Kai Rehder

My Life

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Dedicated to Bärbel

Contents

Preface

Nine decades of my life are over, and it seems to be a good time to reminisce about them. Where did the families of my parents come from? What kind of a youth did I have? What were some of the highlights and low points of my life? My children and grandchildren probably know little about my family and my early life in Germany and what made me come to the United States. To write this autobiography I had to relive my life. Some of my stories are probably too self-critical, and others are probably too flattering.

I was born in a foreign country and lived as a young boy through a brutal war and some chaotic postwar years. Life seemed hopeless. I was fortunate to come to the United States after this time. With discipline, honesty in admitting mistakes and misfortunes, hard work, and luck, the Mayo Clinic gave me a chance to be successful. I owe thanks to many of my colleagues, too numerous to mention. Special thanks go to Professor Neumann in Germany and Drs. Kirklin, Fowler, Theye, Hyatt, Rodarte, and Sessler at the Mayo Clinic. They helped me in my career by encouraging and guiding my efforts.

The most important support came at home from Bärbel, my wife, and our children. Bärbel supported my career and never complained about my long working hours. It was a mutual effort. She was responsible for raising four boys, and she did a wonderful job. The children succeeded in their chosen professions, and they gave us six nice grandchildren, whose development we follow closely. Bärbel deserves the credit for it. I wish to dedicate my autobiography, with thanks, to her.

My Family

My Mother and Her Family

Early Life

My mother, Rosa Anna Bielenberg, was born on February 20, 1896, in Norderwisch, a small farming village on the west coast of Schleswig-Holstein, the northernmost part of Germany, bordering on Denmark. The area has rich, fertile, marshy soil, and the farmers grew mainly common white cabbage for sale to sauerkraut factories (some of the heads of cabbage weighed as much as 30 to 40 pounds). My mother's parents owned a farm of about 130 acres. They relied on horses for farm work, had cows for milking, and also had pigs and plenty of chickens and ducks. There were four children in the family, Claus, Käthe, my mother, and Minna. My mother had a happy childhood at the farm.

My mother as a young lady

My mother in the 1960s

She went on to attend high school in Hamburg and finished by taking the exit examination known as the *Abitur*.

Our home in Oldenburg, Osterstrasse, where we moved in 1934

My mother with our son Mark in Oldenburg, 1978

My Mother's Siblings

My mother's brother, Claus, inherited the farm from his parents. He served in France during WW I and was honorably discharged as a captain. At the beginning of WW II, he was drafted again and had to leave his wife, Hertha, to run the farm. It was not easy for her, because most German males were away in the army. She had to rely on the help of French and Italian prisoners of war. Claus was killed in action in 1945.

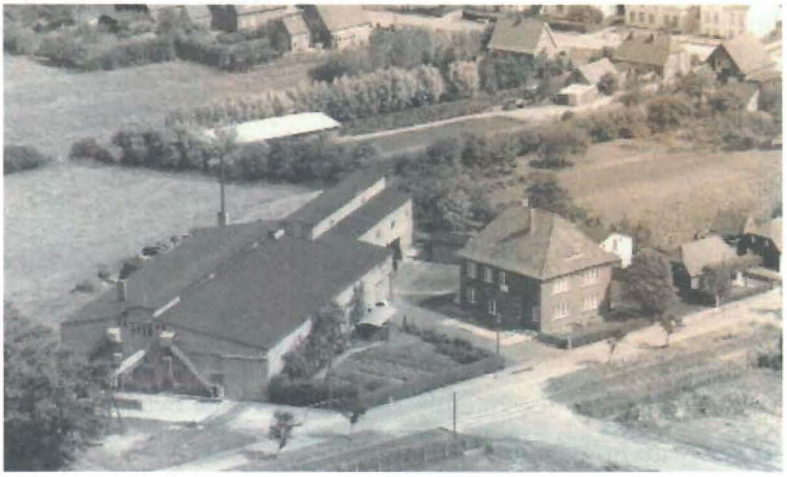
Claus and Hertha raised two daughters. The older daughter, Gertrud, married a German refugee from the east, who had never lived or worked on a farm before. He adjusted remarkably fast and quickly modernized the farm. Horses were replaced by tractors, cows were milked by machines, and other improvements were made. Unfortunately, he died at a young age of a myocardial infarction. The younger daughter, Christel, married a farmer from Schleswig-Holstein; after her marriage I lost track of her.

My cousins Christel (left) and Gertrud Bielenberg

My mother's older sister, Käthe, married Heinrich Gravenhorst, who owned a factory for making sauerkraut in Marne, on the west coast of Schleswig-Holstein. He served in WW I in the battle of Verdun in France and subsequently suffered nervous exhaustion, which interfered with how he ran his business.

We children had to be quiet when he was around or he would lose control of himself. The Gravenhorsts had a son, Konrad, and a daughter, Gesche. Heinrich supported Hitler until Konrad was killed in action as a 20-year-old soldier in Russia. Konrad's death forced the Gravenhorsts to change their plans for the future of the company. They had hoped to pass the factory on to their son, who they expected would modernize the facilities and expand them to process other agricultural products. Their daughter was not interested in the factory, so they sold it.

My cousin Konrad Gravenhorst



Sauerkraut factory and home of H. C. Gravenhorst in Marne

My aunts Käthe Gravenhorst and Hertha Bielenberg, uncle Claus Bielenberg, my brother Hans-Joachim, and my cousin Gesche Gravenhorst

During WW II, before we were drafted, my older brother, Hans-Joachim, and I spent most of our summer vacations in Marne, where we were safe from air raids and bombs and had enough to eat. We helped in the factory and made some money.

Heinrich and Käthe (Bielenberg) Gravenhorst are the second and third from the right.

Gesche attended high school in Marne and was planning an academic career. In 1943, she was drafted as a 17-year-old girl into the *Reichsarbeitsdienst* (working service). These girls helped farmers and worked in factories. Later on during the war, the girls even manned anti-aircraft guns. Gesche survived the war; she never married and she took care of her parents until they both died.

Minna was the youngest of the four Bielenberg children. She did not marry, and she took care of her elderly mother in Marne. Minna worked for the navy as a secretary in France during WW II. She was an artist who liked painting and made ceramics. She had an exhibition of her paintings in Marne.

My Father and His Family

My Father's Parents

My paternal grandfather, Adolf Rehder, Sr., was born in 1861 in Kiel, the capital of Schleswig-Holstein, which lies on the Baltic Sea. At the age of 12 he lost both parents, so he grew up as a foster child in another family. After finishing school, my grandfather trained as an apprentice at a fish company in Kiel. He married Wilhelmine Doose at the age of 22. She was a girl from Schönkirchen in Schleswig-Holstein and was only 20 years old at the time they married.

The couple stayed together and worked hard to build a flourishing company. Wilhelmine was a remarkable woman. She attended school only until the age of 14, and during her last two years of schooling she was excused during the summer so she could help her parents. In a memoir she described how hard she had to work, particularly when her husband was in America studying modern techniques for preparing smoked fish. Wilhelmine not only had to take care of their business

during that time but she also mothered seven children (from Adolf Jr., the oldest, to my father, Max, the youngest) and three foster children and managed her household. Despite her very limited education, she made sure that all of her children went to high school so they would be prepared for higher education. She continued to educate herself by reading, and the works she read included sophisticated ones by Schopenhauer and Nietzsche. She gave financial support to one of her nieces to enable her to study philology, an act that speaks to her conviction that a solid education was valuable.

My paternal grandparents

The company for smoking fish that Adolf Rehder, Sr. founded in 1882 was in Ellerbek. He specialized in smoking a herring-like fish, which was sold all over Germany and Austria as a delicacy called *Kieler Sprotten.* The product earned the first prize for agricultural products from the Austrian Kaiser Franz Joseph.

The navy became interested in Adolf's property in Ellerbek, which fronted directly on the Baltic Sea, as a site for expanding its shipyard facilities. He sold the lot, and being a shrewd businessman, he apparently got a good price. He used the money to buy a lot in Kiel at Lerchenstrasse 17, close to the main railroad station. Here he built modern smoking facilities. His son Louis inherited the business. During the war, some of the buildings were damaged, but they were soon rebuilt, and Louis and his family lived there for the rest of their lives. (Kiel

was, and is, a major port for the German navy. It is the site of the Nord-Ostsee-Kanal [Kaiser Wilhelm Kanal], which was built to facilitate naval travel from the Baltic Sea to the North Sea.)

My Father's Siblings

Adolf Jr. was the oldest son of Wilhelmine and Adolf Sr. He went to school in Ellerbek and Kiel and then began his training in business as an apprentice with his father. He started his own business in 1909 in Plön, about 25 km from Kiel. He dealt in construction materials and coal for heating. In 1910, Adolf Jr. married Elsa Riesenberg, who was a very loving lady, an expert gourmet cook, and liked by everyone in the family. Adolf Jr. volunteered in 1914 at the beginning of WW I for the army and put Elsa in charge of their business while he was gone. In November of 1939, when he died, Elsa was again responsible for the business until her son, Hanning, returned in 1945 from being a prisoner in a Russian war camp close to Berlin.

Adolf Rehder, Sr., and family. From right to left, Adolf Sr., Wilhelmine, Adolf Jr., Emmy, Bruno, Hans, Louis, Ella, and Max (my father). The photo was taken in Ellerbek before the family moved to Kiel.

Twenty-fifth wedding anniversary of Elsa and Adolf Rehder Jr. in Plön. Front row, from left: Kai Rehder, Gesche Gravenhorst, Hand-Joachim Rehder, Ilse Rehder, Wilhelmine Rehder, Elsa (Riesenberg) Rehder, Adolf Jr. Rehder, Adolf Sr. Rehder, Konrad Gravenhorst. Second row from left: Grete (Graf) Rehder, Louis Rehder, Emmy Rehder, unknown, Rosa Anna (Bielenberg) Rehder, Max Rehder. Next four persons unknown.

The couple had three children: Emmy, Käthe, and Hans Johann. The oldest, Emmy, was born in 1911. She studied philology and earned a PhD degree in 1939. She taught mathematics, geology, and chemistry at the *gymnasium* in Plön. Emmy married Dr. Wolfram Huffert in 1941; he was also a high school teacher. They had two children, Wulf and Kai. Wolfram served in the army at the Russian front, piloting a plane behind the front lines for the observation and correction of the accuracy and precision of the German artillery. His plane was shot down, and he did not return to Germany after the war. I am not sure what happened to him. Rumor has it that he joined the Communist party in Russia.

Adolf Jr. and Elsa's younger daughter, Käthe, lived with her husband in Idar-Oberstein in southern Germany. I had no contact with her and do not know whether the couple had any children.

The only son of Adolf Jr. and Elsa, Hans Johann (known as Hanning), was born in 1914. He was an unruly child and young man. He did not do well at school and did not graduate. After he left school he trained as an apprentice in business and again did not finish his training. I was told that as a young man he even broke into the offices of the Social Democratic Party in Kiel and hoisted the Nazi Swastika flag from the window. The party was strongly opposed to Hitler. In 1934, a year after Hitler had become Chancellor of Germany, Hanning joined a Nazi organization, but for reasons unknown to me, he soon left Germany to join the French Foreign Legion. He served with the Legion as a soldier in Africa for five years. When he was scheduled to be discharged in January of 1940, France and Germany were at war, so he was kept in captivity by the French. He escaped, returned to Germany via Spain, and was promptly drafted. In the fall of 1941, he was transferred to Africa with a group of other former members of the French Foreign Legion. By serving in the German army they were given the chance to prove themselves to be patriots. The ship that took them to Africa was sunk in the Mediterranean, and Hanning swam for 16 hours before he was rescued. After recuperating, he was again sent to Africa; he was wounded there in June of 1942 and hospitalized in Germany.

My cousin Dr. Emmy Huffert (neé Rehder) from Plön

Hanning survived the rest of the war and became a prisoner of war in Berlin. From there he returned home by bicycle and took over the family business from his mother. Hanning was very successful in his business dealings. He liked to sail and won several sailboat races. He married and had two daughters, Karin and Inga. Karin married an orthopedic surgeon and Inga a farmer from South Africa.

With my cousin Hanning in Plön

The second child of Adolf Sr. and Wilhelmine was Emmy, who became a teacher and never married. I never met her.

The third child of Adolf Sr. and Wilhelmine was Bruno, who was born in 1891 in Ellerbek. He attended the Ellerbek elementary school. When he was 11, the family moved to Kiel, where he attended high school. After taking the *Abitur*, he studied modern languages at the universities of Kiel, Munich, and Lausanne. While in Munich, he fathered an illegitimate daughter, who later married the son of Wilhelm

Frick, Secretary of Interior under Hitler. Wilhelm Frick was sentenced to death at the Nuremberg Trials.

My uncle Bruno

In 1914, at the beginning of WW I, Bruno volunteered for the army. He fought in France, where he was promoted to second lieutenant. In 1916, Bruno was transferred to the Russian front, where he was captured by the Russians and sent to a Siberian labor camp as a prisoner of war. At the end of the war, he was not released. In 1920, after another quixotic year in captivity, he was released and returned home sick and exhausted. He matriculated at the University of Kiel, where he studied economics and graduated with a doctorate in 1922. In the turmoil of postwar Germany, Bruno saw no chance for himself, and he emigrated to China in 1923. He settled in Tientsin and founded a shipping company. Tientsin was considered to be the Northern Shanghai. It had many European concessions, including a German one. (After China lost the opium wars in 1860, the British and French, and later other European countries, established concessions in Chinese cities,

which were entities that had their own administrations, jurisdictions, and infrastructures.)

Bruno married Ludmila Karlowna Snarsky in 1933. She was born in 1909 to her Russian mother and Polish father, who worked in Russia for the Trans-Siberian Railway. When Ludmila was five years old, the family moved to Tientsin. Ludmila attended the English Tientsin Grammar School (which had the Cambridge examination) and learned the King's English, so she grew up bilingual, speaking Russian as her mother tongue and English as her second language. Ludmila was also the tennis champion of North China. She was a very kind-hearted, sophisticated, and religious lady, liked by everybody. While Ludmila lived in China, before and after marriage to Bruno, she became used to luxury and having plenty of help in her household, but this came to an end after the war when she and Bruno lived in Germany.

My aunt Ludmila

Bruno and Ludmila had two children, a girl named Wilhelmine after her grandmother (but always called Wiki) and a boy named Rudolf (Rudi). In 1940 after the outbreak of WW II, Bruno bought a cabin near Tientsin to serve as a summer home. As business declined during the war, Bruno and his family moved from Tientsin to their

cabin, and they continued to live there until 1947, when they were expatriated and sent to Germany.

My cousin Wilhelmine (Wiki) Möller (neé Rehder)

In Germany, they lived for two months at a refugee camp in southern Germany and after being released from the camp, they moved to Kiel, Bruno's hometown. Kiel, an important port of the German navy, had suffered severely during the war from heavy bombings. About 70% of the buildings were destroyed, and it was therefore nearly impossible to find shelter for a family of four. To make things even more difficult, thousands of refugees from the former region of east Germany had arrived in Kiel and were competing for the few available living spaces. After two months, the family finally found a single room to rent. It served as a bedroom and living room. They shared a toilet, kitchen, and bathroom with others. From these cramped quarters, Bruno managed to build his new business of import and export. His

fluency in Russian, French, English, and German helped him in landing contracts, because all business contracts had to be filled out in four languages. After only six months, the family moved to a better apartment in Kiel. Bruno soon owned a car and hired a chauffeur. He proved when the going gets tough, the tough get going. While I was a medical student in Kiel, I lived with the family for a while and had a wonderful time. They were kind and very interesting people.

Wiki went to school in Plön, where she graduated with the *Abitur.* She married a pastor, Dr. Dieter Müller, who is an interesting and sophisticated man. He wrote the history of the Bruno Rehder family. Wiki and Dieter have four children. Like her mother, Wiki speaks fluent Russian, and also like her mother, she is a kind-hearted lady. Her younger brother Rudi trained in the German merchant navy to become a captain. He was thrown overboard in the Mediterranean during a severe storm and could not be rescued.

Hans was the fourth child of Adolf Sr. and Wilhelmine Rehder. All I know about him is that he trained as a business apprentice before he volunteered for the army at the beginning of WW I in August of 1914. He was killed in action in France in 1915.

Louis was the fifth child of Adolf Sr. and Wilhelmine. He inherited the family company and carried on successfully during the difficult time of the war and the heavy bombings of Kiel. Louis married Grete Graf, the daughter of an artisan, and they had one child, Ilse. I liked my cousin Ilse very much. While I was a medical student in Kiel between 1948 and 1950, I spent many evenings with Louis and his family. We had dinner together and played cards. Ilse was an intelligent lady, interested in many things. She studied pharmacy and married Helms

Huesgen in 1950. Helms saw the great opportunities for the automotive industry in Germany after the war. Everybody needed a car. With his cousin, he built a successful dealership for Volkswagens, Porsches, and Audis in Kiel and established many subsidiaries throughout Schleswig-Holstein. Helms and Ilse's two sons, Jochen and Axel, continue to run the business in Kiel.

Ella, the sixth Rehder child, was chronically sick with a thyroid problem. She never married and stayed with her parents. I never met her. The two unmarried sisters, Ella and Emmy, had little contact with most of the family.

The youngest Rehder child was my father, Max, born on March 25, 1896, in Ellerbek. He attended the *gymnasium* in Kiel. It must have been a tough school with a lot of discipline. I remember my father's interest in Latin and Greek; he could translate Latin books into German. Like his brothers, my father volunteered for the army in WW I and fought in France. After an honorable discharge at the end of the war, he studied dentistry at the universities of Kiel and Munich. After one year as an assistant, he began his own dentistry practice in Hohenwestedt, Schleswig-Holstein, in 1923. Germany was in turmoil during this postwar time, and terrible economic inflation made life miserable.

Many people in Germany, including my father, felt the Treaty of Versailles that ended the war was unfair and the expected reparations were too high, preventing the country from having a chance to recuperate in the presence of an extremely high rate of unemployment. Inflation was rampant. It was not an easy time to start a dental practice. In 1929, he joined the Nazi Party (NSDAP) in the hope that Hitler would turn things around in Germany.

After the war, my father made amends for his membership in the NSDAP, even though he never participated in any Nazi activities. His bank accounts were frozen; a trustee was assigned to control his business and financial activities; and he was not allowed to vote in the first free elections after the war. Eventually, it was realized that membership alone did not equate with any wrongdoings, and things became easier.

My Parents' Marriage and Children

My mother and father, Rosa Anna and Max Rehder, married after World War I. They had met in Marne when my father was working there as an assistant. My parents did not have an easy life. One of their sons was killed; my father served for ten years of his life in German armies; and they twice lost their savings. My father was a dentist and practiced in Hohenwestedt where my brother and I were born—Hans-Joachim on December 8, 1924, and I on December 17, 1928. My parents owned a home but, nonetheless, life was not easy or comfortable for them because in 1923, a devastating economic inflation hit Germany. Most of what my father earned was eaten up before he had a chance to spend it. My mother told me that she had to run to the grocery store because if she walked, her money would lose most of its buying power in the few extra minutes it would take before she reached the store. The inflation was so horrendous that postage for a normal letter was as high as 5 billion marks!

When Germany invaded Poland and started World War II in September of 1939, my father was drafted immediately. The new Mercedes convertible my parents had bought was confiscated, and our dog, an Airedale terrier, was drafted but fortunately rejected because of a heart murmur. In 1942, Hans-Joachim was drafted, first into the

Reichsarbeitsdienst, a paramilitary organization, and then into the *Wehrmacht*. I was drafted on January 5, 1944, as a *Luftwaffenhelfer*. After I had left the house, my mother was alone. The authorities made her serve as a nurse at the railroad station in Oldenburg until the end of the war. My father returned from the war soon after it ended, but we did not know what had happened to my brother. Finally, in 1947, 2½ years after the end of WW II, my parents learned that their oldest son had been killed under mysterious circumstances. In 1948, my parents lost most of their savings once more because of the *Währungsreform*, in which the currency was devaluated.

Postage stamp from 1923

My mother made the best of her difficult circumstances. She enrolled in a course to learn gourmet cooking, needlework, and other skills for advanced housework. She graduated with a Master's degree and was licensed to teach. She taught five girls who came for a day each week to our house, where they worked under the supervision of my mother. This continued even after the war.

The worst time for my mother was while the family was waiting for news of Hans-Joachim. There was still some hope that he might return; we knew that other, more fortunate families had received news through the Red Cross about relatives who had been held in Russia as prisoners of war. My parents' marriage had deteriorated during the six years that they were apart while my father served in the army. They did not divorce or separate, but they no longer had a true marriage. To make things worse for my mother, I emigrated to the United States in 1966. My father had died in 1958, so she was then alone. She remained in Oldenburg but moved from the rented house in Osterstrasse, where

we had lived for about 20 years, to a house she owned in the Grüne Strasse.

With my mother in Oldenburg at Christmas

My mother died in 1982. Bärbel and I attended the funeral in Oldenburg. Only a few relatives and friends were present at the service. She is buried with her husband in the Rehder family grave in the Gertrudenfriedhof in Oldenburg. The tombstone carries the names of my father, mother, and brother, even though my brother is not buried there. Bärbel and I want to be cremated and buried in the Rehder family grave, as well.

My Brother, Hans-Joachim

My brother, Hans-Joachim, went to elementary school for three years in Hohenwestedt. Because there was no high school in Hohenwestedt, the family moved to Oldenburg in 1934. In Oldenburg my brother

attended the last grade of elementary school and then the *gymnasium*. He had a particular interest in chemistry and botany. He was drafted in 1942 into the *Reichsarbeitsdiens*t, a paramilitary organization, and served in it for three months in Zwischenahn together with his classmate Otto Modick. The men of the *Reichsarbeistdienst* provided cheap labor for heavy work. The first *Autobahns* in Germany were built in large part by men of the *Reichsarbeitsdienst*. It also served as preparation for the army.

My brother Hans-Joachim at elementary school in Oldenburg

Otto Modick led an unusual life. After being released from the *Reichsarbeitsdienst* he was drafted into the navy, where he served on a U-boat. His U-boat was sunk close to the British coast. His mother was informed by the navy that her son had been killed, but she knew better. She had been listening on the radio to a British news program from which she learned that a German U-boat had been sunk, and that members of the crew, including Otto Modick from Oldenburg, were alive and well. Imagine the dilemma of Mrs. Modick. It was strictly forbidden to listen to foreign radio stations. If caught doing so, one could be sentenced to death, so Mrs. Modick had to pretend for the rest of the war that she believed her son was dead even though she knew he was well and alive.

After the war, Otto returned to Oldenburg, where he became involved in the black market and soon became its king. While in the United Kingdom as a prisoner of war he had learned to speak English more or less fluently. He used this in what must be considered a masterpiece of imposture. He told a British colonel of the occupation force that he wanted to impress his girlfriend by wearing the uniform of a British officer on their next date. In return for use of the uniform for one evening, he offered the colonel an oil painting. The colonel agreed and the deal was made. Wearing the British colonel's uniform, Otto stopped a British army jeep and ordered the driver to take him to the army warehouse. There he loaded the jeep with cigarettes and other goods for the black market. He sold the stolen goods for a good profit that more than compensated for the value of the painting he had given up. The next morning, he returned the uniform as promised.

Eventually, he overdid it and ran into trouble with the German police. He escaped to France, where he joined the French Foreign Legion. With the Legion he was sent to Vietnam, where he was captured and confined in a prisoner-of-war camp. He could not resist temptation and again began to deal in the black market while in the camp; he got caught and was executed.

My brother was released after three months in the *Arbeitsdienst* and was drafted into the army as a gunner in a *Panzer* tank. In 1942, he was sent to Russia, where he was involved in heavy fighting until he was wounded in June of 1944. His *Panzer* was hit and exploded, and the force of the explosion threw him out of the tank into a ditch, where he was discovered unconscious with third-degree burns on his face and both hands. His comrades thought he was dead. They took his identification and valuables, but somebody noticed that he was moving. He

was rescued and flown to Breslau and admitted to a military hospital. My mother and I visited him in Breslau in 1944.

I was on furlough as a *Luftwaffenhelfer* at the time and had to wear a uniform. One day, when my brother and I were walking downtown, we encountered a high-ranking SS officer. We were supposed to salute him with the Nazi salute. After the futile attempt to assassinate Hitler in 1944, the army salute was changed from the normal salute used in every army in the world to the raising of the right arm. To avoid the Nazi salute, we both turned around and pretended not to have seen him. Sure enough, he stopped us and asked why we had not saluted him. My brother, with his burned face, looked at him and said," Sir, you go where I have been and I will salute you." The officer turned around, obviously embarrassed, and left without a word.

My brother was declared, by some truly irresponsible person, to be fit enough to be sent back to the Russian front, even though he was then useless as a soldier. The skin of both hands was so sensitive that he could not hold a gun or carry anything. After the extent of his disabilities became obvious, he was reassigned and attended an officer school as a cadet in Czechoslovakia. As the Red Army advanced rapidly and approached the town where the officer school was located, the cadets were evacuated and charged with protecting fleeing German civilians against partisans.

When the war was finally over, we did not receive any news from him. This was a terrible time for all of us. There was hope that he might be alive, and we hoped that we might receive news of him through the Red Cross. After 2½ years, a man from the vicinity of Frankfurt-am-Main called and asked my father if he had a son who was missing. When my father said that he did, the man asked whether his son was a

medical student who had been badly wounded. After my father answered that this too was the case, the man informed him that he had bad news. His son was dead. He said that he had been the officer in charge of a group of soldiers and civilians who were fleeing from the advancing Red Army in Czechoslovakia. While they were staying overnight at a farm, three German soldiers, including my brother, were shot by partisans wearing German uniforms. He said this had happened on April 22, 1945.

My father was shocked by the sad news and asked if he and his family could visit him to learn more about exactly what happened on that day. The man agreed to this. He was living on a farm and serving as a private teacher for the farmer's children. My father, mother, and I traveled on a freight train to visit him the next day. He appeared to be a friendly man and answered most of our questions. He told us that the group of fleeing soldiers and civilians had arrived in Germany the next day and surrendered to the Americans.

Strangely enough, the man disappeared from West Germany into East Germany soon after our visit, and it was impossible for us to get in touch with him again. We contacted the farmer with whom he had been living, but he did not know the man's new address and had not heard from him. This makes one wonder whether his story was true. Was my brother shot by partisans wearing German uniforms or was he executed? Did the former officer feel guilty enough to notify us about my brother's death but then disappear so that he could not be held accountable? We don't know the answers. We don't know whether my brother was buried and if so, where. What a tragic death for a 21-year-old boy.

My brother, Hans-Joachim, in the uniform of a German Panzer soldier

My brother after he was wounded in Russia in 1944

Hohenwestedt, 1928-1934

In 1923 my father began his dental practice in Hohenwestedt, a small town in Schleswig-Holstein near Rendsburg. He did well in his practice before he and the family moved to Oldenburg. At age six, my brother entered the first grade in the elementary school in Hohenwestedt. The school building was right across from our house, so it was very convenient for him. When a child was age ten, the parents had to decide about the child's further education. One choice was to have the child continue at an elementary school until age 14 and then start an apprenticeship accompanied by appropriate schooling. The other choice was high school, which prepared the child for more intellectually demanding jobs. One type of high school was the *gymnasium*, which emphasized the study of languages and prepared a child for matriculating at a university. At such a school, children began at age ten with Latin, at 13 Greek was added, at age 15 French, and at age 16 English. The other type of high school, the *Realschule*, emphasized natural sciences and mathematics. Here the children started at age ten with English and added Latin at age 13 and French at age 15.

Dental office of my father in 1934, almost 100 years ago

My parents wanted their children to attend a *gymnasium*, as my father had done. The nearest *gymnasium* to Hohenwestedt was in Rendsburg, which meant that their children would have to travel by train to go to school. Our parents did not want this for us. Their friend Andreas Hamann, the son of the local pastor, had moved from Hohenwestedt to Oldenburg, where he worked as an attorney. He recommended the life in Oldenburg, a city of 80,000, with good schools and a theater and without heavy industry. My parents followed his advice and moved to Oldenburg in 1934.

My father and Adolf Hitler in 1929 in Hohenwestedt

At that time, Germany was still in the midst of the turmoil that followed WW I, which had concluded with the terms of the Versailles Peace Treaty; the country had a high unemployment rate. Hitler promised he had plans to overcome these problems. Many, including my father, trusted him. My father had joined the Nazi party four years before Hitler became chancellor. In 1929, Hitler was on a campaign trip through Schleswig-Holstein and stopped in Hohenwestedt. My father, who acted as mayor of the city, accompanied him on a walk through the town. In retrospect, he should have understood that Hitler was dangerous and a demagogue. After this time my father finally understood Hitler's plans and hated him.

There were many honorable men in Germany who, like my father, trusted Hitler before they realized for what he stood. For instance, the well-known Pastor Niemöller pledged eternal service to Hitler in 1933 after Hitler had become chancellor but was later the leading figure in the Protestant Church protesting publicly against Hitler. He ended up in a concentration camp for seven years.

Another example is Count Claus von Stauffenberg, who first supported Hitler. After he had seen the crimes committed by Germans in Russia during the war, he joined the Resistance against Hitler and tried unsuccessfully to assassinate Hitler on July 20, 1944. He and a number of high-ranking officers were captured and executed. His wife was imprisoned in a concentration camp.

School Years, 1934-1948

Oldenburg, 1934–1944

The city of Oldenburg was also the capital of the State of Oldenburg and was officially called Oldenburg in Oldenburg. Until 1919 the grand duke of Oldenburg lived in his palace in the city, and his beautiful gardens were open to the public and were a big attraction for people. The government of the State of Oldenburg had its offices and buildings in the city. As the capital, Oldenburg had an outstanding live theater, several high schools, including a good *gymnasium*, and many legal courts and attorneys.

The landmark of the city was the Lappan, the belfry of a church, which no longer exists. Oldenburg has many proud traditions, including the *Kramermarkt,* a national festival started by the legendary Count Adolf Guenther von Oldenburg in the sixteenth century. It is a popular festival lasting one week. People jokingly say there are five seasons in Oldenburg, spring, summer, fall, winter, and *Kramermarkt.* Another great tradition of Oldenburg is the *Grűnkohl mit Pinkel Essen,* a meal of kale and tasty, seasoned *Wurst.*

In 1934, my brother entered the first year of the *gymnasium* in Oldenburg. He excelled in biology and chemistry. He had a chemistry laboratory in the basement of our house, where he did experiments. I was allowed to watch him and got interested in chemistry that year.

In August of 1934, President Hindenburg died. In his honor, a National Funeral was ordered. This involved festivities in many cities throughout Germany, including Oldenburg, where Hindenburg had served as an army officer. The army held a gun salute in our city. When

my friends and I walked through the city the next day, we found a leftover cartridge with an intact percussion cap. We took it home to see if we could make the cap go off by hitting it with a sharp nail. It went off all right, and a fragment from the explosion hit me in the right groin.

Me in Oldenburg

I was hospitalized because I bled profusely. The sharp-edged fragment of the cartridge was lodged in the wall of my right femoral artery, and the surgeon, Professor Koenecke, decided against removing it for fear of damaging the artery further and causing uncontrollable bleeding. It must be remembered that in 1934 surgeons had no experience in vascular surgery and there were no blood banks available. The surgeon applied a cast around my pelvis, including the right leg, making any motion of the leg impossible. The hope was to prevent further damage to the artery and give the fragment time to move away from the artery by the force of gravity. This did happen, and the fragment was subsequently removed without any problem.

Oldenburg had survived most wars nearly untouched. Even during WW II it was spared from bombing, and in May of 1945, the acting mayor of the city, who was the father of one of my classmates, courageously surrendered the city to the Allies, saving it from total destruction. For this brave deed, the military government appointed him mayor. He remained in this position until it was found out that he had been a member of the Nazi party. The father of another classmate was

appointed governor of the State of Oldenburg by the military government.

My brother, Hans-Joachim, and me in traditional navy dress

Because my father had joined the Nazi party in 1929, he was compelled to join either the SA or SS. He chose the SS, the organization that academicians seemed to prefer; by contrast, the SA was the party of the working class. When he realized the criminality of Hitler's policies, however, he resigned from the SS after being in it for less than one year, a risky maneuver. He turned from a supporter of Hitler to a fierce opponent. I remember when friends visited, we kids were asked to leave the room so we would not hear what was said and discussed about Hitler and his policies. My parents feared that we might inadvertently tell our friends what we had heard, and this would have been dangerous.

My father was interested in sports. He enjoyed a good tennis game twice a week. He even played one set of tennis against Gottfried von

Cramm, the famous German tennis star, who won the French Open twice and made it to the finals in the U.S. Open, Australian Open, and Wimbledon Championships. Being the gentleman that he was, von Cramm let my father win one game. My father was also a great soccer fan. He flew once to England to watch a soccer game between the national teams of Germany and England. On the return to Heathrow Airport he was asked by the cab driver, "Why does Germany want war?" My father was impressed that a cab driver in England was better informed than most Germans and understood the dangers of Hitler's policy.

My father, farthest to the right

My father was drafted into the army a few days before Germany invaded Poland in late August 1939. He was given the rank of corporal in the infantry, a rank he held at the end of WW I. The medical corps of the German army did not include dentistry as a specialty, so there

was no place for him in the army. He asked to be transferred to the air force medical corps, which included dentistry. He was transferred and served the entire war as an air force dentist at a military hospital in Amsterdam. In 1945, he surrendered to the Americans. He was released in June of 1945 and returned home by bicycle, the only means of transportation available at that time.

My father

I remember when my father came home. We had not seen each other for four years, and I was now 16 years old and had been in the war as a *Luftwaffenhelfer*. He said," Son, I am afraid you will have a difficult life ahead of you. You will never have enough food to eat; you will never own a home; and the world will hate the Germans forever and will never forgive us for what was done by us or in our name." This gloomy prediction may have been influenced in part by his experiences after WW I. What could Germany reasonably expect after WW II? There is no question that Germany started WW II, and that Germans had killed millions of innocent people in concentration camps and committed crimes in occupied countries and at home. It was certainly not an encouraging prospect for a young boy.

My father died in June of 1958 at the age of 62 from a myocardial infarction while on vacation in Italy. He had been in good health up to then. When my mother notified me in Rochester about his death, I did

not have the money to buy a round-trip ticket to Germany. The Mayo Clinic generously lent me the money, which I paid back immediately after my return from Germany.

My first report card in 1934 reads, "Kai is very sweet and hard-working and most of the time tidy."

I entered elementary school in Oldenburg at the age of six. I sat for the entrance examination for the *gymnasium* in 1938 after three years instead of the normal four years of elementary school. By order of Hitler no new classes were accepted at *gymnasiums*; he did not like elite education. There was no choice for me but to go to the *Realschule*, with an emphasis on the natural sciences and mathematics. Luckily, however, those of us who had taken the entrance examination for the *gymnasium* had the benefit of remaining in its building and being taught by highly qualified teachers. I was the youngest student of the class; I was not ready for the rigorous curriculum and had to repeat the fifth grade. In the first year there were 60 students in our grade, but by the time we took the final examination at age 18 or 19, only 16 students were left.

As a young boy I wanted to have a dog. My parents agreed, but we could not decide between a Scottish terrier and an Airedale terrier. We finally decided on an Airedale, and in 1938, we bought Abo in Hamburg. He was a young Airedale with a long family tree. Abo soon became the center of the family. He grew rapidly and became strong and handsome. He loved to play with other dogs in the neighborhood but had one arch enemy, Ajax, a German sheepdog with yellowish brown fur. They hated each other, and whenever they met they had a big fight. One day my father wanted to demonstrate the enmity between two dogs to visiting friends by shouting at Ajax. Abo responded by jumping through the window glass on the first floor into the street, but he could not find Ajax. On another day my mother went to an art shop with Abo to buy something. There was a framed picture of Adolf Hitler in a brown shirt exhibited on the floor. As soon as Abo saw the picture he attacked it and ripped it to pieces, thinking it was Ajax because the color in the picture was similar to Ajax's fur. At the beginning of the war, Abo was drafted, but he was rejected because of a heart murmur. Unfortunately, we had to put him to sleep during the war because we did not have enough food for him.

With my first dog, Abo

At age ten, all boys were required to join the Nazi organization *Deutsches Jungvolk* (DJ; Young German People). We wore brown shirts

decorated with the swastika and black shorts. Every Wednesday and Saturday afternoon we met for two to four hours. The emphasis was on sports, marching, and political indoctrination.

I like sports but I was not interested in marching and politics, and I found the meetings boring. After four years in the DJ, I was automatically transferred to the Hitler Jugend (HJ). I did not like the activities there either and attended few of the meetings. I had to report to the office of the senior leader, who asked me, "Do you not like the meetings?" I answered, "No," and much to my delight, I was immediately dishonorably discharged. I wonder what would have happened to me if Germany had won the war?

I had three good friends. We lived in the same neighborhood. Walter Mittweg and I went to school together; he studied law and became a state prosecutor. Wolfgang Decker studied physics and later worked at the Max Planck Institute in Stuttgart. The third friend was Burkhard Decker, Wolfgang's brother, who entered a cloister and studied theology. He died at a young age of breast cancer with many metastases. Wolfgang and Walter remained my friends until they died many, many years later. After we had all retired and I spent time in Germany, we met once a week and drank French wine or German beer together.

Luftwaffenhelfer, 1944–1945

On January 5, 1944, all of my classmates who had been born in 1928 were drafted as *Luftwaffenhelfer* (air force helpers). I had just turned 15 three weeks earlier. After training in Oldenburg for six weeks on outdated 2-cm Flak guns, we were stationed in Norddeich on the coast of

the North Sea. We were protecting a radio station that was the communication link with U-boats in the Atlantic.

One would have thought that this site would be a major target of the Allies, but it was never attacked. We later learned why not. The British had broken the secret code and were not interested in losing this valuable source of information.

Luftwaffenhelfer

After a few uneventful weeks in Norddeich, we were transferred to an airport in Zwischenahn, where the air force was testing the experimental Me-163 rocket plane. The Me-163 was very small, light, and fast. It was propelled by one rocket engine in the rear and could ascend vertically like a rocket; shortly after takeoff it dropped off its wheels. Hanna Reitsch, a friend of Hitler, was one of the test pilots. The Me-163 was thought to be ideal for hunting reconnaissance planes, but it carried only a small amount of fuel so it had only a few minutes of powered flight before it turned into a lame glider and an easy target. During the year we were stationed at the airport, we saw successful test flights almost daily, but we never saw a successful ascent to hunt a reconnaissance plane.

The other major activity at the airport was the flights of He-111 bombers, which were loaded with one V-1 rocket each to be launched

over the North Sea. When an He-111 bomber returned from a mission, we were awaiting it with searchlights and guns on its approach to the landing strip. We used the searchlight to look for enemy planes that might be behind the He-111 and ready to land to drop off spies and then take off.

The airport was, of course, of great interest to the Allies. We were heavily bombed several times, and several of our colleagues were wounded or died, including Franz Koenecke, the son of the surgeon who had operated on me. We were completely defenseless because the bombers flew at an altitude far beyond the range of our 2-cm quadruplet guns, which was only about 3,000 feet. However, low-flying fighter planes followed the bombings and they were certainly in our range. They attacked parked airplanes, such as the Me-163s and He-111s. These kept us busy and we were sometimes successful.

On a normal day we had four hours of schooling in the morning. A teacher from our school in Oldenburg came every day. We had no homework. In the afternoon we were soldiers, exercising, cleaning guns, and doing other military-type activities. There was no arguing among us, and we were too young to have political opinions. Our beliefs were mostly those of our parents and the church. Most of us expected Germany to lose the war, and we did not hesitate to say so. I could mention many examples. One night, as we were waiting at our guns for the Allied bombers to return from bombing Berlin, Lieutenant Wolf came to me and asked, "Why did you not volunteer for the army? If you volunteer, you can choose between army, navy, and air force. Don't you want to become an officer?" and my answer was "No, sir, I want to be a corporal like our Führer." He did not respond and never bothered me again.

Bombed out at the airport

The quadruplet 2-cm guns were manned by seven people, including German soldiers too old for combat duty, Russian prisoners of war who had volunteered to serve in the Flak, and us *Luftwaffenhelfer.* We had good relations with the soldiers and the Russians. The soldiers treated us kindly; probably some of them felt we could be their children or grandchildren. The Russian POWs were just happy to still be alive. They were well nourished and treated fairly. I wonder whatever happened to them after being sent back to Russia by the Allies. I wonder how many did not even survive their return?

The officer in charge of the 15 2-cm quadruplet guns, Oberlieutenant Ritter, was an educated gentleman and a teacher at a *gymnasium.* He maintained discipline but understood we were not adults. He also understood that the war would come to an end soon, and that more unwise sacrifices were unwarranted.

In March of 1945, he ordered us to get civilian clothes. He said he was to discharge us so that we could register for the regular army. He waited until the middle of April 1945, three weeks before the end of the war. He then collected our uniforms and sent us home together with our official discharge papers. Most of us did not report to the recruiting office of the army and waited anxiously for the Allies to arrive. On May 3, 1945, Oldenburg surrendered and was occupied by Canadian and British troops. We were liberated and safe. The brutal war was over, there would be no more killings, and we had survived!

Oldenburg, 1945–1948

At the end of the war Germany capitulated unconditionally, meaning that we were totally at the mercy of the occupying forces. We had no rights, and no German administration existed. There was a curfew, so we were not allowed on the streets after 9:00 PM. The occupying soldiers were not even allowed to talk to us Germans. No fraternization! That was humiliating. We also were confronted with news about the crimes, brutalities, and atrocities committed by Germans or in the name of Germans.

The military government was responsible for everything, including the police, post office, newspaper, electricity, and gas utilities. It was also responsible for providing food and shelter for locals and thousands of refugees who were being evacuated from eastern Germany by Poland. The city was crowded with hungry, exhausted people. The military government was not prepared for this task. The food supply was inadequate and hunger was a great problem. Shelter for the many refugees and former POWs was not available. To make things worse, the occupation force confiscated the best and most intact homes. We had

no fuel for heat; in the winter of 1945–1946 it was below freezing in my bedroom. Electricity and gas for preparing meals were available for only two or three hours per day.

The Nuremberg Trials were held and even more unbelievable atrocities and crimes came to light. What my father had prophesied on his return from the war seemed to be coming true. We had survived the war, but the immediate postwar period was depressing and chaotic; there was no hope for the future. Bartering and black-market activities were the only way to supplement the scarce food supply and to survive. Cameras, wristwatches, paintings, and other valuables were exchanged for food with the soldiers of the occupation force.

My father needed to reopen his dental practice. His equipment had not been used for six years while he was away in the army, and some of it had deteriorated and was no longer in working condition. He had no dental plaster for making impressions of the mouth, which was necessary for preparing dentures. Most of the day there was no electricity, meaning he had to work without adequate light and had to use an old dental drill powered by foot.

I volunteered to help and got permission from the military government to travel about 200 miles to Osterode in the Harz Mountains to buy 100 pounds of dental plaster and transport it back by bike to Oldenburg. The trip was successful. I do not remember how I fed myself or where I slept at night.

Before schools were reopened, the military government forced us to work to be eligible for rationing cards for food. I worked in a factory owned by the father of a classmate who owned a patent for making clutches for electric motors.

In the fall of 1945 schools were reopened. The *gymnasium* was occupied by the Canadians and used as a military hospital, so we went to a girls' high school in the afternoons. The school was not heated, and some of its windows were broken. No electricity, books, or paper was available. However, and importantly, we were taught by competent teachers and were happy to learn. A welcome bonus was the Hoover hot meal we received, a gift from the United States. In retrospect, it was wise to open schools so soon even under such difficult conditions, though we may not have appreciated it at that time. Educating and training the next generation was the only chance for a country to survive and thrive, and it helped us later.

We had many good teachers, but three of them were outstanding. Dr. Wilhelm had been a German diplomat in the United Kingdom before the war and was married to an English lady. He taught German and English. He had friends among high-ranking British officers of the occupying force, and he invited them to teach us about the English political democratic system. For us, who had grown up in Nazi Germany, this was most informative and interesting. Of course, the discussions were held in English and we learned to communicate in English. What a teacher to do this in his spare time on Saturday mornings!

Another outstanding teacher was the Latin teacher, Dr. Eggerking. He thought our experience of serving in the war as 15-year-old boys was unique. He persuaded us to document our experiences as *Luftwaffenhelfer*. Each of us wrote a chapter in the *Luftwaffenhelferchronik*, and I still have a copy of the book.

Adolf Niesmann, our art teacher, was the third outstanding teacher. He served as president of the Art Society in Oldenburg during the postwar time. In this capacity he miraculously managed to get the

famous original *Sunflower* painting by Vincent van Gogh exhibited in the city. He took us to the exhibition and explained enthusiastically the art of van Gogh and other impressionists. Thanks to this experience, I became interested in impressionist art.

Niesmann had designed his house in Oldenburg in the modern Bauhaus style and it became an attraction. After my retirement, Bärbel and I purchased this house from his daughter, who lives in the United States. We also bought 14 paintings by Niesmann, which decorate our house in Rochester. We still enjoy them every day.

My classmates and I attended school until March of 1948, when we were eligible to take the final examination, the *Abitur*. In December of 1947, we were scheduled for a final test in German to determine our grade entering the *Abitur*. I was afraid I might worsen my grade. I told my father that I did not want to take the test because I was sick. He understood and agreed. He suggested we use the free day to ask the chairman of the department of dentistry at the University of Kiel to help me matriculate there; my father knew him well.

My father offered the department chairman a weekly supply of fresh fish of his choice from my uncle's shop if he would help me in getting accepted at the university. Food was so scarce that a guaranteed weekly supply of fresh fish was enough to serve as a bribe in this situation. Veterans and people persecuted by the Nazis had rightful priorities for acceptance at universities, and it appeared that it would be nearly impossible for me to get accepted at my age without help. I am not sure how much the bribe helped, because coincidentally a new currency was introduced in Germany in June of 1948, and this event forced many students to discontinue their studies, making room for newcomers like me. On March 8, 1948, my class sat for the *Abitur*. I

was lucky I did not have to take the oral examination, because I already had clearly passing grades.

The students in my class celebrated the end of the school year and our graduation from high school with a wild party at a restaurant. Each of us brought an alcoholic beverage and invited a girl. There was dancing to music by Glen Miller and Louis Armstrong and a lot of drinking. Parties like this were well known among the girls, who were anxious and happy to be invited. The annual parties continued for many years, but as people moved away from Oldenburg and as they had their own families, the enthusiasm for them slowly died out. The friendships among the classmates, however, remained forever. It is quite unusual for a class to stay so close together. After my retirement from Mayo, when Bärbel and I lived in Oldenburg during the summer months, about eight of the original 16 classmates met every week.

Medical Student, 1948-1953

University of Kiel

The *Währungsreform* in June of 1948 voided the Reichsmark currency and introduced the new Deutschmark currency. The new currency had been printed in the United States, and the date of its introduction was kept secret and came as a surprise to most of us. On a Sunday, with every business closed, every German regardless of age received 40 *Deutschmark*. The *Reichsmark* was no longer a valid currency, and bank accounts denominated in *Reichsmark* were frozen. The change altered life dramatically. Suddenly one could buy goods for money. The black-market died. Shirking from work was over, and people looked for work so they could buy things. Many matriculated students were unable to finance their studies and left universities, and positions opened for new students. One day before the *Währungsreform*, I was notified by the University of Kiel that I had been accepted into the dentistry program. I immediately traveled to Kiel with a ticket paid for in *Reichsmark* that was valid until midnight, but the train did not make it all the way to Kiel by midnight. I spent my first *Deutschmark* to purchase a ticket for the remainder of the trip. In Kiel, I stayed with my relatives, so I had no further expenses. The next day I matriculated at the university, paid tuition for the first semester in *Deutschmark*, and traveled back home. Without attending any classes, I had finished the first semester for less than 40 *Deutschmark*, or 10 US dollars.

In November of 1948, I went back to Kiel for the second semester. The first thing I did was to switch from dentistry to medicine. With the help of my uncle Louis, my father's brother, I was able to rent a

room, which I shared with a civil servant in the office of internal revenue. As a student, my life changed. I was now 19 years old; I had survived the war and the chaotic postwar times; I was a medical student; and I was responsible for myself.

Many institutions and hospitals of the university and about 70% of the buildings in Kiel had been destroyed or badly damaged during the war. Classes of preclinical medicine were held in a former torpedo factory. The lecture rooms were small and did not have enough seats for all of the students, so we often had to stand during lectures. Textbooks were not available, and a library did not exist. The course in medicine included daily lectures in anatomy, physiology, and biochemistry and two lectures per week in physics, chemistry, botany, and zoology. The lectures were held by the professors, and most of them were excellent teachers.

With the introduction of the *Deutschmark*, living conditions in Germany improved steadily. Soon food was no longer rationed. In 1949, my uncle Bruno and aunt Ludmila moved to an apartment, and they had a room for me. It was convenient and a pleasure to stay with them. Bruno died soon after, but Ludmila and I stayed in touch until her death. One day Ludmila tragically misunderstood a telephone message from my cousin Ilse, who was living in Kiel. Ilse asked to speak to Uncle Bruno, but he was not at home, so she told Ludmila that "Uncle Max" had died. She did not explain that she was referring to Max Stern, the foster child of Adolf Rehder, Sr., whom Ludmila did not know. Ludmila erroneously assumed that it was my father Max who had died. I will let her tell the tragicomic story in her own words:

It happened on Sunday the 22. of January. The day dawned as is usual for Sundays in Kiel, foggy and cheerless, with a suggestion of rain in the air. My husband had made arrangements with a pair of his buddies, for a cross country tramp. After breakfast Bruno asked me if I would mind taking him and his friends as far as Elmschenhagen, by car. Being an obliging soul, I promptly put on my coat and we all went down to our garage. Sitting at the wheel I began to roll out our "Louise" to the tune of instructions from my husband, as how a car must be handled. Nothing irritates an experienced driver like myself, as to be told how to manipulate the gears. I thought I would play a little joke on my lord and master, so keeping my foot on the brake I let the car roll, so that she was nearly flattened against the wall, and at the crucial moment I stopped the car. This must have had a beneficial effect on Bruno, for henceforth he became very meek and never once addressed me for the length of the trip. Having deposited the passengers at a god forsaken spot I started homeward. The visibility was not too good, it started to drizzle. I took it easy, driving slowly when I heard some car behind, honking furiously, wishing to overtake me. Politely I side stepped with 'Louise' to let the impatient gentleman in the black coupe pass me and saw him again five minutes later with a crowd around his car and a body underneath a twisted bicycle draped gracefully the car wheels. One look was all that I could endure being averse to parting so violently with my special Sunday breakfast of ham and eggs, I ducked back into the car and proceeded at a pace that any self-respecting snail could have overtaken me.

The news of the accident was in the papers the next day. Arriving home with a sigh of relief, I related my gruesome experience to my children, Vicky and Rudolf, my nephew Kai and his friend Ernst. Kai studies medicine in Kiel, his parents live in Oldenburg i. O. where his father has his practice being a dental surgeon. Max is the youngest brother of my husband. Ernst is also from the same town and is ambitious to specialize himself in tropical diseases. Leaving the youngsters to amuse themselves I removed myself to the kitchen to prepare the midday meal. The radio

was going full blast and at short intervals I could hear the roar of laughter. Hearing laughter in the house put me always in a pleasant frame of mind. I was just meditating how nice it is to be young and carefree, when one can laugh at the flattest of jokes, when the phone rang. On the other end of the line was Ilse, the daughter of my husband's other brother Louis, who resides in Kiel. Ilse sounded a bit excited, she said she had unpleasant news, they received a telegram stating that Uncle Max is dead and the funeral takes place within three days. I asked how he died so suddenly. Ilse did not know, was it sickness or a heart attack, the telegram was short. I inquired if they were going to the funeral, to which I received a negative answer. Thanking Ilse for calling me up, I just stood there holding on to the telephone and listening to the talk and laughter of my kids, and the melody of the Blue Danube waltz which came floating over the radio. Who was going to bring the news to Kai, I could not bring myself to face him and say that his father is dead. On the other hand, I could not wait until Bruno came back as obviously Kai's place is by his mother's side, and the only train to Bremen was leaving in an hour's time. Beckoning Ernst out into the kitchen I told him the message I received. He was shocked and turned quite green but agreed with me that Kai must go home immediately. Loathing the task before him Ernst went to Kai and delivered the sad news. A couple minutes later I went in to console Kai and shocked to see how badly he was hit. He just went to pieces, Kai and his father were great friends, more like brothers than parent and son. I spoke a few words of sympathy to Kai but he just stared at me vacantly. In this condition the boy could not travel alone, so I decided to accompany him. Changing quickly, we had just enough time to catch the Bremen express. Ernst took us to the station, I requested him to stay at our place and let my husband know what had happened as soon as he came back from his walk. That it would be a blow for Bruno, I knew my husband.

The trip to Oldenburg was awful, it was something I will not forget in a hurry and would not want to go through again. It seemed endless, just sitting there in the

wagon watching Kai was decidedly unnerving. He sat with his head in his hands and never said a word during the whole trip. Six hours can drag on for ages, especially, when thoughts are morbid and numerous. Kai's future was battering me, naturally he would have to give up his studies and start providing means of livelihood for himself and his mother, and twenty-one is a tender age for such responsibilities. The last lap of the journey was the worse.

In Bremen we had to change trains. The Oldenburg train was a contraption to run the nerves, it rattled for five minutes and stopped for ten. It was nine o'clock when at last we arrived in Oldenburg. I looked around for a florist to buy a wreath or some flowers but seeing none decided that tomorrow will have to do. Walking the short distance to the house our feet dragged and the nearer we came the slower we walked. Arriving at the house, I braced myself for a shock and Kai rang the bell. I got a shock alright but not the one I expected.

The door opened. I took one step forward and froze. There standing in front of me, with a devilish grin on his face was the corpse himself, our uncle Max, very much alive and kicking. I glanced at Kai, but he turned into a pillar of salt and suddenly feeling weak around the knees I leaned against the wall. Was it hallucination or did I go crazy, no coherent thought seemed to exist in my brain. How long Kai and I stood there like stone images I do not know, but his parents seemed to enjoy the sight, for they were laughing and dancing around us. Gradually we became alive and asked in no dulcet tones for the meaning of this joke. Having amused themselves to their heart's content, Max and Rosa condescended to explain the misunderstanding. In the meantime, my husband had phoned Rosa to offer his condolences and to inform her that Kai and I were on our way. This dialogue on the long distance would have given me a lot of amusement were I present. Rosa could not make out what my husband was talking about after innumerable who, what and when's. Bruno lost his patience and shouted" Your husband, my brother, Kai's father is dead, do you hear me, dead". "No" Rosa answered "he went to a soccer

game". Then suddenly she became nervous, time enough, he went to a soccer game, but that was two and a half hours ago, a lot can happen in a shorter space of time. She was a relieved woman when she saw Max coming in five minutes later and promptly informed him that he was a corpse. Looking dumbfounded Max felt Rosa's pulse to see if she was in a fever, while Rosa poured out the tale of his demise. Without loss of time Louis was got on the phone and the truth came to light. In Sweden there lived a distant cousin of the family, in deference to his advanced age and white hair he was called uncle Max. It is time that I met the courteous old gentleman with a sense of humor, soon after we returned to Germany, when he was on a visit in Kiel. But with my apologies to this departed Soul, I forgot about his existence, having seen him only once in my life, and it never occurred to me once that Ilse had referred to this other uncle Max.

Oldenburg is an old fashioned small provincial town where the people live in glass houses. Max being quite well known, such unusual occurrence as having a living corpse amongst them, spread around town like wildfire. It did not take long before the doorbell started ringing and in came an old friend of the family with a top hat, black tie and an X'mas wreath. He wanted to have a drink with the corpse. During the afternoon when we were still in the train, Max wanting to spare Kai's and mine feelings and being under the impression that we were travelling by car, put the police force on their feet, with instructions to stop a sky-blue Ford car and to inform the occupants that a misunderstanding had occurred. On the other hand, my husband was sending telegrams to all stations where the train stopped. Unfortunately, none of the messages reached us or we were too engrossed in our own thoughts to pay much attention what was going on around us. The Monday in Oldenburg was hectic. Max had more patients than he could cope with. If the doorbell was not ringing then surely the phone rang. It was early in the morning, that eventually I went to bed, with my mind firmly made up to make my tracks home the next day. I even gave up the idea to break my journey in Hamburg for a show. Having had

next to no sleep for the last two nights and plenty of excitement I thought it high time to come back to the serenity of my home, my loving husband and my children.

Accordingly, Kai and I arrived the next day in Kiel to find ourselves objects of discussions among our friends and acquaintances."

During the two years I was in Kiel, I frequently visited my uncle Louis, aunt Grete, and cousin Ilse at their house in Lerchenstrase 17. We had dinner together and played cards. After five semesters I was qualified for the preclinical examination, the *Physikum*. At German universities there are no examinations during the first five semesters. Student attendance at lectures is not monitored; students are assumed to be mature and responsible enough to attend. They are also expected to attend lectures in other specialties. The *Physikum* consists of oral examinations in anatomy, histology, embryology, physiology, biochemistry, zoology, botany, chemistry, and physics. Examinations are spread out over several weeks, with about two examinations per week for each candidate. They are given by the professors and last an average of 30 minutes for each student. Male and female students wear formal suits for them.

University of Freiburg

It is not unusual for students in Germany to transfer from one university to another, henceforth having the benefit of lectures from other professors. After passing the *Physikum* in Kiel, I matriculated at the University of Freiburg in the Black Forest for the clinical section, which lasted for six semesters. I studied for five semesters in Freiburg and one in Innsbruck, Austria. In Freiburg I particularly liked classes in internal medicine, presented by Professor Heilmeyer, a hematologist. He emphasized the relevant pathologic physiology of diseases and

tried to teach students to think and understand rather than just memorize. Also, lectures in surgery and the specialty of ear, nose, and throat were of great interest to me.

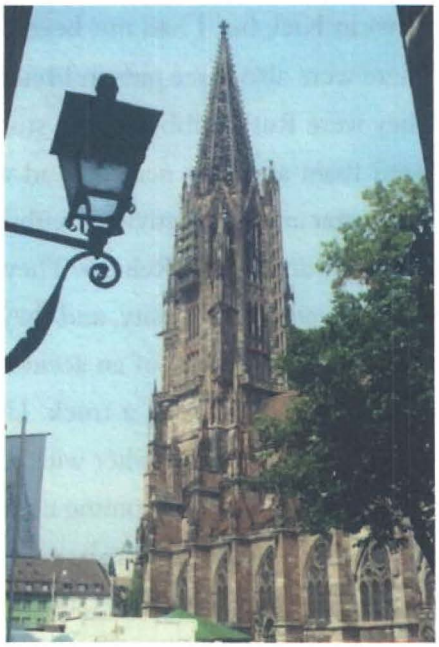
Hiking in the Black Forest

My favorite picture of Bärbel

Two of my former classmates from high school, Hans Rau and Ernst Ammermann, joined me in Freiburg. I had been together with Ernst in Kiel, but I had not been particularly close with Hans before. There were also three girls in Freiburg who we knew from Oldenburg. They were Ruth Lűbbers, who studied history and anglistics. She suffered from anorexia nervosa and was not interested in taking part in any extracurricular activities with us. The other two girls were Hille Dettmers and Bärbel Reiners. They were friends; both studied physical medicine at the university, and they roomed together. Hille was physically disabled because of an accident; she had crossed a street without looking and was hit by a truck. Unfortunately, her injured leg never healed properly and left her with a permanent limp. The disability did not prevent Hille from joining us in whatever we did except for biking and hiking. Bärbel, the same age as Hille, also participated in many of our extracurricular activities, including drinking wine, biking, and hiking. Bärbel and I liked to hike in the Black Forest. We had a very good time together.

By 1950, living conditions in Germany had greatly improved. Life was approaching normal. The reconstruction of damaged houses had just begun, however, it was still very difficult to find a room to rent. It was at this time that Bärbel came to Freiburg to look for a place to rent for herself and her friend Hille. During her visit, I met her at Ruth's place. I asked Bärbel to join me on a bike trip to the beautiful wine country, *Markgräflerland,* about 25 km south of Freiburg. She accepted. The sun was shining, and it was a beautiful crisp spring day. We stopped at Staufen, a small city known for its food, wine, and a ruin of a castle destroyed by the Swedes during the Thirty Years War. We

biked slowly and comfortably through the vineyards and enjoyed ourselves. On this outing, Bärbel and I got to know each other, and our relationship began to develop. It continued to grow and ultimately ended in marriage. We have many common interests, and we both enjoy physical activities such as biking, hiking, skiing, and swimming. It feels as if a magnet is pulling and keeping us together.



Freiburger Műnster

Hans, Hille, Bärbel, and I enjoyed our freedom in Freiburg. We had no worries. We met often at Oberkirch's Weinstuben on the market square in the center of Freiburg and at the foot of the beautiful gothic Freiburger Műnster. Oberkirch's Weinstuben was only one of a few houses on the market square surrounding the Freiburger Műnster, which had been spared from destruction by bombs. Drinking wine was new to us northern Germans, whose favorite drink had always been beer. The wine in Freiburg was excellent and reasonably priced, so we students could afford it.

My friend Hans and I hitchhiked from Freiburg to Paris and back. When we first arrived in Paris, we rented a cheap hotel room and then set off to explore. We walked the Champs Elysée from the Place de la Concorde to the Arc de Triomphe. We admired the Eiffel Tower. We

visited one of the historic landmarks of Paris, the Musée du Louvre. It is so big that all I remember is the *Mona Lisa* by Leonardo da Vinci and some pictures by Rembrandt and Rubens. I was most impressed by the Musée Jeu de Paume, with many exquisite pictures by Cezanne, van Gogh, Renoir, Degas, Monet, Manet, and Gauguin. It was an unbelievable collection of art, and what a fantastic experience for a young man!

Skiing in Austria as a medical student

We went to Versailles and were awed by the Hall of Mirrors. Bismarck chose the Hall of Mirrors as the site for declaring the King of Prussia, Wilhelm I, Emperor of Germany after the defeat of France in the Franco-Prussian War of 1870–1871. The choice was an act of revenge on the part of Bismarck because the pictures on the hall's ceiling and walls depict the conquest of German territory by France. In 1919, as an act of re-revenge, the French Prime Minister Clemenceau chose the Hall of Mirrors as the site for dismantling the German Empire. It was also the spot where Germany had signed the Versailles Peace Treaty in 1919. What an historic place.

In the evenings we enjoyed spending time at the Café du Dome in Montparnasse, sipping coffee and watching people. When Hans and I returned to Freiburg, we both had lost many pounds, but we had seen and learned a lot, admittedly a lot unrelated to medicine. In my opinion, students should use opportunities to widen their horizons; they do

not need a lot of money to do this. Seeing other countries, hearing people converse in foreign languages, and seeing people happy or unhappy all contribute to forming and developing a young person's character. Do not spend all your time preparing for a profession. *Universitas* means the whole world or universe. At a university one can study the whole universe. Sure, we could have learned more about medicine by attending all of our classes, but there was still a lot of time left for this. Our parents, being academicians, understood this and supported us.

Painters by the Seine

University of Innsbruck

In 1951, Hans Rau and I both matriculated at the University of Innsbruck in Austria. We chose Innsbruck because we wanted to bike from there to Italy. We arrived early and purchased the necessary equipment for the trip, including a U.S. army tent where we slept.

View from Notre Dame

We had little money but lots of enthusiasm for our trip. We saw beautiful landscapes, met many interesting Italians, learned about Roman history, admired many churches, including St. Peter's in Rome, visited the Vatican, and learned to speak some Italian. We enjoyed the beauty of Lake Como and were amazed by Venice, with its unique canals and gondolas. The great art museums and their treasures in Florence and Rome were fantastic and were worth the trip by bike of more than 1,000 miles. We biked to the papal palace in Castel Gandolfo and saw the pope. One of many highlights was the breathtaking beauty of the island of Capri, surrounded by the unbelievably blue Mediterranean Sea. We enjoyed ourselves so much and were so fascinated by the country and all we saw and learned that we forgot that our budget was limited. We ran out of money and had to telegraph our parents for financial help. Thank God they understood and helped us.

Biking in Italy. Mount Vesuvius is in the background.

We returned to Innsbruck in time for the winter semester. Changing universities provides the advantage of different teachers. In Innsbruck, classes in pharmacology and surgery were the most interesting ones, and we attended them regularly. The pharmacologist was the famous Professor Jarisch, who identified the Jarisch-Bezold reflex, a triad of hypotension, bradycardia, and vasodilatation. Jarisch, a scientist, had the rare talent of involving students in his thinking. Another teacher, Burkhard Breitner, a surgeon, had been an actor before he switched to medicine, and it showed. His lectures were exciting.

Innsbruck is surrounded by the high mountains of the Alps, which offer unique skiing facilities (the Winter Olympic Games were held in Innsbruck in 1964). We did not ski a lot, because the terrain was too difficult for us beginners. While skiing down the Hafelekar Mountain to Innsbruck, Hans fell and broke his tibia. He decided to return to Oldenburg and asked me to get the professors to sign his *Studienbuch*, which would prove that he had attended all of his mandatory classes. This is necessary for acceptance to take the State Board Examination.

I lost Hans's *Studienbuch.* When he applied in Innsbruck for a copy, he was turned down and advised that a copy could only be issued with permission from the dean. Unfortunately, the dean had transferred to Vienna. To get his permission, Hans and I biked from Freiburg to Vienna and begged the dean to issue a copy of the *Studienbuch.* We were successful and returned in great spirits to Freiburg.

Return to University of Freiburg

After returning from Innsbruck to Freiburg, I had about a year left to prepare for the State Board Examination. I studied all day, leaving little time for extracurricular activities. By this time, Bärbel and I had been together for about 1½ years. Whenever her schedule allowed, she visited me and read while lying quietly on the couch while I was studying. Like the *Physikum,* the State Board Examination is an oral examination. Groups of four students are examined together for two hours. Female and male students wear formal suits for every examination. The oral examinations are spread out over a period of about two months, which means one has about one to two examinations per week.

Unlike in many other countries, in Germany one must submit a thesis to obtain an MD degree. The subject can be either a laboratory study or a review of the literature on a certain subject; this usually takes about a half year. I worked in the hematology laboratory of the University Pediatric Hospital, and my sponsor was Professor Betke. The subject of my thesis was the osmotic resistance of erythrocytes. The results were published in a peer-reviewed journal. Theoretically, the MD thesis prepares a student for the critical study of a circumscribed project. It does not actually accomplish this goal, however, because most of the time there is little to no supervision or guidance.

While I was working in the laboratory one day, I heard a lot of commotion in the laboratory next door. Female medical technicians were laughing loudly and applauding and there was a lot of talking. I was unable to understand the subject of the discussion and decided to investigate.

A former student who had worked on his MD thesis in the laboratory had returned from a trip to the United States. He had worked in New Jersey as an intern and was reporting on his experiences. He told me that Dr. Read, a radiologist from Ventnor City, New Jersey, was offering a program allowing young German physicians to work for one year as interns in the United States. Dr. Read would even pay for a round-trip passage on the Holland-America Line. I was interested and inquired about how to apply for this program. The young doctor told me how to check with the dean's office to get application forms and submit them to Dr. Read. Not believing I would have even a ghost of a chance, I applied and then forgot about it. I was flabbergasted when I found out a few months later that I had been accepted. I was assigned to the Jeanes Hospital in Philadelphia.

Bärbel was not very enthused when I told her that I would soon be leaving to spend one year in the United States as an intern. We both agreed, however, that it was not a bad idea to separate for a year in order to test the sincerity of our relationship. I was particularly interested in doing this because in my parents' marriage, problems had developed during the long absence of my father during the war.

The time as a medical student in Freiburg was probably one of the better times of my life. It was peacetime and I was taking interesting classes, had no worries, knew nice girls, had a good friend, and could travel. What else does one need? We were lucky that our parents were

able to support us generously. We saw a lot of the most beautiful surroundings of Freiburg, skied in the Black Forest, and enjoyed many interesting classes. We had no interest in any kind of national or international politics.

Intern, Jeanes Hospital, 1954-1955

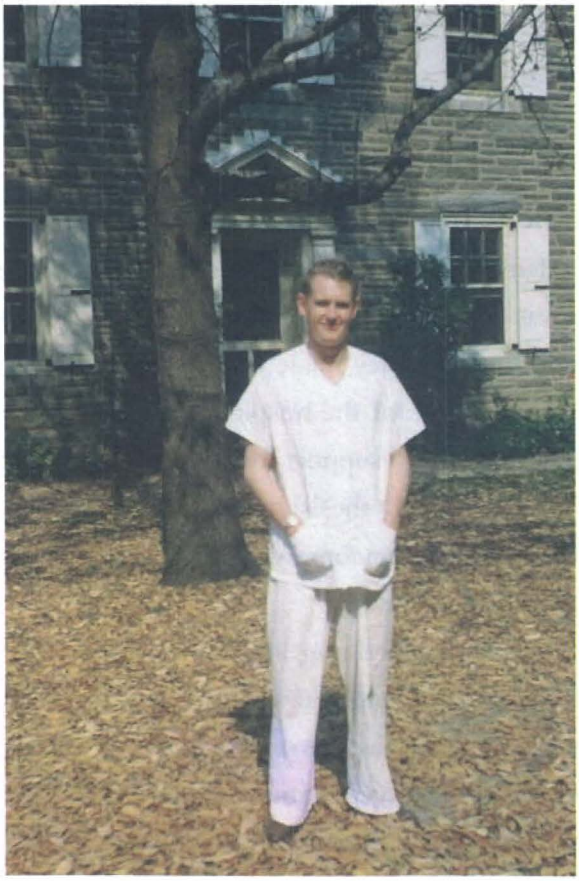
The Read Program

I began my training as an intern at the University Pediatric Hospital in Freiburg, and this allowed me to complete the thesis for my MD in my spare time. Unfortunately, this was a waste of time, and I learned nothing. Nobody demonstrated anything or explained anything. All I was asked to do was to test patients' urine in the ward. Interns did this laboratory work because they made less money than medical technicians; it was a good deal for the hospital but a bad one for interns. I continued to need financial support from home even though I worked full time. I finished the MD thesis on the osmotic resistance of erythrocytes. The other good outcome was that I learned about and was accepted by the Read Program.

I resigned from the Freiburg internship program early and prepared for the trip to the United States. Dr. Read made all the arrangements, including booking passage on the *Maasdam*, a 10,000-ton ship, for the 10-day trip. Bärbel accompanied me to Rotterdam, where I was to board. The weather was perfect as the ship crossed the Atlantic, and I met lots of interesting people on board. I had fun on the trip and was awed by the luxuriousness of the dining hall and the outstanding food.

We docked in Hoboken, New Jersey. After passing through customs, I was met by Dr. Helmut Tauber, a German intern with the Read Program working at the Jeanes Hospital. He drove an old green Dodge, and I had my first big surprise when I learned he owned the car. He predicted that I would soon own a used car, too. In Germany,

I was happy to own a bicycle and did not even dream of ever owning a car.



Jeanes Hospital, Philadelphia

We drove through Trenton, New Jersey, to get to Philadelphia. The immense traffic, glowing neon advertising signs, and constant loud noises everywhere were awesome. Everything was bigger and louder than anything I had experienced. It was breathtaking, and I

pinched myself to see whether I was dreaming. It was obvious I had arrived in a prosperous country bursting with activity, wealth, and enthusiasm. What a difference from the bombed-out old country.

At the Jeanes Hospital I learned how to examine and deal with patients, things I should have learned in Freiburg. Most of the consultants at Jeanes cared about the interns and our education and were supportive and helpful. Interns did not just provide cheap labor. I also learned about medical specialties of which I had not been aware, such as anesthesiology, urology, and radiology.

Dr. Cristoll, a urologist, spoke highly of the Mayo Clinic, where he had trained. I learned a lot from him and I liked the way he approached medical problems. After I got to know him a little better, I asked him about my chances of being accepted for a fellowship at the Mayo Clinic. He asked, "Are you seriously considering going to Mayo?" and after my confirmation, he called and arranged for an interview for me.

A surgeon at Jeanes, Dr. Paul Grotzinger, the son of a German immigrant, spoke German and helped us German interns in overcoming the language barrier. When I was on call one night, I assisted him during an operation for an aortic aneurysm, which was an exciting experience for me. I had never heard of an aortic aneurysm. The anesthesia was provided by Dr. Samuel Blanck, who had completed a 6-week course in anesthesiology during WW II with Dr. Lundy at the Mayo Clinic. The more I saw of the practice of medicine in the United States, the more convinced I became that the German medical practice had fallen far behind during the last few decades. I began to consider practicing medicine in the United States.

My responsibilities at the hospital included physical examinations of newly admitted patients and patients in the busy emergency room, writing admission and dismissal notes, changing dressings, starting intravenous infusions and blood transfusions, and assisting during surgery. We were housed on the campus, and each of us was given his own room. Female employees were on the top floor and males on the bottom floor. We shared the TV room. Watching TV was an easy way of learning English because one saw the action and heard the language simultaneously. The hospital provided room and board, and we received a salary large enough for me to buy an old 1946 Buick and travel throughout the country.

Dr. and Mrs. Read were proud of the success of their exchange program. We were happy and learned a lot. The Reads had no children and treated us as their foster children. We were invited to a chamber music concert at the residence of a Philadelphia radiologist given by professionals from the Philadelphia Symphony Orchestra together with expert amateurs. What a treat! We were invited to a concert by the Philadelphia Symphony Orchestra conducted by Eugene Ormandy, an Austrian Jew who fled from the Nazis. He received us after the concert in his private room. The Reads invited us to a reading by Pearl S. Buck, who had won the Nobel Prize for Literature. Who could have asked for more? We often went to New York City to explore and visit nightclubs. The staff surgeons invited us to Atlantic City for deep sea fishing with lots of beer, and the nurses introduced us to American pizza.

Compare this treatment of German interns in a foreign country after the war with the treatment I received at the University Pediatric Hospital in Freiburg. This difference was the underlying reason why

many young physicians left Germany. The Germans should not have complained about a brain drain but should have corrected their problems. It was a mistake to emphasize reconstruction while virtually neglecting the rebuilding of research and education. Germany should have supported the young academic generation. Germany had lost the Jewish intelligentsia, including Albert Einstein, and the German scientists who were relocated by the Allies after the war, including Werner von Braun and his team. Soon many young academicians left Germany because of the lack of opportunities and adequate facilities. Research and education lead to innovations and jobs. Under the current system, professors at university hospitals are responsible for the education of residents, students, and paramedical personnel; for research; for the administration of their institutions; and for clinical care. No person can do justice to such a burden. It is time to reform the system. Maybe things have changed somewhat since I left Germany.

Touring the United States

Another Read intern, Peter Ritzenfeld, his fiancé, Ruth Wackerle, an immigrant from Austria, and I planned a trip together through the United States, including a stop in Rochester, Minnesota, for an interview at the Mayo Clinic. Our geographic knowledge of the country was less than optimal, and we relied heavily on suggestions from colleagues who had taken similar trips. We wanted to see many National Parks. We prepared the route carefully and had a trustworthy mechanic check the car and its tires. He advised us not to travel faster than 50 miles per hour. We bought a Coleman stove, stocked up on Kodachrome film, and purchased three hammocks at a U.S. army surplus store. All three of us had driver's licenses, so we could take turns behind the wheel.

We departed immediately after completing the internship. The first destination was Niagara Falls. We had no idea what to expect and we were not disappointed. The scenic overlook was breathtaking. The falls have a large vertical drop; so many gallons of water plunge over the falls every second, producing a tremendous spray of mist. The falls provide a huge source of hydroelectric power for both Canada and the United States. I took a lot of pictures, probably more than I should have. Peter and Ruth, the fiancés, did not use the opportunity to get married.

From Niagara Falls we headed to Rochester, Minnesota. In 1955, it was still a small town with a population of only 25.000. It originated as a stagecoach stop between St. Paul and Dubuque, Iowa. When a severe tornado hit Rochester in 1863, Dr. Worrall Mayo, his sons William and Charles, and the sisters of the St. Francis Cloister cared for the many injured people. On our first night, Peter, Ruth, and I camped in the vicinity of La Crosse on the Mississippi River for a good night's sleep. After a refreshing swim in the river, we drove to Rochester for the interviews. I was interviewed by Dr. Drew Miller, a pulmonologist. He asked how I had been selected for the Read Exchange Program, perhaps thinking that the selection was a distinction. Dr. Miller was friendly, and I was comfortable during the entire interview.

From Rochester, we went to the Badlands National Park in South Dakota; it is a wilderness area that boasts sharply eroded pinnacles. From there we drove to Mount Rushmore National Monument, on which the enormous faces of four presidents, Washington, Jefferson, Lincoln, and Roosevelt, have been carved, representing the birth, growth, development, and preservation, respectively, of the United States. The monument is gigantic but not a work of art. Many Native

Americans were tragically killed nearby in the bloody Wounded Knee Massacre. The U.S. government had promised this territory to the Sioux Indians, but when gold was discovered there, white people rushed in and despite the government's promise, the Sioux had to relinquish their land.

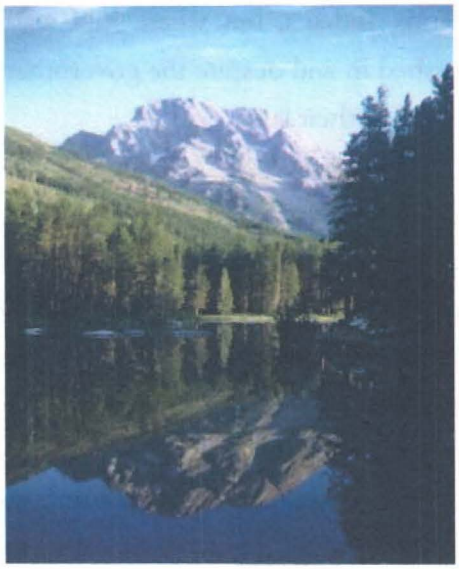
Our next stop was Yellowstone National Park, which was not nearly as crowded as it is today. We visited Old Faithful, a geyser that erupts faithfully every hour. The volcanic geothermic terrain of the park has generated many geysers and hot springs. Algae accustomed to hot temperatures grow in the water in many colors, depending on the water temperature. One can estimate the temperature of the water by its color.

Bear begging for food in Yellowstone Park

The abundant wildlife at Yellowstone, including herds of elks, bison, moose, and bighorn sheep, is beyond description. The highlight for us, however, was the black bears, who sat on both sides of the road and begged for food. Tourists fed them from their cars. The bears also came frequently at night to the park's campgrounds, looking for food. We camped at the Bridge Bay Campground, which had a beautiful view of Yellowstone Lake. It was the first time in our lives we had seen chipmunks. They were small, skittish, and curious, and some were so tame they could be fed by the tourists.

From Yellowstone we drove to Grand Teton National Park. Ruth cried on seeing the beautiful snow-covered mountains because she was

from Austria and seeing them made her homesick. Grand Teton, with its pristine lakes, was one of the most beautiful National Parks we visited. Sleeping in a hammock and waking up early in the morning when the sun was rising and looking at the lake was like being in paradise. The surface of the lake was as smooth as a mirror. On the color slides I took one can hardly tell which side is up or down.



Grand Teton National Park

From Grand Teton, our route took us through Idaho to the State of Washington, Seattle, and Mount Rainier National Park. In Seattle we saw the Pacific Ocean for the first time. I thought back to what my father had prophesied ten years earlier, that I would never have enough food or own a house. Here I was on the coast of the Pacific Ocean about 10,000 miles away from Germany in my own car and not hungry. Who would have thought in 1945 that this would ever happen to me?

We did not spend much time in Seattle because we were curious to see Mount Rainier. What a wonder of nature! Mount Rainier's rich volcanic soil causes its beautiful meadows of abundant wildflowers to bloom in many stunning colors. I particularly liked the Indian paintbrush, which was a brilliant red. We could not stay as long as we

wanted and had to move on. We wanted to see more, but we had a limited budget and limited time.

In Oregon we stopped at Crater Lake National Park. As the name suggests, the lake is in the cauldron of a collapsed volcano. We rented a boat and went to Wizard Island in the lake. I must admit I felt a little scared when I looked down at the clear, dark-blue water and realized how deep the lake actually was.

From Crater Lake our way led to San Francisco, the only city we visited for any length of time. We were guests of Peter's friends, and this made exploration of the city much easier. We drove through the Presidio to the Golden Gate Bridge, one of the Wonders of the World. On crossing the bridge, we enjoyed the view of San Francisco Bay. We visited Sausalito and saw Alcatraz Island with its infamous penitentiary, where gangsters such as Al Capone were kept. The day in Sausalito was very pleasant. The next day we explored Fisherman's Wharf and saw sea lions.

Unfortunately, we had to continue on even though we realized that we had only seen the "tip of the iceberg" in San Francisco. On many later revisits with Bärbel, we both enjoyed the city more and more. It has so much to offer.

After having gone as far west as possible, we turned east and headed toward Grand Canyon National Park in Arizona. This part of the trip was uneventful and the car continued to function well, except it was using a lot of oil. When we stopped for gas we ordered the clerk to "please check the oil and fill up the gas." The Grand Canyon was impressive for its sheer size and depth. The vista from the South Rim was overwhelming; we could see the huge gorge carved by the Colorado River through rock that had once formed a plateau. The canyon is so

deep that from the rim, one can hardly see the Colorado River coursing along the canyon floor. It is a true Wonder of the World, with its many layers of multicolored rocks.

From Grand Canyon National Park, Peter, Ruth, and I crossed the Continental Divide into New Mexico and from there went on to Texas. By this time, the car had decided it had enough. It developed a strange noise, and we were told it would be unsafe to continue our trip in it. In Amarillo I sold the car to a junk dealer for $35.00, which I promptly invested in a Greyhound bus ticket to Philadelphia.

In summary, we had a fantastic trip and saw more of the United States than most Americans have probably ever seen. We saw many Wonders of the World with a beauty beyond description.

In Philadelphia, a large number of colored slides awaited us. We had to describe the trip and show the slides to our friends. My time in the United States had come to an end, and I had to prepare for the return trip to Europe. I changed reservations from the Holland-America Line to the Italian Line because I wanted to visit Spain and France on the way home. I boarded the Italian ship in Hoboken and disembarked in Algeciras, Spain. My plan was to visit Granada, Madrid, and Paris.

Return to Europe

Algeciras is one of the largest ports in Europe and lies on the Bay of Gibraltar. I was not interested in spending time and money there, so I traveled to Granada. It is impossible to do justice to a city like Granada in a short visit. Its unique medieval architecture is awesome. This was the first time in my life that I had seen truly non-European architecture. I was impressed by the beauty of the Alhambra, the most interesting

site of Granada. It was the royal palace and a fortress for the Moors when they occupied southern Spain.

From Granada I went to Madrid to visit the Prado, one of the best art museums in the world, which exhibits many pictures by Spanish artists such as El Greco, Velasquez, and Goya. I did not have much money left, just enough to travel to Paris and from there to get home to Oldenburg. I just got a glimpse of Paris on this trip; it was enough to whet my appetite for more visits later.

In Oldenburg, I finally saw Bärbel again after more than a year. The poor girl was in bed with a protruded disc. I visited her regularly, and our parents began to understand that there was a serious relationship between the two of us. I also met frequently with my former classmates living in Oldenburg. The colored slides of my trip through the United States and of Granada, Madrid, and Paris were a sensation for them. They could not see and hear enough. One of them, Ernst Ammermann, joined the Read Program and later became a fellow in internal medicine at the Mayo Clinic.

Resident, Pharmacology, Freiburg, 1956-1957

I did not stay in Oldenburg long because I needed to get on with my training. While in Philadelphia I had applied for a research residency in the department of pharmacology in Freiburg. I chose Freiburg because I wanted to be close to Bärbel, and I chose pharmacology because I remembered the interesting lectures of Jarisch in Innsbruck. The morale at the Institute of Pharmacology was different than what I had experienced at the Pediatric University Hospital in Freiburg.

The chairman, Professor Janssen, was a role model: he was the heir of the Henkel family fortune, a bachelor, an admirer of classical music and art, and a scholar sincerely interested in research. He was an antifascist and appropriately was appointed the first postwar president of the University of Freiburg. His major research interest was the effect of drugs on coronary blood flow, and to study this subject, his team had designed and built a flowmeter. Blood flow from the proximal end of a divided coronary artery was diverted through the flowmeter and reinfused at the distal end. A small air bubble was injected into the bloodstream at the proximal end and vented at the distal end. The blood flow was determined from the speed at which the air bubble traveled and the diameter of the tube in the flowmeter. It was an accurate way of measuring blood flow, but it did have a major flaw in that it interrupted the innervation of the divided coronary artery.

Professor Schmidt was my mentor. Under his guidance I studied the effect of chemical solvents on the contractions of the intestinal smooth muscles of frogs. Drugs that are not water soluble need to be

dissolved in chemical solvents before they can be injected. The pharmacologic effects of some chemical solvents on smooth muscle contractions were unknown. I liked the work very much, and it resulted in a publication in a peer-reviewed journal.

While I was in Freiburg, Bärbel had accepted a job as a physical therapist in Badenweiler, a spa 25 km south of Freiburg. She enjoyed her work. We spent much of our free time together. She now owned a scooter, which allowed us to take longer trips around the Black Forest than we could have taken by bicycle. We were happy, but the time for marriage had not yet come. I was still unsure about the type of medical specialty I wanted to follow, and I needed to make a choice and begin training. We were both young enough to wait. I had been accepted at the Mayo Clinic in internal medicine. Bärbel and I agreed that I should accept the offer and go to Rochester. She would follow me in due time, and that worked out for us.

Fellow, Mayo Clinic, 1957-1961

My fellowship at the Mayo Clinic began on April 1, 1957. I did not have sufficient funds to pay for the travel to the United States, and I did not want to ask my parents for help. Before I left, I therefore accepted a position in Ütendorf, Switzerland, as a substitute for Dr. Wiesner, a family physician.

It was an interesting experience to take care of patients for the first time without supervision. I held regular office hours and made house calls. The experience gained at the Jeanes Hospital was invaluable. I stayed in Dr. Wiesner's house, and his wife took care of the household. My bedroom was on the ground floor. It was early spring and I slept with the window open. One night I woke up and saw a man trying to crawl through the open window. I quickly grabbed my shoes and threw them at him, and he got scared and left. This was an unpleasant and scary experience that I will never forget.

I made enough money in Switzerland to pay for the trip to the United States. I again chose the Holland-America Line and left from Rotterdam on the *Amsterdam,* a larger, more modern ship than the *Maasdam.* Bärbel accompanied me to Rotterdam and gave me a warm jacket that she had knitted herself as a farewell gift. I still wear it to this day.

I disembarked in Hoboken and traveled by train to Chicago, where I changed trains for Rochester, which still had train connections. Jűrgen Thomas, a German fellow in neurology who I did not know, was kind enough to meet me at the train station in Rochester. I stayed

with him at his apartment for a few days until I found a place to rent close to the Mayo Clinic.

Bärbel in Rochester during my fellowship years

During the first quarter at Mayo, I was assigned to the division of infectious diseases located in the 10-story-tall Mayo Building. I saw six patients per day, took complete medical histories, did complete physical examinations, including examination of all bodily openings, made presumptive diagnoses, and suggested appropriate tests. When I was finished with my work, a consultant again took the medical history and repeated the physical examination. Both the fellow and the consultant documented everything in writing. This is an excellent method of teaching. During lunch hours, lectures were presented by consultants

about interesting cases. The work was very satisfying, and I learned a lot.

I spent the second quarter in the division of hematology. During the third quarter I was assigned to the hospital service of the division of endocrinology. Here I saw many patients with interesting endocrine diseases, including diabetes mellitus. While we made rounds one day, I observed that many patients were smoking while waiting for their blood to be drawn for blood sugar determinations. I wondered how smoking might affect blood sugar levels and asked Dr. Randall Sprague about this. He was not sure and suggested that I study this, and since I liked laboratory work, I agreed. I spent the entire fourth quarter in the laboratory of Dr. Grace Roth from the department of physiology studying the effect of smoking on blood sugar levels. To my surprise, smoking had no measurable effect. The results were published in the journal *Circulation.*

Anesthesiology Training at the Mayo Clinic

After having completed one year in internal medicine, I switched to anesthesiology. I was interested in this specialty because of my work in the department of pharmacology at the University of Freiburg.

In the first year and a half of my training in anesthesiology I learned to administer general and local anesthesia for various surgical procedures. Then a dream came true: I was assigned to Dr. Richard Theye, who worked with the world-famous cardiac surgeon Dr. John Kirklin.

Dr. Theye worked every other day in the operating room, and on alternate days he worked in the research laboratory with Dr. Ward Fowler, a world-famous pulmonary physiologist. At one point in his

career, Dr. Theye had heard a presentation by Dr. Albert Faulconer, Jr., from the Mayo Clinic. He was fascinated and impressed by Dr. Faulconer and asked him if he could come to Mayo as a staff physician and work with him in research. Dr. Faulconer had done outstanding research related to clinical anesthesiology. Dr. Faulconer was now chairman of the department and had little or no time for research. He asked his friend Dr. Fowler to be Dr. Theye's mentor. He could not have asked for a better person. Dr. Fowler influenced the development of Dr. Theye and also of research in anesthesiology at the Mayo Clinic.

Dr. Fowler was a critical person, and only a few consultants stayed with him. His philosophy was that published data cannot be retracted and because every study produces results, one had to ask whether the published data and results were correct. Many instruments used in laboratories respond not only to the signal one wishes to measure but also to other signals that one does not wish to measure. For instance, the nitrogen meter I was using responded not only to nitrogen, but also to water vapor. I had to make appropriate corrections for the water vapor concentrations to obtain the correct nitrogen concentrations. One must also know about, and correct for, the response time of an instrument to determine the correct time relationships with other measured events. Dr. Fowler insisted that all measurements and calculations had to be double-checked by another independent person. We had no computers at that time.

Dr. Theye worked for four years with Dr. Fowler. He examined the validity of the concepts of physiologic dead space and right-to-left intrapulmonary shunting. With both of the lungs of anesthetized dogs being ventilated, he interrupted the blood flow to one lung by ligating

its pulmonary artery. Ventilation of the nonperfused lung is wasted because it cannot participate in gas exchange; it behaves like dead space. Dr. Theye demonstrated an appropriate increase of the calculated dead space.

In another group of anesthetized dogs, both lungs were perfused but one lung was not ventilated. The blood perfusing the nonventilated lung is wasted because it cannot eliminate carbon dioxide and cannot be oxygenated. The nonventilated but perfused lung behaves like blood shunted from the right heart to the left heart. Again, Dr. Theye demonstrated an appropriate increase in the calculated right-to-left intrapulmonary shunt. These studies confirmed the validity of the concepts of right-to-left intrapulmonary shunts and the physiologic dead space.

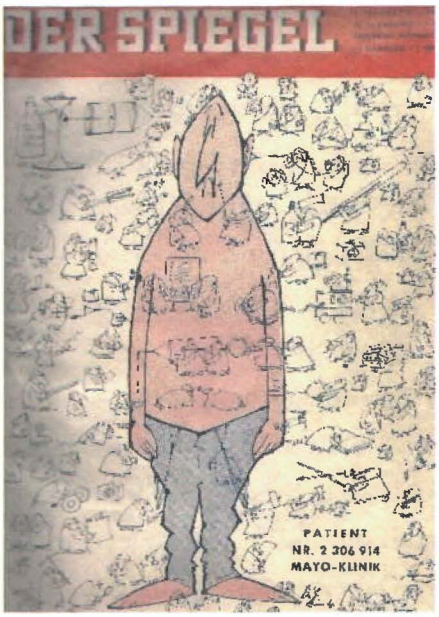
To the best of my knowledge, these were the first physiologic studies by a member of the department of anesthesiology at the Mayo Clinic. Dr. Theye presented the results of his study at the Laboratory and Research Committee Meeting at the Mayo Foundation House. During the discussion, he was asked by Dr. Charles Code, chairman of the department of physiology, how much carbon dioxide was eliminated from the exposed pleura of the thoracotomized dogs and how this would affect his calculations. Dr. Theye answered, "Fowler made me measure this even though I thought it was stupid. Two percent of the eliminated carbon dioxide occurred through the exposed pleura. Thus, it had little effect on my calculations." Dr. Code's question gained importance later on. The elimination of anesthetic gases from an exposed pleura can contribute significantly to the contamination of air in the operating theater.

After finishing my time in cardiac anesthesia, I had completed 1 and 3/4 years of clinical training in anesthesia. Two years of clinical anesthesia training were required for certification as a diplomate by the American Board of Anesthesiology, so I needed another three months.

I intended to return to Germany and paid no attention to achieving certification by the board. Dr. Theye convinced me that I was being foolish. There were not enough fellows in anesthesia to take night calls, and it had been suggested that consultants should participate in doing so. This made many consultants angry. Dr. Faulconer was under pressure because he was being blamed for not having recruited enough fellows. Just at this time, Dr. Faulconer was hospitalized with a protruded cervical disc. Dr. Theye suggested I should visit Dr. Faulconer in the hospital and offer to help him by taking night calls if he, in return, would certify that I had completed two years in clinical anesthesia. I did so, and Dr. Faulconer agreed to provide the certification.

My time in cardiac surgery with Drs. Theye and Kirklin was the highlight of my training in clinical anesthesia. Cardiac surgery was still in its infancy, and there were only two centers for it in the world, one at the University of Minnesota and the other at the Mayo Clinic. The cures by cardiac surgery were sensational. Many patients from Europe, including Germany, were sent to the Mayo Clinic to correct congenital lesions.

Dr. Kirklin was referred to in an article about the Mayo Clinic in *Der Spiegel*, a German weekly news magazine, as "the best surgeon of the best clinic." The galleries in the cardiac operating rooms at St. Marys Hospital were filled every day with surgeons from all over the world who wanted to observe Dr. Kirklin and the other two cardiac surgeons as they operated.



Title page of the issue of Der Spiegel with a report on the Mayo Clinic

Picture from the article in Der Spiegel

Anesthesia for Atrial Septal Defect Surgery

After I had gained experience in cardiac anesthesia, I was allowed to provide cardiac anesthesia for the first time without supervision for the correction of an atrial septal defect. I was excited to work with Dr. Kirklin, a disciplinarian and demanding surgeon.

In the presence of a defect in the wall between the atria (atrial septal defect), blood is shunted from the left atrium to the right atrium. In addition to its normal load, the right ventricle must pump the shunted blood, so there is extra stress on it. The increased blood flow through the pulmonary circulation increases the blood pressure in the pulmonary arteries, eventually resulting in a nonreversible thickening

of the artery walls. The pulmonary hypertension can lead to right ventricular failure, and that is why atrial septal defects should be closed.

At that time, an atrial septal defect was repaired at the Mayo Clinic by the atrial well technique. A heart–lung bypass machine was not used, because so much blood was necessary to prime it. Saving blood was important because there were not enough blood donors in Rochester. Every morning blood had to be flown in from Chicago to the Mayo Clinic.

With the atrial well technique, the cardiac surgeon first sewed a rubber well to the atrial wall. Then he made an incision through the wall of the atrium so that blood would rise in the atrial well. It was the responsibility of the anesthesiologist to prevent the blood level in the well from dropping and allowing air to enter the circulation. The anesthesiologist controlled the blood level in the atrial well by applying appropriate pressure to the airway. For a junior anesthesiologist, this was quite a responsibility. After Dr. Kirklin had repaired the atrial septal defect, he scrubbed out and left the operating room. Soon he returned to thank me for the anesthesia; this was the first and only time this ever happened to me.

On another occasion, Dr. Kirklin had difficulty in controlling bleeding after a bypass had been completed. He asked me, and not the cardiac fellow, to stay with his patient in the cardiac intensive care unit (CICU) until he had finished the next operation. He did this in the presence of Professor Zenker, chairman of the department of surgery at the University of Munich in Germany. Dr. Kirklin knew I was planning to return to Germany, and I think he was just trying to impress Prof. Zenker with how much he trusted me.

Anesthesia and Profound Hypothermia

Dr. Kirklin became interested in evaluating profound hypothermia. The method for doing this had been described by Dr. Charles Drew in the United Kingdom. It involved cooling the patient to 15°C using a left and right heart bypass. After the desired temperature had been reached, the bypass was discontinued for up to 30 minutes and the patient's blood was drained into the bypass machine. This provided a nearly bloodless operating field. After completing the surgery, the blood was reinfused, the flow reinstituted, and rewarming began.

Dr. Richard Lim and I evaluated and established the technique of profound hypothermia and circulatory arrest together with Kirklin in the laboratory. Using profound hypothermia, Dr. Kirklin and two neurosurgeons, Drs. Collin MacCarty and Alfred Uihlein, repaired cerebral aneurysms, which were difficult to repair without the threat of uncontrollable bleeding. The head and chest were opened concurrently and the patient cooled to 15°C. After exposure of the aneurysm, the blood flow was discontinued and the blood drained into the bypass machine. With a bloodless operating field, the aneurysm was then repaired. After the repair, the blood was reinfused, the left and right heart bypass was restarted, and the patient was rewarmed.

Anesthesia Researcher

After finishing the quarter in cardiac anesthesia, I worked for a year in Dr. Fowler's research laboratory. I had witnessed Dr. Theye's development as a researcher while working with Dr. Fowler, and I thought that this was the type of training I wanted. I was subjected to the same rigorous teaching, which prepared me well for my career in research.

I studied anesthetized, paralyzed, mechanically ventilated dogs lying either on their back or on their side to observe the distributions of inspired gas and pulmonary blood flow between the two lungs, first while the chest was intact and again after the chest was opened. This study was of clinical interest to anesthesiologists to help understand the underlying mechanisms of the impaired pulmonary gas exchange occurring in anesthetized subjects. The study was also of interest to pulmonary physiologists, who wanted to better understand the role of the respiratory muscles in inspired gas distribution by comparing the findings with those described for awake and spontaneously breathing subjects. The study and the exposure to the reasoning and thinking of Dr. Fowler introduced me to physiology. It took me many more years to make a more complete transition in my way of thinking. The cooperation with Drs. Robert Hyatt and Joseph Rodarte was helpful.

I divided airways of anesthetized dogs by introducing a tube allowing the separate ventilation and collection of expired gas from the two lungs. Two trained, very competent, motivated technicians helped me. One technician determined the concentrations of oxygen and carbon dioxide in expired gas and arterial and venous blood samples, and the other helped with surgery and gas collections.

The important new findings were that mechanical ventilation of the lungs of anesthetized and paralyzed dogs resulted in a different gas distribution between the two lungs than described for spontaneously breathing humans who were awake. During mechanical ventilation of the lungs, the upper or nondependent lung received a larger share of the inspired gas than the lower or dependent lung. This is in contrast to the gas distribution described for spontaneously breathing humans, where the lower or dependent lung receives a larger share of inspired

gas than the upper or nondependent lung. The difference is that during mechanical ventilation of the lungs of paralyzed dogs, relative impedances of the two hemithoraces determine the distribution of inspired gas between the two lungs. By contrast, during spontaneous breathing, the forces of the respiratory muscles, plus the relative impedances of the two hemithoraces, determine the gas distribution.

Importantly, the distribution of the pulmonary blood flow between the two lungs was similar in mechanical ventilation with muscle paralysis and in spontaneous breathing. The lower or dependent lung was still better perfused than the nondependent lung. The altered relationship between the gas and blood flow distribution between the two lungs during mechanical ventilation may impair the pulmonary gas exchange. Imagine the theoretical situation where one lung is not perfused but receives all of the inspired gas, while the other lung receives all of the blood flow but none of the inspired gas. In this theoretical case, the pulmonary gas exchange would be zero, but even so, the total perfusion and total ventilation would be normal. The results of this study motivated me to plan comparative studies between anesthetized-paralyzed and awake humans.

After I had carefully prepared a draft of a manuscript, I submitted it to Dr. Fowler for his input. He was not satisfied, and I could not satisfy him even after many more attempts. The problem was not my language barrier, but my insufficient understanding of physiologic thinking. I had not made the transition from a clinical to a physiologic investigator. I left Rochester for Germany before the paper was finalized. Dr. Fowler eventually rewrote the manuscript and submitted it to the American Journal of Physiology, in which it was published in 1964. The Mayo Clinic gave me the H. V. Jones Award for superior ability

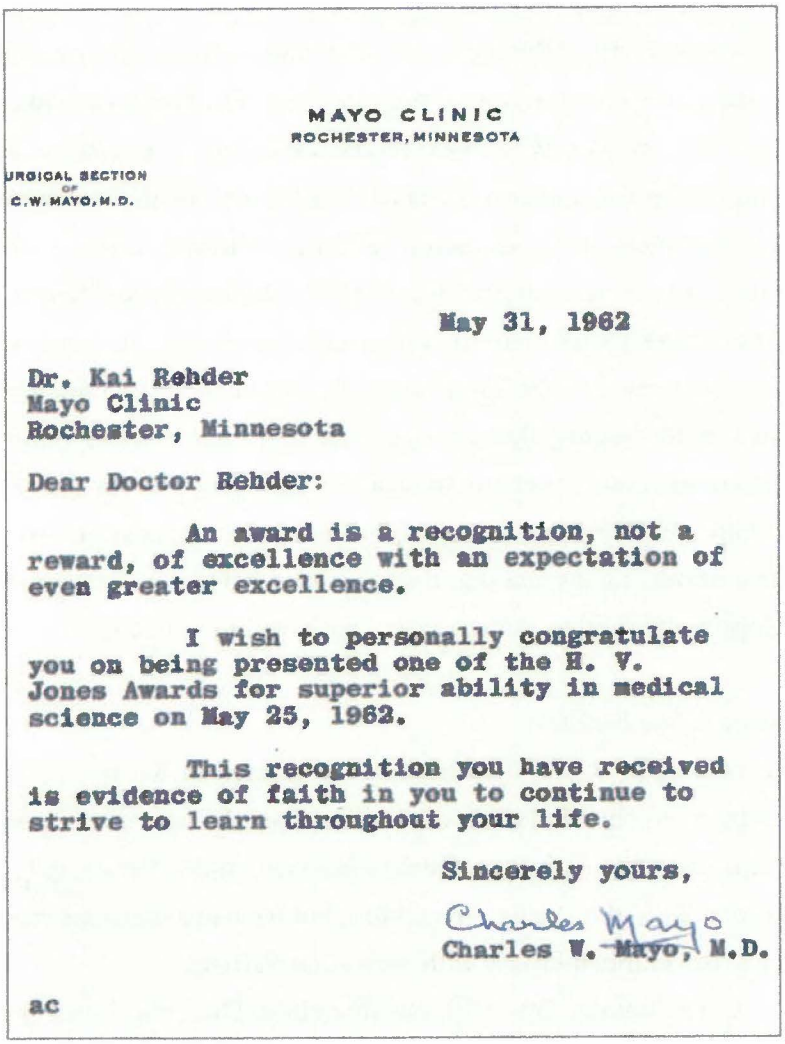
in medical science, and I received a nice letter from Dr. Mayo for this effort.

After the year in the laboratory with Dr. Fowler, I studied with Drs. Kirklin, Theye, and Fowler to learn about the intraoperative and postoperative responses of the heart, circulation, and metabolism to the repair of congenital heart lesions. I accepted this offer with the hope that gaining more experience in research would help me to land a position as an academic anesthesiologist at a German university.

To determine the acute and subacute responses of the heart, circulation, and metabolism to surgical closures of atrial septal defects, we measured both the right and left ventricular and atrial pressures, cardiac output, arterial and mixed venous oxygen and carbon dioxide tensions, and pH. The first measurements were made while patients were anesthetized but before bypass was instituted. Measurements were repeated immediately after the closure of the atrial defects and after the bypass had been discontinued. These measurements allowed elucidation of the acute responses of the heart, circulation, and metabolism to the repair of the atrial septal defect. Measurements were repeated postoperatively in the CICU to assess the subacute responses of the heart, circulation, and metabolism.

I had help, but I did nearly all of the calculations myself by hand; computers were not available yet. Bärbel sometimes helped me. I worked often until midnight, and frequently, Dr. Kirklin would call late in the evening or even at night to learn about the results.

At the time these studies were under way, the American Association of Cardiac Surgeons, a society with limited membership, held its



MAYO CLINIC
ROCHESTER, MINNESOTA

URGICAL SECTION
OF
C.W. MAYO, M.D.

May 31, 1962

Dr. Kai Rehder
Mayo Clinic
Rochester, Minnesota

Dear Doctor Rehder:

An award is a recognition, not a reward, of excellence with an expectation of even greater excellence.

I wish to personally congratulate you on being presented one of the H. V. Jones Awards for superior ability in medical science on May 25, 1962.

This recognition you have received is evidence of faith in you to continue to strive to learn throughout your life.

Sincerely yours,

Charles Mayo
Charles W. Mayo, M.D.

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Letter from Dr. Charles Mayo

annual meeting in Rochester. Dr. Kirklin was in charge of organizing the schedule. All of the big names in cardiac surgery were present. The morning was devoted to oral presentations. Dr. Kirklin scheduled me as the first speaker. When I expressed anxiety, he reassured me that he would be in the audience to help if necessary. In the afternoon, the demonstration of our experimental setup followed, and the surgeons appeared to be very interested in it. Dr. Kirklin was asked why we used strain gauges rather than other pressure transducers. He could not answer and turned to Dr. Theye for help, but he too could not answer. I had recently learned that strain gauges kept their baseline calibrations steadier than other pressure transducers and answered for Drs. Kirklin. Kirklin and Theye were very appreciative of my answer. An added value of our studies was that they provided helpful suggestions for developing the routine monitoring of patients in the CICU.

Family Life in Rochester

On December 20, 1958, Bärbel and I married in Rochester. For the ceremony in church, only the two of us plus the best man, Ernst Ammermann, maid of honor, Patricia Niessen, and a female guest were present. We did not have a reception, but we had a delicious steak dinner at the Hubbell House with Ernst and Patricia.

On September 30, 1960, our first child, Dirk, was born. We were both very happy with the addition to the family. Dirk was healthy. Bärbel was a trained pediatric nurse and worked as a licensed pediatric nurse in the Children's Hospital in Oldenburg. Unfortunately, she developed an allergic eczema on both hands, so she could not continue to work as a nurse. She then began her training as a physical therapist.

As an experienced pediatric nurse, Bärbel was a perfect mother and took care of the baby. I had no clue what to do.

Before we departed from Rochester in December of 1961, Bärbel and I were invited to a dinner party at the home of the Kirklins, together with Dr. Theye and his wife, Jo, and MacCarty (chairman of the department of neurosurgery) with his wife. It was quite a big honor to be invited as a fellow in anesthesiology to a dinner given by the famous cardiac surgeon Dr. Kirklin, particularly because anesthesiologists were still considered by many consultants at the Mayo Clinic to be "second-class" physicians. For instance, anesthesiologist Dr. Charles Restall's annual starting salary in 1959 was $10,000 per year. This salary was lower than the starting salaries for other specialties. The opening of the intensive care unit (ICU) by Dr. Alan Sessler and Dr. Edward Didier and of the Pain Clinic increased respect for our specialty; both the ICU and Pain Clinic were put into place despite resistance from many other specialties.

Bärbel with Dirk

The evening at the Kirklins was nice, and we will probably never forget it. However, a big surprise followed the next morning, when Dr. Kirklin called Dr. Faulconer and informed him that he did not want to work with Dr. Theye anymore and threatened that if Dr. Theye showed up, he would cancel all of his surgeries. Dr. Faulconer had no choice but to appoint another anesthesiologist. Having been fired from the operating room, Dr. Theye became, by default, a full-time researcher. When Dr. Faulconer retired as chairman of the department,

Dr. Theye became his successor. Unfortunately, his time as chairman was cut short by his early death from amyotrophic lateral sclerosis.

I worked closely with Dr. Theye. In my mind, he had his heart in the right place. He recognized the importance of research and fully supported research and educational efforts. His weakness was a lack of diplomacy; he could be a bully, and this made him unpopular among consultants of the department. Nevertheless, I credit Dr. Theye with guiding me and introducing some basic research at the department.

Anesthesiologist, University of Wűrzburg, 1962-1965

I had been a fellow at the Mayo Clinic from April 1957 to December 1961, with one year in internal medicine (including a period of three months in a research laboratory), almost two years in clinical anesthesiology, and the remaining two years in a research laboratory. I felt that my training and the additional year of research in pharmacology qualified me for a position at a German university. The specialty of anesthesiology was still in its infancy in Germany. No department of anesthesiology existed at any university, and the rules and regulations for proper training in anesthesiology were just being developed by the pioneers of the specialty.

I had visited several universities to look for a position and decided to join the surgical department at the University of Wűrzburg. The chairman, Professor Wachsmuth, seemed to be interested in recruiting me; he had just lost the anesthesiologist at his hospital. Maybe that should have been a warning, but I neglected to heed it.

The predecessor was an autodidact, and he was the only person responsible for anesthesia for all of the operations at the entire university hospital. He was not interested in academia, not the development of a department, nor the expanded responsibility of anesthesia at other surgical hospitals of the university. He was also not interested in establishing a training program for residents, or any type of research for that matter. The concept of a department of anesthesiology with

trained anesthesiologists providing general and local anesthesia at all surgical hospitals of the university had not arrived at the University of Wűrzburg by 1962. At the private Mayo Clinic, on the other hand, Dr. John Lundy had been invited by the Mayo brothers to establish a department of anesthesia 38 years earlier!

Würzburg in 1945

I arrived in Wűrzburg in January of 1962, leaving my pregnant wife, Bärbel, and our son, Dirk, with her mother in Oldenburg. The apartment we were supposed to occupy was being used for storage and had not been cleaned up for us. It took two months before we were able to move in and reunite our family. It was a small apartment without central heating on the second floor, and there was no elevator. Bärbel, eight months pregnant, carried everything up two flights of stairs, including our 1½-year-old son, heating materials, and groceries. It was not a good beginning for her. Finally, an acceptable apartment belonging to the university was found for us.

Jörg, our second son, was born in Wűrzburg on March 27, 1962. Bärbel was an experienced mother by this time and saw immediately

that Jörg would develop into a happy and entertaining person. She was correct. I wanted a third child, as well. I had lost a brother and grew up mostly as an only child. Bärbel had lost a sister. A third child would reduce the chances that one of our sons would grow up without siblings.

Dirk and Jörg playing in Würzburg

On August 20, 1963, our third son, Kai Detlef, was born in Würzburg. Both he and Jörg were German citizens by birth, and neither of them ever gave up their German citizenship. Bärbel noticed right away that Kai Detlef had unusual dexterity. As with Jörg, she was right. Eventually we would have a fourth son, Mark, who was born on May 1, 1967, in Rochester, Minnesota.

Anesthesiology in the University Setting

Prof. Wachsmuth expected me to supervise anesthesia given by surgical residents and also administer anesthesia to his private patients. He did not see a necessity for anesthesia services in other surgical hospitals, the training of anesthesiologists, or the provision of an environment conducive to an academic department. Only one resident interested in anesthesia, Dr. Hessler, was available to help me.

Once a week, Prof. Wachsmuth made the rounds on the wards with publicly-insured patients. Every resident and intern, including me (i.e., a crowd of about 40 physicians), had to join the rounds. I was

ordered by Prof. Wachsmuth to do a rectal examination in front of the crowd. Why did he do that? I think he wanted to demonstrate to all surgical residents and interns that the specialty of anesthesia was not a sufficient qualification for a physician. I did the rectal examination under protest and was never asked to do one again.

Prof. Wachsmuth did not see that anesthesiology could be developed into a medical specialty that would require special training, or that all patients deserved the benefit of having a trained anesthesiologist to administer the anesthesia. He continued to believe that the administration of anesthesia could be delegated to young surgical residents. Supervision by one trained anesthesiologist for the entire hospital with six operating rooms was sufficient in his mind. It never occurred to him that patients undergoing surgical operations at the other university hospitals in Wűrzburg also deserved the benefit of the services of trained anesthesiologists. Over time, however, he changed his mind and allowed the recruitment of residents for training in anesthesia. As more trained residents became available, we were able to provide anesthesia services at the other university hospitals that wanted to participate. Only the university Hospital for Obstetrics and Gynecologic Surgery refused to accept our services.

After two years in Würzburg, I submitted a thesis to the medical faculty to be promoted to *Dozent* of Anesthesiology *(Habilitation)*. Only a *Dozent* can be promoted to professor and only *Dozents* are allowed to teach at a university. For the thesis I used the data from the study with Drs. Fowler and Theye. *Habilitation* also includes presenting a lecture that is usually attended by authorities of the university, including the president, and an oral examination by the medical faculty. I was the seventh anesthesiologist in West Germany to be promoted to *Dozent*

of Anesthesiology. My promotion within two years was unusual and created jealousy among some of the surgical residents, and they let me feel it. To make things worse, after my *Habilitation,* I was appointed as *Oberarzt* (senior doctor) for Anesthesiology.

Only the chairman and professor of surgery can propose candidates for *Habilitation* in surgery or anesthesiology; on average, one candidate per year is proposed. To be proposed, one must not only do scientific work or teach but must take on other demeaning responsibilities, such as being available 24/7 for privately-insured patients, which is considered of equal importance. In my mind, the system of *Habilitation* resembled the feudal system of the Middle Ages. A landowner at that time allowed peasants to cultivate a small piece of his land for their use, and in return they were required to work for him at no pay, had to get his permission to get married, and had to comply with his judgments regarding any legal problems that arose between one peasant and others.

Developing a Training Program for Anesthesiology

As I recruited more residents in the specialty of anesthesiology, it became necessary to develop and organize a training program. I felt strongly that the teaching of the basic sciences, such as physiology and pharmacology, should be included in the program. I met with the chairman of the department of physiology to inquire about possible participation in their conferences. Physiology was my first choice because of my experience with Dr. Fowler. Unfortunately, the professor was unwilling to change the time of the conference so that we could have attended.

I then turned to the professor of the department of pharmacology, Professor Neumann. He was amazed at my proposal. "This is the first time that a clinician has ever visited my institution. What can I do for you? Come in, please." He enthusiastically agreed with my proposal to attend their conferences. We both agreed that the anesthesiologists should actively participate by presenting subjects of mutual interest.

As we discussed a paper about halothane hepatitis that had been published by two anesthesiologists in the *New England Journal of Medicine*, Prof. Neumann wondered how halothane was metabolized. The thought of halothane being metabolized was contrary to the prevailing dogma that volatile anesthetics are not metabolized; the only exception was trichlorethylene. After looking at the chemical formula for halothane, Prof. Neumann speculated that halothane would be metabolized by an enzymatic removal of chlorine and bromine, and with further oxidation would become trifluoroacetic acid. He asked Dr. Stier, a research resident, to inject halothane intraperitoneally into rabbits, collect their urine for a week, and see if bromide was excreted with the urine. Dr. Stier found bromide in the urine, suggesting that halothane had been metabolized by the rabbits. Later, we demonstrated the urinary excretion of bromide in patients anesthetized with halothane, and this suggested that humans also metabolize halothane.

We submitted a manuscript for publication to the journal *Anesthesia and Analgesia.* After it had been accepted, I gave copies of it to the salesmen of ICI and Hoechst, the two companies making and selling halothane. The response from ICI was remarkable. Dr. Duncan, senior author of the first paper on halothane, called and wanted to visit to discuss the importance of our findings. Dr. Duncan had checked to

see whether bromide was excreted in the urine after halothane anesthesia, but he was unable to find any bromide. He wondered why the results of our studies disagreed with his observations. In the long discussion we had, we pointed out that urinary bromide excretion occurs over many days and that it was no surprise that he had failed to find any significant amount of urinary bromide excretion one day after halothane anesthesia. We also pointed out to him that he had recovered only 85% of the halothane taken up by the body and that he had attributed the missing 15% to measurement errors.

We had not measured the total urinary output in our patients, but by assuming a reasonable urinary output of two liters per day we came up with a metabolism of 15%, exactly the amount Dr. Duncan could not recover in his subjects. He had arrived at similar conclusions from our data and agreed that our data suggested that halothane was metabolized. However, we did not answer the important question whether the metabolism of halothane is detoxifying or toxifying. After this interesting and cordial meeting, we had a nice dinner together with plenty of *Würzburger Stein* wine. The cooperation between basic scientists and physicians, a system the Mayo brothers had introduced many years before, proved to be very valuable. They were way ahead.

New Findings on Mechanical Ventilation

The demonstration of the metabolism of halothane caught the interest of anesthesiologists and pharmacologists, but understandably, there was little interest amongst surgeons. We soon had the chance to demonstrate to Prof. Wachsmuth that understanding the physiology of mechanical ventilation can help in deciding on the treatment of patients with acute chest injuries.

A patient with a crushed chest and a large flail segment was admitted as Prof. Wachsmuth's private patient. After examining the patient, he told the relatives the sad news that he could not help and that the patient would not survive the accident. Hearing this discussion, Dr. Hessler, a colleague in anesthesia, suggested that the patient's trachea be intubated and that mechanical ventilation of the lungs be started. Prof. Wachsmuth gave his permission, and the mechanical ventilation of the lungs was begun.

When Prof. Wachsmuth saw the patient the next morning, he was surprised. He did not understand why mechanical ventilation had saved the patient's life. He ordered the patient to be extubated and mechanical ventilation to be stopped. I protested and predicted that she would be unconscious by noon because of retaining carbon dioxide, resulting in carbon dioxide narcosis. As expected, by noon she was unconscious. We reintubated her and started mechanical ventilation again. As expected, she woke up. We continued mechanical ventilation until the flail segment had stabilized. The patient was dismissed from the hospital.

Dr. Hessler used a Bird ventilator we had found in the hospital. Nobody knew how it worked or what it was good for, but I was very familiar with Bird ventilators and had explained its workings and uses to Dr. Hessler in detail. During inspiration, the respiratory muscles expand the lungs by creating a "negative" (sub-atmospheric) pressure in the pleural space, the space between the chest wall and lungs. This negative pressure expands the lungs and allows air to enter. With a flail segment, however, the negative pressure in the pleural space created during inspiration sucks in the flail segment, the lungs cannot expand, and gas does not enter the lungs. This paradoxical motion of the chest

can be prevented by mechanical ventilation, because with it the pleural pressure is not negative during inspiration. Paradoxical motion of a large flail segment is not compatible with life. Prof. Wachsmuth, as an experienced surgeon, knew this, but did not know how to prevent the paradoxical motion of the chest.

Soon another patient of Prof. Wachsmuth with a flail segment was admitted. We ventilated his lungs, and he was also successfully dismissed from the hospital. Prof. Wachsmuth professed that these two cases were the greatest miracle he had witnessed during his entire medical career. He gave us 1,000 *Deutschmark*. I do not know, however, how much he charged the patients.

Long-term mechanical ventilation of these two patients was only possible by measuring and controlling the arterial partial pressures of oxygen and carbon dioxide. For our other research projects, we had trained Miss Doris Nau to accurately measure the partial pressures of oxygen and carbon dioxide in the blood. This made long-term mechanical ventilation possible.

Tracheotomized and ventilated patients cannot speak because the exhaled gas used for speech escapes through the tracheostomy tube rather than the larynx. In an effort to allow these patients to speak, we modified the existing tracheotomy cannulas to redirect the exhaled gas flow to exit through the larynx. Expiratory gas flow is fast and cannot be controlled by the patient during mechanical ventilation. Patients could speak only a few words, but at least they could call for help.

We received a patent for the speaking cannula. However, the tube soon became outdated because it functioned only in combination with Bird ventilators and they became unpopular.

A privately-insured patient of Prof. Wachsmuth was scheduled for correction of an esophageal diverticulum, a pouch in the esophagus. Food particles may become lodged in a diverticulum, and on the induction of anesthesia, the particles can be aspirated and asphyxiate a patient. The patient, the wife of an internist who referred many patients, feared anesthesia. Prof. Wachsmuth had assured her she was in good hands and that a Mayo Clinic–trained anesthesiologist would induce anesthesia in her bed, so she would not see or hear anything. I insisted on inducing anesthesia only in the operating room, where suction was available, because I feared that food might be lodged in the diverticulum. I argued that if I induced anesthesia in her bed on the way to the operating room and she aspirated food from the diverticulum, she could suffocate and die. "Oh, I did not think about this danger," said Prof. Wachsmuth. "That is why you have an anesthesiologist, Herr Professor," I said.

After having demonstrated the value of the services of trained anesthesiologists in the operating room and the ICU; after having established an anesthesia training program that included seminars with the department of pharmacology; and after having published research on halothane metabolism, I thought the time had come for anesthesia to become an independent department with a permanent director. I explained to Prof. Wachsmuth that I had an offer to return to the Mayo Clinic as a staff physician and that I was married and had three children. If he did not agree with me, I would resign. "That is no way to speak to a German professor" was his response, and I was persona non grata. In retrospect, I could and should have been more diplo-

matic, but I felt the time had come and I did not want to lose the possibility of returning to Mayo. I never regretted leaving Würzburg. Returning to the Mayo Clinic was the right step to take.

Sonderbericht

Deutschland braucht Akademiker

Professor Dr. Kai Rehder, Chefarzt an der Mayo Clinic in USA, übt Kritik an deutschen Universitäten

My article in Nordwest Zeitung titled "Germany needs Academicians"

While I was back in Rochester, I was asked by the local newspaper of my hometown, Oldenburg, to write an article about my experiences as a physician in the United States. I used this opportunity to describe, as objectively as I could, the differences between the practice of medicine at the Mayo Clinic and at the department of surgery at the University of Würzburg. Prof. Wachsmuth read the article and sent a copy of it with a letter of complaint about it to the Board of Governors of the Mayo Clinic. Dr. Faulconer, chairman of anesthesiology and member of the Board of Governors, asked me to translate the article into English for the board. When I provided Dr. Faulconer with the translation, he replied, with a big grin on his face, "We will not answer the *Geheimrat*."

With his letter Prof. Wachsmuth tried to sabotage my career at the Mayo Clinic, but he failed. My experiences at the Pediatric Hospital at the University of Freiburg as an intern and at the Surgical Hospital at the University of Wűrzburg as an anesthesiologist were bad. Residents were used as cheap labor, and the academic training was inadequate. However, my experiences at the departments of pharmacology in Freiburg and Wűrzburg were in sharp contrast. The training of residents was considered important, and there was a genuine interest in research. Why this difference between the clinical and nonclinical departments? Was it because the chairmen of clinical departments have too many responsibilities? Was the income of the clinical chairmen a contributing factor to their reluctance to support the independence of new clinical specialties?

Consultant, Mayo Clinic, 1966-1991

Moving to Rochester and Settling In

I was looking forward to an academic career at the Mayo Clinic after resigning from my position in the department of surgery at the University of Wűrzburg. I was hoping to do research and some clinical work.

Boat trip from Rotterdam to Hoboken, 1965

Our family left Germany in December of 1965, shortly before Christmas. We had bought two new Volkswagens but owned little else other than some furniture, which had been shipped by an agent. After a pleasant trip across the ocean, we drove from Hoboken, New Jersey, to Rochester. We stayed over Christmas at the Twin Motel across from St. Marys Hospital. I began work as a consultant in neuroanesthesia there on January 2, 1966. There was only one other consultant, Dr. John Michenfelder, assigned to neuroanesthesia. He also was eager to obtain National Institutes of Health (NIH) funding.

A new life began for us. We purchased a house on Westchester Court, financed by a mortgage provided by the Mayo Clinic at 2% interest. I was not yet licensed to practice medicine in Minnesota, so my

priorities were to pass the Minnesota State Board Examination as soon as possible and then the written examination of the American Board of Anesthesiology. I also needed to submit a research grant application to the NIH so I could have the funds to support my research and equip a research laboratory. I was lucky to accomplish all of this within two years while working full time in neuroanesthesia.

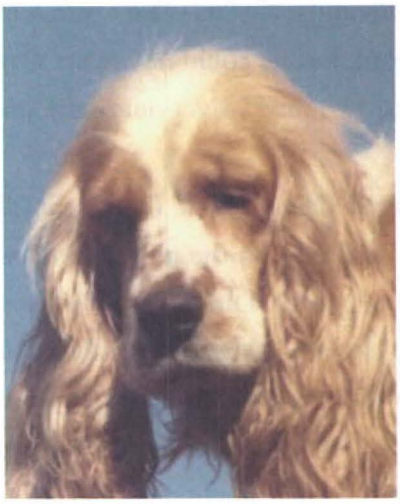
In fairly short order we owned a house, and I was licensed to practice medicine, had passed the written examination of the American Board of Anesthesiology, had my research funded by the NIH, and had my own laboratory with a laboratory technician. This would have been impossible without valuable support from Chairman Faulconer, who stipulated that only one of us two consultants could supervise neuroanesthesia at St. Marys Hospital while the other worked in the research laboratory. With this arrangement, Dr. Michenfelder and I were able to obtain NIH research grants within two years.

One year Jőrg's wish for Christmas was to have a dog. When Bärbel and I went and looked at dogs for sale, there was one dog who looked at us and said with her eyes, "Please take me; I will be a good dog." She was Susi, a cocker spaniel, and the sweetest dog we ever owned. She was loyal and always seemed to know what we wanted her to do and not do. If dogs go to heaven, I am sure Susi is sitting right next to God. The poor dog developed breast cancer and we had to put her to sleep.

Susi was soon replaced by another cocker spaniel by the name of Oliver. He was in many respects just the opposite of sweet Susi. Oliver, a long-haired cocker spaniel, was a character. He knew what he wanted, and he did not like to take orders. We bought Oliver in Blaine, a small town close to Minneapolis and drove home to Rochester with him

resting in a Coca-Cola box. After arriving at home, Oliver wandered into the backyard and fell into the pool, but he could not swim. Only Jőrg's presence of mind saved him; he swooped Oliver out of the pool before he drowned.

There are many funny stories about Oliver to tell. One night Oliver was sleeping in Dirk's bedroom, and early in the morning, Oliver made it clear to Dirk that he needed to go out. Dirk wanted to stay in bed a little longer, but Oliver showed him who was boss by filling both of Dirk's shoes to the rim with poop without spilling anything. A masterpiece. On another day, after Bärbel had returned from shopping, she put the groceries, including the meat, on the counter in the kitchen, figuring that Oliver could not reach them there. She was wrong. Oliver pushed a chair next to the counter, jumped from a kitchen bench onto the chair and, from there, onto the counter and stole the meat. A number of years later (in 1987), Oliver was staying with Jörg in Denver as Bärbel and I were in Europe for some time. On Jörg's 25th birthday, he went out with friends to celebrate. Unfortunately, he overdid it with the celebrating. His roommates were thoughtful enough to leave a garbage bag next to his bed, just in case he needed it. Sure enough, the next morning at about 5:00 AM, Jörg's stomach was feeling queasy because of the (drinking) activities of the night before. In no shape to make it to the bathroom, Jörg vomited into the empty garbage bag. Not only did the loud noise wake Oliver, who was sleeping in Jörg's bed, but the stench was too much for him. Seeing that Oliver was about to lose it, Jörg quickly placed the (no longer empty) garbage bag under Oliver's snout. Oliver knew exactly what to do, and he too vomited into the bag. Man's best friend!



Sweet Susi

Smart Oliver

Finding My Niche in Research at the Mayo Clinic

After Dr. Theye had become chairman of the department, he gave me three options. I could work full-time as a clinical anesthesiologist like most other consultants of the department or I could work half of my time as a clinical anesthesiologist and the other half in the research laboratory. If I chose either of these two options, I would be paid a full salary but he would lose all respect for me. The third option was to do full-time research, but I could do this only with a reduced salary.

I liked the third option but not the reduction in salary. The reason given for it was that as a full-time researcher, I would not be productive in terms of generating money for the Mayo Clinic. I told Dr. Theye I wanted to do full-time research even at a reduced salary, provided the salaries of the members of the Board of Governors would also be cut, because they were also unproductive in terms of generating revenues. Dr. Theye informed the CEO, Dr. Mayberry, of my response. It did

not take long before I was invited to Dr. Mayberry's office. In my defense I pointed out that I was board qualified, was continuing to take night calls, was one of only two members of the department who taught at the Mayo Medical School, and was one of only three members of the department who had NIH support. In other words, I had more qualifications than most of the other members of the department, and I saw no reason for my salary to be cut. Dr. Mayberry agreed with my arguments, and my salary was not reduced.

Department of anesthesiology at the Mayo Foundation House

When I returned to the Mayo Clinic, I expected to work on my research with Dr. Theye. Unbeknownst to me, however, Drs. Michenfelder and Theye had developed a common research project and Dr. Theye had no interest in my planned project. I was on my own, with only Dr. Fowler as co-investigator. I wanted to study intrapulmonary inspired gas distribution in humans while they were awake and breathing spontaneously and then repeat the measurements after they had been anesthetized, paralyzed by curare-like drugs, and their lungs me-

chanically ventilated. Comparisons of inspired gas distributions between volunteers who were spontaneously breathing and those who were mechanically ventilated should elucidate the role of the respiratory muscles in the distribution of intrapulmonary inspired gas. Changes in intrapulmonary gas distribution, if not accompanied by appropriate changes in intrapulmonary blood flow distribution, can impair pulmonary gas exchange. Optimal gas exchange occurs only if the ventilation of a lung region is about 80% of its perfusion, that is, if the ratio of ventilation to perfusion is about 0.8. Blood is not optimally oxygenated if the ratio is less than 0.8, and the optimal elimination of carbon dioxide does not occur in lung regions where the ratio exceeds 0.8.

With Drs. Mike Joyner and Alan Sessler at the Mayo Foundation House

To conduct a safe study of anesthetized and paralyzed volunteers, I needed a co-investigator qualified and willing to administer general anesthesia and muscle paralysis to volunteers. Dr. Sessler was the man.

He was experienced and much respected by the anesthesia staff, residents, and nurse anesthetists alike, the only persons I could accept as volunteers because only they could give informed consent to participate in such a study. Dr. Sessler recruited Mr. Gilles, a nurse anesthetist, who was very experienced and enjoyed great respect among nurse anesthetists, to assist him. Volunteers were accepted only after Dr. Sessler had interviewed them and after they had passed a physical examination, including blood tests, a urine analysis, and a chest x-ray.

Dr. Sessler and Mr. Gilles took full responsibility for the anesthesia, permitting me to concentrate on the study. It was an ideal setup and the envy of many other investigators. It would have been impossible to do these studies in anesthetized-paralyzed subjects without their help. Dr. Sessler and I also worked closely together in preparing manuscripts, abstracts, and book chapters. We enjoyed working together and learned much from each other. We also became good friends.

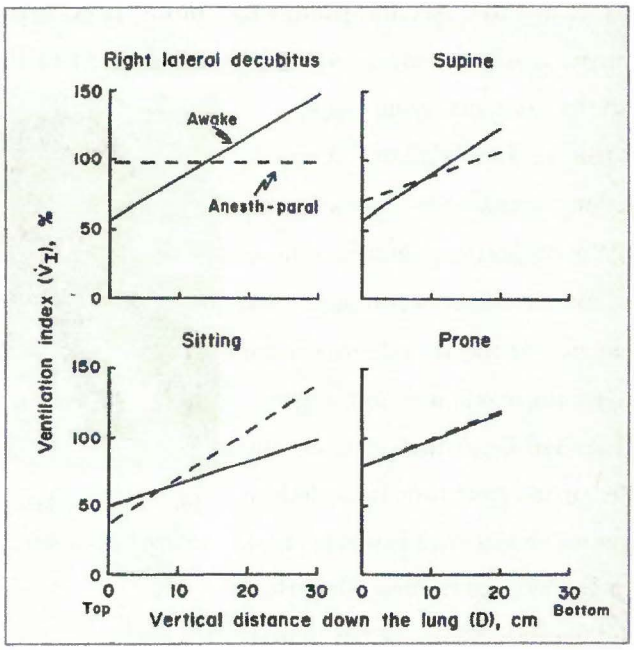
The important finding of our study was that the inspired gas distribution during mechanical ventilation of the lungs was different from that during spontaneous breathing in three of the four examined body positions. In the prone position (lying on the abdomen), the gas distribution was similar in both the awake state with spontaneous breathing and the anesthetized-paralyzed state with mechanical ventilation of the lungs. The other important finding was that anesthesia–paralysis reduced the end-expiratory lung volume. These findings suggested that the respiratory muscles (1) may determine the pattern of expansion of the chest wall during inspiration depending on the body position and (2) contribute to the maintenance of the end-expiratory lung volume. We published these findings in *Anesthesiology*.

Dr. Hyatt invited me as his guest to a meeting of a small group of pulmonary physiologists interested in the mechanics of the respiratory system. The group met once a year for informal discussions, and each member is allowed to invite one guest. Dr. Hyatt did not tell me that as his guest I was expected to present my findings to the group. I was totally unprepared and had no slides with me, but I managed to get my message across. An interesting and inspiring discussion followed about the function of the respiratory muscles, particularly the diaphragm.

Dr. Hyatt held weekly seminars, which my group attended regularly and with great benefits. Here we had the opportunity to present our findings for discussion and critique. Dr. Hyatt became interested in the underlying mechanisms for the altered intrapulmonary inspired gas distribution and for the reduced end-expiratory lung volume occurring after induction of anesthesia–paralysis and mechanical ventilation. He, Dr. Philippe Westbrook, and our group cooperated in investigating the effects of anesthesia–paralysis on the mechanics of the lungs and chest wall.

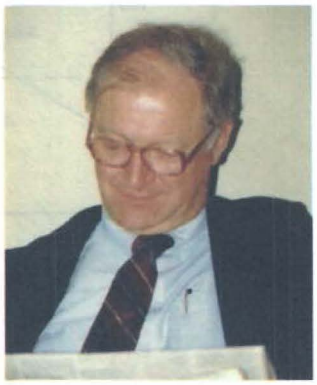
In this study we confirmed our previous findings of a reduction in the end-expiratory lung volume. In addition, we found significant changes in the pressure–volume behavior of the lungs. Larger pressure changes were required during anesthesia to increase the lung volume, that is, the compliance of the lungs was reduced after the induction of anesthesia. The results were published in the *Journal of Applied Physiology*, and the article caught the attention of pulmonary physiologists.

Inspired gas distributions during mechanical ventilation and during spontaneous breathing are similar when subjects are lying in the prone position. The blood flow distribution does not seem to be altered by mechanical ventilation. I speculated, therefore, that the similar



Intrapulmonary inspired gas distribution in four body positions in awake and anesthetized-paralyzed volunteers. The ventilation index is plotted as a function of the vertical distance down the lung. A ventilation index of less than 100% indicates hypoventilation, and a ventilation index of more than 100% indicates hyperventilation. Therefore, the degree of nonuniformity of the inspired gas distribution is indicated by the slopes of the lines. Both in the supine position (lying on the back) and right lateral decubitus position (lying on the right side), the inspired gas distribution is more uniform after the induction of anesthesia and muscle paralysis and mechanical ventilation (--) of the lungs than it is while a patient is awake and breathing spontaneously (-). By contrast, in the sitting position, the inspired gas distribution is less uniform after the induction of anesthesia and muscle paralysis and mechanical ventilation of the lungs. In the prone position, the inspired gas distribution is similar in the two conditions.

distributions of inspired gas and pulmonary blood flow in patients lying in the prone position may result in less impairment of the gas exchange than in subjects lying supine. I mentioned this to Dr. William Douglas, and he tested my hypothesis in six consecutive patients in respiratory distress whose lungs were mechanically ventilated. He found that in five of the six patients there was a dramatic improvement in oxygenation after they had been turned from the supine to the prone position. Included in the study was a 1½-year-old boy who had fallen into a bucket containing dirty diapers and had aspirated the contaminated material. The boy was unconscious and did not respond to painful stimuli. His oxygen level in the arterial blood was dangerously low even while he was receiving 100% oxygen. On turning him from the supine to the prone position, the arterial oxygen level nearly doubled; it decreased promptly when he was turned back to the supine position.



Dr. Michael Marsh, former fellow in my laboratory

The anatomy of the pulmonary blood vessels may contribute to the benefit of turning patients from the supine to the prone position. Dr. Kenneth Beck, in my laboratory, discovered that the blood flow distribution is determined not only by gravity, but also by the number and/or size of blood vessels (vascular conductance). Gravity favors the perfusion of the dependent or lower-lung regions, and the anatomy of the pulmonary blood vessels favors the perfusion of the dorsal-caudal lung regions. It follows that in subjects lying supine, both gravity and anatomy favor the perfusion of the lower lung, and the upper lung is

at a disadvantage. By contrast, in subjects lying prone, the effects of anatomy and gravity counteract each other, resulting in a more uniform distribution of blood flow. A better matching of ventilation and blood flow improves the gas exchange. Obviously, both the severity and distribution of lung disease can alter the response. Our studies in the research laboratory had serendipitously contributed to clinical care.

Receiving the Award of Excellence in Research, American Society of Anesthesiology, 1993

With Dr. Warren Zapol, Anesthetist-in-Chief at Massachusetts General Hospital

A Trip to Japan

In 1989, I was invited to Tokyo to attend the annual meeting of the Japanese Society of Anesthesiology and to serve as a visiting professor at the University of Tokyo. I was not particularly interested in visiting Japan, because I was afraid I would not be able to appreciate Japanese culture and history. The language barrier was also frightening; I would be unable to understand any of the written symbols, including the ones for *Ladies* and *Men*. Ultimately, however, Bärbel and I decided to go. We booked a flight from Rochester to Minneapolis and from there a direct flight to Tokyo on Northwest Airlines. About three hours before the scheduled departure from Rochester, while we were still in bed, we received a phone call from the airline informing us that the flight had been canceled. I inquired about the reasons for the cancellation and was told that we should have been informed many days earlier. At the end of the month, there was no pilot available for this long flight. The airline offered us first-class round-trip tickets from Rochester to Tokyo plus frequent flyer miles for a first-class flight. I gladly accepted this generous offer.

On arrival at the Narita Airport in Tokyo, we were met and taken to our hotel. When we woke up the next morning, we saw from our bedroom on the top floor of the hotel the amazing and beautiful symmetrical snow-covered cone of Mount Fuji, which is about 60 miles southwest of Tokyo. After breakfast we were taken by subway to the meeting site, where I presented my paper. We then had a guided tour through Tokyo, which included the Imperial Palace, the seat of the Emperor of Japan.

We also learned about the Shinto religion, which originated in Japan. Its followers believe in Kami, a formless spirit present in all things,

including human beings. According to Shinto beliefs, humans can be cleansed through rituals such as prayers. Many shrines house Kami.

NIH Study Section on Surgery, Anesthesia, and Trauma

The hospitality in Japan was unbelievable, and we were given many gifts. We traveled from Tokyo to Kyoto with the Shinkansen, the fast modern bullet train. In Kyoto a chauffeur took us to many shrines and temples, including the Golden Pavilion, which was the retirement villa of a shogun and, after his death, was converted to a Zen Temple. The upper two stories of the building are covered with leaves of pure gold, which are wonderfully reflected in the adjacent mirror pool.

From Kyoto we were taken by the Shinkansen to Hiroshima. Seeing the Hiroshima Peace Monument and Hiroshima Peace Memorial

Museum was a moving experience but emotionally draining because it reminds every one of the horrors of war. From Hiroshima we went by boat to the famous Itsukushima Shrine, with its giant "floating" torii gate, on Miyajima Island.

We spent our last day in Japan in Nara, with its many historic temples and shrines. Nara was once the capital of Japan and seat of the Emperor. As we walked around the city we saw many deer walking, as well; they are considered heavenly animals. It was in Nara where we heard on TV in German that the Berlin Wall had been opened.

On the morning of our departure, we received a telegram from Jörg, while we were waiting in the lobby of the hotel to be taken to the airport. It said, "Kennedy I am not". Just like John F. Kennedy, Jr., Jörg had recently taken the bar examination. The only difference was that Jörg passed, while "John-John" had not been so fortunate. Thus Jörg's comparison to Kennedy in the telegram. The trip in the first-class section back to Minneapolis was super, with all the comfort one could hope for.

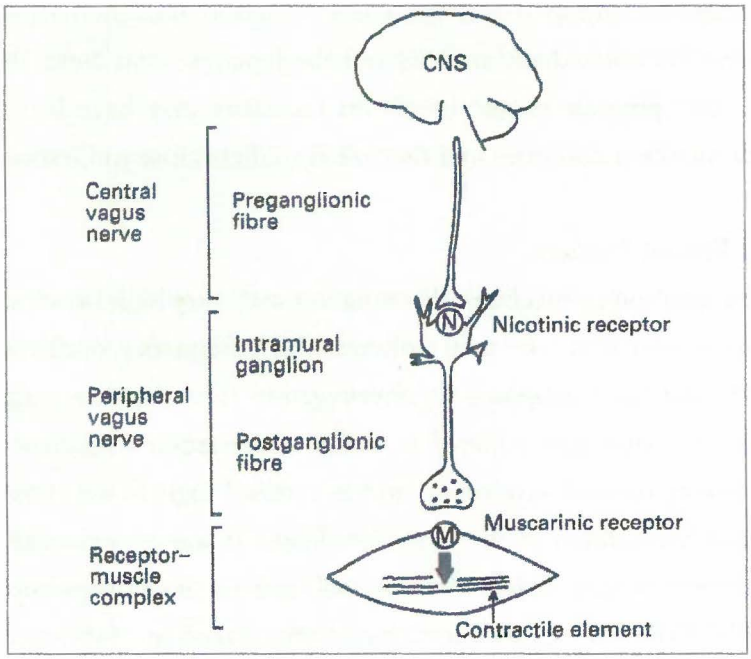
Japan is a country with an extremely low crime rate. People are honest, clean, diligent, and courteous. The country has much industrial potential, and it plays a dominant role in Asia as a competent, reliable, and powerful ally of the West. Shortly after WW II the roles of China and Russia versus Japan and Germany were reversed. During WW II, Germany and Japan were enemy number one and Russia and China were powerful allies, but soon after WW II, China and Russia became enemy number one and Japan and Germany became powerful allies. I think the Japanese still suffer from being hit by atomic bombs, at least that is what I gathered from my discussions with them. They wondered why they were chosen -- and not the Germans -- and suspected it may

have had something to do with race. They ignore the fact that Japan as an island is isolated and nobody but the Japanese were hurt. By contrast, dropping an atomic bomb on Germany may have hurt many other innocent countries and the Allied soldiers close to Germany.

More Research Findings

A new method of mechanical ventilation with very high breathing frequencies and very low tidal volumes (high-frequency oscillation, or HFO) had been proposed by investigators from Germany and Toronto. It supposedly resulted in better oxygenation of patients with respiratory distress syndrome, and it avoided high airway pressures, making barotrauma of the lungs less likely. It was hypothesized that ventilation of lung regions with partially obstructed airways improved with HFO because gas is transported to the alveoli by "facilitated" diffusion rather than by gas flow, but this was a false hypothesis. We examined HFO in the laboratory, operating room, and ICU and concluded that it offered no advantage.

In the later years of my career, I became interested in the response of airways to anesthetic drugs, including opioids and muscle relaxants. Innervation of the airways follows a complex pathway. Fibers of the vagus nerve pass down from the brain (CNS) to the nicotinic receptors in the intramural ganglion located in the walls of airways. From there, short nerve fibers emerge (postganglionic fibers), which synapse with the smooth muscles of the airways. Stimulation of the vagus nerve releases a neurotransmitter (acetylcholine) from small vesicles (dots) into the synaptic cleft between the postganglionic nerve fiber and a smooth muscle (contractile element) to stimulate muscarinic receptors on the cell membrane of the muscle.



Innervation of the airway smooth muscles

Dr. Jean-Francois Brichant (from my laboratory), in cooperation with Dr. Susan Gunst (from Dr. Hyatt's laboratory), characterized the types and localizations of receptors along the nervous pathway in isolated airways. They next examined the effects of volatile anesthetics on the nervous pathway. They found that the three volatile anesthetics halothane, enflurane, and isoflurane reduced the contractile responses of smooth muscle to stimulation (1) by reducing the excitability of ganglia in the airway walls, (2) by depressing the conductivity of postganglionic nerve fibers, and (3) by depressing the contractility of muscle cells. All three mechanisms contribute to the potent bronchodilator effect of the three anesthetics.

The many benefits of working closely with Dr. Hyatt included close cooperation with Dr. Rodarte, one of the most intelligent persons (if not the most intelligent) with whom I ever had the pleasure to work. We discussed our data and ideas weekly, and frequently Dr. Theodore Wilson, a professor of aerodynamics from the University of Minnesota, joined us and contributed immensely to the discussions. We shared data, ideas, and criticisms. The Mayo Clinic was ideal for such a unique interdisciplinary approach. With Dr. Hyatt as principal investigator, six investigators from different specialties, including internal medicine, physiology, pharmacology, anesthesiology, and aerodynamics, received an NIH Program Project Research Grant for millions of dollars.

My work at the Mayo Clinic was fun and a hobby. The working conditions were perfect. I was there at the right time at the right place with the right coworkers. I credit Drs. Fowler, Theye, Sessler, Hyatt, and Rodarte for their contributions to my modest accomplishments. Drs. Hyatt and Sessler and I remained close friends until they died.

Emergency Treatment

At one point, on returning from a vacation in Germany, I developed gastrointestinal bleeding on the airplane. I was unaware of it until I noticed blood in my stool at the Minneapolis airport. We had arranged for Dirk to pick us up at the airport, and he took us to the emergency room of St. Marys in Rochester. During the ride I was lying with my head down in the car to avoid becoming unconscious.

On arrival at St. Marys, Bärbel notified the people in the emergency room that her husband had GI bleeding, was in the car outside,

and needed transport on a stretcher. A student nurse ignored her information and took me, against my protest, in a wheelchair into the emergency room. She parked the wheelchair with me in it, unconscious, in a corridor outside the emergency room. Luckily a consultant discovered the unconscious, overweight, middle-aged patient who was pale and had cold sweat on his face. He assumed that I had a myocardial infarct.

I was taken into the emergency room, where I received intravenous infusions and had ECG electrodes applied to my chest. I regained consciousness as I heard the fellow telling the consultant that my blood pressure was now up to 80 mm Hg. When I saw that ECG electrodes were being applied, I informed the consultant that I had GI bleeding and not a myocardial infarct. Apparently, he still had not been informed of my condition!

It was not a good experience in the emergency room of the Mayo Clinic. Unfortunately, this was not the only bad experience we had with the emergency room at St Marys. Many years later Bärbel was admitted to the emergency room with a broken hip and complicated fractures of the radius and ulna. She was in the emergency room for eight hours and was never seen by an orthopedic surgeon. Next morning, an orthopedic surgeon operated on her hip and wrist without discussing with her, or me, the choice between nailing the hip fracture or inserting a hip prosthesis. He nailed the hip but had to remove the nail later, because it started migrating in the osteoporotic bone. It was another bad experience.

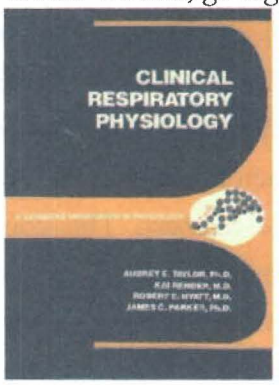
Committee Work and Authorship at Mayo and Beyond

I served at the Mayo Clinic on the Research Committee, which was one of the three major standing committees. It was responsible for distributing funds received annually from the Board of Governors among laboratories and researchers. The committee also did a biannual review of the progress of the research in each department. I was a member of, and later chairman of, the Academic Appointment and Promotion Committee, which reviewed the academic achievements of staff members and, if appropriate, advanced them in their academic ranks. I chaired the Institutional Review Board, which was responsible for overseeing the safety and ethics of research on humans, and I also chaired the division of anesthesiology research.

With Dr. Richard Weinshilboum, chairman of the Research Committee, at the Mayo Foundation House

At the national level, I served on the NIH Surgery, Anesthesia, and Trauma Study Section, which met twice a year for three days in Bethesda, Maryland, to review research grants. A conscientious review was time-consuming; careers of researchers depended on a fair decision by the Study Section. Editorships on three journals (*Anesthesiology, Journal of Applied Physiology,* and *News in Physiology)* contributed significantly to my workload. I became more and more occupied with committee work and reviewing manuscripts for scientific journals or research grants for the NIH, leaving progressively less time for my own

research. At this time, at the age of 62, I decided to retire from the Mayo Clinic. With permission of the NIH, I was allowed to transfer my recently funded NIH research grant to Dr. David Warner, giving him a flying start as a young investigator. He was, in my mind, the most likely successor in my laboratory. I transferred my principal investigatorship of the NIH training grant in anesthesiology to Dr. Anthony Jones.



Cover of the textbook Clinical Respiratory Physiology

I was asked by Dr. Aubrey Taylor, chairman of the department of physiology in Mobile, Alabama, and president of the American Society of Physiology, to co-author the book *Clinical Respiratory Physiology*. We invited Drs. Robert Hyatt and James Parker to be co-authors. It was a lot of fun to write the book. It was used as a textbook at the Mayo Medical School for many years.

Family Time

When I had spare time, I enjoyed a good tennis game. A group of consultants played indoors regularly in the winter and outdoors in the summertime. Bärbel and the four boys also liked the game. Mark was the best player in the family. He and I often participated in father-son tournaments; we sometimes advanced to the finals, but never took home the Winner's trophy.

The family enjoyed swimming and playing around the swimming pool at home. We camped often at Martin's Campground on Leech Lake in northern Minnesota. We swam in the pool or Leech Lake, hiked, and took trips with a U.S. mail boat around the lake. We also

traveled often to National Parks in the United States and Canada. We seldom traveled to Europe to visit my mother or Bärbel's mother.

In the 1970s, at Bärbel's suggestion, we bought a condominium at the Racquet Club in Vail, Colorado. The club offered indoor and outdoor tennis courts and a large heated outdoor pool, which stayed open even in the winter. Each year, we spent some of our summer vacations and all of our winter vacations in Vail. We skied during the day, swam in the pool, relaxed in the jacuzzi, and played tennis in the evening. Our condominium had two bedrooms and bathrooms and a large loft that could sleep guests. Paula, Mark's future wife, was the first guest to use the loft.

Our first house in Rochester on Westchester Court

Kai Detlef, Jörg, and Dirk playing with Legos at 901 11 1/4 Street Southwest

Lunchtime at Martin's Campground

The family ready to ski at the Vail Racquet Club

Family with Oliver in Rochester

Playing Barrikade in Vail

Retirement, 1992 to Present

Shortly before my retirement, Dr. Douglas Gracey, a pulmonologist, organized a retirement party for Bärbel and me at the Holiday Inn Restaurant. All our friends came, and we had a very good time reminiscing about our days together.

Retirement party

A Move to Vail

After retirement, Bärbel and I moved to Vail. At first, I found it difficult to adjust to retirement, but Bärbel assured me that I would soon get accustomed to it. I had hoped I would have more time to read, correspond with friends, and enjoy other hobbies, but Vail kept us busy. We skied there and at surrounding resorts, including Breckenridge, Ski Cooper, and Copper Mountain, on days with fresh snow and sunshine. A special treat for us was spring skiing when it was warm

and one did not need warm clothes. Vail not only offered unparalleled downhill skiing in the back bowls but also great cross-country skiing. The children and their families visited frequently in winter and summer. They liked Vail's unmatched back bowls. They also enjoyed the pool and tennis courts at the Racquet Club for après ski. We soon traded the condominium for a townhouse at the Racquet Club. It was a little larger, with three bedrooms and bathrooms; we needed more room as our family grew. One cannot have a better life than we had in Vail.

(Left) Rita Hatch, Christiane and Dr. Jőrg Vettermann, a former fellow in my laboratory and Dr. Lucia Zappi in London. (Right) Dr. Bob Hyatt and me in Italy.

One day as Bärbel and I were returning from skiing in Breckenridge, we had an almost fatal car accident. When we left Breckenridge the sun was shining, but as we approached Vail Pass it began to snow and the highway became progressively slippier. We had gone over the pass and were descending into Vail when I lost control of the car while passing a VW Beetle. The car hit a huge rock, rolled 360 degrees, and landed on the middle strip of the highway in deep snow with the engine running. Amazingly, neither of us was injured. The driver of the Beetle

was shocked to see both of us alive and uninjured. We left the car in the snow, and the Beetle driver gave us a ride back to the Racquet Club.

Soon after we had arrived home, the phone rang. Dr. Doyt Conn, a retired Mayo rheumatologist and friend, wanted me to go to Kuwait to assess the damage to hospitals after the invasion of the Iraqi forces. He invited me to join a group of Mayo people who included a surgeon and several laboratory, x-ray, and anesthesia technicians. Having just miraculously survived the accident, I felt I had to thank God and agreed to help.

Unfortunately, the trip to Kuwait was not well organized and was unproductive. The reservations for the first leg of the trip to Riyadh, Saudi Arabia, were made for the wrong day, and so, by the time they were changed and we got there, there was no U.S. military plane available to take us to Kuwait. We had to drive in two rental cars for two days to get from Riyadh to Kuwait.

In Kuwait we stayed at an evacuated hospital. Hospital engineers were supposed to advise and help us, but they were useless and ignorant. They told us a bomb had exploded near the hospital and caused a large leak in the central oxygen supply line. They were now using oxygen tanks for the oxygen supply in the operating rooms, but because of the leak in the oxygen supply line they lasted only a very short time, making safe surgery difficult. To estimate the size of the leak we shut off all of the oxygen outlets in the hospital and connected an oxygen tank to the central line, but there was no decline in the pressure; in other words, there was no leak. The reason for the "leak" was that massive amounts of oxygen were being used for constantly turned on suction driven by high flows of oxygen. They did not understand the situation and did not change anything.

There were many other instances like that. They did not accept our help, and after a week we returned to the United States very frustrated.

In Vail, we went out for dinner and drinks with visitors, including the family. Some favorite places were the Alpenrose, the Saloon in Minturn, and the excellent restaurant at the Vail Racquet Club. The Alpenrose was owned by a German couple, who baked delicious cakes. Bärbel and I enjoyed sitting on their terrace, eating cake and watching skiers coming down the slopes.

Dinner and Margaritas with Drs. Gary Sieck and Vito Brusasco at the Saloon in Minturn

The Saloon in Minturn is an old, historic bar and restaurant featuring Mexican food and smooth Margaritas with chips and salsa. Photos of famous athletes decorate the walls of the bar. Most of the frequenters of the Saloon are local skiers, and they enjoy Mexican food and drinks.

Bärbel and I took many trips through the United States or to Europe from Vail. We visited Arches National Park, with its amazing sandstone formations, which are produced by erosion; its Delicate Arch is pictured on advertising posters for Utah. At the beginning of a hike to the Delicate Arch, we admired petroglyphs drawn by Ute Indians. I am not an artist, but I was impressed by the quality of the petroglyphs depicting wild animals. When driving around the park, we were awed by the Balanced Rock, a huge rock that is balanced on another huge rock. From Arches National Park we drove to Bryce Canyon National Park, with its unique geologic hoodoos, spike-shaped rocks of a white-orange-red color. Hoodoos are often arranged in amphitheater-like structures.

Zion National Park impressed us with its red cliffs and deep canyon carved out by the Virgin River. From Zion we drove to the North Rim of the Grand Canyon. When my friends and I had visited the park during my year with the Read Program, we had wanted to sign up for the donkey rides down through the canyon to the Colorado River, but we could not afford them. Now I could. I got up at 5:00 AM and dressed lightly in shorts, a short-sleeved shirt, sandals, and a hat. When I found out that tourists weighing more than 200 pounds were not accepted, I was disappointed. It, however, turned out to be a blessing in disguise. About an hour after the group had departed, a heavy snowstorm began. I would have been uncomfortable in my light clothes if I had been on the ride.

Before retirement, I had made plans to do research in laboratories in Sweden, Italy, and the United Kingdom. I contacted Drs. David Hatch in London, Vito Brusasco in Genoa, and Sten Lindahl in Stock-

holm, all friends of ours. I proposed to continue the research on isolated airway smooth muscles and assured them that I would bring most of the necessary equipment. I also told them that I did not expect to be paid a regular salary, but just hoped to be reimbursed for room and board. We agreed that I would not have to work every day in the laboratory so Bärbel and I could explore and enjoy the nearby sights of the country. All three agreed to my proposals. Bärbel and I lived like students, with few responsibilities, but unlike students, we had money in our pockets.

Research and Travels in Italy

Dr. Brusasco, a pulmonologist, had worked with me in Rochester on three occasions. He procured a furnished apartment for us in Bogliasco lying directly on the Mediterranean Sea and boasting a small pebble beach. Bogliasco is only a few kilometers away from Genoa and has frequent trains to the city. Dr. Brusasco had persuaded Dr. Francesco Nicosia, chairman of anesthesiology at the Italian National Cancer Institution in Genoa, to join our research, provide laboratory space, and free Dr. Lucia Zappi, one of his associates, from clinical work to join the research team.

Dr. Nicosia's main area of interest was the treatment of pain. To dovetail my research with his clinical interest I suggested that we investigate the effects of opioids on isolated airways. Dr. Zappi turned out to be a very good co-investigator. She had experience in research and was intelligent and motivated. We first had to set up and equip the laboratory and arrange for a supply of airways from the local abattoir. After a few weeks, we were done with this work and ready for the first experiment. All of the equipment worked perfectly, and the isolated

airways in the tissue baths contracted to an electrical stimulus. I still remember the surprised and happy faces of Drs. Nicosia and Zappi when they saw the airways contract in response to the stimulus.

Mayo Foundation Distinguished Alumnus Award, 1995

Why did we decide to study the effects of opioids on airways? It is known that opioids can produce constipation by stimulating opioid receptors in the intestines, which in turn inhibits peristalsis. Intestines are embryologic "relatives" of airways. It is therefore reasonable to speculate that opioid receptors may also be present in airways and may inhibit airway constriction. We found that contractile responses of airways were significantly reduced by opioids. Opioids would be ideal for the treatment of severe bronchospasm and asthma if they did not release histamine, which contracts airways.

Studies in collaboration with Dr. Brusasco and his co-investigators were along the same line. These studies showed that opioids stimulate opioid receptors at the synapse between postganglionic nerve fibers and smooth muscles. The stimulation of the prejunctional opioid

receptors reduces the release of acetylcholine, the messenger initiating muscle contraction.

Left: Bärbel in Monterosso. Top right: In Belgium with retired Mayo anesthesiologist Dr. Robert Devloo and his wife, Ann. Bottom right: In France with Professor Martin Zindler, former chairman of the Department of Anesthesiology of the University of Düsseldorf.

Work in the laboratory in Genoa was stimulating, but the city and its surroundings offered many other things to enjoy. Few other countries have a documented history of 2,000 years as does Italy. The beauty of the landscape, the many historic buildings, and the abundance of art are breathtaking.

Cinque Terre, on the coast of the Mediterranean Riviera about 40 miles from Bogliasco, was one of our favorite sites for hiking tours. It is a UNESCO World Heritage Site comprising five villages: Monterosso, Vernazza, Corniglia, Manarola, and Riomaggiore. The villages

are connected by a beautiful, but somewhat wild trail, the *Sentiero Azzurro*. Each village has colorful homes, small harbors with beautiful fishing boats, and vineyards on steep terraces. The hike from Riomaggiore to Monterosso takes several hours, not counting the stops for refreshments. Monterosso offers a great sandy beach that invites one to take a refreshing swim in the Mediterranean after a hike. Another favorite hike of ours was from Camogli on the Mediterranean Riviera to San Fruttuoso along a trail with unique panoramic views of the Golfo Paradiso. San Fruttuoso is an oasis away from traffic; it can be reached only by foot or boat. It boasts a pebble beach and bars where one can enjoy an espresso with the Ligurian specialty focaccia, a flat oven-baked bread, while one admires the century-old abbey and historic Doria's Tower. We usually took the boat back to Camogli.

We also hiked often from Santa Margherita to Portofino, a fishing village with a picturesque harbor and colorfully painted houses clustered around a small but busy harbor. A trail with panoramic views leads from Paraggi, a village with a wonderful sandy beach and good swimming in the blue Mediterranean, to Portofino. Here we sat near the harbor enjoying a Campari or espresso. We proudly showed our visitors the beautiful country and enjoyed Italian wine and tasty food together.

One day when Dr. Zappi and I were working in the laboratory the phone rang. Dr. Zappi was speechless when she listened to the message of the caller. Dr. Gattinoni, chairman of the department of anesthesiology at the University of Milano, and an expert in critical care who is recognized worldwide, was on the phone. He did not want to talk to her but to me. As a guest editor, I had reviewed a manuscript that Dr. Gattinoni and his coworkers had submitted to the *New England*

Journal of Medicine. Despite many attempts, I had been unable to reproduce their calculations. In the written review, I diplomatically asked what I had done wrong, rather than to suggest they had made an error, which I suspected was the case. Reviews of manuscripts are usually kept anonymous, but I had signed my review with my full name. Dr. Gattinoni could decipher only Kai but not the last name. He knew me from the literature. When he called Rochester, he found out that I was in Genoa and he was given a phone number where he could get in touch with me. He tried to explain what I did wrong, but I had difficulties following his arguments on the phone. I offered to visit him in Milan to discuss the problem. There he quickly convinced me that my calculations were wrong and his were correct. During the discussion, and lunch that followed, he smoked many cigarettes and drank a lot of wine. After lunch we continued discussions of problems of mutual interest. During dinner he again drank plenty of wine and smoked lots of cigarettes. He surely was burning the candle at both ends. Dr. Gattinoni is an outstanding clinician, exceptional researcher, and talented musician (some of his recorded music is commercially available).

The son of the German Chancellor Helmut Kohl was involved in a serious car accident in northern Italy in 1991, suffering severe, life-threatening chest injuries. An ambulance from the University of Milano Hospital happened to pass the site of the accident and took him to Dr. Gattinoni's ICU. When Chancellor Kohl was informed of the accident and the hospitalization of his son in Milan, he ordered that his son be transferred to the University Hospital in Bonn in Germany. He soon changed his mind, however, apparently once he learned that his son was getting the best possible care. His son was released from

the hospital in good health. A grateful Chancellor Kohl invited the entire team of Dr. Gattinoni to Bonn for a thank-you party.

Italy offered unique hikes with breathtaking views. Relaxing on the beaches and swimming in the dark blue waters of the Mediterranean was a pleasure, and the food and wine were outstanding. We went back to Genoa to work with Drs. Zappi and Brusasco many times and were never disappointed. I believe Bärbel and I have never seen a more beautiful country, with the possible exception of Croatia.

Mr. Dräger (left) Chairman of Dräger Company and Prof. Kettler at a meeting of the German Society of Anaesthesiology and Reanimation in 1995 where I was made an Honorary Member

Research in Sweden and the Nobel Prize Awards Ceremony

After we had spent three months in Genoa, we went to Stockholm to work with Dr. Sten Lindahl at the Karolinska Hospital, where he was chairman of the department of anesthesiology. He had been on the Mayo Clinic staff, but he went back to Sweden to accept a job at the

Karolinska Hospital. He is double boarded in pediatrics and anesthesiology. In Stockholm I again set up a laboratory to continue the investigations into the effects of anesthetic drugs on isolated airways. Unfortunately, no physician was interested in this work, so it was less stimulating than in Italy. In Stockholm I began investigating the effects of ketamine, an intravenous anesthetic, on airways.

From the left: Drs. Holmdahl, Lagercrantz, Murat, Severinghaus, Rehder, Warner, Gordh, Lindahl, person unknown, Peterson, Gisvold, Eriksson, Irestedt

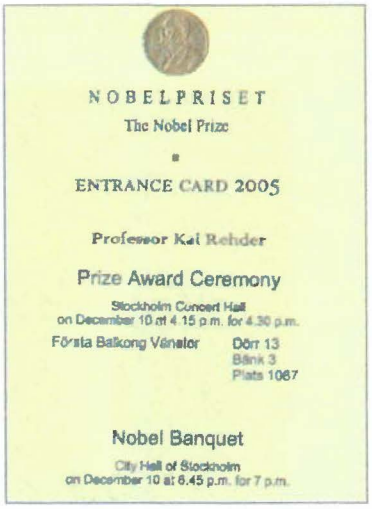
The Royal Swedish Academy of Sciences decides each year on the Nobel Prize to be awarded in Physics and Chemistry, the Karolinska Institute on the Nobel Prize to be awarded in Physiology or Medicine, and the Swedish Academy on the Nobel Prize to be awarded in Literature. Bärbel and I had the unique honor of being invited by the Royal Swedish Academy of Sciences to attend the week-long Nobel Prize

festivities in Stockholm. What an experience! The festivities began with a Nobel Prize concert by cellist Yo-Yo Ma, and this was followed by a reception at the Nordic Museum.

With Professor Sten and Ulla Lindahl at the Nobel Prize festivities in Stockholm. Sten was the former chairman of the Committee for the Nobel Prize in Physiology or Medicine.

The actual Nobel Prize Award Ceremony is held at the Stockholm Concert Hall. It is a festive and dignified ceremony appropriate for the occasion; all participants wear formal suits. The ceremony we attended was opened with music from Mozart, followed by a short speech by the chairman of the Nobel Foundation, followed by music by Tchaikovsky. The three Laureates for the Nobel Prize in Physics, including one from the Max Planck Institute, were then introduced by a member of the Royal Swedish Academy of Sciences, and they received the Nobel Prize from the King. Before the next prize was awarded, the Royal

Swedish Philharmonic Orchestra played a waltz by Puccini. The Nobel Prize for Chemistry was awarded in a similar ceremony. Drs. Barry Marshall and Robin Warren, of Perth, Australia, were introduced next to receive the Nobel Prize in Physiology or Medicine for their discovery of the bacterium *Helicobacter pylori* and its role in gastritis and peptic ulcer disease. They discovered that a peptic ulcer is caused by a bacterial infection of the stomach and that it can be permanently cured by antibiotics. Dr. Warren, a pathologist, had observed spiral-shaped bacteria in specimens from many patients undergoing gastroscopy causing gastritis. He interested Dr. Marshall in his work, and Dr. Marshall subsequently proved, in a heroic experiment on himself, that Helicobacter pylori bacteria were responsible for the gastritis. He consumed a cocktail containing the spiral-shaped bacteria and developed severe gastritis, which was cured by antibiotics.


NOBELPRISET
The Nobel Prize
ENTRANCE CARD 2005
Professor Kai Rehder
Prize Award Ceremony
Stockholm Concert Hall
on December 10 at 4.15 p.m. for 4.30 p.m.
Första Balkong Vänster
Dörr 13
Bänk 3
Plats 1067
Nobel Banquet
City Hall of Stockholm
on December 10 at 6.45 p.m. for 7 p.m.

My entrance card for the 2005 Nobel Prize Award Ceremony

The Nobel Prize Award in Literature was presented in the same type of ceremony. Interestingly, the order of the award ceremonies is always Physics, Chemistry, Physiology or Medicine, and Literature.

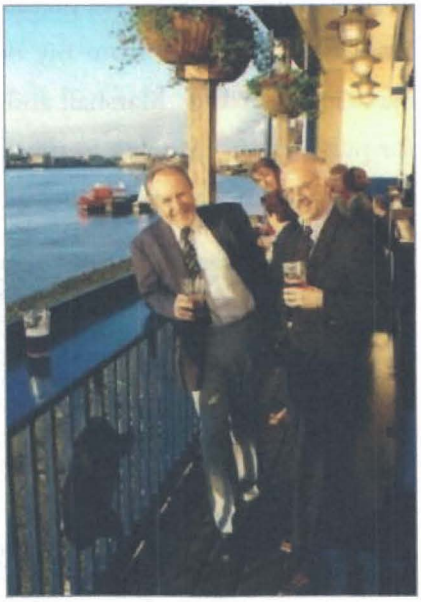
After the Nobel Prize Award Ceremony, the participants were taken to the City Hall, which is the national symbol of Sweden with its tower topped by three crowns. The Blue Hall in the City Hall is where the Nobel Banquet is held. After all participants had been seated, the

Royal Family and the Laureates descended the Grand Stairway into the Blue Hall while music was played. It was a very moving moment. Interestingly, I learned from my neighbor at the dinner table that the manuscript by Drs. Marshall and Warren had been originally rejected for publication. Dancing to music played by a student band followed the banquet. It was an evening we will never forget.

Swedish King and Queen on their way to Swedish Reichstag

Research in London and a Royal Occasion

Dr. David Hatch is professor of anaesthesia at the Hospital for Sick Children at Great Ormond Street in London. In the United Kingdom, the clinical and academic responsibilities of a department are shared by two persons. The chairman of the department is responsible for the clinical work and a professor for the academic work. Dr. Hatch had everything ready for my visit, including a women co-investigator. In London we continued the investigation of the intravenous anesthetic agent ketamine on the airways. We found that it had a dual effect on airway smooth muscles: It inhibited postsynaptic receptors and receptors in the intramural ganglia.



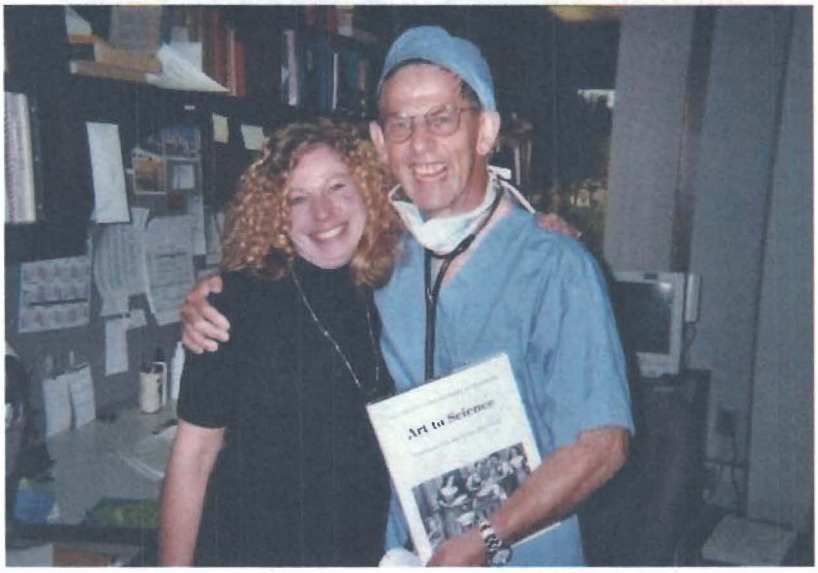
Professors David Hatch and Francesco Nicosia in London at the Thames River

While in London, I had the honor of being appointed an Elected Fellow by the College of Anaesthetists, which was in the process of getting "promoted" to be the Royal College of Anaesthetists. For such a promotion, either the Queen of England or a member of the Royal Family must attend a formal meeting. Luckily for me, the Queen came to the meeting where four physicians and I were honored for becoming Elected Fellows of the Royal College of Anaesthetists.

Ceremony installing me as an Elected Fellow of the Royal College of Anaesthetists in London, 2005

With Queen Elizabeth II at the Royal College of Anaesthetists

Dr. John Shephard had suggested that I consider writing a book about the history of the department of anesthesiology at the Mayo Clinic. I discussed this with my friends Dr. Sessler and Dr. Peter Southorn, and we decided to go ahead with it. I spent three months in Rochester gathering material on the history of the department, including reading the entire correspondence of Dr. John Lundy, its founder and first chairman. We invited many of our colleagues to participate in the writing. The book, *Art to Science,* was ready for the ninetieth anniversary of the department, but it did not receive the attention that we had hoped.



Dr. Peter Southorn with Ms. Linda van Sickle, who helped with preparation of Art to Science

A Trip to China

Bärbel and I took some memorable trips during our retirement. A trip to China was a special one. We traveled from Oldenburg via Amsterdam to Beijing, where we had booked a guided tour. The group met in Beijing, and we had a very competent and friendly guide. The first surprise was the enormity of Tiananmen Square in the center of the big city. The square is so big that one million people can meet in it. It is flanked on the east and west by two huge buildings, the Great Hall of the People and the Museums of the Chinese Revolution and Chinese History. In the middle of the square one sees an obelisk, a Monument to the Heroes of the People. On the south side is the Forbidden City, a huge palace complex and the most remarkable building complex in China. It impresses by its size, its beautiful and unique architectural style, and its colors. It gives one an idea of how mighty and rich China must have been during the Ming (1368–1644) and Qing (1644–1912) dynasties. No wonder the Chinese considered themselves to be the center of the world. A visit to the Forbidden City alone is worth a trip to China.

The Forbidden City was the imperial palace and residence of the Emperors of China for nearly 500 years of the Ming and Qing dynasties. It is surrounded by a wide moat and high wall with four towers sitting at the four corners. One enters the Forbidden City through the central gateway of the Meridian Gate, which is part of the Imperial Way. Only the Emperor was allowed to walk on the Imperial Way, except for the Empress on the day of her wedding and Imperial students after they passed the Imperial Examination. The Imperial Way leads to a large square and crosses the Golden River with five bridges. A complex of three large wooden buildings follows. One of them used

to be the residence of the Emperor during the Ming dynasty; the Emperor of the Qing dynasty moved to another building. The southern part of the Forbidden City was used for ceremonial and administrative purposes, and the northern part was reserved for the residence of the Emperor with his families and for the concubines and eunuchs.

Another highlight was the Summer Palace about ten miles north of Beijing, which is in a large park with a lake. Emperors of the Ming dynasty added several buildings. I remember the Long Corridor with its many historic paintings, which runs along Kunming Lake to the Marble Boat. This boat was built by the Empress, who chose to spend money to improve her residence by building a two-story-high Marble Boat rather than modernizing the Chinese navy.

Another exciting visit was the trip to Xi'an to see the tomb of the first Emperor of China, Qin Shi Huangdi (221–210 BC), with its large Terracotta Warrior Army. He unified China by defeating and conquering independent smaller states. The name *China* is based on his name. Qin Shi Huangdi began the construction of the Great Wall of China as a defense against aggressive northern nomadic tribes.

When Qin Shi Huangdi was only 13 years old he ordered the building of the huge necropolis. It took 700,000 men to build his tomb, which includes an army of 8,000 terracotta warriors, 500 terracotta horses, and more than 100 terracotta chariots. The soldiers are life size and vary in height, hairstyle, uniform, and facial expression. They were supposed to protect the Emperor in his afterlife. The terracotta warriors were discovered only recently, in 1974, by a farmer who was digging a well for water.

Travels in Europe

We purchased a house in Oldenburg from the daughter of my former art teacher, Adolf Niesmann, who had designed the house himself in the Bauhaus style. From Oldenburg we explored Europe by bicycle. We biked through Germany, Austria, Italy, Switzerland, the Netherlands, and Belgium. We were accompanied by our son Kai Detlef on the trip from Passau to Vienna, and by all four of our sons and our grandchild Kai Derek on a trip from the village of Lienz (in Austria) along the Drau River to Wőrther Lake. We biked along the Moselle River with Jerry Rach, Bärbel's friend Etta, and Jörg. With Mark and family and Jörg, we started biking at Salem, and then we biked around Lake Constance passing through Austria and Switzerland.

Our home in Oldenburg

After I ended my cooperative work with my friends in Stockholm, London, and Genoa, Bärbel and I invited my coworkers to be our guests for a holiday in the Black Forest. Professor Sten and Ulla Lindahl, Professor David and Rita Hatch, Dr. Mike Marsh, and Drs. Lucia and Antonio Zappi attended. We hiked together and had some nice meals with good wine from the Kaiserstuhl.

Mike, Sten, David, Bärbel, me, and Rita in the Black Forest

School classmates. From left: Hans (Jack) Lütke, journalist at Handelsblatt Hamburg; Dr. Peter Koch, attorney in Oldenburg; myself, anesthesiologist at Mayo Clinic; Dr. Ernst Ammermann, family practitioner in Delmenhorst; Horst Hedden, engineer in Oldenburg; Walter Mittweg (only back of head visible), state prosecutor in Oldenburg; and Marten Dethlefs, attorney in Oldenburg.

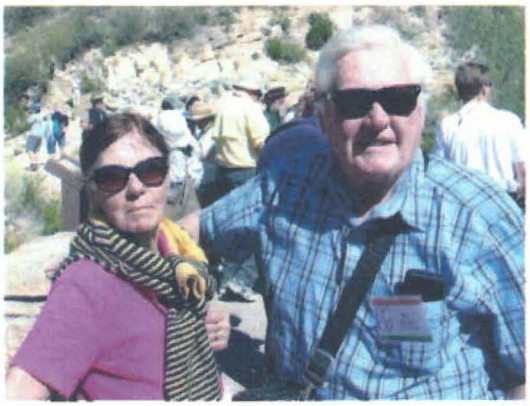
When in Oldenburg I met weekly at the Ratskeller with school classmates for beer or wine. We had lively discussions about old times, shared plenty of jokes and gossip, and were happy to be together. All of us had served as *Luftwaffenhelfer* and probably never expected to have the comfortable life we lead today

Bärbel in the early 1970s

Bärbel and I sold our townhome in Vail in 2010 and moved back to Rochester. We are currently 91 years old and live in a home on an artificial lake. There are no steps, and it has a bedroom for visitors. It is just right for us.

Our Family

Bärbel and I knew of each other while we were living in Oldenburg, but our relationship really began in Freiburg in 1951. We spent much time together there and became closer and closer to each other over the years, but we were still too young to think about getting married. I had not finished my training in medicine and could not support a family. Bärbel understood and waited patiently for seven long years before we finally tied the knot and married in Rochester on December 20, 1958. Nobody from our families in Germany attended the wedding. It was too difficult and expensive for our mothers to travel to the United States during the winter. Only the best man and maid of honor were with us at the church ceremony and at the dinner at Hubbell House.



Bärbel and me in Arizona

Our first son, Dirk, was born at St. Marys Hospital in Rochester on September 30, 1960. We were both excited about the first addition to the family. Bärbel excelled in taking care of the baby; her experience as a registered pediatric nurse was of tremendous help. By contrast, I had no idea what to expect or what to do.

After finishing my fellowship at the Mayo Clinic, we moved back to Germany in December of 1961. Bärbel was six months pregnant at

the time with Jörg, and Dirk was 1½ years old. I began to work in January of 1962 as an anesthesiologist at the Surgical Hospital of the University of Würzburg. On March 27, 1962, Jörg was born at the University Hospital for Gynecology and Obstetrics. Kai Detlef followed on August 20, 1963. We had no time to socialize with friends or enjoy Würzburg. As I pointed out earlier, the work was not satisfying and I decided to resign after four years to return to the Mayo Clinic. By this time, Dirk was five and a half years old, Jörg nearly four, and Kai Detlef two and a half, and none of them spoke a word of English. In Rochester, Dirk had to attend kindergarten even though he did not understand anything that was said, and he had to repeat the class. Playing with children of the neighborhood helped all of our boys learn the language fast, and they became good students at Bamber Valley Elementary School, Central Junior High School, and Mayo High School.

In Oldenburg during retirement

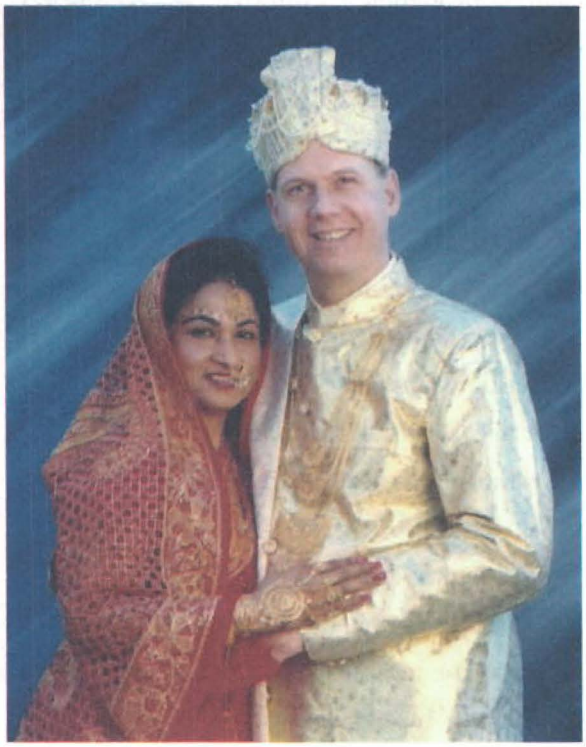
Dirk went to college at the University of Pennsylvania in Philadelphia. After graduation, he was still uncertain about his career and decided to try to work as a research resident in pharmacology at Duke University in North Carolina. He soon changed his path and applied to medical school and was accepted at the Medical College of Wisconsin in Milwaukee. After graduation, he began a residency in internal medicine at St. Vincent's Hospital in New York City. There he met Raj, who was working as a registered nurse on an orthopedic ward. Both Bärbel and I liked Raj from the moment Dirk introduced her to us in Detroit. Dirk and Raj married in 1999 in New York with Indian and Christian wedding services. The Indian wedding service, with all of the ladies wearing beautifully colored sarees was memorable. The abbreviated service in the Indian temple lasted several hours, and we parents sat on the hard floor of the stage in the temple.

Dirk at Bamber Valley Elementary School

Dirk's graduation from medical school in Milwaukee

After completing his residency in internal medicine, Dirk began a residency in neuroradiology at the New York Presbyterian Hospital of Columbia University. He is double boarded in internal medicine and neuroradiology. He currently works

as a consultant and Assistant Professor of Radiology at the University of Alabama in Birmingham and practices neuroradiology and musculoskeletal radiology. He and Raj own a wonderful large home. They are blessed with twins, Carson and Lauren, who were born prematurely and needed to be hospitalized for nearly three months before they could go home. Thanks to Raj's determination and hard work, both babies survived. They are currently 15 years old and are healthy and good students.

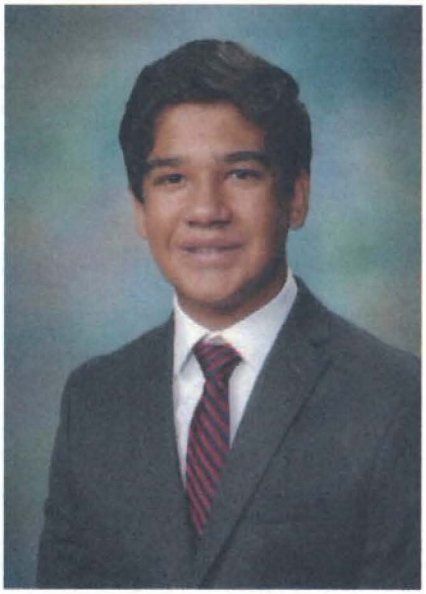


Rajdai's and Dirk's Indian wedding

Graduation from medical school

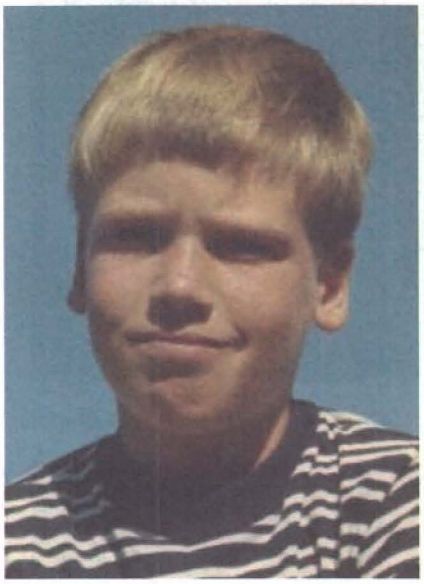
Rajdai

Lauren



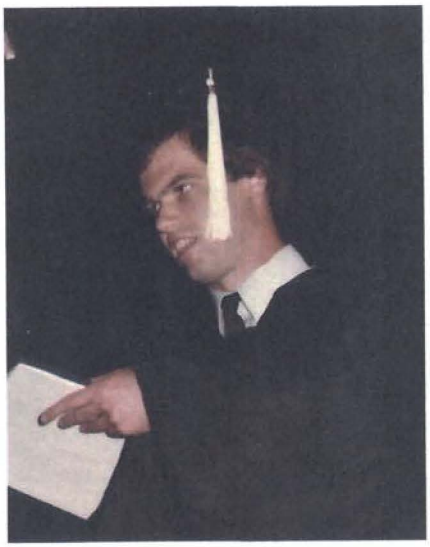
Carson

Jörg was born in Würzburg on March 27, 1962. Jörg spoke no English when we returned to Rochester, but unlike Dirk, he had a year to learn the language before starting kindergarten. After graduating from Mayo High School, Jörg attended Northwestern University in Evanston, Illinois. After graduation he was accepted at the University of Denver Law School. After finishing there, Jörg worked at various law firms in the United States and Germany, before he joined as Partner at the Schiedermair Law Firm in Frankfurt am Main, where he is directing the U.S. desk. Jörg is licensed as a *Rechtsanwalt* in Germany, Solicitor in England and Wales, and U.S. Attorney at Law in Maryland and Minnesota.

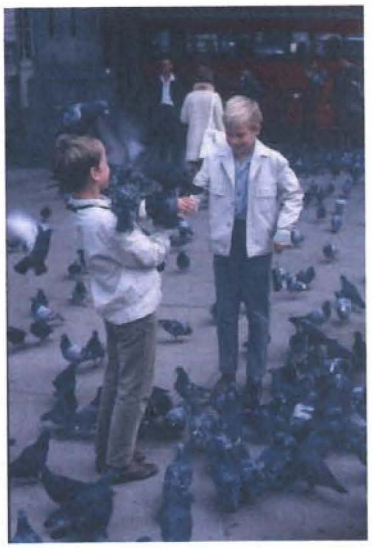


Jörg at Bamber Valley Elementary School

Jörg enjoys life as a bachelor. He travels much and loves sports, including biking, soccer, and boxing. He is an accomplished skier and a certified ski patroller in the United States. Bärbel and I like biking with him. He is full of energy and entertaining, never boring, loves wine and beer, and enjoys his life. He is the proud owner of a condominium in Telluride in the Rocky Mountains and a condominium in Frankfurt am Main on the Main River. Jörg has German citizenship by birth and returned his U.S. Green Card, suggesting that he plans to stay in Germany. He is truly bilingual.



Jörg's graduation



In London

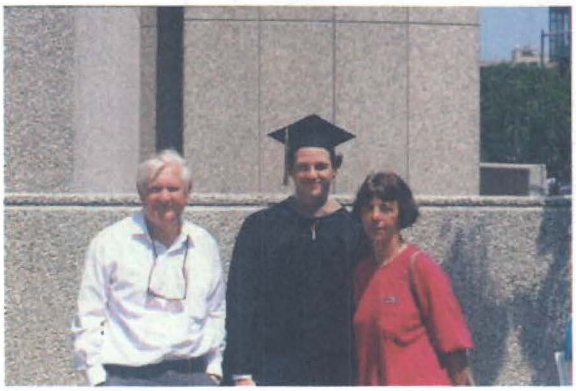
Kai Detlef, Jõrg, and Dirk in London

Jõrg

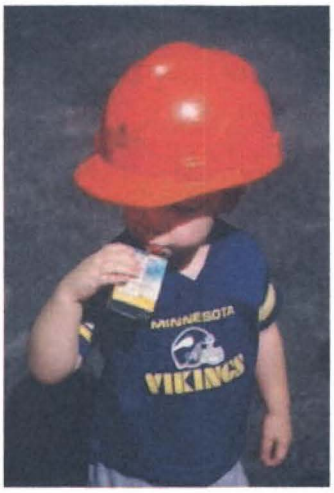
Kai Detlef was born in Würzburg on August 20, 1963. He went to Bamber Valley Elementary School, Central Junior High School, and Mayo High School in Rochester. He began his college education at the University of Wisconsin in Madison and transferred after one year to Lawrence University in Appleton, Wisconsin. After graduating, he earned an MBA degree in Washington, DC, and then studied dentistry at the University of Minnesota in Minneapolis. He is currently in private practice in Waldorf, Maryland.

Kai Detlef at Bamber Valley School

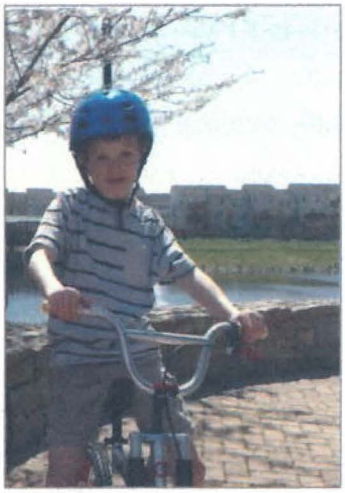
He was married to Heather and has two boys, Kai Derek, born in 2004, and Nicholas, born in 2007. The marriage broke up and they were divorced; Heather was not the right wife for him. He is now single and lives with his boys in a very nice home in Aldie, Virginia. Kai Derek is currently 15 years old and Nick is 13 years old.



Kai's graduation in Washington, DC



Kai Derek



Nick

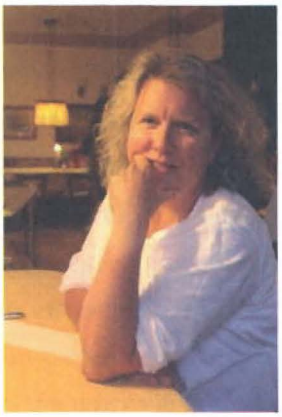
Mark at Bamber Valley Elementary School

Mark was born May 1, 1967, in Rochester. He went to Bamber Valley Elementary School and Mayo High School in Rochester. He followed his brother Kai Detlef and attended Lawrence University in Appleton. He met his future wife, Paula, at Lawrence. She is a bright, energetic, and friendly lady. Mark, the youngest of the four boys, was the first to marry. He was always interested in the outdoors and dealing with people. He is a self-employed tree consultant in North Branch, Minnesota, and enjoys his work very much. Paula graduated from medical school at the University of Minnesota in Minneapolis and works as a primary care physician in private practice in North Branch. Not surprisingly, she is extremely successful.

Mark and Paula own a nice home in North Branch. They have two children, Charles, born in 1999, and Lydia, born in 2001. Charles is currently in college at the University of Illinois at Urbana-Champaign and studies computer science. He is scheduled to graduate from college in 2021. Lydia is at Carthage College in Kenosha, Wisconsin. She is in her second year of college and chose mathematics as her major. Both children are doing very well in college.

Mark's high school tennis team. He is second from the right in the back row.

Mark and Paula's wedding



Paula

Lydia

Charles

In Mexico City

Basketball game in North Branch at Lydia's confirmation

In Austria, ready for a bike trip

Grandchildren in Phoenix, Arizona

Family in Chicago at Thanksgiving

Epilogue

It has been exciting to write my memoir and to relive my life. I have tried to give the readers a glimpse of my parents and their families. I wanted to tell the story of the family for our children, grandchildren, and friends so that they can see that I am part of a normal family with its good and bad and, sometimes, with opposite political views. The family paid dearly for the tragic World Wars. One relative was killed in action in World War I, and three, including my brother, in World War II. My family lost their savings twice and some were bombed out, yet they survived, and they continue to exist and grow today, demonstrating the stubborn resilience of man.

Why did I come to the United States? I was not unhappy in Germany. As a matter of fact, I had a great time in Germany, and some of the best times of my life were in Freiburg as a medical student. I married a German girl, and we remain happy together. When we are alone, we communicate only in our mother tongue, and we have not given up our German heritage. I decided to come to the United States because I saw no future for me in Germany. The country was devastated and the support for—and interest in—research was not there. In the United States I received the support and the means to conduct medical research. My traveling around the world with Bärbel was exciting and opened our eyes to other cultures and traditions. Also, my time spent in the research laboratories in Italy, the United Kingdom, and Sweden—and with my former school classmates in Oldenburg—was extremely enjoyable.

Many times in my life, I have been lucky to be in the right place at the right time with the right colleagues, but times I have spent with

my family have been most important. I have been amazed to see our children grow and develop into independent individuals with professions of their choice. They have now their own families, and Bärbel and I are proud of their accomplishments. Our family is a good family. It is my hope that my memoirs will be meaningful to all.

One important thing I learned in my long life: show respect for people, particularly for young people who want to learn and advance. Give them a chance and be patient with them. They will often surprise you and you learn from them.

Finally, I would like to thank Michael Ransom, Marjorie Toensing, and our son Jörg for their valuable help in putting this autobiography together.

December 2, 2020

Appendix

Curriculum Vitae

12/17/1928: Born in Hohenwestedt, Germany
1935–1938: Elementary School, Oldenburg
1938–1945: Oberrealschule mit Gymnasium, Oldenburg
1944–1945: *Luftwaffenhelfer*
1945–1948: Oberrealschule mit Gymnasium, Oldenburg
1948–1953: Medical student, Kiel, Freiburg, Innsbruck
1953–1954: Intern at University Pediatric Hospital, Freiburg-im-Breisgau
1954–1955: Intern at Jeanes Hospital, Fox Chase, Philadelphia, Pennsylvania
1956–1957: Resident at Pharmakologie Institut, University of Freiburg
1957–1961: Fellow at Mayo Clinic
1962–1965: Anesthesiologist at Universität Surgical Hospital, Würzburg
1963: *Habilitation*, University of Würzburg
1966–1991: Consultant, Departments of Anesthesiology and Physiology, Mayo Clinic
1966–1973: Assistant Professor of Anesthesiology, Mayo Clinic
1973–1976: Associate Professor of Anesthesiology, Mayo Clinic
1976–1991: Professor of Anesthesiology, Mayo Clinic
1978–1991: Professor of Physiology, Mayo Clinic
1978–1991: Associate Examiner, American Board of Anesthesiology
1982–1991: Visiting Professor, University of Genova, Italy
1991–1993: Visiting Professor, Hospital for Sick Children, London, United Kingdom
1992–1994: Visiting Professor, Karolinska Hospital, Stockholm, Sweden

Awards

1962: H. V. Jones Award, Mayo Clinic
1984–1990: Ruth and Vernon Taylor Professor of Anesthesiology

1987: Louis Mark Memorial Lecturer, American College of Chest Physicians
1990: Distinguished Lecturer of Medical Science, Mayo Clinic
1992: Distinguished Career Recognition, Mayo Alumni Association
1993: Elected Fellow of The Royal College of Anaesthetists, London, United Kingdom
1993: Award of Excellence in Research, American Society of Anesthesiology
1994: Honorary Member, Belgian Society of Anesthesiology
1995: Honorary Member, German Society of Anesthesia and Reanimation
2002: Mayo Foundation, Distinguished Alumnus Award
2005: Attended Nobel Prize Ceremony, invited by Royal Swedish Academy of Sciences
2013: David Little, Jr., Prize, Anesthesia History Association.

Committees
1973–1987: Member of the Administrative Committee, Department of Anesthesiology, Mayo Clinic 1976–1985: Chairman of the Division of Research, Department of Anesthesiology, Mayo Clinic
1976–1977: Member of the Research Committee, Mayo Clinic
1976–1985: Chairman of the Division of Research, Department of Anesthesiology, Mayo Clinic
1978–1981: Member of the Academic Promotion and Appointment Committee, Mayo Clinic
1981–1985: Chairman of the Academic Promotion and Appointment Committee, Mayo Clinic
1985–1986: Member of the Institutional Review Board, Mayo Clinic
1985–1987: Member of the Research Committee, Mayo Clinic
1985–1988: National Institutes of Health Study Section on Surgery, Anesthesia, and Trauma; multiple Ad Hoc NIH Study Sections
1986–1987: Chairman of the Institutional Review Board, Mayo Clinic
1988–1990: Member of the Research Committee, Mayo Clinic

Societies
American Society of Anesthesiology; American Society of Physiology; American Thoracic Society; The Academy of Anesthesiology; Association of University Anesthesiologists; International Anesthesia Research Society; Honorary Member Deutsche Gesellschaft für Anaesthesie und Wiederbelebung; Honorary Member, Belgian Society of Anesthesia; Supportive Member, Max-Planck-Society

Editor
1978–1987: Journal of Applied Physiology
1986–1990: Anesthesiology
1990–1991: News in Physiology

Guest Editor
Lung; American Review of Respiratory Disease; Journal of Thoracic and Cardiovascular Surgery; New England Journal of Medicine; Journal of Clinical Investigation

Publications

Books and Chapters

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Papers

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