderline average be waived.

There were few of us left, no graduates, for they were all in the military or in draft-deferred jobs. I was classed 2-S by Selective Service which meant that I could complete my studies but would then be eligible for the draft. The city was a camp town and soldiers and air force men were everywhere. They dated all females—the goodlookers and the ugly—and Columbia had a spree of marriages. Buddy and Hank were at Officer’s training school and when J. was in rehearsal for a play we would get together for music and Madiera. Buddy had eight months left to live. Albert left the movie theatre, which gave no deferment, to become a public health employee—which did. He journeyed from town to town giving lectures accompanied by film to mid-wives and public health nurses. These low country girls, living in an area which (due to the draft) had been denuded of men, were sex starved. Albert was a great success and lost a great deal of weight. He would bring one or two of his students back to Columbia. They were older women, professionally trained and raring for action. I was chaste. J. was studying and had taken a job at one of the local radio stations. Her voice would come through the machine at 4:00 every afternoon soothing the research chemist and suggesting that he buy step-ins or perfume or have his hair done at Belks.

I heard nothing from Whaley for the government had made his project (with Henne) top secret. He had asked me to join the Rosicrucians. I was reluctant but agreed, sent in my initial subscription price and was sent the first lesson called a mandamus. One went through a rigamarole in psyching up for the lessons; if you did not properly prepare, you were told, the entire program was jeopardized. This meant the right time of day and the right phase of the moon. I read and scoffed. The second mandamus arrived and I read it cursorily after removing the many seals. It was no more interesting than the first. A third came in and as I was reading it said: “What time is it?” I made an immediate guess and a check revealed that I was correct to the minute. The next injunction was to tell the next man I would see his age and weight. I astounded a student with this gratuitous information, then guessed the age and weight of the postman who brought me the fourth mandamus, and without looking informed him correctly of the time. I decided that this was not for me, and sent all the mandami back to California and rejected the next when it came in. Atherton was mildly critical. This was a rift which would widen.

I had been treated as a member of the Whaley family. They lived on Colonial Drive and Judge Marcellus Whaley was well known and admired as a member of the bar. Atherton’s mother was an artist. His brother Murion

was my good friend. His other brother, Baynard, was a chemist at Sonoco. Atherton, Baynard and I had dabbled in industrial cleaners and hand soaps using one of the little out-buildings on their property. I had eaten many meals at their table. I had pampas grass in our yard at Capitol Place from their yard and artichokes from their garden. I had been bitten by their dog. The military permitting, Atherton and I would open a chemical company to make research chemicals but I didn't want to be a Rosicrucian.

There was a letter in the mail. "Greetings," it said, "You have been chosen to serve your country." The hot breath of the draft was on me. I took the letter to Dr. Lipscomb. He called the draft board. "Ames," he said, "I don't care who you call up but Gergel is busy here in my labs and Guy (his son) is making war chemicals at U. S. Rubber, so why don't you pass them by for now." He then gave me the great Lipscomb smile. I was never called again until the war was almost over.

I had been an avid Boy Scout and at the university I kept on with Sea Scouting. Our membership was decimated by the draft. Ike Smith went into the army. Dixie Davis followed. Dieter was with the fleet. Billy Farrow and Pete Todd were both in the air force. Willie Auld was in merchant marines. Donald Auld and Dibble were both in the navy. I developed a mild limp and pretended that I was a wounded veteran when I went out at night for civilians were not popular. I started the final semester of my senior year. I hardly remember the subjects. I rarely attended class.

Chapter 6

Dr. Lipscomb's mail came to me for he was too busy making solidified glue and artificial blood over at Continental Chemical Company. I answered all mail, bringing to him only those letters which absolutely needed his personal attention. I would meet him at his home on Sumter Street and we would sit on his front porch and he would rock while I read the letters and replies. I was the unofficial purchasing agent for the company, the writer of all letters of recommendation for those entering medical or graduate school. I could sign, and can to this day, a perfect Guy F. Lipscomb as a duplicate to his signature. He was amused and told me not to sign checks. I gave lectures and graded his papers. I had an assistant, paid by the department, Jeep M., who helped with the grading and the exams. He was the self-appointed proctor, adept at the unmasking of cheaters. It was rumored that he made deals with apprehended females, for Jeep had an active libido.

A letter came from the South Carolina Public Service Authority marked *Confidential*. I opened it and recall from memory that it was addressed "Dear Guy", and signed Bob, for R. M. Cooper, the director. It advised that they had an emergency. Their chemist, Harry Colman, had been drafted and they needed someone to do analytical work. They were prepared to pay \$300 per month, an enormous salary for the time.

Everyone in South Carolina knew of Santee-Cooper. It was a large hydroelectric development in the lower part of the state. The Santee River is on higher ground than the Cooper and for years it had been known that one could divert part of its flow to the Cooper and generate power. In practice two large reservoirs were created at Moultrie and Santee and a dam erected at Pinopolis, which is a tiny town close to Moncks Corner. Large stands of native cypress were destroyed or inundated and a fortune in timber left to rot. Residents sold property under duress to the "Authority" and some were not happy. The Cooper River, normally brackish because of low depth was now almost fresh, wreaking havoc with stands of rice paddy planted for the duck,

and complicating the problem of silting in the port of Charleston, S.C. Only cattle immune to salt water could drink from the considerably more shallow Santee because of saline intrusion from the ocean. The program of which Colman was a part compared salinity at various points of the rivers at various times, so that the "authority" would have a yard stick for indemnifying the local landowners who protested.

The letter explained all this to Dr. Lipscomb and asked that he recommend an intelligent senior to take Harry's place. The job was immediately available. I wrote at once, over Lipscomb's signature, telling them of a prodigy who coincidentally was immediately available, a hard working senior, who was also an engineer; a man of golden temperament, beloved by his peer group, singular for moral integrity, good humor and resourcefulness. I sent it back marked personal and confidential along with a transcript of my academic record which I obtained that very afternoon from the Registrar's office. I affixed a small note saying that because of the war, Gergel was the only man available.

Two days later another letter from Mr. Cooper thanked Dr. Lipscomb and told him they were very pleased with his choice, "Mr. Gergel sounds great." They would be sending their Mr. Toliver Heyward and Mr. Gene Power that very afternoon to interview him. Five minutes after I finished reading the letter the telephone rang and it was Mr. Power, head of the Health and Sanitation Labs in Pinopolis, asking to speak with Dr. Lipscomb. I told him that Dr. Lipscomb was in class and then he asked to speak with Mr. Gergel and we chatted about Chemistry and the war and Dr. Lipscomb, and he said that he and Mr. Heyward would be over in ten minutes. Dr. Lipscomb's class finished and I filled him in omitting the letter writing detail. Fortunately, he was distracted for his company was inundated with orders for sand blast stencil, a solidified glue which pressed against a marble slab and cut like a stencil, permitted sand to etch out last wishes and hopes for a better world. He hardly heard me and just muttered, "Good, Gergel, but tell them you can't work but three days a week."

Mr. Heyward was short, plump and elegant. He had white hair which flowed over his shoulder like a musician's. He wore a blue suit. He was the spokesman. Mr. Power ("Folks just call me Gene") was short, lean and swarthy. He wore a sweater and looked a great deal like Humphrey Bogart. Heyward grabbed my hand, pumped it enthusiastically, and told me of his respect for Dr. Lipscomb, then focused myopic eyes on me and said, "Aren't you a bit young?" I explained to him that I was congenitally young in appearance and that I was 21. I added that Dr. Lipscomb was my Godfather and Dr. Tabor my close friend; both of them were consultants to Santee-Cooper. "Can you start at once?" was the next question—and this posed a problem for I had hoped to start in June and this was February. I told them I could start at once.

I knew the university had a policy of permitting rising seniors to graduate in absentio so that they could enlist. I was enlisting but in a job rather than the military. I added that my highly confidential “war research” which secured deferment would make it necessary that I be in Columbia four days each week and this was agreeable since they felt that three days at Santee-Cooper would suffice, they were delighted that I was deferred, no doubt having poor Harry Colman in mind. They sat with me in Lipscomb’s office and asked lots of questions concerning my family, my hobbies and my marital status (they told me that Moncks Corner was a little primitive and had rigid views on the maintenance of the chastity of its females.) Having been briefed by friends from the area I had already decided to be a monk during my employment. I told them of my ambitions, of my good grades, of my relationship to Silas S. Seideman of Charleston, S.C. (he was a noted politician) and they were impressed.

Lipscomb walked in unexpectedly and Mr. Heyward rushed over and shook hands and told him how much they appreciated his prompt reply to the letter; that they were sure Mr. Cooper would be delighted with “young Gergel.” Lipscomb absent-mindedly nodded his head and muttered some apologies, put on his hat and left. My tachycardia gradually subsided. We closed the meeting with my assurances that I wanted more than anything in the world to work for Santee-Cooper, thought their salinity survey fascinating and would be happy to join the team. Mr. Heyward asked that he be remembered to “Big Si” and they left, telling me that I would hear from Mr. Cooper. I could have been crossed-eyed, deaf and a stutterer—but ability to titrate, relationship to Si Seideman and my 2-S draft status overshadowed all.

After a telephone call from a secretary I took the train to Charleston and met Mr. R. M. Cooper, the head of Santee-Cooper, in his office. In a cultured voice he told me of his close friendship with “Big Si” and his affection for my step-father Jules and my mother and Dr. Lipscomb. He added that he knew my uncles Max and Tommy. Santee was a big happy family and he knew I would work hard. He suggested that they would pay the full salary for just three days per week if I could complete the assignments in that time. I had an acceptance speech memorized and ready but he would not permit this—as if fore-warned he gestured the bowing, unctuous future chemist to the door, and managed to make his next appointment. His final words were not, “You are a fine young man, Gergel, and we are proud to have you.” He said simply, “Remember me to Big Si.”

Outside the Santee office was a Fleetwood Cadillac driven by Mike Barnes. Mike had been a “protector” in the old whiskey days, and had lost an arm. He was a close friend of my uncle Si who had sent him to pick me up. He told me that Santee was a nice place to work, good hunting and fishing and no one to “mess around you.” He told me that he had good friends working for Santee and that our Santee captain (of a boat which I presumed

the authority operated on the Santee River) was his old friend Captain Pearce who had been a former carrier of illicit spirits from Cuba to South Carolina, on which missions Mike had served as guard. It was all very romantic. We drove over to Si's who picked up the telephone and called Mr. Cooper and said "Thanks Bob." I gathered once more that my charm and intelligence had been secondary reasons for appointment.

I was now the Chief Chemist for Santee-Cooper (actually I was the only chemist), reporting to Gene Power who reported to Tolivar Heyward, who reported to Mr. Cooper who reported to the Governor of the state of South Carolina. I was quite low, echelon-wise. My new home was Moncks Corner, a wild and desolate city about thirty miles from Charleston, known for whiskey making and other lawlessness. Before joining them there was the small matter of my academic career, which was incomplete. I told my professors that I was going into the service and they did not realize that this was the Santee-Cooper service. I had the very real problem of forced absence from my sweetheart (I promised faithfulness and waited full of hope growing to anxiety when no counter promise was made). There was the matter of the draft board which assumed that I was still at the University. I enrolled for Graduate school signing up in advance for Petrography and Advanced Mineralogy. Dr. Lipscomb promised to accumulate my work for the four final days of the week. As far as he was concerned Saturday and Sunday were normal working days for me. I wrote Atherton that I would make chemicals at Santee.

Then I went to see Bill West. He was in my graduating class, taking a BS in Chemistry and already hired by West Virginia Pulp and Paper Co. in Charleston. Bill was a former preacher, a little older than most of us, and already a confirmed, steady inbibber of alcohol. He lived in Moncks Corner where his father was also a preacher. He telephoned the father and it was arranged that I would stay with the Wests as boarder. The family lived right outside Moncks Corner, fortunately on the Pinopolis side. Bill told me of the rather sinister nature of the little city, of feuds which existed and of what happened to those who took sides; of the sheriff who had already killed a number of people including several lawyers who had defended Northern clients. I promised Bill I would stay home at nights and study. Above all, he warned, do not mess with the local girls. I did not need the warning.

There are a number of ways to get to Moncks Corner, which is the largest city in Berkeley County. Thirty years ago you drove the "Old State Road," or you went by bus which was a bit faster than the train to Summerville and on to Moncks Corner, or went by bicycle or hitchhiking. In the course of 16 months I would use all of these methods. My first trip was by train. It was very slow. We got to Branchville and stopped. No one knew why. The train was crowded and for April the weather was quite warm. There was no air conditioning. I am used to odors through years of working with mercaptans and nitriles but the odor of perspiration and urine was obnoxious. It dominated

the air and the conversation: "Sure does stink in here" came from the mouth of one of the unwashed. We simmered, I in a frenzy knowing that Gene Power was waiting in Summerville to take me on to Pinopolis. I left the train and discussed the problem with a switchman. "Waiting for another engine," he said, and spat a huge gob of saliva and tobacco on a bug crawling six feet away. He refused to elaborate. I tried to use the telephone; it did not work. I gulped down a package of peanuts fighting tachycardia and gastritis. A new engine was brought in and coupled to the train. Still we waited. Finally the engineer emerged from a neighboring shack, ascended to the cab and tooted the whistle. We began to move. My friend the switchman stood by the window. "He's gotta girlfriend," he said, smiling. We picked up speed.

An hour later we were in Summerville. Gene Power was waiting in an old truck with the faded letters "Wahpoola" on the side. He was asleep. One eye opened when I banged at the door, then the other. He brushed away my apologies and a fly simultaneously. "Happens all the time." We drove in silence through woods and swamp, past logging camps and cotton fields. We reached the outskirts of Moncks Corner. There was no one on the streets. The shops were empty. On the other side of the city we made a right turn on to a dirt road. A cow blocked the road. We honked. The cow leisurely ambled off the road. Chickens appeared and as quickly took to the air as our old truck plowed ahead. We drove into the yard of a large frame house, back of which was a barn. "Mother, he's here" was the shout from a white haired, blue-eyed, one-legged man stomping up on crutches. "Thanks, Gene, you must be Max, son, I'm Preacher West and we are proud to have you as a guest in our home." I followed him into the house while Gene waited outside. I met Mrs. West and Lucl, their daughter. My suitcase was taken up to a large airy room. "The boys will be back by supper and don't be late," Preacher said as we got back into the truck and headed toward Pinopolis.

We arrived at the Public Service Authority building in the early afternoon. It was on a huge reservoir. The scenery was gorgeous, a shimmering blue lake with the dam in the distance, long leaf pines growing from the white sand surrounding the clean red brick buildings, a little rivulet separating the main office from my laboratory with a yellow bridge completing the Van Gogh-like scene. There was a faint pungent odor from the Kraft mill in Charleston. A kingfisher, waiting on the utility pole, made his dive into the water, emerged with his victim and then flew off into the woods back of the laboratory. Cicadas called to their girl friends.

Gene introduced me to Mrs. Beck. She was Mr. Heyward's secretary, a small busy woman, her hair done up in a bun, horn rimmed glasses, a tummy, the impatient look of a school teacher dealing with adolescents. "So glad to see you, Mr. Gergel, you are a little late you know—and we try to have everyone checked in on schedule; we have been expecting you for two hours." My attention was diverted to Gene Power standing patiently back of her, his

eyes rolled up in their sockets—a truly horrible phenomenon. “There is no one here right now, but wait, I’ll see if I can catch Dr. Blizzard.” She disappeared into a hallway and Gene motioned that we get out fast. As we were leaving the office he muttered “She runs things.” Mrs. Beck reappeared, shriek-like, half dragging a small preoccupied victim. “Dr. Blizzard, this is our new chemist, Mr. Gergel,” she said, adding “He’s late.” Dr. Blizzard nodded, gave me an apologetic smile and tried to escape. “Are you Jane’s father?” I asked, and he smiled and said “Do you know Jane?” Jane was Virginia Hodge’s friend, a devoted attender of evening sessions at the Carnegie music set. He shook hands warmly, told me we’d see each other later and went back into the office. Mrs. Beck promised to bring Mr. Hingher, the Sanitary Engineer, when he came back from a field trip.

“That’s our group,” said Gene. “You, me, old Toliver, Hingher, Blizzard and Shrimp Hasell. There’s also Mrs. Carpenter who helps Mrs. Beck and will do your secretarial work, and George Scarborough who works for Doc and the boys over at the repair shop. He explained that Blizzard was on loan from Coker College and his job was to report the effect of changes of salinity on Santee and Cooper River fauna and flora. Hingher was the Safety Engineer and was in charge of the work forces and their health. Mr. Hasell (“you know Shrimp?”) was the overall engineer for the Authority. Gene was my boss and was also in charge of catching and classifying mosquitos.

We went into the laboratory. It was dark for late afternoon and left us little time. There were benches, a desk, burettes, hundreds of bottles in neat crates all with etched fronts and scribbled codes. “It’s too late to go over all this” he said, and like the rabbit in Alice in Wonderland he disappeared. Mrs. Beck banged at the door. She had in tow a slim, deeply tanned man dressed in khaki. He was rolling a cigarette. “Go away and leave us alone, Mildred,” he said, and walked over and gave me his hand. “I’m P. G. Hasell and my friends call me Shrimp and I don’t give a damn what other people call me,” this speech coupled with a grin. He slapped me on the back and said “We’re neighbors, I live on South Ravenel in Columbia and I checked and you live on Capitol Place and its not more than six blocks from my home. Next time you’ll drive down with me.” He rolled a cigarette and handed it to me (I did not tell him I was a non-smoker), lit it and said, “We’re a great bunch. You’ll like all of them. Mildred is a bit much and Toliver gets a burr up his butt, but mostly we’re tip top. Come on and I’ll introduce you to Hingher.”

Enraptured, I followed Shrimp over the bridge, but had to return at his suggestion to cut off the lights and lock the door (“or the old girl will tell Toliver”). Sure enough she was watching out a window and said, “You are so thoughtful, Mr. Gergel, Harry never shut that door.” Shrimp gave her a great thwack on the bottom as we entered the building and she disappeared

red faced. "Sleep with her, Gergel, and we'll all pitch in and give you part of our pay."

Waiting for us, also in khaki, was a tall, handsome husky man smoking a cigar, watching us, half smiling. "This is Frank Hingher," Shrimp said. "He is a genuine Kraut but we tolerate him." They play-boxed for a few minutes, shook hands and Frank said "Welcome Max, we all miss Harry but you look as if you'll get along." I was overcome with happiness and the cigarette and a cigar. Gene was stretched out in "Wahpoola" sound asleep. One eye opened, then the other and he grinned. "Met the boys?" I had not only met them, I was prepared to march behind them anywhere they wanted to go. We drove back to the outskirts of Moncks Corner and he left me off at the little road. "Be here at 8:00 tomorrow," he said, "Someone will pick you up."

The Wests were waiting for me in the dining room. Preacher was wearing a suit and Mrs. West and Imel were seated at the table with two young men I knew would be Norman and Jay West, Bill's brothers. There was a third man the same age at the table and he was introduced as Claymon Grimes. Preacher made a prayer and told the Lord how happy they were to have such fine children and such a nice guest in Mr. Grimes who was studying like his son to be a lawyer, and Mr. Gergel who was one of God's chosen people. We feasted on collards, black eyed peas, rice, cornbread and fresh milk. There was a large platter of pork chops and an isolated turkey drumstick. "Are you a practicing Hebrew?" Preacher asked, but I was already busy with the pork chops. "Mother, Mr. Gergel does not observe the dietary laws." The boys were friendly but preoccupied; they left the table and I could hear a car crank up and I spent the next hour with Preacher discussing Josephus and the destruction of the Second Temple. Preacher was a student of history.

I went to my room. From the window one could see forests and part of Moncks Corner. I searched in vain for the Pinopolis lake; it was hidden by the pines. The sky was very bright with a majestic Orion and Milky Way. This was an era before pollution. In the room were at least a dozen mosquitos. I spent the night trying to kill them. A defect in the screening permitted reinforcements to arrive; an examination of a corpse confirmed that it was a *Quadrimalatus*, almost always malaria-carrying. The Wests were all skinny. Visions of malaria competed with the stalking of the foe in my exhausted brain. At midnight the boys returned and after about an hour, during which I made a great deal of noise trying to dispatch the enemy, they came in and sat on the bed. They had a half gallon jug filled with a clear, colorless liquid. They passed it to me and I drank several mouthfuls of corn whiskey. I am not a drinker; after the last gulp I no longer cared about the mosquitos, and they triumphed and ate in peace.

I was up at dawn. A dozen roosters had announced the coming of

morning starting at 4:00 AM, I observed sleepily. I dressed and strolled in the yard. We were in a clearing with three other houses. Around us stretched dense forest. Idly gazing was the cow, which had blocked the road, and her calf. Mrs. West appeared holding a bucket; she shooed away the calf, set a stool to the starboard side of the cow and grasped the teats with expert hands. Then she beckoned to the fascinated bystander to try and he approached the cow cautiously, sat on the stool and yanked to no avail. After five minutes instruction and much patience on the part of Mrs. West and the cow he was able to produce an occasional spurt, but never the streams of frothy white which her old fingers developed. Carrying the brimming bucket into the kitchen, she reappeared to tell me that breakfast was ready. This consisted of homemade bread, platters of eggs and bacon (now that I was established as a pork eater) and the milk which I had helped extract.

I walked to the main road. Mrs. West had made up a package of sandwiches with a fresh cucumber and tomato. I waited by the side and in a few minutes a Santee truck pulled over and a red faced, freckled man about my age called, "Hop in, I'm Carl Wilson and I work for the Authority." Carl worked in the auto shop next to my laboratory and told me that they serviced all the company cars. "If you don't tell anyone I'll give you Wahpoola since Power has gotten a newer truck and told me he won't need it anymore." I was in love with Santee Cooper. It was Shangri-La.

Gene was waiting for me and we went immediately to the lab. There was a note in front of the burettes: "Max, I have never met you and may not ever see you but good luck. The sodium dichromate solution is ok but restandardize your silver nitrate. You'll find three weeks samples from the Santee River and one tidal cycle from the Cooper. Gene will show you how to predict maximum salinity for various depths using the cycle of tides out of Charleston. Meet Bill Pearce at McClellanville and don't pick up riders. There is a case of beer back of the wash stand. Don't fool with Moncks Corner women. I'm off to the war. Harry." I checked back of the wash stand but there was no beer. Gene Power was concentrating his attention on the ceiling. We returned to the main office and he told me all about Santee-Cooper.

The "Salinity Survey" had been started three years ago by Harry and a friend. They had done similar work in the Savannah River, and, hearing that Santee-Cooper had a problem with saline intrusion, had organized the entire program, hired Captain Bill Pearce to run a boat up and down the rivers, showed him how and when to collect samples and set up a laboratory to test them.

The method used for testing the samples was Volhardt analysis. A measured amount of water was drawn off into a beaker, a trace of sodium dichromate was added and then standardized silver nitrate from a burette dropwise until a faint orange color developed. This was the "end point". A

table developed by Harry equated cc of silver nitrate solution to parts per thousand of sodium chloride in the sample. The laboratory permitted a close check of the salinity of the river at maxima during each day of the year for the samples were taken at high tide, or just after this, allowing time for the sea water to penetrate and dilute the water coming down the river. My analysis took about five minutes per sample. I had seventy crates, each holding twelve bottles. A calculation showed that at my present speed, working ten hours per day, three days per week, with new batches of samples coming in weekly—I would never catch up.

In the beginning Harry and his associate had etched the sides of the milk bottles so that information could be written on with pencil. The information included the date, the time of day, the state of the tide and the depth at which the sample was taken. Extra space on the bottle often was the release area for the emotions of our semi-literate river workers. Comments included: "This is a helluva way for a white man to make a living." (In 1943 there was prejudice in the South); "Santee is a s--t company" (our workers were not heavily paid); "I, Corliss Jenkins, is the best fisherman in McClellanville" (the main occupations in McClellanville were fishing and making and consuming whiskey); "Boaz Johnson is et up with clap" (a scribbled addition, "I cot it from your sister," indicated that the two workers were on amiable terms). Reading these notes consumed a part of my five minutes! Either I had to develop more speed, or work more than three days per week, or work more than ten hours per day.

I walked over to the office and discussed my problem with the head of Mosquito Control. He grinned and said, "Max, your letter said you were a genius, how about geniusing for us." I asked for Wahpoola which was ok'd immediately, titrated a hundred bottles, skipped lunch and stayed with the Wests only long enough to gulp down supper. I was back at the lab before dark and titrated another 50 samples and entered the days results on specially prepared charts to be graphed when I caught up. Back at Preacher's I read in the Bible (which had been thoughtfully placed next to my bed) what Saul did to David and vice versa. Immune to mosquitoes, I slept the night. At breakfast Preacher asked me about my drinking habits and I told him that I was a non-drinker. He told me that Norman and Jay didn't drink either (I could have argued the point) but that his son Bill caused him much grief since he would occasionally take a nip. He, Preacher, had never touched the stuff, and had been told that Hebrews didn't touch it either but that since I was a "pork eating Hebrew" he wasn't sure, and did not wish me to influence his other two boys. I hurried to work.

Wahpoola was old and cranky. She was hard to start, choked down and drove erratically. I was thumbed to a halt by a small, gnarled man who shook hands and introduced himself as George Scarborough. He was Dr. Blizzard's "riverman" and had acted as Harry's boatman on trips to the Santee and

Cooper rivers. He asked hopefully when I would want to make a trip. He would take me. He commented on my problems with Wahpoola, we changed seats, he drove and Wahpoola's speed doubled and she drove without choking. I have always had trouble with cars and boats and horses. Scarborough drove and drank. He produced a bottle of straight whiskey which he downed after giving me a small sip. It was at least a pint. He told me that he was the messenger who picked up my samples from Captain Bill in McClellanville. From the grin and the inevitable "Harry liked to make salinity surveys", I learned another detail of my predecessor. I was met at the door of the Health and Sanitation Building by Mrs. Beck. She took me in her office to warn me not to "fool with the local girls." She told me that I was young and foolish and that people in the area were hostile to those who tampered with their women. I was rescued by Frank Hingher who walked in as this interesting conversation progressed to comment "Gertrude, Max likes older women, so you've got a chance." He asked if I would like to take a trip along the dikes. I wanted to get on with the titrations but this invitation was irresistible.

It was a cool clear morning with a faint odor from the Kraft Mill. We got into his truck, a pickup marked "Property of the Health and Sanitation Division, Mr. Frank Hingher, Safety Engineer". As he drove he told me about the history of Santee-Cooper. Much of it I already knew. That the difference in elevation of the two rivers permitted one to be diverted to the other; of the formation of the reservoirs, of the development of the diversion canal by my old professor, Reuben Johnson, and its failure to act right. He told me that Santee-Cooper had not always made people happy with the manner in which it purchased land, and that if I should ever be driving a company vehicle and someone threw a bottle, or put up a road block and assaulted me, or screamed insults, not to take this as a personal matter for they were simply displeased with my employers.

He told me about his job, which consisted of supervision of safety including the large earth moving devices employed by engineering firms sub-contracting to the Authority. He showed me one of the behemoths which he called a Monigan and advised that the very day before a man had been sucked into the chain mechanism and shredded in the gears. He tried to find me a souvenir (over my protests) but the creature had been hosed down and stood belching its fury and looking as if it would like to make Mr. Hingher its next victim. We discussed his personal life. He and his wife were from Germany and lived in Chicago. His wife had been an Olympics star and had won medals; according to Hingher, Hitler was not a really bad man, but he had strong ideas on Jews and this was probably, at least in part, the fault of the Jews. Actually he was a victim of bad press . . . on and on, obviously Frank had not read my vitae and did not realize that I was one of those who had inconvenienced der lehrer.

At this point, when I was preparing for a debate, we were riding along

one of the dikes which keep the Moultrie Reservoir from overflowing and washing Moncks Corner and the South Carolina Public Service Authority to sea. Our path was blocked by an earth moving monster whose cockpit was occupied by an aged colored man, the victim of hard hearing or morpheus. Mr. Hingher honked and honked and then got out of our truck and shouted for the man to move his machine. The driver proved asleep and neither Hingher's voice nor the prolonged honking of the horn produced a response. Hingher cursed and the driver awoke and looked at him without comprehension. The earth mover was marked "Robert E. Lee Construction Co." The old man called softly "Mr. Lee, Mr. Lee" and from the monigan, for all the world like a Djinn, another occupant materialized. This was a Viking, about 7 foot tall and proportionately heavy, who slowly, relentlessly advanced on our truck and the dazed Mr. Hingher. "Buddy," he said, "you have insulted me and my driver, Mr. Washington" (the complete non-sequitur Washington and Lee danced through my brain), and you will apologize or I will beat your brains in." The tarzan was carrying what we used to call a monkey wrench and he seemed bent on carrying out his threat, at least Mr. Hingher took no chances and promptly and profusely apologized and in silence we drove down the side of the dike, almost losing our truck to the waters, and up the dike once more, this time by-passing the monigan. I waved to Washington and Lee and they waved back and Mr. Hingher stopped the truck and went back to shake hands with the two of them (what would Hitler have said I asked myself) and in excellent humor he took me for a tour not only around the vast Santee enclave, but over to the old Guidine Plantation house on the Pinopolis Point. It was a lovely afternoon. We drove to Mepkin Plantation and observed the Trappist Monks on the Luce estate and even skirted Middlebooks Plantation with its lovely magnolias and Spanish moss. Frank was great company. I confided my monotheistic persuasion and he told me that he had always liked members of my faith and had been developing doubts as to the moral worth of the Third Reich.

Back at the Wests. Chaos. An empty fruit jar which had contained whiskey had been found under my bed. Preacher West was bitter, Mrs. West was sally quiet. The three young men stared at their plates. I told them that I had picked it up at Santee planning to use it in lieu of a bed pan. That I suffered from prostrate trouble and sometimes had to go in a hurry, did not want to disturb the others etc., etc. "He don't even know what it smells like, Preacher," was added by Mrs. West, referring, I am sure, to the whiskey and my professed naivete. The thunder clouds disappeared, Preacher lifted his voice in a Hosanna and Norman West gave me a look of friendly admiration.

After titrating that evening until my eyes would not focus and all the next morning I went over to see the Mosquito Inspector. He was interviewing his crew and inspecting the night's catch. The mosquito catchers were three skinny locals dressed in faded blue uniforms emblazoned with South Carolina

Public Service Authority-Mosquito Control Div. on their backs. They looked as if the mosquitoes were winning. Every night they would take their stations at various homes, outhouses, barns and garages and use their arms and legs as bait. They were very quiet, and only occasionally one would scratch a neck or an arm or a knee. The leader was wearing a white apron and had attached to one eye the device used by pawn brokers to defraud customers. He was examining the victims. Rapidly he checked the minute corpses and wrote in a ledger whether it was "Culex" or "Anopheles Quadrimaculatus" or "Aedes Aegypti" and x'd the statistics. The quiet, heavily bitten workers stood by until he was finished, then returned to their "Mosquito Division" trucks and drove off for the next nights work. Power was affably conversational. He discussed the program.

The Santee, normally a fresh river so deep and wide that in days gone by one could drink fresh water from its flow miles out at sea, was now heavily subject to saline intrusion, the backing up of salt water due to the diversion of water to the Cooper. The amount of backup varied with the height of the tide ("high", "low" and "slack"), and the depth at which the sample was taken. The Coastal and Geodetic Survey printed a manual giving the tides at Charleston and we had a conversion factor to equate this to the mouth of the Santee. The tables showed the times of day and night at which maximum tide occurs and here, too, we had a time conversion factor. The values varied from day to day, being strongly influenced by the moon. The salt water coming up the river showed a definite profile with the maxima close to the bottom. Our crew of workers, Pearce, Boaz, Corliss, and the rest, were stationed in the middle of the river ready to capture samples at fixed depths and at a given time. It was my duty to tell them when to take the sample. Led by Pearce, who lived in McClellanville and piloted the "nurse ship," the men were towed to their positions and left there with their sample bottles, the sampler, called a "Go-devil", the sun and the mosquitoes. The Go-devil was an invention of Harry and consisted of a bottle holder with a special cap which opened at a preset pressure proportional to the depth. It was "chunked in" and brought back into the boat (the top snapped shut as the bottle was lifted) by a line attached to the neck. The bottle with its small gulp of Santee water was stored in its crate for pickup by George Scarborough and transfer to the chemist. Considering the intelligence of our workers we had surprisingly (as yet) had no fatalities. The role I would play was simple. Anyone could do it in an eight day week provided he did not eat and sleep. The enormous accumulation of samples indicated that Harry ate and slept. Every month I would make out the tidal cycles for each days activities for Captain Bill. Since Dr. Blizzard needed Scarborough I would travel twice each month to McClellanville to pick up the samples and deliver empties. Then, theoretically, I would take George with me to the Cooper and collect samples as far up the river as Back Creek, confirming that the water was fresh. Back at the laboratory I analyzed the

samples for salt content and plotted the salinity as a series of dots on a chart, each showing a date and each representing the maximum salt of the three samples taken by the rivermen. We could tell just how salty the river was at maximum for each day. Then if a farmer complained that his cows had sickened from drinking the water of the Santee we could confirm or deny for the period in question whether it was our salty water or some other factor; from the graphs we could tell if any of Pearce's men had "fudged" their results, for the questionable values would be outside the continuity of the curve. It was a fascinating study and in the quiet of the laboratory examining the samples gathered a world away, I observed the scrawls of the barely literate rivermen compared to the neat handwriting of Captain Bill, which meant that Corliss or Mose, or Slim or Boaz had missed that day; I could picture a vexed Captain Bill doing the work.

Not only was it expected that I would relieve Scarborough of his trips to McClellanville, but from time to time I must make a trip to the Cooper River which in the old days was low lying and had salt water backed up as far as Beacon 57 and even Red Bank. Now, thanks to the enormous amount of water which went through the turbines at the power station, the Cooper was not only fresh but carried lots of sediment which might silt up Charleston Harbor and the Navy Yard. The land bordering the Santee was cultivated; the marsh along the Cooper was primarily owned by rich people from "up North" who cultivated wild rice to attract the ducks. We did not expect much trouble from the Cooper owners, for the rice preferred fresh to brackish water.

When one diverts water so that an area which has normally been exposed to fresh water now experiences saline intrusion there is a profound change in ecology. This was explained to me by Dr. Blizzard. He had made a collection of various grasses gathered on the banks and showed that the growth and decay of species confirmed our salt charts.

I had completed my first week and took the train back to Columbia. There was a deluge of paper, tests for correcting, letters to be answered; since Copie was busy I had to make chemicals, pack and ship for our little USC Chemical Research Foundation. The experience would be valuable when we started Columbia Organics. Oh, how sad it was to find that my sweetheart had survived the week so well. No one seemed to have missed me: I, on the other hand, missed Santee-Cooper.

The following Monday at dawn the horn sounded and I met, by pre-arrangement, Shrimp Hasell. Shrimp was originally from Charleston and he had the city's rich brogue. A happy man, he sang all the way to Holly Hill; between songs he filled me in with company gossip. We drove the Old State Road, Highway 21, past Holly Hill, through Remini on to Santee and the diversion canal. Coming into Pinopolis, we saw Mrs. Beck's car moving slowly in the direction of the Authority. Shrimp eased his car behind hers and gently accelerated. You could see her looking down at her feet as the car

gathered speed. Soon we were racing at 60 MPH, our cars tightly locked. She waved her hands, tried to brake and then noticed Shrimp in the rear view mirror. At the main building she got out to fuss, but he bowed low and said, "Mildred, I love you", and she hurried to her office.

It was a wonderful period. I would go to work Monday morning, spend the morning titrating and in the late afternoon have time to myself. It took only two weeks to catch up on the accumulation of samples, and I realized that titrations, like anything else can become routine, and in a minute could do one which had required five minutes when I started. I fished, dug for treasure at the old Guidine Plantation and went hunting with Norman and Jay. We visited whiskey stills and met the manufacturers (all of whom knew my friends), took Gippie and the other dog for walks on the banks of the reservoir or explored California Creek. I visited Mrs. Carpenter, my part time secretary, who lived with her husband at the Nicholas Roosevelt Plantation. They employed Jeremiah as a handy man and he showed us how he could pierce a penny with a .22 rifle at 50 feet.

In the evenings we would gather with other young fellows and their dates and have parties at the diversion canal. One of them, Wayne Ballentine, had a magnificent voice. We boiled peanuts, roasted corn, talked until past midnight and had wonderful fun. Other evenings I sat up with Preacher discussing the Bible, the patriarchs and the decline of morality. Sometimes I would drive back to the laboratory and do a half week's titrations in an evening.

George and I drove to McClellanville. We passed through Hell Hole Swamp, Four Hole Swamp, Jamestown and Honey Hill. Much of the road was bad, most of it was wet and at places there was not enough room for two cars to pass. We arrived after about two hours with our cargo of empty bottles and I met Captain Bill. He was exactly what I had expected, big, red faced, friendly and barefooted. He and his wife had a heavily shaded river house with a front yard full of junk and hound dogs. They had a gallon jug of "Hell Hole Heather" which passed from mouth to mouth. "When are you going to make a tidal survey?" Bill asked, and explained that these surveys, much loved by my predecessor, had the crew working all night taking samples to confirm that our predictions of maximum salinity were up to date. I gathered that these were festive occasions enjoyed by all, liberally supplied with food by the Authority and with drink by Captain Bill. I promised to make a survey the next month and then postponed it several times and never made one.

Also, with George I made a survey of the Cooper River. First we drove to Red Bank, used as a hush-hush storage point for Naval ammunition. We put in our little boat right next to a destroyer taking on torpedos. George was an expert with the outboard motor, with the loading of the boat and finding his way up the river. We rode the boisterous waters up past Red Bank to Back Creek, taking samples using the "Go-devil", visiting abandoned Plantation houses, picking blackberries from vines hanging out over the water and

drinking from the small flask which George carried to prevent malaria. It was a wonderful, sunny afternoon and George was great company. We promised ourselves we would go again and again—but didn't. The next day in the laboratory I verified that the Cooper River was fresh for its entire length.

The days passed in a pleasant blur, three days at Santee followed by four days in Columbia. Sometimes I would drive in with Shrimp, sometimes I would take the train and be met in Summerville by Gene. Every two weeks I would take Wahpoola to McClellanville. From the cold looks of the natives one could tell that Santee had "requisitioned" property. It was forbidden to pick up riders. There had been incidents. These always happen to the other fellow. One cold rainy day right outside Honey Hill, down in the deep swamp, fighting Wahpoola through the muck with tires spinning and my load of full bottles clanking, the road was blocked by four men. They had rifles and signaled me to stop. I did and they got in. One of them put the business end of the rifle to my head and told me to take them to Bonneau. Bonneau had a bad reputation for lawlessness and was off limits to Santee employees. We drove to Bonneau. On the outskirts they told me to stop the car. There was a discussion as to whether or not I should be killed. The pros and cons were argued while I listened in consternation with the rifle still at my head. The leader came around to my side of the car and said "Now fellah, we ain't agoin to kill you but we might of. Next time you see men in that road just rev up and runnum down cause next time you mayn't be so lucky." They melted into the woods. Somehow I drove to Moncks Corner. The newspaper the next day described the jail break and announced that the sheriff and his men had shot one man outside Bonneau.

My friends took me to meet a professional killer. He was hired by Santee Cooper to protect Camp No. 1, which I was always being asked to visit, but never got around to visiting. The killer was "Rooster" Brown. At Jay's request he did various things with a rifle and I had pictures taken of me disarming this indulgent desperado, he smiling and me looking quite scared. There was always trouble. One of our employees, a chap named N., actually dated one of the C. girls. Their daddy, Sab C. was a noted manufacturer of spirits and a client of my uncle Si in Charleston. The C's did not like N's family and several of the girl's brothers, with the aid of a felled tree, planned to "bushwack" him on his trip home after dating their sister. He had with him a double-barreled shotgun, a truly formidable weapon, and with this he blew off one of their legs.

Everyone at the Authority knew that the Guidines had buried their silver when Sherman's army invaded the lower part of the state. All had taken turns in digging including Shrimp and Frank Hingher. For diversion Frank and I "salted" the ground in a pit we were digging east of the old house, using coins from Schindler's Antique Store in Charleston. We put in Indianhead pennies, two cent and three cent pieces and some old half-dimes. As we expected one

of Blizzard's men from the "flotsam and jetsam" squad, which he supervised, saw us and reported us to the boss. For the next week there was furious activity and several acres of Guidine property (now Santee property) were ravished by Blizzard and his crew and they unearthed a small chest of silver coins and two dueling pieces which Blizzard commandeered to take to the Coker museum, and for the next month Frank and I dug up the rest of the property but didn't find anything.

One evening at the lab I was watching a total lunar eclipse, noting its effect on the wind and water when I had a visit from Slade. Slade was a legendary bad man who had no love for Santee and what it had done for ecology and his hunting and fishing area. We sat and talked and he rolled cigarettes for the two of us and gave me a swig from his bottle ("make it myself") and behaved in a thoroughly friendly fashion. As he was leaving I promised not to tell anyone about the visit and he told me that he now worked for the Authority and had been asked by Mr. Power to keep a friendly eye on me since I worked at night. "If you can't lick-um, jine-um."

The Summer passed and it became very chilly on the point. There was little heat in the laboratory so I worked very hard for two days each week and slipped back to Columbia a day early. Later I made it official and for a slight cut in pay was permitted to spend either the first two or the last two days each week on my job. The company was wonderful and everyone was friendly. They told me I could have the job as long as I had draft deferment, but now the war was in full swing and being at Santee did not contribute as a war effort. Dr. Lipscomb signed me up for the new Flight Preparatory School at the University which would open in three weeks. I said my goodbyes, finished the titrations and the graphs and they closed the project. I did not come back to Moncks Corner for several years; when I did the lab was unchanged; there were cases of old bottles; an orb weaver had done his thing and the strands caught the light.

Chapter 7

I left Santee-Cooper in February of 1943. The flotsam and jetsom crew was working the shores of the Pinopolis reservoir. Mr. Hasell was off on a trip, Gene Power was on vacation, Hingher had left the project. Mr. Heyward told me that they had enjoyed having me and that I should come back and see them; they would close down the project since they had enough information to "stand up in court." Mrs. Beck took my goodbyes and Carl Wilson from the repair shop came over to the labs and shook hands. The Wests said they would miss me and Preacher said to study hard and avoid strong drink. I was 22 years old, matured by a year away from home as the youngest member of a working team. I was all excited by the new pre-Flight school and the chance to work full time making chemicals. An immediate catalyst to departure was the imminence of my being drafted. Mr. Heyward had assured me that Santee could not help. Dr. Blizzard (whose son was in the air force) told me of the glories of the military. All told me of the benefits of free travel and promised to write after I joined up. Mrs. Beck promised to put up a little plaque with my name and a star if I were killed. On the river, Captain Bill was down to two men and had handed in his resignation. I did too.

The University of South Carolina was one of twelve colleges chosen to train young men for the Naval Air Force. This was a "crash" program to turn out pilots in a hurry. Young men all over the country were taking examinations to qualify for the newly formed V-5 which gave flight training and exemption from the infantry. Our university had no one on its faculty who was a flier. The professors assigned to the V-5 program came from Geography, Languages, Physics, Biology and Political Science. My old professor of German, Dr. Vernon Cook, was assigned to teach Navigation! With few exceptions these were culls without background in the field they were assigned to teach. The University brought in some people from outside and the Navy assigned a lieutenant senior grade, a lieutenant junior grade and two ensigns. These were

all non-fliers. We were the blind leading the halt. In a faculty of the aging, Joe Bouknight, Frank Sloan and I were the young men; some of the cadets we would teach were older! There was no airplane, just class rooms. The men would learn Theory of Flight, Communications, Navigation, Aircraft Engines and Identification. They would learn to sleep with their eyes open, to run the obstacle course without breaking their necks and to salute. We were the “grammar school” of the flying program. From here they would go to WTS where they would get their first experience actually flying an airplane, then to advanced training where they would fly more complicated aircraft and relearn much of what we had taught them. Those who survived would be assigned to the fleet as ensigns and would fly fighters such as the “F-5-F” and the “F-4-U”, dive bombers such as the “SBD”, amphibians such as the “PBY” and the transport plans called “flying boxcars”. We assembled in Davis College where I had studied English and Languages and were addressed by Lieutenant Rappenecker.

Caspar Rappenecker was handsomely dressed in flight uniform with the black tie worn out, not tucked the way the Army did it. He had a fierce face which showed proper dismay at the group of “civilians” assembled as his teaching corps. Actually he was himself a teacher, had never been at sea, had a small pot belly and myopia. He knew no more of airplanes than the rest of us: zero. He was flanked by his two ensigns, Ellis and Wolfshmidt, who would soon be nicknamed by the cadets, Green Hornet and Wolf---t. Scowling in the background was the Physical Education instructor, Lieutenant Stanszyk, a former professional football player, convinced that all students were soft and his mission was to make them hard. This massive man, handsome in forestry green, was a sadist who would run the cadets unmercifully over his own version of Napoleon’s Retreat from Russia, using barricades instead of snow, producing broken arms and enemies.

There were 35 of us and we were a sorry lot. The average age was fifty and above. It did not take brilliance to see that the University had transferred to Pre-Flight those whom it could best spare. Aside from our nucleus of draft-dodgers, they were for the most part older men, poorly fitted to teach flying of which they knew nothing. There were some exceptions. Joe Bauknight from Chemistry, and Ayers from Biology, and Foreman from Accounting were first rate and assigned to Navigation. Bowles had actually been a Marine pilot before he got too old and fat. Then we had a veteran titrator from Santee-Cooper, M. G. Gergel, assigned to teaching Physics. Rappenecker looked over the group and shook his head. We were divided into groups. My new boss was Norman H., one of the laziest men I have ever known. He assigned me to teach four classes per day of Physics. Par was three; when I did not protest he raised it to five. Ultimately I had a nightmare of six classes per day of Physics and Theory of Flight. The same subjects over and over—just different faces. Classes started at 7:00 AM, my class, that is, for the others

started at 8:00 or 9:00 (depending on how friendly the instructor was with Norman). Most classes were over at 2:00 or 3:00 PM. Mine never ended until 4:00, this in deference to my youth and the glorious opportunity given me by Mr. H. to serve my country. Absence from class was forbidden and sickness was not accepted as an excuse. It was obligatory that cadets learn levers, pulleys and Archimedes' principle.

The classes averaged 30 cadets and a platoon leader. They marched back and forth from the barracks and to each lesson with a cadence "One, two three, four, four to your left, four to your left, to your left, four left." I hear it in my memory nearly forty years later. The cadets were young, handsome, smart, athletic and tired. The navy needed pilots and needed them fast. These kids were pushed through a vigorous program of study and physical training and the survivors pushed into an advanced program and after four months my first graduates were shooting down Japanese planes, and getting shot down.

Tired they were, but alert, except when they had been on all night watch (guarding the sleeping university from invasion). They arrived at Flight School in great shape and despite the physical education program which took a toll of limbs and collar bones, they always looked smart and proud. They were (in the early days) scrupulously polite and after marching to class, would remain standing until I gave a signal to be seated. Most of them were my age, and most of them came from the colleges. We discussed airplane physics, angle of glide, torque, momentum and they made good grades on the tests. The sessions were more seminars than lectures. My classes were popular for I told jokes and sometimes called on the brighter students to handle the lecture work. They called me by my first name. Rappenecker called me to his office, using my family name, and gave me a lecture in decorum.

On weekends, those who had "liberty" would dress up in their black trench coats and cocky overseas caps. They escorted Columbia's loveliest coeds down the streets and if they passed me, walking with J., they would whistle softly and salute. They brought me presents, joined me in partys at the lake, and always stayed after class to chat. It was against regulations to fraternize with the cadets but these were fellows my age and older, and many of them knew more physics than I.

Since the cadets looked so good and we looked so bad, we designed uniforms. Lanneau Foster, or "Chick", as his friends called him (he was a ballet dancer pressed into teaching Navigation) arranged a combination of forest green trousers, pink blouse (from the air force) black shoes and tie, and an overseas cap with a logo USNFPS which stood for U.S. Naval Flight Preparatory School. We had black peajackets. The uniform was so impressive that we got salutes from the wretched "dog faces" of Fort Jackson who, from force of habit, saluted everybody.

The uniforms were so smart, and being out of uniform so embarrassing, the aged, the mis-shapen, the lame and the hult were soon wearing them.

Rappenecker called a meeting and told us it was against regulations for us to dress in uniform, we were civilian employees of the navy. We defied him to show us the regulation, and, sensing our firmness, he dropped the matter. Those of us who were of draft age wore it for security. I made a visit to Assembly Street's pawn shops and purchased special bars and decorations which announced that I had participated in the battle of Jutland and the Somme, and earned the "purple heart". A firm meeting with an exasperated Lieutenant Rappenecker resulted in the removal of my battlefield honors.

My day began at 6:00. By 7:00 I had breakfasted, reached the University by bus or by hitchhiking and was ready for my first class. At 11:00 I walked or ran to Huger Street where the infant Columbia Organic Chemicals was quartered. I would work on preps until 1:30, walk back to the University and teach for another two hours; then back to Huger Street to work until 6:00. I would get home by bus or thumb and then in Jules car would go back to work in the evening. J. was acting in Town Theatre productions and always practicing or doing her radio work. Unknown to me, happily, she was preparing for surgery to remove a sweetheart from a budding actress.

Whaley had insisted that I find a building. My uncle by marriage, M. B. Kahn, owned the Glenco Cotton Mill on Huger Street which had been idle for years. It had a small office in front of the main building which was ideal for our new laboratory. There was a tenant in the front part of the building, Mr. Sizemore, a tool and die man who worked in Irwin Kahn's Southern Plastics, and I assured him that we would make nothing which smelled or exploded. Elmer told me he would come home only to sleep, and that he would be glad to have a neighbor. This was Columbia's "sporting district" and in the late afternoons and early evenings the girls sunned themselves on the front porches and exchanged conversation with passersby including a young chemical entrepreneur, fascinated, but fearful of gonorrhoea. We were across the street from the maisons de pleasure, a block from the city dog pound and right around the corner from Southern Plastics. This was Columbia's Ruhr Valley.

The old pay office was divided into two sections and my part had shelves and some plumbing. There was a small back yard which we soon managed to pollute. There were chemical resisting magnolias in the front. Elmer was chemically resistant too, at first. Several nights after we had started production a heptachloropropane prep "took off", producing a miasma of smoke and shouts of fear from the neighbors. We had our first visit from the fire department. Elmer appeared in his pajamas and his aplomb helped reassure the crowd. Some of the paying customers from across the street, thinking this some new kind of raid, scattered undercload, fleeing police whom they were sure were concealed in the smoke. One managed to get into our building and was sprayed by the still active hepta flask. It gave him a camphor like odor and the product crystallized in his hair. This was an exciting evening and the odor

lingered for days. There was no damage to the building and I reassured Elmer that it would not happen again.

Atherton visited the new laboratory. An excellent carpenter and plumber, he went to work erecting set-ups, installing cabinets and making the area more functional. Our little plant was close to the river, a convenient place to dump wastes in the pre-EPA days. It was close to the University, which meant that I had only 32 blocks to walk each day. It was close to the girls, if one had the courage, and could pay the price.

Mr. Sizemore became our first industrial customer. I mixed sodium cyanide and salt and sold this to him at a phenomenal price, and he used it for heat treating metals. He said that our price was less than half what he had been paying. I also sold him laboratory aprons for his employees since I could get them cheap at the University. He was a kind, patient man. After work he would come visit, elaborately holding his nose and pretending to be nauseated by the fumes. He brought his dates of evenings and they held their noses and everyone agreed that it was rough to live next to a lab. After a few fires and explosions Elmer was not sure whether he wanted to live next to one either. Gradually he developed a camphor odor from our best seller, asym. heptachloropropane, and so did his dates and the postman and the fellow who delivered chemical shipments from railway express.

The company for which he worked, Southern Plastics, was a joint project of Irwin Kahn and Dr. Jules Lindau, both of whom were family friends. Jules taught Electrical Engineering at USC; he was an inventor and a mechanical genius. Irwin was a financial wizard and they were pioneers in the new and fast growing plastics industry. Elmer made the dies into which the plastics was extruded. I was an interested spectator. In the warm, wonderful late evenings when the street lights came on and the fireflies made their magic on Huger Street, Elmer and I would sit on the stone coping under the magnolias and talk about his early days at Tennessee Eastman. Often we were joined by the curious from the neighborhood, drawn by the glamor of my fractionating columns which they assumed distilled whiskey.

The fledgling chemical company could not make a living and was subsidized by my salary at the flight school. Atherton contributed labor and brains. After wooing and winning Harriet Bailey he departed once more for California. He was opposed to war and killing and felt that world opinion would influence the Germans. I told him that in the interim they would take over much of the world and eliminate that portion of the population which was Jewish. He told me that he would recruit people at AMORC, the Rosicrucian stronghold, to make crude alkyl bromides and send them to us to purify, distill and sell. I pointed out first that we were 2000 miles away, the chemicals he proposed to have them make did not sell, and that we had a non-paid chemist making chemicals for the company whose job would be opted by Atherton's recruits. He treated my protests with good humor and hired two fellow

Rosicrucians and ordered raw materials which he charged to us and they shipped in 15 gallons of low quality isopropyl bromide and secondary butyl bromide at a freight charge exceeding their own modest bill for labor. Most of it was still around fifteen years later, when we had our first big fire.

Atherton had many friends and most of our customers came from his contacts. He had a real flair for preparative organic chemistry and wonderful technique. He was a superb, patient teacher. Despite his efforts and what business I had inherited from the University Research Foundation there was not enough to support one (much less two) on our staff. We got about fifteen letters each week containing about four orders. The telephone occasionally produced an order, but usually the calls were from my mother checking to see if I were still alive. We grossed about \$500 each month and this took care of the rent, electricity, gas, telephone, breakage and raw materials. It allowed nothing for the chemist.

I made heptachloropropane and from it hexachloropropene and from this trifluorotrichloropropene. I made tert-butyl chloride and methyl iodide and the lower alkyl bromides. I worked with aluminum chloride, bromine, sulfuric acid and sodium hydroxide. My hands were stained, my clothes had holes and at night there was always a halo around objects, showing corneal damage. I worked fourteen hours per day, counting time at flight school.

I taught the same Physics and Theory of Flight course again and again, so many times that I could anticipate any question a cadet might ask. These were sometimes tricky and the bored class liked nothing better than to make the instructor squirm. The early battalions were interested, the ones which came later were apathetic. They paid attention only when a drone in the distance indicated a plane, then they stampeded the window and could identify any plane no matter how small it might be nor how remote. They questioned why I did not fly. I secretly arranged with my friend Les Hembel to take lessons.

We approached the plane. It was a Stinson Voyager with a prop which had to be turned by hand. My first lesson was how to turn the prop and start the plane without literally losing my head. Once in the plane, with the prop turning, we waited until there were no planes landing and taking off, this was before the day of radio and control towers; then after checking the "mags" we took off noisily. During the first hour all the flying was done by Les and included sharp turns and steep climbs. Landing was an even more frightening experience. I was ready to renounce flying. Three instruction hours later I had successfully taken off and landed the plane without doing any damage. I was less afraid. Then I got my first bill and was ready to renounce flying again. Two weeks later I had landed successfully following a solo flight and had a certificate which I could show the cadets. While studying I had met Betty Morton who was teaching for WTS and she permitted me to taxi her planes and I could sit on a bench in the ready room, and join others in silent admiration of her sleek beauty. The others were larger and most were officers

from the base. I was content with the crumbs. Years later I married her sister, Pat.

J. was rarely available for dates. She was busy at the theatre and radio station. I could not dance and she had met a sergeant at the Fort who was a good actor and could dance well. She assured me that the friendship was platonic. The plays were always followed by cast parties at which people drank and caroused, I was told; on a hunch I waited for her at Steward's Hall after one of these. The play ended at 10:00 PM. She was not home at 11:00 or 12:00 or for that matter at 3:00. I kept a lonely vigil. The next day I had a note telling me all was over. It was anti-climax.

I grieved mightily. Unfortunately I had to keep teaching whether I wished to or not; there were no replacement instructors. Death was not permitted in the contract, and anyhow I could not die or my little chemical company would die too. I wrote her a letter. It was unanswered. An indignant second letter brought a cool reply, she asked that I return her pictures. I followed her once for several blocks ending at a strange house where I confronted her. It was the wrong girl with the right perfume. My family feared for my life. They consulted the family physician, Abe Silver.

Dr. Silver was an unusual man. He did not prescribe medicine; he gave shots. These were ordered from outside the city. They were expensive. He had cured Albert Ragsdale's Angioneurotic Edema—with shots; he had treated my mother's hives—with shots. One of Kahn's carpenters stepped off a building and fell through a maze of framing breaking an arm and a leg—he got shots. I expected shots. No, we sat in his office and he asked me intimate details of my sex life and habits, then walked over to my mother and told her that I had a broken heart. She asked whether he would treat this with shots, but he assured her he had a remedy. Going to a side shelf he removed a mortar and pestle. In the mortar he put iron sulfate, quinine and Karo syrup. He stirred and ground this mixture vigorously. The product was a thick yellow liquid. He poured this into a bottle, spooned out a generous portion. He then commanded me to think about J., close my eyes and swallow the mess. I did. It was awful, hard to get down, almost impossible to retain. The effect on the epithelial lining of my stomach was disaster. I coughed and burped and struggled for air. "Good" said Silver. "Think of her again, and that long night you waited for her outside Steward's Hall, and drink another spoonful." I took the nostrum everywhere I went. Let even the smallest memory of better days—when we were sweethearts—beset me and I would take a swig—and then suffer. After a while the merest thought of J. brought convulsions—without the medicine. Even as I write this, thirty years later, I feel a twinge. Dr. Silver was a student of Pavlov.

Wretched as I was, black as were my prospects, life went on. Every morning, fortified by a gulp of the medicine, I caught the bus to flight school. By now I was teaching Battalion No. 3. These fellows were older, less

motivated, often hostile. We were getting the draft dodgers, the problems. They would fall asleep in class, talk back to instructors, give each other the “hot foot” and generally show disdain for NFPS and its instructor. I called down one of them for some trifle, not knowing that he was the battalion commander. He came up after class, took my ruler and broke it in two, then took the two pieces side by side and broke them in two. He told me that if I ever called him down again he would do to me what he had done to the sticks. I put the four pieces of ruler together, lit a match, and let them blaze away. I told him that if he ever laid one of his dirty paws on me I would burn his a— by reporting him to Rappenecker who would send him to the fleet. He thought this over and grinned and said “you are pretty tough” and I told him that compared to a s—t cadet my problems with a broken heart and a suffering small chemical company loomed large. We called it a draw and he went off to WTS and was one of the casualties in a control tower error several months later.

The arch-enemy of the cadets was Lt. S. Had it not been for him I am sure that the battalion commander might have visited Huger Street or waited in some dark corner of Davis College for me to pass. The cadets had vitriolic hatred for S. He marched them over and over through the obstacle course breaking bones and producing heart attacks. In due course he was transferred to the fleet. We had a visit from Ensign N. who had been a real problem cadet but managed to make it through NFPS and WTS and had nearly been eliminated in the control tower error which cost the life of the battalion commander. Fourteen planes were sent aloft in a half-gale, and only N’s returned. He told me that he had shipped with S. on his first trip to sea and that on the second night S. fell overboard. I did not pursue the subject.

Everything was on allocation: gasoline, meat, chemical raw materials. To get supplies of fatty alcohols, then made from palm oil, it was necessary to have a priority rating and a permit. The War Production Board, run jointly by T. Keith Legree and Gadsden Shand, knew that our little company made research chemicals and required raw materials, however, the amounts we needed were small and they were always indulgent. I brought Atherton to meet these men, just as a friendly visit. Shand and Legree made short speeches on the value of research and I made a longer one on our important contribution to the war effort and then Atherton made the longest one of all, telling of his attitude toward the war, the killing of men and the use of chemicals for accelerating these projects. There was stunned silence. They told Atherton that they knew how he felt but it was understood that our company was making research chemicals which might be of use in the war. I tried to change the subject but Atherton announced that he wanted no part of making war chemicals. They did not smile.

The next day I was notified by telephone that our priority rating would be terminated unless they had a statement that our company was prepared to take

defense orders. I was in a dilemma; without priority we could not get raw materials and would be out of business. Whaley was adamant. He was passionately opposed to killing. I argued that he think of the Poles and Frenchmen and Jews who were also opposed to killing but were getting killed. I reminded him of my own religious “persuasion,” and the attitude of the Third Reich toward Jews. He said he still did not believe war the answer, and was firm in his intention to keep us away from any participation. I told him that I respected his views but could not subscribe. There was a family consultation that night with my Uncle Sy and Jules. The next day we wrote the WPB that the company was prepared to make chemicals for the war effort. Atherton and I sat quietly in the lawyer’s office and received our “divorce.” The surgery was as painful as the loss of J. The events occurred within a period of two weeks.

Chapter 8

You pick yourself up. You work on the first catalog of Columbia Organic Chemicals, a few days old, born in the lawyer's office, circa 1944. You go through the ordeal of teaching Physics and Theory of Flight six hours a day to a dazed audience of spring-feverish cadets and then rage takes over. With Ayers and Sloan you go to Rappenecker and protest, give an ultimatum. The easy days for Norman are ended. No more leisurely arrivals at flight classes when the junior faculty members have already slaved away two sessions. Now you have the luxury of only three classes a day, the exquisite pleasure of seeing Bowles and their cronies hustle. The battle won, you switch over to teaching Aircraft Engines and Communications.

I knew nothing about aircraft engines. Fortunately neither did the cadets. Les was teaching a class in engines for WTS and I joined it along with a number of mechanics from various garages in the city who were preparing to seek employment in the airforce. I learned about the LeRhône engine which had its cylinders whirling around the crankshaft. I watched the little Lycomings and Continentals taken down and their innards exposed, replaced and returned to the airplane and flown. I actually replaced a piston and wonder of wonders the engine did not fly apart on test. I kept one step ahead of the cadets. In code we had Morse, Blinker, and Semaphore. The course was given with an audiovisual machine which trained at various speeds. It needed only manual dexterity, the machine did the teaching. I actually learned to take Morse at eight words a minute. The cadets could send and take at twice this speed. This was Nirvana. I never wanted to teach Physics or Theory of Flight again. We were now teaching fourth battalion. The word passed down to slow up; we were accumulating more officers than planes.

Normally at this time a big order was anything above \$50. An order for \$100 or more meant euphoria. I got an order from the War Production Board at the University of Illinois for 10 kilos of n-Dodecyl bromide at \$40/kg. This

was a fortune. The chemist who requisitioned this was Dr. Nelson Leonard. There was one specification; it must be alcohol free. We regularly made higher alkyl bromides and by careful distillation would get rid of most of the unreacted alcohol as forerun. Unfortunately treatment with sulfuric acid to remove alcohol gave emulsions. First I purchased Lorol B, a mixture of higher fatty alcohols with about 70% C-12 and some myristyl and cetyl and a little decyl. This I brominated with sodium bromide, sulfuric acid and water using a conventional 12 liter, three-necked flask and plenty of heat and stirring. I gave the product a fast distillation after washing with water, then re-treated with a little red phosphorus and iodine. This gave n-dodecyl iodide as impurity and removed residual alcohol. I felt very superior, for this innovation was not reported in the literature, it was our own development. The stamp of approval was another order, this time for 20 kilos. I put up an auxiliary setup in the Advanced Organics Lab at the University and made n-dodecyl bromide while teaching flight school; I made it day and night. In my sleep I set up and took down equipment, treated and retreated product, packed it and shipped it and started the cycle again.

At night I worked alone in the Advanced Organic Lab. It had been my home now for nearly six years. The only other person in the building was Joe Bauknight working in Lipscomb's office downstairs. One night I charged the flask with sodium bromide, sulfuric acid and water; the heat of solution was sufficient to dissolve most of the salt. I next added the lauryl alcohol and started the stirrer. I lit a bunsen burner and put this under the asbestos ring guarding the flask, went downstairs, chatted for a bit with Joe, ate a candy bar and noted that the reaction was routine. An hour later n-dodecyl bromide was forming as a dark layer swirling above the reaction mixture, then my stirrer stopped. I should have pulled the flame, let the reaction mixture cool, repaired the stirrer and then started from scratch: instead I continued to heat and when the stirrer started again the superheated liquid gushed out of the flask, covering my face and hair. It was acid at a temperature of about 150°. I screamed for help and rushed blinded to the washstand. Joe was upstairs in a minute and drove me to the hospital. They demanded payment in advance. The Columbia Hospital was available for the rich and poor but admission for the in betweens was difficult. I was a mass of blisters. Silver came at once and gave me morphine. I slept for two days. Fortunately this happened on a Friday, otherwise Rappenecker would have insisted on waking me up. Swathed in bandages I was ready Monday morning to teach Aircraft Engines. I told the cadets I had suffered the burns in an aircraft fire. They were impressed.

Jules' heart attack came three weeks later. He was taken to the Baptist Hospital and Dr. Madden assured my mother that it was mild. Hasell Ross, his associate, assured us it was mild; Jules refused to believe he had had one at all. He looked great propped up in bed and had plenty of attention from the

doctors and nurses. He was a warm friendly person, and very handsome. Mama insisted on staying with him so I had the unrestricted use of the car. We had just received a 50 kilo order for n-dodecyl bromide. With Jules ill, I was the breadwinner in the family. Jules' brother Sy came in from Charleston bringing his own physician. The three of them decided that Jules had not had a heart attack, just severe gastritis.

My heavy orders for n-dodecyl bromide justified hiring an assistant. My first was William Glen Crosby. He worked several weeks and was called to active service on a minesweeper. I put up my first star to indicate that we had an employee in the service. I hired Peggy, who was majoring in Chemistry, entering her Senior year, and had the recommendation of Dr. Lipscomb. She was excellent at putting up and taking down equipment but was not pretty by 1943 standards as she was very skinny. We became great pals and would work until late at night since Dean Childs considered me sexless and safe and let Peg come in any time she wanted. We would close down the plant and go by Railway Express and ship the day's production, then sit around with the expressmen and drink beer, sometimes we would drive over to Arsenal Hill and drink more beer and smooch. She was great at singing "On Top of Old Smoky," after three beers. Then she confided that she was becoming too attached to me, and since she also confided to Dean Childs I lost my second employee.

Jules was convalescing. His room was always full of company, and once when I was visiting, he and my mother told me of a lovely young student nurse who helped in the afternoon shift. They said she was blonde, had green eyes and was very pretty. My mother added that she was intelligent and liked music. After three days of conversation I was in love with this, as yet unseen, beauty. Her name was R. S. and she was indeed blonde, green eyed and very pretty. She was intelligent and liked music. I had met her by giving Sloan \$20 to take my two hours of code classes of an afternoon, a mighty bargain.

She lived with the other student nurses on the corner of Marion and Taylor Streets where the Baptist Hospital now has its main building. I came in the room and she and my mother were discussing nursing at Mount Sinai where mama had trained. The room was full of the gaiety which comes after an emergency has passed and the vessel has reached a safe shore. She walked over to me and took my hand and said "You must be Max." I was speechless; R. was truly lovely. All the student nurses had to be in at 10:00 and therefore they could not date handsome instructors from the Naval Flight School who obviously had no curfew. But if I dated her she would use a ladder which she concealed back of the nurses home. This would permit her to come in late. I offered to take her out that very evening, but she told me that this evening she must spend with her regular beau, Tom, who ran a restaurant across from the hospital and was generous to hungry nurses. I told her that I was a wealthy industrialist and would buy her filet mignon and caviar.

I went over to Tom's restaurant and observed the owner, who was also the chef, make hamburgers. He was ancient (at least 50) had a white beard, white side burns and a heavy accent. He walked with a slouch. He was untidy. The hamburger was greasy, the little shop was dingy. He was dull and dirty. I discussed this with my authority on women, Ragsdale. He suggested that I invite her to dinner and the theatre.

"Porgy and Bess" was playing at the Township Auditorium. Todd Duncan was Porgy. There were no seats available except the stone steps. I purchased two and the next day at visitors hour I was once more at the hospital. I cornered her in the hallway and told her that she would make me everlasting happy if she would join me. I was in love, a victim of loss of appetite and sleep. She said, "Max honey, (this was the first time I had been called "Honey" by a woman other than my mother and my nurse Carrie, now deceased). I hoped you would want to go to Porgy." She produced two tickets for the dress circle, telling me a friend had given them. Making sure no one else was in the hall she put her arms around me and gave me a hug and a kiss which loosened my wisdom teeth. I asked her if the ticket donor was Tom and she said "No, it's one of the Doctors who wants to sleep with me," (Mentally I added another rival); It will do them both good to know that I'm out with a younger man. We shared a laugh of the young and giddy at the expense of the old and patient. I sold the stone step seat tickets and purchased roses, candy, handkerchiefs and perfume. I supplemented the refund with a week's pay from the flight school. Loaded with packages I presented myself at the nurses home, was interviewed by Mrs. Eidson, who, satisfied that I was safe, went to the phone. In a few minutes R. flew down the stairs, halting with astonishment at the heavily laden suitor. Recovering, she made the proper comments over the flowers, opened the candy for her starving sister nurses and transferred a dab of perfume to the region back of her left ear. "Be back at 10:00" followed us as we rushed to Jules' car, already five minutes late for the performance.

I shall always remember "Bess, You Is My Woman Now," she was cuddled against me and her hand stroked my knee. Every now and then she reached over and bit my ear. The music was beautiful, R. was beautiful and 10:00 was approaching. At intermission she suggested that if we wanted to make love we would have to leave. As the elegantly dressed gathered for intermission drinks we slipped out a side door and hand in hand ran to the car parked two blocks away. "Tonight, dear, we'll just smooch; we have lots of other evenings." I brought her in at 10:00 and Mrs. Eidson was happy and I went out to the plant and made chemicals until dawn, savoring in retrospect each moment, each word.

I called, but the next night was Tom's and the next was reserved for the benefactor who had furnished the tickets. The next night was Tom's again. She said "You are so wonderful and patient . . . maybe I love you a little." My disappointment was so obvious that she relented and suggested that we spend

Sunday together since she did not go to church. I promised to take her sailing.

We drove up to Ballentine's early Sunday morning. There was a fresh breeze and the sky was bright with cirrus clouds and mares' tails. Yank Quattlebaum, the colored man employed by the landing, fetched the Dawn from anchorage. She was sprit rigged, an old French rig seldom seen nowadays. Modern sailboats are built to race, or to make leisurely weekend cruises; this old veteran, safe and slow, was built for duck hunting and light breezes. She had been my companion many afternoons and evenings when I was dateless and lonely. Now R. and I set the sails and stowed away sandwiches, a blanket, books and a bottle of wine. It had been five days since the concert; now with a lovely girl, on a faultless day with a fair breeze I was strangely distracted. I felt listless; when I hoisted the main it took all my strength. R. helped hoist the jib and we set a course for one of the close islands. She chatted about her life at the hospital and how she had met Tom and hinted at the identity of her doctor admirer. I barely listened, the horizon was slanted and there were two masts, six sails and two green eyed girls prancing around the boat.

We reached the island and transferred the food and all our other baggage. Somehow I got the sail down and the boat moored. R. talked on and on; she did not notice my apathy. In a low voice, tired and ill I asked her to come to where I had collapsed. Mistaking my intention she said "Lets eat first." Then for the first time she noticed the green, shaking moribund. The nurse in her surfaced and she took my pulse and temperature, and then, revealing latent talent, sailed the Dawn back to Ballentine's unassisted and took down the sails, and with Yank's help got me and our gear to the car. She drove back to Columbia and put me to bed. She summoned the family physician. They knew each other, and whispered. He told me that my fever was temporary and would abate during the evening. Sure enough I was up early the next morning feeling fine. I called R. and she told me that this man was the donor of the tickets. That afternoon I ate two hamburgers at Tom's. We were united in a common love.

It was some time before I saw her again. After a week I telephoned and she told me it was Tom's night, a week later it was the doctor's night and the next time it was once more Tom's. She assured me that she was fond of me, but she had other obligations and in fact there was a young intern at the Baptist hospital and his wife was in a distant state; she felt it obligatory to console him in his distress. She simply did not have time. I gave up and quit calling. We were busy making n-Dodecyl bromide and I had my hands full with Battalion 4 and was half way through reading the Galsworthy Forsyth Saga. I decided to be a sailing hermit—and avoid women. Fate stepped in, Tom burned his hand, the doctor took his wife on vacation and the intern was transferred to his native heath. R. telephoned and we drove up to the lake and she took me to

bed. Tom's hand healed, the doctor returned and other interns needed consolation but by then I did not grieve.

Battalion 4 was made up of fellows from Charleston, Atlanta and Nashville. They were drinkers and fun lovers, carefree and friendly. I had a number of visitors at this time and I would bring them to the flight school. There was Calvin Shaw, from High School days, now a major in the air force, and Billy Farrow—about to leave on the Hornet mission. Pete Todd, now a Lt. JG assigned to TBF's came by to say hello and tell me that he had only one check flight before he would join the fleet. The cadets, all Southern boys, made friends with the visitors and asked endless questions. I had made some good friends in this battalion; Osborne Gomez (Osborn the poet) remains to this day my dear friend—and there was Posterò and Strass Morley. They helped me fix up a little cottage I purchased at Lake Murray from Mr. J. C. Huggins who had a son in the Navy—and wanted to help. He and his wife could not get up to the lake for they did not have enough gas stamps and would not buy them black market. The cadets had plenty of stamps, supplied by doting parents. Many of them even had cars. Osborne's group offered to buy the little house for me but I used my savings and a loan from the bank. The purchase price for the land, the furniture and the little house was altogether \$500.00. I built a dock and we moored the Dawn. To celebrate we had an all night "beer blast". We named the cottage "Borodino" after the battle of that name in which Katusov prepared Napoleon for Moscow. This would be my shelter when the love winds did not blow, and later would house me when I married.

The house had no electricity, no heat and no bathroom, but the four small rooms could hold an enormous number of cadets. At home we always had company. Jules and my mother had friends from New York and New Jersey stationed at Fort Jackson in the 100th or "Yankee Division." All were officers. They came to dinner and would sit around of an evening sipping wine. All were older men and many of them were doctors. All died in the "Battle of the Bulge."

Any hours I could spare from teaching were spent at the plant making and distilling chemicals. There were not many orders but since we had a one man staff who doubled as purchasing agent, salesman and clerk there was little overhead and we survived. When I closed the plant at night I would drive down to Railway Express and sit with Earl Garrick, Rish, Guy Bickley, Goff and Dutch Hazelwinkel. Goff's nephew Irby would sometimes take me home and his wife, Leola would cook us dinner. I attended all the Railway Express parties. We'd go up to the lake, make catfish stew, drink, tell stories and swap jokes. They are all gone now. Railway Express bankrupted years ago; its old building stares eyeless on the strange new surroundings of a modern Columbia. In the long lazy evenings of my early twenties I relaxed there in the warm glow of friendship and listened to the music of the trains. Now the trains are

gone with the exception of one which streaks through the city on its way to and from Miami. The yard and the old platforms are overgrown with weeds. For that matter gone too is the Glenco Mill, my lab building and the magnolias. Sic freat crustulum.

My sex life was arrid. Even cross-eyed girls were getting married. We had an Airforce Base, a Marine Base, Fort Jackson, The Charleston Navy Yard (the sailors ranged afield, hunting women), the University with its handful of draft deferred, the V-5, the V-12, the WTS, Ragsdale and me. On weekends a wave of lonely men enveloped the city and suburbs. Any girl had a dozen suitors. This was tough on the cadets who had limited liberty. Tougher on their instructor, forlorn in his little overseas cap and forestry greens, hurrying to the University, or to Huger Street, or to Lipscomb's Chemical plant or to the city schools.

I was now a part-time instructor in Chemistry. There was a severe shortage of teachers because of the draft. Needing special classes for nurses, the University fetched my uncle Max Revelise from Washington and he taught Chemistry and Philosophy.

Pete came home. Part of his face was smashed and one eye looked off at an angle. He had cracked up the TBF on the qualifying run, riding it to the ground. He had managed to crawl away before it exploded, to drag himself the three miles back to the base, bleeding and in great pain. They told him it was a miracle that he was alive; there was a clot in his bloodstream and sooner or later it would block and the lights would go out. Pete was tall and handsome in his Lt. SG uniform. He had been promoted after the accident, but this was small recompense, his face was terribly scarred. I took him home and my mother nearly fainted. He was amused. We decided to get dates and fortunately Olin Crouch loaned us his girl Betty, she had a friend Camille and we took the girls riding. They had to be back at Sims Dormitory at 10:00 so after taking them home we decided to drive up to the lake where we had been Sea Scouts, to the shore where we had launched our sailboats, to the little point where C. had yielded her all. We talked and talked. He told me that time no longer mattered. I knew I would never see him again. Oh, Pete, my wonderful best friend, Pete, my companion on so many hikes; Pete with your red bulldog sweater running around the ice park to join me when we were kids going to school.

His voice was low. He told me not to feel bad, that he had no fear, that we would always keep in touch no matter what happened, no matter where he was. We were back in front of my house. The dawn was breaking but we were wide awake. He had never been a toucher but now he put his arms around me for a great hug and then he was gone. Three weeks later in a heavy snow fall at Great Lakes Training Station his car ran into the huge tree at the entrance. He was already dead. I saw him two days later and his eyes were closed but there was a faint smile on his face. We buried him at Greenlawn Cemetery but he

lives down by the water works. He walks the old trail winding by the Broad River where we walked and played as boys. I take my closest friends to walk there, or go alone. Only I can see him.

Ragsdale was drafted. He had stubbornly resisted the blandishments of the military service with dodges such as soap in the armpits to raise blood pressure (they made him lie on a cot overnight and the next morning it was normal). He claimed to have flat feet (a second trip to the fort and this infirmity was waived). With a ream of testimonials from the Public Health Service certifying his importance in the community he successfully held the draft at bay for month after month. But, now it caught him and he was whisked away to basic training and then sent on to England where he managed to get hit by a taxicab. For this he was awarded the Purple Heart. He came back to Columbia telling people his special leave was reward for subduing two German Tiger tanks. He married one of the Chemistry majors, Marian Clarke, whom Joe Bauknight and I had both dated, and went back to the wars.

My fate was controlled by the draft board. Mothers called to ask why I should be going free when their sons were serving the country. I wondered myself if it was really worth it. I was working fifteen hours each day and had no girl friend because I was not an officer in uniform. I was terribly bored with flight school. Frank Sloan and I, the baby instructors, were summoned to Rappenecker's office and told that we had the choice of a quick Navy commission, or an A-1 selective service rating. We took the physicals from the Navy doctors. Frank passed and a few days later was off to Radar School. The doctor discovered that my left testicle had never descended. I was told that the Navy would take me without testicles (and classify me a Wave—uproarious laughter by the doctor—not shared by the candidate), or with two, or with three (more uni-laughter), not with one. He explained that if my only testicle were shot away the Navy would feel responsible (no mention was made of my own feelings). He was such a happy bastard that I could not resist, as I was leaving, asking him whether he was 0 or 3 nudded; I had the satisfaction of seeing the smile freeze.

Back to Rappenecker; a one-nudded reject. He had a smile which attempted sympathy and said, "I guess the Navy can't use you." Emboldened by my draft-exempt status I told him that I felt it might use him better, and left having made my quota of enemies for the day, sure that dismissal from flight school would follow. I went to see Lipscomb and he called the draft board. They suggested a confirming visit to the pre-induction center. I was rejected routinely for flat feet and ownership of only one testicle. There was a slight mixup and my next to last examiner who had just come back from a tour of duty at Corregidor affixed a note suggesting that Mr. Gergel could probably serve his country with only one testicle; the final doctor overruled and I was returned to civilian status on a truck bearing the other rejects; three men each blind in one eye, two bed wetters and a sex fiend.

I bid old Strass Morley goodbye. He had flunked out of Battalion No. 4, been held over to 5 and flunked this too. He had even failed "Theory of Flight" the first cadet in history to have this dubious honor. He was "Bainbridge Bound". Bainbridge was the Botony Bay of the Navy where V-5's were sent when they died (flunked out). I hated to see old Morley go for we were pals, the same age, and had spent great weekends drinking beer and sailing the Dawn. He had helped paint and caulk her and helped with the construction of the dock, too.

Chapter 9

I had bought the Dawn from Skipper George Sumner of the old Sea Scout ship *Viking*. In the years before the war there had been a rivalry between the *Viking* and the *Rainbow*, our own Sea Scout ship and Pete and George Dieter and Ike Smith and I were all in the *Rainbow*, but had learned to sail under Sumner. He was a wonderful man; a former destroyer captain in World War I in the Canadian Navy. He had a business in Columbia making press cloth for filter presses and a factory where human hair imported from China and Japan was converted into a tough mat used for filtrations. George Dieter and I had sailed an old whaleboat under his command from the Sea Scout cove all the way to Prosperity S.C. when we were fourteen years old. On the way back we had taken turns sailing his championship moth, the *Dixie Starlight*. Now with World War II decimating the ranks of young men the several boats which idled at anchorage had no young men to sail them. I asked Skipper to sell me one of them and he suggested the Dawn. Every weekend from the time I bought her, no matter what weather prevailed, I was at the lake. The Dawn, never really fast, made up in stamina and braved the squalls of Ballentine's and the big water.

As I have mentioned she was sprit rigged, old and serviceable. There was a huge trapezoidal main sail, a small and well-patched jib and a long pole which took the place of the boom. There was an honest-to-God belaying pin to clew down the main halyard. In light breeze she wallowed a bit but given a fair wind, the old girl would show her heels. The cadets loved her and I have many photos of tough young men and their lean, tough instructor braving the winter winds.

I had not only no girl friend but no one to pal around with. I met D.V. Walker, from Winusboro, who was doing graduate work (he had an eye problem and deferment). He was a superb sailor and an excellent Chemistry student. We became fast friends and even spent date and a halves, with his

sweetheart Mary Vin T. I was the half. When he went off to graduate work at the University of North Carolina he bequeathed her to me. We dated for several months, but unlike D.V. I was not tall and dashing; she was tall and lovely and soon another took my place.

During the previous year when I was at Santee I took graduate work in Petrography and Advanced Mineralogy, toying with the idea of a minor in Geology. I won the McKissick Graduate Fellowship. I considered more graduate work but there was no time since V-5 took at least four hours a day, Chemistry class another hour, and the infant Columbia Organics screamed for attention. I gave up a Masters, and soon after this gave up V-5.

We were teaching the 7th and 8th battalions and there were too many fliers. The WTS and "Advanced" were "washing out" cadets on a quota basis. You had to be a super student and flier possessing extraordinary luck to survive. There was a relentless flow of cadets to Bainbridge. The new students were "tarmacs." Not having room for them in V-5 they had been sent to air bases in Jacksonville and Coral Gables and given menial jobs such as washing down wrecked planes, often with the remains of hapless pilots dangling from the seats. They were a mean, mirthless group. I hated them and they hated me and V-5 equally. They were contemptuous of the Navy, the Naval Air Force and especially the instructors. When Rappenecker called me in to tell me he would not ask for my deferment I told him to get real brave and join the fleet and leave his nice cushy job to some physically handicapped veteran, or to a Wave. I was promptly "detached." They gave me two weeks pay and I joined the Chemistry Department as part-time instructor. There were no goodbyes and no thank you's. Bauknight quit the following week and joined the Chemistry Department. I left two friends in the cadets, a chap from Chicago named J. Peter Dodge (who told me that in Beverly, where he lived, women followed men around with mattresses on their backs) and my buddy Arwood who left us for Bainbridge, then the fleet and then Saipan (the final Navy dump for the brainwashed). He wrote me a heavily censored letter concerning his encounter with a native female. I said my goodbyes, showed V-5 the upraised fore-finger and returned to LeConte.

Dr. Lipscomb gave me the job of teaching General Chemistry labs. I lectured and supervised the experiments. It was easy work and I had plenty of time to make chemicals both in the Advanced Organic lab and down on Huger Street. Jules let me use his car. He was statistician at the Federal Land Bank and I would drive him to and from work and have the car the rest of the day. We were beginning to get orders for mercaptans, but after our first production on Huger Street the dogs at the nearby pound howled and the ladies of the street sent "friends" to protest. Mr. Sizemore moved into a motel asking us to tell him when we finished making mercaptans; he was developing considerable chemical knowledge and vocabulary. Before then he tried sticking his head in the lub from time to time asking if he could do anything, which

meant could I do anything? I made large batches of heptachloropropane; sometimes the runs got out of hand and this was especially bad when I was off teaching and the reactions were unattended. I would come back to find a crowd gathered and Elmer explaining to them that there was no need to worry, that where there is smoke there is not, necessarily, fire.

I hired Mariann Snider as assistant. She had graduated in dramatics and interpretive art from Tallahassee and our families were friends. She was a poetess. Her friends called her "Nicki." She dropped a 5 liter, three necked flask full of crude methyl iodide and I hollered and she wept. I told Gomez about her. At the time the two of us were courting a girl from Charleston named Roulain. She lived on Gadsden Street right down from my uncle Sy and her mother ran a little store which sold cacti. He courted by letter and had the advantage of superb prose and a background as Golden Gloves champion. I had the advantage of propinquity. He switched his attention to Nicki whom he courted by letter and ultimately married. With the field left free I journeyed to Charleston every weekend. We did a lot of sailing together and I was presented for inspection to the other members of her far flung family. She married a Lieutenant SG from one of the ships wintering in Charleston.

The infant Columbia Organic Chemicals made slow progress. People published articles involving the use of alkyl halides and the various polyhalides, haloolefins and nitriles we made, others would read the articles and write for a catalog. We were getting too big for our one room at Glenco and there were rumblings about the odor in the Advanced Organic Lab; the patience of Huger Street was almost exhausted. I went to see Mr. Kahn. I knew, through my family, that he had an offer for the property from Trojan steel, and I had a lease. He suggested that if we moved out he would help me find larger quarters and would build for me if necessary.

In my afternoon class was a student N. She was lovely and intelligent and sat on the front row. She hurried to and from class but for two hours each week she was all mine and listened attentively. I asked Dr. Lipscomb and he told me she was a nursing student who already had her RN and he suggested, "Gergel—you ought to court that one because she's smart and comes from a good family." This was a splendid suggestion, but first I had to meet her and she was elusive. "Miss D.," I asked, the very next day, "Why are you always in a hurry?" She relaxed, smiled and told me that she did private nursing and was in college just part time. I told her that I was in college just part time too, and that Dr. Lipscomb had suggested that the two of us should marry. She gave a little "oh" and looked surprised but not, (thank God) displeased and said, "if you don't mind meeting me after I get off from Waverly." Suddenly life was very worthwhile, and wonder of wonders, she did not leave but dawdled at the lecture table. "Doc tells me that you have your own chemical company and that you work real hard; would you take me by and show it to me?" I was enraptured. "I have my own car and if you'd drive me to Waverly

you can keep it and pick me up tonight at 10:00.” This was the first time in my life a woman was *out* at 10:00. We left the university and drove down to Huger Street and she thought the plant just lovely and admired the magnolias. She chatted with Mr. Sizemore, just returned to his old quarters now that we had purged the atmosphere.

Then, since she was late, we hurried up Taylor Street along the road I had hiked as a boy scout years before, and turned in to a little side road and there was spooky Waverly Sanitarium. She told me that she liked nursing mental patients and had received her early training in this area. She gave my hand a little squeeze, warned me to be sure to be back at 10:00 PM “since I’m scared to stand here alone”: and as she disappeared into the building I felt very happy, and very proud. We dated steadily, but I was not her only date. Her little car moved Columbia Organics to its new home in Cedar Terrace; then she went into the war as a nurse and I began to date S. An instructor of 24 is not much older than girl students of 18 and 19. S. was from the lower part of the state and her father was a doctor in the Monck’s Corner area. She was having trouble passing Chemistry. I would work with her at the board for she was a slow learner, and then we’d go off and have a beer. Later she agreed to take an evening sail with me. She was small and chic and I felt very proud to take her out on a date. The weather was cold and the wind blustery. No sooner had we left the safety of the Ballentine cove than the wind heeled the Dawn and S. was in the water. I gybed and pulled her aboard. We sailed back to the dock; dropped the sails, made the boat fast and headed for the cottage to find dry clothes. One of the cadets had left trousers, another a shirt. We started back to Columbia. She was furious, indicating that the beer drinking and the sail were simply part of her plan to pass Chemistry. It was after check-in time and the Dean of Women, Arney Childs, was waiting for us. “Where have you been S.?”, she said, and in her excitement S. failed to hold up the trousers. I left assuming correctly that this incident would be reported to Dr. Lipscomb. It was, but he took no action and S. dropped Chemistry.

Joe Bauknight and I were great cronies and double dated. He was teaching General Chemistry and was very popular since he had excellent rapport with the students and was very fair. Dr. Copenhaver left the Department of Chemistry and went to Sonoco Products in Hartsville where he took Dr. Mill’s old job as Director of Research. Dr. Lipscomb was more and more involved in his activities at Continental Chemical Co.

From time to time friends would come back from the war. Donald Auld was a Navy boxing champion. His return for a leave coincided with visits by Gene Johnson who was in the Merchant Marine and Willie Auld, his cousin also in MM. We all decided to go to the movies and, with the exception of Donald, wore uniform. A group of Fort Jackson inductees heckled Don who was deaf in one ear from much pinching, and encouraged by his silence, they grew more obnoxious. Then Gene explained to Don what was happening

and the two of them took on a large part of Fort Jackson while Willie and I gave them moral encouragement. When things looked bad and Willie and I had been drawn into the battle we were joined by a group of NFPS cadets who, seeing me in uniform and in trouble, pitched in. It took five policemen to clean up the mess and my nose has never been the same.

V.H. came back. Neither of us mentioned H. I had received a letter from my friend several months back telling me that he planned to take care of H. during the next battle. I did not tell V. and she said nothing about H. She was lovely in her Wave lieutenant uniform, and offered to take me to the officers club at the Fort. Judicious questions revealed that neither of us were involved with others but somehow we parted and did not date again. In due course of time she married.

Ragsdale wrote from England. He had transferred to aerial photography and would soon be an officer, probably a major general. He was helping British morale by dating war widows. Dieter wrote from the Navy. He was now a lieutenant commander. I sent him a care package which followed him around the Pacific but never got delivered. My uncle, Jack Goldberg, was in the Ferry Command flying B-24's to England at \$2000 per trip. He was offered a commission which he took, and given the same job at basic salary. Later he flew captured German planes back to England. Mustered out of the airforce because of age, he took a Cub aloft, had engine trouble, made a forced landing and broke half his bones-but survived.

Mr. Kahn telephoned to say that he had purchased land out in the East section of Columbia close to Fort Jackson and Twin Lakes. I had recognized that we would have to move for Huger Street was becoming industrialized and no one wanted a small chemical company threatening to burn or explode. In return for my lease Mr. Kahn offered to build a plant.

We drove into the country, past the entrance to Fort Jackson, past Midway Kennels. Right before we reached the Veterans Hospital we turned left on a shady dirt road with a street sign "Cedar Terrace." There were no cedars, but the road was lined with maples and they were green and lovely and swayed in the breeze. There were a few scattered houses and beyond a large field with a red brick building in its center, I assumed this might be our new home. No, this was the office of the now defunct Plowden Steel Co. and the little building was occupied by the Jim Bolton Co. Fork lifts were busy moving a chaos of derelict army vehicles. On one side of the road was Rothberg Manufacturing Co. It looked lifeless. On the other side of the field was an old abandoned schoolhouse. The only sound was the drone and sputter of the fork lifts and the sharp call of birds wheeling in the clear blue sky. The Kahn property was surrounded by fields planted in cotton and corn. This was the boonlocks.

"What do you think of it, Maxie?", asked Mr. Kahn. I told him it was wonderful. There was an air of peace, of the far away. It was an excellent site

for a chemical company whose products might burn beyond control or have obnoxious odor. There was no water, no electricity, no sewage, no telephone, no stores, no neighbors. We paced off an area about 2000 square feet and another small area for a pump house. Mr. Kahn promised to put in a well, supply a pump, build our building, bring in electricity, establish telephone service and dig septic tanks. It was obvious that he wanted us away from Huger Street.

The Laboratory would have a front office, packing room and work area. There would be a bathroom and shower. We were close enough to Devine Street to buy supplies and the Veteran's Hospital on the other side of Devine had fire fighting equipment which, we knew, inevitably would be called on to help. Jim Bolton, our neighbor, was a large friendly man who came over to welcome us and offer the use of his machinery should we ever need it.

Jules and I visited Gary Paschal, the lawyer, and arranged to incorporate Columbia Organic Chemicals with 1000 shares. I would hold 334, Jules 333 and 333 were reserved for my uncle, Max Revelise, who we planned to bring into the company to help with production and take over sales. Construction was started at once. The well digger arrived and there was a heated argument over which type of pump should be installed. Sand, cement and terra cotta brick arrived and was stored next to the area we had paced off. I drove out every day to watch the progress. We erected the building with a facing of terra cotta and a sloping composition roof. It is noteworthy that the cost in 1944 for building, pump house and pump, electrical work and plumbing was less than \$2000. We put in large fluorescent light fixtures which looked great and worked until we had our first explosion. During evenings I installed equipment and furnished the office. The pump was placed in its little building, electricity was brought to each table and the plumbers arranged pipes and hot water tanks and sinks and drainage lines to take waste to the yard. This was before the era of government supervision.

Jules quit his job in December and started full time work at the plant. He was a lawyer who had not practiced, but more important he was a man of great personal charm and unusual business ability. Add to this abiding optimism and infinite patience, qualities that would help us greatly in the years ahead. My uncle Max was working with a United Nations group in Washington, helping the U.S. remove the wealth from our country and redistribute it among those nations who despised us. He was a salesman per excellence, a tireless worker and a man of irresistible charm and good humor. I had hired a helper, and an assistant helper and we transferred chemicals to shelves, erected benches and reaction setups while I continued teaching at the University. The income from teaching was essential for we had a maximum of seven orders per week and the dollar value of the individual order was small, certainly not sufficient to cover the upkeep of the new plant and pay Jules' and Max's salaries. Our rent was \$35 per month, the electricity bill about \$25 per

month and as long as I did not draw a salary and we had no major expenditures we could meet expenses on our budget.

The summer passed and the plant neared completion. We had all the chemicals and equipment to make the items we would sell. We had a small office, a small library and a functioning bathroom. All of us were very proud.

Fate dealt kindly with us. The head of the Chemistry Department at the University of North Carolina was Dr. Robert Bost; he had a large grant of money from the Office of Naval Research. Knowing of us through Dr. Reid and Dr. Copenhaver he sent an order for over 50 of our alkyl halides. He ordered bromides, chlorides and iodides, and, even though we did not list them, alcohols as well. In each case the minimum order was a kilo, and for the cheaper items he ordered 5 and even 10 kilos. The total value was over \$2000! This would carry us for several months! Now we had not only a chemical company but orders backed up. Fortunately much of what he ordered was in stock and we could ship and bill for this at once. I hired our first chemist, Edward Taylor, a senior at Allen University. Surviving, he went on to become a distinguished educator. Every evening after completing teaching and my supper I would drive out to the plant, using Jules' car. Devine Street was two lanes in those days and from the section now known as Crosshill, it was heavily wooded.

The plant, as I have mentioned, was only two blocks from the Veterans Hospital to which I had hiked many times when I was a boy at the Y camp. We were less than two miles from Twin Lakes where Pete and I used to go swimming when we were in High School. At the bottom of the hill some twelve blocks from the plant, where the bridge passes over Crane Creek, was a solitary little restaurant with its solitary owner, staff and chef, a Greek. Like I he patiently waited for orders, but there was little traffic on those days. He had a little dog who followed him around as he swept the yard in front of the restaurant and did the hundred small chores of the idle. This little animal would follow with his eyes each passing car, pleading with it to stop for a hamburger. Where the Host of America, Red Fox, Jaws and the Pizza Parlor now attest the march of progress there was a small stand and a little pickup truck and a sign "Mountain Cider For Sale." The countryman who ran this had me as his daily customer, but told me that business was slow. Midway Kennels, then as now, had its large open dog runs and I could see the Saint Bernards and Newfoundlands as I would drive by.

Chapter 10

One day as I was preparing a flask to make one of Dr. Bost's bromides I heard a faint "meow". Facing me, his little face turned up, his back arched, his tail straight in the air, was a kitten. Somehow he had found the one spot on the field occupied by a cat-lover, albeit a heartbroken one. I stroked his back and he grimaced with pleasure, purring mightily. He was hungry. I poured milk into a beaker and while he lapped I tried him out with various names. He responded to Borso D'Este. This man was the father-in-law of Lucrezia Borgia and his son was Alfonse D'Este immortalized in the painting which shows him holding a mirror while the model, Laura Diante, combs her hair. I named this small feline Borso and discussed with him (a careful examination confirmed that he was a "him") the duties of plant cat. He was very attentive and stared so intensely that I thought for a minute he might be a reincarnation of some departed friend. Then he leaped in my direction and as I drew back in horror he snatched a small praying mantis from the shelf back of my head and proceeded to disarticulate the little dragon, devouring it with pleasure. Full of milk and mantis, his belly completely distended, his little tongue poking out, he fell asleep on my desk. As I worked that night I would come check on him from time to time. Occasionally he would wake, grin, curl up a little paw to wash his face and then return to sound sleep. I explained to Taylor when he came for his shift that one of his duties, henceforth, would be the feeding of the plant cat.

My classes at the University were in the afternoon, which meant that I worked in the morning and the evening at the plant. We had two new employees coming who would have to eat and we had a small black and white boy kitty who ate more than any cat of his size in history. I lectured for Dr. Whitesell and directed the work of his extremely capable assistant Millie H. She was now No. 1 in eligibility and was the hardest working assistant in the department. Wearing her little apron she was in and out of the stockroom,

replacing equipment in the desks, showing students how to set up apparatus, correcting test papers. Surely Millie would be able to make Columbia Organics a success, would appreciate its hard working president, and feed its small cat. I would talk with her that afternoon. There was a knock on the door. In walked one of the loveliest coeds in Lipscomb's Chem. 12 class. She carefully shut the door and said "Can I have a private chat with you? Listen, Gergel, I've got to pass Chemistry and I'll do anything-and I mean anything." She started unbuttoning her blouse and fortunately at the second button Dr. Bauknight came in with several students from the other door-which she had not closed. In the excitement we both were blushing and Joe gave one of his searching looks. Outside the office she said "Maybe you'd prefer my car, or I can come back this evening when no one is here." I told her I would do anything to help her pass, would coach her in afternoons, would go over her tests but for the sake of all that was holy not to make any bargains, and tempt a wretched instructor woefully sensitive to the fair sex. She promised to work hard and try not to seduce me and I was so shaken that I forgot to propose to Millie. By the next day I had decided to be a bachelor, spend the time with my books and boat etc., cultivate a pipe, sit by the reactions and stroke my cat. Millie, unaware of all of this continued to work for Whitesell, went off and got her PhD, got married, had a son who is now grown, visited Columbia Organics thirty two years later and read what I wrote about her narrow escape. She was as pretty as ever, remarked that business was obviously good based on the growth of my tummy.

Borso, pampered by me, by Edward Taylor and later my mother, grew to adolescence. He tippie-toed around reaction flasks, curled his little frame against one's ankles, turned his little mug up with his eyes almost closed, waiting for a caress. He caught grasshoppers and praying mantis and brought them home for dismemberment and supper. When we got our first military contract and the plant was open all night he stayed up and helped me pass the long quiet hours. I had a cot in what was later to be the "bomb" laboratory; this was his sleeping chamber and he would slip in to snooze when not watching the reactions.

The telephone and the typewriter have been very important in my life. I have always tried to take personal calls and help chemists locate what they need, or to advise if we could make an item-and when. I try to type all my own letters and have written many thousands during the past thirty five years. This is why I was at the typewriter next to the telephone when we received the fateful call in late 1944. It was relayed from the Chemistry Department at the University; the caller was Captain Mont Hearon who was with a company he called Manhattan District Engineers. I had never heard of them but the name was impressive and I felt sure they could pay their bills.

We wanted to know if I had ever made asym.-heptachloropropane. I assured him that I had, that the material was in stock, and in fact was "on

special.” He did not “bite” and asked if I had made hexachloropropene, and I assured him that we did, that it too was in stock and that it too was on sale. Then he asked if I had fluorinated hexa and I told him that 1,1,1-trifluoro-2,3,3-trichloropropene was one of our regular products, that we sent large amounts of this to Whaley and Henne at Ohio State University. I told him we could make any reasonable amount he would need-that it too was on special. Then he asked me if we had ever oxidized trifluorotrchloropropene to trifluoroacetic acid and since I was sure that this is what Atherton was doing with the material I had sent I told Dr. Hearon that I had not run the reaction but felt we could give it a try. He advised that they had procedures and we would get together later in the week, he would take a train to Columbia and see me. He asked that I not say anything about this telephone call or his visit and above all not to discuss trifluoroacetic acid.

The next day I wore civilians to Chemistry class. The matter of dress had been a source of controversy with the Navy Flight people who felt that, since I was no longer in the program and the Navy had never issued uniforms to civilians in the first place, I should dispense with mine. I ignored them. No one came to my classes or plant to press the point. I did not wish to confuse my visitor-so took off the uniform on my own. I never put it on again.

No one came to the Department of Chemistry. I left for the plant that afternoon confidently expecting Dr. Hearon would be there; he wasn't. Nor did he show up that evening, nor during the next few days and nights. Four days later, when I had given up hope, he appeared, not at the plant but at my home. We sat in the living room. Jules and my mother were having coffee in the kitchen but came out long enough to be introduced and then left us alone. Captain Hearon was a tall, handsome man. His hair was prematurely gray, and cut very close as was the Marine style of the day. He was in Army Chemical Corps. uniform and carried a brief case which never left his hands. He was obviously quite tired and I sensed that he had been busy.

“I have a pretty good resume of your life history here” he said, indicating the brief case. “I have been in Columbia for several days checking on you.” I was mystified and flattered, “Why?” He explained that Manhattan District Engineers was an auxiliary for the army, and they carried out highly confidential work. He was aware of my work in halogen chemistry, my dabblings in fluorine chemistry and the work at the University and at our little Columbia Organic Chemicals. Someone had sent him; his job was first to investigate me, then to qualify Columbia Organic Chemicals as a vendor, and then to place an order for a chemical whose synthesis he would discuss the following morning. My mother and Jules joined us and we sat around for an hour drinking coffee and discussing the war, chemistry and M.I.T. where he had been a teacher before joining Manhattan District. “I'm a sort of chemical G-man”-he told us.

The following morning we met at the plant and he told me the job which

they wished done was the synthesis of ethyl trifluoroacetate from trifluorotrichloropropene via the intermediate trifluoroacetic acid. He showed me "confidential" and "secret" patents and procedures. I noted that Henne's name was on all of them. He asked me to quote on 20 pounds of the ester.

After many years running a small chemical company and handling similar requests I know not to quote until one has developed some experience making the compound. "Do not trust the literature" is a maxim which all learn who survive. I should not have quoted Captain Hearon, I should have made a batch of ethyl trifluoroacetate using the Henne procedure and verified that the instructions were adequate and the yields could be duplicated. I was young and "hungry" and I felt that \$100 per pound should take care of costs and allow a profit. He said that the price was reasonable and they would send a formal contract. I told him that I would need 200 proof ethyl alcohol and he promised to send a drum in his name to the plant. Once more he advised that I keep his visit and all details of our discussions confidential, and that they would be happy for me to start at once and try to send product within three weeks. I would be draft exempt.

From now on trifluoroacetic acid would be TXA, its ester TXE and the sodium salt TXN. They promised to order both acid and salt later. I was given a number in New York which I could dial toll free at any time. Then, as an afterthought, he recommended that I eliminate from my collection of records "Discos de los Brigades Internationales" which my old friend Ritchie Krone had brought back from the war in Spain. He suggested that I be careful with my friendships and avoid contact with people whose views were "to the left". Since most of my associations were with people whose main desire was to pass Chemistry and get out of the University this was no problem. I was now a part of a large program, government directed, FBI monitored, working on specific assignments for the war effort. It was many years later that I learned that I was directly working for Dr. Oppenheimer.

I told Captain Hearon that I had two part time workers who came after their classes were over and that my friend Marian Clark would be able to help; that my stepfather and uncle would be joining us later in the year. He was not concerned by the smallness of our plant, nor our staff. Once more he opened his briefcase, once again we reviewed the chemistry of our project. I made notes. He closed the brief case, shook hands, wished me luck said he would make his few final calls from the hotel and drove off. I telephoned the draft board and asked why Max Gergel was not in the service and they advised that such information could not be given over the phone. Dr. Lipscomb called at my request and was told that next to my name was a newly added notation "indefinitely deferred-2S" which meant that in addition to having the disability which might defer me I had classified work which would.

Our resources were pitiful. All had been purchased with my salary from Sutee Cooper and the Flight School. We had two 12 liter and two 22 liter

flasks but all were being used on Dr. Bost's order. I would require large amounts of trifluoro trichloropropene and this meant that we would lose many flasks through etching for some HF was released during the reaction and the walls of the reaction flasks grew progressively thinner. Nothing had been said about an advance payment, I did not have the temerity to ask. In 1977 we were assigned to make 2000 pounds of a chemical needed by the military and we quoted \$125,000 and were the only bidder. We made them pay for initial runs and part in advance for the production. One learns.

The next day I "borrowed" four 12 liter, 3-necked, flasks from the University of South Carolina. I set two of them up immediately using a tripod and used a bunsen burner for heating. Each flask had a stirrer, a separatory funnel and a condenser connected up and down for reflux. These would be used for running the oxidations. In another part of the little room I set up my 22 liter flasks with two refluxes for each flask. These would be used to prepare the raw material, asym. heptachloropropane. The conversion of the heptachloropropane to hexachloropropene would be done in 12 liter flasks stirred by hand. The conversion of the pure hexa to trifluorotrichloropropene would be done in the main lab under our one exhaust fan for the by-product HF fumes were stifling.

Heptachloropropane is made by condensing chloroform, tetrachloroethylene and aluminum chloride. If the reactants are dry you need only "kiss" the flask with a bunsen burner and the reaction exotherms and soon reaches gentle reflux. If you stay close to the flask and apply wet towels you can keep the reaction under control. Neglected, it covers everything in the laboratory with heptachloropropane. I have run it well and run it poorly many, many times. The product smells like camphor. During the reaction the flask contents turn from deep brown to a lovely green; this color change and the slowdown of the reflux is a sign that the reaction is complete.

The crude hepta contains excess chloroform. This is fortunate, as without it, on cold days, the product would crystallize out and pose a problem. The chloroform solution is washed several times to remove aluminum compounds, then stripped free of chloroform. It can be distilled to produce a water white product, but if one plans to use the material to make hexachloropropene this is not necessary. To remove the HCl and produce hexa one stirs in a slurry of sodium hydroxide, methanol and water. This was pre-OSHA days and I am sure today's agents who check on industrial hazards would object to my technique. I would add a bit of slurry to the Gergel-stirred 12 liter flask; there would be a roar on contact and I'd stir like Hell, then add a little bit more slurry and repeat until the flask was hotter than I could hold. Periodically I would immerse the flask in a container of water and go on to a second flask, which by then would be cool enough for its own slurry addition. I calculated the amount of sodium hydroxide necessary in advance. It was important not to add the slurry too fast or part of the hexachloropropene product would be lost to side

reactions. I have had the bottom drop out of a 12 liter flask while I was stirring by hand-and been liberally doused by a mixture of hepta, hexa, caustic and wood alcohol-and suffered no apparent permanent damage. All of us who have done bench chemistry have had similar experiences. We have our private contempt for government rulings on toxic standards. The flasks, propelled by one Gergel-power were allowed to cool, the top layer (alcohol, water and salts) was decanted and a mixture of muriatic acid and water was added to the thick liquid remaining, and a brown oil separated. This was hexachloropropene and it required distillation. I have made the separation of the hexa sound easy; actually getting it out of a mixture of salt, methanol and crud evoked curses and prayers and I usually got a great part on my arms and clothes. According to OSHA I should have died in late 1944. All that happened was that I developed good biceps. I might add that we poured all the water, waste alcohol and caustic, some hexa, some hepta, all the crud, and a liberal amount of my personal sweat on the ground back of the plant. Rapidly we had this region cleared of vegetation and began our own Sahara. This was pre-EPA days. The only witnesses were the vultures soaring over the terrace and one small black and white cat.

The hexa was distilled using a round bottom flask attached to a vigreux column, itself attached to a downward condenser. The distillation required a vacuum pump. One of my regular and more distasteful jobs was disassembling and rearticulating the pump. I am not mechanically oriented but in the early days of Columbia Organics you were a plumber and mechanic or you were out of business. The distilled hexa was reacted with antimony trifluoride in a dry 5 liter flask, using a little bromine or antimony pentachloride as a catalyst. In the hexa molecule there are three allylic chlorines and provided the hexa is pure and that the antimony trifluoride is both pure and dry and crumbly (and provided one is lucky and has been living right) the application of heat from a bunsen burner starts the reaction. The white mass of antimony trifluoride grows progressively black and gradually dissolves. A milky layer of trifluorotrichloropropene forms on the surface of the reaction mixture, increasing in size as the reaction progresses. Like a good chef, the chemist knows the proper time to change the set-up permitting the distillation of the contents of the reaction flask. Lack of this knowledge shows up economically in the "bottom line." By feel I would distill until no more product collected under the muriatic acid in the trap and the trifluorotrichloropropene I had produced was a pale pink bottom layer. This was washed and if the phase of the moon was favorable and I had not offended the Gods I got a good yield and did not break the reaction flask. The residues were taken to the same dumping area which had earlier accepted the wastes from our hexa prep, added to the debris; interaction was immediate and for the next ten minutes our little plant resembled an assembly of bon fires on the prairie.

The pure trifluorotrichloropropene, after it had been washed, dried and

distilled (its by-products etch flasks-which was not anticipated when we quoted on Hearon's project), was now slowly added to a stirred mixture of water, potassium permanganate and sodium hydroxide in the twelve liter three-necked flasks. There was an immediate exotherm and manganese dioxide began to separate as a dense black solid. When the potassium permanganate color disappeared, and the supernatant liquid was clear, the reaction was over; our product was the filtrate, a solution of the sodium and potassium salts of trifluoroacetic acid mixed with other inorganic impurities. Alas, we did not know at that time that this solution, on partial evaporation, could be treated with ethyl alcohol and sulfuric acid to produce ethyl trifluoroacetate, instead we boiled down to semi-dryness and often the entire mass would decompose violently, and the entire effort through all the proceeding steps would have been in vain. Until we learned better we had many such misfortunes, and combined with losses in the other stages of the reaction it was evident that the procedure was profitless. In fact our tiny store of chemicals, equipment and our labor was a subsidy to the Manhattan District Engineers. I appealed to New York and they listened with sympathy, asked few questions and promised help. The help was Major Alfonso Thompson.

We were down to one 12 liter round-bottom 3 necked flask; the crack in one other could be repaired and it was off at the glass blowers; others were on order stretching thin our financial resources. To make TXE profitably we needed help. Major Thompson was a large, handsome man in a smart Army Chemical Warfare uniform, liberally adorned with brass. He carried the inevitable briefcase. It was early morning but there was a crowd awaiting the arrival of the Silver Meteor. He addressed us (they were astonished) in a loud stern voice, saying "Which of you people is Dr. Gergel." I presented myself with apologies, explaining that I had been accepted in the project before my education was complete. He made a comment that "they send boys out to do men's work," and then made a critical observation that my skull was definitely dolichocephalic and that in his estimation brachycephalics made better bench chemists. It was then mentioned that Major Thompson had two Phd's. He was unmistakably a brachycephalic. I drove him to Columbia Organic Chemicals whose staff consisted of myself, my mother, Jules and Borso. He sat with us in our little office and told us all about his background and when relaxed, was a thoroughly nice man. He confided in me that the way to keep a wife faithful was to keep her pregnant. I explained that I had no wife. After a small lunch of sandwiches and lemonade, which my mother prepared, he suggested that we go in the laboratory and run one of the oxidations. I took him out in the plant, showed him our remaining 12 liter, three necked flask, containing the purple potassium permanganate solution, described what we were doing, assured him that the pot contained the correct stoichiometric quantities and that the temperature was correct for the addition of the trifluorotrichloropropene. He told me that I could busy myself with other work, that he would run the

reaction, work up the reaction products and study the results before giving his opinion. I suggested an apron, mentioning that on occasion the oxidations got out of hand. He told me that aprons were for sissies, that they were not needed by one who had good experience and good technique.

About five minutes later there was a muffled explosion and Major Thompson hurried into the front office where we were sitting. His uniform was peeling away and manganese dioxide was spread so evenly on his face and hands and shirt and trousers that he could pass reasonably as a Black. Something had gone wrong in the early stage which we normally passed without trouble, obviously he had added the trifluorotrichloropropene too fast. He was very embarrassed and I comforted him by telling him that we had had the same experience, mentioning nothing about the values of a PhD and the shape of one's head as factors in raising the yields in organic syntheses. Jules found that they were the same size, took him home, got him washed and even saved the brass and decorations. We all went out to a dinner of Southern fried chicken at Martin Roberts' emporium and then put him in the early evening train for New York. We remained good friends until his death some 15 years later, but his visit did not solve our problems with the production of TXE. We called in Dr. H. Willard Davis from the University and after studying the reaction conditions he gave us much helpful advice. Then Jules, who had no chemistry background, solved our problem-by making a mistake. I came to the plant one afternoon fresh from two hours of teaching Chemistry and he was sheepishly observing a 12 liter flask half filled with a pale yellow liquid. "I added the sulfuric acid and alcohol without first evaporating" he told me. "Don't worry, Jules, we'll strip it down and add more sulfuric acid and ethyl alcohol and won't lose anything." When we started to distill I noticed that two layers were forming. The top layer had the pleasant fruity odor of ethyl trifluoroacetate. We distilled, washed, redistilled and got a wonderful yield. Dilute trifluoroacetic acid was still strong enough to esterify. From that time on we evaporated the oxidation product part way and then added sulfuric acid and ethanol and we lost no runs by explosion and cut down on the expensive loss of evaporating dishes. Some great scientific achievements result by accident.

The government had shipped us, as promised, a drum of 200 proof ethyl alcohol. If I were a drinker, and had sold it for its alcohol content we could have doubled the value of the contract, but when I ordered it I had the idea that crude TXN must be dry to esterify. One of the students from the University who was working for us, Jimmy Stranch, now at Tenn. Eastman, was aware of the existence of this drum, and decided to requisition a small part to blend with grape juice and make the "Purple Jesus" at this time, and perhaps even now, popular with social groups. His fraternity was giving a party and Jimmy, working at dusk, removed several quarts, but unfortunately from the wrong drum. Methyl alcohol when imbibed straight, or diluted with grape juice

produces dramatic results such as blindness and paralysis. On a cold New Year morning my telephone at home rang and it was Jimmy. "You know the drum stored back of No. 1 distillation column-it is *Ethyl alcohol*, isn't it?" I told him that we had moved the ethyl alcohol into a locked area and that he probably was confused with the drum of methanol now stored in its place. Jimmy told me that he and his friends had imbibed a bit, fortunately very little-for it did not have the right "bouquet" and that he was off to the hospital.

I saw him a few years back when I was giving a talk for the ACS in Kingston, Tenn. His face is fuller and his hair, like my own, is no longer black. He survived. It seems that some people can drink small amounts of methanol without permanent damage. He must have been one of the lucky.

Just when we seemed to have "ironed out the kinks" I received a summons to report to Fort Jackson for my second pre-induction physical. This was in the customary letter from the President of the U.S. informing me, with the salutation "Greetings", that I had been selected for military service. My earlier visit to the Fort, promoted by the Flight school and my 2-S from Manhattan did not seem to matter. Board 67 was scraping the bottom of its barrel and needed bodies. The truck to Fort Jackson contained a great many "bodies". There were bed wetters, homosexuals, an albino and two hebephrenic schizoids who drooled. The only normals were Guy Lipscomb, Harry Kaminer and myself. Guy had been summoned from his job in essential rubber research; Kaminer had simply run out of luck. I had telephoned Manhattan to tell them goodbye and was resigned to the military where I would probably join Whaley, who was a cook. With great humor chemistry-trained inductees were assigned to the kitchens. My single testicle status obviously was no longer a protection.

We were a sorry lot. Our group reported to the pre-induction building where a group of bored medics awaited the new batch of prospects. First we were stripped and given a little package to be worn around the neck in which one stored what he did not wish stolen. The candidates, sans clothing, looked even more dreadful. This was the real thing; my first trip to the Fort had been a picnic. The first doctor looked me over carefully, checked his records and then examined with concentration the area in which my left testicle should have been. By this time the right one, panic stricken, was trying to crawl up in my abdomen which would have rendered me a eunuch. A group of doctors gathered and discussed me and my "condition" and read a note which had been handwritten and attached to my "vita." I got a peek and it intimated that women and children should be drafted before this candidate. The verdict was pronounced: "You are disqualified, son, the army marches on its testicles." School was out for me. The other hapless selectees went through a gamut of tests resulting in the acceptance of one of the idiots (who had given out of drools), a bed wetter and a former criminal. They also took poor Harry. Guy

Lipscomb, the other idiot, the homosexuals and two bed-wetters joined me in the trip back to Columbia and in due course of time I was notified that my draft classification was 4-F.

In our haste to produce TXE we took chances, and when one takes chances in the laboratory he, sooner or later, has accidents. One evening I was running an oxidation and the flask was so dark and so much manganese dioxide had been thrown on the sides and into the reflux condenser that I could not tell if the mixture was refluxing. Violating all the laws of common sense I climbed on the table and looked down the condenser. The hot vapors from the haloform reaction which occurs seared my eye, and for days I wore a patch.

One lovely Summer afternoon the humidity was low (excellent for grinding antimony trifluoride preparatory to making trifluorotrichloropropene), business was good and my spirits excellent. I routinely cleaned a 1 liter flask, dried it with acetone and neglected to aspirate the acetone vapors. When I started to pour in liquid bromine (we always used a small amount as a catalyst) there was a flash and liquid bromine splashed on my left hand. They say you could hear the screams all the way to the Veterans Hospital-as I watched the flesh curl away from the bone. I still have the scars.

Captain Hearon called with another assignment. Later I would learn that this was for Oppenheimer himself. He wanted us to make two kilos of fluoroethanol. There was no procedure supplied so I went to the literature and found that Friederich Hoffmann had reported a preparation starting with chloroethanol and anhydrous potassium fluoride in an ethylene glycol medium. I ran it with indifferent success and developed a splitting headache. I then calcined my KF, repeated the reaction making sure the glycol was dry too, and the yield was somewhat higher, and I developed the headache again. Finally I made enough to fill the order for which, as I recall, we were paid \$200. Ten years later I had a chance to meet Dr. Hoffmann himself and he marveled that I had made his compound and survived. He told me that in Germany in Bockemuller's lab everyone knew of the terrible toxicity of fluoroethanol which metabolized in the body to fluoroacetic acid and was a Krebs Cycle blocking agent. I told him that in our laboratory we had taken no precautions but somehow I had survived. For those who are curious, or wish to make fluoroethanol and offer it to us at Columbia Organics the compound has a musky, rather tart odor. By the time you have established this you have probably had a fatal exposure, unless, like Max Gergel circa 1945-you have a hyperactive liver and like the Columbia of that period, you are really hungry for business. Mark labels: "Do not sniff before using."

A casualty at this time was Borso. He used to chase wisps of paper across the field and in memory I see his little black and white kitty figure dancing with a paw reaching for the elusive quarry. He moved farther and farther from the plant and we did not connect the tooting of the train as it shifted cars with the disappearance of Borso until that afternoon when he did not appear for

supper. His paw still held the slip of paper and we buried him in a graveyard where he would be joined by other plant dogs and cats and ultimately be covered by the debris from our disastrous fire of 1958.

While making TXE for the Manhattan District I taught at the University and helped Lipscomb with the paper work of Continental Chemical Company. He was aggravated by shortages and the difficulty of getting good workmen since so many of the better men had been drafted. He needed dextrose as an ingredient for his sand blast stencil so I was put to work inverting sugar, a stupidity since sugar was itself scarce. Then we tried wood flour which results from the sanding of wood in furniture factories and lumber yards using the so-called Bergius process, in which the wood is heated with dilute hydrochloric acid. This produced a real slop. Finally I made a trip to Assembly Street and had a conversation with a merchant who supplied bootleggers and whiskey makers with Karo syrup and made a deal; we bought the syrup for them, and kept a part for ourselves. He had me locate a rubber conveyor belt. They were hard to find and on allocation. The price was fixed. I offered a bonus to the salesman for the company and we got the belt. In addition to all of this I had to write letters and post grades and God help me if my boat becalmed on a Sunday afternoon for Doc would be pacing back and forth when I arrived, berating my ungratitude. I had to keep the extra job since I did not take a salary at Columbia Organics. When people ask me about the logistics of starting a small chemical company I tell them the idea is excellent provided they have money, or indulgent parents, or don't eat.

I would arrive early at LeConte and collect my wits sitting on the stone steps in front of the huge Corinthian columns. The "green" stretched in front and students strolled to and from class, the men almost all in uniform, dazzling white for the V-12's, khaki for the Naval ROTC's and V-5's. Coeds laughed and flirted with the handsome young men. I took the sun, old beyond my years. As I sat there one afternoon, one of the loveliest girls came over followed by two of her cronies. She snatched my hand, which was at the time holding a copy of the *Forsyth Saga* and pointed out wiggles and valleys and they discussed the hand while its owner submitted like an idiot. Then, lovely princesses, they scattered to attend class and my hand was dropped. I rushed after the leader and asked her to explain; she smiled and said "We have been discussing you and we made predictions which your palm confirmed." "What does it say?" I inquired, and the voice wafted back as she disappeared in the crowd "You are a born romantic and vulnerable to women, one is about to enter your life." I went to the lecture room and faced my class.

This was Freshman Chemistry 11. All the students were young, all bright, attentive and happy. There was a particularly pretty girl near the front. She seemed a few years older than the others. She was an attentive listener, took the biweekly tests, turning in neat "A" papers. One day she tarried after class and said "May I talk privately?" I told her it would be a pleasure and we

went into the office I shared with Dr. Lipscomb and Dr. Bauknight. She told me she was collecting money for a benefit concert and would I buy two tickets? She was almost my height, had blonde hair green eyes and a lovely figure. I told her that I would buy one ticket, but had no one I might take to use the other. She said "Buy two of them Mr. Gergel and I will be your date." Her name was Amelia Wallace ("My friends call me Mimi") and she was from Mars Bluff, outside Florence. She turned to leave. I asked her to please stay, she smiled and sat down and looked at me, still smiling. I said "Mimi, are you a Freshman?" "No," she said, "I have already graduated. I took Chemistry to be with you." She paused, the smile faded and her face became serious, "Max, I may be in love with you."

She would be in Columbia for only three weeks and then would go to Philadelphia to enroll as a nursing graduate at Bryn Mawr. We attended the concert, we drove many times to the lake, she liked to swim and sail. She told me that her family would invite me to spend Christmas Holidays; she had told her mother and this was the custom. It was taken for granted that we would marry. I discussed it with Dr. Lipscomb. He told me that the Wallaces were one of the oldest families in the Florence area. He had lots of nice things to say about Mimi.

Her mother and father met us at the railroad station. Sam was a small man and very quiet; his wife was a slim brunette with a kind face, as pretty as her daughter. She drove; her husband, after fifteen minutes said, "Mr. Gergel, for the last twelve minutes you have been on Wallace property." I was impressed. Later he gave much of the property and the home we would visit to the University of South Carolina to be used as a regional campus. We reached their home, a large Colonial mansion with many wings. Her mother told me that everyone was happy that Mimi had decided to marry and that while Mimi was "High Episcopalian" the Wallaces had distant Jewish blood. I was introduced to everyone including the cook, assorted relatives, the hounds and the horses. We arranged that I would come see her in Philadelphia and we had wonderful times visiting art galleries, chatting and making plans. Then we quarreled over some trifle and she told me she wanted to be a medical missionary and we agreed to correspond and defer marriage for the time.

Clive Walker lived across the street with her Grandmother who was an Ellerbe, her Uncle Roger who was an eccentric and her mama who worked at the Wade Hampton Hotel. With them was Uncle Roger's sister, Aunt Matt and two little dogs (one a tiny Chihuahua and the other a Manchester, Patsy and Midget. These little animals walked by our house every afternoon trailing their mistress who was only about 16 and in High School. Sometimes I would help Clive with her studies; I petted Midget and was bitten, but Patsy and I got along fine. Clive was shy. I started taking her sailing and she was always ready to do what I wanted and go where I wanted and then she went to work at the plant. My mother and her grandmother and aunt were good friends. She had

been raised to be a wife, to cook, to clean, to care. She loved dogs and cats. I can recall her in the labs, face smudged, helping Jules make ethyl trifluoroacetate. She was quiet but very friendly. I asked her to marry me and she said yes-and asked if she could go tell "Big mamma," her grandmother. I told her she must first graduate and when she was 17 we would marry. She promised she would study hard. I reached over to pat the dogs and Patsy snuggled and I got a severe bite from the unrelenting Midget.

Chapter 1, Book 2

Our staff at Columbia Organics in early 1945 was Jules and Mama, Max R., and Clive. Max had not actively started working and we had Maison and Blair Turner helping in the labs. We still had a portion of the army contract and had built up a small, faithful clientele among the several colleges who knew we had alkyl halides. We broke even on expenses as long as I didn't take a salary. Then I received notice from the University that they would no longer need my services. Rescue came from Professor Ball in Electrical Engineering who asked me to teach one laboratory each week of Direct and Alternating Currents, a subject about which I knew nothing; fortunately neither did my V-12 student victims.

I was 25 years old. My net worth, aside from my equity in Columbia Organic Chemicals was approximately \$900 plus an old sail boat and a small house at Ballentine's Landing. We lived in this house which was heated with an oil burner. Our water was fetched in 5-gallon "jerrycans" before I would leave in the morning. Our bathroom was an outhouse. Clive stayed in this mansion all day. If she wanted to reach me she had a three block walk to Fred Germany's telephone, or if they weren't at home, to the Stallings's three blocks further away. If something happened at the plant at night, God help us, we were twenty miles apart. I commuted back and forth with Mr. Stallings who charged \$3 per week per passenger and if we weren't at his house on time we "missed our ride." There were six people at the plant and enough business to support four, so Clive was "detached" (and stayed up at the lake scared to death). I took no pay. In the warm weather it was fun but in the late Fall and Winter it was depressing. We had a skinny cat, Rinktus, and we were two skinny parents. We ate sparsely, supplementing our diet with okra and tomatoes purchased from our neighbor, Vonray Keith. His Aunt Maude had a cow which supplied milk to the neighborhood, and we were milk

customers. Something happened to the cow who "went down." This meant that she could not get up and do things like other cows, Aunt Maude, who was thrifty, brought her food up in a special tray and milked her as usual. We drank it from poverty, and, thus encouraged, the other customers drank it too. The cow recovered and the price of milk went up.

Vonray Keith and I were good friends. He was horrified that I had to walk three blocks to get water and permitted me to tap on to his stream. I became a plumber, *faute de mieux*. I borrowed tools from Mr. Milligan, (may he relax in Paradise!) and cut, threaded and connected pipe and laid it in the trench which I had dug myself, connecting our two houses (around obstacles such as granite boulders and trees, and in spite of snakes and poison ivy) across a distance of 600 back-breaking feet. Next I borrowed and installed, with the aid of another neighbor (an alcoholic named Horace Stokes), a commode and wash stand. With Stokes' help I built a bathroom, learning as I went the meaning of "German Siding" and "perling" and "studs." I was not a good plumber and at best an indifferent carpenter but I did not have to pay for labor.

Building a bathroom was necessary due to the deterioration of our privy. It had always leaned, and it always squeaked when one sat down, and there was always the exciting possibility that it would tilt over during one's visit. Max Revelise had a mother-in-law, Bess Kahn, and she was stout. A kindly soul, she visited us one day, and feeling the call asked us to show her the bathroom. We explained that we had only an outhouse and she was delighted saying that she had not used one in forty years. Seeing ours "over the hill" she laughed out loud and said that it reminded her of the one she had used in Russia. She entered and shortly afterwards we heard a scream and were astonished to see that the walls had collapsed and Mrs. Kahn was hanging like a trapeze artist from one of the beams. We rescued her and tipped over the rest of the building. Moments later, poor Rinktus, in full flight from her dog galloped over the hill and landed in the hole. We cleaned up the two of them and Mrs. Kahn assured us that she could see the humor in what happened, but never returned. Rinktus stayed in the woods for days. We used the woods as a toilet until I could complete the bathroom.

I hired Vonray to put in the electricity. The job cost \$45 of which \$30 was labor and the rest a breaker box. We stole the wire and receptacles from a wrecked house in the woods. I paid this debt at a rate of \$5 per week from my salary at the University which was \$150 per month. It cost me \$15 a month for transportation, food was \$75 per month for the three of us, electricity was \$15 per month. Air and water were free. We simply had no money for cleaning, for insurance, for medical bills, for clothes, or repairs. I went down to the University of South Carolina and asked Doc if he would give me papers to take home and grade and he promised he would, but was absent minded and never called.

With our contract completed we faced a real problem. With the war over the country had a recession. Mason and Blair left for school and this reduced our staff to four but we still could not make expenses. We tried selling chemicals locally, also fire extinguishers, rubber gloves, aprons. I met the fellows at the D&M Metal Plating Company, which was across the street from the terminus of Mr. Stalling's daily run, and they bought all they could. The owners of D&M, Hoyle Dobson and Bubber Martin, were glamorous men involved in some of Columbia's more exotic enterprises. Martin ran a gambling house during the war; Dobson had a huge bus touring the country with an embalmed whale and another with a Jap midget submarine and another containing Hilter's personal car. The electroplating company started because Hoyle had purchased a sizeable quantity of knives, forks and spoons as well as mess trays and trench shovels from war surplus and wanted these reconditioned. He took a small group of veterans and started an "on-the-job" training company making them into electroplaters. Their leader was my friend, Hank Golden, who today directs the fire engines which visit us when something goes wrong.

They gave me a consultancy. People brought in various heirlooms to be silvered. D&M had a tank, electrodes and a DC generator. They could put on a lovely coat of silver, but it soon flaked off. My job was to find out why. I consulted the books and took advice from friends at the University, but no success. Hoyle solved the problem by hiring a German plater named Hildebrand who could plate anything. Now this was fine, but Hildebrand had a reputation for wandering off. My new assignment was to shadow him and discover his secret. When Hildebrand ran the baths the silver came out bright, and stuck to the objects; the minute he left troubles started. No one knew why. Shortly before he left to go into the antique business in Charleston he showed me the secret. It was his chewing tobacco, spat into the bath from time to time. From then on, one man in each shift chewed, and the problem was solved.

Max Revelise joined the company. He celebrated his arrival by throwing a drunk which lasted several days and boded ill for his career at Columbia Organic Chemicals. When he was sober he was wonderful company and had great ideas. We discussed the items we had to sell. They were pitifully few. We were representatives for Mallinckrodt Chemicals, but had little stocks and few customers. Our sales of fire extinguishers, rubber gloves and aprons produced little money. We needed a product line. God delivered this. We became industrial chemists by being good hosts. At 12:00 every day my mother would fix soup and sandwiches in our little front office. We would sit and discuss our problems and drink the hot soup. One day a car drove up and in it were two men from the DuPont Company. They were Howard Smith and Charles Klotzberger. Howard was the district manager, and they were looking for business. Invited to join

us for lunch, they stayed all day. They could see at once that we were struggling for survival and discussed with Jules and Max the formulation of industrial cleaners. They agreed to sell us the raw materials and supply us with formulae. They told us who would buy and how to price and what to sell. When they left there was joy in our organization.

We built our first soap machine. It consisted of a 55 gallon drum mounted on a stand with a crank and a side door which could be opened to introduce raw materials or pour out the finished soap powder. We sectioned off the laboratory so that one part became our soap factory. Our workers were Mr. C. J. Seideman, LLD, Mr. Max Revelise, Masters, USC, and M. Gustave Gergel, B.S. in Chemical Engineering. The three of us took turns cranking the monster and pouring its contents into bags and 25 pound tins. Dust was everywhere and since I suffered from hay fever I sneezed all night. We started off making a mildly alkaline cleaner for hand dishwashing and scouring. Since the material did not suds (later when we were sophisticated we would add actual soap powder which built the mass of bubbles the dishwashers considered necessary for cleaning), too much tended to be used and the end result was, inevitably, dermatitis. It was necessary to educate the “washer” or “pearl diver”, as she was called in the argot of the kitchen. I was the teacher, and kept dermatitis—and one wary eye out for people who might know me and see me washing dishes in some eatery and go back and tell their friends, “Saw poor old Gergel today—he’s washing dishes for Tom’s Cafe.”

Max Revelise was the chief-of-operations, also the salesman and bill collector. In the morning he, Jules and I took turns cranking the soap machine. Later he would go out and sell the product. In the afternoon, once more dressed in work clothes, he would make the delivery, and collect the bill. All soap powders were sold C.O.D. Many of the customers thought there were three Revelises and I recall one who told me “I like that nice Revelise who does the selling, but that brother of his who delivers is sullen.” I would agree, for after one has man-handled a 200 pound drum of soap powder down uncertain steps, around bags of produce into some horrible hole of a storeroom, one is not inclined to gaiety. Most of our customers were black and they all liked Max who would stop a sales pitch to discuss religion or “gestalt psychology” to an admiring group of employees and customers. On more than one occasion I was asked “now, that Revelise you got out theya, aint he a nigger?” Max was rather dark complected or “liverish,” as they used to say.

We built up a faithful group of customers. Several weeks after the start of our mixing operations we had a visit from Jimmy Broom and his friend, Mr. Hellams, who was with the City Health Department; he was chief inspector for the restaurants. It was he who determined whether the premises were clean, the dishes and glasses washed and sterilized, the bath-

rooms tidy. His visits were anticipated with the same pleasure afforded auditors for Internal Revenue, his word was God's and his mark "A," "B" or "C" influenced customers. "C" meant potential cholera or bubonic plague. Jimmy and Hellams were old friends; Hellams was Jimmy's partner and consultant.

Jimmy's family were restaurateurs par excellence. His brother Doug had popularized drive-ins in Columbia and they owned or controlled several eating places. Parenthetically it may be remarked that the young Bill Fox, author of "Southern Fried" was a hash slinger in one of Doug's places and that Jimmy's younger brother Gene still operates a string of eateries. Delivering soap once to Doug's, I ran into Lonnie Justice (who had destroyed me in a fight at Logan School when we were kids.) He was cooking hamburger and I was delivering soap. Neither of us had amounted to much. Jimmy and Hellams knew every establishment which at any stage of operation poured a liquid into a glass or served something edible (or inedible) in a dish. Such was the clout of Hellams that the owners of the establishments were only too glad to take his advice on a good reliable source of soap powder (and later germicide when we went into the germicide business) so our sales and the incidence of dermatitis boomed. The telephone was busy and the delivery man, M. Gustave Gergel, BS in Chemical Engineering, developed lower back trouble which persists to this day.

Hellams and Broom offered us a deal: Restaurants, as earlier mentioned, were graded "A", "B" or "C" depending on the degree of sanitation one could expect. The chances of coming down with violent illness through eating contaminated food, (or uncontaminated food on a germridden dish) corresponded with the grade received. Another criteria was the glasses—whether or not they contained hair or fingerprints of the "pearl diver" (the dish washer), or traces of the last beverage ordered. Our customers used large amounts of quaternary disinfectant to snuff out bacteria and washed dishes and glasses in a solution of our soap so hot that it not only removed grease and films but part of the derma of the unfortunate dishwasher. In the nadir of my existence as president of Columbia Organic Chemicals I accepted a place on the team which would call on these establishments and demonstrate our products.

Hellams would visit some poor Greek or Negro running a hash joint on Washington or Assembly Streets and wade through the confusion back of the counters to the kitchen and the sink stacked high with dishes from the lunch time rush. Immaculate in his blue serge suit he would take a swab from a plate or dish, culture it and bring back the bad news to the proprietor. "Mr.—I have found the bacteria which cause acute diarrhea, herpes simplex, yellow jaundice, plain jaundice, gonorrhoea ("you say, boss, we got that too?") was frequently interjected by the victim), plain itch and the seven year variety. After the announcement, and while the unfortunate owner was still in shock, he would hang up a placard "C" in a prominent

place so that the next customer would know to eat at his own peril.

The stage was set for the entrance of the other members of the team, summoned by Hellams with a telephone call. Enter his friend and ally, Max Revelise, the salesman with his trained ape, Gergel, the dishwasher; the accumulated dishes and glasses (on bad days pots and pans, too) would be cleaned by this unfortunate whose hands, unreddened, would then be displayed to show how gentle was the soap we sold, how happy the dishwashers privileged to use it. Revelise would then discuss the theory of washing dishes and the use of quaternary disinfectants and write up a hefty sale including a gallon of germicide. The dishwasher would return to the laboratory which had case hardened his extremities. Hellams would return, take new swabs and congratulate the beaming proprietor on his new cleanliness, and replace the "C" with a "B" or "A" depending on the E. coli count of the swab and the amount of soap the wretch had ordered.

After a month of this cooperation the team of Broom (the business manager), Hellams, the "heavy", Revelise, the barker and Gergel, the "geek" had taken over most of the peripheral eating house business and moved on to the larger restaurants and hotels where Revelise, the economist, contrasted the cost of our product per hundred dishes washed with that of the competitor, and offered to educate the help under the tutelage of his associate Mr. Gergel. By this time Mr. Gergel had developed severe dermatitis and a badly shattered ego. A kind man, Max Revelise reversed the roles and for the next month I was the pitch man and he washed the dishes. He accompanied this chore with soulful renditions of "O Sole Mio" and other semi-classics to the awe of the proprietors, some of whom are still alive and reverently cross themselves when his name is mentioned.

Actually our detergents and disinfectant were much cheaper and far more effective than those of the competitors. The soap produced an immaculate surface, the quaternary did the rest. Performance combined with showmanship and the subtle power of Hellams to assign "C" ratings influenced the proprietor to buy from Columbia Organics. Nowhere could a simple restauranteur buy soap and get a lecture on "Ultimate Reality" save from Columbia and its wonder salesman Max Revelise; no end man nor stooge ever cooperated more completely, served more devotedly than his Sancho Panza, M. Gustave Gergel, a one-time scientist, forced by economics and cruel fate to perform wonders of dishwashing for the critical approval of the semi-literate.

I have no doubt that, somewhere in heaven, my uncle Max and my old friend and accomplice, Hellams, are bartering the angels out of their pinfeathers.

We bid on the requirements of the school lunch programs and for several years supplied the cafeterias. We packaged a high sudsing powder which we called "Sulfine Sudsy Wash Power" in coffee bags and sold it

to wholesale grocery houses. The visit of the DuPont men had literally saved our lives for now we had a steady and almost predictable source of income to supplement the chemicals we produced in the labs.

Max purchased a truck. He knew people all over town and his friend, Charlie Stork of Sunshine Cleaners and Laundry, had a friend who had a now-defunct laundry and they had a nearly defunct vehicle. This was a small black panel truck which no longer had the strength to deliver and pick up laundry and drycleaning. We bought it for \$50. It drove as far as the plant and died. We pushed it out on the road and Mr. Mahaffey, who ran the Shell Station where Cedar Terrace meets Devine, helped us start it. "That truck will keep you poor," was his comment. The old truck must have heard him for it rallied and ran erratically, but without major problems for the next few months. True, the exhaust pipe had some defect so that whoever was driving would turn blue and gasp with anoxia after a trip; true, that we all had to learn a bit about points and timing. In its Indian Summer this old veteran moved an awesome tonnage of soap powder up Columbia's most devious alleys. It ran, off and on, for three more years, perhaps 20,000 miles, and then we sold it to one of our fellows and he ran it for additional years. Old laundry trucks never really die.

Max would come to the plant in the morning, check in, drive back and pick me up wherever I had reached in my walk from the Stallings' terminal, turn the truck over to me, pick up grandfather's car and sally forth to clean the city, or at least its restaurants. When business was slow he helped Jules and me with the cranking of the soap machine. He told all who would listen his observation that one did not need a Masters in English to do this work; Jules added that one did not need an LLD and a small ghostly voice from the delivery platform echoed, "certainly not a degree in Engineering."

Jimmy and Hellams visited the plant. They brought a third man. He was a genial rummy old timer with white hair and high collar, a sort of ex-preacher type. They introduced him as Dr. Bold. He carried a small box and they asked if they could talk with me in private. We went into the front office, shut the door and opened the box. It contained a small cage in which paced an infuriated rat about 8 inches long and heavily teathed. These were gnashing. Jimmy told me that he and Hellams were planning to add exterminating as a feature of their business association. Mr. Rat was their come-on. Dr. Bold was its keeper, and friend. Actually the monster was trained. Despite my protests they opened the cage and the demon rushed out, tore around the room and made for Nickodemus (the current plant cat) who wisely took shelter on a high shelf, from which she eyed the newcomer with alarm. His energies spent, the super-rat returned, crept into his cage and went to sleep. I was enormously impressed. They unfolded the plan.

Dr. Bold would go into a business establishment, particularly when customers were present and cautiously release Mr. Rat who would do his

thing and then rejoin his confederate outside and be rehoused. Then Dr. Bold would return to the premises in role of rat-killer and for a fee offer to remove all rodents which might be present; then up would come the dreaded Hellams who would tell the dazed owner, "I understand you are having a problem with rats"" later Jimmy would come by and sign him up to a contract. My job was to produce an efficient rat-destroyer. I became an expert in thallium, red squill and later "1080." From this it was a simple step to formulate insecticides and termite killers. By the end of 1948 when I was 27-years-old we had a flourishing "Industrial Division." Dr. Bold lived into his 80's and super-rat lived out a long and productive life. Many years later, Bold, now retired, Jimmy, Hellams and I buried Mr. Rat, dead of old age, in the little plant cemetery alongside a growing collection of our deceased.

Chapter 2

In 1948 “Industrials” hired its first, full time employee, an ex-army sargeant, Mr. Irving Anderson. He took over the cranking of the soap machine and a gadget we had borrowed from Woods Brothers (the mayonnaise people) for filling our Sudsy Washing Powder bags. The soap operation was moved to a small out-building. I could now make chemicals in peace without breathing an air rich in soap “fines”; no longer did I have to crank the machine, deliver the product, and instruct dish washers. Life was wonderful.

During the Winter of 1947 there was a terrible shortage of anti-freeze. Since we had a good friend at Dow Chemical Company and knew people at Union Carbide as well, we could buy diethylene glycol which works as well as ethylene glycol. Using triethanolamine as a rust inhibitor we sold all the material we could make. We worked around the clock; every morning there would be people waiting to buy single gallons and cases. We bought a new truck, and now were making soap powder, concrete cleaner for service stations, insecticides, rat killers and anti-freezes.

One of our customers for insecticide was a twitching, gaunt Mr. Jackson who killed termites with white arsenic. “I’m one of the last of the arsenic killers, boys”, he said to a fascinated audience of Columbia Organic’s Industrial Division (myself and Max Revelise). He showed us how one trenches under the house and pours in a solution of arsenous acid in the form of the sodium salt; how the arsenic had accumulated under his finger nails, in his lips and gums and in the whites of the eyes. He was impressive. I had read somewhere that white arsenic was the poison most fashionable during the period of the Borgias, that people could develop immunity to it over a long period of time, that it produced twitching, and that those who had used it in safe doses not only survived but developed super libidos. I asked Mr. Jackson if he had a super libido, then translated this into the language of the people. He guffawed and told me that arsenic was great, the best aphrodisiac in the

world. He went on to tell me that he had just married a “widow school teacher”, that he would bring her out some time and she could testify as to his powers. While he talked he twitched. We developed a super termite treatment using pentachlorophenol and sold this to Jackson for many years. Despite the change to this gentler treatment he never lost his twitch, nor, he claimed, his virility.

We purchased “penta” from Monsanto and made this up into a 50% solution. The customer would mix one gallon of our concentrate with ten gallons of kerosene or varsol and pour this into little trenches dug around all the supporting structures under the house. One used one gallon of dilute solution for each ten running feet and the cost of treating an average size house in the 50’s was about \$50 worth of chemicals. If one had a son, or a neighbor’s son or a wife so dominated that she would work under a house, the labor cost was trifling. In those days the average termite company had an impressive tank, hose and a lout who crawled under the house and read funny books, every now and then tapping a pipe with his hammer. The price was high. Now thanks to “OSHA” and the “Toxic Substances Act”, penta has been outlawed to the joy of termites. Poisons affect the ground moisture; the termite, after his days work, goes into the soil to wash down all the cellulose he has ingested. You get him when he drinks.

I asked Jackson how he kept in business. After all, sooner or later all houses get termite proofed—and he was not Columbia’s only termite killer. He confided that he had developed a business booster, and showed me an envelope containing roach eggs and in his truck a little cage containing mated mice. When he completed his job he left eggs or mice depending on “conditions.” (The moral: check the character of your exterminator). He told me tricks of the trade, the hammer on pipes routine, “Yore studs is et up with termites, mam”; (you show the horrified owners a termite chewed hunk of wood brought from some other location). The field day comes when some luckless owner builds on a concrete slab. Amazingly, termites find channels in concrete. Mr. Jackson would drill holes and inject poison. At his price it was sometimes cheaper to abandon the house to the termites. I became a termite proofer to supplement my salary at Columbia Organics, joined by Anderson, our soap producer, Revelise, who had to support his family and his drinking, and Jackson, who came along to “give you boys advice.”

We marketed “Aridex.” This was a product developed by the DuPont Company for treating laundry and dry cleaning; a wax suspension which renders it water repellent. There was a price freeze on dry cleaning and laundry charges, but a loophole permitted a “surcharge for extra services.” Max Revelise started a number of “Aridex” programs in the local establishments and the garments treated not only shed water but had a nice “feel” since the wax acts as sizing. We sold many drums. Launderers all over the city were eager to offer the service (and collect more money from customers). We hoped

to franchise the program and become rich! DuPont sent two men down to Columbia to find out why we were selling so much of their product; they did not believe a collection of non-professionals could develop a market overlooked by their experts. They were “devil’s advocates”; we had to convince these pleasant, handsome disbelievers that DuPont had a gold mine. They were not impressed and we were disappointed for we had fond dreams of becoming executives in a hypothetical new “DuPont, Aridex Division.” Over the years I have learned much of corporate intelligence; in 1950 I associated largeness with wiseness. The program came to an end when the “Office of Price Administration” challenged the use of Aridex, stating that it was a method of increasing price on the pretext of doing a service. DuPont, who stood to gain more than Sunshine Laundry and Cleaning Co. and similar establishments packed up its bags and departed. “Put not one’s faith in princes.” We were in, and out of Aridex, in three months. A painful memory is the day Max and I cleaned the equipment of Sunshine Laundry. A drum of faulty Aridex threw its contents on the wheel. More humorous but financially disastrous was the time when Max sold Aridex to Tidy Didy Laundry Service. They waterproofed a day’s diapers to the anguish of owners, parents and our check book.

We made boll weevil poison. To do this one dissolved “Toxaphene” in a solvent. Since the “Toxaphene” was a black sticky oil our workers (Seideman, Revelise, Gergel and Anderson) smelled more strongly than usual (boll weevils and neighbors hate the odor), and looked like coal miners. The customers paid cash. We stirred and smelled but we were happy.

We made “Willis’s Master Spray,” the first DDT formulation offered in Columbia. Since DDT did not go into solution very fast I conceived the idea of dissolving it in carbon tetrachloride, then adding deodorized kerosene. It is a question of which was wozzier after an application, the insect or the hunter. As a result of this particular brilliance, many cases of cirrhosis of liver may have been initiated.

We mixed pyrethrum and rotenone to make Mexican Bean Beetle poison. We formulated concrete cleaner using sodium metasilicate, pine oil and a little fluorescein to clean oil slick from service station concrete pads. We made a de-bugger for removing encrusted insects from auto glass; we made white side wall cleaner by dissolving our concrete cleaner in water. We sold terrazo cleaner, the same product under a different name.

At this time my friend Hank Rothberg, who was a co-owner of General Arts, approached us to formulate an asbestos tile cleaner. They already had a name, “Luster-San”; they needed something to put in the container. Our industrial chemist, Max Revelise, with the aid of his trusty assistant, M. Gustave Gergel, developed a solution of DuPont’s “soapless soap,” MP-189, with a little tetrasodium pyrophosphate. This mild product sudsed and cleaned well (tile cleaners which are more “dramatic” usually remove tile when doing

their thing). I had been selling a similar product to restaurateurs and some of the small hotels. At the College Inn, the owner asked if it would “take off” tile and I told him the product was so gentle that one could gargle with it. He asked me to demonstrate. I gargled and he ordered a quart; my all-time low in making a sale, my all-time low in self esteem. I told the story to Hank; he was impressed. I gargled and he was even more impressed. I cleaned a test swatch of linoleum tile and he was “sold.” General Arts was having a sales meeting; he asked me to put up 100 cases of Luster-San and give him a sample. He would gargle for the group. I left the filling and sample work to Mr. Seideman who made one of those small errors which frustrate a project and doom a sale. He substituted trisodium phosphate which is extremely alkaline for tetrasodium pyrophosphate which is mild. Further compounding the error he doubled the concentration so that Hank would get dramatic results. Little did he realize the deadly cocktail we had produced.

Came the appointed evening and we were ready to accept congratulations (and orders) after the presentation. Hank made his “pitch”: “Gentlemen, this is a product so mild that a person can gargle with it.” A voice from the audience, probably his brother Mike, serving as “shill,” called “Show us.” Hank displayed the bottle, turned so that the label “Luster-San” could be seen by everyone, opened his mouth like a swordswallower and took a hefty swig. Instantly he gagged and bubbles came from his mouth and he yelled, tore at his throat and behaved like a madman. At first the audience considered this an act and applauded—then someone called an ambulance. Two of the employees of General Arts held Hank, who was in convulsions. Everyone was nice about it, accepted our explanations and told us that they would probably order later in the year—but they didn’t—and ten years later we were still giving the stuff away as bonus for sales.

Max Revelise “hit the road.” We had a million Kerr jartops from Woods Brothers who had earlier loaned us our Sulfine Sudsy Soap machine. He put the tops in cellophane bags and went from country store to country store reciting poetry, discussing religion and showing card tricks. He sold lots of Kerr jar tops. My Aunt Leah went with him and would discuss piano, voice, politics and child rearing with the shopkeepers wives. They were a great success and we sold out of Kerr tops and Woods had to order more.

We developed a super bleach. It was a solution of hydrogen peroxide and worked beautifully with delicate fabrics. We called it Colorbrite; it had no odor and did not damage wool. It was produced in a 55 gallon drum by our chemical staff, Mr. Anderson, helped by his assistant Mr. Samuel Revelise, father of Max Revelise, and by my mother Mrs. C. J. Seideman. The product was excellent. We put up hundreds of cases and advertised it in the local newspapers. Alas, breaking into the market required more than a good product and although every user loved it we sold very little, and lacking money to do a

real promotion, Colorbrite joined the other “might have been” products we developed in our eagerness to make Columbia Organics successful.

Mr. S. Revelise had joined us after the death of his ladies “ready to wear” business. He was in his seventys and had managed to raise three sons and three daughters, but never to make money. He did not care for he was a Socialist and prided himself on being “above” making money. He was also a hard, deadly worker whose broom swept many a bottle of chemical off the shipping table; his poor eyesight resulted in many customers getting the wrong chemical. He was happy, surrounded by his descendants; able to work and earn a living. Since he was accustomed to poverty ours did not bother him a bit. We had, with his coming, a second car.

Chlordane came on the market. Max Revelise was one of the first to realize its potential and made up solutions which we sold for killing roaches. He called his two products (actually they were virtually the same except that one contained DDT) Elephant Killer and Seideman’s Special. In large drums he sold either for use as a substitute for pentachlorophenol in termite killer. We still sell both products to old timers who remember them—and Revelise.

One of our regular customers for insecticides was Sam Chewing, an elderly eccentric. He wished us to make roach powder. The cockroach, an animal which thrives in the South, was introduced to Columbia by General Sherman’s army which led to its second name, the Yankee Bug. The creature is nocturnal and, like other animals which operate at night, emerges, hungry, when dusk falls and the house is quiet. It is always alert and always hungry. Our variety is quite large, has wings which it never has to use for it depends on speed (a researcher has shown that they develop up to 125 MPH in sprints). Roaches thrive on most insecticides for they have armor and the spray does not bother them at all. Sam wanted to poison them and we formulated a delicious but deadly blend of sodium fluoride, pyrethrum and powdered sugar. We put it in coffee bags and called it “Roach’s Last Supper” and showed a copy of the Leonardo painting with roaches substituted for disciples. An enraged clergy made its protests and we changed the logo to “Chewing’s Roachfeast,” showing the same picture; it sold equally well. Flushed with success, financially independent Mr. C. “ate high on the hog.” His heart and liver gave way and he was buried with honor in one of our local caravanserie for the departed. I am told that the old logo is on his tomb along with R.I.P.

Max traveled from one end of the state to the other and was away most of the time, calling on drugstores, service stations and school lunch programs. Many of the oldtimers still remember him and Leah, who went everywhere with him. They speak with mingled awe and affection. He would interrupt a sales “pitch” to help solve some problem, or wait on a customer. He “substitute-preached” in smaller communities with a mean sermon mingling his views on “Ultimate Reality” with injunctions against strong drink. His audience was shaken by his eloquence. Some of them “got the voice” and

went whooping and hollering into the outback. After a performance Max would sit around and drink whiskey with those who cared to join him confiding that since he had made his peace with God he was permitted a drink now and then “just for the nerves.”

He was constantly testing new religions and at one stage decided to become a Catholic. There were long sessions with Father Murphy and he applied for permission to attend a retreat at Mepkin Plantation where the Trappist Monks make bread, wine and cheese. These men have a vow of silence. After a week with Max they were no longer silent and noisily discussed Ultimate Reality. The bread, wine and cheese making was neglected. A silent Supermonk was sent to investigate; Revelise was banished. He was considered “part-colored” by the Blacks, part Greek by the Hellenics and part-Indian by the remaining Lumbee and Cherokee. He was a mighty drinker and a coterie of hypnotized admirers followed him on Saturday nights to one of the several cafes where he held forth on his favorite theme.

He came into Kester’s Bamboo House of an evening with a towel wrapped loosely about his head and introduced himself to a reunion of some 35 members of the Watkins family as Abou Ben Revelise, Swami. Max was drunk, but eloquent, and the people were impressed. They thought he was an entertainer supplied by the management. He produced a pack of cards, riffled them and revealed the chosen card in all sorts of out of the way spots. They applauded. He produced a ukelele and sang hoarsely of his lost loves; they were ecstatic. Then he told them that he would attempt a never before performed feat of legerdemain. He would remove the table cloth without disturbing the tureens of hot Chinese food; they whooped him on. Max grasped the end of the tablecloth and with one mighty jerk deposited a terrible conglomeration of food, dishes, cutlery and hot tea on the shell-shocked members of Clan Watkins. Max muttered about the “will of the Gods” and was led off by Mr. Kester and the police. I pretended that he did not belong to me.

He was always experimenting. At one time he decided to make “lye soap” by saponifying the grease produced in restaurants. He collected several drums of this mess containing not only grease but bits of potato, fragments of meat, cigarette butts and the cast-off garments of the pearl diver and other employees. He cooked this up with alkali and produced a perfectly vile, evil smelling soap which would remove hair. Realizing he needed technical help he hired an old colored woman as consultant. She showed us how to strain the tallow and mix it with the alkali in an iron pot. She refused to make it in the equipment of Columbia Organic Chemicals. Facing the nightmare of purchasing a hundred iron pots and as many “cooks” Revelise abandoned the project. After the drums began to stink with decaying tallow we hauled them to the land fill but Max was oblivious, for he had turned his attention to pharmaceutical research.

He had read somewhere that potassium iodide could be reacted with

iodine, that as a solution in diethylene glycol the product was antiseptic without the burn or color of iodine. He postulated a treatment for athlete's foot and hemorrhoids based on iodine's known properties. Having no lab animals, and being a true laboratory scientist, Max carried out field testing on himself and the faithful M. Gustave Gergel. Bufferdyne, as he called his invention, was applied to his posterior (fortunately—or unfortunately Max had “piles”) and to my toes. It was a heavy cream smelling faintly of iodine. After a week my toes were free of itch and Max proclaimed that his “piles” had shrunk. He was heady with success and took to the road with his car loaded with cases of Bufferdyne and advertising blurbs proclaiming that Piles and Athlete's Foot could now be cured in the privacy of one's home. He sold it like magic throughout the state and collected testimonials from the happy users. He had photographs made of the Revelise backside before and after treatment which he showed to an all-male audience of country druggists, enraptured with the scientific breakthrough of their favorite “drummer.”

Then my toes developed first numbness and later sores and simultaneously Revelise had a recurrence of his condition and was taken off, howling with pain, to one of the hospitals where an emergency hemorrhoidectomy was performed separating Max from a part of his lower intestine. Hasell Ross, the surgeon, told me it was the worst . . . he had ever seen. We withdrew the product from “trade” and kept a “low profile.”

Max had a crony, Harry Fripp, who drove a used hearse. Harry came from a tall family but was quite short. Max called him Fripplet, with great affection, when the two of them were inebriated. Max's home was noisy with their pleasure on weekends. I am told that on one occasion they ran out of “chaser.” Max recalled seeing a Coca-Cola bottle with a Kleenex plug in the back of the refrigerator. Without checking the contents he mixed this with corn whiskey and each took several big swallows. Unknown to Max this was Leah's soap dispenser. Sudsing heavily and cursing, they drove in the hearse to the emergency room of the Columbia hospital and had their stomachs pumped.

Periodically Max would leave home and be found in some bar, bleakly expounding Ultimate Reality to a mildly interested “Sunday-after” crowd. Once I received a telephone call from the police. They were polite but concerned. They asked if I could influence my uncle and I promised to try. I was told that he was creating a disturbance on Heyward Street. Backed up cars indicated that the disturbance continued. We parked on Saluda and walked to Heyward. Max had moved his bed from the house, strung a drop-cord to the headpost, and was lying in bed reading the bible on the front lawn. He was unclad. Leah was advising those who would listen that she “could handle everything.” Max was almost sober and kept saying “Leah, you are mad.” I discussed the day's business with him and in a better mood he re-entered the house; the crowd dispersed.

He was a phenomenal salesman. I went with him on several trips and watched him in action. He had charisma. To listen was to buy. His voice was low and pleasant and the words flowed beautifully, like free verse. Customers would buy if only to show gratitude. He entered the orders on a little pad, tore off the copy with a flourish and presented it to the buyer, who held it as if it were precious. Sometimes, on request, he would quote sections of his own poems and often would be asked to write down excerpts. This went on the sales receipt, properly autographed.

Through his friendship with “Shotgun” Cannon we got into the toilet bowl business. Shotgun used to visit the plant every three months and buy muriatic acid and Coca-Cola jugs, which we had gathered, washed and employed as containers for insecticide. I used Bobby, Tommy and Ervie Lee as jug collectors and every week we harvested the drug stores who received them full of cola concentrate and were glad to sell the empties.

Shotgun would repair to the side of the industrial building and fill each jug half full of water, add a little blue dye and then fill the balance of the jug with muriatic acid. He affixed his label “Cannon Cleaner—Blow Away the Crud,” packed four jugs to the case and added a special toilet bowl brush—a normal brush with a long handle. The cases stacked in his station wagon, he and Max would celebrate (if Max were at the plant when he visited) or, he would take a snort alone.

Max suggested that they make a trip together, share expenses and help each other drive, etc. Shotgun was agreeable. They got as far as Sumter, where we located them three days later after an all points search and customer-by-customer checkoff. They were in jail. Liberated, Shotgun continued the trip and we brought the liberated Revelise home. He was enthusiastic (the jail sentence was due to lack of a license and had nothing to do with drinking, he claimed; the jailor disagreed) and told us that he now knew the “pitch” and that Shotgun had given him the lower part of the state as territory. The water in South Carolina contains iron salts and pipes are often old and corroded. As a result an ugly red stain precipitates in sinks and commodes (and probably stomachs and intestines as well), which melts away magically when treated with muriatic acid, the active ingredient in Cannon Cleaner. Tiny amounts of sink and commode (and the human stomach) erode in the process, but the action is slow and the salesman is seldom blamed. The magic disappearance of the red stain and the eloquence of the “pitchman” assisted the sale with restaurants, theatres and, especially, service stations as victims. The cost of the gallon jug was more than the cost of the contents. The selling price was anything the market would bear and varied with the locality and the resistance of the customer. A case plus a brush sold “normally” for \$15; two cases per day was the salesman’s “nut” (the amount one has to sell in order to declare the day a success— and in the case of Shotgun, and alus, often our star sales-

man as well—sufficient cause for celebration in a local tavern). Max had a fantastic pitch; a flair for showmanship.

We would go to a service station (I was the assistant: the prop man). “Fillerup”, from Revelise (horror, on the part of the accomplice, who knows that we do not have the money for gas—and this in a day when there were no credit cards). Then, “May I use your bathroom?” Given the key and following the pointed finger of the attendant, he would disappear, to return in a few minutes, ashen faced: “Say, friend, you have albumin in your commode. That’s why you have red color, and this causes clap.” He buttoned the last button, leaned against the attendant, one arm affectionately on his shoulder—the other stretched out with the hand and one finger pointing all the way to God. “It so happens that we sell a product which will clean your crapper, kill gonorrhoea bugs and make your bathroom sanitary. Come here, boy, and open a case for my friend, Bill” (or Jim, or Tommy, or whatever the first name was of the victim). The boy (actually a youthful Gergel forced to shill by harsh fate and the necessity of learning selling, starting in the bathroom) rushed over toting a case of Revelise’s “Bonnie Balm for Bathrooms”, an enormity which only Revelise could conceive as label for a toilet bowl cleaner. This was fetched to the toilet (in those days, and in the country service stations of the 50’s—a region comparable to the Black Hole of Calcutta, used only by the desperate traveler; the attendant went into the woods when he got the call). “Boy”, then poured in about a pint of the blue liquid, swishing it around with the toilet brush and presto, the horrible red of the commode disappeared, and pristine marble once more gleamed for the delighted proprietor and his new friends. We rarely failed to get an order, sold for whatever we could get, and, in cases of stubborn sales resistance we settled for gasoline. One man waited until Max had completed the performance and then told him with a grin that Shotgun had come by only two weeks before. Not at all disturbed, Max said, “That’s right my friend, and he told me to call on you for there is a new species of gonococcus spreading around the country and we’ve had to put in a new ingredient to take care of it. My good man, we’re *only* calling on *old* customers.” Exhibitions such as this by the master salesman always astonished me and hypnotized the customer. In this particular case the man bought six cases and Max made him regional salesman for Chester County—“Throw in a half dozen brushes, boy!”

Chapter 3

I had plenty of time to learn selling in 1949, 1950 and 1951 for the sales of Industrials easily outstripped the Organics. We were prepared to make any compound for a price. The rumor spread and we were approached with every “dog-prep” needed by academia. Sensing our desperation, we had a visit from Dr. Parry Borgstrom of the Naval Research Labs in Washington, posing as an itinerant scientist and bibliophile. “He dabbled with Chemistry and was employed by the Navy to qualify vendors.” Oh how friendly he was, “Just happened to be passing through, Gergel, and stopped in to see my old friend, Gittman, you know he sells books and I am a collector. Thought I’d come out and see you, son.” In those days I was son to so many. As we chatted, as if the thought had struck him for the first time, the old rogue said, “You know Gergel, I have a prep you could run for us which would make you a lot of money.” Now this was the con working on the con. When my mother told me that a gentleman had called from town asking to visit *Dr. Gergel* there was no one at the plant except the two of us; when Parry, whom I already knew by reputation, sauntered in disguised as a simple country bumpkin I knew he was the director of research for Naval Research Labs. and his mission was to find someone foolhardy enough to make pentaborane. News travels. I met him at the door and told him that I was simply a lab flunky but would fetch *Mr. Gergel*, that my boss was extremely smart but had been prevented by the war effort (in which he had served valiantly and with distinction) from getting a PhD; that right now *Mr. Gergel* was extremely busy with priority reaction but would be able to see him in ten minutes—which gave me time to change my clothes and wash my face. He never realized that we were the same person. Parry chatted with me in the breezy, confidential voice that has been used by every con man since Judas Iscariot and told me that the only reason that the Navy was willing to farm out this *fascinating* project was simply lack of qualified personnel. That my *splendid* contribution

to Manhattan District was well known by the military, that people spoke of me as a true Southern *prodigy*. (The old devil was so good that I listened with gradually increasing preparedness to make pentaborane, although I had been forewarned that it was dog with a capital “D”.) He told me that we had been especially chosen as the only vendor with the skill, the integrity and the willingness to stick to a project once we started it. I told him there was a small matter of startup costs to put in a plant for the manufacture of a substance known to be violently pyrophoric. This revelation took him back a bit, but he proceeded silkily to tell me he was prepared to place a large order and my bank would do the rest. It was obvious that if we got poor yield (or worse, exploded) that the banks would take over our business and I would go to debtor’s prison. This was not mentioned to my charming visitor. That evening I studied Schlesinger’s monumental work on boron hydrides at the University library and the next day told Parry that I was flattered but would not make pentaborane. He was affable, showed no surprise, no disappointment, just produced a list of names, most of which had been crossed off; ours was close to the bottom. He crossed us off and drove off in his little auto leaving for Gittman’s, or perhaps, another victim. Later I heard that he visited two more candidates who displayed equal lack of interest and the following Spring the Navy put up its own plant, which blew up with considerable loss of life. The story did not make the press. I would see Parry regularly on visits to Baltimore and Washington; he congratulated me on our prudence.

We had a visit from a Dr. Johns, who was an exponent of the “Modern Coué’ Method of Self-Hypnosis” (“every day in every way I am getting better and better”). Johns was, himself, a hypnotist, and I learned that his visit to Columbia was sponsored by a wealthy family whose head had a drinking problem. He was summoned when our local drying-out establishment, Keely’s Sanitarium, failed to bring sobriety to the customer.

He visited Columbia Organics because he had read somewhere that the Germans had combined scopolamine with alpha-chloralose to make a truth serum, scopachloralose; this, on ingestion, rendered the victim unable to lie; confronted by questions as to his whereabouts and companions (or companion) the victim would give a true account and the questioner, e.g., a wife, would seek a lawyer. All sorts of interesting potentials were described by Johns who also displayed a billfold bulging with cash. Spurred to true scientific endeavor (with the money as catalyst), I went to work and made scopachloralose, after consulting with Willard Davis at the university. It received its first test at the city jail where an amnesia victim was confronted with Johns, myself, Mr. Seideman and an assortment of detectives and unarraigned drunks. The amnesiac was smelly, furtive and loudly indignant at detention. Johns chose six of us including the amnesia victim and made several passes with his hands and spoke soothingly. Presto, all of us were hypno-

tized except the victim. Not at all disturbed, Johns woke us up and inserted a hypodermic into a solution of my product, assuring the amnesiac that this would restore his memory. Foregoing injection the "patient" confessed to being a fraud, a rapist, a murderer, as well as a delinquent in filing income tax returns. Two policemen confessed an assortment of crimes after the captain suggested that he would give his staff injections. All took Johns at his word; we never got to test the product. Johns paid our invoice and promised to keep in touch but we never saw him again.

On a windy, cold, December 19th we were preparing for a miserable Christmas when the mail brought an order for 5 kilos of n-dodecyl bromide from Eastern Chemical Company. Eastern was run by my ambitious entrepreneurial friend, Howard Kastner. Also, wonder of wonders, in the same mail was an order for 10 kilos of isocapronitrile from U.S. Gelatin Corporation. If Dr. Robert Leeper is alive and reads this I extend to him a thank you for he and Howard brought us Yule-time joy; an assignment, in the case of the isocapronitrile, which would usher in Christmas in an effluvia of crushed bed bug.

There were wretched soap operas every afternoon and I would keep the radio on full blast and follow the adventures of "Old Ma Perkins" and "Terry and the Pirates" and numb my fear for our little plant. Despite our efforts, we simply did not have enough money coming in to justify the seven day week we worked. We decided to offer Sol Kahn, Max Revelise's brother-in-law (who would periodically visit us to pick up muriatic acid used to clean brick), a fourth interest in our business in return for an influx of capital. There is an odor of fear and despair given off by a beetle racing from ants, and by a small chemical company facing debts. He left before we could make a pitch. His antennae had picked up the pheromone.

Dr. Bigelow called from Duke University. He was so famous that I was prepared to undertake any synthesis. After telling me nice things that Dr. Bost had said about our alkyl halides, he asked whether I would be willing to make a compound he needed, methyl isocyanide. I asked him if he had a prep and he told me that it was in the literature. I checked the past ten years and then went back another ten years and yet another and finally located a cursory reference to its preparation by Moissan in 1878. There were countless references to the physical properties and chemical reactions but a paucity of descriptions of the synthesis. I telephoned Dr. Bigelow and offered to make 100 grams for \$100 which he said was a bit steep so I modified the price to \$80, also supplying the methyl iodide and silver cyanide, and, since his student Cuculo needed the material badly, he agreed to this price.

I carefully mixed methyl iodide with silver cyanide. It formed a paste which immediately gave off an aroma so vile, so horrible, that I developed an instant headache and ran retching from the laboratory. Later I transferred the mixture to a large porcelain dish and subjected it to radiation from a UV lamp.

The laboratory stank, the odor permeated everything. I transferred the reeking mess to a 5 liter flask and added dilute caustic soda. The product distilled as the top layer of a two phase system. Unfortunately there was very little top layer; a tiny additional amount was obtained by saturating the bottom layer with salt. I combined the organic layers and distilled in a small side arm flask. The methyl isocyanide had the correct boiling point. I had about 15 grams, a 10% yield of the foulest smelling liquid imaginable. Since I needed 100 grams to complete Bigelow's order I had to repeat the ordeal 7 times. I slept at the plant for I was persona non grata at home. Despite endless showers and changes of clothes (burying the discards), I stank constantly and kept a severe headache. Finally I sent two 50 gram bottles to Dr. B. I telephoned him and advised that aside from the loss of sleep, clothes and good humor I had an investment of more money in raw materials than the total he was paying. He advised that "a bargain made was a debt unpaid." I told him that I depended for my bread on what I produced with my hands and that I had probably impaired my health and jeopardized my marriage. He agreed to pay an extra \$25.

"Dr. Bigelow, I asked, why is there such a hiatus between Moissan's work with this methyl isocyanide and your requirement? Why is there such a paucity of literature references?" "It's the toxicity, Gergel", was his cheerful reply, "Didn't you know that methyl isocyanide is one of the worst poisons known? It killed Moissan, and I didn't want to kill John Cuculo as he is taking his Ph.D." It was apparent (1) that rank has its privileges and (2) I was expendable.

"Beware the sin of Hubris". Scientists tend to forget that they are mortal. Cuculo dropped one of the bottles and it was necessary to evacuate the Chemistry Department at Duke University. Cuculo nearly joined Moissan; Bigelow was on the telephone the next day, but I declined with thanks and they dropped the project.

We were prepared to do anything or make anything for a buck. Someone had discovered wind resistant bubbles and every child had a cup of soap solution and a hoop shaped wand which would scoop up a thin film and send an almost endless stream of large, iridescent bubbles into the firmament. We had a visit from a carnival operator at the State Fair. He wanted to go into the bubble business and asked us to develop a formula. I was about to refuse, since this was not an area in which I had expertise, when he produced a huge roll of bills, peeled off ten tens and placed them next to each other and gave me the smile of a co-conspirator. I was instantly a bubble expert and with the aid of our employee, Mason Turner, we produced a satisfactory product and typed up an instruction sheet which gave sources from which he could purchase raw materials. Once more he took out the roll and off came five more tens and he left, trailed by Mason who suggested he might want to hire a chemist cheap. I was tempted to offer him a plant supervisor equally cheap.

A chemist called from Kansas City asking if I would be prepared to make alpha-bromopropionaldehyde dimethylacetal. I said that for a price I would try to make anything. He said in that case he would let me make the compound which he really wanted, alpha-bromo-beta-methoxypropionaldehyde dimethylacetal, a really long name for a chemical. I told him that, as I recalled, this had been produced by the celebrated German sugar chemist, Emil Fisher, sixty years ago. I recalled that Fisher advised (in German) that one should operate "im lustige wind" which translates to "in a strong wind". It is to be presumed that there were no good bench hoods in those days. There was no good hood at Columbia Organic Chemicals either. We had one exhaust fan at the back of the laboratory which usually worked. Sometimes it did not and then the lab would fill with fumes and the worker, I, would nearly asphyxiate. It normally stopped operating at awkward times, as for example during a nitration when the air was full of the red (and toxic) fumes of nitrogen dioxide. Max Revelise, my co-worker, would reel from the building muttering "there must be easier ways to make a living".

My friend placed a substantial order and we set up our operation for the bromination of acrolein in the back of the lab under the fan. Half way through the run the fan stopped working. Immediately we all began to weep for the acrolein adduct is a powerful lachrymator. We followed the advice of the departed Emil Fisher and brominated "im lustige wind". The inhabitants of Cedar Terrace, maddened by our production of mercaptans, now wept through our production of acrolein dibromide. Somehow we staggered through the three step synthesis and shipped him the acetal which was milder than the bromine intermediate. He thanked us profusely, added a liberal "extra" in paying the invoice and at Christmas sent me a "thermototer" which is a device his company made to keep things cold. I could only assume that he had attempted the synthesis and found it more expedient to purchase than manufacture. I read of his death in the necrology section of the ACS publication, "Chemical and Engineering News" and wept in total recall.

Shortly after DuPont announced its discovery of Teflon the M. W. Kellogg Company announced its discovery of the polymer derived from chlorotrifluoroethylene, "Kel-F." I recall that "Butch" Hanford was the president of the company and he had my old friend Bill Landrum as director of polymer research and Dr. R. L. Copenhaver, (a cousin of my preceptor, J. E. Copenhaver) as chemist. They had trouble finding an ideal solvent for the Kel-F polymer and wanted to buy 1,1,3,-Trifluoropentachloropropane. I went back to Henne's work and found that he had made the material as one of several polyfluorochloropropanes by the reaction of antimony trifluorodichloride with octachloropropane. I laboriously chlorinated hexachloropropene, then fluorinated the octachloropropane so produced. (I developed conjunctivitis from the action of the vapors on my eyeballs). We successfully separated 1,1,3-trifluoropentachloropropane and sold it to Kellogg at \$200 kg, then

they found they could use P-chlorobenzotrifluoride equally well, so my nice research work went down the drain. "Sic Transit Gloria Mundi".

A chemist called. He wanted to get 1,2-dibromotetrafluoroethane. He told me that DuPont had it as a development product although they did not advertise it. He urgently needed a gallon and offered to pay well. I should say nothing to DuPont about why I wanted it. If they asked what my research interest was, to simply tell them we were interested in its biochemical activity, and its potential use for fighting fires in jet aircraft. He did not mention that it can be conveniently reacted with zinc to produce tetrafluoroethylene which was DuPont's Teflon monomer. I telephoned DuPont's buyer, my good friend Joe Marshall, and he referred me to Dr. Barrett in the development department. Now Barrett was like my godfather. He was from Ohio State and was high in the echelons of DuPont and had an office with four windows in the DuPont building (four windows meant you were at the top, three that you were on the way, two that you were going up or down, one that you were starting or finishing; and if you didn't have a window, DuPont was trying to tell you something). Dr. Barrett was quite surprised that I knew about 1,2-dibromotetrafluoroethane, intimating that DuPont was not ready to announce its availability. He told me that he would give me a gallon free if I would promise that neither I, nor anyone to whom I would give or sell it, would use it, to generate tetrafluoroethylene. I thought the matter over and decided that I didn't want the compound. He said "that was very wise, Max". A year later Joe Marshall one afternoon confided that DuPont had known my prospective customer, knew of the telephone call to me and had set me up. They would have let me have the materials, and then I would never have access to confidential DuPont work again. Joe congratulated me on "not taking the bait!"

In 1951 the U.S. Department of the Interior with its offices in Bartlesville, Oklahoma, launched an investigation of mercaptans. The head was my old friend Dr. John Ball, one of the many admirers of Dr. Reid. His group knew that various sulfur compounds were present in crude oil and natural gas. They had a chemical laboratory in Laramie, Wyoming. One of the requirements for a laboratory devoted to the synthesis, purification and evaluation of mercaptans is "lebensraum!" One cannot get more remote than Laramie. There they exiled some of their chemists to produce and study mercaptans, thiophenes and heterocyclic polyringed compounds. After some months of making the compounds they came to us. I assume that the coyotes and Sioux had protested. We were glad to help for as usual we were under-employed. I met their Dr. Charlie Hains at an ACS meeting and we sniffed each other with mutual respect from opposite ends of the table. He smelled just like Dr. Reid. He told me that I smelled just like Dr. Reid. Four men at a neighboring table got up and left saying that our odor had killed their appetites. By this time I was well along with their project and we were polluting the air at Cedar Terrace and the citizenry were consulting lawyers.

Our assignment was to make 2-methylbutanethiol but I misread it and used isoamylbromide to make the isothiuronium complex; only an alchemist can make 2-methylbutanethiol from isoamyl bromide. I shipped my material to Laramie and a week later John Ball called and with his customary tact congratulated me on the purity of the chemical I had made and the speed with which we had shipped, but said “unfortunately you have made the wrong chemical.” Visions of lawsuits, lost profits, death by starvation all danced through my head but with patience and understanding he told me that they would keep the 3-methyl isomer, and we should go back to the lab and make the 2-methyl. As a bonus he ordered 10 kilos of tert-amyl mercaptan as well.

Two weeks later the enraged inhabitants of Cedar Terrance sued. Racing against time we completed the Bureau of Mines orders and started scouring down the plant with bleach and sodium thiosulfate. Finally we had it smelling merely bad. By this time the odor had permeated the area between us and the Veteran’s Hospital; patients who were staying there in comfort at government expense decided to go home. We agreed to cease making mercaptans and the citizens dropped the suit. For days, people coming into Columbia from Sumter on US 76 could tell when they were approaching the city limits by our odor.

I traveled for the company. George Llewellyn, a chemist working at the plant, was unafraid of alkyl halides and routinely prepared the chemicals. The problem was that people did not order enough. My salesman’s career started in 1948 when, during one of our lulls with its coincident financial crisis, we were living at Lake Murray. No one wanted organic chemicals. If we did not sell chemicals we did not eat. If the telephone rang seven heads would butt together in eagerness to take the order. It was usually my wife calling to find out how I was, or it was a customer for solvents or soda ash or sodium hydroxide.

Periodically one section of the world is short of wheat or soybeans or solvents or the so called “heavy chemicals,” sulfuric acid, caustic soda and lime. The “have” nations usually have these in abundance and sell to the “have nots.” When the “haves” run short the “have nots” are put under tremendous pressure to keep their factories running and have to pay premium prices.

This leads to the formation of a “gray” market. The large companies are not averse to selling their goods at premium prices (although they vigorously deny it) and, by one means or another, goods intended for local use find way into the “gray market.” This quickly affects local users who have to pay premium prices to get their own requirements. There are large profits for the entrepreneurs who have a friend with the “haves” (the actual producers or legitimate distributors.) We were not producers, nor were we distributors, but as they say in German “hunger ist dens bestens koch” (“hunger is the best cook”). We became dealers in chemical commodities.

In 1949 and 1950 the main shortage was caustic soda and a letter reached us from a company offering premium prices. We could buy caustic soda laid down in Columbia in 400 pound drums at \$4.76/100 pounds. Our customer offered \$6/100 pounds f.o.b. Columbia (f.o.b. Columbia means that he would pay the freight). By selling 10 drums per day we could make \$45-\$50 and pay all our salaries and the overhead and not even have to sell organic chemicals. Getting 10 drums per day was not easy. First we bought what we could, a few drums at a time, from the local jobbers. After a few purchases suspicion tinged their "thank you's." They knew that caustic was scarce and that we were too small to use more than a drum a month. Our next source was bottlers who used it to remove the last traces of Coca-Cola and other syrups from the deposit-carrying containers in which they were shipped. Then we went to the local textile mills to see if they could spare 5-10 drums. We shared our profits with the mills and the bottlers and soon were accumulating drums at a rate of about twenty five per week. The customer paid cash and we paid our suppliers cash and this stimulated trade. Others learned of Columbia as a supplier of caustic soda and our telephone became busier and the volume of mail increased. It was decided that I travel to New York City and Newark to find out more about the market.

My first call was to the office of our main customer. Mr. C. was a small plump man with a great sense of humor. Learning that I had 30 drums of caustic he wrote me a check for the full amount as payment in advance and added \$50 to help defray expenses of the trip. He told me that he had something else he wanted to discuss with me and locked the street door and tapped on another smaller door at the back of his office. "Moishe," he said, "come out." A gnome appeared, bearded and blank-faced. We were introduced. He was unable to speak English. They talked in Hebrew. Moishe was a buyer for the Irgun Zvai Leumi, a militant group in Israel, and his mission was to purchase explosives. Since I was in an army town could I buy or steal explosives? There seemed to be an impression that as a Jew I had a commitment to help Israel. I had in my youth been a second story man, but the idea of diverting military supplies from the Fort was not very attractive. I told Moishe that instead we would be willing to make a shipment of laboratory chemicals, some of everything we offered, and send it to Israel as a gift. He told me that he would pass this information on to his friend Kaplansky at the Technion, and went back into his little office at the rear. I gave C. the \$50 expense check and he told me that it would be spent buying guns.

I next went to City Chemical Company at 152 East 41st. St. I had known these people for several years. They were the Macys of the chemistry world. Their manager, Toby Keller always tried to give me a little order when I visited. The president was Bob Wolpert, Sr. and the chancellor of the exchequer was a Mr. Baer. I offered Toby methyl iodide and got no "bite," then I told him how lousy business was—and the atmosphere relaxed for

this is a favorite theme. Then I mentioned caustic soda and he and Baer came alive, telling me that they had heard that caustic was scarce, that a black market existed and many unscrupulous people were making a killing, buying from the uninformed and selling to knaves and shysters. "You wouldn't be involved in anything shady like this?", Baer asked and I confessed that I was. Smiling broadly, relieved, he confessed that City Chemical was mildly involved too; there was no question of honesty and scruples. They were simply trying to help an old friend and customer whose dye plant was about to go under for lack of caustic soda. This friend was Jewish, suffered from emphysema and had four children under twelve. He showed me pictures of the friend, he looked quite healthy, "better days" said Baer, sensing my critical stare of this fond father. We agreed that it was a pity that such a chap would have such tsuras.

I told him I had 30 drums for which he offered to pay 6¢ per pound. I told him that I was already selling for 6½¢ per pound and would not sell at less than 7¢. He asked me what idiot would pay 6½¢ per pound and I gave him C's name. He was shocked that I would deal with such a "mumser" and offered to pay 6½¢ per pound. I told him that 7¢ was my lowest price and he said his friend simply could not afford this. I chatted with Toby, left the building and was almost at 6th Avenue when he caught me and pressed into my hand a check for 30 drums at 7¢ per pound. I realized that I had sold my thirty drums twice.

An important buyer of caustic was rumored to be trading in Newark, N.J. exporting to India, Argentina and Egypt. I was oversold but took the train to Newark and a cab to Standard Scientific Supply Co. which was in a desolate, trash strewn neighborhood of empty stores and starving dogs. The sign was faded and the storefront dismal—just a few fly specked bottles of chemicals, a broken analytical balance and a delapidated microscope. The small outer office had one person in attendance.

This was a large, stout man whose shirt was partly unbuttoned and there was one button loose at his fly; through the opening peeped a part of his shirt. He was perspiring freely for it was July and there was no air conditioning. Next to him on the old couch was a violin cello case. He was reading a comic book, an untidy musician. I assumed him a poor relation of Mr. Gelfand, the man I had come to see. I introduced myself, told him that I too, was a music lover but did not play, and had an affection for Scarlatti and Vivaldi. He stared at me as if I had taken leave of my senses. This was a text book mafiosa type.

Jules Gelfand was small and mustached and had four telephones. He talked into two of these at a time. Obviously many people had things to buy and sell. While I listened he bought, sold, handled complaints and shipping matters then, so that we might talk, he took all four telephones off the hooks, gave me a big smile and asked whether I wished to buy or sell. I told him I

was a minor dealer in caustic soda and he asked me if I knew Mr. C. and I told him that I did and Jules told me that he had just purchased 30 drums from C. Then he wanted to know if I knew Baer at City Chemical Co., he had purchased 30 drums from him as well. Obviously Jules was the desperate father of four struggling to keep his little company solvent. I asked him what he had paid, knowing that the answer would hurt and when he told me 9¢ per pound my fears of pain materialized. I asked him if he would like to buy 30 drums from me (he commented that they are coming in 30's today) and he pulled out a purchase order pad, scribbled an order for 30 drums at 9¢ per pound. Then he wrote a check for the full amount, turned it over for me to sign and then opened a drawer full of money and counted out \$1080 in 20's and handed me the stack. The telephone rang and he discussed some shipment for which he had paid and for which he had not received delivery and he advised whoever was listening that if he did not get his merchandise within three days he would send Sammy. This call completed he went to use the bathroom leaving me with the musician—and I told this worthy that I certainly liked his brother. “He aint my brudder, he is my boss” was the comment. Jules returned and we discussed other items he would buy, such as caustic potash and butyl cellosolve and carbitol and the glycols. He promised to pay cash. I told him that his keeping large amounts of money around worried me and I also was worried about taking so much back to the hotel. “Don't worry,” he said. “I'll see that you get back to your hotel.” We discussed chemistry, although he confided that he was not a scientist and in fact had not attended college. He had never sold scientific supplies, and had bought Standard Scientific simply because it was bankrupt and he needed a quiet office. This brought up another matter which bothered me. “Mr. Gelfand, aren't you afraid to keep so much money around? This is a bad neighborhood and you might get robbed.” He answered “There is no worry, you have no doubt chatted with Sammy?” I told him that Sammy was a musician and musicians characteristically shunned violence.” He called for Sammy telling him to bring his equipment. The “instrument” was a Thomson sub-machine gun. Gelfand told me I had a nice face and that he trusted me, but this would not keep him from sending Sammy if I did not ship his 30 drums of caustic—which, I realized, had been sold three times.

In Columbia we were rich with the cash and the two checks. It is amazing what cash will do to assist purchases. Our buyer, Max Revelise went out with a roll of bills and for the next month the wretched employees of the bottling companies must have used more muscle and less caustic for we bought another sixty drums. We had a telephone call from Mr. Gelfand advising that he was sending a certified check for 60 more drums and Jules called his friend Jimmy Little of F. H. Ross and Co. and told him we had discovered a novel use for caustic soda. Jimmy shipped in a truckload. Jimmy paid a visit and nearly fainted when he saw Jules stencilling “Egypt”

on the drums. We promised that we would not tell his company he had come by.

We became bulk purchasers of glycols, ethers, caustic and other scarce items all of which we sold to Jules. It was in connection with nickel that we were able to do a service for the Shakespeare Company. They needed nickel sulfate for plating the “Wonder-Rod,” a special fly rod which they had developed. I didn’t have any nickel sulfate and told the desperate buyer that his only hope was the black market. He asked a price and I said at least \$60/100 lbs. a premium of \$30 above regular price. He was shaken, but desperate and told me to get 200 pounds. Jules sent me 200 pounds at list—the normal price—telling me to make myself a buck. I called Shakespeare and they were so happy they paid me \$100 for the 200 pounds and sent me two of their “Wonder Rods,” both of which I sent to Jules Gelfand, hopefully starting him and Sam on a new career.

Chapter 4

The shortage market continued into the early 1950's and then fortunately our own business, like a little sailboat catching a puff of wind, took off and we left the commodity market, which was petering out, for newer fields. At this time I received a letter from Dr. Henry de Laszlo asking me to come to an ACS meeting in Atlantic City. En route I planned to see Dr. Reid and get help from him on a sales campaign with the large industries of the North.

Dr. de Laszlo was the president of L. Light in England. I have heard that there was an L. Light who was sacrificed as part of the expansion program and for some reason de Laszlo kept the name. Henry was one of the first entrepreneurs, along with Ed Stirling of Edcan, to open a small chemical supply house. His company was known for slow delivery and indifferent purity. He was aristocratic and immune to criticism. Henry was a charmer and his specialty was visiting academicians and persuading them to donate chemicals for research. The research consisted of the sale of the chemical to a customer with subsequent enrichment of Henry de Laszlo. I have met men who, following the painful, tedious synthesis of some laboratory curiosity, had a visit from de Laszlo who assured them that the compound had great possibilities, that in fact, it was the subject of elaborate research in Poland and that he, Henry, without any charge would take the material and transport it to the under-paid Soviet scientists.

His letter to me, I now realize, was routine—one which went out to any chemical company which might be able to supply him with chemicals, preferably free. It was so enthusiastic,—“he had heard of our great work and the fine, unusual chemicals we were producing,” that my mother and father urged me to accept his invitation to a rendezvous in Atlantic City, where I had lived as a boy. Columbia Organics was poor but we scraped up enough money for the fare (day coach) both ways to Philadelphia and on to the “World’s Playground.” I had enough extra for meals or a hotel but not

enough for both. I hoped to find Dr. Reid and bunk with him, or to sleep under the boardwalk, or in the park at Ventnor. It was September and the weather was balmy. Sure enough, the first person I saw was Dr. Reid, walking slowly along the boardwalk for he was almost blind. "Where are you staying, Gergel?", he greeted me—and I told him that as my finances were low I had the options of the YMCA or the Salvation Army. He told me to come stay with him at the Kentucky, where his bills were paid by DuPont, and that I would get breakfast free.

I will always remember this trip, my first to an ACS meeting, because of the wonderful time I had with Dr. Reid and my first meeting with the fascinating Henry de Laszlo. Henry was the son of Laszlo, the Hungarian cum British portraitist. A tall, handsome man, he had a fine knowledge of chemistry and economics and was ready to order any chemical in our catalog provided we let him have it free. He asked searching questions about which chemicals sold best and of these which stored best; then he confided that L. Light was in a bit of bind and could only buy at cost ("Think of the publicity you'll get in the European market"). He told a harrowing tale of England hard hit by war and in terrible need of research chemicals for destitute universities. He was a convincing liar. Such was his charm that I sold him 3 kilos of 1,4-dibromobutane and 500 grams of allyl iodide at little more than cost. This was his "large order" we had been promised; it would not pay for the train fare. He invited me to breakfast and ordered four eggs with a rasher of bacon for himself, encouraging me to do the same (I told him I was dieting) for, as I had mentally predicted, he wandered off leaving me to pay the bill.

I would see him many times during the next twenty years. Shortly after our get together in Atlantic City we received an order from "British Unicorn" a company I had never heard of, who ordered 2 stainless steel drums of propionic anhydride. This was obtainable only from DuPont who would themselves never ship to Hungary, the destination specified. The letter of credit which arrived a few days later was at double DuPont's charge and in the same mail I received a note from de Laszlo instructing me to deposit 90% of the profit to his personal account in New York. I deposited 50% less \$6.00, the cost of the breakfast, and he sent a scorching letter from England complaining of the deterioration of ethics in the chemical profession.

The several days with Dr. Reid was a return to college. We discussed chemistry and the synthesis of chemical compounds and people who were working with chemicals whom I might contact as customers. He recommended trips to DuPont and Hercules and the Army Chemical Center, all places for whom he consulted. Despite his age (at that time he was almost 80) he still traveled extensively, consulting, and published regularly in the chemical journals.

I left my first ACS meeting with people hurrying to and fro on the boardwalk, attending meetings, chatting with friends and enjoying the warm September weather. Dr. Reid waved me goodbye and we arranged that I would visit him in Baltimore. As we talked it clouded up. I started the six block walk to the railroad station lugging my brief case and suitcase. After one block the heavens exploded and I began a full trot arriving with my summer suit disheveled and worse, my tie which had a defective dye “bled” over my shirt. I had yet to visit Smith Kline and French in Philadelphia to see their director of research, Dr. George Connitt. I looked terrible and had no change of clothes. There was nothing I could do except fasten all the buttons on my coat and hope the weather would be cool; unfortunately it was sweltering.

I had two shirts, two ties and one suit. After five days in Atlantic City the suit was dirty and crumpled and the other tie had a rip. The other shirt was wrapped around a bottle of bromocaproic acid, a gift from one of the chemists I had met, and had picked up a goaty odor. There was nothing else to do but wear what I had on.

George Connitt, small and blue eyed with neatly combed gray hair, came down immediately and welcomed me to his office. He saw a small, pale, disheveled salesman clutching his brief case with one hand and his coat front between thumb and forefinger. “Come in, Max” he said kindly; “take off your coat and get comfortable.” I took off the coat revealing a shirt splashed with red and blue and mottled tie of the same color. “It’s always good to see a *working* chemist,” he smiled kindly and immediately discussed the project about which he had written. The order he gave me (50 kilos of n-amyl chloride) would pay for the trip; SKF has been a good customer ever since.

Before this trip I had made one other. This was to see Mimi Wallace in Bryn Mawr where she was studying and on to New York City where I attended the first Fluorine Symposium and met other people who worked on the Manhattan Project, Dr. McBee of Purdue, Dr. Miller of Cornell, and Bruno Wojcik of Hooker Chemical Co. I had been invited by Dr. Aristid Von Grosse, the co-author with Von Braun of the monumental text on metal organic chemistry. He was the inventor of the “fluorine torch” and the liaison man between General Groves, the military director of Manhattan District, and the chemists who worked on the project. I hurried to my appointment and Dr. Von Grosse greeted me much as Adam Magwich greeted the youthful Pip in Dicken’s *Great Expectation*: “Come in Gergel, it is I who am your benefactor.” He had been responsible for the large orders for n-dodecyl bromide, and it was he who directed the attention of Manhattan District to a tiny laboratory in remote South Carolina. This wonderful man talked with me for an hour and would be my friend in all the years thereafter.

After my successful visit to Smith, Kline and French I started planning

another trip. We had a problem for production virtually ceased when I was away and I had to work nights, days and weekends to catch up. Dr. Reid told me that DuPont could place enough business to last a lifetime. The problem was getting to see the right person. He suggested that Dr. H., who was the brother-in-law of my former professor of Organic Chemistry, J. E. Copenhaver, was the director of development and intimately familiar with DuPont's research requirements. There was a problem. H. was impossible to see. He was surrounded by three concentric orbitals of secretaries who protected him from salesmen.

I got through immediately by telling the first that I was Dr. H's natural son. In his sanctum he listened carefully to my speech in which I informed him that DuPont was in serious trouble—that they had too many chemists. I proposed to help them by using my “small, efficient company” to make the chemicals they needed at rock-bottom prices. He was interested and called in others and I told them, too, that DuPont was in serious trouble and they nodded their heads in agreement, without listening to the rest of my pitch. Dr. H. wanted to know if I was familiar with the synthesis of allene. Indeed I was; it was one of the compounds on which Dr. F. O. Rice of Catholic University had published. I told him that the best synthesis, to my knowledge, consisted of the dehydrochlorination of 1,2,3-trichloropropane followed by treatment with a suspension of zinc in methyl alcohol to remove the remaining chlorine. He listened attentively and suggested that we make it a joint project; we would dehydrochlorinate and they would dechlorinate. I told him that I would prefer it the other way around. He reminded me that I had told him that my visit was to make DuPont's life easier; we agreed to run *both* reactions. My promise was complicated by the fact that I had never run either.

When one treats 1,2,3-trichloropropane with alkali and a little water the reaction is violent; there is a tendency to deposit the reaction product, the raw materials and the apparatus on the ceiling and the attending chemist. I solved this by setting up duplicate 12 liter flasks, each equipped with double reflux condensers and surrounding each with a half dozen large tubs. In practice, when the reaction “took off” I would flee through the door or window and battle the eruption with water from a garden hose. The contents flying from the flasks were deflected by the ceiling and collected under water in the tubs. I used towels to wring out the contents which separated, shipping the lower layer to DuPont. They complained of solids suspended in the liquid, but accepted the product and ordered more. I increased the number of flasks to four, doubled the number of wash tubs and completed the new order.

They ordered a 55 gallon drum. At best, with myself as chemist and supervisor, I could make a gallon a day, arriving home with skin and lungs saturated with 2,3-dichloropropene. I needed help. An advertisement in the local newspaper resulted in an interview with a former producer of illicit spirits named Preacher who had just done penance at the local penitentiary.

He listened carefully and approved of my method of production which he said might be improved with copper coils. Immediately he began to enlarge our production room by removing a wall, putting in an extra table, and increasing the number of washtubs and reaction set-ups. It was amazing to see Preacher in action (I gave him encouragement through the window); he would walk up the aisles from set-up to set-up putting in first the caustic then the water, then fastening on the rubber stoppers and condenser, then using the hose. At this stage the room was a swirling mass of steam and 2,3-dichloropropene. We made a vast amount of material and shipped the complete order to DuPont—on schedule.

As a part of our contract with them we had agreed to supply details of the production as well as innovations we might have discovered. I wrote them a complete description, giving credit to my indefatigable co-worker. Two weeks later I received a telegram with only two words. "Ship Preacher!" DuPont became an excellent and regular customer. I met their youthful buyer for organics, Joe Marshall, and his associate, Bud Young, and their boss Arch Foster. Ultimately I met Dr. Barrett and Dr. Rigby in DuPont's "Development Labs". I would be involved in dozens of their projects in the years to come.

We were joined by my friend V. C. Dibble. Our staff had fluctuated between two and three people as the cash flow flooded and ebbed. He was hired during a flood. We had an order for 100 pounds of n-butyl bromide and made it in 12 liter flasks. Dibble was not a trained chemist and had failed Chemistry twice under Lipscomb. He was a sailor and philosopher. Chemistry for him was "a port in a storm." Self taught, he became a superb production man. We had a benzene fire about this time which burned itself out before consuming the building. After jumping through the window I remembered Dibble was in the distillation room fighting the fire. I was a good runner in those days and must confess that I considered sacrificing him but there was no choice for he was bellowing for help and the building was pitch black from burning benzene. I crawled along the floor, breathing through a wet handkerchief and feeling my way. Reaching the body I tied his hands together with the handkerchief, put my neck through the loop and dragged him out just as the flames went out. His courage in staying and his use of the fire extinguisher had saved us. My mother and Jules directed the Veterans Hospital pumper, dousing down the roof and the out-buildings. We still give them fires to fight.

Dibble left and I hired George Llewellyn. We had a tremendous order for methyl iodide. I made it by day, with George's help, and in the evening Max Revelise and I worked on some articles for the Kirk-Othmer *Encyclopedia of Chemical Technology*. The chapter on methyl iodide turned out to have special significance.

I am a reader of the classics and during one particular evening I was

re-reading Thomas Hardy's *The Return of the Native*. Closing my eyes I could see the sheep daubed with Diggory Venn's riddle, beautiful against the Devon meadows. I opened my eyes and the color was still there. In a panic I cut on all the lights. The room was alive with strange colors which gradually paled. I was shaken. There was unearthly music. I took two phenobarbitals and was unconscious, but this was no restful sleep but a phantasmagoria of bad dream, color and sound. The next morning I woke up to a full orchestra. The music was pleasant but it came from within and could not be cut off. That very day I was supposed to sail in Charleston with Dr. George Smith. The trip down to the sea was hectic and I rigged the boat to a celestial accompaniment. I told George about this. He was disturbed and could offer no explanation.

I did not go to the doctor, not just then. I was sure that Monday would find me symptom free, and sure enough the music died away early in the morning. I hurried to the plant where we were racing the production of methyl iodide, always troublesome in hot weather. Standing on a little stool to observe the temperature of a distillation in number 1 column, the upper half of the room gradually turned white, then vision faded and I saw only the blank screen of a theatre. I gave a harried yell and my grandfather, Mr. Revelise, came immediately. He did not know what had happened but helped me to a chair and got my mother and Jules and they drove me to see Dr. Alion. On the ride partial vision returned but everything was double and blurred at the periphera. Alion told me that I was 12 pounds lighter and observed that I could not stand alone.

We had friends coming in that evening, Al and Dot Rosenburg, and I told Clive to call them and tell them I was not well. They insisted on coming anyhow. Al was in charge of the steroid lab at Georgia Medical University. I had taken a bath and was attempting to read the afternoon newspaper. The double vision made this difficult. I performed for the visitors a number of experiments with myself as actor. I could not stand erect, could not walk in a straight line nor negotiate a corner. My voice was fuzzy and I had trouble making myself understood. I could not write my name. On top of this I had no memory from one minute to the next.

Clive called Dr. Alion and he suggested that we call my uncle Herbert Schreiber who was practicing medicine in Camden. They lived outside the city in an old plantation house called The Terraces. The four of us drove over and despite a large number of patients who were waiting he examined me at once. It was his opinion that I had been toxified by my chemicals. He asked me what I had been working with last and I told him methyl iodide and he asked me to go back home and check everything I could find on its toxicity. We found cases of other wretches who had fallen victim in the very article Max Revelise and I were writing. I had methyl iodide poisoning. The prognosis was not good and I had all the symptoms of the gravely stricken.

I sent the Rosenbergs home and that evening insisted on going over to see the Rabbi. I was dying and wanted spiritual consolation. Gruber was in his nightshirt for we had woken him up. "Come in, Max," he said, "something dreadful must have happened." I was in no mood for levity. In extremis sinners demand equal repentance time with the devout.

I made the rounds of optometrists, doctors and neurosurgeons. Herb wanted other opinions. All confirmed that I was in deplorable condition and some felt that I had acute toxicity. The outlook for methyl iodide poisoning was not good. A number of deaths had been reported and those who survived had permanent brain damage. In other cases there was noteworthy loss of IQ and deterioration of personality. Having survived, I may say that I take issue with these reports although my friends will debate the point. There was the possibility that I had multiple sclerosis. My friend, Dr. Henry Potozky, kindly brought by the house a book devoted to this disease, complete with pictures. After reading two chapters I spent a sleepless night. On top of my personal aggravation, the knowledge of potential starvation from my absence at the plant rendered me half mad.

Herbert suggested that I go back to work, doing the same thing, making the same chemicals. I went back to the lab that very afternoon. Llewellyn had left. He was now a confirmed hypochondriac, fearing methyl iodide every time his heart missed a beat. Our other laborer had gone back to pumping gasoline. The lab was quiet and deadly. We made methyl iodide in 5 liter flasks placed in 6 gallon cans surrounded with ice water to minimize losses. The ice water was the only protection against methyl iodide poisoning and insanity. Since I could not stand up or walk straight I strung lines along the tables and dragged from bench to bench. I weighed out the red phosphorus, methanol and iodine, added the chemicals to the flasks, cooled, completed the additions and then set up the reactions and distilled. There is no description adequate for the revulsion I felt over handling this musky smelling, high density, deadly liquid. As residue of the toxicity I had chronic insomnia for years, and stayed quite slim. The government had me questioned by Dr. Rotariu of Loyola University for there had been a number of cases of methyl bromide poisoning and the victims were either too befuddled or too dead to be questioned. He asked me why I had not committed suicide which had been the final solution for some of the afflicted and I had to thank again the patience and wisdom of Dr. Scriber. It is to be noted that another factor was our lack of a replacement worker.

Bobby Kennedy, the son of my mother's cook Alberta and her husband, Soloman, (a part time painter) was pressed into service as associate methyl iodide producer. He had a friend, Tommy Jacobs, who had just finished a military assignment in Korea and he joined us. They worked side by side with me in the laboratories and learned everything I knew about the reactions. We took no unnecessary risks and they were great performers. It was a source

of mixed pleasure and exasperation to know that, consistently, Tommy Jacobs would get better yields than I when he made TTA (2-Thenoyltrifluoroacetone). This was produced from the Claisen condensation of ethyl trifluoroacetate with acetyl thiophene in the presence of sodium methylate. I would set up my flask and he would set up his and I would add my reactants from the same jug he used and we would start our stirrers simultaneously. His reaction mixture would remain liquid while mine would set to a gel. It is characteristic that gelling results in a lower yield of product. His yield was always better than mine. When I asked him if there was anything that he did which I did not do, he told me that he prayed!

Now we had a full crew of workers, Bobby and Tommy and Tommy's brother Ervie Lee and Henry Jackson, nicknamed Sonny by his friends, and Ernest Dessasaure. I no longer worked in the labs and devoted my full time to sales and work on our catalog.

Chapter 5

I was approached by my friends Bill Wannamaker and Ray Christena, both chemists at the DuPont May plant in Camden, who were interested in forming a small chemical company. They would specialize in sulfur compounds, now that we had left the field. This was the start of Wateree Chemical Company; its first laboratory was at the junction of Lugoff's one road and the railroad. Lugoff was formerly the home of the Wateree indians who, warned by their soothsayers of impending doom, had moved from the area two hundred years earlier. After Wateree started operation tobacco produced in the Lugoff area could be spotted by odor, and for that matter farmers from the area could be spotted too. For the next few years Wateree property could be purchased cheap.

After the patience of his neighbors was exhausted, Bill located and purchased a large tract of land in the Camden boondocks and erected a small cluster of buildings. Soon he and Charles, his assistant, were contaminating the prairie. Fortunately they were upwind from the May plant which took the blame for the mysterious odor, which, from time to time, enveloped the nylon plant. I had a visit from some DuPont officials who, after swearing me to secrecy, told me they were having trouble with their neighbors. On certain days the plant had an odor. I told them that for a small fee I would solve their problem and pinpoint the solution. I located Wateree Chemical Co. on the map and they may have visited, may have subsidized traps for the odors—but as a consultant my job was done in locating the key to the problem.

I made a complete recovery from methyl iodide poisoning and, with the laboratories capably managed by Tommy, Bobby and Sonny, was able to travel and see customers. Clive and I moved to Ravenel Street where we lived with Rinktus, a Minah bird and 9 dogs. I had a car and the plant had its own car and truck. Business was good. I joined the chess club in Columbia and met Alex Edelsburg, who would be my friend and companion for twenty years.

My second sales trip was to Thiokol. Reid had consulted to them for many years and was a close friend of Patrick, the founder and first president. Every month they would send a car to pick Reid up and take him to Trenton where he would chat with the chemists about their work with sulfur polymers. I met Ed Fettes, Jack Borsellino, Dick White, Gene Bertozzi, Frank Davis and Morris Berenbaum. I had known Morris when he was a graduate student. He had purchased our asym. heptachloropropane and used it as a chlorinating agent. Like Fettes he was a Brooklyn Polytech. graduate. Thiokol was our customer for alpha-, omega-dihalides which they used to make linear disulfide polymers. Not only did they buy our chemicals, but on every visit they would give me surplus reagents and equipment. Often I would spend the night at one of their chemist's homes. Later it would be orders from Thiokol which would help us recover from the 1958 fire.

I visited Socony Vacuum, later to be renamed Mobil Chemicals. Dr. Reid had a friend there, Lyle Hamilton. I visited Atlas Chemicals in Wilmington; Dr. Reid's friend there was Dr. Walter Rueggeberg. In Washington I met Charlie Grogan and Martin Rubin, both working on chemotherapeutic agents for the Geshickter Foundation. Dr. Reid was a consultant for this group. Dr. Grogan also worked at NIH where he had had an experience with chemical toxicity similar to my own. These visits kept me away from the laboratory and gave me a chance to overcome the effects of the methyl iodide. The contacts made, the friendships and the information exchanged would be of great importance to our company in later years.

In 1957 we received a request to supply 2 kilos of n-nonyl chloride to Publicker Chemicals which was located South of Baltimore, Md. This was a large order for a chemical which sold, even in those days, at a high price. There was no reason which I could imagine for anyone to need so much of such an uninteresting chemical. Since I could combine a visit to them with a visit to Dr. Reid, I made, distilled and packed the lot and left for Baltimore the following week. As I drove I tried to imagine the purpose for which they might want it. Publicker was active in producing ethyl and butyl alcohol and other solvents and during the war had made immense amounts of butadiene but none of this provided a clue for their unusual order. A salesman must be an optimist and I dreamed of large orders for this easily produced and highly profitable chemical. I stayed at a motel between Baltimore and Washington and was at their plant early the next morning with my package. It was a large complex with many buildings and production set-ups but the gates were locked and the entire area was deserted.

I wandered around and peeked through the fence. Finally I found a small door which was unlocked and walked into the main yard. There were no people; no smoke came from the chimneys. I went to several of the buildings, called for Dr. Rubin, the chemist whose name appeared on the purchase order. My plans for selling large amounts of n-nonyl chloride evaporated

and now I would be happy just to deliver the package. At the last building, marked "Publicker Research," my knock brought a response. It was Dr. Rubin, the man who had ordered my product. I told him who I was, that Columbia Organics specialized in quick delivery and laughed heartily with thin enthusiasm. He stood looking at me, trying to comprehend who I was and the purpose of my visit.

I talked on and on, first at the door and later in his office. He did not recall an order for n-nonyl chloride. "Perhaps there is another Dr. Rubin?" No, he was the only one. Suddenly he smiled and said "You are the little chemical company from Columbia, S.C.?" I confessed, beaming like an idiot. "You are from my wife's city and she suggested we place the order with you." It developed that his wife also worked at Publicker which was phasing out this plant and its production. They had been doing research on the production of butadiene derivatives; there was some money left in the research budget; she had our catalog and prevailed on her husband, "After all, why not spend it with someone who can use it, not simply turn it back to the company." Our catalog, happily, was at hand. The two kilos of n-nonyl chloride was a random choice. I thrust into his hand the package and a delivery ticket which he signed. Then he handed me back the package and said "Sell it to someone else." We discussed Publicker and people we both knew and he made some coffee and told me that he was interested in making pharmaceuticals on the side and perhaps Columbia might want to try the preps he would outline (we tried—and failed). I asked Rubin if all the chemicals and equipment had been "written off." Perhaps I might "borrow" something for my company. He offered to help me load up a 500 gallon Pfaudler reactor or a fork lift, but there was simply nothing smaller. The laboratory had been dismantled and shipped to other Publicker plants; he himself was being transferred to another plant. I asked if we might have the chemicals left over from the butadiene project and after a moments thought he took me to the window, rolled up the blinds and I saw, glistening in the morning sun a, veritable Fuji. He explained that at war's end they had a considerable amount of butadiene left over and his job had been to find novel chemicals which could be made from it. He suggested to management that they produce cis delta 4-tetrahydrophthalic anhydride and no one told him to stop—thus the mountain. This is an example of the excellent liaison which sometimes exists between management and research.

We backed up my car, raised the trunk and he shoveled while I kept watch, and then I shoveled while he kept watch and we filled the trunk with the white powder. I thanked Dr. Rubin, wished him happiness in his new assignment, and asked that he thank his wife for me. I drove to 203 E. 33rd. St. in Baltimore where Dr. Reid was living in retirement. I told him about my find and he was enthusiastic, telling me that this was a very interesting chemical and he knew that Dr. Geschickter would buy some. I bade him

goodbye and drove to East Rutherford which was the home of one of the major suppliers of organic chemicals, and coincidentally our own customer. They were so impressed with the potential of this compound (I hinted that Eastman Kodak was interested) that they purchased my trunkload, although they complained of the unorthodox pack. I explained that this was due to my haste in bringing them the windfall. They wanted to know if there was more. I said there was a small amount remaining which I would try to obtain. That very evening I was back at Publicker, fortunate enough to find Dr. Rubin at his books. We reloaded the trunk and the next day I delivered this new batch. On my way back to Columbia I picked up a third load, rushing against time for Dr. Rubin told me the mountain was going to be burned. I sold part of this to Dr. Geshickter, who was delighted. He could make from it the dioctyl ester, an excellent solvent for drugs. Ultimately Publicker burned the mountain and what we had remaining in stock burned in our own fire in 1958. I lost contact with my benefactor.

On my next trip I met Dr. William Kaplan of Sapon Laboratories, a company even smaller than our own. He was making alpha-bromopropionic acid and other brominate acids and esters. His laboratory smoked with HBr from the reactions which he ran, or digested in carboys. It smelled almost as nice as our own. He had graduated from the University of Illinois and decided, like me, to set up his own company. I placed an order with him and he placed one with me and this started a policy which continued even after his death in 1977. Trading with the peer group, buying from and selling to other small companies, each with his own specialty, has been an important part of our business. With Bill Kaplan I made my second trip to an ACS meeting, this, too, in Atlantic City. We spent wonderful days seeing friends and chatting chemistry, then on our way back we passed a sign which said "Toms River Chemical Company." We assumed that we might find a customer and detoured to visit. Toms River, like Publicker, was idle. As we discussed the fate of companies, a night watchman approached and asked us if we might be interested in buying the entire operation. Jokingly we told him that we were definitely interested, that we had rich associates who had commissioned us to buy a plant. He said "I figured you could, boys, you fellows are Jewish aren't you?" There was no point in explaining that we happened to be struggling entrepreneurs for he was launched on his pitch for selling Toms River. The plant had been built to produce sulfur black and with the recession the orders had fallen off. They had run out of working capital and the bank would not put up more. The workers had obtained a lien on the assets and this took priority over all other claims. The watchman confided that his brother was the lawyer in charge and would sell the plant with all its assets for \$60,000, plus another \$15,000 which I understood would go to the two brothers. This would free the plant of all debts. Even to our inexperienced eyes there was a million dollars in chemical company at Toms

River. We promised the watchman that we would go to New York and raise the investment capital—and indeed Bill approached his friends and I approached everyone I knew; but no one was interested. The brother in charge of the sale, having been appointed by the bankruptcy court, thanked us for our efforts and some months later the property sold for several million dollars. It changed hands three times during the next ten years, ultimately selling for about \$20,000,000. As I write this my eyes blur and my hand grows unsteady.

I met Dr. L. of Bios Laboratories. His company specialized in selling chemicals at astronomic prices. His catalog listed several thousand items, all unpriced; the unwary sent in purchase orders for the exotic items and a brain joggling bill would be received for ten times the normal worth of the chemical. He would refuse to take the material back, and several university professors and an endless stream of industrial customers were victimized. Dr. L. was an alumnus of a European university and quite a capable chemist, but like the intelligent con-man who could make a fortune legitimately, he had found an unethical way to make money at the expense of his fellow scientists. He did not bother about purity, he would put anything in a bottle, attach a label and sell it to the unlucky. When the protest arrived he would say that someone in the organization of the purchaser had taken his perfectly good item and substituted junk. One of his earlier employees was Irv Kolier, later to be president of K&K Laboratories. Irv told me that he and another L. employee had been asked to make carbon suboxide. The material decomposed in distillation flask leaving an oily crud. They asked Dr. L. what to do. He told them to bottle it up and send it to the customer. He had another company, Delta, across the hall from Bios and this gave him an opportunity to cheat the same company twice. Finally, at great cost, both companies were forced to disband.

I regularly visited Matheson, Coleman and Bell in East Rutherford, N.J. The Matheson Gas Company had purchased a company named Paragon Testing Laboratories run by the Rosenbaum brothers. Their salesman was “Weepy” Rosenbaum, so called from a natural affliction which caused one of his eyes to permanently run. More tears were shed when a salesman such as I quoted an honest price which he wished to lower. There was another Rosenbaum who did not pay bills on time and a third whom I understood was chained to a laboratory bench and forced to make those chemicals they could not scrounge or purchase at bargain prices from the desperate. Matheson purchased the company and renamed it the Matheson Company and then added Coleman and Bell. They were regular purchasers of our products and chronic complainers about purity; most of the complaints were justified for in those days our analytical equipment was minimal.

I visited Howard Kastner who had founded Eastern Chemical Company and been my benefactor many times. He had a small chemical company in Newark which ultimately moved to Pequannock. Howard was from Vienna

and had excellent contacts in Europe. He would be with me on my first trip overseas. His wife Merriam was always my good friend and later the Kastners and I made trips to Scotland and Yugoslavia. He filled me in on the backgrounds of our peer group in Europe such as Loba and Serva and Heinrich Mack.

I visited Squibb in New Brunswick. Building 90 was the research building and Pribyl, Sheehan, Krapsho and Yale were Columbia customers. Yale had studied with Louis Hatch in Texas and was a skilled synthesist. Tom Amore from Cardinal had worked at Squibb before coming to Durham, and Bill Braker, my old friend at Matheson, had done a "hitch" in their laboratories. Yale would be famous for the development of "Stellazine" a tranquilizer made by the reaction of meta aminobenzotrifluoride with phenothiazine. We would supply the MABTF and this in fact was the first bulk chemical we manufactured.

Regularly I visited Pyridium Corporation, later renamed Nepara Chemicals. I had a friend there, Fred Grail, and I would stay with Fred and Anita. Fred bought lots of alkyl bromides and iodides for they were doing pioneer work with antihistamines. Their product was called Anahist and their advertisement was a typical American family free of sneezes and allergy indicating the efficacy of the product. No one sneezed at Pyridium Corporation.

At the University of Virginia I met Dr. Lutz who had been our customer in the old University of South Carolina Chemical Research Foundation days. He was working on benzofurans and other heterocyclic organic compounds. While visiting I learned how to stabilize alkyl halides during distillation by the addition of small amounts of sodium carbonate. We always previously had trouble distilling tert-alkyl halides which autodecomposed releasing HCL which in turn would catalyze further decomposition; now we could distill a pure product with ease, and have saved thousands of dollars with this information. At the University of Virginia I met Dr. Berger, the brilliant professor of Biochemistry. He was a nephew of Stephen Zweig and, learning that I was an admirer of this eminent Austrian writer, he gave me a copy of *Marie Antonette* written in German and autographed.

I regularly visited Dr. Reid. He was past eighty but still alert. I would tap at the door and he would storm downstairs yelling for Maggie to set another place at dinner for "Gergel is here and you know he is always hungry." Actually Dr. Reid had an excellent appetite and when I would take him to dinner he would eat large portions and order two desserts. I would find his fork appearing on my own plate and various dainties lifted to the Reid choppers (he did not see very well). In the evening we would talk until I was almost asleep. Since he no longer traveled he wanted to know how this one was getting along and whether that one still published. I never mentioned the deaths of his students and associates and we concentrated on their research; he would prod me to publish. He had become a good friend of Bill Wannemaker

and always I had to tell him what new sulfur compounds Bill was making. Once he gave me a present for Dr. Willard Davis of the University of South Carolina, a 100/g. bottle of pure ethylene dimercaptan. One hundred grams of the dimercaptan smells like every polecat in the world confined to one room. I left with the bottle leaking just enough to pollute the air and saturate the interior of the car. In mid-town Baltimore I picked up an escort from the police who hurried me on. I was stopped seven more times during the trip back to Columbia. I made an abortive visit to Philip Morris Research Laboratories but did not get past the reception desk. I presented the gift to Willard Davis, who accepted it with reluctance, (and jettisoned it, I am sure, as soon as I left the room).

In Washington I visited Reid's old friend Parry Borgstrom. Dr. Borgstrom was still at the Naval Research Laboratory; it was he who had visited us and tried to place an order for pentaborane. Homer Carhart, Dr. Gulbrandson and Warren Weaver were regular Columbia customers. Parry was an authority on Grignards and still a bibliophile. He promised to leave me a set of Beilstein when he passed away but his exit was quiet and I never collected. I still see Warren from time to time at the University of Virginia Medical College in Richmond.

Grogan, Marty Rubin and Geschickter were all at Georgetown Medical College on Reservoir Road. They were working on anti-tumor drugs. Charlie Grogan was an extrovert. He was extremely hairy and a devoted womanizer. He lived in his ancestral home in Falls Church, a square block of woods surrounded by office buildings. Of late afternoons he would kill a squirrel or rabbit for supper. He grew camelias and turned away real estate agents who offered ever increasing prices for the property. His home was the refuge of the traveling salesman. Often his buddy, Joe Waldsachs, would be there, and we would spend the evening eating Charlie's victims and listening to the story of how he had broken up with his wife. Grogan was a descendent of Colonel Grogan of Mosby's "Irregulars" and Charlie continued the war from his fortress in Falls Church, heavily armed against Blacks and Yankees. He had an old car with a rebuilt engine and periodically he and his girlfriend Edna would drive to Columbia. Edna paid for the gasoline.

The friendship with Charlie saved my grandfather's life. Grandfather had phlebitis and the chance of a successful operation on a man of his age, suffering from high blood pressure, was not very good. "Ostensin", Wyeth's creation, was flown in and his leg was successfully removed. Then they operated again and removed more. Every penny the family had saved was absorbed. This was before the era of Medicare and Medicaid. It was while visiting him in the hospital that I saw my old sweetheart. N. was assigned to the case after telling them she was a member of the family. She had married and was the mother of three children. She was as pretty as ever. Grandfather

was not an easy patient; he bellowed to be returned at once to active duty at the plant.

In 1957 we had completed twelve years of operation. We had a staff of twelve people and ten cats. My mother was cat feeder and house mother. We had two locations on either side of the field: the laboratory, a red brick building with annexes, and a large barn which had formerly housed Gordon Manufacturing Co. The letters painted over gradually emerged so that the tax people were always after us for having two operations. The latter building served as office for our Industrial division and was occupied by my mother, stepfather and its own collection of cats. The "Industrials" made a small profit each year and so did the Organics. The company began to accumulate an inventory of raw materials and finished products. We had "great expectations."

After my experience with methyl iodide poisoning I never returned to the laboratory. I had developed a sensitivity to alkyl halides which continues to this day. I was the traveling salesman, taking our message to all who would listen. We hired a very intelligent young Black, Henry Leroy Jones and he worked in the laboratory until he, too, contracted methyl iodide poisoning. We then transferred him to the stockroom where he worked for the next ten years. All of our fellows were Black, all were warm, wonderful, highly skilled and intelligent. They ran the reactions with virtually no supervision. When I was at the plant I spent my time on the telephone or at the typewriter, worked on our catalog or helped in the packing room. Max Revelise, who was weary of the road, spent more and more time in the labs or catalog room and many of our old cards have his annotations.

Sometimes we had visitors, people I had known in the early days. The wonder was how they found us in the wilds of Cedar Terrace. Once they arrived I faced the problem of how to get rid of them. It is difficult to make chemicals, answer the telephone, type letters and entertain guests simultaneously. Fortunately, of those who came, some were interesting.

I had known Scotty G. as the poor brother of G. the stamp dealer. From the time I was 7 until I had to sell my stamp collection at 22 (to pay Columbia Organics' first corporation tax) I had spent most of my spare money on stamps; in the early days it went to G. His brother was usually in the store or would wander in during negotiations (the separation of my tiny capital by the gaunt proprietor). By gesture (a finger applied to the head executing several rotations while the finger of the other hand pointed to Scott, whose back was turned) G. indicated that his brother was "simple." Then, when G. bent over the open books which contained his stock in trade, Scotty applied his own finger to his own head and repeated the circular motions while the other hand's forefinger pointed to G. This produced convulsive laughter on the part of the handful of customers and some perplexion on the face of the ever serious G., who looked up questioningly. There was something a little

frightening about Scotty, the feeling that he was not quite safe, that he would do things to little boys.

When the depression of 1932 brought turgidity to the business community, with his fortunes at their lowest ebb, G. moved to a garret over one of the Main Street stores. One reached his office by a dismal stairway, dusty and smelling faintly of urine. I was one of the dedicated faithful who brought their lunch money to G., grown even more gaunt, and his half crazed brother. Scotty was thinner but still laughed a lot and spoke his garbled nonsense. G. treated him as a punishment from God.

Long after the demise of the stamp store, several years after I had started Columbia Organic Chemicals, I was picking blackberries in the field where I now maintain my Verner office. I saw in the distance a figure trudging toward the plant. As it grew closer I was astounded to see it was Scott G. dressed in a sort of white uniform carrying, of all things, a briefcase and over his shoulder a short pole to which was suspended a sack. Recognizing me he burst into wild laughter, broke into a trot and grabbed me in a vise-like embrace, kissing me exuberantly on the cheeks to the mirth of my assembled workers who had dropped everything to witness this remarkable tableau. I hurried him into our little office and filled him with two cold Pepsi-Colas for he was dehydrated from his journey. He assumed that I recognized him, and of course I had, but the question was how had he found us and why had he come. He confided the purpose of the visit.

During the twenty years which had passed he had, as he told me, become a guardian of important secrets vital to the country—but his importance was known to Russia's intelligence who had sent their best men to track him down. Knowing his danger Scott had left his job, become a member of the brethren of the road, staying in hobo jungles, relentlessly pursued, with every friend suspect. Having read an article about our company working on the A Bomb and seeing my name, he had felt it important to see me—to leave with me vital information that *they* (he looked around—then walked over to a window and peered intently at the automobiles lining up at Rothbergs' [they were having a sale] then grabbed me by the shoulder) not know that he, Scott G., had been here; for not only would this endanger him, but me as well. He then told me that he had gotten one of the best Russian agents the night before and this would surely make them mad, and in fact they may have followed him—his voice became brittle “keep it for me—I will be back.” Back to the window and another long look. “There they come.” He rushed out of the office, through the laboratory, out the back door and into the wilderness of blackberry bushes which protected from view the area where we polluted Cedar Terrace in the pre-EPA days. He was a small white figure running crazily toward Cedar Terrace, stopping once to wave, knowing that I was watching—and then disappearing forever.

No one came except a car with an elderly man who wanted to buy a

gallon of termite proofing, definitely not an agent-type. Whoever was after Scott was simply a part of the crazy half-dream in which he had always lived. I examined the brief case. It was rather expensive and fairly new. In it was (1) a small package of fishhooks, a coil of nylon line and a small frying pan in a paper bag. There was also a small, fully loaded Smith and Wesson 38, a Russian newspaper and a severed finger with a rather long nail. I kept the brief case for several years and it burned with everything else in the fire of 1958. I received a postcard stamped Fargo, No. Dakota with only two words, "I Gotim." This was several months later and there was no signature, so it might not have even been Scotty.

Chapter 6

Our ally, Wateree Chemical Company was doing well. They had orders to make sodium butyrate in bulk. Anyone who makes mercaptans for a living can withstand the fetid odor of butyric acid. They also oxidized mercaptans to sulfones and made other derivatives. I would visit them from time to time and even ran a few mercaptans “for old time’s sake”.

At Ohio State I met a number of German chemists who were working on the Grundemann-Herndon project. They all came from the Max Planck institute and had been brought over as a group by Olin and sent to Ohio State to work in the same building which housed the A.P.I. project, headed by Ken Greenlee and Vince Wiley. I met Rudy Raetz, Ehrenfred Kober, Gerhardt Ottman and Henry Ulrich. They worked on fluorine chemicals and bought their raw materials from us. We would get together on evenings and sing and drink beer. Ottman and I listened to Beethoven. On this same trip I met Ralph Pelly and Leo Paridon and learned about the fascinating work they were doing with Henne on aromatic fluorine chemicals. They were the chemists who first made meta-aminobenzotrifluoride which Yale would react with phenothiazine. They had a little chemical company, Caribou Chemicals, which offered fluorine compounds. We became their customer and I became their salesman.

In making MABTF they would first nitrate benzotrifluoride to the meta-nitro derivative and this was reduced to the amine. They considered this had possibilities as a pharmaceutical intermediate and we put it in our next price-list along with their products, trifluoroacetone, ethyl trifluoroacetate and hexafluoroacetylacetone.

We had no idea that this family of compounds would prove a gold mine. When “Stellazine” became an accepted tranquilizer and Lou Burger at Squibb had given us our first big order, Caribou moved into new quarters and polluted a heretofore virgin landscape with all sorts of effluent. Meanwhile,

needing production facilities, they used Elmer Fike's Roberts Chemical Company to make glycidol and meta-aminobenzotrifluoride.

Elmer was an alumnus of Monsanto's Nitro, West Virginia, plant. A chemical engineer, he and a fellow entrepreneur formed Roberts to make agricultural chemicals. These included bis-dithiocarbamates which were covered by the Rohm & Haas Tisdale patent. He had worked on this class of compounds at Monsanto; they were used to poison soil before planting a crop to kill organisms such as nematodes, which eat the root system.

Rohm & Haas had invested a great deal of money producing bis-dithiocarbamates. They had cross-licensed with DuPont, a fact not known by Elmer, who thought that DuPont was "violating" and figured he could too. Rohm & Haas promptly sued. Their Otto Haas did not like people using his patents without paying royalty. Elmer won the first trial which was in Charlestown, West Virginia, where he had friends; while they were celebrating, the dismal news was received that they had lost in a dozen other courts. Worse, triple damages had been assessed, enough to bankrupt Roberts Chemical Company.

Elmer was liked by everyone. He was always prepared to do a favor. He had made glycidol for Ralph and Leo although he could not possibly profit at the price they paid. He was an adventurer. When the Fish and Wildlife Service was confronted with the necessity of disposing of large amounts of ethyl fluoroacetate, a very toxic compound, they approached Monsanto who reacted it to the sodium salt. This was sold as "1080" and used as a rodenticide. It was so dangerous that they quit offering and Elmer took over the production. The terrible white powder and the even more insidious ester, which was fatal to breathe, made a visit to Roberts Chemical an adventure, only to be made by the wary. Everything Elmer produced was either poisonous, inflammable or explosive.

I visited him accompanied by Ralph Pelly. Elmer and his wife, Frances, put us up in their home. We had morning prayers over breakfast and we met his children. All of them, like Elmer and Frances, were musicians. We visited the plant the next day and I met Leroy Bogges, Elmer's "right hand man." With Elmer and Leroy we tramped around the large plant and saw chemicals made in bulk. Steam poured from leaks, small pools of spillage endangered shoes; there was pleasant odor of ethyl fluoroacetate, the killer.

We told Elmer of our project and he said he would try to produce meta-aminobenzotrifluoride, although things looked bad right at the moment because of the lawsuit. I suggested a quid pro quo; we would help him with the lawsuit and he would help us by making meta-aminobenzotrifluoride. I planned to get Rohm & Haas's consultant, Dr. F. O. Rice, to intercede, but Elmer and Dr. Rice agreed that it was too late for minor help. First I offered to buy up Roberts Chemical stock and sent letters to all the stockholders. Convinced that Roberts had won the lawsuit or discovered oil, most people

held tightly to the stock, and I picked up a few shares. Then, without telling Elmer, I started psychological warfare against Rohm & Haas. He was unaware of my diabolical plan, which, as a practicing Christian, he would have opposed.

The year before, Clive and I had taken a trip to Haiti with my good friend Paul O'Brien of Standard Oil of Indiana. We had attended the American Chemical Society meeting in Miami and, as I had never been out of the country, we decided to visit Haiti. It was a fascinating experience and I made many friends including a practitioner of voodoo and devil-devil we will call Dr. J. Now, his specialty was love potions and their opposites, but he was available for hire to anyone who had a grievance. His excellence was praised by all who knew him and he specialized in difficult cases. Elmer had a difficult case.

I wrote Dr. J. and told him of the small chemical company which was being persecuted by the large wealthy one (not mentioning why this large wealthy company was so irate). I leaned heavily on the relative sizes of the two antagonists, and enclosed a check. Ten days later I received a thank you with a copy of a letter to them in idiomatic English suggesting that they negotiate with Fike. Several weeks went by and naturally we did not hear from them so I wrote my friend once more. This time I received a bill for further services along with a copy of a second letter warning of the serious consequences of their neglect of this important matter. Two weeks later there was a serious explosion in the Bridesburg plant. Elmer was permitted to license.

In Columbia we started making 4,4'-dichlorodibutyl ether. This was at one time available from DuPont, but had been discontinued. Thiokol wanted a few kilos and I used Organic Syntheses route and blew the contents of a 12 liter flask on the walls and ceilings. The prep called for the reaction of tetrahydrofuran with phosphorus oxychloride. When they placed an order for 100 lbs. my emotions were mixed.

I telephoned Morris Berenbaum who told me that Thiokol had an enormous file of information on the preparation extracted from Reppe's research work during World War II. I made several runs at Columbia Organic Chemical using thionyl chloride and tetrahydrofuran with ferric chloride as catalyst. Yields were excellent. Needed was a plant to make bulk. I enlisted the aid of Cardinal Manufacturing Co., a local company, and when Thiokol's requirement reached 50 tons I made Elmer a second supplier. Thiokol was using CBE to make disulfide, which they polymerized and then cleaved to yield a rubbery material with low and high temperature stability. They used this for propellant containers in the "Nike," "Bomarc" and "Honest John" missiles.

Pelly and Paridon lured George W. to leave Carbide and run their new plant. During an unfortunate evening the yield was dumped instead of the waste. George called to tell me about it. Later when they were without funds for George's salary or my commission we dug test holes, located the strata

containing the meta-aminobenzotrifluoride, sunk a pipe and pumped up the lost material which paid his salary and my commission. All we had to do was wash and distill.

At this time we had a request to make large amounts of dimethyl sulfide. It had been years since we made mercaptans and I thought we would simply buy a mixture containing dimethyl sulfide from the Hercules Kraft plant and distill. Our customer was Stepan Chemical Company. I had no idea that the separation would be so difficult and the main product and all the co-products of the distillation horrendous in odor. I had received a telephone call from the chap at Stepan who told me his name was Thor Smedslund. He was interested in buying the sulfide as an intermediate for making dimethylsulfoxide. I told him my largest reaction vessel was a 22 liter flask and that the citizens of Cedar Terrace were already paranoid about the odor of mercaptans. We set up equipment and the Hercules plant in Brunswick, Ga. sent me 5 drums of a black, vile liquid, venomous with methyl mercaptan. I arranged to heat the drums with electrical tape and distill directly into a receiver connected to a sodium hydroxide trap. My condenser was a criss-cross of $\frac{3}{4}$ " galvanized pipe in a 55 gallon drum surrounded by brine. The dimethyl sulfide so produced was fairly pure and we made three drums. This brought praise from Smedslund and complaints from the residents of Cedar Terrace for, alas, dimethyl sulfide smells bad, too. The contents of the trap had an indescribably bad odor. We buried it in a little used part of the field. Several years later a McLean truck drove too far into the storage area, sank deep into the hole and burst the now forgotten drum. The stench which arose was mind-boggling. The president of Mclean offered to give us the truck if we would sign a quit-claim and assume responsibility to the community.

There were other problems. Smedslund was hospitalized. A gallon jug of DMS broke and caught fire. He returned to the bench and made the country's first dimethylsulfoxide so that we played a role in this compound's fascinating history.

During 1956 and 1957 we worked closely with DuPont's Textile Fibers Laboratory making alpha, omega-dinitriles and from these the diacids, also we imported diamines from my friend Walter Griesmeir. The first bulk item we made for DuPont was suberic acid; this introduced me to Dr. Alfred Bader of Aldrich, then a small chemical company like ourselves. Alfred supplied the 1,6-hexanediol, raw material. In practice we reacted the glycol with PBr_3 to produce the dibromide and reacted this with sodium cyanide in alcohol to form dinitrile. This was treated with hydrochloric acid at elevated temperature to form the white, faintly goaty smelling suberic acid. Our success established our reputation with DuPont's Carruther's labs and led to my friendship with Dr. Richard Heitmiller. He was heavily involved with their programs and next brought us the assignment to produce alpha-methyladiponitrile which is easily made (on paper) from the reaction of

1,4-dibromopentane with sodium cyanide as an alcohol mixture. Unfortunately it is hard to make the 1,4-dibromopentane very pure. When we got impure dinitrile we suffered through a tedious purification. DuPont had just developed the spinning band column and one of its first assignments was to purify our dinitrile. Then Dick telephoned me and asked if I would come to Wilmington.

They wanted us to react an acid with ammonia under conditions of extreme temperature on a catalyst bed to produce nitriles. We would be furnished hot tubes, packing, lagging, electrical instruments, the chemical raw materials and lots of orange juice. Their doctors had advised them that repeated exposure to ammonia fumes leads to eye damage and this is partly helped by drinking lots of orange juice. First on the program was a visit to Columbia Organics to look over the plant site. We were rather primitive and there was no room where we could put the large equipment needed for this assignment. We would have to build a new lab.

Dick, Otis Shealy and Dick Sellars, all PhD's and very bright, came to Columbia and met our technical staff, me, plus Peyton Teague from the University and Max Revelise, who looked very professional in his white apron. Our other employees were high school level. I hurried the group off to lunch and an afternoon at Lake Murray.

Heitmiller was an accomplished sailor. The wind was excellent and at 3:00 PM when we were two hours away from the estimated time for departure we were five miles up the lake. At 3:30 when we were still a mile and half away from our anchorage; the wind died and the three of us had to paddle. At 4:00 we were taking in sails; Dick assured us the plane would wait. We reached the airport as it was taxiing to take off position. Dick told the attendant at Eastern, my friend Frank Broom, that they were from DuPont's atomic energy commission, "could they recall the plane?" Dick is a very convincing speaker, and this was before laws had been passed to prevent glib or frantic latecomers from upsetting schedules. Eastern brought the plane back, the three of them got aboard, and I went back to Cedar Terrace to order construction of new quarters.

While Luke Jones was building the new laboratory and we were awaiting the arrival of the equipment from DuPont we took on the synthesis of bibenzoic acid for American Viscose. Dr. Lytton, who was the director of research, had been my customer in early years of our operations, purchasing large amounts of asym. heptachloropropane. Often his orders had literally kept us solvent. Working with him was Dr. John Massengale, at one time chemist for the Sharples Co., which later became Pennwalt. John had put in years with the Marines and a stint with American Cyanamid. The two of them came to visit.

They told me that they had made bibenzoic acid in their own laboratory after they were unable to get material from Dow, who had pioneered the product. Now they needed large quantities and wanted Columbia to produce

this. They brought with them a working prep which looked easy. They enjoined me to secrecy.

First we had to make 4,4'-diacetylbiphenyl. An hour later I was adding biphenyl to acetyl chloride and carbon disulfide in one of our 12 liter flasks which was surrounded by an ice bath, since the reaction is exothermic. Three hours later, my lungs saturated with carbon disulfide and HCL, I worked up the highly colored product. Without bothering to check its purity or try the next step, I proceeded during the following week to make some 15 kilos. I was full of optimism; the project was well funded and the first step had gone exactly as they predicted in the paper. It was early Summer; I whistled while I worked.

The whistle ceased during the second step. When one reacts 4,4'-diacetylbiphenyl with sodium hypochlorite solution he obtains the sodium salt of 4,4'-bibenzoic acid as a thixotropic goo. If he uses my diacetyl compound he gets the same paste, but highly colored. It sticks to things; it can hardly be removed. The instructions left with me noted that the product must be repeatedly washed with water. This gunk simply absorbed water to form a somewhat thinner paste. I could not only not wash it, I could not budge it from the flasks and beakers. I employed strategy, muscle, prayer and tears. It covered everything including the chemist. I brought in Dr. Broughton Baker from the Chemical Engineering Department of the University of South Carolina and he clucked sympathetically and tried such resorts as centrifuging. He could produce a yellow damp powder, but more water simply yielded paste again. After two sleepless nights I telephoned for help.

Dr. Massengale returned to Columbia and examined our raw material which he said looked different from his own. He ran a batch of it to the diacid using sodium hypochlorite and he, too, got paste. He remarked that this had never happened in his laboratory. What he did not say, for which I was grateful, is that his laboratory was clean and there were efficient technicians and nice filtering equipment. Ours was untidy, in Summer it was a hell hole. I was "the technicians." He suggested that I visit their plant in Marcus Hook and I returned with him and watched him routinely make bibenzoic acid from scratch and he had no great difficulty. We decided that it would be better for my ego and my bank account to abandon the project, (especially since he needed not the diacid, hard enough itself to make, but actually the ester from the intermediate acid chloride). I gave up and for the next two months, before the fire, I looked sadly at the enormous nuche we had purchased with our year's profit to filter the bibenzoic acid we never made. The nuche and the plant would soon share a common grave.

This has a sad end, the common fate of many elaborate research projects. Those which are successful and survive, do not necessarily satisfy the economic requirements of the industry they serve. Viscose's elaborate work with this compound---the efforts of their highly competent John Mus-

sengale and our own brief and costly fiasco—were “scratched” by the policy makers “upstairs.” After making the diester, at a cost of many thousands of dollars, the program was abandoned and John transferred to another assignment. I was visiting him years later and we were discussing it. I asked him if he still had the diester and he gave me some 5 pounds which I sold to Alfred Bader at Aldrich for some \$1500 and still had enough left to fill many small orders for Columbia.

Knowing that we had an even more formidable assignment ahead we hired Peyton Teague from the University to act as consultant. Immediately he helped us solve some of our small problems. His patience during the next year would help us with the DuPont project. Our relationship with the University was a real help. We could ask advice, hire student help in Summer and use their excellent library. This was important for Max Revelise and I, together, would spend hundreds of hours working on the Kirk-Othmer *Encyclopedia of Chemical Technology* for which we contributed sections on Fluorine, Nitriles and Fatty Acids. Later with Ellen Clarke, the wife of Dr. James Clarke who would be our senior research associate for several years, I wrote the chapter on Halogenation for the McGraw-Hill Encyclopedia. Dr. H. Willard Davis was now head of the Chemistry department, Dr. Lipscomb had retired to his chemical plant and succumbed to a liver ailment, not uncommon in organic chemists of his era. He now paced the halls of Elysium measuring celestial desks. I expect to see him some day; he will have a small cluttered office with a steam bath on the desk in which he will test the tack of heavenly adhesives.

In the early 1950's LeConte had been moved to the other side of the field, next to Davis College where I had taught pre-flight many years ago. The new labs were modern, enrollment had increased and the University now had a Graduate School and offered a Ph.D. in Chemistry. These were traveling salesman days and I would either go North to New York and Boston or West to Columbus, Cincinnati and Chicago. I would load my car with catalogs and visit laboratories to tell the chemists that they should buy their research intermediates from Columbia. I visited Duke and saw Dr. Hauser and Dr. Bigelow and met Dr. Tom Amore who was running Cardinal Chemicals. He helped me buy equipment and chemicals at bargain prices and often invited me home for dinner.

I met many graduate students whom I still see from time to time, Fred Swamer who is with DuPont, Murray Hauptschein who is director of research for Pennwalt, Ned Heindel who is at Lehigh, dozens of fine men who would go on to make reputations in Chemistry either in industry or academia. I met Ed Tyszkowski at Duke, and followed his progress through Allied to Pennwalt and on to Hynes and Beaunit; now we are associated in his company which bears the fearful name “Armageddon Chemical Company.” He makes fluorine compounds using HF and elemental fluorine. I recall the old days

when I would visit Philadelphia and stay with Murray and Gloria Hauptschein, sleeping on their couch. I had couch privileges at the University of Pittsburgh with John Wotiz and his wife. John left to go to Diamond Shamrock. He and I had given papers at Academy of Science meetings and later he became an expert in acetylene chemistry. When John taught at the University of Pittsburgh he introduced me to Bob Levine, who was a Duke alumnus and would later consult for us.

Chapter 7

The DuPont equipment arrived and we were ready for Heitmiller's project. I had completed my trips. I knew that for the next four or five months we would be busy: We unpacked large cases containing heavy glass reaction tubes, intricate electrical equipment to monitor electric input and temperature, takeoffs, huge three necked flasks, in short, everything needed to make the dinitrile. At that time Clive and I took most of our meals with Luke and Claire Jones who ran a boarding house. Luke was a wonderful carpenter, plumber and electrician, and he worked at the plant setting up the DuPont building and later installing the equipment. Max Revelise left "the road" and came in to help. Dick Sellers came from DuPont Experimental Station and stayed with us during the two weeks required to set up the columns and made our first runs. When finished we had a truly lovely high temperature laboratory, well ventilated (because of the ammonia fumes), with a storage area and stockroom for spare parts. We would divide into three shifts and work around the clock, seven days each week. We had cases of fruit juice supplied by DuPont to counteract eye irritation. Promptly every family on Lovers Lane, where most of the fellows lived, was adequately supplied.

In operation one fed the raw material through the top of the reaction tube. It vaporized and was exposed to ammonia introduced at the bottom through one of the necks of the three necked reaction flask on which the columns were suspended. The reaction took place in the column and the product collected in the flask below. There was an outlet tube for vapors and a trap to collect material which might sublime from the reservoir. I say parenthetically that material sublimed not only from the trap but from every possible opening and in operation we worked in a cloud of mixed ammonia and product and left the room with part of the material deposited on our faces, hands and clothing. The columns were packed with catalyst and had to be repacked after

each run. This was not easy for the columns were glass and the catalyst caked and one had to actually dig and pick the material out of the reactor. During the entire reaction the temperature had to be carefully regulated, so that at least one person was on duty with the other gazing fondly at the blue or black sky, wishing that he were a thousands miles away as the ammonia slowly dissolved his corneas. It took two people to feed and milk these monsters for we had three set-ups, of which two were always in operation and one heating up or cooling down. In the later days when we were desperate we even ran with four. The sounds from the room were startling: the swish of ammonia and product escaping from the safety ball at the top, the clanking of a worker trying to remove caked catalyst, the hum of the electrical units, the curses of the workers. It was dreadfully hard work and despite care the room was always full of ammonia as well as product and no one except the work shift would go in at all. The regular lab workers pretended to be non-people and if you wanted to accelerate a technician in making his regular compounds you had only to threaten him with a tour of duty on the nitrile project. When things went right everyone survived and we had good production. When they did not go right we worked with gas masks and brought in one of the regular lab men to help. But work we did, twenty four hours each day, seven days each week.

I have a cousin Adele and she and her husband Frank arrived in Columbia in their aged automobile, which did not have the energy to make it to Florida. Frank was looking for work. He was prepared to do repairs or construction but there was nothing available in Columbia. They stayed for several days with Clive and me at Ravenel Street and then pushed on to Florida in their wretched, wheezing old car with four brown eyes peering sorrowfully back at us. We decided we'd do something for them if they returned, for we feared they would find nothing in Florida. They were back in five days. They were family; both of them came to the plant.

In starting any major project it is assumed that everything which can go wrong will go wrong and our first obstacle was the potentiometers which Dick Sellars coaxed into operation. During the first run the project plugged no matter how well the reactors were insulated, so that every time one fed the raw material through the top of the column part would blow out with the ammonia rising along the reactor. The joints needed constant lubrication. If the temperature fell too low or one fed too fast there was a glut of unreacted material, a cake would form in the unit and the gases rising would swell the almost molten unit out like a balloon. This was costly both in columns, down time and the nerves and fingers of the operator handling glass at a temperature of 450°C. Sometimes the glass top would blow out and a column of ammonia and product at high temperature would spurt for the ceiling and be deflected to one's hands and face. When the leadoff tube jammed, the entire unit leaked. Keeping three columns on schedule kept the

shift witless. When a column misbehaved, one had to take it down, replace with a new column while the miscreant cooled, pull out the pot full of product, the usual cause for the problem (a two man job), then hurry to repack so that it could replace the next one to go. The new shift greeted the tired old shift, white as snowmen with product and fatigue.

We had a visit from Dr. Lester Friedman who, at the time, was teaching at New York University and consulting for a half dozen firms. Lester was a chemical genius whom I had known since he was ten years old, when he ran a small chemical company and effected the total synthesis of rubrene and other fused ring compounds. I was sure that he would help us simplify our operation in the nitrile room and discuss interesting things we could do in the organics. He inspected our high temperature room, and the plant in general, went with me to a football game, and left echoing Max Revelise's observation "there must be easier ways to make a living."

The most productive shift was the one Max ran. He was sober and dependable. Max and his helper had fewer breakdowns and more production than either of the other shifts. In an eight hour period we could, theoretically, make as much as 15 pounds of crude product, but bad luck (which meant blown column, breaks in the leadoffs due to strain, failure of the potentiometers, or just general crankiness) would cut this to 10 pounds or less. If one were sick and had to go home we extracted a technician from his hiding place and pressed him into service—if it happened at night someone got woke up and ran a double shift. We were lean and we had learned to hate fruit juice.

There were lots of visitors. People came from the University to see the wonder unit—perhaps the largest "hot tube" reaction any of them had ever seen. Ed Fettes from Thiokol came to spend a week with Clive and me and commented that no one from Thiokol would be caught dead running our reactors. He told me that I was looking ammoniated. He had a dry wit and was a pipe-smoking observer of our inferno. Heitmiller and Sellars visited and viewed the operation from a distance and doubled the ration of orange juice.

We collected the glistening white product in a bathtub, stirred it with a clean broom handle, transferred it to our nuche, and then washed it again in the bathtub, refiltered and packed it as a damp cake in polyethylene bags. DuPont told us it was extremely pure. Somehow our labor force kept up production with almost no illness. The lovely Autumn weather turned cold; the months of November and December of 1957 were very cold. The temperature in the Nitrile room stayed at 75°C. If you stayed inside the ammonia got you—outside the cold got you. There was a shock zone in between. All of us had burns and mild double vision but we never caught cold, flu or pneumonia. We just got very, very tired.

In the evenings when I was not on shift I would catch up on correspon-

dence, work on the new catalog and generally take it easy. Clive was pregnant. We had lost a little boy several years earlier, had gone to fertility clinics and now we were lucky again. She went to bed early; I renewed my interest and was a regularly attending member of the Palmetto Chess Club with my new friend Alex Edelsberg. Alex was a veteran of General Anders' "Polish Army in Exile." He had fought in Africa and Italy and married Andrée, who was his brother's widow. They were such good company that no matter how bad things might be at the plant, how bleak our prospects seemed, his friendship and counsel made it all bearable.

Frank was working a shift. We had earlier put him to work with Joe Shway rewiring the electric system at the plant, then for a month he was an apprentice in the labs. He was amiable, gentle and patient. He always had the night shift—the one no one else wanted. He worked with one of our other technicians, Bill. Unfortunately neither of them had any real background in chemistry, even the simple lab techniques. Frank was good at instruments and this was invaluable, for without correctly functioning potentiometers, we could not run the hot tubes. I would call from time to time in the evening to see how they were doing.

Shway worked in the late afternoon and early evening. At least part of this time he was alone in the DuPont building depending on Bobby or Tommy or one of the other lab technicians to help him if there was a problem. His relief came on at 9:00 P.M. He was a plodder and capable. On the fateful night of the fire he had sent Max Revelise home and later turned everything over to Frank and Bill. I had taken Howard Lovejoy, a Monsanto salesman, to dinner and left him comfortable at the Best Western Motel. The lab fellows were stripping benzene from a number of runs of TTA. The forerun was always dangerous for it could flash if unattended and I cautioned the fellows to cut off and go home if the stripping did not finish.

I was visiting Alex at his home on Edisto Ave. which was about two and a half miles from the plant. I had eaten supper earlier and we were playing chess. It was a cold January 8, 1958. We had played four games and of these he had won three and I had one miserable draw as my only success for the evening. We were mid-way through the fifth game; Alex was playing White and as usual had opened the Ruy Lopez. As usual I was in trouble. The telephone rang and Alex answered and when he came into the room he looked worried, "It's your plant," he said, "Frank Volin says they have a fire."

Frank was friendly and not at all excited. "We have a fire at the plant," he said, as calmly as if he were reporting that all the reactors were doing well—and that he was going home to get some sleep, "Where are you?", I asked, and he told me that he was at the service station on the corner. This was a version of the classic Russian story "The Dog is Dead." "Has the fire department been called?" "Yes, but they refuse to come— you must put up a deposit." "How bad is the fire?" "It's pretty bad." It was obvious that my

cousin was added. I telephoned the fire department reminding them that we had a deposit for such eventualities, and called the Veteran's Hospital; they told me their fire truck was already at the plant. With Alex I hurried out.

When I arrived Frank was waiting for someone to tell him what to do and Bill was helping him hold up the telephone pole from which they were surveying the fire. I put the two brooders to work dragging things out of my own office and putting what we collected in the field. There were lots of awe-stricken spectators. The fire was quite lovely—due to the various colors of burning chemicals and solvents. Howard Lovejoy had heard about it on the radio and I put him to work helping firemen remove equipment from the DuPont room. Everyone was helpful and brave. I knew many of the firemen by their first names. There was Hank Golden, from the old D&M Plating Co., and Bub Davis, Edna Richbourg's husband, and Chief Marsh himself, who chatted with me and told me how sorry he was. Although it is upsetting to watch your chemical company burn (especially when uninsured) one does not panic. You watch the timbers blaze and a huge spurt of flame come from a drum you have gone to so many times that it is like your brother. You are numb and the smoke gets in your lungs and you chat with the curious and you try to help. The old construction went, the DuPont building went, (we saved most of the equipment) and I saw the nuche fly from the inferno heading toward Fort Jackson. This was Gotterdamerrung, the "twilight of the gods." The firemen, despairing of saving the main building, were wetting down the space between it and the new warehouse, playing the stream on the roof of the huge, dark building in an effort to save it. More people arrived and more fire trucks. Now the Chief was afraid that the debris would ignite the newly constructed shopping center and the houses on Cedar Terrace. There was a hungry, crackling sound from the fire and purple flames from vaporizing iodine.

The fire had razed the storage shed and DuPont room when I remembered the day's shipments on the shipping table. I wet myself down and plunged in through the fallen and still burning rafters. I knew there was a gallon of freshly distilled decamethylene dibromide on the table and some packages waiting for a never to be consumated rendezvous with railway express. It was almost impossible to see and hot as hell. My hair was starting to burn when I emerged clutching the gallon jug. Alas, I had rescued a container of isopropyl alcohol. As I laughed hysterically at this new blow from the gods, the television cameras closed in and all of Columbia viewed several minutes of Max Gergel dancing gleefully and holding aloft a jug—all against a backdrop of flames. Most assumed we were heavily insured and several hinted that in a drunken frenzy I had started the fire. There was no insurance.

It was hell. Firemen and friends were moving cases of bromine from the side storage area. Taking dreadful risks, they wheeled out carboys of acid,

the boxes already in flames. Every now and then some smoke-blackened fireman would come up to say "Hey, Max—What do we do about this?" Periodically a wall would collapse and there would be a "whoof" of smoke and flame. It was hot at the fire yet frost had formed in the silent fields where we had moved the truck and our own cars. The crowd was large but very quiet. They tried to get close, to drink in all of this wonderful excitement, the thrill of watching someone else's house burn. Periodically a drum, propelled by its own flames, would arc out of the doomed building far into the fields, then they would scatter; like wolves they would close back in. They chatted and no one offered to help. An exception was our city treasurer, Tom Elliott who at the time was the poor owner of a little fruit store and our neighbor. He worked alongside Max and Howard and me. I was manning a hose. Max put his hand on my shoulder and whispered, "don't worry, we'll build it back!"

I was full of smoke and adrenaline. The fire was under control but there were still patches which the men attacked with brooms and small extinguishers. Hank and Chief Marsh came up and told me to go home and "hit it a lick tomorrow." I was a poor man, a desperately poor man—but I had friends. I drove first to my own home. Clive was watching television and glad to see me safe; no, she did not feel bad, she was three months pregnant. On the TV screen a grinning, gibbering idiot was holding a gallon of isopropyl alcohol to the gods; it was a playback. I went to the bathroom to wash and was so dark and grimey that I could have passed for a coal miner. Next I drove to Capitol Place to see my mother and Jules. Max was there and Hasell Ross (Jules' doctor); Jules was sedated and feeling alright. His main concern was the warehouse and he worried about the cats. He took the fire in stride and, as we chatted, he drifted off into sleep.

We sat around. My mother made coffee. Max made a few jokes. It was decided we would meet in the warehouse, after we'd had some sleep. I drove home. Clive was asleep. We had nine doggies. They were asleep but some of them woke and smiled and yawned and I snuggled them and took two phenobarbitals and slept a few hours. As I waited for the narcotic to take effect I mused. It was just past midnight. At Cedar Terrace the firemen were cleaning up. Our new warehouse and the Gordon warehouse on the other side of the field were both intact. The two cars and the truck had been spared. We had the plant records, the lab notes, my record player and diploma. We had some carboys of acid, some cases of bromine, some miscellaneous salvage and the DuPont equipment. We had just sent them a shipment. I grieved for the shipments which had not made it to railway express, for the \$60,000 loss of chemicals and finished products, for the equipment, and especially the little red building of which we had been so proud. We had \$10,000 in insurance, we had 18 cats, all alive; 11 employees, all healthy. God knows how much we owed. I struggled for air. There was a lot of

smoke still in my lungs and breathing was a dull pain. I fell asleep.

The next morning was very cold. Cedar Terrace was decked with white frost. I drove to the ruin half hoping that it was all a dream, full knowing that it was not. My eyes were watering and my head and chest were still full of smoke. The workers were a huddle of misery wearing sweaters and raincoats. Their noses were running; suffering and apprehension was in every face. "What's going to happen to us?", the eyes asked.

The mess was still smoking. The site of the laboratory was a blackened waste. One red wall was still erect, the others had fallen like pillars of the Parthenon. Commodes crack but must be fire resistant, ours sat incongruously in the shambles which had once been the bathroom. I sent Henry Leroy Jones to buy shovels, picks and wheelbarrows. It was now light and the human buzzards and the curious began to arrive. The former offered demolition services and the carting away of debris and we soon had a series of pickup trucks carrying off pipes and whatever they could salvage. I started a crew moving the DuPont equipment into temporary storage in the Gordon warehouse. Jules drove up and made room in the new warehouse for the chemicals and equipment we had managed to save. It was miserable flotsam snatched from the sea.

The telephone rang. People ordered chemicals or expressed curiosity and concern. Old customers were especially solicitous. They ordered concrete cleaner and dust-down and assured us they would be patient. There were orders for organic chemicals and we set up temporary offices and laboratories in whatever area we could find. There are in the animal world creatures which regenerate a lost part; examples are the lizard, the starfish and Columbia Organic Chemicals.

The day advanced. It was cold but the bright sun began to clear the ice and our pick and shovel crew was busy. Max Revelise, in overalls, supervised the shovelers. He worked as if he were twenty rather than fifty-five. The people from the bank came out and assured Jules they would approve a loan. The insurance people visited and thanked us for what we had done to minimize disaster. They promised speedy payment of the small insurance we carried.

Mr. Kahn drove out. He always called Jules, "Jewish", "Jewish," he said, "You boys sure had a bad fire." He told us not to save the walls as the concrete had lost its strength. He offered us the old schoolhouse, where our dogs Trumpet, Tuba and Trombone had been born, as an office, rent-free. He would send out a bull-dozer, no charge. He was family, and waved off our offers to pay. I called Clive—she was fine. We had a kitty head count and all were present—and hungry. We brought in food for the cats and sandwiches for the workmen. The bulldozer arrived and there was the crash and crunch as it ate into the ruin of our plant. The phone rang, people ordered soap powder. Like some story out of Kafka, we operated from ruins.

Jules and I went to see Fred Stubbart. He and Maudelette owned Midway Kennels and had switched from raising St. Bernards and Newfoundlands to Pekes. We were greeted by a hundred yaps. My mother and Mrs. Stubbart were friends; Jules and Fred were friends. He was a master engineer and had designed bridges throughout the world. This year he had retired because his heart was failing. He insisted it was indigestion. The EKG disputed. He suffered from emphysema, and when we arrived he was lying on a cot; a humidifier whirled. The thoroughly bored Stubbart was delighted to see us. We told him what had happened, but he had already seen it on TV. He got up and put on his overalls over the protests of his wife, drank two cups of coffee and got in our car. A despairing cry "Fred, you idiot, don't you blame me when they bring you back dead," floated in our wake.

He gave the site a good look. "You can't pour concrete in this weather," he said to himself. "We'll want three or four little buildings, not a big one, and they need natural ventilation, runoff, sun and space. We'll start with one in this corner and work our way back to the schoolhouse." In his planning he had devoured one of Mr. Kahn's buildings and a great deal of his land.

Tommy, Sonny, Ervie Lee, Shway and Frank were shoveling debris. Fred gathered them and told how we would rebuild. Shway was appointed for liaison with the weather bureau, told to call every hour. We would pour at the first break in the weather. Fred phoned the concrete block people and arranged for sand and mortar. He took Max Revelise from the shovel and put him on twine detail, which meant lining up the new walls. We told Fred we didn't have any money, just some insurance and a bank loan. He said "Shucks, who needs money." He roughed out four small 20' x 20' buildings in one of the flat portions of Kahn's property. There was one 6-foot tall pine. (It is now 60 feet tall and has survived blizzards and thionyl chloride).

Ben Arnold visited. He drove up in his large, chauffeured car, got out and stared at the debris. "Maxie," he said, "You gotta lotta insurance?" "No, Ben," I replied, "but I have a good friend. He is going to help me rebuild. I am poor but I am rich in friends." "Who is it Maxie?", he said. "It's you, Ben," "That's right, Maxie, that's why I came out here. You can count on me; I'll help." I thanked him but advised we had already made arrangements with the bank. Ben had the reputation of driving a hard bargain, but that day he was noble. He is probably running a pawn shop in Paradise and I hope someone shows him a copy of this book.

Mr. Stubbart had extraordinary ideas. Knowing that we were low in funds he designed buildings which self-ventilated, and showed us how to make a crude stucco from cement and water. He was up at dawn and working like a horse all day. He told me stories about his early days in the Ran of Kutch, India—how he had sunk pylons in quicksand. He would relate the stories while sawing a 2"x4", or sighting down the Revelise "breastworks," or cussing out a delivery man. He discussed mysticism and mind over matter.

He confided in me that he could control his heart beat and intimated that fasting was a universal cure. He worked for \$1.25 per hour, exactly what the lowest lab men cum construction worker received, exactly what Revelise, Gergel and Seidman were paid.

Luke Jones joined us. He had designed and created the DuPont annex. Like Fred he was not well and his diabetes combined with a fondness for John Barleycorn affected his performance. Now he worked like a Trojan designing and erecting girders. He was a superb welder but needed a backup man. We hired Mr. Digges who had been night watchman for the old Carney Zipper Co. five years earlier, currently unemployed. There are few jobs for one armed men. Digges welded and backed as if he had two arms. They were assisted in the erection of the trusses by that unlikely helper, M. Gustave Gergel, who had a fear of heights, but a greater fear of poverty. We hired concrete mixers and block masons. Buildings were going up all over the place. A new packing room grew at the site of the old laboratory; we left the remaining red wall in memoriam. I had no idea where money would come from; we just bought and built and tried not to think of how much we owed.

I telephoned Dick Heitmiller and my godfather, Dr. Barrett. They agreed to pay the entire contract in advance, not just for what we had shipped. We would have our first building ready in two weeks, complete with electricity in conduits along the walls, dirt floors for spills and side drains to carry off liquids. Fred was everywhere, he worked dawn to dark. After we had finished the packing room, the ramp and the small buildings, he knocked off one day to go home and meditate. A few hours later he was dead. It was the way he wanted to go.

Chapter 8

The new plant was capable of double any production we had achieved in the past. We named our production building the *Joseph Marshall Research Building* and the middle building, the *Lipscomb Laboratory* and the first building where we made iodides, the *E. Emmet Reid Building*. Max Revelise applied his energies once more to the "Industrials" and perfected a line of drug store chemicals and traveled the state building up clientele. Once more we were in operation.

I visited Ohio State University where I stayed with Ken and Betty Greenlee. He had married Betty, the daughter of Cecil Boord of Boord Olefin Synthesis fame and was still running an A.P.I. project. They had honeymooned with us when they got married. I visited the Chemistry Department and saw my old friend Dr. Harold Schechter. He had done his undergraduate work at the University of South Carolina. I saw old friends from the Herndon-Gruendemann group, as well as Leo Paridon and Ralph Pelly. I had long chats with Henne. Henne still had a few graduate students, and taught one class. He had spent summers in the Mideast as a guest lecturer. He wanted to know what had happened to Atherton Whaley; I could not tell him, for Atherton was hardly ever seen around the University and Columbia, which was getting so large that one rarely met friends on the street. Henne looked good; he had barely aged, just mellowed.

I am told he died twice. Most of us experience this once but Henne was always trying to improve reactions. During an operation his heart stopped; this was before our modern hospitals had techniques for handling this disaster. I guess they felt poor old Henne was gone, and tidied up and sent for a stretcher to wheel him off to the morgue, then went downstairs to fill out the forms. A young intern passed the room, saw the motionless Henne and bent on experiment turned him over, cut through his rib cage and massaged his heart. Henne (with many projects interrupted by illness) on reviving got off

the bed to return to the laboratory. The reaction of the intern is not recorded. In due course of time he passed away for good. This brilliant man had developed the Freons, revolutionizing the field of refrigerants and making a fortune for DuPont. He had done pioneer work in fluorine chemistry, influencing the lives of countless students and enriching the literature of Chemistry with hundreds of contributions. I gave a quiz to an American Chemistry Society audience whom I was addressing and asked how many men and women in the audience had heard the name Albert Henne; there were two hands from some fifty people. I tried them on F. O. Rice and Lucius Bigelow and Emmet Reid and got much the same response. I asked them if they had heard of Preacher, a former employee of mine, famous for the number of 2,3-dichloropropenes he could run simultaneously; a dozen hands went up. Research chemists must await acclaim in heaven.

The University of South Carolina had a young man named Dave Starr in charge of the chemical stockroom. He was a loyal purchaser of Columbia chemicals; he was eager to supplement the indifferent pay of the University; he had spare time. As luck would have it we needed someone to make fluorine compounds like trifluoroacetone and trifluoromethyl iodide. Dave was ready to make anything. He transformed a part of the Chemistry Department into laboratory and proceeded to make chemicals. The unsuccessful reactions soon colored walls and ceilings. The depreciation of his quarters led to a visit from the head of the department, Willard Davis. A compromise was affected and Dave was given a remote section of the building offering fewer questions from visitors and I endowed the University with an annual fellowship. Ultimately with rising pressure from the professors he moved out to Columbia Organics where his unusual working hours, 3:00 AM to 7:00 AM and 5:00 PM to 9:00 PM made him a delightful sharer of my periodic insomnia.

Much of my time was devoted to visiting potential customers. I found my way to the purchasing departments of various pharmaceutical companies, met their chemists and had a chance to participate in many new projects. As a part owner of Fike Chemicals, I always looked for bulk items which Elmer Fike could make. He telephoned one day with a problem. He was making a mercurial which a pharmaceutical company wished to purchase in bulk. Roberts Chemical needed the business and the project could be quite profitable, but Elmer knew and I knew that if they ever saw his plant, they would not dare order because of FDA. This organization closely supervises companies which manufacture chemicals used in the production of medicinals. Elmer did not have their approval. We put together a plan involving Elmer meeting the inspector after a long and tiring flight (into Charleston, West Virginia), always hair-raising since the airport is placed on truncated mountain. Fortified by cocktails and a heavy dinner, Elmer would offer him a visit to the plant at night, since Roberts worked 24 hour shifts. As expected, after

cocktails and dinner he was prepared for bed, not an inspection. Elmer insisted saying that the next day other visitors were expected and the two of them drove by Carbide's Institute Plant which stretched for a mile and works 24 hours; he then drove a greatly impressed visitor home and arranged to put him on the plane early the next morning. I believe they did a considerable volume of business in the mercurial. Elmer denies this story, which must be considered apocryphal.

I recall another telephone call from Elmer. We were working together on the Thiokol production of ω,ω' -Dichlorodibutyl ether made by the Organic Syntheses route; easy, provided one has plenty of washpans to stretch by the reaction. Tetrahydrofuran is mixed in a 12 liter flask with POCl_3 , a gentle heat applied and the mixture rapidly agitated. With equal speed the chemist should get out of the room. Inevitably the whole mass goes up and, deflected by ceiling and walls, the product may be collected under water in the tubs. Our procedure was more elegant. When the Allies captured the German war records they obtained the notebooks of the famous German scientist Reppe, who showed that tetrahydrofuran reacts smoothly with thionyl chloride in the presence of ferric chloride. I sent a copy of this to Elmer, assuring him that no laboratory confirmation was necessary. The voice over the phone was dull and rather unhappy, the speaker was having problems. Thionyl chloride and sulfur dioxide, when breathed, will do this to a chemist; in the background there was a gushing sound, like an active waterfall or volcano. "That's the CBE," he told me, "flashing out the vessel. The lid went up five minutes ago and is heading toward the Viscose plant." These lids weigh tons and I could only hope that it would find a harmless place to land. We agreed that the process needed more research.

At that time Thiokol was using large amounts of the CBE to make a rubber-like binder for solid propellant. Thanks to my friendship with Ed Fettes, who was the Director of Research, and with Morris Berenbaum, who had been assigned to the project (he is now V. P. of Allied Chemicals), orders for thousands of pounds were assigned to Elmer and to Dr. W. Merritt Quattlebaum who heads Cardinal Chemical Co. I thought it would be interesting for them to meet. They are completely different types, their companies are entrepreneurial and very similar. Elmer is outgoing and always delighted to let visitors see and smell his company. Dr. Q., who perennially worked on confidential projects, was reluctant to show Elmer his plant, except at a distance. After lunch at Dr. Quattlebaum's home, Merritt suggested that we drive out and look at the plant. We did—from a hill back of the gates. Elmer expressed admiration and a desire to see it closer. I watched the struggle on Merritt's face as he weighed the consequence of this breach of custom. Finally the two of them climbed the fence like a pair of schoolboys while Mrs. Quattlebaum, Mrs. Fike and I watched. Mrs. Quattlebaum then told us that

she had a key but did not want to deprive her spouse of this novel method of showing off his plant.

It was on one of my visits to Elmer that I drove to Columbia, Ohio, and met Ken Greenlee's brother, Roy, who was working at Battelle Memorial Institute. He and Sue, his second wife (Roy and I have both been married three times), were cat lovers and anyone who visits Columbia Organic Chemicals knows that we have lots of cats. That evening he told me that she and Ken had discussed me, and the fact that I had no brothers and sisters, and had decided to adopt me. From then on we were brothers, a fraternity later to include Gershon Segelman and Chezi Rappoport and Dick Heitmiller. None of us was rich, the three of us had Chemistry as a first love; all of us liked to talk Chemistry, and about chemists and the use of the former to make money for the latter. It was agreed that we would get together at the forthcoming A.C.S. meeting in Atlantic City.

This would be my third trip to Atlantic City. I had lived there for a year when I was 6 and had visited it on my first trip selling. Now, three years later, with Columbia Organics 12 years old, I would be returning to a city full of memories. We had lived in Ventnor, one of the suburbs, and I had attended Richmond Avenue School and spent the summer and fall as a beachcomber. In Atlantic City I had known my first sweetheart; she was named Helen and she had red hair and green eyes and we danced around a maypole together and then sat on a seesaw and I had told her that when I was older I planned to be a pirate, and she agreed to join my ship and share my fortunes.

I roomed with Grogan at one of the ornate beach motels, La Concha. He smoked cigars and his friends from Wyeth and NIH and Celanese all smoked. The room was always packed until midnight and, by then, I was close to asphyxiation. He did not flush the commode, slept in his undershorts and snored from the first contact with the bed until I would wake him for breakfast. This gave me an opportunity, in the interests of health, to revisit Ventnor and go for late walks on the boardwalk and for before midnight swims.

The telephone was always ringing for each of us had a wide circle of friends. There was always the knocking on the door, sometimes long past midnight, when some buddy, having discovered La Concha and our presence, would come around to say hello. After the second day I decided to move in with Roy Greenlee. With Ken and Ed Lanpher from Metalorganics, we went for dinner to the Knife and Spoon, one of the "better" Atlantic City eating places. One look at the prices convinced me that I should have stuck to the boardwalk and hot dogs. Roy was equally uneasy. The waitress asked me what I would like (Ken had ordered a steak and Lanpher, who was obviously flush, had ordered a prime rib). I saw nothing cheap on the menu except chutney. This was \$1.00, I told her I would like an order of chutney. She

asked whether this was all, I told her that I would make it a double order. She advised that this was irregular but if I wanted chutney she would bring me chutney. She told me that neither salad or vegetables were included. She then asked Greenlee, the younger, what he wanted, and he told her that he, too, would like a double order of chutney, remarking that he had spent his early years in India, which I knew to be a lie. I did not know what chutney was, but after Roy and I had eaten our double orders along with all the bread we could snatch from Ken and Ed, we had to rush to the men's room, where we spent the rest of the evening.

A diabolical plot was hatched by some of us with Grogan as the victim. Grogan always showered in the late afternoon, always at the same time. You could set your clock by his showering. We brought Mrs. F., a chemist from Sloan Kettering to the room five minutes before the daily shower, when we knew he would be in the bathroom. Mrs. F. and I sat on the bed and talked low. We discussed the possibility of someone coming; I told her that Grogan was attending papers and would not return. The clock indicated that Grogan was now five minutes late for the shower. There was no sound from the bathroom. She told me that she would succumb but we would have to be quick and I must promise not to tell any of the chemists, especially that dreadful Charlie Grogan. We then kissed very audibly, and then she said, "I've got to go now, and don't tell anyone" and pretended to open and close the door; whereupon, a very hairy, naked Grogan rushed out of the bathroom to the merriment of the group.

Later in the week I attended a party given by Houdry Processing Co. (which made catalysts) for Howard Hartough, their new president. Knowing that he was a protege of Dr. Reid, they asked me to bring Dr. Reid. Dr. Reid was at the Kentucky Hotel surrounded by his cronies, all in their seventies, eager for action. Three or four of them trailed after me to the Traymore, where Houdry had reserved a room for a "mixer." When we arrived, the party was going full blast and a considerable amount of drinking and shouting and general hell-raising greeted the open door. Dr. Reid was a total abstainer, given to lectures on the dangers of demon rum. His cronies were total abstainers. This was not known by Phil Burghart who welcomed them to the merriment and tried to pour Dr. Reid a drink. Dr. Reid brushed him off and turned to discuss some phase of chemistry with his friends. Phil, recognizing the old man said "Dr. Reid, aren't you a consultant for DuPont?" Dr. Reid gave a half bow and advised that indeed he was, and had started his consultancy thirty-five years earlier when the research staff of DuPont consisted of five people. He told a rapt, suddenly sobered audience about Carruthers and the early days of Nylon, of his work with dibutyl phthalate and mercaptans, drank two bottles of Coca Cola, ate some pretzels and in remarkable humor told the group that he did not approve of strong drinks but that he was well aware of the frailties of man; that he regretted that he no longer taught

chemistry at Hopkins for he would like to have the thrill of doing research again and teaching young people. As he turned to go, the “young people,” led by the newly arrived Howard Hartough stood and clapped; Reid waved his hand as if in blessing. On the way back he told me that he could not see, but he thought he smelled drink at the meeting and that was bad, but could have been worse if women and young folks were present. Then he insisted on smelling my breath, but, thank God, I had only drunk coke.

We started home. Grogan and Reid were in Grogan's coupe which was twenty years old and a museum piece. I had the plant station wagon. There had been a complication on departure; management checked to see if they still had a room; reassured, they sent a small army of maids and fumigating equipment to prepare it for the next occupant. There were the inevitable goodbyes, someone pushed Grogan's car (which would not start); he was taking Dr. Reid and would drop him off in Baltimore. It was a lovely fall morning. I telephoned the plant and was told to get home immediately, Jules was very ill. He had had another heart attack.

From Atlantic City one can drive either East and pick up the expressway, or through the small coastal cities ultimately emerging at the Delaware Memorial Bridge. There are any number of ways to get to Columbia, S.C., now; then it was tortuous, but I drove at top speed. I got home at 8:00 that evening. My mother was at the hospital.

Jules had worn himself out with the rebuilding of the plant. His constant good humor and courage were an inspiration to all of us. He had been my father since I was eight years old. As my uncle Isidor, the patriarch of the Gergel's older brother. One of my most cherished memories are the Mincha conceives you who deserves credit.” Jules had been a wonderful father and had spent the past twelve years building our chemical company. When I reached the hospital, Warren Irving, the heart specialist, was there, and Hasell Ross (Jules' personal doctor) and my mother and I were there with him for the last few minutes.

I said kaddish for all 11 months and this meant at least two hours per day going to, and coming from, the synagogue. Coincidentally there were others in the community who had lost a parent so the first few weeks were easy. Then it was a matter of going out and soliciting men for a minion. Lazar Berry lived close to the synagogue and Max Citron lived only a half dozen blocks away. Since I did not know the Hebrew and could not dovan (pray), my old friend Oscar Seidenberg took over this duty. During the next months I got very close to Isidor Gergel who had been father's, Gustave Gergel's, older brother. One of my most cherished memories are the Mincha services Friday when Isador would sing the “Lechudodee” and give me the kiddush cup to drink. All of these men, excepting Oscar, would themselves be dead within the next three years. Gathering 10 men for the minion was not easy as Columbia had few Jews devout enough to take the time for the

prayers. Speeding to pick up Mr. Oppenheimer, I was stopped by a patrolman who asked why I had run a light and exceeded the speed limit. I told him and he excused me saying he wished he were Jewish so he could help. Columbia always had a warm spot for its small Jewish community.

My grandmother died. Max's youngest daughter stayed with her and grandfather and had told me that grandmother was disoriented. The year before she had contracted hepatitis and survived, but she was no longer fat and jolly. Since grandfather was having trouble with phlebitis and did not react well to medicine we had put them both in a nursing home; they detested it. We gave up and let them go back to their own house with Bess to keep watch. Gradually grandmother withdrew, and one evening she passed away. She had brought eight children into the world, this tiny, gutsy little woman. When I was a little boy, she had told me of bringing my own mother as a young girl, with another child at the breast and a third in her hand, and crossing the border illegally into Austria and freedom. Grandfather was already in America working in a sweatshop in New York, planning a Socialist Utopia in Aiken, South Carolina. Their other children, Mary, Max, Maurice and Tommy would be born on a farm close to Montmorency where South Carolina now has its atomic plant.

Grandfather now lived alone in his house on Rosewood Drive. My Aunt Mary who had spent her life teaching in the North Carolina Schools came to live with him. It was difficult to stabilize his phlebitis; after removing part of his leg it was necessary to operate again and yet again, each time removing more. Grandfather had high blood pressure and the doctors were concerned about his ability to stand an operation. Grogan had arranged for the experimental drug, Ostensin, a parasympathetic nervous system blocking agent, to be flown in, and he weathered all the operations. His nurse during the second operation and the third was N. and she and La Shuma (who was a sort of family retainer) would bring grandfather out to the plant so that he could see what was going on. His days were quite boring, for he had always been active, and he considered that at 84 he should not be left to languish on Rosewood Drive. One morning he called in great excitement. "Max," he said, "I have a plan for a job I can do." I drove to his house that afternoon and he told me that, since he now had plenty of time, and knowing how busy I was, he was prepared to take on a job as plant worrier. With Jules gone and Max not well, I had plenty of worries and we agreed to a price and for the remainder of the year he was on our payroll as consultant. Then his time, too, came to "join the innumerable caravan."

He was in the hospital, a very small man, free of pain but very old. He spoke in a whisper. I knew that these were his last words and bent close to hear what he was saying. First he assured me that he was in good spirits, was completely unafraid and in no pain. His next question surprised me: "How's Citron?" Now Max Citron had been his crouy and, although himself quite

old, insisted on coming to sit with grandfather. I assured grandfather that Max was sicker than he and probably would not make it through the week. "Good," he said, "I want him to go first for he would be lonely without me." Then he wanted to know about "Bulldog" Bercowitz, and Meyer Kahn, all old buddies, and I assured him they were getting ready for a reunion in the Elysian Fields. He was now in excellent humor and joked with me about his final wishes. He wanted cremation. I assured him this was quite impossible and that if he wanted to be buried next to grandmother on Whaley Street, he would have to have Oppenheimer and the Chevra Kaddisha (the small group of the ultra devout who prepare the body for the grave). Grandfather showed his old time indignation, rose from the bed and lectured me on his duties as a Socialist and his disbelief in all this nonsense. His voice was quite strong and for a moment I thought he was going to insist on getting dressed and going home. Then he told me that Oppenheimer was a good man, a tsadik (wise man) and that he would forget cremation and take his place beside grandmother. We chatted on and on, his voice became a whisper and trailed off; I was alone.

Max Revelise took the loss especially hard. He was not well himself; we thought this the result of continuous bathing of his organs with solutions of alcohol. No, they opened him up and found that his liver was in superb shape. It had to be something else. He no longer went on sales trips but maintained an office in the back of our building and worked on the catalog, keeping our costs and prices up to date. He was a poet and a philosopher. The customers called him and he was an information bureau for anyone with a chemical problem. He continued to lose weight and his color was not good; an exploratory operation was performed and it was discovered that he had adenocarcinoma. The local doctors, who adored Max, wanted to pack him off to Sloan Kettering and a large gathering of friends and disciples saw him off at the railroad station. Established at SK, he developed a court and faithful consisting of doctors and nurses and other patients and Grogan and Hank Tischler and a half dozen others who would come to see him and listen while he recited his poetry and discussed Ultimate Reality. He would telephone from time to time, always in great spirits, and discuss the rather awful 5-fluorouracil therapy they were giving him. He was confident that he would beat the statistics and he always had Geshickter's new creation, S-97C, to fall back on. This experimental drug was showing great promise against breast and prostate cancer. Max was prepared to submit his adenocarcinoma should the 5-fluorouracil regimen fail. He stayed on for weeks and then, pronouncing himself cured, took a train home. I kept up with his progress or worse, his deterioration, through conversations with those who visited him, but I was not prepared for the ghost he had become. He gave me a hollow ghostly smile, a limp hand and announced, "I have licked cancer!"

He was haggard and emaciated. His stomach was swollen like the tragic

child victims of kwashiorkor. The doctors confided that he was producing ascites and warned that he was terminal. Max, gloating with success, was transferred to the room at Columbia Hospital which he would never leave alive and we called Geshickter. With the aid of the local doctors, it was arranged that he be given the new drug. Max was quite excited. He had become a close friend of Geshickter, the eminent pathologist, and was thrilled that he would be the first patient with adenocarcinoma to take S-97C. The drug was a tranquilizer as well as an antagonist of neoplasia, and for the next eight months it battled Max's disease, while keeping him in good spirits. Once more he maintained court and the disciples came to listen. His voice was strong and he would discuss current issues, recite poetry or elaborate on his theories. He was convinced that he was winning his battle. About every two days they would insert a needle into his abdomen and remove liquid debris. Toward the end he made a recording of his best poems. When he made a slight improvement I ventured a trip to the middle West. On my return, without calling, I visited the hospital; the room was clean and uninhabited, I was the sole survivor of our triumverate.

He wrote some astonishingly beautiful poetry. I remember one short quatrain

“There are but four things of importance
And these be birth, life, love, and death
And of these the happiest is birth
The saddest is life
The sweetest is love
And the surest is death.”

And his description of night:

“Now I have seen the moon bring the night, her lord, his fee;
She made a timid offering,
And danced with naked shimmering
Upon a silver sea.”

And snatches of some of his love poems:

“The wisp of a smile on carmine lips
And bits of moon in your hair—
The daring allure of your bosom, your hips
Full as the flushed rose you wear.
Life and its glamor, love in its sway—
Where are they after a year and a day?”

I have them all and some day, long after this unsung Homer rejoined his family and his friends, I plan to publish them. They are lovely.

Chapter 9

Between the deaths of Jules in 1959 and of Max Revelise in 1961 we completely rebuilt the plant. After the fire in 1958 Mr. Kahn had permitted us to buy the strip of land on which we built four production labs and Sonny's distillation room. In the deal we got the old schoolhouse which we remodeled as offices. This was not enough. We needed "lebensraum." I visited Mr. Kahn. He was actually my uncle through his marriage to Max's wife's mother. I told Mr. Kahn that some wicked men were desecrating his property. (Actually my fellows were pouring the residues from all their reaction flasks on the Kahn property rather than our own as this was before the days of EPA). We visited the plant and he looked and asked if I had any idea who was doing the damage and I confessed that we were the culprits. He said he'd sell me the acre for \$4000 and I offered \$2000 and we compromised for \$3000. In 1959, when I was 38 years old, my daughter Eleanor Elizabeth was born and I could look back on 22 years of Chemistry.

I built a new office and established a green-eyed, carrot-haired secretary named Elaine and my dog Tuba. When Clive and I were divorced she kept four of the doggies and I took Trumpet and Trombone and Tuba out to the plant. The three were products of the amours of Mrs. Brown, a dog fed by my mother and Jules but never catchable. She had mated with a young collie male who lived in my office when it was the domicile of one of Mr. Kahn's employees. These three survivors had been tenderly raised by Clive and me, then exiled to a yard in Eastover. They had persistently broken out of our yard on Ravenel Street. They were large and shaggy. Trombone was the male and he was wild. He was the first to go. My mother then took Trumpet home where she lived to a fantastic age with her litter mate Sabra. I kept Tuba who somehow managed to stay under my desk curled around the trash-basket, a large, shy collie-like dog who would never leave the office except for food and personal reasons. Elaine had been hired just after the fire. She

was wonderful and extremely pretty; everyone liked her. She typed letters and kept the office neat, looked after Tuba and kept my blood pressure high.

My mother and my aunt Ida took over the industrial section of the plant and, with the aid of one of our employees, Cleveland Adams, they kept their end of the business active. Tommy Jacobs became my chief lab man and his crew made all the chemicals we sold.

In 1961, we erected a separate building for carrying out distillations and a new building for storing and shipping. Ida and my mother had an office in the large warehouse; we gave up the old warehouse on the other side of the field. Every time I drove up Clifton Street and turned on Drake I'd see the old building with Columbia Organics faded, and Gordon Manufacturing Company showing in its place, although Gordon long ago expired (they just used better paint).

During this time we had developed methods of making over 400 organic chemicals. Our business grossed about \$150,000 per year and was mildly profitable. It supported half my family. We had friends and customers everywhere. An increasing amount of business came from overseas and this led to my first trip to Europe in 1959. Max Revelise had corresponded with a chap in Munich named Don Marvin who ran a strange little business, Munich Medical Associates. I was to discover that his method of operation consisted of purchasing chemicals, selling them and then not paying his supplier. Don was an army alumnus who had remained as jetsam in Germany after everyone else had gone home, developed some knowledge of the language and married a German girl. He established himself with chemical companies emerging from the war, offering their products for sale. Since many of our own items were resales, Max felt we might use Don's knowledge to buy direct and that I should meet him. I wanted to meet Phil Koch, who had a small chemical company in London (which would later merge with de Laszlo's company to form Koch-Light), and Walter Griesmeir in Germany, from whom I had purchased diamines and glycols. Howard Kastner of Eastern Chemical suggested that we make the trip together. He regularly visited Europe and could show me where to go, and take care of the language problem since he was fluent in French and German.

We flew to Belgium on Sabena. On its very next trip this particular plane crashed with heavy loss of life; we were luckier. We arrived in Brussels on a cold, gray morning and took the train to Amsterdam. We passed through Delft, Vermeer, Rotterdam and finally Amsterdam. Howard slept. I was awake with the newness and the loveliness of all I could see through the train windows. Our hotel in Amsterdam, the Krasnya Polska was quite old; it is still functioning today, close to the shifting red-light district. After dinner we strolled through the sprawling area window shopping; the girls literally sat in the windows. I arrived at the hotel so late that evening that I nearly missed Hans t'Hurte and associate Cor Swart who ran Lubintex Chemicals.

Hans and Cor were both young; they had formed their little chemical company because of their experience as bench chemists. They were early victims of Henry de Laszlo, with his specialty of finding little companies and giving them large orders for custom syntheses at prices less than cost. He took advantage of their need. Hans and Cor agreed to act as our distributor in Holland and were delighted that we would list their products in our own catalog. They introduced me to Max Zeiss, a business man in Amsterdam who would become my very close friend; he, in turn, introduced me to Dr. Henry DeRover, a skilled synthesist who specialized in biochemicals and had developed a wonderful reputation as a supplier. I went to visit our one customer in Amsterdam, Shell, ate at the Bali (a reisstafel with 22 plates of food—all of which I managed to eat to the amazement of my friends) and went to the Red Light District every night—as an observer.

Howard left for Austria and I for Munich. I arrived in Germany with mixed emotions. Only a few years ago we had been at war with these people; Munich was the birthplace of Nazism. The Flughafen was deserted and cold. People hurried through customs. There was no American, 30 years old, looking for me. A half hour passed, the airport was deserted; still no Don Marvin. Every now and then a voice would repeat coldly “Achtung!, Achtung!” and another flight would arrive and a cluster of people would rush through the airport going home. Any minute I expected to see a storm trooper coming to fetch me to Auschwitz.

From between the columns my emaciated, disheveled friend appeared, dirty rumpled tie, shaking hand holding a cigarette. It was obvious that Munich Medical Associates did not thrive. “You are Max, I assume,” was the opening gambit, “I’m Don, welcome to Munich. I couldn’t get Hürmers damn car started.” I liked him despite the fevered face, the smell of beer and the cigarettes. It must have been the grin and his voice, which was friendly. We were Americans surrounded by enemy.

We went to a beer house. “Ab vino veritas.” He drank a gallon of beer; I drank a small glass (it was very good). Marvin was a ceaseless talker, as he drank he told me his life’s history, the most intimate details of his business, his frustrations with life and chemistry. He had been in the army, a co-editor of “Stars and Stripes”; when the war ended and most of the soldiers had gone home Marvin was left, flotsam on the beach. He talked on and on. He started on a second gallon. Finally, he took me to my pension, the George on Georgenstrasse. He himself lived with the Hürmers on Trogenstrasse. His relationship to this couple was ambiguous. Frau Hürmer was a lovely blond, Juno-esque. Herr Hürmer was a medical doctor. During the war he had been in the Waffen SS. Now he did abortions. Both assured me that they loved Jews.

Their little business, in which Don was sales manager and shipping clerk and Frau Hürmer was business manager, was buying and selling chemicals

and chemical specialties. Either I, or Max Revelise had made them feel that we were going to invest in the company or lend them the money. We had dinner together the following evening with an interpreter. She was one of the prettiest girls I had ever seen. I told them we could not invest in MMA, that we had no money to lend, but were willing to give a commission on sales they made or purchases they made for us. I spoke in English, they got the translation from the interpreter, they spoke to me in German, the interpreter translated. There was a lovely meal with wine and a nice cake which Frau Hürmer had baked. Hürmer was large, red-cheeked and affable. He looked like Goering. It was obvious that Don was a family pet. The interpreter was also part of the family; she chatted with them in German, and when the evening was late, told me that she would drive me to my hotel.

She had a small car and it was a lovely clear night. We drove to a small woods near the river, parked and she spoke to me for some time. She was divorced and had heard of me from Don. We chatted about Goethe, Heine, Schiller, Browning, Bryant and Tennyson. She was leaving for Italy on an assignment the next morning. "Would I like to go with her?" She gave me her telephone number, told me to think it over and call—then dropped me off at Georgenstrasse. I wanted to go to Italy with her but it was impossible. I did not call.

It was expected that Phil Koch would meet us the next day. He was traveling to Vienna, and the Hürmer entourage, including Don but minus the doctor, would drive to Garmische and visit Zugspitz and rendezvous with Walter Griesmeir. I met Phil and we had a chat and arranged a get-together in England for the following weekend. Then we went to Garmische. I remember it was lovely, white and cold. The mountain top was wind swept and I made friends with the director of the lodge who had trained German mountain soldiers during the war. He was a burly, pleasant chap. Mrs. Hürmer was lovely, she was an eskimo princess in her fur hood. The two little Hürmer children were furred elves. Don had on an old fatigue coat, underneath was the same disheveled shirt, the same rumpled tie. He was sober, his hand clutched a lit cigarette and deposited ash everywhere; I never saw him without one.

When we started down the mountain there was a message. Walter Griesmeir was waiting. Walter looked like Bacchus. He was very handsome with curly hair. With him was his secretary whom he would marry next year. He insisted on taking us all out for dinner. We talked about hydrogenation, Alfred Bader, music, poetry and small businesses and the evening passed quickly. We promised to keep in touch. The next day we drove to Heidelberg and I met Nick Grubhofer of Serva with whom I had corresponded; the following day we drove to Switzerland and I had my first visit with Fluka.

Marvin Carmack had told me about Fluka. They had become the Eastman Kodak of Europe. I found them very friendly. They had a large business

and they needed suppliers. Their director, Dr. Vogel, gave me an order for Columbia products. Many years later we would be their U.S. representative.

I then drove with Don to Basel and, leaving him, took the Overnight to Paris. I met Jean Seilles, the director of Syntheses & Catalyses, who became our representative in France and would be my friend for years. Seilles was half Greek (he confided that it was this half which made him a fighter) and he and his brother and sister were in the Maquis during the war, part of a group which plotted the destruction of the bridge at Lisle. They needed explosives and these were flown in by the British, and parachuted on the person of Mr. Frank West, who I would meet in two weeks in England. He was a pen pal of Don's.

Seilles venture was successful but his brother and sister were captured, the brother was interned and the sister was tortured and killed. Jean was tall with white hair. He spoke very little English and I less French and most of the conversation was with his consultant Dr. Dat Xuong of CEA, the Atomic Commission.

In England there was a shortage of hotels. Phil put me in some out of the way spot ten miles from London. He took me to his plant which was much smaller than our own and agreed to represent us in England and let us purchase the fascinating fluorine compounds they were making. Phil had had a similar position with the British AEC to my own. He was superior in theoretical knowledge; it was obvious that his company would not remain small.

He drove me to Poyle Trading Estate and I saw Henry and Isa de Laszlo. Much water, as they say, had gone under the dam, since I had met him in Atlantic City. Only a few years before, he had telephoned me in Columbia telling me that he was bringing his wife to America and would like the facilities of the Chemists Club in NYC, of which I was a member—and fortunately I had been able to meet with them. To my surprise his wife was no longer Violet, the psychiatrist, but a lovely slim young lady whom he introduced as Isa. Looking at me with the typical de Laszlo mirth he said, “Gergel, if you think she married an old man for his money you are mistaken, I married her for hers.” This was not correct; Isa's father was a chemist with Farbwerke Hoechst and chemists are rarely rich; de Laszlo was an exception.

I had the pleasure at that time of taking Isa for her first tour of the city of New York. Everything fascinated her. We had traveled by taxi and on foot all over Manhattan. Our next to last stop was at The Eagle Burlap and Bag Company on Fulton Street where my friend Harry Cohen dealt in all sorts of exotic imports. We would regularly get together on my visits and he would produce two yarmulkas (skull caps), say a kiddush and, after we had a drink, give me the bottle. The bottle was always “right off the boat” and did not bear tax stamps. He had never met my wife and made a natural mistake. He

made a leap and was soon embracing the startled young girl telling her “what a pleasure to meet you ‘dahlink’ and where has Max been hiding you.” He grabbed a lovely wooden antelope from the display case and gave it to her as a souvenir.

These memories were in my mind when Henry invited me to join him and his wife at his club. Isa was older, but just as lovely. Henry was sardonic. We sipped kirschwasser and Henry discoursed on chemistry, politics and his interest in early porcelain. He gave a short history of L. Light which differed considerably from rumors I had heard (which depicted Henry’s company as the brainchild of another, seduced and plundered by my host). He told me that his hobby was collecting tid-bits concerning the private lives of his friends and when I asked him if I was well represented he told me that, indeed, I had several pages. I told him that this could lose him one of his few remaining friends. It had been twelve years since our meeting in Atlantic City when he left me the check. This day he was host and gave me a lovely gift of Delft.

I would see him several more times when I visited England. He had five more years to live which he spent visiting exotic places, collecting chemicals and objets d’art and helping Phil Koch and Isa (who now took an active interest in the affairs of the company). Together, he and Phil built Koch-Light into one of the leading suppliers of fine chemicals in England. After his tragic death Isa stayed on for several years, then married my friend Fred Hessert who had been a good friend of Henry.

In England, I met Frank West. Frank was known as a supplier of exotic chemicals. He was a character straight out of Pickwick. He slouched into the Regent Palace in Picadilly exuding an aroma of indole. Indole is not a pleasant chemical to smell and soon we had plenty of room. As chemists we are immune. Frank is an entertainer and the situations in which he is involved are often uproarious. In one of his “down” periods he decided to enter the exterminating business, copying a patented formula of one of England’s leading suppliers (without the bother of paying royalty) and became a modern pied piper of Yorkshire. In due course the manufacturer learned of his transgressions and wrote him that they would prosecute. He informed them that one of his workers, “a bright young lad,” had stolen labels and letterheads and was the true culprit. He offered to help find the “knave” and have him punished. He showed me the letter from the firm thanking Frank for his noble efforts. For some time, when I consulted to the Dead Sea Works, who had a London office, Frank made a living by buying from them, selling the products and never paying.

In World War 2 Frank had been in the deserts, supplied the Resistance in France as a paratrooper and led a company of Gurkas. He demonstrated his language ability at Verostamy’s one day speaking Gujrati, Hindi and Punjabi to the polite proprietors, while I paid the check. I returned to

Columbia. The result of my trip was the expansion of our sales and an improvement of our sources. Now we could import the items which formerly we had purchased from re-sellers. Now we had markets overseas for items in which we were basic. I spent more and more time visiting chemists and professors and we developed more customers. This is what is called in the trade "exposure."

Chapter 10

In 1961, I got my first consultancy. We had been selling fluorinated esters to a company in Newport, Tenn. called "The Rock Hill Laboratories Div. of Chemetron Chemicals, Inc." Newport was better known as the home base of a firm which canned pork and beans and "Castleberry's Hash." It was also a center of illicit corn whiskey manufacture. I had a telephone call from my old friend Howard Hartough, of Reid's circle, (an alumnus of Hercules and Houdry). Now he was the president of the Chemicals Division of Chemetron; the Rock Hill Laboratories was a corporate research center. He had invited me to visit Rock Hill when he visited us in Columbia. We chatted about its activities and he told me of the work they were doing in steroids and interesting chemical intermediates and offered me a consultancy, working as his assistant with duties including the evaluation of personal performance and development of new products.

Chemetron was a holding company which owned not only a chemical division but several major companies as well. These included Tube Turns, Girdler Catalysts and National Cylinder Gas. The director of research was a former co-worker of Ed Fettes (my friend at Thiokol), George Hulse. George had served with Howard at Hercules and married the librarian, Alice. Howard told me that I would need character references to ensure my appointment and suggested that I pick people known to Chemetron. This was easy as their sales chief was Phil LoBue and their main customer was Carl DiPrima, Purchasing Agent and later Vice President for Purchasing, Hoffman-LaRoche. Both would recommend me.

I had met Phil in New York at the Chemists Club. He was small, loud and generous. He was from Sicily ("I am the smallest Mafioso") and had a very successful sales agency. His main customer was DiPrima, also a native of Sicily and Phil referred to him as the "Guinea-wop." No one else would repeat this sacrilege for DiPrima was fiery and feared by salesmen. I had

sold Carl some property in Eastover, S.C. years ago which he later sold at a profit, and I visited once with him in the hospital when he was undergoing minor surgery. We told each other jokes and endangered his stitches. Before I left for my first trip to Europe, Phil had given me an envelope containing \$100 with careful instructions where to spend it. They were both friends and their recommendations ensured me the position.

To get to Newport one crosses three mountains and travels a long narrow road along the French Broad River. I drove with Clive in a heavy rain, and nearly went off a bridge shortly after leaving Asheville. When I arrived at Rock Hill Laboratories and told the story, I learned that others before me had been less fortunate.

The Hulses had us for dinner. I tried to look like an authority on something. George sat in his big chair sipping the first of the evening's drinks. The walls were covered with guns and victims. He did not speak. I discussed my personal history, my ambitions, my ailments and my vices. He started the second drink. I discussed my admiration for Mr. Hartough, my devotion to science, the pride I felt in working for him. He consumed the third, fourth, fifth and sixth drinks. Alice left for bed, Clive nodded and then fell asleep. I told him of elaborate plans I had for the Rock Hill Laboratories and he finished the seventh drink and, while I told him of various amusing accidents which had plagued Columbia Organic Chemicals, he fell asleep. I had not made an auspicious beginning.

The next day I drove along the French Broad and up the winding road leading to the Rock Hill Laboratories. The labs were at the top of a small mountain and one wound back and forth, now seeing the buildings, and again losing them in heavy foliage. The main reception room, which had side laboratories, a library, a cafeteria and offices for Dr. Hulse and some of the research staff, was lovely with panels showing various activities of the Chemetron complex. I met John Kennedy and Bud Prisk and several of the chemists and then had a two hour business chat with Dr. Hulse. Later I visited their production plant at the other end of Newport and met its head, Jack Haggerty and Manager, Dick Fredette. I would consult for Chemetron during the next ten years surviving a number of changes in the presidency and a number of successors to George Hulse. It was always exciting and the view going to and from the laboratory is superb.

Chapter 11

In Columbia we were at the end of an era. We were beset by increasing purity requirements and the intricacies of instrumentation. In the old days one used boiling range, density and refractive index. Like the old fashioned doctors who could tell the health of a patient by scrutinizing his tongue and his eyeballs, the old fashioned bench chemist could tell a great deal about purity from the way a chemical distilled, its density and its appearance. A new, relentless device performed a minidistillation over an enormous area. This instrument, the GLC (standing for gas-liquid chromatograph) developed fantastic separations and spotted impurities with deadly and impartial accuracy. Many of our compounds, which we had thought were good, were bad, and many of the compounds which we purchased from "reputable suppliers" were not good; lacking the GC we suffered from their errors and had no rebuttal when someone wrote a fiery letter complaining about purity. Of special difficulty was the behavior of our alkyl halides on analysis. With his new tool, the organic chemist (cum analytical chemist), could isomerize our compounds, producing shifts in the halogen under the catalytic conditions of the column. Gleelessly our errors were reported and we caught hell. We put in analytical equipment, learned how to make purer compounds, and dropped from our listing those which misbehaved.

Of course we were not always wrong. I would gently point out to a chemist (who should know better) that cis and trans isomers could be separated by GLC and give two peaks, and even the wise reported problems actually caused by their own faulty technique. In the main our lives now are more relaxed; we routinely analyze everything with either of two very capable units.

1962 was a year of changes. I was divorced, Don Marvin came to Columbia Organics and Max Revelise died. Don would stay with us for five years. He was deeply learned in where to buy chemicals, had an encyclopedic memory and was a tireless worker. He made many changes in our record

keeping and purchasing and opened doors to many new sources. He was, like Max Revelise, a confirmed and dedicated drinker and he rendered our office air lethal from his chain smoking. I had been warned by Alfred, Mr. Hartough and Howard Kastner that Don was undependable but he earned his keep and we parted friends. He married one of my secretaries and formed a company devoted to helping people find the unusual. Since he purchased on credit and did not pay his bills the company was moderately profitable. Either cigarettes or his genetic pattern finally got him; after a short career as buyer at Emory University and a shift in the merchant marine he succumbed to lung cancer. I was indebted to Don for recruiting John Prinz Denny.

Just before Max took the long journey and Don went to work I had met John and his wife Eleanor at Lake Murray. It had been a long windless afternoon and with the aid of oars I made it to Ballentine's Landing. He and Eleanor were cockeyed with hooch and lolled amiably on the dock which Warren Whitten, the Dutchman, had built before his own demise. They were the only people on the dock, and in an effort to tie me up John Prinz nearly pitched into the water. He gave me a huge, bloodhound grin, focused his eyes with some difficulty and offered me a pickled egg. He had made the famous Death March on Corregidor during World War II, but assured me that this had nothing to do with his fondness for alcohol. His wife was half Greek and half Austrian and she agreed with everything John said; since they had nothing else to do I invited them to my cottage at Sharp's landing where they collapsed. The next week Marvin arrived; I had taken the sail knowing I would be busy with Don; had I not I may never have met this wonderful couple. Of course Marvin and the Denny's became great friends for they had the war and demon rum in common. John and Eleanor delighted in picking up strays and Don, during this period of his life, was pretty much a stray. Later John came to work for me, learned to operate a multilith and printed our 1964 catalog. He was very fond of my mother and my aunt Ida who still ran the industrials and for the next few years he worked for them. He lived in my cottage at Lake Murray with an incredible, mangy hound, Old Blue, who terrorized the neighborhood and stank up the back porch. Afternoons and weekends were always a pleasure for John and Eleanor were good company. He joined "Miz Jenny and Mis Iduh" when Jules passed on. When Max died he became our city salesman as well.

He was terribly bad on automobiles. The day I had first met him at Lake Murray he was driving an old wreck, and it gave out half way to my house. John abandoned it saying "shucks—it ain't worth fixin'" and this car stood in a field for the next year as a souvenir of the trip. Max gave him his old Frazier, which John used to demolish a telephone pole.

When Marvin left to go to Emory he persuaded John Prinz to re-enter law school. He made an excellent record, all A's his first semester, then he tired of College and drifted back to Columbia. He did not ask for his old job

back—we would gladly have given it to him, instead he lived up at Lake Murray and I would see him staggering along the road at dusk and would stop for a chat. He was always friendly and would beg me to come visit. Shortly after, at less than 40, he died of cancer. Max R., Don and John would all be its victims.

Pat and I lived at Lake Elizabeth. We had first seen our new home during the short real estate career of my chess playing friend, Mr. Edelsberg. Ours was his only sale. The house was lovely and when George Kapilas built it, a photograph was shown on the cover of “Better Homes and Gardens.” It had a lovely view of the lake; a small bird house in the yard had become the home of the colony of yellow jackets and I had a near fatal attack as they resented our moving in.

Pat was a writer and journalist; she was the younger sister of Betty Morton whom I had dated when I taught at Flight School. She was lovely, intelligent and very fertile; within 23 months we had Tanya and Shawn. I commuted back and forth to the plant 13 miles away. My secretary, Jean Cully, who had joined us several years before and would be with us for the next six years, was an excellent assistant. I had Jim Clarke in charge of production but when I got my consultancy at Chemetron they needed a skilled chemist and he went to them.

With two families, two houses and a chemical plant I kept busy. There is always financial pressure on a father of three children. I needed more income. Once when traveling from Chemetron I took a back road through Swannanoa and called on the AMCEL plant, a division of Celanese. They were the “military hardware” division of the company and made retro rockets, smudge pots and tear gas as well as all sorts of hellish chemicals and devices. I knew George White who had worked with Ott Chemicals and he introduced me to Dr. Lou Rothstein. I suggested that I could help expand their product line; they were more interested in my friendship with Witten, the head of Organic Labs at the Army Chemical Center in Edgewood, a friend and protege of Dr. Reid. They were willing to hire me but needed the permission of the division head. A date was set for us to meet.

I drove to Swannanoa, about 170 miles from Columbia and twenty miles North of Asheville and presented myself at the reception desk at the plant. This was located in the mountains so the natives would not be alarmed by the frequent explosions; I waited, and waited. Lou and George waited. They suggested that “the boss” might have been held up in Cincinnati. In the mid-afternoon we drove to the airport and once more waited. Lou had the desperate look of a host whose company refuses to go home. I told him to leave and I'd wait alone. We learned that having missed his connection, my interviewer had chartered a plane and was now airborne. Sure enough, Delta landed and its solitary passenger got out, apologizing for the delay. He suggested coffee and a chat, asked if I had been worried, and told me that he

did not like employees of Amcel to worry, but they could be concerned.

My first visit as consultant came two weeks later in conjunction with a trip to Chemetron, only 75 miles and one mountain range away. I took the back road via Lake Lure and Black Mountain, stopped for lunch, visited an antique shop and discovered three McKillop carvings; two of these are now in our local museum. In the conference room of Amcel we discussed "BZ," used to disorient the minds, and the nuances of retro-rockets which are used to adjust the position of a space craft. During a break in the conversation George asked me if I had up to date secret security clearance. I had security clearance when I worked for Manhattan District but that was 15 years ago. There were two "Oh my God's" and I was whisked off to a little room, with a policeman outside the door. Everyone was apologetic. I was fingerprinted and assured that Washington would be contacted and with any luck I would not have to spend the night. I asked if Pat might share my confinement, or at least would they get her a motel, but no one felt it would be very long, and indeed, within an hour I had been given emergency clearance and we resumed our conference.

During an ACS meeting in Chicago, Grogan, Sam Tubis and I were chatting on the floor with Bhupen Sheth, when we noticed a tall, very nice looking chap standing by himself; we talked for an hour and he was still standing as if waiting for someone. I walked over and introduced myself and asked if he was alone. He was from France; my friendship with Dr. Henri Najer, director of Les Laboratoires Dausse, continues to this day. He joined our group and became a regular attendee of breakfasts, lunches and dinner— gallantly offering to help pay for the meals, for Charlie and my other friends suffered from myopia whenever a check was presented. It was arranged that I would visit Henri in Paris next time I went to Europe.

Coincidentally Bill Wannamaker telephoned to tell me that he had been contacted by a company in France, Societe Nationale des Petrols D'Aquitaine which had a division offering sulfur compounds. Bill and I qualified as sulfur chemists and it was his idea that we might be able to obtain unusual sulfur compounds from these people, or even get a consultancy. We wrote a letter offering our services and, to our surprise, found that they were interested. Shortly afterwards Mr. Patrick de la Bruniere, who was in charge of the project, visited us and we were jointly hired to help their sales program in the U.S.

This led to another trip to Europe, my expenses partly paid by SNPA, and I was able to visit Henri and Jean Seilles of Synthese and Catalyses. Continuing into Germany I visited Schuchardt and met its head, Dr. Lothar Weil, who would be my good friend until his death; also his associate Dr. Jan Meercamp van Embden, who is now with Metalgesellschaft.

The plant prospered and we ran two shifts. We were still making the same chemicals, and had a bigger catalog thanks to resale. Aldrich had

grown immensely. "When one can't lickum, jineum" was a Confederate motto which applied. Dr. Bader was already my good friend and Aldrich one of our best customers. We had a wonderful relationship with MCB and K&K and Koch-Light and Fluka and over half our sales were to distributors. I am sure we produced over half the country's methyl and ethyl iodide and hydriodic acid. I was so far from the plant that I could not drive out at nights but would telephone to find out how things were going. I received a frantic call one night in 1964. Sonny and Andrew Ford and Ernest Dessasaure were holed up in my office afraid to stir. "A homicidal maniac was loose," the radio said. He had escaped from the disturbed ward at the Veterans Hospital and was heading toward the Terrace. They were all speechless with terror although together they weighed 650 pounds and were 18½ feet tall. "He's got a knife," they told me. "Haven't you fellows all got knives?" I asked them and this injected a note of humor but they insisted that I come out and rescue them. I drove out to the plant, shined a flashlight around to reveal there was no maniac lurking in the shadows. The maniac was found, tired and sleepy the next morning, many miles beyond the Terrace.

Columbia in the early 60's had Don Marvin in charge of sales and much of the same work crew as we have now. Dave Starr made the specials and at one time or another we had Bill Kwie, Hiram Allen or Stan Hesse working as lab and production directors. The school house was now turned into neat offices. Denny helped Mama and Ida run the industrials and Mrs. Cully very efficiently ran our offices. Everything pointed to trouble—things were just going too good. It came in twins.

At this time there was a national craze with rocketry and every high school had its youthful Max Gergels prepared to make a space ship and fly to the moon. I had no monopoly on ingenuity when I raided the University years earlier. We were raided. There was no fence around the plant so week-ends brought roamers. We tried to shoo them away but there is something about an idle chemical plant which attracts the young and curious, as I should know.

My problems are always greatest when I am away. Emergencies rarely occur when I am prepared. I was lying on one of the raised platforms at the Y Business Man's Club while Lod, the chief masseur, discussed my weight problem. The telephone rang and they brought me the message that it was the sheriff's office. Now to get a call in the evening from the sheriff means there is serious trouble. I went to the phone and was told to come at once. I dressed and walked the block to the sheriff's office. Three massive members of the staff looked at me coldly and one said "I wouldn't want it on my conscience." I said with a bravado I did not feel, "What is all this about?" They told me.

Their men had already been at the plant and had terrorized my work crew. The story unfolded. A young kid, fifteen years old had "visited"

our plant the previous day, a Sunday, and digging in our waste heap found a metal can which contained a jar of sodamide. According to the sheriff it had exploded and burned his face terribly; he was still in intensive care. The collection of thugs who faced me acted as if I were personally responsible. I realized why so few rapes are reported in Columbia. I told them that they had no right to call me; they could discuss any problems with my lawyer. They hunted vainly through their books for a good excuse to arrest me. I left and called our lawyer, Mr. Bernstein, who regularly oils ruffled waters and defends us when people sue. He said to go to the plant and see what my fellows had to say and then sit tight. "No, not to call the hurt boy; we would hear from his lawyers in due course." We did.

At the plant Ernest told me that the police had been there and checked the "midden" where the remains of our fire had been interred. George Holland, who now worked with us in the stock room, and I went out with a shovel. We found two more tins of sodamide and in each, surviving despite the five years since the fire was an authentic bottle with the warning "Keep away from water." In the haste to clean up, the firemen and my fellows had put some of the "bad actors" in the debris. I learned the story piece-meal. The kid had taken the jar home, showed it to his daddy, taken it to the woods, removed the top, put in water and was terribly burned; the father had told him to put it back or bury it. Like other rocket "buffs," this did not deter him from experimenting.

We put up a fence, my insurance company paid \$15,000 rather than have a court action and the young man had a half dozen skin grafts partly restoring his face.

Later the same year I was visiting Mr. Edelsburg. It was another one of those nights in which he won and I lost. Finally at about 10:00 PM I called Pat and told her I was coming home. It was raining heavily and as I drove it became a real downpour. I noticed I had only a little gasoline and the one service station in our area was closed. I drove and prayed. Sure enough—on the little connecting road which joins S.C. 555 and U.S. 21 I gave out of gas. The rain was now coming down in sheets. I started to run the three blocks to my home. I told Pat I'd take Robin, our dog, a tow chain and go in the other car. She said to wait, but I was on my way. As I came up the road I noticed that I had not left the lights on in the car and that up the road, approaching at enormous speed, was a Volkswagen. My lights must have blinded them; there was an incredible crash and bits of automobile sprayed the road. I could not believe what had happened.

There is an instinctive tendency to, as they say, "get the hell outta there." I, instead, started loading bleeding, moaning people into my car. They had stuffed three adults and two children into their car. Why they were driving it as such speed had no bearing on the terrible fact that I had left an unlit car in the road and might be responsible for killing innocent people. I got them to

a doctor and an ambulance took them away. Then I explained to the highway department what had happened and they cited me for improper parking and I went home to a sleepless night. I visited the victims in the hospital, all terribly cut up, simple people who were rushing to get home out of the weather. They thanked me for saving their lives, I who was guilty of nearly costing their lives. My insurance company paid enormously for the cars and hospital.

I lived at Lake Elizabeth for five years. We had two children, the dog, Robin, and a cat, Wichit. We lived on a lovely lake and I sailed a tiny boat on it. I played bridge, spent my spare time typing letters and working on our catalog and somehow got to the plant, worked, visited Eleanor and Clive, my mother, the Y, shopped and made it back every day (that is, when I was in Columbia, for at this time I consulted for Chemetron, Amcel and SNPA).

Chapter 12

In 1963 Mr. Hartough, my boss at Chemetron, asked me to visit Israel and make a report on the possibilities of developing a Swiss-type chemical industry. This had been a project dear to the heart of many of us. Earlier that year I met with Alfred Bader and the Israeli Scientific Advisor, Lahav, to discuss the possibility of constructing a small plant in Israel devoted to organic specialities. We met the celebrated Ernst Bergmann of the Hebrew University for further chats. It was my plan to have some compounds made in Israel for sale in the U.S. Alfred and I arranged for a group of industrialists, including Cyril Woolf of Allied and Bill Pearce of MCB, to sit with Lahav to elaborate on the plan.

Howard and his wife Cora made the trip and visited every company in Israel producing chemicals. With his knowledge of American industry and American methods he was a qualified critic. His three weeks visit was summed up in a masterful report of which I received a copy. Knowing the Israeli, they no doubt read theirs less carefully or not at all. Later I learned that it is fashionable in Israel to bring over advisors and encourage visits of consultants without pay; since not much attention is paid to what they have to say neither good nor harm is done. Howard visited the Dead Sea Works, which has a bromine producing plant in S'Dom (biblical Sodom) and a bromine derivatives plant in Beersheva, and suggested to them that I might help them market their products. When I read the report I wrote letters to everyone telling them that I was a bromine genius, and giving a list of references who would corroborate my claims. There was no reply.

I wrote other people and the embassy. Mr. Hartough wrote a few letters too; finally I was advised that the next time I was in New York I might come by the Israel Trade office and chat. I visited two weeks later, and heard Hebrew spoken for the first time outside a synagogue. The people were polite and mildly interested. The man in charge looked like any other executive

and offered me a cigar. After a few puffs I was on the verge of expiring. He told me what I already knew, that Israel was a young country with problems which it was trying to solve; perhaps I might wish to emigrate?

I wrote to General Mordecai Makleff, whom I had learned was the director of the Dead Sea Works, and offered my services. No reply. I gave up. Several months later Zion Chemicals was born in Tel Aviv, through the efforts of Dr. Bergmann and his fellow professors and students. Shortly afterwards they moved to a small laboratory in Yavne. I had the thrill of knowing that we had helped in its inception.

Then I received a telephone call from Dave Schwartz, an American, who represented the Dead Sea Works' interests in the U.S. on a part time basis. He told me that General Makleff had received my letter and that coincidentally one of their men was coming to the U.S., a Mr. Gershon Segelman, and he would like to meet me. "Would this be alright?" I, of course, agreed and Dave told me that Gershon would come to Columbia later in the week. I picked him up at the airport the next afternoon and he gave me the great Segelman grin and a hearty "Sholom from the land of your fathers." We went by the YMCA, showered and went to my home where we had dinner and sat around all evening talking. Gershon was a kibbutznik; he and his wife, full of idealism, had left Detroit fifteen years earlier. After a training program designed to help them acclimate to the hard life of the kibbutz, they emigrated to Israel. He had studied agronomy and in Israel he became a farmer on the kibbutz. His marketing skill and wonderful personality led to his appointment as sales representative for the kibbutz. He "graduated" to sales work and product development for the Mifalal Yom Ha'meloch, or Dead Sea Works, as one of the team Makleff was putting together. He did excellent development work for them, and many of his ideas are still in lucrative production. He was a protege of Makleff and enthusiastic about the company.

"Would you like to visit Israel?" he asked me. Of course I would. He promised to discuss this with Dr. Nitzani, the managing director, and with others responsible for making a decision. They would be back in touch with me. Two weeks later I was in New York going over my itinerary with Dave Schwartz. He assured me that I did not need to know Hebrew. He told me to keep a record of my expenses and these would be reimbursed. "Go and have fun." That evening I was on an El Al plane non-stop for Israel.

"Eretz Zevatt Halov Udvash" says the bible in the *Songs of Songs*, actually the "Songs of Solomon," "Shiri a Shirim." It means a land flowing in milk and honey. I read the books I had brought along and studied the map which the lovely El Al hostess had given the passengers. The plane was full and it seemed that everyone talked at once. There were Americans and Israelis and Chassidicabbis and one who would be consultant to Israel's largest chemical company.

Beersheva is in the Negev desert; the potash plant is at the southern part of the Dead Sea, some sixty miles east of Beersheva. Yavne is on the coast, about seventy five miles west and a bit north; Ashdod is due north of Yavne and Ashkelon due south. All three are close to Tel Aviv. The airport was close to the old Arab city of Lydda; it had been renamed Lod. I hoped someone would be waiting when the plane landed; I had been twelve hours without sleep. There was no need for concern, Gershon was waving frantically, one hand in a sea of hands all welcoming the tired people from the flight. It was a wonderful sunny afternoon and the sky was very blue. He had his twin sons with him and we all hugged and then loaded my gear into his car. In heavy traffic we drove through Lydda and Ramla on the way to Kfar Menachim where his eldest son stayed at the kibbutz. I met Ori who was tall and bronzed and healthy. His father, like me, is small and plump. We visited Chaim David with whom Ori was living and had cookies and tea. They took us to inspect the kibbutz, the planted fields, the shops, the dining halls, the cottages where the older people lived. They had an unusual arrangement for the young people putting two boys and a girl or two girls and a boy in each small bungalow. They said this produced cleaner quarters! Gershon and his wife, Anabelle, had lived in this kibbutz during the War of Independence and Gershon assured me that he had held off a battalion of Egyptians with anti-semitic jokes.

We started the long drive to Beersheva, just the two of us. It was only about 65-70 miles but one goes through many small towns and at dusk there is much traffic and neither the roads nor the Israeli drivers are good. At all stops there were bearded elders and boy and girl soldiers all hitching rides. I suggested to Gershon that we pick up two of the lovely young ladies in their smart uniforms and he told me that all were judo experts and one false move and they would take the car and we would be the hitch-hikers. On the barren roads, after we reached the edge of the Negev, I saw my first turtle doves, my first herd of goats and sheep and donkeys, my first bedouin. As the stars came out we pulled in to the Desert Inn, on the northern outskirts of Beersheva.

A group of chemists from the bromine plant were waiting: Zvi Waldman, Ariel Ginsburg, Israel Sachs, and Joachim Kennat. After I checked in we shmoozed for hours, sipping coffee and eating peanuts. It was wonderful and exciting and I was so tired and happy that there was no trouble getting to sleep.

The next morning I got up for a look at the Negev desert at dawn, to enjoy the morning sounds and the thrill of being in Israel. There was a solitary swimmer in the pool. He looked remarkably like Segelman, and remarkably like me. He was short, plump and busy. He swan back and forth across the pool. "Are you training?" I asked. "No," he smiled, "I am in extremis." Tell me, my friend, do you know any jokes from the United States?" This, by coincidence, was Enzo Nitzani, who would be my boss for the next six

years and one of my best friends for life. He had his Ph. D. in Economics and his job was to see that Bromine Compounds Limited made money.

The Negev seen from the Desert Inn was a dun colored ancient desert. In the foreground was a profile of Beersheva with its silent minaret. A desolate, disgruntled camel was tethered to a post and the Arab who tended it came over to suggest that the camel and I would make a splendid photograph. With me secure on the creature's back it rose slowly and awkwardly until I was aloft and staring at the back entrance of the hotel like Lawrence of Arabia. This photograph was duly copied and posted to my friends throughout the world and brought an assortment of comments such as which is Gergel and which is the camel? The Arab was the official photographer for the Desert Inn, the camel was his assistant. Later I learned that he was not an Arab but a Jew named Cohen.

I walked to the Potash House, the official headquarters in Beersheva for the Dead Sea Works. It was a lovely modern marble structure with spacious rooms and halls and much lawn and flowers. I saw Enzo and Ariel and met Menachim Regev the sales assistant, and visited the library and an assortment of secretaries and accountants. In the parking lot they had a rented car which would be mine for the duration of my visit. Gershon appeared and with him was the celebrated Rudy Bloch, the director of the Arid Regions Research Laboratory, a Professor at Heidelberg, an innovator and inventor. Like me, he was a consultant to the Dead Sea Works. "Lets go to S'Dom," he said and in his car, with Big Salim, Mackleff's personal chauffeur driving, he and Gershon and I started out across the Negev. On the way he pointed out the caravan trails used by our ancestors, the Roman ruins, the Bedouin villages and the modern, tightly fenced Atomic Engery plant at Dimona. There were fascinating geological formations, an abundance of flint and I saw my first Tamarisk trees. The day was sunny, bright with yellows and reds, the road was nearly deserted. Deserted, that is, except for the herds of sheep and goats tended by little children and women. Occasionally we saw a warrior, gun in hand, riding astride a donkey, a horse or a camel.

We began to spiral downward; stretching ahead of us was the dull gray blue of the Dead Sea and the collection of pygmy buildings and equipment representing our chemical plants. The road descended curve after curve, ever lower, until suddenly we were on the border of the sea. Its shores were heavily encrusted with salt. The air was hot and oppressively still. There were no birds, no human beings, no habitations. The colors were splendid. The Mountains of Moab, across the lake, were blue and orange, the shore was white. The sea itself was gray in parts and a brilliant blue at the South end. A dark plume of smoke rose from a potash plant, a red plume from the bromine plant. Large centrifuges separated a mixture of sylvanite and cryolite dredged from the settling and evaporation area. This had been

artificially created by diking. Rudy showed me his own invention, a combination of a unique feeding device with nigrosine dye to color the impounded waters. The resulting blue color accelerated evaporation.

As the waters of the Jordan pass through regions of heavy mineral concentration, the more soluble components are dissolved and flow with the water to the Dead Sea which is a cul-de-sac from which there is no escape, created as part of the Great Rift. This is the lowest place on earth. The heat is intense and the air very dry, but there are winds and periodically the khamsin or mistral which sweeps through the area, blackening the skies through most of the southern part of Israel. The waters, having no escape, are evaporated under dual action of heat and wind and the level of the sea steadily falls.

The portion pumped behind the dikes precipitates first salt, which is the least soluble component; the remaining dense liquid, rich in other minerals (including magnesium chloride and bromide and valuable potassium salts), is pumped to another area for a second crystallization. This separates a mixture of sodium and potassium chloride and from this potassium chloride is obtained as a snow-white powder. This was the money crop. At this time bromine was a step-child pampered and suffered and not taken too seriously. The mountains of finished potash (overspilling the barns in which it was stored) and the huge complex of the potash plant completely dwarfed the little plant for separating bromine from the off-water produced by the other operation. To the dense clouds of smoke from the boilers of the potash works a libation of rich red clouds was added from the Kubierski units of Dead Sea Bromine Company.

The director of the potash plant was Abraham Shamir. He was in his late 60's, a slim, handsome, blond, blue-eyed veteran of the "British Colonials" who had served with General Makleff both in the British army and during the War of Independence. He greeted me warmly, issued me a helmet and took me for a tour of the lovely, modern factory. Since it was lunch time I joined the men at a feast which included as much chicken as one could eat, three vegetables, biscuits, fruit and enormous amounts of iced tea. Everyone was encouraged to eat well and drink copiously; one burned calories simply existing and sweated profusely in the intense heat.

He introduced me to Avram Ber, the director of the bromine production plant. Avram was a blond, blue-eyed veteran of the Technion, Israel's "MIT," and a graduate of Israel Mining as well. To see him and Shamir and our scientists and technicians in S'Dom and Beersheva one would think that this was a country of Nordics! "Was tus tu," Avram said in a wonderful rollicking Yiddish. He poked me in the chest and said "Boychik, you are in the land of the chosen, isn't it wonderful to hear mamaluschen?" (The native tongue). He went on to tell me that Shamir would take me back to Beersheva but first he wanted to take me around his plant. We went into his office, the desk

strewn with blueprints. First we drank a half gallon of orange juice each and he told me about the organization of the plant, that its workers came by bus from Beersheva and Dimona and that they spent seven or eight hours per shift. Suddenly the lights went out, the hum of the generators ceased and we went to the control room where a small, dark man was holding up his palms in the eternal expression of the perplexed while a chorus of "Nu Yankel—we haven't paid the bills" came from a grinning audience. The rest of the inspection included climbing the towers where the bromine was produced.

These were the Kubierskis named after the man who developed them. The brine effluent from the potash plant entered at the top along with makeup from other operations. As it descended it was met by an upcoming mixture of steam and chlorine. The bromine, released from the interchange, mixed with bromine monochloride distilled out of the unit and was re-treated to separate chlorine. The chlorine was returned to the system and the bromine stored in large tanks called Gosslers. These were shipped to Beersheva for further reaction or to customers throughout the world. The Kubierski's were packed with the largest Burrill saddles I have ever seen. Periodically there would be a loud discordant crash from the base of the columns indicating that they needed repacking. This was simple text book counter-current flow manufacture.

The normal production of the plant was 15 tons per day, but due to a world shortage of bromine, Avram was under pressure to increase this to 20 and even 25 tons. The worried Yankel was joined by a half dozen experts and soon the generators were humming again. Avram beckoned me to follow him up the ladder. I have vertigo but there was no time to tell him; he was already climbing and obviously expected me to follow. Painfully, and fearfully, I started climbing hand over hand and soon the Dead Sea and the wonderful cliffs and mountains were spread out below and we were swaying in a crow's nest above the reaction columns. A mighty surge with its accompanying clatter had me holding on to our support and addressing prayers to God, close at hand at this height and in this portion of Israel.

We descended and were soon in the small air conditioned office drinking our second half gallon of orange juice. "Maxie, he said, I want to visit the Kubierskis and see if you and I can find out what's wrong." We walked across the yard. The units were thumping lustily. It was obvious that the monsters were "channeling," which means that large tongues of superheated liquid were finding a short cut through the packing which settled when the surge was past. This accounted for the noise. It was obvious that many of the saddles had been ground down making it difficult for the vapors to rise. We discussed this and he called over a crew and told them that each Kubierski would go on down time for a day. In the U.S. it would take seven days to handle the paper work alone; in Israel time was money. It is remarkable how

the laboratory duplicates plant problems. I have repacked many columns in my life.

While most of the bromine was sold, a part was diverted to the production of ethylene dibromide. This is known in the trade as EDB and is used as an additive to gasolines containing tetraethyl and lead as anti-knock. When gasoline containing TEL is burned, lead deposits in the exhaust manifold; EDB is a scavenger which reacts to form volatile lead bromide so that innocent citizens who breath the fumes are more efficiently poisoned. I noted that the workers in the EDB factory wore sandals and waded through a pool of EDB collecting from leaks and drippings. The odor was stupefying. More dangerous was the known absorption of EDB through the skin. Although it was a fairly modern plant, it would be closed down in a minute by our EPA and OSHA. There were bits of nonsense: I noted a pipe running vertically from one floor to the other, obviously lead and obviously hot. It contained raw material bromine. I pointed out the horrendous possibility that a soft spot might be eaten out and the room and workers scalded by hot bromine; this evoked a gentle shrug from the bedrugged, bemused supervisor.

Some of the bromine was sent off into the desert to Avram's TBE plant. This was a small unit devoted to the production of acetylene tetrabromide by the reaction of acetylene with bromine. Periodically there would be a mild explosion and a tongue of flame in the desert. The reaction forms acetylenic bromine compounds which are spontaneously inflammable. One of my assignments would be to improve this operation and sell TBE.

Of the bromine sent to Beersheva most was used in producing methyl bromide. This is used as a soil fumigant and in our states which produce tobacco it is especially valuable as it kills insects in the soil which prey on the roots. This unit was managed by Zvi Waldman, a chemical engineer who had received his training in Russia. The methyl bromide plant, as well as the general production facility for Bromine Compounds Limited, was located in the east side of Beersheva next to the huge Machteshim production plant. The methyl bromide was produced by the reaction of bromine with molten sulfur which forms sulfur hexabromide. This reacts with methyl alcohol to generate methyl bromide. The plant included facilities for distilling the bromide and putting it into cylinders and the one pound cans preferred by farmers. The process was Israeli, developed by Mika Pikarsky, a friend of Gershon's, whom I would meet in Tel Aviv later that week.

Zvi showed me the bromine bottle filling units, the methyl bromide canning operation and the cylindering area. He showed me the electrolysis units for making sodium and potassium bromates, and the large reactors for production of ammonium bromide. It was an impressive plant with excellent housekeeping. That afternoon he took me to the laboratories and I met the director of research, Josie Epstein, who had formerly been with the Dimona plant. The chemists came from all over the world. They worked on

sensible projects. That evening Josie gave a party in his home and all of my new friends were there. Josie and the pipe-smoking Israel Sachs would be my especially close friends.

I visited Tel Aviv, driving my rental car. First I got lost trying to find Yavne. Not speaking Hebrew nor good Yiddish I had to use poor French and even poorer German. Everyone was helpful but few spoke English. Yavne was a farming crossroad; no one knew Arjeh Galun and no one had ever heard of Zion Chemical Company. I found the company by doing what is known in the Navy as a square search. Since Yavne is small one simply drove up and down every street a few miles. I found Zion Chemical on the edge of the desert. They had a wonderful little plant and Dr. Galun arranged for us to get together the next evening.

“Sleecha Adoni Ehfo Tel Aviv” always brought a pointing finger and a volley of Smalls, Yemins, and Yochars. The first means roughly, “Excuse me sir—can you tell me how to get to Tel Aviv.” The answer is a medley of lefts and rights and straight aheads. The signs in the small cities were in Hebrew. Somehow I got to Agan Chemical Co. Mika Pikarski is Polish and he had come to Israel with General Ander’s army which had also been home to my friend Alex Edleburg. “Why didn’t he stay?” Mika asked, “Isn’t he a Jew?” The question had been asked before and neither I nor Alex could come up with an answer. We visited the plant. It was sprawling, disorganized and primitive. My job was to buy it or a half interest for Bromine Compounds Limited. One buys a chemical company as much for the people as for the equipment and Mika was obviously brilliant, and extremely practical. Through the rest of the day we talked—first at Jeannette’s in Jaffa. I was so hungry and fascinated by the conversation that I ate all the hors d’oeuvres. Mika was impressed, “You know of course that this is not the main dish?” I did not. They brought in huge baked fish. I ate mine and half of Mika’s. He was astounded and delighted. It is easy to like a man who likes to eat. Some of my best friends are peanut addicts. We reached a price and it was quite fair. I took the agreement back that evening to Enzo, who promised to give it a study. Nothing happened and Agan made millions under its inspired leader.

After five days I could drive from the Desert Inn to the labs, to the Potash House, to the methyl bromide plant, to S’Dom, to Yavne, to Tel Aviv and to Ramat Gan. The magic “Sleecha Adoni . . .” brought the direction and my forty words of Hebrew and valiant attempts at French and German did the rest. I could say good morning, good afternoon, good night, hello, good-bye, one, two, three, four and I love you in Hebrew. I loved the Desert Inn and the food and the friendliness of everyone. I was told that Makleff would see me.

He was of medium height, athletic and youthful in appearance. He was my age but his figure showed what one can do without peanuts, candy and cookies. “Come in, Max” he said, “and tell me if you like us!” This was

a switch. I was ready for elaborate questions about my chemistry background and my impressions of the company and that I would be judged as a salesman trying to sell a kilo of isopropyl bromide. We talked about the history of the Dead Sea Works and of Novamaisky, the Russian Jew, who had pioneered its development. He had noted that freezing waters concentrated minerals in the unfrozen portion and correctly assumed that partial evaporation would do the same. By controlling the evaporation one could deposit a series of salts.

“Well, Max,” he said, “I assume we will see you next year. What should we pay you?” I was so happy that I had not thought of asking for pay. This had been a vacation, a wonderful experience in which knowledge I had never thought of value had helped solve problems. We agreed that they would pay me \$100 every month, that I act as consultant to the new office in New York and that once each year I would come back to Israel for a week or two week visit. He told me that Gershon would work with Dave Schwartz in the New York office, then we discussed the British Colonial Army and Rommel and bromine compounds and Kaiser Aluminum and he gave me a hug and a hand shake and a Shalom.

Epilogue

My final day was my own. I drove slowly to Yavne by the way of Ashkelon where the Philistines had lived and where Samson had loved Delilah and where David, pretending insanity, had gibbered and shook before the Philistine King, provoking the wonderful remark, "I have enough meshugenahs in my own kingdom, for what do I need another?" I went for a swim in the lovely blue water, and strolled along the beach picking up bright orange shells. Then I drove to Yavne. Here the Rabbis had been permitted by Titus and Vespasian to open a school after the fall of Jerusalem. Arjeh Galun was all smiles and I promised to see him the next year. I drove to Jerusalem and visited the tomb of David. At that time most of the old city was in the hands of Jordan but from the hills one could see it all, and from Ramat Rachel one could see Jericho and Bethlehem.

I flew back to Columbia and the routine of running a small chemical company with no backup personnel, with the ever increasing pressure of new companies forming to share the research dollar. We had an old plant and an old product line and we lacked brilliant chemists and modern equipment and instrumentation and our catalog was terrible and I was playing bad chess.

We tried young Ph. D's. They were glowingly recommended by their professors and friends. All were either intellectually inadequate to handle our various problems, or were simply lazy. They, one and all, had a dearth of experience at the bench making organic chemicals. I knew I would have to find the right man and train him to take my place for I was forty-five and felt it.

I did. Steve Reichlyn, who is now the president of Columbia Organic Chemicals, joined us and proceeded to absorb our knowledge and make the changes necessary to bring the company out of the "middle ages." I have the leisure to write— and many more stories to tell.