

A 20th century (Jewish) Life.

(From Shepherd to Professor of Virology)

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This book is dedicated to my children, Yuval and Jonathan and to my grandchildren, Thalia, Jacky, Rina and Alex. Hopefully .they will learn something of a useful and interesting life .

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Origin of the Family : My early years.

I seem to have accrued a variety of accents during my long life, reflecting where I have lived and with whom I have interacted. The original and basic accent is Scottish, a Glasgow accent picked up as a child in the poorer neighborhoods of Glasgow. The language became more polished after attending a private grammar school, was modified by living in England amongst cockneys and snobbish North Londoners. It became even more modified by a few years in Israel, while attempting to learn Hebrew, modified further by living for 62 years with a native German speaker, and 60 years in the USA. Thus is my accent Scottish? Apparently it still bears some similarity, since those I meet from Scotland in some cases recognize it. I have been asked occasionally if I am from India? I don't think I have that lilt.

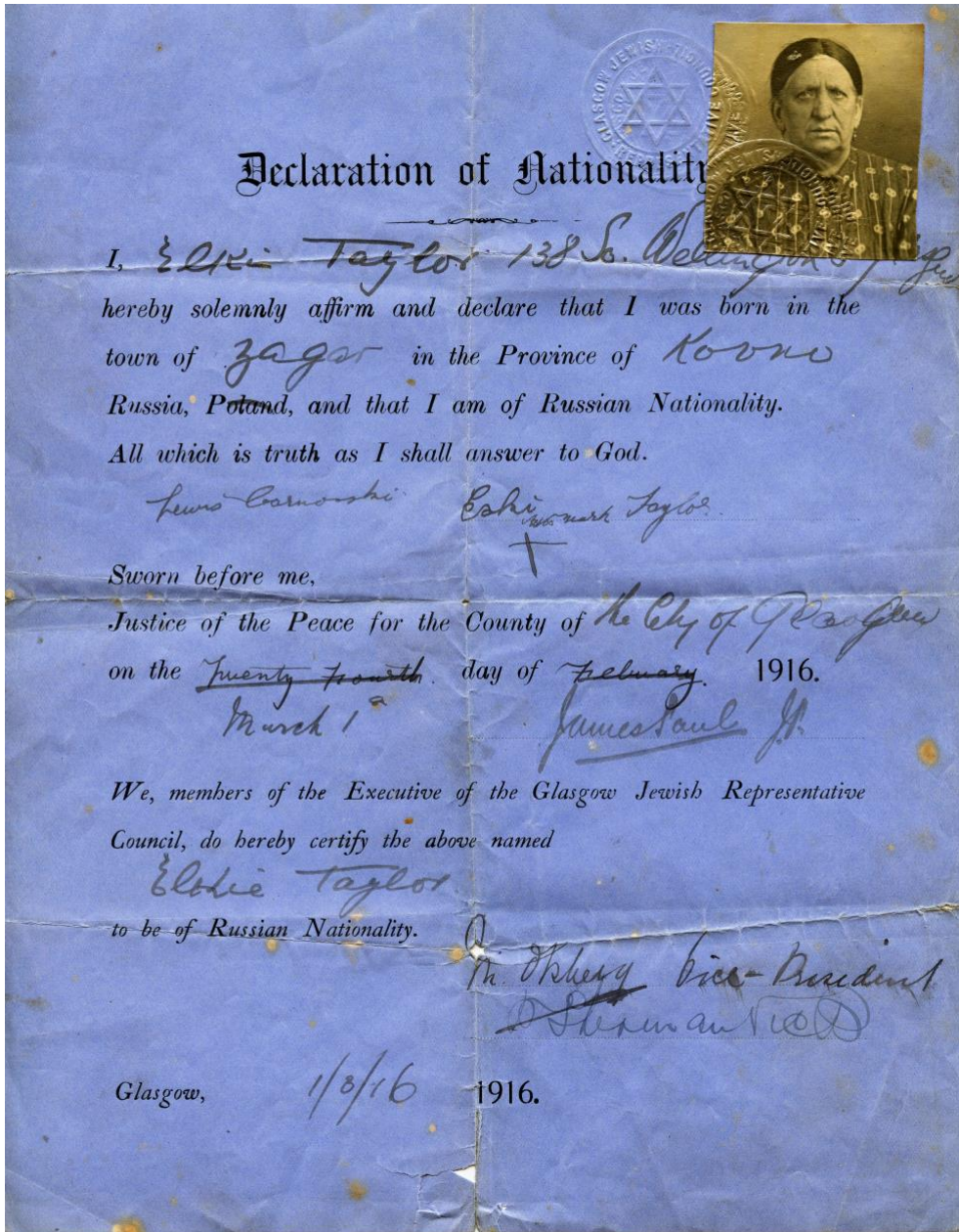
That Jews lived in Scotland always causes surprise here in America. I don't know why, since as far as I am aware Jews are found everywhere, except perhaps Iceland. When I was born (1931) there were approximately 15,000 Jews in Glasgow. There may have been as many as 10 synagogues. Today the number of Jews in Scotland is about 5,000 as a result of emigration to England, the USA and Israel and I assume intermarriage and assimilation. My four grandparents had immigrated to Scotland from various parts of the Czarist Empire at the beginning of the 20th century.

My father's family, the Taylors, (originally Schneider) arrived in Scotland around 1904 from Kovno or Kovno Gubernia (province), Lithuania. In the Scottish census of 1911 they were living in Edinburgh. My grandmother arrived pregnant with Abie (Abraham) and my father was the second child, born in 1907. According to the census living in the house at the time were my father, and his brothers Wolfe, and Louis. Wolfe died from appendicitis before I was born, and I was thus given the middle name Wolfe, which was Anglicized by my parents to

William. This was also the middle name of my great- grandfather on my mother's side, David William Jordan, who according to the Latvian census was actually Wolfe David Jordan.

From documents in my possession my grandfather and grandmother Taylor were both born in Vitebsk, in the Pale of Settlement, that area of Russia in which Jews were permitted to live. Most of Russia was off-limits to Jews. However the extended family lived in a small town in Lithuania, Zagare, which was full of Schneiders, many of these later, became Taylor. In looking at the pattern of immigration of the Jews to Glasgow, most came from that area, and many from Zagare. It looks as if the town emptied of its Jews between 1900 and 1905. My grandparents arrived with Isaac's mother, the "Bubby", Ellen whom I remember as a very old lady, who only spoke Yiddish and appeared to be quite deaf since I recollect everyone shouting around her. As a child I was always afraid of her. She always sat in the same corner of the living room, holding a large cane, and did not move around. Her 10, later 9 grandchildren surrounded her.

I recently received a copy of her naturalization certificate of 1916 from the Scottish Jewish Archives.



Exploring the Internet site Jewish Genealogy, I found a number of Schneiders in Zagare, all tailors by trade. I have been told that the town was also famous at one time for its wooden synagogue. The story in the family, is that they, the Schneiders were on their way to the "Goldene Medina", got off the boat, saw that the natives were friendly, and decided to stay. Another version is that they thought they were already in America. After all the natives do speak a weird form

of English.! The first is more likely, since there was constant immigration to America of Glasgow Jews until this day, although lately Canada, Australia and Israel seem more popular destinations. Sisters and brothers of my grandparents did immigrate to the USA shortly after their arrival in Scotland. I have recently made contact with their descendants. They retained the original name, Schneider. My grandparents (The Taylor's) were quite religious; in fact, the Taylor family dedicated the Bimah (elevated platform for the Torah reading) in the Clarkston Synagogue in memory of my grandfather. Clarkston is a southern suburb of the city of Glasgow. Unfortunately this synagogue as many others in the South side of the city has since closed.

The Schneiders arrived as three brothers with families, Isaac, my grandfather and his brother Barnett, who changed their name to Taylor, and another brother Noah, who changed the family name to Shein. This has caused a lot of confusion in trying to draw up a family tree since later there were a number of first cousin marriages. Apparently there were other brothers who headed for America, but the Scottish branch of the family had lost contact with them until recently. The two Taylor brothers had 18 children between them, so that the family increased very quickly. These were, in order of birth, in my immediate family, i.e. the family of Isaac: Abie, (Abraham) Hyman (my father), Wolfe, (who died before I was born from appendicitis), Louis, David, Kitty, Norman, Sadie (Sarah), Flora, and Minnie. All of that generation is now dead. The picture below shows all the Taylors and their spouses remaining in Scotland in 1955. Kitty and Flora are not present since both had emigrated, Kitty to Israel and Flora to the USA.

As a child I got to know most of my uncles and aunts quite well. My father would take me every weekend to visit his parents, and many of his sisters were still unmarried, or at varying stages of “ courting



It was a very warm family, not in the least pretentious. It was also a closely-knit family, in which each brother or sister would help the other if necessary. This even extended to nieces and nephews, since on arrival in the US my Aunt Flora immediately wanted to know whether we needed a “loan” of money (perhaps it was a gift). Luckily it was not necessary.

The Taylor family after moving from Edinburgh settled in the Gorbals in Glasgow, which at that time was the preferred haven of foreign immigrants. Although they were poor, they maintained high standards and in particular Jewish tradition. Among themselves they spoke Yiddish, but the younger generation quickly learned English. Life initially must have been very tough. The Gorbals was a mixture of Jewish, and Irish immigrants who quite often did not get along with each other. When I was growing up in the 1940’s the Gorbals was the location of Glasgow Jewish Institutions. There were Jewish bakeries, and

delicatessens. There was the “ Board of Guardians” an organization to look after poor Jews, with a kitchen and dining room for the hungry. There was a large synagogue on S. Portland Street, (figure 2) which my father and I as a child sometimes attended. The Talmud Torah, a type of yeshiva, and later Jewish school was at the end of this area in Turrif Street. My sister Beatrice worked in the Talmud Torah for quite a few years as a teacher.



Figure 2 S. Portland St Synagogue in 1917.

The Gorbals became infamous later on, in the 1950's as one of the worst slums in Europe. For a detailed description see the “ Gorbals Story “ a fantastic and interesting book by Ralph Glasser who grew up in this area in the 1920s and 30's. His description of living conditions and filth is shocking. About 90,000 people lived in a very small area of 250 acres in badly built and squalid

tenements. Residents would often live four, six or even eight to a room, 30 to a toilet or 40 to a tap. My memories of the Gorbals differ, since I knew the area at a different time and under different circumstances. I did not have to live in the grime and stink of the slums. My association was the smell of pickled herring and kosher style pickled cucumbers. As a child I would accompany my father to Ettinger's on a Sunday morning to buy bagels, herring and other delicatessen. I still remember the barrels of Schmaltz herring and other delicacies. I think Ettinger also had a bakery (in fact an old directory lists them as bakers), there was later Geneen's a kosher restaurant, which later was incorporated into the "board of Guardians", an organization for poor Jews, and also a social venue for weddings and bar mitzvahs. This restaurant was run in the 1970's by a friend Zvi Fried and his wife. Zvi was rather a portly jovial sort of person. We had been in the kibbutz and Israeli army together. He died rather young and I don't know what happened to his wife.

. By the 1940's the Taylor family had moved out, as had most of the Jewish population, to the South side of the city (Queens Park, Langside etc. which were one notch up, best described as middle-middle class). The South Side means the South bank of the River Clyde. I do remember my grandparents Glasgow apartment. It was quite spacious with a very large verandah overlooking Battlefield Rd, and from this verandah one could see Battlefield Cross, an important transport hub with a kiosk, and tram car stop.

My mother's maiden name was Mitchell and her mother's maiden name was Jordan. According to the census of 1901 my grandmother (Fanny Jordan) was already in Scotland living in Paisley. I have been able to trace her voyage from Europe using the Latvian census of 1898 and the Scottish census of 1901. She was born in Zabeln, moved to Talsi in what was then Courland ,but today Latvia. Her native language was German. She arrived in Scotland with her widowed mother joining two married sisters, Sophie and Ada who were living in

Elgin, in the North of Scotland, their husbands being brothers and were listed in marriage certificates as salesmen. There was another sister Kitty who was slightly older than my grandmother. Sophie eventually immigrated to the USA and Ada to Australia. I can trace the Jordan family back to about 1850 using Jewish Gen, as a large family in the Talsen area of Latvia (various small towns are mentioned). It was an inhospitable area for Jews, who were constantly expelled. The family were saddle makers in Latvia. My grandmother looked the very Puritan type and would easily have passed for Scottish Presbyterian. In fact, if I had not discovered her Latvian origins, I would have sworn that she was of Scottish origin. Doing genealogical research, I was able to trace my grandmother's family back to a great grandfather with the name Talberg. Interestingly the two brothers list on their marriage certificates that their mother was Hannah Talberg, thus probably cousin marriages.

In a recent search of Talsen I found reference to the grave of Reb Josef ben Haim Talberg. Haim Talberg was the name of my great grandmother's father, so this might have been him or cousin, since the same names occur all the time in Jewish families.

My grandfather on the Mitchell side came from the Ukraine, exactly where is not clear, although Zlatapol has been mentioned as the birthplace of my grandfather's sister, thus I assume that the family originated from this "Shtetel", which is close to present day Novomyrhorod in the Ukraine. By all accounts it was a well-known Shtetel. From old documents, including the naturalization papers of my grandfather and his brothers the original name was Mechelman or Michelman. The Mitchells were a large family, some settled in Glasgow, others went to Belfast, Dublin, or as far away as the USA. Although the Mitchells were not religious, in the sense of attending shul on Shabbat, my grandmother's household was strictly kosher. My grandfather Mitchell on the other hand was not averse to having a ham sandwich, which he ate while working in his store. I

was instructed not to say anything to my grandmother. I remember my grandfather as a medium sized, slightly stout man, with a twinkle in his eyes. He never seemed to get angry, although his children could drive him mad. Although his spoken English was good, I do not think he read in any other language other than Yiddish. He was one of four brothers and two sisters, from what I remember and heard, all very colorful characters.

My mother, Jessie was born in 1908 and my father Hyman in 1907. My mother was born and went to school in Paisley, a small town not far from Glasgow, and my father was born in Edinburgh, moved with the family to Glasgow and according to the stories I heard Jessie and Hymie met at the Plaza Dance Hall in Glasgow. In the late 1920s and early 30's this was one of the prime dance halls in Glasgow, situated at Eglinton Toll, just at the border of the Gorbals. This area was demolished in the 1960's-70's to make room for a major highway into the city. My parents were traditionalists, if not religious. They kept Kashrut, different dishes for Pesach, and my father went to services occasionally on Friday evenings, but kept his business open on Saturdays. They did go to Synagogue for the High Holidays, Rosh Hashanah and Yom Kippur. I suspect that both my parents left school to work at the age of 16. This was a generation that never considered attending institutions of higher education or could not afford this path.

My mother had two siblings one of whom played an important part in my life. This was my Aunt Betty. I have devoted a chapter to her later in this book. The other was her brother David. I knew both of them very well. Below is a photograph taken in Paisley of my mother and her cousin Willie Shapiro, the son of my grandmothers sister. I do not know the date, but I imagine sometime in the 1920's. I did not realize that goats were used to tether carriages.



I had contact with both David and Betty until their deaths. Unfortunately, Betty's children died tragically and quite young. One died in a car accident at the age of 19, the other died in his 50's. I have contact with David's children and grandchildren who still reside in the U.K.

I myself was born in 1931. I do not remember much before the age of 5, and even after that age my memory is very sketchy. I spent a lot of time at my grandparent Mitchell's home. I think I was taken there every Friday evening and stayed sometimes the whole weekend. I do have fond memories of creeping into bed with my grandparents. They doted on me, the first grandchild. It is funny what one remembers, since one of the strongest memories was that there was a chamber pot under the bed that was used by both my grandparents and emptied in the morning. My mother's young sister, Betty, must have been about 16 when I was born, and took care of me. She was quite a rebel, and always arguing with her mother. Betty would not accept the traditional ways of doing things. I was basically "adopted" by her, and she may have had a greater early influence on me than my parents. According to Betty my favorite pastime was playing the

gramophone, which I would take from room to room, playing the same record over and over. I vaguely remember the gramophone and the RCA dog on the records. My uncle David must have been very impressed with my playing the gramophone as a child, since this was his wedding present to Mimi and me, 25 years later. This time it was electric, just plug it in, and I did not have to wind it up.

My grandmother's house was spotlessly clean. She was extremely fussy, and she had a procession of maids in uniforms in the house. These were live in maids, country girls who would do the washing, and cleaning. My grandmother however did the cooking. I got along very well with my grandmother, although my sisters and cousins were a little afraid of her. She was a tall, rather dour person, never seemed to smile or have fun, and extremely fussy around the house. Certainly my mother turned out to be the opposite. She and my mother seemed to have non-stop arguments, and I do not think that my two sisters, Beatrice and Adelaide were very fond of her.



My grandmother and grandfather Mitchell (I assume in the 1940's)

These maids came from mining towns, from very poor backgrounds. They were delighted to live in such clean and “ genteel “ surroundings. Most probably

never had a room for themselves before. My grandmother insisted they wear a uniform and they were quite well paid for the time. My grandparents always had a dog, the first I remember vaguely was “ Arispa”, a golden retriever, whom I loved dearly. Unfortunately, he snapped at me and left a small scar above my eye. I think this was an accident, but my grandparents decided he was too dangerous and placed him in a “ shelter”. By all accounts although a beautiful dog, he was very ill behaved. The next dog was “Punch”, who was a shorthaired terrier. He was not as cuddly as Arispa, but he lasted much longer. He was white with a black spot on his back.

My Mitchell grandparents compared to most Glasgow Jews at that time were quite wealthy. My grandfather had a successful furniture/antique shop in the direction of Paisley. Most Jewish immigrants when they arrived in Scotland lived in poverty, and most were small craftsmen such as tailors, cabinetmakers, cobblers or worked in the garment industry. I do not know how my grandparents Mitchell made their money, although it must have been in the early days in Paisley, since my mother and her brother attended a private school in Paisley, and my mother had piano lessons, quite a luxury. My grandparent’s Mitchell lived in a very nice “ tenement”, with spacious rooms. The table was always beautifully set and the whole family would gather on Fridays or Sunday nights for dinner. The one thing that does stand out from these early days was these dinners. These were always fish, the best fried fish I have ever tasted. I remember that the fish were flat so that they must have been sole or flounder. The whole family would gather including my grandfather’s brothers and sisters. They were a noisy bunch, some representing the nouveau rich.

These dinners were a tradition that was carried on for many years. Not only the immediate family would gather but also my mother’s aunts and uncles on both sides of the Mitchell-Jordan family. In particular I remember Aunt Annie and Uncle Jack Foreman (Annie was my mother’s cousin on the Jukoff side of the

family, my grandfather's mother's maiden name was Jukoff) and my grandfather's brother Robert and family. The evenings were noisy and usually ended with card games. The most popular game was pontoon (21's). Many an evening was spent playing this game. I also remember visits from "Aunt Kitty", my grandmother sister, who always seemed to be upset at something. Her husband Philip Shapiro would tag along. A weak, red-faced man, who was bossed around by his wife. Their son Willie and his wife Julie would also come around with their daughter Elizabeth, slightly younger than I.



My mother and father, her brother David and wife (Sadie Cohen) and Annie and Jack Foreman, my mother's cousins. Annie's maiden name was Jukoff, thus on my grandfather's mothers' side.

I enjoyed staying with my grandparents. It was much more peaceful than at home, for there always seemed to be fights going on, between my father and mother. My mother had a terrible temper, and a vivid imagination of my father's misdeeds. By the time I was two and half, Beatrice my sister was born. As a child she was quite sickly and required a lot of attention. Apparently she had whooping cough and had to be placed in hot water in a bathtub. She certainly grew out of it

and became a very healthy adolescent. Adelaide, my other sister was born when I was about 8 years old. Because of age difference we were never close as children. Even when I left home at about 16.5 years old, she was still a child. My relationship with Beatrice has remained strong. I now have another brother, 21 years younger than I, whom I do not know very well. Adelaide eventually moved to the USA and we do visit each other and certainly participate in all the family events. Beatrice and Maurice live in Oxford, England.

My parents were quite poor, having lost everything during the great depression of the 30's. They had to move out of their apartment since they were unable to pay the rent. I was born in this apartment which was somewhere near Eglington Toll. I recently visited this area (2009) and found it a depressing sight. Grey, empty buildings and even what is new is not very attractive.

When I was about 4 years old, we moved to Pollok St. in an area called Tradeston, not as bad as the Gorbals, one step up. This was a working-class neighborhood, not terribly slummy. I do remember that the neighbors polished their brass door handles and doorbells until they shone. However, I also remember houses marked with crosses as a sign of infectious diseases, either scarlet fever, diphtheria or perhaps even smallpox. There was a multitude of infectious diseases that one could get, scarlet fever, measles, scabies, just to name a few. Later on, one was checked in school for the presence of lice. with the 'beastie comb', a sturdy comb made out of metal with very fine teeth to entrap the lice.

My father's secondhand furniture shop was just around the corner from Pollok St. on Houston St. In my mind I still visualize it a being a very rough run-down neighborhood. At the bottom of Pollok St was my elementary School, Scotland Street Elementary (more about this later) and at the other end on Paisley Rd. West was my favorite hangout- a public library. I don't remember that

the rough and tumble of the area affected me.

I think living in this area was a strain on my mother who had been brought up in a very “posh” environment. Now looking back, I think my mother suffered from depression, she was always crying, and moping around. The house was always in a mess and smelt of cats and fish (they both went together). Much later we also had a dog, Carl, a German shepherd. Life was very tough for my mother. She had come from a very privileged background, with servants and now had to do everything herself. Laundry for example was a big deal, since the clothes had to be soaked, boiled, washed by hand, and then put through a mangle to squeeze the water out. It is difficult to imagine the days, without washing machines, dryers, dishwashers etc. Being a housewife and having to care for children was very difficult indeed.

I started elementary school in 1936 at Scotland Street Elementary just down the road from our house. The famous Glasgow architect Charles Rennie Mackintosh built this school between 1903 and 1906. I remember it as a large building with leaded glass towers and wide entrance. It is now considered an architectural gem and is a museum, of the history of education in Scotland. The architecture is called baronial, since Scottish Lairds in the 18th century-built tower houses, still to be seen all over Scotland. The classrooms were large and spacious, with lots of light. The teacher had his or her own desk, and there were two large blackboards. Each desk had an ink well and pen with nib. What a mess I made writing, blots all over the place.

I can picture myself with a school bag on my shoulders, wearing tzitzit which all Jewish boys were supposed to wear. This is tucked under an undershirt, with four groups of knotted threads hanging out. I probably wore these until about the age of ten or eleven. As far as I can remember no one paid any attention to them

I do not remember very much until 1939 when on September 1 war broke out. After 1939 we would bring our gas masks to school. At that time, I, my mother and the other 2 children, (Adelaide my sister was born in 1939) were evacuated to Mauchline, a small town in Ayrshire, now renown because the poet Robert Burns spent a few years there. He dedicated a poem to one of the local lasses who later became his wife. Our stay there was very short, only a few weeks since nothing happened for the first year or so of the war. There were no air-raids, and thus no reason to stay away from Glasgow and home. This period was known as the phony war.

My friends during this period were mostly children of neighbors. I seemed to have a preference for playing with the girls since I found the boys rather rough. (It may have been that I was encouraged to play with the Jewish neighbor's children in an area with few Jews, and that these were predominantly girls). We used to play "peeever", jump with skipping ropes, play with " jawries "and the usual hide and seek and tag. I do not remember having a doll or soft animal, although I assume, I must have. In fact, there was a story that as a five or six-year-old the family went on vacation to the Isle of Barra by ship. Everyone was seasick, the passage was very rough. I used the can on wheels set up to collect vomit as a pram for my doll, so I must have had one. My best friend appeared to have been a girl called Doris Pikovski. My life was fairly uneventful until I started going to Hutcheson's Grammar School at the age of 10. I do not know whose ideas it was that I sit the entrance exam for Hutchie. Either it came from my teachers at the school, or from my parents. Anyhow I was thought to be a very precocious child, and I appeared to have done well in the exams, so that I had no problem gaining a fellowship to this prestigious school. In these days it was called a "founders" scholarship, and I became a founder's boy, like a character out of a Dickens novel.

I was also given all sorts of opportunities to learn dance and music. I started piano lessons at about the age of 8 with a Mr. Wilson. He was an organist

in one of the local churches, and my father had met him as a customer in the shop. I also was sent to tap dancing and Scottish Highland dancing, although this may have been a little later, after the war, when my father's business was better, and the family became more prosperous. As one can see from the photographs before I looked like a healthy, loveable child.



Beatrice and I in front of a tenement in Pollock street.





Thus, I was born during the great depression, which in Glasgow was very severe. The city was grey and depressing, with large slum areas and very high density of population in certain areas. My parents were going through an economic crisis, homeless for a period, but supported by the larger family which nurtured me and later my sisters. Despite this I was a well-dressed little boy, probably better dressed than the other kids at my elementary school. I was liked by my teachers and was apparently a happy child.

The war years.: Blitz on Glasgow.

I was a child of seven and a half when World War II started on September 1, 1939. I was issued a gas mask, taught how to use it and carried it in a box with a shoulder strap everywhere I went (at least at the beginning of the war). To this day I can smell the rubber and feel the tightness of the mask on my face.



The order to evacuate children from the cities was given on August 31, 1939. 120,000 children left Glasgow in three days. Quite a feat of organization. School life was disrupted, and I with my mother and two sisters and a few hundred other children were sent to Mauchline, a small town in Ayrshire, thought to be quite far from any potential target of German bombers. Thousands of children, all carrying boxes with their gas masks and with a label identifying the name and location of home, some with mothers, descended on the railway station and boarded special trains to various destinations in the countryside. The Glasgow evacuees were a rag tag bunch, coming mostly from working class families, children of shipyard, dock and iron foundry workers, from the major industries of Glasgow.

Mauchline was famous as a place where the poet 'Robbie' Burns lived for a short period of his life. His wife Jean Armour was born in the village and while residing here wrote many of his well-known poems, such as "to a mouse"

It probably had a population of a few thousand individuals. I only have vague memories of the village. We were billeted to the house of the "laird", a very large, or so it seemed to me, mansion with extensive grounds. At one time I must have been lost in these grounds, since for years afterwards I had repeated dreams of wandering through glens and unable to find my way back. I have no recollection of attending school there, and it is quite possible that I did not. After a few weeks when nothing happened, the so-called "phony war ", we returned to Glasgow.

At that time, we lived in Pollock St in what was called a "tenement". These were large multistoried (3-4 level) buildings, made of either dark grey granite or reddish sandstone. Ours was grey granite. One entered through the "close" and climbed up dark stairs to reach the flat. At the back of the building there was a central court or square surrounded by a number of such tenements where we kids would play. This was also where the middens were kept. This was a working-class neighborhood, and I distinctly remember my mother taking great care that I should appear clean and well dressed, and not look like the ruffians of the neighborhood. We played games in the back green and mothers would throw their children "pieces", the Glasgow slang for a sandwich. "Maw gee us a piece". We played "peever", a sort of hop- scotch and conkers with horse chestnuts. At the age of five I started in Scotland St. Elementary School within walking distance, at the bottom of the road. Pollock Street is no more, razed completely to the ground to make way for urban renewal and highways and Scotland St elementary school is now a museum of education, having been designed by Rennie Mackintosh, (1868-1928) the famous Scottish architect, between 1903 and 1905 and only recognized as an architectural gem in the 1960'.



Scotland St. elementary School.

Gas lamps lighted the streets and I remember the lamplighter came around every evening with a sort of torch like apparatus lighting the lamps. I believe he also lit a gas lamp in the close of the tenement.

As a child I was fascinated by the night skies, searchlights looking for German bombers lighted them up, and during the day there were grey and silver “barrage” balloons (blimps) to entrap enemy planes. However, nothing much happened in Scotland or for that matter in the rest of Britain during the early months of the war. The news from Europe was dreadful, and I remember having a large map of Europe on the wall and with the help of my father putting pins on the map to mark the advances of the German army. Thus, I learned European geography. To this day I can still visualize a political map of Europe even though the boundaries and names of countries have changed, although I do get a little lost when it comes to the newly created states in the Balkans and the ex-Soviet republics.

We were scared not only of the bombings but also the fear of a German invasion and occupation. Being Jewish, compounded that fear, we were only too well

aware of what might await us if the Nazi's occupied Scotland. There were a few German-Jewish refugees in our neighborhood, and I heard horrible stories of what was transpiring in Europe. I remember some of these refugee families had children approximately my age. My father's uncle Barnet had given refuge to an elderly man a Mr. Heller, with his two children from Germany. I recall that the boy was called Norbert and the sister, Heidi. I did not know them very well since they were older than I. To me they appeared snobbish and looked down on us poorly educated "Eastern" Jews. For 50 or more years I had no idea what happened to them, until I casually mentioned their name to an "old" acquaintance from Glasgow, Robert Weber, and he excitedly told me that he had been a close friend with the Heller's, and that Norbert ended up in Israel on a kibbutz and his sister lives somewhere in England. Thus, my impression of snobbishness was probably not justified.

My parents were aware of our possible fate at the hands of the Germans. In the event of a German invasion arrangements were made for me to hide with a Scottish family named Fraser. I never discovered details of the arrangement, but I know the Frasers would pretend I was their son if the worst did happen. I have attempted unsuccessfully to find out more about them. All I remember was that they also had a son also called Milton (William) and that there was some Canadian connection. I have found a Hamish Fraser using Google, who was a communist leader at the shipyards my father worked in, and he may have been the head of that family. Recently I googled Milton Fraser, and found a William Milton Fraser, an engineer in Glasgow. He might be my "twin ", only our first names reversed. Although I sent him E-mail, I did not receive a response. To date I have not been able to contact him. There was also talk of sending my sisters and I on one of the boats evacuating children to Australia, where we had distant relatives, cousins of my mother. Many such ships were torpedoed on the way, and in retrospect staying in Scotland was undoubtedly the best and safest course.

For the first two years of the war very little happened in Glasgow. There were a few probing raids, lots of noise from anti-aircraft fire, and a few bombs. I still recall coming out of a cinema with my mother (I do not remember the film, but it may have been the Mummy's Hand, because I know I was also terrified by the film), while an air raid was going on. I remember the noise of ack-acks, the searchlights, the fear, and the rush to get home. No announcement had been made and we were quite unaware of any raid.

In March of 1941 the air raids started in earnest. This was after the blitzes on Liverpool and Manchester. The Germans worked their way systematically north. Glasgow was a prime target because of the docks and the shipyards where a large part of the Royal Navy had been built. In two nights they hit Clydeside, as the banks of the river Clyde were called. Large areas of the city, Clydebank and Maryhill were destroyed. After the first blitz, I wandered the streets near home gaping at the people bandaged up and the destruction of houses, tenements with large gaps in them, and burnt out churches. This was very exciting to a child of nine and a half. Since we lived in close proximity to the river Clyde, still in Pollock Street at this time, my parents decided to spend the next few nights with my grandmother who lived in an area ironically called Battlefield, but further away from the river. The area was so called because of the Battle of Langside between the followers of Mary Queen of Scots and the Protestant supporters of her son James 1 of England (VI of Scotland) in 1538 took place on fields nearby. At the top of one of the streets there is a statue to commemorate the battle.



As expected, there was another blitz the following night badly damaging the shipyards. The whole town of Clydebank was destroyed. There was not a house left standing. 500 people were killed and more injured during the two days of bombing. Extensive damage was done to other parts of the city particularly in Maryhill and Govan, closer to our house. It was during this air raid that my Uncle David (my mother's brother) and his wife Sadie were bombed out. Apparently, a parachuted mine hit a nearby shelter, and everyone inside was killed, whereas those who stayed in the building survived. The newly married David and Sadie lost everything, but at least they were alive. The bombs most certainly did not hit their targets but a middle-class residential area, Shawlands killing many people, unless that was the plan, to terrorize the population.



After this Glasgow was left very much alone. There were occasional raids, one of which was a firebomb raid. Incendiaries fell around the brick shelter in the back yard in which we had taken refuge. This took place on March 23, 1943. I remember the terrifying screams of my sister and mother when the shelter door was opened and there were flames all around. For the moment we thought we would not be able to get out. Everyone was terrified. When we did get out the sky was completely red, and there were fires all around. A beautiful church just around the corner from Dixon Avenue was completely destroyed. This was the Queen's Park Presbyterian church, a beautifully designed church by the well-known 19th century architect Alexander "Greek" Thomson. We had moved to this area, a step up probably in 1942.



Despite all of this life continued normally (or so it seemed to a 10-12-year-old child). I attended school, by this time Hutcheson's Boys Grammar School, quite a distance from home, and went to Cheder (Hebrew religious classes) after school, at Langside Synagogue. I had Hebrew lessons, I assume in preparation for my bar mitzvah, which would have been in December of 1944. I do not remember much about the event. It was held in the Marlborough Hall, in Shawlands, near Queens Park. As far as I know there are no existing photographs of the event.

The war was still on and there was strict rationing, and money was in short supply. Rationing of most foods and petrol began in 1940. There were ration books with coupons for everything, food, clothing, and sweets. These latter were rationed at 12-16 oz per month, a considerable amount and was thought to be the reason so many children developed cavities in their teeth. I certainly ruined my teeth so that I had to have almost all of them replaced later in life, but I enjoyed this surplus of candies. Butter was rationed on the other hand to 2 oz per week, and margarine was the staple substitute. Many foods such as bananas and coffee were unavailable, and oranges and imported fruits were in short supply. Although rationing was a nuisance it meant that everyone had sufficient to eat and wear, and perhaps rationing acted as an economic and social equalizer. On

the other hand, it did create a thriving black market with “ skivvy” guys raking in the money.

I would visit my Taylor grandparents and the rest of the family in Battlefield once a week. My father’s sister Kitty and Louis Flacks, and my cousins Cyril and Barry and later Irene lived downstairs from the grandparents, next to the Tonic cinema in Battlefield Rd. I remember my Aunt Flora talking about her boyfriend Leslie Slavid who was a prisoner of war in Germany in Stalag 8B and had organized or played in a band in the prison camp. He was either a saxophonist or clarinetist. I remember my Aunt Minnie sending me out to buy some “ elbow grease” at the Battlefield kiosk near the tramcar stop. My laziness must have been apparent at a very young age! My grandfather was doing very well with the factory producing uniforms for soldiers instead of suits. However, he died in the middle of the war (1942), and the factory continued to be run by my uncles Norman and Louis. My grandparent’s house was always full of people, and my great grandmother Ellen (Elke) always sat in a corner. She did not speak English and I was rather afraid of her. According to my records and I do not know if they are correct, she died in 1946 at the age of 107. I recently received a copy of her naturalization papers from the Glasgow Jewish Archive (see copy in chapter 1).

During the war my father worked as a riveter in the John Brown shipyards. Since he had three children, this was the alternative to military service. Although the pay was little, we somehow survived, as did everyone else. As life improved, because the war was winding down or there was an increase in prosperity, he would come home on Friday evenings laden with fruit. The visit to Ettinger, the delicatessen in the Gorbals, in the old Jewish neighborhood was a major event every Sunday morning. It is interesting the foods I remember, particularly chopped herring, and I can visualize my mother standing near the sink with a

chopper and hacking away at the herring which was mixed with eggs, apples and onions. This is apparently a traditional Jewish dish.

I remember my childhood as happy, despite the war. I had music lessons (piano), tap dancing, and at one time even Highland Dancing lessons, although this might have been later when I was about 14. For the latter I had the full regalia, kilt, sporran, rabbit paw and special shoes known as brogues. As well as group dances, I danced the “ famous” sword dance around four swords placed as a cross. These dances apparently go back to the 15th century. I was a good dancer and always enjoyed this past time.

One disturbing thing that made a deep impression on me was that towards the end of the war, or perhaps right after the war my father was arrested and accused of dealing in black market cloth. As pointed out above, clothing and cloth were rationed and one needed coupons. Rationing of clothes began in July 1942 and continued until March 1949. I don't think there was any real shortage of clothing, but this was an attempt to control spending and to equalize the ability to purchase clothing. It may also have been away to recruit workers for the war industries rather than for the production of luxury goods. There was no real evidence against my father, and the general impression I got was that he was arrested because he was Jewish. Luckily my mother's parents were wealthy enough to get a good lawyer, a Queen's Counsel, and the case was dismissed. In Scotland QC are usually barristers (lawyers or jurists) with 15 years or more experience. I think he may have spent a few days in jail, during which time we lived with my grandparents. My mother was quite distressed by the whole affair. This was shortly after he re-opened his furniture store. This had quite an effect on me, I was of a vulnerable age, and it seemed to me that the whole affair was the result of Anti-Semitism.

For me World War II ended on May 8, 1945. I was just 14 and a half years old. Thus my childhood was one of war and fear, and yet also good times. I suppose as

a child one accepted war as normal. I was doing well in school, was involved in the youth movement, Habonim, and felt quite carefree and confident of the future. I had no idea of what really lay ahead. At that time I suppose my ambition was to finish high school, go to university and perhaps be a lawyer or doctor.



The family , when I was about 14.

A Scottish Grammar School.

Grammar School:

Every morning as we gathered for prayers we sang the school song,

“ In 1650 the school began with 12 boys on the roll,”

in jest the following was added.

They bent their backs to the master’s whacks

For the benefit of their sandshoe soles.”

I do not know the original version .

(In these days sneakers were sandshoes or later called tennis shoes. The origin appears to be Scottish or Australian and still used to this day.)

This was followed by morning prayers in the great hall in which all the staff would assemble in their gowns, and the headmaster or one of the other masters would lead us in the “ Lord’s Prayer,” and some other hymn or psalm., usually Psalm 23. As a kid from a Jewish home I was exempt from prayers, but I did not want to stand out as different, so I participated most of the time. I am certain the exposure to Christian prayers did me no harm (anyhow the Psalms are of old testament origin.). I can still visualize the sea of blue blazers standing in the assembly hall, each class with its specific location. The “ masters” would troop in, with their robes and board hats, followed by the headmaster. I don’t know whether they entered in order of seniority, but I suspect they did. They stood on the stage with the headmaster and the masses of students before them.

George and Thomas Hutcheson founded Hutcheson's Boys Grammar School in 1641. The original intention was that the school should be for orphans. By 1650 there were 12 boys attending, thus on the roll in the school song. The Crown Street building in the Gorbals was home to the Boys' School from 1841 to 1960. The architect liked the Gorbals for the "quietness of the situation, good air, roomy and open site, with good access from all directions." During my time, the 1940s, the Gorbals was a notorious slum, considered the worst in Europe. In the 1920's it was a haven for Jewish and Irish immigrants, mostly working class, who worked in the nearby steel mills. By the 1940's the Jewish inhabitants had moved out further south of the river Clyde, although some Jewish bakeries, and delicatessans remained. In order to get to school I had to take a tramcar from Queens Park (Victoria Rd) where we lived and walk a few blocks past the taunts of the local kids who considered us "posh little snobs". The school was a large Victorian building, rather cavernous, and dark, built from grey/black sandstone. It was quite a depressing site from the outside. Inside it always seemed to me, to be cold, and the main source of heat was the fireplace in the classrooms. It often was so cold, that the frozen milk bottles would be brought in: each student was entitled to ½ pint of milk for halfpenny a day, and the milk placed in front of the fireplace to thaw out. The classrooms were large and desks organized in long rows. At each desk there was an inkwell filled with blue ink, these were the days before fountain pens and ballpoints, and we all used old- fashioned pens with nibs, or pencil for writing. My calligraphy was terrible, and I could not avoid getting blots of ink on the page .As I remember classes were large, about 40 students per class. The desks were one continuous row seating about 12 boys. I do not want to give the impression of some Dickensian environment; it was far from that although we were "belted" with the strap for various reasons. These were thick belts, about half an inch wide and the end split into three tongs to

make it more painful. Despite the corporal punishment, on the whole, it was a happy place, with lots of high-spirited boys running around the playgrounds. These playground games were quite rough, tagging each other, catching and opening each other's trouser flies. I suppose this reflected our stage of sexual development. These were the days when it was considered healthy to separate boys from girls. It was after all a boy's school. There was a separate school for girls in a different part of the city. Today it is co-ed.



In my time in the 1940's there must have been about 600 students in the school, all dressed in school uniform, a blue cap with black band, blue blazer with the word "veritas" under the school emblem on the blazer pocket. Veritas, truth was the school motto.

I was a small dark boy with masses of curly hair. For some reason I was nicknamed Tony right away, and this stuck during my period at school. Either because I looked Italian, or because Tony was a corruption of Milton, take away the Mil and add a Y. I was about 9-10 years old when I enrolled, having sat an entrance exam and won a place as a Founders boy. In these days it was not called a fellowship. A founder's boy paid no tuition. I came from a poor family who could not afford to send me to a private school. The founder's boy was in the spirit of the Hutcheson's Brothers who established the school for orphans. I do not remember there being other founders boys in the class. I assume that most of the other students came from the city middle class, and quite a few from rural Scotland, sons of ministers and doctors.

My previous school, Scotland St. Elementary School was later recognized as an architectural gem, built by the famous Scottish architect Rennie Mackintosh, but it was in a poor working-class district, and I apparently excelled among the other students. I was I believe the teacher's pet, which was bound to cause trouble sooner or later. Also my parents thought of themselves as middle class, and it was considered important that I have the correct accent and mix with middle class children. I was assigned to the A section of the grammar school. By all accounts I was a very smart kid, who learned to read at about the age of three. This must be a genetic characteristic since my son Yuval could also read at a very early age, long before attending kindergarten.



Me at age 15 or 16,

In Hutchie classes were divided along classical (language) lines. The top students were in the A classes where Latin and then a year later Greek were taught, the B class studied Latin and French, C, French and German and D only French. Each year was referred to as a Form, and school would continue through the 6th form. I soon discovered that I had no talent for languages and was often belted for having more than two mistakes in Latin composition. The Latin Master was a Mr. Dorian, and he, at least to me, was a terror. I have heard from others that when he left Hutcheson's for a position at another school, Albert Rd Academy, that he continued his reign of terror. I must have been a good student

originally to enter and continue in the A classes. To some extent I envied the boys in the B classes since they were at least learning something useful, a modern language, namely French. It seemed to me that the training I was receiving would be good for the ministry or law, but not for much else. We did have some mathematics, some art (drawing) and history, mostly Scottish history and of course English and singing. I distinctly remember all the Scottish songs, mostly by Robert Burns such as Annie Laurie, a love song and “Loch Lomond,

“By yon bonnie banks and by yon bonnie braes,
Where the sun shines bright on loch Lomond'
Where me and my true love will never meet again
On the bonnie, bonnie banks of loch Lomond

Oh, ye'll tak' the high road and I'll tak' the low,
And I'll be in Scotland afore ye;
For me and my true love will never meet again
On the bonnie, bonnie banks of loch Lomond..

Most songs were probably of Jacobin origin, and encouraged a sense of Scottish nationalism. The above song was first published in 1841, but predates this, possibly to the Jacobite rebellion. History, as taught at school always seemed to revolve around the wars between Scotland and England. I don't know how many times I heard the story of Robert Bruce and William Wallace. Later on we had some “ British history” which always stopped at that villain Napoleon! There was, at least in the years I attended, no chemistry or physics, or perhaps I never got that far. Other private schools such as Allan Glen Academy were well known for the sciences. We did read quite a lot of Robert Burns, difficult to understand

being in Ayrshire dialect and also studied the poetry of Keats and Wordsworth, as well as the works of Dickens. We studied a Shakespeare play every term. My favorite subject was undoubtedly history, and towards the end of my stay in school we had an excellent history teacher, a Ms. Crawford. She was young, attractive and inexperienced. The older boys used to tease her, and it was funny to see her "belt" someone much larger than herself. In a recent edition of the school newspaper, which I now get periodically after many years of disinterest, I noticed her obituary. She went on to be a very popular teacher. However to sum up, it was a very classical education, not appropriate for the 20th century, nor what I was to engage in later in life. That I did not get more out of it was my fault, I was very restless for the reasons discussed in the last chapter. I also did not participate in sports, which was a drawback in getting to know other school mates.

I did meet with the occasional anti-Semitic remark in school. Not so much from the fellow students as from the teachers. In fact most of my fellow students may not have known I was Jewish. Some may have thought I was Italian, thus the Tony, and one kid asked me if my mother used sewing machine oil for cooking, probably mixing up olive oil with machine oil. Being Jewish (or Italian ?) was an oddity to some students. It was assumed I ate different foods, I suppose olive oil was strange to these kids. They grew up in a land without garlic, olive oil or spices. In particular I remember the art teacher making some insulting remarks about Jews, and of course English literature from Shakespeare to Dickens is quite anti-Semitic. Unlike other stories I have heard from colleagues growing up in the East End of London, I never met physical violence for any reason, most certainly not for being of another religion or ethnic group. In fact Glasgow seemed a very tolerant place until I reached the age of 16 (when the anti-British violence occurred in Palestine).

I recently visited Hutchesons' Grammar School. It is a new location the old building in Crown Street having been torn down. The new school is in a nicer part of the city, still in the South side, not far from Queens Park and is now co-educational. It's emphasis has shifted completely, it being on the arts, music, and sciences. There was little evidence of the classics. They have excellent facilities for the drama and music, and I was very impressed. Two students very proud of the school and its cultural program showed me around. The student body is very heterogeneous, a large percentage (15-20%) Indian, Pakistani, and Jewish. In fact "diversity" of the student body appears to be important, not at all as in my days at the school. In those days White Protestants predominated. I cannot remember a single Pakistani or Indian pupil, and most certainly not a Catholic. This of course reflected the ethnic and religious make up of Glasgow in the 1940's. There were however quite a few Jewish students, some, not bitten by the Zionist bug, becoming prominent physicians later on. As far as I am aware there never was any overt anti-Semitism at the school.

I was a very quiet shy boy, unfortunately not interested in sport. There was cricket and soccer once or twice a week in the schools private playing fields, somewhere in the Southside of Glasgow (Auldhouse Field). I usually stood aside and was a spectator, or later on did not go at all. To this day I am sorry I did not participate in sports. I was a very lonely boy at school and had few good friends, mostly because of lack of interest in sports, and I shied away from rough play. I had one friend from 2B and 3B, a Donald Dickson (Dixon or Dickenson) with whom I would go out to tearooms, or visit his home. We enjoyed each other's company and I was made very welcome by his parents. His parent's house was wealthier and cleaner than mine, and I was embarrassed to invite him home. Our house always smelt of cats and cat food. My mother loved her cats, and there was always a dog at home. Since the house at that time was rather small the animals reigned. When I left school in 1946 or 1947, I lost contact with Donald. I did write

him a letter explaining my motives for leaving Scotland at that time but he could not understand them. I have tried to track this friend down, but all record of him seems to have been lost. Even the school has no trace of him.

I have tried to figure out what made me so shy and quiet, and in many respects a loner. I was actually a happy child and had a fairly happy childhood. I spent a lot of time with my grandparents, my mother's parents, and they always pampered me and gave me a lot of love. My parents sent me to various classes to improve my education, such as music (piano), dance, (tap and Scottish) and probably indulged me when they could hardly afford it. My father doted on me, I appeared to be the brightest in the family (at least of my generation up to the 1950's). Was the shyness genetic? Looking at my own children and grandchildren I find some of the same characteristics. Perhaps I was self-sufficient and did not need the rowdiness of other children. I spent a lot of time on my own in the public library from a very young age, before even going to Hutchie. The public library was at the bottom of Pollock Street on Paisley Rd West. I got a great enjoyment from reading. I immersed myself in the 10 volumes of the Book of Knowledge (originally Arthur Mee's Children's Encyclopedia) that I must have received as a present about the age of 8. I had all kinds of children's encyclopedias and one of these accompanied me to bed every evening.

Was being Jewish a factor in this lack of social interactions? Although the family was not religious, I heard a lot of talk about things a Jewish boy does not do, such as play football, go to the local swimming pool (the baths), play with "hooligans" etc. This was not only a Jewish thing, but one of class, the striving to be middle class and not working class, to move up in society. The result of this was that I did not learn to swim. I suppose the baths were a mixture of things, a place to take a bath for those who did not have one at home, and also a place of recreation. The nearest baths were on Calder Street, not far from our house. Many of the

tenements did not have bathrooms and as such the baths as they were known were used as a place for personal washing, and also as “steamies”, for washing clothes. I suppose the idea of washing in public was frowned upon as lower class and as far as I remember there always was a bath and toilet in our house. Only when we went to the coast on holiday did we stay in a flat in which there was a common toilet on the landing. The public baths also contained swimming pools, Turkish baths, and saunas, although these may have been added after the war.

I started playing the piano at the age of 5 or 6 . I did consider studying music seriously. I had a good ear for music and could sight read extremely well. I gave a few performances at local events, and even had a few pupils for a time after I dropped out of school. However at the age of 16 I lost interest in music. Perhaps all sorts of hormones were active. Music became an important part of my life later on, influencing my marriage and also choice of place to live. I later found that playing the piano was a “honey trap” for attracting female admirers.

My studies certainly suffered as a result of being so involved in Habonim, a Zionist-Socialist youth movement, discussed in another chapter. My grades plummeted and I lost all interest in school.. I had problems with Latin and Greek, and thought my future was elsewhere. A classical education seemed a waste of time. I was disgusted by Glasgow social life, the emphasis on money and consumer goods, and the time spent on dances and small talk. About the age of 16 I told my parents I was quitting school. No one made any attempt to persuade me otherwise and this completed a chapter in my life. I do not understand why my parents gave in to my whims so easily. One of my friends, Tommy, who went through the same brain washing by the movement (Habonim) tells me that the same “madrach- leader” came to his “parents” house to persuade them to let him go on Hachshara, but his “parents” would not hear of it before he finished high

school, and matriculated. I wish my parents had done the same. I was offered too much freedom. Thus I did not complete high school, and this resulted in problems later in my life. **I was a high school dropout.**

I blame my desire to leave high school partly to the “ education” I received in Habonim. The movement secretariat or policy makers made a deliberate decision to encourage teens to leave high school without a certificate of education (highers), and thus prevent them from attending university, since an academic education might remove prospective pioneers from the “ fold”: that is immigrating to Israel and kibbutz living.. For us youth it was a very short- sighted and ultimately a cruel decision (and actually for the future of Israel as well). Many lives were ruined by this action, and there are many bitter individuals as a result of this policy. Ironically most of the “leaders” encouraging this choice had themselves finished university at the level of the BA or BS. What a bunch of hypocrites. ! Many of my peers went back to school at the age of 40s and 50s so that they could do something other than agricultural laboring , tedious work no longer needed .

What was Glasgow like during these days, of the 1940's? This was the period of the war, when the city was quite damaged by the Blitz's. Most of the damage was along the River Clyde. It was a very miserable city; grey and dark, always raining or cloudy and cold. If the temperature reached 65oF in the summer. it was considered a heat wave. It was also a heavily industrial city, with shipbuilding and steel production as the main industries. The city was poor, as were the inhabitants. Mostly it was a working-class city. The air was “ dark” and heavy because of the burning of coal as a means of heating the houses. Even the school as mentioned above had coal fireplaces in the classrooms. The coal was delivered in large sacks by horse and cart. I can still visualize the streets with the horses (usually Clydesdales) pulling the cart loaded with sacks of coal. During or because

of anticipated shortages it was often stored in the house (in some cases, I heard, in the bathtub). In fact each tenement had a storage area or bin for the coal. The streets were full of horse dung, no one thought of hanging a bag from the rear end of the horse. In fact horse and cart delivered many items, including bread and milk, etc. Lorries were reserved for larger items such as furniture and only became popular much later on. Certainly until the mid-50's a horse and cart was a common site. I spent a short period working with my father in his furniture store, and often the furniture was delivered or picked up by horse and cart.

Occasionally for relaxation a few schoolmates and I would saunter down Sauchiehall Street and go to one of the tearooms for tea and cakes. Glasgow bakeries have always been very good, and I remember cream filled meringues, and cream puffs served with a good pot of tea. I loved to walk down Sauchiehall Street to my father's shop, which was at the end of this main thoroughfare, past George's Cross (no longer there but site of a highway overpass) to Maryhill road. My father's shop was quite close to the Cross, and from school to the shop was probably a couple of miles. This was the day before it was a pedestrian mall, but when tramcars or buses ran its length. Perhaps I stopped off at the Willow tearoom for my tea, unbeknown that this was a famous landmark. Like my elementary school, a café built by Rennie Mackintosh, in 1903 that was to become famous many years later. It is still open as a tearoom in the now pedestrian Buchanan Street. I visited it a few years ago and was not impressed by the quality of the scones or cakes. It had become a tourist trap.

In retrospect , leaving school when I did was an obvious mistake. I did not think much about it until many years later, when I decided that Kibbutz life was not for me. Without a high school certificate there was not much of a future. There were not many openings for a high school dropout, even in Israel. I should have continued, worked harder and taken my Highers.(school certificate). I might have ended up staying in Glasgow, either as a lawyer or a physician, or

even a teacher. Who knows. ? Life is never as one plans it. My life and career would have been very different, and I really should have no regrets.

Zionism, Socialism, and Adolescence.

At a very young age, about 9 or 10 I was sent for private Hebrew lessons to a young woman named, Ruth Ross, who lived in Sinclair Drive, in Battlefield quite close to my grandparents. I do not know how my parents knew of her or why in retrospect, it was so important to them that I learn Hebrew, since I also attended cheder where we learned prayers and ritual. She taught “ modern Hebrew” different from biblical Hebrew and I learned to read and write Hebrew script. She was to have a tremendous influence on me, introducing me to Zionism, the idea that we as Jews did not belong in Scotland but in Israel (Palestine) and introduced me to the youth movement Habonim. This was a Socialist- Zionist youth movement, akin to the boy scouts but with Jewish nationalist and socialist overtones. Ruth came from a Zionist family. I lost touch with her after I left for Habonim hachshara (training farm). However her influence thrust me in a direction very different from that of my peers.

I was also influenced greatly by my cheder teacher at Langside Synagogue, on Niddrie Rd, close to our house on Dixon Ave. Rabbi Singer “adopted” me and decided I should play an important role in the Jewish community and in the synagogue. He had great aspirations for me. I recently came across a prize I received from the Langside Hebrew Congregation in 1944. It was the Dux prize (first prize) of Valentines Jewish Encyclopedia., with an attached certificate signed by Rabbi L. Singer. I have not been able to find out what became of him later on. I certainly appreciated him. I assume he taught me for my bar mitzvah of which I remember very little.

Thus all this “ guidance” and to some extent “ brain washing” on a small impressionable child made me feel different from the other children. Perhaps brain washing is the wrong word since the intentions were positive. I was the

only Jewish boy in my elementary school class and likewise later in my class at Hutchie, and this also might have had an influence.

I joined Habonim when I was about 10 years old. The group was called Gedud Degania after the first kibbutz established in Palestine. All the Habonim groups, meeting in different synagogues in Glasgow, had names of kibbutzim, and gedud signifying an army battalion., was the name given to the youngest groups; the teen groups were called plugot. It is interesting that these were military terms in the Israeli army. They are in fact of biblical origin. Gedud meant band or troop and occurs a number of times in the book of Samuel. "Madrachim" leaders who were generally a few years older than us from within the community led the gedud. Occasionally there would be a "shaliach", someone from Israel, who would make the rounds of the various cities. These were usually tall handsome guys, occasionally accompanied by their wives. They were the heartthrobs of the girls of the group, appearing very "macho". Their job was to encourage and recruit prospective halutzim (pioneers) for kibbutz life.

We learned the Habonim promise "I promise as a Boneh to uphold the good name of the Jewish people ... " and we built bricks out of cardboard and glue to represent the bricks of the pioneers. This ceremony, equivalent to a scout's ceremony was known as the "hakdasha", basically "dedication". This was a youth movement, similar to the boy scouts except with a Socialist-Zionism theme. We learned songs all about building the new "homeland", dances such as the Hora, mayim-mayim (water-water), a precious substance in that part of the world, some scouting, knotting, and camping skills. We met, 10-15 of us, every Sunday afternoon at Queen's Park Synagogue. I remember this as a beautiful building, surrounded by a wooded garden. The first time I went there, by mistake I walked into the church next door, and sat down with other kids learning about Jesus. I quickly realized that something was wrong, approached the teacher and asked

whether this was Habonim. She quickly directed me to the synagogue. I do not remember whom our madrichim (leaders) were (Sylvia Poli or Robert Weber) . I have kept up with both of the above, meeting Robert occasionally in New York and Sylvia in Israel.

I have added a photograph of the synagogue below



When I think about it now, all of this seems very strange, growing up in Scotland and singing songs about water and work. I loved the singing although I did not know the words, just a jumble of sounds, and the dancing was fun. I suppose this was part of the indoctrination. Communal singing became an important part of life in Israel, reflecting in many cases nostalgia for times that never were and places long lost.

I was quiet and a little introverted (or shy) compared to most of the other kids. I remember only a few in the group including Agnes Benjamin Victor Kurtzman, Ruth Samuel and Judith Wolfson. With some of them I remained friends until I left Glasgow for Hachshara, and others such as Agnes, ended up for a time in the same kibbutz in Israel. (She later on moved to Dayton, Ohio and we met a few times when I first arrived in Bloomington).

During these early years, around 13-14 I would occasionally meet with Tommy Berman and Basil Rifkind, both a few years younger than I. I believe I knew them from Cheder. I admired Tommy, thought him very clever, and intelligent, and appreciated his superb self-built electric train set. I would occasionally go to his house, to the Millers, for “tea” with my mother and spend time playing with this wonderful set. Basil was less “cultured”, more outgoing, and always a little rough on the outside. Tommy and I later became good friends, and he became instrumental in my studying in the USA. We were in the same kibbutz and in the army together.

Basil did not join our hachshara but obtained a MD degree from Glasgow University Medical School. He became a well-known cardiologist and head of the US-NIH heart section. He retired as chief of the NHLBI's lipid metabolism and atherosclerosis branch in 2000. It was Basil who pioneered the relationship between cholesterol levels and heart disease and published extensively in this field, both books and papers. He died of Parkinson's in 2008. Apparently, he did go to Israel as a physician, but one of his children developed leukemia, and the best treatment at that time was in the USA. He came to the US because of the son and stayed on at the NIH. By chance I met one of his other sons recently on a trip to Bethesda. A small world!

My social life revolved around Habonim and around the same kids who attended cheder. I also attended Bnei Akivah, a religious Zionist movement

occasionally at a small orthodox shul on Dixon Avenue. This was called the Crosshill congregation and was more Orthodox than the others, although all three would be called modern-orthodox today. The meetings were held right across the street from our house on Dixon Avenue. Many of those attending were not native Glaswegians, but refugees from Europe. They seemed to me and particularly to my parents and their friends as “ strange” people, rather uppity. I have learned since then that this was a case of us the Oeste Yidin and them the German Yidin, with the same suspicions and prejudices that occurred in all Jewish communities. We were suspicious of each other. Many of them had been saved in the “ kinder” transport as was my friend Tommy . B’nei Akiva was more orthodox than Habonim, which at specific time appealed to me, (as I went through a religious stage) and other times turned me off. The girls of Bnei Akiva appeared prettier than those in Habonim. I discussed this many years later with Professor Julian Davidson, a fellow Glaswegian, whom I met at Stanford University. Julian was a regular at the B’nei Akiva and also Bachad the more senior movement. We agreed that the Bnei Akiva girls were prettier. Sometimes I went to Shul on Friday nights and Shabbat morning, other times I stayed away. At home we were “ traditional”, and yet I hung up a stocking at Xmas and expected presents until about the age of 9. In fact, I learned there was no Santa Claus when I started Cheder which I attended from the age of 9 and had a bar mitzvah at 13 in Langside Shul.. I participated in religious services until my bar mitzvah, and probably for a short time afterwards.

Tommy, Basil and I or my sister Beatrice and I would occasionally go out together and roam the Queens Park area. My favorite haunt was Victoria Rd. the main drag in the neighborhood. This was a broad street, with shops on each side, ice cream café’s and bakeries leading up to the main entrance of Queens Park. There was an excellent ice cream shop called the Bluebird Cafe (at the entrance to the park near Shawlands). This park played an important role in my young life.

When I was much younger (5-6 perhaps) I would sail my toy boat in Queen's park pond and go fishing for minnows (Guppies). My father would take me to feed the ducks and swans of which there were many different varieties. This was a Sunday morning pastime. There were often concerts in the park on Sunday afternoons, or sometimes in the long summer evenings. I remember being with my sisters Beatrice and Adelaide in the park and listening to some operatic arias sung by a rather large soprano and giggling all the way through. The park had everything, swings, rose gardens, flower beds, and green houses. It was a breath of the country in the midst of the city. The park was opened in 1857 and was designed by the world renowned Sir Joseph Paxton, also responsible for noted public parks in London, Liverpool, Birkenhead and the grounds of the Spa Buildings at Scarborough. The park was dedicated to the memory of Mary, Queen of Scots and not Queen Victoria, a common misconception given the proximity to Victoria Road and that the park was created during her reign. The park is on or near the site of the battle of Langside which took place in 1568 between the forces loyal to Mary Queen of Scots and her Protestant half-brother the Earl of Moray who was fighting on behalf of James VI, Mary's infant son. The park is huge, covering some 148 acres. It has many entrances, flower gardens, and great walking trails. The Sunday afternoon concerts were an important part of growing up. There were programs in the band-stand of all kinds, from vaudeville to series classic and band performances. It would be a whole family outing once a week in the summers.

I went through a very nationalist stage during my early teens. This was a result of news coming out of Europe on the massacre of European Jewry and the activities of the British in trying to stop immigration into Palestine. This was the period of the Jewish underground activity against the British right after the end of WWII. I was thus a mixed-up kid, tending to the violent side of the Zionist

movement and also at the same time to the socialist side, reading the Daily Worker (which incidentally was also supportive at that time the Jewish struggle against the British) and the right-wing revisionist (Zionist) newspaper. Both papers claimed that Britain was an imperialist power, attempting to destroy the nascent Jewish State. There is no doubt that this was the aim of Ernest Bevin the foreign minister of the time. His Anti-Semitism was quite open. To an impressionable youth, the betrayal by the Labor party was felt very keenly, and possibly led to my desire to get out of Britain and immigrate to Israel.

During my early teens the struggle between the Jewish underground movements in Palestine and the British army made me feel uncomfortable. I became friendly with a Bernard Epstein. I have no idea where I met him, perhaps in Hebrew School . His father subscribed to the “ revisionist” newspaper, which supported the Irgun Zvei Leumi (Etzel) in Palestine and was very anti-British. I avidly read this paper and the ideas expressed and tone added to my estrangement and feeling of being a foreigner in Scotland. We talked and dreamt as teens do, of taking part in some “ liberation” action for the good of the Jewish people. All of this was just talk, and I do not know what became of Bernard after I left Glasgow. I think he did move to Israel. If I transpose this to today and if I was a Moslem would I have become a Jihadi?

Another event that had a profound influence on me was an attack on my father’s shop. This must have been in 1947 after the hanging of two British soldiers by the Irgun. The shop windows were smashed. I don’t remember if anything was written on the shop windows. There was nothing on the outside to indicate that this shop was Jewish owned. Some local ruffians who knew my father must have been the perpetrators. This reminded me of Nazi Germany and obviously had an effect on an impressionable teenager. There were anti-Jewish riots in Glasgow, Liverpool and elsewhere at this time. (I thought for a time that

this might be my imagination, but I found descriptions of the riots on the Internet).

Thus by 1947 at the age of 16, I was ready to go on Hachshara, a communal farm run by Habonim, which was supposed to prepare one for Kibbutz life in Israel. I have written elsewhere about my time on Hachshara, a happy time in my life.

My other early interest was music and aimed to be a pianist. I started piano lessons at the age of 6, from a Mr. Wilson. He was the organist at a church somewhere in the Maryhill area close to my father's shop. He appeared to me to be elderly, but as a child everyone probably did. At some point he decided he could not teach me more, so I started studying at the Orr School of Music, my teacher being a Mrs. Sweeney. She was a very capable teacher, and the school kept to the standards set by the London Royal Academy of Music, with their annual exams. I think I progressed up to grade V. The exams entailed playing before a committee and answering questions on theory. This "academy" was also on Dixon Avenue, where we lived, so that my life revolved around this area. As in school, I began to lose interest in piano performance about the age of 16. However, I did give some recitals as part of programs arranged either through, cheder or Habonim. I do remember one such concert in which I accompanied Agnes Benjamin in some Hebrew songs. She had a pleasant voice. I also played some waltzes by Chopin. I cannot remember where these concerts were held. For a short period, after I dropped out of high school, I taught the piano to a few pupils at home in order to earn some money.

I seemed to have wandered off again. By the age of 16, not doing well at school, not being interested in my father's store (I did work there for a few months after leaving school, see that chapter). I just lazed around and did not really want to do any work or find a job. I must have been a horrible teenager,

causing no end of problems to my parents and sisters. I was uncomfortable at home, being very snooty about the lack of education and culture in the home, constant arguing with my parents, I decided the best option for me was to go on Hachshara (commune) with the movement.

As I discuss later, I was quite happy on hachshara. I seemed to have lost most of my inhibitions, was quite popular, and had quite an active sex life (by the standard of the day) and I did not mind the hard work (farming), the cycling in the cold to work, or studying Hebrew in the evenings

Working in my Father's shop .1947-48

My mother's family had furniture stores as far back as I can remember. My grandfather Mitchell had a large store just off Paisley Road West in Glasgow. My Uncle David, my mother's brother had one on Maryhill Rd in what used to be my father's store, and my Aunt Betty also opened an antique store wherever she lived, both in London and later in Brighton. I often went to my grandfather's store as a child. It was next to a park (Kinning Park or Plantation Park), and not far from a cinema, called the Lorne, which was made into a Bingo Hall in 1976, and demolished in 1986. This area (Goven) was famous for being the home of the Ranger's football team, until this day a place of strong anti-Catholic feeling. My grandmother's house was a few blocks from the store. This was further west (in the direction of Paisley) of the city center, it was a prosperous neighborhood, and flats were more spacious than where we lived. However, it still was what was called a tenement, although by today's standard it was a large apartment. My grandparents always had a maid to do the house-keeping and serve the meals. My Uncle David and Aunt Betty both worked originally in their father's shop. This was good training for their futures, since both later had their own business.

The local school in the neighborhood was the scene of many clashes between Protestant and Catholics kids particularly on Orange day, a day celebrating the Protestant victory over the Catholics in Ireland at the battle of the Boyne in 1690. This religious feeling was tied into the rivalry between the football teams the Rangers versus the Celtics, which played at nearby Ibrox Park. Being Jewish, I was not caught up in this rivalry, and stood aside; I suppose not knowing where I belonged in this "religious" struggle. I don't think it truly was religious, but more a matter of native Scots (Protestants) versus Irish immigrants (the Catholics). In today's time of political correctness it is a way to ask whether

one is Catholic or Protestant. Only a few days ago I met someone from the U.K., and hearing I was from Glasgow one of the first question asked, was I a Celtic fan.? I was a little taken aback, and should have answered no, my favorite team is Hapoel. (an Israeli football team)!

My father's first store was in a slummy part of the city, in Houston St. We lived close by in Pollok Street, perpendicular to Houston Street. Unfortunately, I do not remember the shop address. Today Houston Street is crammed between the M8 and A8 two major highways. Houston Street then was very run down, full of drunks, and grey/black tenement houses. Pollock Street had an air of lower middle-class gentility. This area was as much as my parents could afford, since they lost everything including their home during the depression of the 1930's. This shop in Houston St was in existence until sometime during the war, probably 1941-or 42 when my father was conscripted, and instead of serving in the army, worked in the shipyards (John Brown) as a riveter. John Brown was one of the largest ship building yards in Clydeside. I think he was exempted from military service because he had three small children. It was during this time that he came under the influence of the communist party. All I remember was the name Fraser, which cropped up in conversation and I assume that this was Hamish Fraser who was the communist organizer on the docks at this time. This introduced me to the "Daily Worker" the communist newspaper, which reinforced my own ideas of the world. If this was the Fraser referred to by my father, he converted to Catholicism after falling out with communism and became a much admired Catholic theologian. However, Fraser is such a common Scottish name that it may be someone else.

After being released from the shipyards, which I assume was either at the end or towards the end of the war, my father opened a store at 23 Maryhill Rd. Again, this was a poor, working class neighborhood although better than Houston St. The shop was in a good location not far from a central crossroad, St George's

Cross, and close to the subway station on the Great Western Road. Today it is difficult to recognize the area, since there are expressways overhead, and St George's cross has disappeared. I used to walk from school (Hutcheson's) through the city center, along Sauchiehall St. to reach the shop. After a few years he opened a larger shop further up Maryhill Rd, while eventually the older store was either sold or rented to my uncle David Mitchell.

The store always smelt musty and of furniture polish. Mrs. Stuart was the "French polisher", the person who stripped of the old paint and varnished and polished the old furniture until it looked new. French Polishing is a technique in which many layers of shellac and other finishing compounds, including linseed oil are applied to the furniture. It is a very labor-intensive job. Mrs. Stuart was a very hearty, jovial woman, very Scottish, and very upset when her daughter married an Englishman. The furniture was a mix of "junk" and antiques, and old solid Victoriana. I took a dislike to all the smelly old stuff, and to the down-trodden customers. However it also was a treasure trove. I would find interesting books and lots of sheet music and albums, many of which I still retain until this day. There were probably lots of valuable antiques that were never recognized as such. These goods were superior to those found in antique shops here in Indiana. A lot was authentic Victorian and Georgian antiques and today would be very valuable. We needed an antique road show in those days!

I believe the store functioned as a sort of "last resort" when families ran out of money. The locals spent a lot of money on alcohol, on gambling, in particular the dog races, and filling out the football pools, which involved spending their last penny, with the hope of a "win". Even my father filled out the pools, and had a flutter with gambling, dreaming of better days. The shop was not a pawnshop, but in some respects it was similar, it was there to help, if needed. Those who sold their stuff were mostly locals of the neighborhood. Everything in these days was cash. If there was credit it was on a personal basis. I remember there was

much discussion of what was called “hire purchase” This was the idea that the customer would put down a “down payment, a certain percentage of the value and pay the remainder over a period of times. My father did not like this idea, afraid he would not see the final installments. Credit cards were unknown.

The customers were a cross section of Glasgow and further away. There were those visiting from the Highlands, who seemed politer and better dressed than the locals. Occasionally there were customers from Norway. In particular I remember one woman who came to the store quite often, a very attractive well - dressed woman. She was buying items and shipping them to Norway. There were also those who came in to hang out, lonely people looking for conversation and those who were stoned and drunk on “red biddy” which was methylated alcohol mixed with red wine. In particular I remember one old woman who always looked bedraggled and smelt terribly of a mixture of dirt, sweat and booze. She would enter the store and hang around preventing other customers from entering. She really was looking for a handout to buy more booze. I think a lot of people would sell their furniture in order to get booze money or “fag” money. This was the days before hard drugs or pot. I hate to think what it must be like today!

In the back of the store there was a small kitchen, or space for making tea with a small stove, and a small dirty toilet. There always seemed to be people “hanging” around this area. In fact, these were mostly plain- clothes policemen, since there was a lot of petty crime in the area. They would come in to chat and have a cup of tea. They were big hefty men, and I suppose my father (and I) must have looked puny next to them. They were decent guys doing a difficult job. There were also the deliverymen who either carted the sold furniture away in a van or in earlier days in a horse drawn cart. They also helped move the heavy pieces of furniture around, and sometimes opened the store.

When I was about 16 and uninterested in school studies I often worked in the shop. I would open the store in the morning, wash the windows with a pole attachment, dust the furniture and wait on customers. I found the job quite boring and would saunter off down Maryhill road looking at other stores or go in and talk to the women who worked in the R.S.McColl sweet store a few doors down. During the war years I would spend my sweet rationing coupons in this store. I probably never ate so many sweets in my entire life as I did during this period. The result was in later life, rotting teeth. The women who ran the store “spoiled” me and were always giving me Rowntree gums or Mackintosh Quality Street. A few years later when I returned to Glasgow for a stint at college, I would still go into the store and say hello and get my fill of sweets. A combination of sweets and British dentistry meant that to this day I have constant oral problems. Next door there was a butcher store, smelling of blood and meat. This was the days before refrigeration and the meat would hang as carcasses at the back of the store. The specialty of the store was “black pudding”. A sausage made out of blood. To this day I have never tasted it, I must have been disgusted by it, possibly because I was also trying to keep Kosher. I assume they must have had blocks of ice delivered to keep the meat cool.

The store remained in business until my father’s death. It expanded a few years before with the purchase of the next-door store.. My father opened a second store, a betting store (Bookie). Betting on Greyhound dogs and horse racing had become legal and was a thriving business. The store must have done quite well since my parent’s standard of living constantly increased. Another brother was born into the family after I left home and was 21 years old. My father wanted to hand the business over to John Duncan, my brother in law but my sister and husband had other plans. Eventually I suppose it should have passed onto Maurice, but he was not interested. After visiting me in Bloomington he decided that to study biology (actually botany) to be like his older brother.

Unfortunately, he did not get a 1st class degree in the subject and opted instead for accountancy. He was successful in that profession, eventually becoming a partner in a large London firm. As I write this, he has reached the age of retirement.

For many years I have avoided going into a secondhand furniture store. It brought back too many bad memories of dirt and shabbiness. In retrospect selling second hand furniture is no worse than any other retail business, and with the large number of garage sales in the US, people are always looking for bargains and selling old objects I think that the socialist education I received in the movement (Habonim) instilled in me a sort of disgust of business. It was associated with Diaspora Jewry (as opposed to the educated peasant of the youth movement and the new Israel) and bourgeois life, the antithesis of what we (or I) was going to become in Israel. I was very naïve.

Communal Living in England: Hurst Grange, West of Scotland College of Agriculture and David Eder Farm.

During a concert of the Scottish Symphony Orchestra performing Beethoven's 9th Symphony I decided to leave Glasgow and join a Hachshara (A training camp run by the Zionist youth movement Habonim-and Hechalutz , training for kibbutz life in Israel). I was inspired by the words of Schiller and the rousing choral music. Every time I hear the last movement of Beethoven's 9th I become choked with emotion. I feel this way when listening to large choral pieces; the sound of many voices stirs multiple emotional sensations. I turned to my group leader (madrach), at that time Z.F. and said something like " I am ready to go on Hachshara."

I was bored by high school in particular the study of Latin and Greek, which I thought useless, and I was tired of practicing piano. I was not sufficiently talented to be a concert pianist, although I might have been a good teacher. My grades at school plummeted, probably through lack of interest. I was in the " A" class at my grammar school, indicating I had been a good student and had academic potential. The decadent and what I considered then, hedonistic life of Glasgow Jewish youth (Social clubs, parties, dances) repulsed me. I felt something was missing from my life. I had no interest in joining my father in his secondhand furniture business, although that option was open to me. I had been exposed from the age of 10 to Zionist and socialist indoctrination, having joined Habonim at that age and was filled with the ideal of creating a better and more egalitarian society. I believed this could only be achieved through living in a Kibbutz in the newly independent State of Israel, established only a few months earlier. I was a romantic and decided that living in a communal farm in England was of more value to society than my continuing in high school and then on to a

university, as planned by most of my contemporaries I wanted to differ from my peers. This is a personal trait that has continued throughout my life and has not always been to my advantage.

I was influenced largely by the ideas and leadership of the movement, which frowned on the idea of a university education. The policy of Habonim and Hechalutz (the parent movement of Habonim) was to discourage university education, since it often resulted in a loss of that individual to the movement. Either he or she stayed in the U.K. after graduation or arrived in Israel as a professional, no longer interested in kibbutz as a way of life.

I came from a middle class, comfortable home, and had never performed a day of physical work in my life except for pulling out a few weeds around the rhubarb patch in the back garden. I was very pampered by my parents , and grandparents who saw me as the first from the family to graduate from a prestigious high school and go on to university.

Also, the war and its aftermath influenced me greatly. .I was conscience of the fact that my parents arranged for me to be hidden by a non-Jewish family, the Frasers, in the event of a German invasion. I had met this family a number of times. I remember a very warm family, with one or two children of their own with a son also called Milton. I do not remember how my father knew them, either as customers in the shop or through his work at the beginning of the war in the shipyards. I have been haunted by this decision all my life. Not that I blamed my parents, rather that we had come to such a state of affairs. This was the price of being born Jewish.

The pictures and information coming out of the concentration camps shown in the newsreels at the end of the war shocked me, and I lost all belief in God (How could God let this happen to His chosen people?). I also developed bitterness towards Britain as a result of the actions of the Labor government, in

particular the foreign secretary Ernest Bevin in curbing Jewish immigration to Palestine, as well as the ongoing struggle between the Jewish underground movements, the Hagana and Irgun and the British Authorities. Although a member of Habonim, I read the newspaper printed by the Zionist Revisions movement, which represented the Irgun (part of the resistance movement in Palestine and terrorist movement to the British). I was drawn towards the extremes of Zionism.

I felt very much the odd man out in British society, although I never suffered physically from being Jewish. I had met very few holocaust survivors, since remnants of the concentration camps did not arrive in Britain until much later. I was obviously looking for something I could not find in Glasgow, although most of my compatriots were quite happy assimilating into a Scottish-Jewish existence. For many years, even while living in the USA, and having discarded a lot of my prejudices, I was uncomfortable with people I met who were of British, in particular of Scottish origin. When I met someone who tried to befriend me because of our common Scottish (non-Jewish) ancestry, I would inwardly feel awkward, a stranger who did not totally belong to this group. This luckily has disappeared as I have grown older and more accepting.

The first hachsharot were started in Eastern Europe in the 1920's as part of the Zionist youth movement, to educate Jewish youth, and instill in them a love of Zion (Palestine, later Israel) through agricultural work, leading to life on a kibbutz. Many of the members were trapped in Europe during the holocaust and joined the partisans in their fight against the Nazis. Politically the hachsharot belonged to a spectrum of Zionist political parties including the right-wing parties, as well as the left, although the left predominated. The philosophy of the movement was very much to instill in us a love and appreciation of work, the land, and to create an "educated peasantry" different from the tradition of urban Jewry.

Thus at the age of 16.5- 17, sometime in 1948 I arrived in the village of Dial Post near Twyford (at that time Twyford was also just a village although today quite a large town) the largest nearby town being Reading a major marketing and agricultural center of Southern England. That I ended up in the manor house called Hurst Grange-Zichron Yisheyahu. was chance, since the movement had three hachsharot (training farms) in England, "Reading" as the one near Hurst Grange was often called, David Eder Farm, near Horsham, and a third at Bosham, Sussex. The group I initially joined was much older than I by as many as 3 -5 years, which at my age of 17 made quite a difference in maturity and interest. At that time I believe I was the youngest to join such a group. The older members had been on the farm for a number of years, because of the war and restrictions by the British on Jewish immigration to Palestine. Many of them had arrived in Britain from Europe at the beginning of the war. They were much more mature and experienced in life. A few were married, although there were no children around. We were about 20 members; not all Jewish, some non-Jews through personal attachment, (boyfriend/girlfriend) others because they believed in our ideals. Some were more socialist than Zionist, and others the reverse. There was the occasional couple not from the movement who wanted to experience a communal lifestyle and were not interested in moving to Israel. All were secular, and the only Jewish holidays celebrated were Passover and Shavuot, which had agricultural and nationalistic significance. If anything we were in revolt against the religious traditions of our parents' generation. For Passover we wrote our own Haggadah, emphasizing social justice, and nature, without mention of God.

.Hurst Grange was an old rambling run-down mansion that had seen better days. I think the house probably still exists, or it did a few years ago. It was very spacious with a large kitchen and dining room. It had been an " English manor" at one time. It seemed to me luxurious, and peaceful, off the major road, and surrounded by beautiful countryside. It had extensive gardens and lawns.

Others have described it as a dilapidated mansion in the middle of no-where. The house was built in the 1880's. It had 45 acres of farmland and was owned by the Zionist Federation of Great Britain and in turn leased to Habonim. The kitchen had an Agga, a type of oven heating contraption that acted as a social base, a place to congregate and keep warm. We slept two or three to a room, with complete segregation of sexes. I shared a room with another newcomer, Nat from London . He had arrived about the same time as I did. He was also about my age.

My first task was to learn to ride a bike long distance. I don't remember cycling much in Glasgow, so that I had to practice . Most of the bikes were in a sorry state of repair, and there was an appointed" bike man " who made sure they all were in working condition. We had to cycle to work, often many miles and often at night or at least in the dark early in the morning to arrive at work at 6.0 a.m.

We worked as farm laborers if such jobs were available in nearby farms, or in local industries such as jam making or even alcoholic liquor production and pooled our earnings. Although equality of the sexes was an important principle of the movement, for the most part it was the girls who did the bulk of the cooking and the housework. We lived on a very limited budget, and tried to be self-sufficient, i.e. not taking help from outside, although I am not sure how much Hechalutz and the Zionist organizations subsidized the training farms.

I quickly learned the ropes and the day after my arrival was sent out to work with Nat and Leon, another new arrival. Our first day at work: There was me (ex -music-student, ex-Grammar School boy), Nat (an ex tailor's apprentice) and Leo (an ex-hairdresser). I do not think either Nat or Leon had been very involved in the movement, certainly not as much as I had been. It was tough work. None of us had handled pitch- forks and shovels before, and with great difficulty we extracted the material, which was all compressed together. Although

we thought we were working hard, when it came time to go home, the farmer advised us to go back to our old trades, and not to return the next day. Although we were cheap labor, our productivity was such that he preferred local labor. Thus my introduction to Hachshara, and farming, ended after one day on the job.!

After a few days I had found a job in a market gardener- cum dairy farm owned by a Mr. Lobjoit who hired quite a few “Jewish farm boys “ in his time. (For those interested a reference to Lobjoit and sons can be found on the Internet, as part of an exhibit at the Reading Museum of Agriculture). I must have worked O.K. or he took pity on me, since not only did I manage to pick Brussel sprouts covered with ice in the cold, one of the worst jobs I have ever had except for “ sikul” , clearing of rocks from fields in Israel later on, but I learned to milk the cows by hand. This was before milking machines were common or were just being introduced. I got used to rising about 6.0 a.m. and cycling the few miles to the Lobjoit farm. Cows had to be milked twice a day, once early in the morning and once late in the afternoon, and my usual working day was early in the morning until around 4.0 p.m. Milking was not too difficult, one washed the udder, sat on a stool by the side, and after a little practice one could tease the milk out of the tits, which eventually would begin to flow. I got to know the individual animals by name, and each had a different personality. Some were more docile than others. I never had any problem with a kicked over bucket. I also became friends with Frank, the local cowhand, and Sheila the local “ milkmaid”., These were local farm hands and there most certainly was no animosity between us. In fact we became good friends. I also learned to drive a tractor which placed me in a good position later on in life. I actually used my tractor driving skills to help put me through college 15 years later! I have pleasant memories of this time, and although the work was hard it did not bother me. I learned a lot about agriculture, and the exposure to different tasks came in handy later on. The worst job, as I remember, was picking Brussel sprouts covered with

ice in a cold frosty morning. I remember one freezing morning picking these ice-cold sprouts with one of the girls Aliza, I think from London. She cursed like a trooper and amazed all the local yokels with her vocabulary. I remember Mr. Lobjoit taking me aside and asking whether all our girls behave like this.

I loved working in the cow shed, it was warm and cozy, even if it smelt a bit, and sitting next to the cow and milking by hand was quite an experience. I became a good cowman, and it helped that I had a love of animals (previously cats and dogs). As far as I can recall I worked at Lobjoit's all through my period at Reading. Certainly my hachshara was a success in learning how to work, and to some extent enjoying it. I also may have been one of the few to have a stable job.

I do not know what happened to Nat. or Leon, but both left the Hachshara after a short time. During a recent visit to Kfar Hanassi I met a distant relative, (Irene, wife of Nocky Shine, a 2nd cousin of my father), and it turns out that she was instrumental in convincing her nephew Nat to join a Hachshara. He left hachshara and became a London taxi driver. I imagine that Leo returned to hairdressing. The first job many of my "comrades" had on returning to the UK was as London taxi drivers.

We ran the hachshara very democratically, the instrument of decision being the asepha (Hebrew for a gathering) a general assembly where all of us would participate in discussion on "important" matters. These were held once or twice a week. Everything could be discussed at the asepha; even personal criticism was allowed or encouraged. This is evocative of the communist party where self-criticism often led to expulsion during the purges from the party. We did not go that far, but one could be criticized for not pulling one's weight or being selfish, or other possible sins. We also elected a secretary (Mazkir), treasurer (Gizbar), and various committees, to attend to our cultural and social needs, as well as budgeting. There were dozens of such committees pertaining to all aspects of daily life. I remember being on the cultural committee which dealt with

programs, and the occasional performance performed on Friday nights and Jewish Holidays. Culture was very important, particularly music (classical) and books. We had a large collection of records brought and then left behind as members moved on. When not in discussion at the asepha, we had other programs, including outside lectures. One of the major modes of entertainment was the “ zig”. This was a comedy skit written by one of the members, involving quite a few individuals. These were fun, an opportunity to dress in costume, and “ let go “. See <https://www.bogreihabonim.com/the-rise-fall-of-the-zig.html>. To quote. *With this brilliant first book Israeli historian, N. Applebaum, has leapt into the front rank of revisionist historians who in the recent past, have exposed so many of the popular myths of the Zionist movement and rewritten Zionist history as it really was.*

Applebaum's target is one of Zionism's most important and seemingly unassailable myths: that Habonim was a Zionist Socialist movement educating towards Aliya and Kibbutz.

In this extraordinary challenge to popular belief Applebaum claims that in fact Habonim's Socialist Zionism was merely a front to extract funds from the Anglo-Jewish community and the Jewish Agency and that the aim and raison d'etre of the Movement was the cult of the Zig - the writing, rehearsing and performance of which took up most of the time and energies of the Movement's activists and was the main event at all Habonim functions.

Applebaum has done his homework. The thesis that Habonim was not a Zionist movement but a “Zigonist” movement is convincingly built up. Has another of Zionism's great myths been debunked? Has delegitimization of the Zionist Movement been taken yet one step further?

There were also those who had the talent for writing and performing “ zigim”. I do not know the origin of the word although the above article claims the word

was invented in Manchester Habonim. These were funny comedies, and a number of today's comedians cut their teeth in the movement writing and performing such skits including Sasha Baron Cohen and Dan Patterson

I remember a series of lectures by Professor Shimon Applebaum, (not related to the above Applebaum) a professor of archeology from Cambridge University, on ancient Jewish History and Jews and Ancient Greece. He was a regular visitor. Shimon Applebaum had graying curly hair and seemed to me quite old. In fact he was born in 1911, so that he would have been in his mid-forties. He would appear on Friday evenings and stay the weekend. He was a sort of " Guru", both looked up to but also sometimes ridiculed. Unknown to me (and probably to most of us) he was one of the world's foremost archaeologists on the Greek-Roman period in Palestine. He was also a member of a kibbutz in Israel, Kfar Blum, as well as a Professor at Cambridge.

I do not remember there being any interest in " pop music" which might have been natural for a group of youngsters. However we did relax occasionally and sing old pub songs, and dirty ditties. This was a specialty of certain members, mostly those from a Cockney (East End of London) background. This was the British coming out in us... However we had a wonderful collection of records and gramophone, inherited from prior members so that we had evenings of classical music as entertainment. I don't remember going to the cinema or showing films, and this was the days before television, so that we spend our time reading, discussing books, or listening to music. We could not afford to gout to the local pubs.

We learned Hebrew songs, and had evenings devoted to communal singing. These songs were all about working the land, building a new country and the early heroes of the Zionist movement (Trumpeldor and others). We also learned Israeli folk dances and danced the " Hora" for hours at a time. This added to our

feelings of comradeship and connection to the land we had not yet seen. . Our cultural life was very intense, and after a hard day's work it was difficult to stay awake. In the little spare time I had I hung around the large living room, played the piano, or sat outside on the spacious lawn with a book or flirted with the visiting girls in the warm summer nights. We always had a lot of visitors from London who came down for an " exciting" weekend. They must have thought of us as very sexy. None of these ever developed into lasting relationships.

During the years I was on Hachshara, and this was a much longer than usual, I experienced a change in the make-up of the group. Initially the majority, were from Europe, displaced by the war. Later we were joined by a number of younger people my own age who had been in the kinder transport, that is rescued as young children from Europe, and only towards the end of my stay (1950-2) were the majority much younger and British born. As each group left to go on Aliyah (a term used to signify immigration to Israel. literally going up) another group replaced them. Being the youngest I stayed on with each replacement. This annoyed me, since I did not see why I should not go on aliya with the group. I should have gone to Beth Ha-emek with the first group, since I felt very close to them.

At Hurst grange there was an interesting group of people. Most were older than I . The secretary of the group was Meir Weiselman, a small extremely active guy. Two of the girls were in love with him, Annie and Sylvia. They were sisters, and there always appeared to be rivalry between them. I know he married one of them, I think Sylvia, but I am not sure. Many of the members at this time were from Europe. There was Susie, with a strong German accent, a very friendly motherly type. Sylvia Brooks from Glasgow, a few years older than I. She was a very attractive young woman. There is a photograph of her with a flower in her hair, in one of the old newspaper articles. She probably dressed much better than any of the others. I met her a few years later at in Kibbutz Afikim where she had

settled with her husband. There was Norman Abrahams, the intellectual of the group. Quite a handsome guy. He went around with Sheila , a small rather plain young woman. In fact at one Asepha (group meeting) we advised them not to get married, but of course they did. I understand from a mutual friend, Robert Weber, with whom I have renewed contact after 50 years that they had a terrible relationship and ended up divorced. I met Sheila a few years ago at the Habonim reunion in Jaffa. She was much better looking as an elderly woman than as a youngster. Norman I believe now lives in Hamilton, Canada. There was Yetta, a very attractive young girl, always happy and smiling. She ended up marrying Ivor Pope, whom I remember as being a very strong character and ideological driving force. Another Glaswegian was Sylvia Polli, later Sylvia Flowers. Harold had received his Ph.D. in Chemistry and was one of the few academics in the group. One of my best friends was Ronnie Silverstein, later Ronnie Sillers. We were both known as skirt chasers. Ronnie eventually married an Israeli at Amiad, Yael Neumann. However that was not to last very long. He left Israel, settled in Britain and married another acquaintance, Laura Shur of Glasgow.

In retrospect I must have been the youngest kid to ever join a Hachshara in Britain until then. As stated above most of the others at Reading were in their 20's, some were married, many were those who had escaped from Europe, or had served in the British army during the war. I imagine that I must have appeared as a little kid, or an unruly teenager. (From photographs of that time I looked like a “ wild” unruly teenager, sporting a large mop of dark curly hair). I think I was treated as such and mothered by many of the girls. In particular I remember one girl, Susie, with whom I used to converse with and go for walks in the countryside together. She had a very strong German accent. She was with the group that later went to Kibbutz Beth Ha-emek. I did not find any of the girls (or women, since they were much older than I) sexually attractive, and only flirted with a few, or outside visitors. I lost all contact with this group following their departure for

Israel. In some ways I retained a feeling of family, but always felt that they were from a different generation.

I must have been quite happy in my new life, since my mother came on a visit to convince me to come home, and I instead convinced her that I was doing the right thing. My mother accepted that I was happy, or at least happier than I had been at home. However my father had great difficulty accepting this. I fitted into this society and was accepted by it, something that did not happen in school in Glasgow.

Learning how to ride a bike, a must for the work, gave me a new freedom, and I fondly remember the weekends exploring the beautiful English countryside, and the bike rides to Henley and Sonning on Thames, both resorts being only a few miles from Hurst Grange. I still can picture the long sweep of willows and thatched cottages down to the river Thames at Sonning, and the excitement of the regatta competitions at Henley. This was obviously part of the romanticism of Hachshara, the reason I enjoyed it so much, the proximity to beautiful places, living close to nature, the listening to classical music in the evening, the singing and dancing and the long intellectual discussions in the weekly asepha. Of course we were attempting to create an educated peasantry, hard work during the day and intellectual activities in the evenings. So different from the life I led in industrial and slummy Glasgow. However looking back at what I have written above, I also “fell in love” with S. England, which forebode problems in the future

Some of the subjects discussed in the asepha are worth mentioning. Should a member who works outside in a factory for production of alcoholic liquors, steal an occasional bottle to be like all the other workers, and not be suspect of being a plant of management? Should we report to the authorities that wood shavings of a similar shape were placed in the jam instead of raspberry seeds? Should this be reported to the authorities with the subsequent loss of jobs? ? We

even discussed whether a particular couple should get married (Obviously we did not decide who should share a room with whom, but there is a distinct possibility in those hey days of freedom we would even have gone that far). Economic self-sufficiency was very important to us, and we refused to take help in any form from parents. I don't think we realized how much money hechalutz was giving to the Hachsharot. This was money collected from " friends of Hechalutz" or other Zionist charities.

Looking back, many of the things done in the name of creating an educated peasantry now seems downright silly, and really were more a reflection of a revolt against our society and upbringing than anything else. Swearing and cursing was the vogue, the more the better. I never got over the shock of hearing the foul, crude language used by my friends. It was a way of expressing one's independence, and our desire to identify with the British working classes, where every second word was a curse.

Another interesting factor was the importance of cigarettes. I only tried smoking once and hated the taste of tobacco. But most of the other members were chain smokers, and one major budget allocation was tobacco. Most rolled their own cigarettes much cheaper than buying packs. I recall members going around picking up cigarette butts, since the group could not afford to spend much money on tobacco. Again the smoking may have been a reflection of revolt, something our parents might have frowned upon. Perhaps if drugs had been more available, they also would have been used. Many members of the group seemed to spend an inordinate amount of time " rolling fags". Likewise there was not enough money to spend on beer or alcoholic drinks, and the visits to the pub were very few. In fact I do not remember any such visits.

Obviously being 17 years old, sex was important. Although I had been to Habonim summer camps, notorious for their sexual freedom, I was quite

innocent and naïve. Standard of behavior were quite different in the 1940s and 50's from that of today. One did not "go all the way" the very first time you dated someone (at least I did not). Very shortly after arriving, I found a girlfriend in R. F. The laundry, which was an annex to the main building, was a suitable place for "necking". It was isolated and very warm since the clothes were dried here. This was not a serious affair, since R's parents were immigrating to Australia and she was going with them, but it fulfilled a need for quite some time. R. was a small, not unattractive young girl 17-18 years old. However when I saw her mother, a small-wizened old lady, I realized this could not be a serious affair. In fact one can judge a lot by meeting the parents of a prospective bride. (I have to remember to tell that to my grandchildren). Many years later when I met Ruta my future mother in law, I thought her a very beautiful woman, and that her daughter would be the same. Quite true.

Of course there were always visitors who came down for the weekend or a few weeks, and I think I must have been constantly in love (or thus it appeared to a 17-year-old) with at least one of them. This was of course after R. had left. I remember one instance in which LW, and I sat on either side of the bed of a young attractive, coy visitor from North London, and competed in our advances. I think she was very clever at playing us off one against the other, and neither of us got very far.

I do not want to leave an impression of sexual promiscuity. In fact we were quite puritanical and were very careful that the place should not be given a bad name, in particular to avoid scandal with the locals, who possibly imagined all sorts of sexual depravity going on in "that house where boys and girls live together" as well as with the Jewish community at large. We did not drink alcohol, nor take drugs. Tobacco was the only exception, and this was in the day before we knew the detrimental effects of this substance. We lived a very austere life.

L W had joined the hachshara about a year after I got there. We shared a room at one time, probably the messiest room in the building. His mother, Mrs. W would come down from London periodically to “ inspect” our living quarters. Although she had the best of intentions, she was quite resented, in particular by her son. She would bring down clean sheets and blankets, since she felt we were living like animals. In one case her son instigated throwing the stuff back at her. His father was a director of Marks and Spencer’s and very much wanted to help, not only their son, but also the whole group. However I understand that when she did come down with packages of cigarettes, he forgot his principles and gave in. It was for the good of the group. After LW left for Israel I never met him again. He became a historian of the Israeli Army.

As the older members left for Israel they were replaced with a younger group. They were different in some respects from the “ old timers”, a different generation, who matured during the war, but had not fought in the war. A rift developed between those who would go on Aliyah in 1950 to Beth HaEmek, and those who stayed behind and formed a new garin. I was caught in between part of the “ older” group (known as garin bet) initially and was now the same age as those joining the hachshara. I bonded very much with this group and became good friends with many of them. I think I and Van Emden , Una (Van’s wife), Rosie, and Devorah, and perhaps Len Goodman are all that remain of this group.

After about two years at the Reading Hachshara the secretariat of the movement decided that I should not go on Aliyah with the garin of the time (the group that went to Beth Haemek), but rather take a course in farm management at the West of Scotland College of Agriculture. I was told that when I finished the course. I would be expected to manage the David Eder Farm, near Horsham, Sussex, then managed by a Mr. Rogers. I do not know the true motivation of the committee, since the idea was not mine, and I was disappointed that I was not going on Aliyah with my friends. Perhaps it was decided that I was too young to

go with the group, or I was not yet ready for Aliyah. This “not ready for Aliyah” was a vague concept that was quite often discussed. I do not quite know what it meant, not ideologically ready? I was never politically active. I was much more of a Zionist than a Socialist. I also had a hedonistic streak, wanting to enjoy my youth. I loved the English countryside and even the hard work and as I found out when I returned to Glasgow to attend college not so averse to the social life I had left behind. The decision to complete a course on “Farm management” was to affect my future life in an unexpected way. It became an entrance to university many years later. Another possibility was that I was as a farm worker exempt from the British Army draft. This meant that I could help in instruction of younger groups coming to the hachshara.

My experience on Hachshara taught me the value of hard work, and how to work. Within the group a person was valued by his labor, and this I learned later was true of the kibbutz itself. However Hachshara did not really prepare one for the reality of life in the Middle East. Rather I think we all fell in love with rural England. I enjoyed my interactions with the local farmers who were pretty decent, and the bike rides at the weekends. I was enamored by the countryside of the Thames Valley, enjoyed the Henley Regatta, and what Southern England had to offer. The Thames valley was idyllic and has remained a lovely spot in my memory. Perhaps I already had second thoughts about living in Israel, but I was not consciously aware of them.

I enjoyed the farm management course and being in a university setting. This was at the West of Scotland School of Agriculture in Blythewood Square in the center of Glasgow. We studied chemistry, genetics, agricultural economics, and topics on management of a dairy herd, the main branch of farming in Scotland. This became my main interest. The course only lasted a few months and did include visits to large dairy farms and agricultural stations in Ayrshire. I also enjoyed the company of the other students, some with whom I became friends.

Being Jewish was unimportant, or it never came up. Only once do I remember having lunch or tea with a fellow student from Rhodesia (white) and he made a remark about the attractiveness of a certain girl he wanted to date, her name was Zelda, and I knew her slightly. I said something about her being Jewish and he was astonished, since “she did not resemble the Jews of Rhodesia who always dressed in a very ostentatious fashion.” I did not consider this remark anti-Semitic, just an observation. I went to student dances, but also to the Habonim bayit (house). I tended to think of the kids attending Habonim as rather childish but then I was now in my 20’s and they were teens. To me the Habonim bayit was a new concept, since while growing up, we met at local synagogues without a central meeting place. The bayit was a large house in Sinclair Drive, in Battlefield. Individuals were often selected from the Hachsharot to manage the houses and be leaders for the various youth groups. Although I did not join social clubs, I did not shy away from social events. I did attend dances (ball room dances) frowned upon by the movement, dated a few Jewish girls, and had my face slapped for being too forward on one occasion. Thus for a short time I returned to bourgeois life.

I had my old room back at 90 Holeburn Rd. ate at home, and from my recollections led the life of a university student. The financial burden of my being in Glasgow was on my parents. I don’t think I ever offered to pay for my keep, and I do not remember that the movement gave me any money. That the movement paid for my studies was a misconception I heard later on from relatives and others. I think my parents were delighted to have me home again, although I am not certain that my younger sisters appreciated losing their room. Both were in their teens by this time, Beatrice about 17, and Adelaide 13. I think Beatrice was training to be a nurse. As far as I remember I had good relations with both my parents. To some extent I was fulfilling their dream, going to university, even if to

study agriculture. I also visited my grandmother quite often who lived a few houses down on Holeburn Rd.

I gained a lot from the course. I was a good student, and felt very confident, that I would be able to manage the David Eder Farm. I was filled with great expectation and a new purpose. Thus after the course in Glasgow I arrived at the David Eder Farm expecting to take over managing the large farm. The farm consisted of 150 acres of cultivated land, partly devoted to permanent pasture and to mixed farming, market gardening and fruit trees. It also had a herd of 24 cows, with heifers and calves and a poultry section. There were two locations for sleeping, the main house and an adjoining farmhouse about 100 yards down the road from the main house. I was given a room in the farmhouse with Alan Solomon. Mr. Rogers (Jock) was still in charge, and the group at the Eder Farm seemed to run the place quite efficiently with his guidance. No one expected me to manage the farm. In fact it had never been discussed. Why was I sent on the course, to keep me in line and out of trouble ?. To this day no one has an answer to this question.

Each Hachshara had its own character, obviously reflecting the group of chaverim. My first shock at the David Eder was mixed showers. I went into have a shower that first day after arriving and found not only boys showering, but also one girl among the group. There seemed to be no inhibition. Mike Fox, a leader in the group, told me that this was the normal situation, part of equality of sexes. However I soon found out that there was only one girl who participated in this and this was Mike Fox's girlfriend. and later wife. Generally there was a time allocated for males and another for females.

I reverted to just being a farm hand, either driving a tractor or working in the cowshed. There was a " new" group of Chaverim: many of whom became lifelong friends and later we would all serve in the Israeli army together. This

was to be the group that would later on leave for Gal-Ed, join the group from Hurst Grange and was known as garin gimmel. There was also the noar (youth), a group of 16-17-year old's, who worked half a day and studied Hebrew, and Zionist history, the other half. Hachsharat noar was a one-year program to train young people in agriculture, to prepare them for immigration to Israel, or for movement work. They did not work outside but did tasks around the farm. Socially this made for a good mix. Some of them later joined the garin in Gal Ed others left and never fulfilled Aliyah; others joined a second garin and settled later in Kfar Hanassi.

I found I had quite a lot in common with the noar group. I was only slightly older, and very soon had a girlfriend, Esther Davidson, from among the group.

For me life at the Eder Farm was full, there were many cultural events, performances for outsiders (I have a photograph of performing an Israeli dance with Esther Davidson for an audience from London.). I worked in the refet (cow shed), which by this time had been modernized with milking machines (known as a milking parlor), and drove a tractor, made silage etc. did all the chores of a regular farmer. I had a regular girlfriend, Esther and on Sundays (or Saturdays) we would take a small amount of money from the kuppah (common money that was kept in a vase) and go out to Horsham for tea. All our earnings were pooled and there was a small sum set aside for general use after budgeting for necessities. We lived a very pure, egalitarian and austere lifestyle (at least I thought so). We took turns at running the kitchen, and I remember that in turn, the economit (person in charge of food and running the kitchen) were Irene and Thilda, (not necessarily in that order). Again some time in 1952 it was decided that the group would go on Aliyah, and that I should stay behind as a "madrach" to help run the farm. Thus another group! However a few weeks later I received my draft papers from the RAF, and Hechalutz decided that two others and I should now go on Aliyah. Thus David Capatanchik (who had been on noar, and

later became a professor and an expert on terrorism at Aberdeen University), Phil Shearsky and I very quickly were on the road to Paris, Marseilles and Gal Ed. I have since found out that this was a common occurrence. Agricultural workers were exempt from the draft until the 1952's when this was rescinded, and many had to "skip" out of the country to avoid military service.

One has to ask the question was the Zionist movement correct in recruiting someone as young as I, and later when Hachsharot Noar (Junior Hachshara) was established of recruiting a large number of 15-17-year olds. Would it not have been better to encourage them to complete high school, and attend university, or technical schools to learn careers that could contribute to the building of the State, rather than "educated peasants" in a kibbutz? With hindsight higher education and non-agricultural, but industrial and high-tech careers would become the mainstay of Israel in the future. In fact many did return to university and enter the world of finance or high tech much later on. However just as many returned to Britain after a few years in Israel. Kibbutz life lost its appeal. In many cases disillusionment set in early, both with Kibbutz as a way of life, and Israel as a country.

Thus my road to Israel was a long and varied one. Looking back the years on hachshara were among the best and most enjoyable years of my life. This may reflect my youth, that I wanted freedom from the restrictions of a middle-class society and wanted fun combined with a seriousness of purpose. I made friends easily and was highly respected. The friendships were deep and continued for many years. Hachshara did not quite prepare me for the hard life and communal problems of Gal- Ed or kibbutz life. What I learned from Hachshara was a work ethic (I am still accused of being a workaholic in my old age) a respect for other people and their opinion, and how to interact with others of different background. I never was a true socialist or interested in the economic theories of socialism. I was more of a humanist, feeling the world was often unfair (or I

should say people and governments), and I wanted some how to set it right. These ideals are still with me today.

Arrival in Israel And Kibbutz Gal-Ed. Where I learned to become a shepherd.

As stated previously, I and two other members of the group left England on route to Israel in the fall of 1952. Two of us were escaping from the British Army, or at least I from the RAF after receiving draft papers. We crossed the channel by boat and boarded a train to Paris. This was before the Channel Tunnel had even been conceived or thought possible. This was also the first time in my life that I had been outside of the United Kingdom. I do recall a feeling of total freedom; we could do as we pleased until we arrived in Marseilles and boarded the ship for Israel. We saw some of the sights of Paris, indulged in French food, including for me the first-time bacon with eggs. At the David Eder Farm we maintained a kosher kitchen and my parents kept kashrut at home in Glasgow. One evening we went to the Follies Berger, the famous cabaret. The girls wore fantastic costumes; I do not think there was any complete nudity just a lot of semi-nudity. I do not recall where we stayed and whether Habonim had a house in Paris. After a couple of days we boarded the train for the South of France. Once in Marseilles, we boarded an Israeli ship the Artza. This was an old vessel built in Germany in 1930. The German Navy had used her during WWII. After the war she was reconditioned by an Italian line and travelled between Italian Ports, Cairo and Haifa. She was called the Mare Ligure. Zim, the new Israeli shipping line bought her in 1949 to carry immigrants from Europe to Israel. She carried about 550 passengers per voyage, making non-stop return trips.



The ship was crowded with immigrants mostly from North Africa making their way to Israel. I hung out with a group of young Tunisians who were on their way to a kibbutz. I became very enamored of one of the girls, but do not even remember her name. We never met again. We spent the evenings together singing Hebrew songs and dancing the Hora. As we neared shore of Israel, we crowded onto the deck and were excited and emotional at seeing the coastline and the white city of Haifa on Mt Carmel from afar.

Reality hit on arrival. We were taken aside, and each one of us covered with DDT. I assume this was to get rid of any lice or other bugs, but still it was insulting. I can't remember why, but this made a deep impression on me, and prompted me to do something I should never have done. Apparently I signed a paper opting out of Israeli citizenship. Did I have some doubts? . If I did, I kept them to myself, and did not think of it as important for a long time. Signing this document had many ramifications later on, and even to this day causes me some problems. Although I served in the Israeli army I am not certain of my citizenship status. Shortly after arrival I received my identification card, which identified me

as an Israeli citizen. Following the signing of some other papers we were loaded onto a truck with our worldly possessions and headed for kibbutz Gal Ed. Either I brought with me, or had shipped items like a short-wave radio, some records and books. I did not have very many private possessions.

The trip to Gal Ed from Haifa was by truck through the winding hills of Ephraim, as they were then called and are now hills of Menashe. (This reflects the Biblical tribes that lived in this area). We drove past a number of kibbutzim on the way, including Kibbutz Dalia known for its dance festival and Kibbutz Ein ha-Shofet (“well of the judge”) at that time an established left-wing kibbutz called after the US judge Brandeis. Gal Ed, founded in 1945, was originally called Even Yitzhak, after Yitzhak Hochberg a South African philanthropist. The words Gal Ed mean memorial, and it was called thus in memory of those Habonim members who fell in WWII. However for many years the signpost to the kibbutz had the name Even Yitzhak printed on it. The drive was pleasant through hilly country and just before the kibbutz gate was a large vineyard with bunches of green grapes, hanging from the vines: the best grapes I have ever tasted. Today opposite this area is a nature preserve known as cyclamen hill or Ramat Menashe Park. In the spring it is covered with purple cyclamens, which are a protected flower. Hundreds visit and picnic in the area.

On arrival I was shown to my house for the next year. These were single bedroom attached concrete dwellings, each with a small toilet and sink-shower attached, and a small terrace. I shared a room with Jerry Pitch., whom I had known from our training farm in England. Jerry was a real Cockney from the East End of London. He was a fun person to be with, sung cockney songs and although our personalities differed, we became good friends. I believe he had been on Hachshara t Noar and thus was a few years younger than I. Although we were very different types, we got along well, and we eventually worked together with the sheep when we later moved to Amiad. Eventually Jerry married an Israeli

from another kibbutz, moved with her to Kibbutz Yizrael and changed his name to Hadar. I lost contact with him for many years although I did meet him once at a group reunion. During a visit to Israel as a lecturer in 2002, I was told that he was terminally ill with esophageal cancer, which prompted me to visit him. He was a shadow of himself, having survived many surgeries, and outlived by a few years the doctor's predictions. Although told he would not recognize me, he did, and we talked about our days as shepherds. He was a real fighter.



Above is a picture of Jerry and myself (in the white shirt) outside our room, at the age of 20 or 21. Shortly after my arrival in Gal Ed.

Most of the single men lived in the same style room, adjoining one another, usually two or three per room. Others lived in tents opposite the row of houses. The married couples from our group had slightly better accommodation and the older members of the kibbutz, even fancier. These were known as shikun vatikim, and as the kibbutz became more established, couples strived for this accommodation. Housing was allocated in a system of “vetek” or seniority, the longer one lived and worked as a member the better the housing allocated.

On arrival at Gal-Ed I immediately sensed disappointment and lack of enthusiasm within the garin. They had already been at Gal -_Ed a few months. Somehow kibbutz life had not turned out as expected. In particular for the girls of the group, instead of working in agriculture, found themselves in the laundry, or cooking in the kitchen, or looking after the children. None had the training to look after children, so they were in a more subservient position. Very few of the girls/women worked in the agricultural branches of the kibbutz, partly because the work was considered too hard, and partly because of the unbearable heat. The general ambience in Gal Ed was also not as expected. We were newcomers not readily accepted. The original founders had come from Germany or Holland and spoke German or Dutch among themselves. We were known as the “Anglim”, and I must admit that we felt much more comfortable speaking English to each other rather than Hebrew. We felt a little like second -class citizens and the group felt as if treated as such. We did have courses in Hebrew, but it was a slow process, learning a new spoken language. Also the methods used were often not appropriate. In some cases the lessons were on tanach, the bible, which really was not appropriate for learning spoken Hebrew.

Life in Israel was also tougher than expected. There was food rationing, which resulted in a limited diet of tomatoes and eggplants, the work was very

menial, particularly removing boulders from the fields to allow for cultivation, and there was very little culture in the evenings, other than the occasional very old film. There was also the sense that this was a temporary stopping place until we formed our own kibbutz. Although the original plan from the movement was that after one year we would decide to stay in Gal Ed, there was general opposition to this. The most outspoken members against the idea of staying in Galed were the ideologues of the group who thought we should start a new kibbutz or if not, that at least join a new kibbutz. After much discussion the vote was taken to join another kibbutz and not to remain in Gal Ed. This must have been a great disappointment to the members of the kibbutz. They felt they had invested time on us, and we were not receptive to their overtures.

As mentioned above, life was difficult. There was no air-conditioning, and we suffered from the heat, in particular in the dining room, a fairly primitive structure. We would sit six to a table, often sharing one or two knives, and bowls of tomatoes, peppers and cucumbers, from the kibbutz vegetable fields. We had soup of some kind every day, and in the summer the sweat would drip from our brows into the soup. Occasionally there was fish or meat, mostly chicken. One of the few delights were the various milk products. Certain foods such as halva were reserved for those who worked nights. Working at night or very early in the morning left the kitchen to oneself, and one could make an omelet. We certainly did not starve, and on Friday evenings we had quite a banquet. We took turns at working in the dining room or kitchen. This was called toranut and was over and above our usual work- day. Someone had to clear the plates and run the dishes through the dish washing machines. Also there was "shmira", guard duty, which occurred once every few weeks, when two or three of us would be on duty most of the night, wondering around the meshek (farm) to keep out marauders. We would have an old Czech rifle and wonder around in the dark, very silently. As far as I remember there were no incidents during our period at Gal-Ed.

Somehow or other I found myself working with the sheep and becoming a shepherd. I do not remember whether I volunteered for this or was assigned to this work. I worked with two of the “veterans” of the kibbutz, one was Shlomo, who was from Holland and the other was Dan, whom I believe was Indonesian or half Indonesian. Although the word shepherd conjures up a romantic picture in reality it was not so. The sheep were bred for their milk, and cheese (feta) production. These sheep belonged to a breed known as “fat tails” or locally as Awassi. In Israel and the rest of the Middle East they are bred for their milk production, their wool is very coarse and can only be used for carpets. Very few members wanted to work in the Tson (Hebrew for Sheep branch), it was dirty and one’s clothes stank from milk and lanolin from being close to the animals during milking. This smell would encase one all day long. The herd consisted of a few hundred sheep; they would line up for food in troughs or racks, we would pull a lever and the sheep would be trapped with their heads between iron bars. We then took a wide circular and not too deep bucket, sat behind the sheep, and milked them by hand, as one would do with a cow, except this was from behind rather than from the side. Everything went into the milk, both pellets of sheep droppings, and occasional urine. It was very difficult to withdraw the bucket in time. Perhaps this gave the Feta its pungent taste! The milk was passed through a filter before being shipped off to Tnuva (large co-operative for purchasing and selling agricultural products) for processing. I must admit that for years I could not bring myself to eat Feta cheese. After the milking, the sheep would be taken out to graze in the nearby hills.

I enjoyed the freedom that came with wandering over the hills, among fields blooming with cyclamens, wild irises and poppies in the spring. It also was a lonely job, since after the first few times, when I was accompanied by Shlomo, head of the sheep branch, I would take the sheep out by myself. This also had its advantage as I could take a book or just sunbathe. I would take off most of

my clothes and lie on one of the many large rocks scattered over the area. One had to be careful since often under the rocks would be hidden red scorpions, whose bite could be very painful. I did not play the 'haleel" (flute) so that I had no musical accompaniment. However it was wonderful to feel the wind and sun over all my skin, although one could be burnt very easily. I felt lucky to have this job rather than wheelbarrow loads of cement laying paths or removing boulders from the fields.

A short distance from the kibbutz, passed the cultivated fields, one came upon an abandoned Arab village. It was in ruins, and the sheep would graze among the Bustanim (orchards). This was my first contact with a different reality of Israel. The village looked as if it had been abandoned in a hurry. Many of the buildings were built from the local rock and were in ruins. I delighted in the smell and taste of the figs and other fruit. Prickly pears (Sabras) were growing everywhere. I was very surprised to find this place and felt sympathy for the previous inhabitants. I do not know whether a battle was fought here, or whether the inhabitants were chased out or left of their own volition. I do know that the kibbutz benefited from the nearby lands, which were now worked by the members. As far as I remember no one was ready to talk about the fate of the village or its inhabitants or perhaps I did not ask. None of us gave much thought to the fact that the Arabs had once lived here and fled. We were too engrossed in our own future and ourselves. Somehow all our education in the movement had ignored the reality of an Arab population. There was no feeling of hatred towards them; it was as if they just did not exist. We always went out armed with a Sten gun, in case of Arab marauders, but I did not connect that to the destroyed village. I suppose I was young and innocent and did not think too much that this had been home to someone else.

One interesting aspect of sheep rearing, or being a shepherd, was the need to move with the flock around the country during the summer. This was after the

lambing season, and when the natural grass growing in the hills had dried up. The sheep would be driven slowly to the valley (Emek Yizrael) where the crops had been harvested. I remember that Shlomo and I moved the herd to kibbutz Mizra in the Emek Yizrael, and the sheep grazed on the remains of the dura (sorghum). I have a brief recollection of living in a hut or tent. Supplies would be brought from Gal Ed daily. I assume that Shlomo, Dan and I must have taken turns at shepherding. Since the sheep were with the lambs there was no need for milking.

Dan taught me a side of life that I did not know in my naivety and I suppose did not expect in Kibbutz. . One day he asked if I would like to join him for tea in the house of Margalit, who was also from Holland. I had heard talk of this mysterious Margalit. She lived by herself in what must have been the tower of the original tower and stockade settlement. In the early days when a kibbutz was established, a stockade of wood filled with stone or stone stockade was built with a tower in the center for a guard to sit in. Initially the settlers would live in tents inside the stockade and the first building to go up would be the communal dining room, laundry, showers etc. Gal Ed had passed these initial stages, and Margalit now occupied the tower. She had it furnished in “ Dutch” style with table, sideboard and the typical small Oriental rug on the table, similar to what one would find in a middle-class Dutch household. I did go with Dan for tea. Margalit was a large blousy woman, rather course and loud. I was so naïve that I did not realize that Margalit offered more than tea! I became aware of this when Dan said he spent the night there, or when there were jokes about Shlomo, head of the sheep branch of the kibbutz, and who was married, and must have been in his 30's or 40' also spending the night with Margalit. She provided favors to the bachelors of the kibbutz, and even to married men. I unfortunately do not know her history. In a recent visit to Gal Ed (2010) I could not find the tower, and no one remembered Margalit. She may have been a passing phenomenon, or perhaps I imagined it. (I doubt that).

The early 1950's was a time of mass immigration into Israel, not only from Europe but also Jews from Arab countries. The kibbutz received children through an organization called Youth Aliya, which was an offspring of the Jewish Agency. These were kids of about age 10 and up, who attended the kibbutz school, or a special school established for them, to teach them Hebrew and other skills. Many of these kids worked with me and I became familiar with children from Kurdistan, Iraq and Turkey. I do not know what happened to their parents, or where they lived. I enjoyed working with these children and help educate them. Many were orphans and members of the kibbutz would adopt them inviting them home or go with them to the dining room for dinner. Below I have a photograph of two of these children with a newborn lamb. Unfortunately I did not have any contact with these children after I left Gal-Ed.



On my days off I would explore the neighboring kibbutzim. One usually could hitch a ride on the many trucks carrying produce from the kibbutzim to Haifa, which was about 25 miles away. These kibbutzim along this road belonged to the left-wing movement Hashomer Ha'zair as opposed to Habonim. I cannot forget my first impression of these kibbutzim, red flags and pictures of Stalin and other Russian leaders everywhere. It is true the Soviet Union to everyone's surprise had voted in the UN for the establishment of the State of Israel, and the war of Independence had been won because of help from Czechoslovakia in the way of arms. However by this time, 1952 most of us knew of the excesses of the Stalinist regime. In Czechoslovakia the trials of Jewish communist leaders, the Slansky trials had taken place, and most of the Jewish leaders were hanged. They were accused of Trotsky-Titoist-Zionist conspiracy. Of the 13 put on trial 11 were Jewish. The Doctors plot, wherein Stalin accused Russian Jewish Doctors of plotting to kill the leadership was ongoing, and yet despite this these kibbutzim still believed Soviet propaganda, and that Russia was the new Garden of Eden. In 1952 the kibbutz movement split over the Soviet Union. Hashomer and Ahdut Avoda (United Labor) saw Joseph Stalin as "the sun of the nations," while Mapai viewed him as a mass murderer. The whole kibbutz movement was divided, and it was to split again over other matters such as "hired laborers" a few years later. This meant that a large number of members would leave an established kibbutz and start a new one. Families were often divided. These kibbutzim have remained separate to this day. Of course this was a transient phenomenon and today, 60 years later these kibbutzim, like most others are undergoing privatization, but they are still separate. For example, we often stay in in kibbutz Ein Harod in their guest-house. There are two kibbutzim, Ein Harod-alef and Ein Harod-beth. Today they often co-operate.

I did leave the kibbutz a few times, either on organized tours to other parts of the country, to Jerusalem, or to the Negev. However it was difficult to go out on my own, for the simple reason that I did not possess any money. To get about I was dependent on hitch-hiking, and even if I did go into Haifa or Tel Aviv I had no place to stay. My father's sister Kitty and family lived in Ramat Gan a suburb of Tel Aviv, and I did visit a few times, if I could get there by "tramp" an appropriate Hebrew word for hitch hiking.

The lack of money and questions relating to private property did bother me quite a bit. There was really no equality, or only limited equality on the kibbutz. It did provide us with what we needed, in terms of clothing, toothpaste all our physical needs but some people did receive money from family, and later reparations from Germany, and even items like radios and records became bones of contention since some had and others did not. It is difficult or near impossible to legislate complete equality. One of my mother's cousins, Willie Shapiro, visited during this first year in Israel and gave me 50 pounds sterling, indicating that he would get it back from my parents. I know it caused a row at home, and I do not know whether he was reimbursed, but it allowed me some freedom to move around the country. I do not think I bought anything with it. I hoarded this money for my occasional visits to Ramat Gan..

The kibbutz did have a guesthouse in Netanya a resort on the Mediterranean, or they rented rooms. After one year of work one was entitled to spend a few days at the guest- house and given some cash to spend. I do not remember what I did on that mini vacation except I acquired a taste for Arak, an alcoholic drink made from Anis. It is similar to the Greek Ouzo, which I still enjoy to this day. I think I sat on the beach with some of my "comrades" and enjoyed our few days of quiet.

On reflection, life in Israel was very difficult. There was the time of mass immigration, tent cities had been set up all over the country to handle the thousands of immigrants. Bus service was poor, crowded with people, chickens goats etc.; it was in reality a third world country. The war of Independence had been only a few years ago, and there was constant harassment from Fedayeen (Terrorists from Gaza and Egypt). On the other hand it was also a time of great idealism. There was hope of building a better society in the world and hope that eventually there would be peace with the Arabs. The socialist party of Ben Gurion dominated the country and gave it direction. It was a Socialist economy and the labor union, the Histradut, played a large role in everything. I don't recall any hostility to the Arab population.

I was not religious nor was anyone else in the kibbutz or in our group. I am always being asked about this subject, and in general we did not practice any religion in the kibbutz. Most of us were atheists. The kibbutz was not kosher and there was no synagogue. Our aim was to restore the Jewish Nation not the religion. At that time we thought it was possible to do the one without the other. Unfortunately it looks as if things have turned out differently. We were too naïve about human nature. There was a nucleus of religious Jews, but they appeared to be a minority and lived mostly in Jerusalem. To us these reflected the diaspora, a culture we were escaping from.

After a few months our group started looking at possible places to settle permanently. No one really wanted to stay in Gal Ed. I think the only one who wanted to stay was Trudi who had a boyfriend from the kibbutz. The kibbutz movement decided that we should join an existing Kibbutz and came up with a few suggestions. These included Gonen, a new " sabra" (native Israelis) kibbutz right on the Syrian border and Hachoshlim (later called Amiad). Gonen to me was more attractive because of the age of the group, in their early 20's and it had a true Israeli (sabra) atmosphere. There were also a large number of young

women. Hachoshlim had been founded by native Israeli's and was later joined by groups from Holland and Romania. It was a well-established and economically flourishing kibbutz, at least compared to Gonen. It appeared at that time to be economically better than Gal Ed. Its economy was based on agriculture and fruit grown on the banks of the Sea of Galilee, including large areas of bananas. I do not remember the discussion but after a vote it was decided that we would join Hachoshlim. This would also be our base for army duty (Nachal) later on. It turns out that Gonen would have been very tough. It was later under constant bombardment from the Syrians and was on the front line of the Yom-Kippur war. Today it is a very small kibbutz with less than a 100 people with a "country inn", as have many kibbutzim in the area.

We were a large number of bachelors at Gal Ed. Slowly individuals from our group was getting married, and there was a shortage of available women. We were quite dependent on visitors for sex. Most of us in our early twenties were still "virgins". I remember one incident in which there was visit of a group of Jewish-Indian girls. We as usual flirted with them in a fun sort of way. However in the middle of the night, Z.F, (deceased) who was rather a portly individual woke us all up with cries "I did it, I did it". He had successfully lost his virginity. I personally do not remember going with anyone in particular from these Gal-Ed days. I must have been too tired getting used to the land, the climate and the hard work. My sex life had to wait until the next move to Hachoshlim (Amiad) .

.THE ISRAELI ARMY-ZAHAL.

In October 1953 we moved from Gal Ed to Amiad, and about a month later we were conscripted into the army. I will describe Amiad in the next chapter, since that first month was one of adjustment and waiting. Perhaps the most trying period of my life were those 30 months spent in the Israeli Army. Not all 30 months were bad, it was the first few months of basic training (tironut) that got me and many others down. We were inducted into NAHAL, an acronym for noar halutzei lochem, “ fighting pioneer youth”. These units were established in 1948 in response to a request to Ben Gurion, the then prime minister, not to break up garinim, or groups of “volunteer” youth. We were thus inducted as a group into one unit, men and unmarried girls. Our average age was about 24. Men were in one part of the camp(Machane David near Tira on the Carmel) and women in another. We were given our uniforms, and berets with the Nahal insignia (the sword and ploughshare a biblical reference).



For the first six weeks we were “ tironim”, that is we were uninitiated soldiers subject to basic training. Our camp, (Machaneh David) Camp David, was

at Tira in the Carmel mountain range overlooking the Mediterranean. We slept 10 to a large tent, close to each other. A major part of the day was spent preparing the tent for inspection, beds had to be made and look neat, our guns cleaned, our gear and kit bags set out, and we had to appear neat and tidy. The officer (hamifaked) was God. We were constantly packing and unpacking our gear. What struck me most was the senselessness of a large part of the training. There was an obvious purpose, in some of it, which was to get us into physical shape (after all we were for the most part a bunch of intellectuals), and to get us to respond to any command without question. The slogan was 'only asses think "(rak hamorim chosveem) or something to that effect. We were constantly running up and down the Carmel ridges with our beds, first thing in the morning as well as in the middle of the night. This did not make much sense other than exhausting us all the time. Our gear was heavy, and we were often woken up in the middle of the night for long hikes. Here we stumbled over rocks and stones. I do not think there are anywhere else in the world as many stones and rocks as in Israel. Thus the effective use of these by the Palestinians during the Intifada. Rocks are everywhere. The night training was in response to the idea that the Arabs do not fight at night. This may have been true of the 1950's not today. Apparently the night training was the idea of the British General Wingate who was instrumental in training the Hagana, the pre-war army of the Yishuv, the Jewish community of Palestine.

It was drummed into us, never to let go of our rifle. We had to sleep with our rifle. This was our girlfriend. We were constantly cleaning and oiling it. These were old Czech single barrel rifles, which initially is all the Israeli army possessed. Later on we graduated to Sten guns (an automatic machine gun prone to going off accidentally), and then much later to the Israeli made Uzi, I actually was in a jeep once when a Sten gun went off after the jeep went over a bump in a road and a fellow soldier in the jeep was injured. The Sten was a semi-automatic

machine gun, with a magazine containing 10-20 bullets developed by the British during WW2.

We had short haircuts; however one could sport a beard unlike in other armies and after our period of basic training, no one really cared how we dressed. Food was served either outside or in a mess hall. I should not say served but rather that food was slopped into metal canteens. This was a period of austerity in Israel, and we seemed to live on eggplants, tomatoes, olives (5 equals one egg) and bread. Occasionally there was a better meal with an egg instead of the olives.

I recently watched a movie about Wingate, the British officer who helped train the Hagana against the wishes of the British. He introduced the code of behavior in the Israeli army, no saluting officers, informality of calling officers by first name and eating together in the mess hall. This indeed compared to most armies was a “ democratic” army although I think the officers had better food and more money than we had, and we did not eat together. We got paid very little, and what we did have we spent on chocolate wafers in the shekem (a sort of army canteen, it actually is an abbreviation of sherut Kanteenot umisadot, which for the those interested in language translates to canteen and restaurant service). Most of us could afford very little. Every time I see chocolate wafers in the supermarket I think of these days, and how much of a luxury they seemed. I still have a taste for them; somehow they are not as good as I remember them. I have found some recently in the local supermarket made by Osem and they taste like the original, with chocolate between the wafers.

It was in the Nahal that I learned Hebrew. One of the ideas of tironut was to use the army as means of integration into society. This was an immigrant country, with immigrants from many different cultures. Thus a part of the day was spent learning Hebrew conversation and reading from an easy immigrant newspaper, called Omer. Other lessons were derived from the tanach (bible). We

also learned to curse in Arabic and Russian from our fellow soldiers. We were cursed at by our sergeant Aaron Ashkenazi, (originally from Turkey), and we learned to curse other soldiers in the unit, who were mostly from Morocco or Kurdistan. We really were a motley crew. The Kurdim (as they were called) were considered the most stupid and backwards of the immigrant population. For some reason only known to the army, we, “Anglo Saxim” were placed together with a group of 18-20-year-old from Kurdistan and Morocco. We were the “worst” if that is the right word, unit in the camp, known as “Machlaka 4”. The rest of the battalion looked down on us, and I think they thought of us as crazies. The army might have been a better experience if we had been with a “Sabra “ group, even though we were older and from a different culture, it would have been closer than that of Kurdistan. Interesting that today in the fight against ISIS the Kurds are considered the best fighters and the bravest soldiers.

Of those who shared a tent with me some have remained friends others unfortunately have died. We all hated the sergeants and officers although Aaron Ashkenazi joined our group after this period in Tira. They seemed exceptionally cruel. Two of our group could not take it, and found means of escape, by prematurely burying their parents, getting leave, returning to the U.K. and only much later (many years later) returning to Israel. Others deserted and spent time in jail. The army almost destroyed the cohesiveness of the group. Stealing from each other became common during muster, metal hats, and camouflage covers often went missing and had to appear at parade. We soon recognized who could be trusted and who could not. At one point either my metal hat or camouflage net was stolen, I think by someone in our own group, but my experienced friend Phil Shearsky who had served in the British army, stole one from someone else and thus I avoided problems. This was the way the army worked, and I assume still works to this day. The story from Tommy Berman is that his bed went missing. How that happened I do not know. Phil got up,

sauntered around and returned with a bed. I don't know if the army is still like this, but I saw a recent Israeli movie called Yossi and Jaeger about two friends stationed in Lebanon, and by the goings on, not much has changed. It was what was called in Hebrew a balagan, which I believe is Polish/Yiddish word for chaos. (There is a whole site in part devoted to a discussion of this word see <http://balagan.org.uk/balagan.htm>). The only way I think we could beat the Arabs, was that they were a bigger balagan.

In my tent were Gerry Pitch, who later became a lorry driver and is one of the few who remained on a kibbutz (not Amiad), Dr. Harold Flowers, a biochemist later in life at the Weizmann Institute, Tommy Berman, who later became a limnologist, and was partly responsible for my decision to study in the States, Les Collins who moved to Haifa around the same time that we left Amiad and found a job in Shemen as a metal worker, Piers Coleman, who later owned an antique store outside of Netanya, and Bernard Clements who later became an artist. He was one of those who could not take it and went back to England for a time. Finally there was Phil Shearskey, who kept our moral up. He had gone through the British Army and knew how to manage. On reflection on re-reading and rewriting this, none of the above are alive today. Tommy died in an accident last year in the Galapagos Islands, and Les Collins may be alive but is in a home for victims of Alzheimer's., and does not remember or recognize anyone. Gerry died about three years ago, and the others earlier. There are a few survivors of our group, Lionel Holland and Van Emden, whom we later chose to send on an officer's course. I see them usually on our annual visit to Israel.

We waited for leave so that we could get out, buy some decent food (if we had the money) and relax a little away from the constant harassment and shouting. I had an aunt living in Ramat Gan, not far from Tel Aviv. She was my father's sister, Kitty, she and her husband Louis and three children lived in a tiny apartment in one of the newer shikunim (apartment complexes, bare minimum,

that were put up in a rush to house the immigrant population) in Ramat Gan. I would turn up unannounced with one of my “ mates” usually Gerry for the weekend. I did not realize how financially hard up the family was, and how difficult it was for them to adjust to Israel. Louis was a cabinetmaker and was involved in construction. I think he made window frames and doors for the new apartments that were going up at a fantastic rate. He wanted to branch out on his own, but was tied down by the Israeli trade union, the Histradut. At one-point Kitty asked me to come by myself without company. Only recently (2008) in conversation with her did I learn what a burden my visits caused. They basically had neither room nor money, and my visits were an extra expense. She had three children (my cousins) and Louis was often without a job. Because of the harsh conditions of Israel at that time they eventually immigrated to Canada. I still have contact with my cousins. Kitty and Louis are dead. I see the cousins every few years. The youngest one, Irene, spends her winters in Florida, and I meet her at various family gatherings. All the others live in Toronto with their children.

We spent three months in Machaneh (Camp) David. I supposed towards the end we got used to it. As stated above, our sergeant, from Turkey ended up joining our group, and some of our group was sent to specialized courses. I did learn to shoot a rifle and Sten gun, throw a hand grenade (not that well, I have never been a great pitcher), and got to know the Carmel range, and every nook and cranny of Israel very well. To this day I can find my way around even without a map, as long as I know the location of the Mediterranean.

We were supposed to spend two years in the Nachal, the first part as described above in basic training, the second part as agricultural workers on a kibbutz, and after about a year or so, to advanced training. This idea of advanced training was a novel one, and we were the first group of Nachal to do this. Later groups had to go through parachute training, something I am glad I did not do. I had enough trouble jumping off a 6-foot wall. Thus after three months of basic

training, some time in 1954 we returned to Kibbutz Amiad, not as members of the kibbutz, but as a Nachal Garin. We were quartered in wooden “shacks” arranged around a central flagpole where parades and orders were given. This was up a hill removed from the main kibbutz buildings, with separate showers and bathroom facilities. Our sergeant was much more humane, Zvi Fingerman (later Goffer) himself an immigrant from Argentina, who later became a good friend and a world expert on archaeological chemistry. Our commanding officer Yossi ? was an asshole. I cannot remember his last name, but he was a young punk who thought highly of himself and could not adapt to the fact that the soldiers under him were much older and much more intelligent. In fact a few years ago I met one of our group, Geoff Halpern, who had been with me in the army, and was now a bank manager in Ramat Hasharon and this Yossi came in for a loan. Goff recognized him and thought now was his opportunity to get his own back, and I believe he refused him the loan or at least gave him a hard time.

The Nachal camp, for such it really was, was on a bleak hillside behind the kibbutz, and quite a walk from the dining room and other buildings of the kibbutz. Behind this was a large hill (or mountain) with a peak that looked like an extinct volcano. We slept four to a hut. I shared a hut with Les Collins, Piers Coleman and I think Bernard Clemens, or was it Gerry Pitch? All of us were ravakim that is single guys. Those who were married slept in the kibbutz proper or had a hut to themselves. Single girls, and there were a few, slept up the hill, also in the huts.

Before going into the army I was a shepherd at Gal Ed and I continued this job as part of Nachal. We continued our Hebrew lessons, folk dancing etc. all material to integrate us into Israeli society. In fact I was sent to a folk-dancing course organized by nachal (see photograph). My folk dancing was very good, I held myself erect, and I had a great sense of rhythm. I also was sent on a course for shepherds at the Wingate Institute outside Netanya. It was a week- long

course on sheep rearing, breeding and how it was done in other countries.



Three ' Shepherds at the Wingate Institute. I am in the middle, still lots of curly hair.

Apart from the fact that we continued to speak English among ourselves we acculturated quite well.

We often went out of the kibbutz on army exercises. One of these I remember distinctly was at Tabha on Lake Kinneret. I do not remember the purpose, but our officer, decided to occupy an area frequented by picnickers. Our 2nd lieutenant, Yossi, ordered us to clear the area of civilians. One of our group Les Katz, refused to do so. He was correct, we did not have the authority to chase off civilians. This was not a military zone. Les refused, and as a result was

arrested for subordination. He spent a few weeks in military jail for not obeying an order, even though all of us thought that the order itself was illegal. He and his wife eventually left Israel. A few years ago I met Jackie his wife in Covent Garden manning an “ antique “ stall. Les died rather young. He was a fellow Glaswegian.

Meanwhile I worked as a shepherd, with Yossilke, who ran the sheep branch of the kibbutz and occasionally in the banana plantations. The kibbutz owned extensive areas of bananas on Lake Kinnereth, near Tabha. This was hard work, either harvesting bunches (which weighed 100's pounds) or wrapping the bananas with plastic material to protect them. Another job, which was more enjoyable was driving the tractor, and having others load on the fruit.

Apart from army discipline, and occasionally having to dress for misdar (parade), this was a satisfying time in that I enjoyed my work and my working companions. Conditions were primitive, the showers were makeshift structures with corrugated iron roofs. Rats would run along the edge and appear to stare down at one having a shower, the toilets were primitive the squat down type . However time passed pleasantly enough. I really did not have any regrets, nor did I think much of why I was doing what I was doing. Social life was reasonable. We bachelors often felt out of things, we talked about sex, ran after the young women who came to visit, but nothing serious happened.

We lived like members of the kibbutz. Food was bad and rather boring, but then there still was a general shortage of food in these early years. We subsisted on egg plants cooked in a dozen different ways, and lot of tomatoes and cucumbers. It is amazing what can be done with eggplants. They can be made to taste like “ schmaltz” herring or stewed apples. However being a shepherd meant getting up at ungodly hours like 4-5 a.m. to milk the sheep before taking them out in the morning. This had to be done before it became too hot. Thus we had breakfast ourselves in the kitchen and for getting up so early we were provided

with extra rations, a real omelet or halva, considered a delicacy. One usually got these if one was sick, as was chicken soup, a cure all. Food like halva was usually kept for the children. There may have also been budgetary constraints, since the kibbutz had to be self- sufficient.

After a hiatus of about a year we were sent advanced training to the Negev, to Camp Nathan, just outside Beersheba. It is hard to believe that this is the same Beersheba that is a thriving metropolis today. Beersheba was a sleepy little town, part in ruin, since it had been predominantly an Arab town, an oasis in the middle of the desert before the War of Independence. There were a few Arab style buildings and a Jewish entrepreneur had opened an ice cream parlor, Moshe's "glidah", to which we went at every opportunity. The ice cream was good, and we could sit around and enjoy a beer. I can still picture the small building which became the restaurant, the few palm trees, and the surrounding desert.

In Machaneh Nathan we ate sand, slept in sand, and had sand all around us. This was the heart of the Negev desert. Advanced training did not seem all that different from basic training, the same discipline, and the same exercises. There was talk of making us " jump" and train us as parachutists, but luckily this did not happen. I had great difficulty jumping off the roof of a low-level building, never mind from an airplane.

One of the "adventures" of this period was to test our ability to do without water. I don't know whose great idea it was. I think it may have been that of Aryeh (Arik) Sharon our mad general. (If I am correct this is the same Sharon who later became prime minister, lay in a comma for over a year and only recently died). The great idea was to march from Beersheba to Masada under strict water rationing or no water at all. This was a march through the desert of about 50 miles. I think Tommy and I acted as scouts going ahead to map the way, and I suppose to ascertain there was no " enemy" in the region. We did meet the

occasional Bedouin. The route was tough, the sun strong and it was very hot. We were strictly rationed as to the amount of water we could drink, very little. Ambulances and tankers containing water just in case anyone fainted followed the long line of soldiers. When we got to Masada all we wanted to do was lie down and rest. Instead the army decided that we should have a series of lectures on the history of the place. Instead of giving us water, they gave us either soft drinks or chocolate milk. We began to puke; exhausted soldiers fainted from either dehydration or the excess of sweet liquid. No one gave a damn about the lectures. Every time I think of Masada I think of this grueling hike. I assume we had “ misdar” (a parade) on the top of Masada, but no one felt very patriotic at that moment. I have avoided going to Masada as a result of this experience. I don't mind other parts of the Negev. I enjoy the Dead Sea and Ein Gedi, but Masada always reminds me of the stupidity of the army. I think the army has given up on the theory that one can be trained to survive on little water. Sounds a lot like Lysenko's genetics.

We did see some action while in the Negev. We were sent out to ambush Fedayeen who were routinely crossing from Gaza strip and launching terrorist attacks. In one case we were sent to the Kurdish village of Patish to raise the moral of the immigrants sent to this god –forsaken place, after someone had thrown hand grenades into a wedding party. One person was killed and 23 injured. This was in March 1955. The village itself was founded in 1950. Attempts were made to settle Jews from Egypt, but they refused to stay, so the Jewish Agency sent Kurdim!

It is in the middle of nowhere and reminds me of the location for the Israeli movie, “the band”, about an Egyptian band lost in the Negev. This was followed by routine night ambushes near Nachal Oz and Zeikim, just north of the Gaza strip. We would lie just off the beach behind some scrub bushes and wait for hours for someone to pass. Once we shot up a poor donkey, which wandered off

his regular track, and once a lone individual was shot. He had crossed the border in the water. He had no identification on him and was unarmed. We had quite some discussion as to whether we had caught a terrorist or some poor soul who wanted to join his family or visit a relative. Who knows? After a few months of this we were released from the army and made our way back to Amiad.

When we discuss our time in the army none of us feel any nostalgia. Perhaps we were too old, or just not ready for this experience. Obviously it was necessary if we were going to continue to live in Israel, and we continued to do “milluim” (reserve duty) once or twice a year. Since I left Israel a few years later, I cannot judge how others felt about this disruption in their lives.

Kibbutz Amiad: 1954-56.

Following our stint in Beersheba (Camp Nathan) we returned as demobilized soldiers to Amiad. I knew the kibbutz well from our previous stay in the Nachal quarters. Wooden huts up the hill behind the kibbutz, where we would muster every morning before the flag for parade, with common showers overrun by rats and no air conditioning. Now we were members of the kibbutz.

Amiad had been founded in 1946 near a ruin of a khan (inn) called Jeb Yusuf. Although the kibbutz was only 8 years old when we joined, it was a relatively thriving kibbutz, with a large communal dining room (not air conditioned), a few hundred sheep, a large herd of cattle, initially for milk later for beef, a large poultry unit both for eggs and meat and the usual other agricultural branches, including extensive fruit orchards newly planted around the Khan. The kibbutz also been allocated land on the shores of the Kinneret, (Sea of Galilee) at Tabha where the climate was sub-tropical and was ideal for growing bananas. Below is a photograph of me driving the tractor with bananas, and other members of the kibbutz or foreign volunteers taken about this time. Tabha is mentioned in the Bible. It is the site where Jesus preached the story of the multiplication of the loaves and the fish. A small hill with a monastery overlooking the Sea of Galilee, between Amiad and Tiberius about 2 kilometers from the kibbutz is known as the Mt of the Beatitudes and is where Jesus delivered his "sermon on the mount to the multitudes". It is close to Capernaum, which is on the lake, with its ancient synagogues and churches.



Bananas require intensive agriculture. They grow as large bunches that are wrapped in brown paper to prevent insect attacks. Each bunch weighs 20-30 lbs. During the 1950's the banana plantations and other fruit orchards, mostly avocado, and much later Kiwi fruits, were the mainstay of the kibbutz. This later branched out to a winery, producing wine from fruit, such as Kiwi wines. Unfortunately this was not profitable and when the kibbutz was privatized a few years ago it was sold to a local businessman. It still was not profitable and is no longer in existence. All that remains of this winery is a small pub near the main road, which at one time served local wines.

Eventually in the 1960s and thereafter the main income of the kibbutz came from an industrial plant designing and producing equipment for irrigation, particularly water filters. Amiad filters can be found all over the world even in Saudi Arabia, lacking Amiad stamped on the equipment. The kibbutz members maintain a controlling interest in Amiad Filtration Systems, now a publicly owned company with some 550 employees (about 80 Amiad members) worldwide. The Industry provides Amiad's major, but by no means only, source of income.

I settled down very quickly and was given a small apartment (one bedroom, and adjoining toilet and shower), which I shared with Piers Coleman. Piers was from Dublin and I had known him for a long time, mostly from our time together on Hachshara in England. Piers arrived in Israel sometime in 1953 accompanied by his mother and sister, Tessa. All three settled down in the kibbutz. Tessa eventually left Israel after marrying a " wealthy " Israeli and returned to Ireland, and Mrs. Coleman a few years later. Piers and I were both slob, and our room was mostly in a chaotic state. Our small apartment was one in a block of four identical rooms. We had a small porch in the front on which we would sit outside in the evenings and interact with our neighbors. The houses are still standing today and look as they did some 40 years ago. This was the bachelors' quarter. Piers was quite a character. He had a wonderful collection of

books, and was interested in music and art. He left Israel for a short time to return to Ireland and returned married to Rosy in 1960. He opened an antique store first in Raanana and then later in Ehud Yehuda, a suburb of Netanya. He also wrote poetry. Pearse died in 2012 of a heart condition.

An Arab guard, Mustafa was the watchman of the banana plantation.. He was a tall swarthy guy and talked a sort of “broken “English and “ broken” Hebrew. He always seemed in a good disposition, joking and laughing. I could never find out how many wives he had, although from conversation he had many. One day he invited my friend Tommy and I to come to his village, Deir Hanna, for his brother’s wedding. Deir Hanna is in the Western Galilee, not far from Karmiel (which was not in existence in those days). I don’t remember much about the weekend, except it was quite exotic. We drank lots of “ Turkish” coffee, and I was impressed by the fantasia of horses, rifle fire, and dancing of debka by the men. I do not recall meeting any women. Thinking about it, I do not even remember a bride. There was a lot of food to eat, including lamb, and everyone ate out of a common large bowl, pulling the food out with their hands and holding it while they ate. I was a little put off by this, but eventually joined in. I have since become accustomed to this “ custom”, since I had the same experiences in India where one eats “ sticky “ rice with one’s fingers. We slept on the floor wrapped in blankets. I remember waking up in the morning and scratching myself, since I was covered by bites, most probably bed bugs. Mustafa and family were very hospitable; we were treated like honored guests. Certainly there was no hostility to us Israelis’ and we were not afraid. I do not think it occurred to us that we might be in any sort of danger (we were not). I don’t know why he invited the two of us. Tommy thinks it had something to do with being from Scotland, some of the elders of the village having served in a “ Scottish ‘ regiment with Glub Pasha in Jordan in the 1940’s. Maybe! In these days relations with the local Arabs seemed good, although Deir Hanna was a Moslem village. At that time it had a

population of about 800. Today it is a small town of 2,500 inhabitants. It was not destroyed or attacked during Israel's war of independence.

After settling down I returned to work with the sheep. This branch of the kibbutz economy was run by one of the older members, Yoselke, a very diminutive middle-aged man, who had a very fat wife, Shula. There was me, Piers, Les Collins and Gerry Pitch working in this agricultural branch either all the time or periodically. It was dirty, hard work. Going out with the sheep was tough work, particularly in the summer since in the heat of the day the sheep would clump together as if one body and were immobile. They would place their heads under each other's bodies and stand in this fashion for hours. I could scream and they would not move. I don't think even a sheep dog would have helped. This was their way of protecting themselves from the scorching sun.



Sheep huddled together against the heat. Photograph courtesy of Ehud Aviram.

Later I would go out with the herd alone with only a donkey for company. The donkey was to carry back any injured sheep or lambs during the lambing season, and of course my lunch and books to read. Unlike shepherding in Scotland or England we did not have a sheep dog, the rationale being that chasing them would lead to a drop in milk production. I would take the sheep a few miles from the kibbutz, in search of “pastures green”. (Psalm 23) The sheep would eat everything that grew, weeds, shrubs, saplings, and actually denude the land. This

area of Israel is very rocky with basalt (black) rock, and the sheep would eat clumps of grass growing under the rocks, while I would stretch out on a boulder in the nude or semi-nude and get nicely tanned. However one had to be careful since under these rocks lurked snakes (vipers) and scorpions. I occasionally met some of the latter even in my room. These were red scorpions, the sting of which could be very painful or even fatal.

There were always a few sheep that acted as leaders and would even recognize their names. One was "Ping pong," another "Marylyn Monroe". I would call out " ping pong, boi, boi" the Hebrew for come, come, and she would come running, the others would follow. They always expected some " goodies" and I would oblige with some bread. Without these few lead sheep it would have been impossible to move the herd especially in the heat. These specific sheep had bells around their necks which helped to find them if they wandered off. The noise of the bells acted as a signal for the other animals to follow the leaders. I assume this is the reason for bells around cows' necks in the Swiss Alps.

Milking the sheep was hard work. One put food in a long manger like contraption and the sheep would begin to eat. A lever was attached at each end, and pulling the lever trapped the head of the sheep in the "ibush "as it was called in Hebrew. We then took our buckets (wide and flat) and milked the sheep from behind. The milk was collected, filtered, and put into large containers for shipment to Tnuva, the kibbutz cooperative. There were also other aspects to sheep rearing. The sheep were dipped once a year just before shearing. We employed Arabs from a nearby village to do this job. It was very difficult work, the sheep struggling furiously to be released and not very happy with being manhandled and dipped in a sheep dip, which contained a mixture of insecticide and fungicide. The sheep often had ticks and other insects, and sometimes large scabs.

Another difficult task was that of mating the ewes and the rams. Sheep were selected for mating to specific rams. The rams were kept separately, and there was always a strong smell of, I assume, semen. They would come rushing towards the 'estrous' sheep with a long red-rod like erection, penetrate, and it was all over in a few seconds. Sometimes we had to hold the sheep and lift her fatty tail, a rather disgusting job. These sheep were fat tails or Awassi sheep found all over the Mediterranean. The mating season was in September, just after we returned with the animals from stubble grazing. Although we did not realize it we were amateur geneticists. Each sheep had a number tag on her ear and a record of milk production, and we tried to pair her off with a different ram each season. We also worried about inbreeding and kept meticulous records.

I always went out armed with a Sten gun, and later an Uzi, in case I encountered marauders (luckily this never happened). Occasionally I would see another shepherd, usually Arab, with his herd, and on one occasion I did meet and talk to the Arab shepherd from Akbara the village behind Amiad. I have never been to this village, which was a few kilometers behind Amiad in the direction of Safed. Apparently it was leveled during the battle for Safed in 1948 but resettled after the war of Independence.

In the summer of 1956 we went up with the sheep to the newly drained Hula swamps. This had been a malarial infested area and the draining was considered quite an ecological achievement. I enjoyed the isolation of living in a small hut at the edge of the Hula (now a national park) and wandering around with the sheep. That year I did not go up alone but was accompanied by Zev, a young man from the suburbs of Haifa, who had just arrived with a small group of pre-army kids. Zev was a "real" cowboy, young, tall and handsome and dressed as if in a cowboy movie. He loved to ride his horse and gallop after the cattle. We were of a similar age, and our talk turned to the girls in his group. I was interested by this time in one of them Miriam (Mimi), and Zev warned me that I

did not have a chance. Many of the boys in the Garin were interested in her and she had refused to go out with any of them. Zev's opinion made me more eager to go out with Mimi. I was sure I could do it I felt challenged. My Hebrew was not that great, and I did not know whether she understood or spoke English. However I was willing to take a chance. In general young Israeli's, and in particular Sabras, looked askance at anyone who was not a native. The courting of Mimi will await the next chapter.

What about my sex life during this period? I did have one serious affair. Aliza was, a single mother with a 1.5-2-year-old child called Giora. She was, very thin, dark and pretty and could not be mistaken for anything but a Yemenite. Since I was lonely, and my friends were all getting married, I started going out with Aliza. Most members of the kibbutz approved, particularly since I would take Giora for walks, and he would call me abba. (Daddy) This was the first time (since Esther on Hachshara) that I really had a serious love affair. We slept together on occasions, but I soon realized that Aliza was terrified of becoming pregnant. After one of these nights together, and after we had been going out but not living together for a few weeks I learned that in fact she was not divorced, as she had told me, but that her husband was in Morocco, and was expected to return soon. This quickly put an end to the affair, since I did not want to get mixed up in a brawl, which according to her would be very dangerous for me. Moroccans had a reputation for being very violent. I was quite angry that she had encouraged me and strung me along, and now wanted to break up. I had become attached to Giora, perhaps more to the child who was very sweet, than to the mother. Shortly afterwards she left Amiad for another kibbutz and I never met her again. I do not know why her husband was in Morocco or why she did not inform me of this fact earlier. Perhaps he worked for the Mossad or some other "secret" organization. She also may have been lonely and needed the love and companionship I gave her.

Who were my friends at Amiad? There were many, most of whom I had lived with for a long time, particularly in England and later in the army. My closest friends were those I worked with, Piers and Les. The latter was a large tall guy, very intelligent, and basically self-educated (actually thinking about it, all of us were, since none of us had a formal education.). Piers could be described as an intellectual, interested in music and reading, whereas Les was much more the outgoing type, a bit of a tough guy, threatening to beat anyone up who annoyed or insulted him (or me). I met him again in 2002; forty years later and he had not changed. Although born in North Africa, he was of British-Jewish origin, and very much the London East End tough guy. Today I don't know whether Les is still alive. When I phoned his house a few years ago, his wife said that he had Alzheimer's and could not meet me, since he could not find his way home. I did talk to him on the phone and he did know whom I was. He did want to meet, but his wife was non co-operative. He was then placed in an institution and I assume that he is no longer among the living. I never met his wife who was either from Egypt or Morocco. He had one daughter a practicing physician in Tel Aviv.

After leaving the kibbutz Piers and his wife Rosie, (from Manchester) ran an antique store in a small shopping center, in Even Yitzhak, a suburb of Netanya, specializing in Victoriana. Piers worked in the shop and Rosie earned money as physiotherapist. I had the impression during my visits that the shop did poorly. Piers died in July 2012 of a heart condition and I have lost contact with Rosie. Piers was a good friend and was always glad to see me, presenting me with his poems, and odd pictures, (one of Sadat of Egypt wearing a tie decorated with what looked like swastikas)

I quote from his obituary that I came across on the Internet "This past week, July 25th to be exact, Piers Coleman passed away. A very moving funeral ceremony was held at the cemetery in Even Yehuda, the place where he lived, and home

also to his unique antique shop that he ran with his beloved wife Rosi.

Piers Coleman enjoyed every facet of life - he loved music, art, antiques, the English language, especially people and above all his family. He cared deeply about all the injustices he saw around him.

Piers came on Aliyah in 1953 and settled at Kibbutz Amiad. A Dubliner straight from a James Joyce novel, he could spin a yarn that would keep you interested for many 103an hour. His humor brought delight to all those who had the privilege to be a party to it.”

My friend Tommy, who went back to my Glasgow days, meanwhile had left the kibbutz to study. He had received a Waksman Scholarship from and later reparations from the Germans for “loss of property ” and parents in Czechoslovakia .He had relatives (an aunt and uncle) in New York who supported him. He had taken leave of absence from the kibbutz and was studying agriculture at Rutgers. We did correspond periodically and his decision to study in the States was to influence me later on.

As mentioned above, a new group had taken our place in the Nachal quarters behind the Kibbutz. There were quite a lot of good-looking young girls among them. One day I ended up working in the kitchen with one of them, Mimi, an attractive, intelligent, blonde girl, who spoke very good English. We seemed to have fun washing up, and we had an interesting conversation. She soaped the dishes and I did the rinsing, something we still do together over 50 years later. As far as I remember she had borrowed some books from Piers, wanted to return them and I invited her to our room, which always was a mess. According to Mimi, her first visit to our room should have put her off, since it was dirty and untidy. We had quickly taken our dirty clothes, shoes etc., which were on the floor and put them on the bed and covered them with our bedspread. There really was nowhere to sit except at the edge of the bed.

Mimi says she found herself attracted to the “ wild looking, piano playing shepherd”. We started going for long walks together and often hikes in the Galilee. She would come and wake me up at ungodly hours to go hiking. I should have realized that she was a “ morning” person and I was not. To this day I still get wakened up at dawn, particularly in the summer. After a short time she moved into my house and Piers moved out (this was the regular scheme of things). All my friends approved of this match (some had not approved of my previous affair with Aliza). Mimi was attractive, very intelligent, and very full of life. I do not think at this time that I realized how strong willed she was, and that in fact she had a much stronger personality than I. Sometime during our early stages her mother came to visit the kibbutz. Mimi moved out of our room not wanting to embarrass her and introduced me to her mother as her boyfriend. I was struck by what a beautiful woman she was, even though she had suffered during the war, and her husband was in the USA, which made life in Israel even harder for her. Later on we visited her mother’s home in Kiryat Bialik, and since she approved of me (this was before I even thought of studying), we decided to get married. We were against marrying in the kibbutz since we thought of leaving, and felt it was unfair for the kibbutz to pay for the celebration. This must have been in October-November of 1956.

I personally was quite happy in the Kibbutz. I enjoyed my chevra (group) and my work. Because of my work in the sheep branch, I gained lot of respect, and was even nominated at one time to be in charge of kibbutz planning. I was not worried about the economic future; I was happy with what the kibbutz gave. Amiad was not beautiful; it was situated among black basalt rocks, a sign of a previous volcanic eruption or earthquake. The dining room was old and not air-conditioned but there were plans for a new one. A ‘ cultural center’ had just been built, with a music room and a piano, which I utilized a great deal. I felt an integral part of the kibbutz. Mimi on the other hand found a lot to criticize. She

did not like working in the kitchen, which she was told would be her job for some time in the future. She worked for a time in the sewing room, which was a hub of gossip, and she found disturbing. She also did not like the idea of bringing children into this environment, and not being able to have them at home in the evening.

It was during this period that my garin (group) began to fall apart. Many of the group decided for various reasons, although I think mostly to do with bringing up children to leave the kibbutz and settle in town. Among the first to leave were Sylvia and Harold Flowers, h found a position at the Weizmann Institute. Some of the single girls met future husbands and left for other kibbutzim or for the city. Others left to return to Britain. There seemed to be a general unhappiness. The next thing I knew we were at war with Egypt.

1956-57. SINAI WAR, LEAVING THE KIBBUTZ AND JOB- HUNTING IN ISRAEL.

As recounted previously, during my stint in the Israeli Army, we laid ambushes to prevent the Fedayeen from crossing from the Gaza strip into Israel to carry out terrorist attacks. In 1956 alone, about 250 Israeli's had been killed due to Fedayeen activity. Not only was there terrorist activity, but Egypt under Nasser had blocked Israeli shipping through the Suez Canal and the outlet to the Red Sea from the Israeli port of Eilat through the straits of Tiran. In the summer of 1956 Nasser had nationalized the Suez Canal and had threatened the shipping of other countries. The British and French formerly administered the canal, and Britain owned a large number of assets in Egypt. To finance the building of the Aswan Dam, Nasser turned to Russia after the western powers turned down his request for assistance. These events triggered a short war in October of 1956 known later as the Sinai or Suez War. Israel's aim was to stop the Fedayeen, destroy the Egyptian army, and open the port of Eilat on the Red Sea. The French and British wanted to retake control of the Suez Canal. A repeat of this war with Egypt was to happen in the future (1967) in what is known as the six- day war. Thus the two wars should not be confused. Neither the British nor the French were involved in that second war, although the root causes, Nasser's attempt to throttle Israel by blockading the Red Sea port was the same.

As soon as the war started we were on high alert, having just been demobilized We expected to be inducted into the army immediately. However it took a day or so before this happened. I remember we milled around uncertain as to what to do. We were ordered to muster in Haifa, and then were transported to a camp, Sarafand, an old British Army camp in the center of Israel, not far from Ben Gurion Airport. Haifa to my surprise was full of French sailors, with their red pom-pom caps, being carried in trucks, and giving the V- sign as we passed them

by. This was so totally unexpected, and unbelievable, that we asked ourselves what's going on? We could hardly believe our eyes.

France and Britain formally entered this war a few days later ostensibly to protect the Suez Canal from damage, but in reality to gain control of the canal. We (the public) were completely unaware of any collusion between Israel and the French and particularly the British, who only a few years before had been enemies of the Jewish State.

By the time we got to Sarafand the war was half over, (we did not know that of course) and I think there must have been a shortage of equipment, since we were told to wait for rifles, and instead of seeing action we sat and played bridge. I remember being very bored. The news was upbeat about victories in the Sinai, and Israeli troops reached the Suez Canal in no time, with the French and British attacking from the western side of Suez. The Israeli strategy depended on the use of air power and paratroops. Israel demanded the opening of the Straits of Tiran and the Suez Canal to Israeli shipping and lifting of the blockade of Eilat as a condition for a cease fire.

Unfortunately the US (President Eisenhower or was it Dulles, the foreign minister) disagreed with the aims of the UK and France and through the UN ordered cessation of hostilities. There was fear in the US that the Russians might intervene on the side of Egypt, as well as the position that the US could not condemn the ongoing Russian invasion of Hungary and at the same time support the "imperial" powers. This bolstered Nasser, and instead of a defeat he claimed victory. Personally I think this was an enormous error on the part of the US and had repercussions for a long time (and probably still does to this day). One can imagine how much more peaceful the Middle East would have been if Nasser had been deposed and Britain or France had maintained some type of foothold in Egypt. Subsequent events such as the Six Day War of 1967 and the current

occupation of the West Bank of the Jordan were a result of this US policy. However Israel proved that it had the ability to defeat once again a major Arab power, it occupied the Sinai and for some time prevented incursion of the Fedayeen. Although there was unceasing pressure from the US to withdraw from the Sinai, and even threats of sanctions against Israel, it was not until Egypt agreed to open the straits that Israel withdrew from the Sinai. To a large extent, Eisenhower and his foreign secretary Dulles prevented Israel from enjoying the fruit of victory and if it was not for internal public pressure the US would have sided completely with Egypt.

Some of our group did see action. At least three members were parachuted into the Mitla Pass, the site of a major battle in the Sinai. These were Francis Van Emden, Mike Leaf, and Phil Shearsky. Mike was seriously wounded but made a complete recovery. He today is a very well-known artist with an international reputation and works from a studio in Safed. Van has remained a good friend lives in Haifa, and for many years worked for ZIM the Israeli shipping company. Phil although unscathed from the war died of cancer in the 1990s. He experienced trauma from the war, having observed the massacre of Egyptian prisoners. Phil and I were close friends, being on Hachshara together, worked together with the sheep and were in the same tent in the army. He later married one of the beauties of our group, Elisheva from Holland. He was a very shy individual, very much a product of an English working-class background, with little knowledge of Judaism or Zionism before joining our group. He later left Amiad and moved to Moshav Timorim, in the northern Negev with his wife. Elisheva died shortly after Phil also from cancer.

Mimi anxiously awaited my return to the kibbutz. She worried about my safety. I had written a few times from the ‘battlefield’ and was very much in love. It was shortly after this and after I had visited Mimi’s mother in Kiryat Bialik, and her mother visited Amiad that we decided to leave the kibbutz and marry.

Leaving the kibbutz was difficult for me, since I enjoyed my life in the kibbutz and was generally quite happy both with work and the social situation. I was not all that interested in money and material goods. I was satisfied with the little I had and being part of the group. I felt I was surrounded by friends and was responsible for an important branch of the economy of the kibbutz. Mimi had decided that she did not want to bring up our future children in the kibbutz and she had encountered some unpleasantness from one of the “ old timers” who threatened her with a long period of work in the kitchen after she was married. Of course this would not have happened since a committee and not one person decided on place of work. The kibbutzniks did not live up to her expectations, were not idealists and that there was a great deal of pettiness and infighting. I was in love, and Mimi meant more to me than the kibbutz.

We had not thought through our future since I had no skills, apart from shepherding sheep, driving a tractor, and certainly no education, not even a high school certificate. What was I going to do, and how was I going to earn a living outside of the kibbutz ? Our prospects were bleak. The idea of bringing up children communally did not worry me, since I thought it worked quite well, with ample leisure time to play with the children. I had enjoyed my experience of being ‘abba’ to Giora.

We moved out of the kibbutz to my mother-in laws house in Kiryat Bialik, in November of 1956. We were not yet married, a fact that did not bother Mrs. Reifer (Rutta). We did not share a bedroom I slept in the sitting room on the couch up to the day of our wedding. The apartment was small with two bedrooms, a small kitchen and a sort of hallway used as a sitting room. It was one of the apartments built very quickly in the 1950’s to house new immigrants. It was in a three-story structure with 6 apartments per building. Mimi had designed the furniture, which was very modern; Bauhaus style, with contrasting

black and white wood. Although small the apartment was better than our room and bathroom in the kibbutz.

At one fell swoop there was a general exodus of members of my group from the kibbutz, with Mike and Thilda and their baby Anat leaving the same day, on the same truck, followed a few days later by Una and Van, Lottie and Barry and my co-worker in the “sheep” pens, Les Collins. All moved to suburban Haifa. All eventually found decent jobs, Van in Barclay’s bank, Les in Shemen, a factory producing soaps, detergents, perfume etc. maintaining equipment, and Mike as a chemist with the Potash company. We helped Les find a job through Mimi’s uncle Jacob who was a manager at Shemen. Leaving the kibbutz was like an infection that spread and led to the disintegration of the garin (group) and everything that we had dreamed and worked towards for the last 10 years of our lives. We were not the first to leave the kibbutz other had left before us, mostly those with a solid profession. The reasons for leaving varied, but mostly due to concerns about bringing up children in a communal fashion, and the children sleeping apart from the parents. Gradually the “bleeding” from the kibbutz subsided leaving a core of about 20-30 of our group many of whom are still living in Amiad or buried there. Our little apartment in Kiryat Bialik soon became the social center for gatherings of ex-kibbutznicks from Amiad, most of whom lived close by.

None of us received financial compensation from the kibbutz for the years of work. We were not particularly bitter about this, since we really did not expect anything. However the lack of money made it difficult to start a new life. If it had not been for Mimi’s mother living in Kiryat Bialik, and her desire for us to move in and live with her, until she went to the USA to join her husband, our initial independent married life would have been much more difficult. My future father-in-law, Salo, had left Israel, in 1954 for the United States. He had been quite unhappy in the new country, found it too socialist. Trained as a mathematician he

did not want to teach in the Israeli school system, and instead was employed as a night watchman in a factory belonging to the minister of defense. When it was discovered that he had a degree in mathematics he was offered a position in a chemistry materials laboratory. However his brother Paul, in New York urged him to try his luck in the USA, which he eventually did. Ruta meanwhile decided to stay in Israel and look after Mimi. She was very content in Israel after the suffering through the war in Europe. She felt very much at home in Israel and her brothers and sister lived nearby. The move to the USA was something she dreaded but was done to save her marriage. She felt that Mimi was now in good hands after her marriage.

The first task after leaving the kibbutz was to find employment for both of us. We had vague plans for the future, all in Israel. We looked into the possibility of growing flowers for export (a thriving business in Israel) on land left to the family by Mimi's grandfather. This was land not far from Kiryat Bialik, bought by him in the 1930's. Although zoned for agriculture, when we inquired about getting water to the area, we were told this was impossible for the foreseeable future. Since we were up against Israeli bureaucracy, we quickly gave up this idea. This land is still in the family, still untouched, and being used by one of the nearby kibbutzim for growing grain. It should have been rezoned for building, but this has been pending for many years and nothing has happened. Perhaps if we had settled down and thought it through we would have fought the bureaucracy and obtained permission to put in water, but it would have been a long fight, and we did not have the funds to hire a lawyer.

Mimi found a job without difficulty as a chemistry lab technician for Hemed (the army research branch), and I went for interviews to agricultural schools for a position as an instructor in some field. I was offered a job at the agricultural high school in Nahalal to teach, "shepherding". This was a well-known agricultural school, but the position was only part time, and did not pay very

much. Here my ex-army sergeant and now friend, Zvi Goffer, intervened. (Zvi had married one of our girls, Chava, while in the army). He felt I could do better than this and suggested I turn the job down, find something better and consider studying, which was in his plans. Zvi was slightly older than I, and both Mimi and I valued his wisdom. He was originally from Argentina, and after completing the army had investigated the possibilities of studying chemistry. He decided it was easier to do this abroad and encouraged me to do the same. Eventually he completed a BS and then a Ph.D., at London University and later was a professor of chemical archaeology at the Hebrew University. His book, *Archeological Chemistry* a part of which I reviewed and edited, is an authority on this subject.

I thus declined the position at Nahalal, continued job-hunting, and found a position in an office of the agricultural ministry in Haifa. This was interesting work, helping a Ph.D. candidate from the Hebrew University School of Agriculture. Michael Taran was completing his Ph.D. on the effect of high temperature on poultry in the Jordan Valley, and also studying the incidence and genetics of leukemia in chickens. My job was to crunch numbers on coefficients of inbreeding, and to accompany him to the Jordan Valley (Ashdod Yaacov, Kinneret, Degania) to obtain records of egg production and to analyze whether the severe heat of the Jordan Valley had an influence. It was a good job, and I enjoyed it, although a co-worker once warned me that I worked too hard! If I remember correctly heat had no effect on egg production. The temperature in the Jordan Valley, one of the lowest spots on earth often reached 100 degrees F.

The office was a small one on the third floor of a large building on “rehov Atzmaut” (Independence Way) in the downtown section of Haifa. This was close to the port and the area contained all the foreign banks and trading offices of the mandate. It was near the old Arab section of the city, which was partly destroyed and quite run down. I took a bus every day from the “Tsrif” in Kiryat Haim, close to our apartment to downtown, a ride in these days of about 15 minutes. I

worked in the office with a Mrs. Lieberman, who kept an eye on me in a nice way. Mrs. Liebermann was a middle-aged woman, probably of German-Jewish origin, long hair tied back in a bun, and appeared very strict. However she protected me, a naïve newcomer. The head of the department was a decent guy, a Dr. Zvi. Ben Adam who later gave me excellent advice, and I think was instrumental in my being accepted by Cornell University, or at least he must have written a good reference. In the office we talked a mixture of English and Hebrew, so that language was not a problem. When I started work I had no intention of going to the States, and I was quite happy with the position.

We adjusted quite well to our life in Kiryat Bialik. We had two groups of friends, mine from the kibbutz, and Mimi's high school friends, although at this time most were in the army. They were mostly Sabras i.e. native born and found it difficult to accept an immigrant from the UK into their midst. I likewise found them immature and childish, and this did become a source of friction between Mimi and myself. My Hebrew was not good, and this made matters worse. With the passing of time, I have become more acceptable to this group and when we meet now I feel quite comfortable, despite my "broken" Hebrew. We meet approximately once a year in our visits to Israel. We have continued our friendship with those of my group who have survived the years, .Unfortunately this group has been dying out and there are not many of us left.

Thus that first year we established a routine. Both of us worked and enjoyed the Shabbat. We had a very tight budget and kept to it (we rationed ourselves to one record a month. I still had my gramophone, a wedding present from my uncle David.). This gramophone made it all the way to the USA with us, where we found it had to go extensive modification to get it to work. We lived very frugally but enjoyed our friends. We also became friends with neighbors, in

particular those from English speaking countries. (known as the Anglo-Saxim)
We had no idea that we would be leaving for the US in a year.

I have often thought of the Utopian idea of the kibbutz, and why it did not completely succeed. I think the disintegration of my group was a result of general dissatisfaction with kibbutz life, the reality, as opposed to the dream. We discovered that people, no matter how idealistic, were human, and had human foibles. There was jealousy and nastiness, there were those who were more ambitious than others, and those who wanted to “lord” it over others. Some did not like the idea of someone else (whom they did not like or appreciate or disparage) bringing up their children. That children, including babies slept together in the children’s homes under supervision was not agreeable to many of the female members. After a few years, children’s care was modified when an extra room was built on to the houses as bedrooms, and became the norm in most kibbutzim, except for those of the left wing Hashomer Hatzair Kibbutzim. There were also economic considerations, the resentment that some members had more money than others, either from parents or other sources (reparations from Germany). These were not shared with the group. In particular the problem of reparations from Germany was a tricky one.

One of my friends, Tommy Berman, received quite a sum since his parents died in concentration camps. He decided to put the money aside so that he could study in the USA. I don’t know whether anyone handed their money into our kibbutz, although I am certain this happened in other places.

The girls in the group objected to working all day in the kitchen, washing up, or in the “ machsan” sewing and ironing clothes. Where was the promised equality to the sexes ?.

As an economic unit the kibbutz was quite successful, although subsidized by the labor government of the time. The overall economy was capitalistic, so that

the kibbutz competed in the free market with other businesses. It sold its produce to a co-operative, Tnuvah, who in turn sold the produce to retail stores. The culture that we had experienced in Hachshara, the intellectual discussions, the listening to music together, the discussion of ideas and principles was absent. Work tired us out. Also the family unit began to dominate social life, whereas on hachshara we were young and mostly single, with no parental responsibilities. Now parents collected their children for a couple of hours after work, and by the time they had dinner and returned the children to the children's home they were too tired to do anything other than sleep. Later on it became obvious that the family replaced the individual. This was most apparent in the dining room where tables were often occupied by members of the same family, in particular as the number of children and grandparents increased.

I have often wondered what it would have been like to remain on the kibbutz. Today, when I visit Amiad, I find that many of those remaining have little in the way of personal belongings to show for a life of toil. The housing situation has not changed in years. Agriculture is no longer the mainstay of the kibbutz. In the case of Amiad there is a factory for the manufacture of water filters and sophisticated filtering equipment. Workers are paid salaries based on their position in the factory. Many of these workers come from outside the kibbutz. The kibbutz has undergone huge changes with privatization, private ownership of houses and other property, reallocation of resources, pensions to older people, car ownership by individuals, in fact everything is in flux. Even without these changes brought about by generation three of the kibbutz, life was disappointing for many. In some cases the children of the first generation (the founders) have left for the city or even for the USA/UK or other countries. I think the biggest blow, is seeing one's children leave the kibbutz, since sacrifices had been made for future generations. To have your children leave the kibbutz is a failure. For those who stayed there must be a sense of betrayal and bitterness. What made it

worse was that some of the children immigrated to the USA or “ returned” to the place their parents came from, namely the U.K. The first and second generation born on the kibbutz did not want to be farmers or work in the kibbutz industries. Rather they wanted to go to university, study literature, sociology or architecture, professions that were unimportant to the kibbutz. Thus the experiment to create the educated peasant succeeded but only for one generation. One factor was the industrialization of the country and the loss of agriculture as a mainstay of the economy. Israel became high tech, no more growing tomatoes and oranges. With the increase in population came urbanization and many kibbutzim (not Amiad) found themselves at the edge of cities, or even incorporated into the city, if not physically but culturally. What do you do when there is a shopping mall at your door?.

Tommy B., my childhood friend from Glasgow was one of the few who seemed happy. His children except for one who immigrated to the USA stayed in the kibbutz He has grandchildren who remained, and for most of his life was an academic performing research in a government sponsored laboratory on limnology of the Sea of Galilee. This offered him the opportunity to travel and work elsewhere. He even had a new species of algae found in the Kinnereth called after him. Tommy died last year in an accident while exploring the Galapagos Islands. Others of the group who remained are now teachers, or retired teachers from junior colleges in the Upper Galilee. Most took classes as the kibbutz became wealthier and finished their education in middle age. In the end most of my “garin” had managerial or teaching positions within the kibbutz or even outside in middle and old age, so that their life changed, albeit very slowly.

MARRIAGE AND LEAVING ISRAEL.

The wedding was to be a simple affair, but this being Israel it was more complicated than necessary. The date was fixed for February 24th, 1957 in a wedding hall, Weiss on Rehov Herzl in the Hadar (center) of Haifa. I invited my parents and family from Scotland, but only my mother and my sister Beatrice attended.

Before being married in a Jewish ceremony I had to prove that I was born into a Jewish family. We had an interview with a Rabbi at the Rabbinate in Haifa. My proof of Jewishness was a couple of letters (or was it one?) from the secretary of the kibbutz, that he had known me for a number of years and that I came from a good “kosher” family. Interestingly, and never investigated was the fact that the mazkir (secretary) of the kibbutz was himself not Jewish, being Lionel H who had joined our group because of a girlfriend while we were on Hachshara in England. The Rabbi made it clear to Mimi that the wedding could not take place without her going through the “mikveh”, ritual bath for purification purposes. Mimi balked and decided she would skip this step, and not obtain the required certification. It is customary to go to the mikveh as close to the wedding as possible. To quote “If they will not marry us we will live in sin but no mikveh!” she did not say this directly to the Rabbi.

The wedding day itself was a beautiful day. Mimi still did not have a certificate showing that she had been to the Mikveh and was under pressure from her uncle Yaakov to get one. This was a surprising turn of events, since Yaakov was one of the ‘Old’ pioneers of nearby Kiryat Haim, known for its secularism and socialism. I do not think he had ever been to “shul” since leaving Europe in the 1930s. Mimi went to the Mikvah, offered to pay but not immerse and of course was turned down. All of this fuss was for naught, since at no time did the Rabbi officiating the ceremony ask for proof. Mimi was a beautiful bride, very radiant.

The Rabbi turned up with a small chuppah (canopy) and when he saw that the wedding was large, he had to send his assistant for a larger one, thus a short delay in the service. I do not recollect who was at the wedding, except that a lorry loaded with people came from the kibbutz, both Mimi's friends from the Kiryot and my friends from Amiad. It was a joyful wedding, lots of joking and dancing. During the service Mimi had a fit of giggling, and none of us were very respectful of the religious ceremony. I think my mother was shocked at our behavior.

We went back to the apartment and my attempt to carry my bride over the threshold ended when I tripped over some barbed wire surrounding the small patch of lawn in front of the house and ripped the trouser leg of my "new" wedding suit. The next day it poured all day. This was my one -day off work and



our honeymoon.

My mother stayed for a week, and she and Beatrice did some touring. My mother was not impressed by Israel. I do not know what she expected, but Haifa to her seemed shabby, no large department stores, and I suppose it was backward compared to Britain. It was then a third world country, with crowded buses. She complained how everyone would talk to her on the bus, ask her questions, and just be themselves (Jews-Israeli's), not reserved like one finds

among the British. Yet my mother had the reputation of talking to strangers on the bus in Glasgow! However my sister enjoyed her visit and was back in Israel within two years, working as a nurse at Hadassah Hospital in Jerusalem. She eventually met her husband, Dr. Noah Lucas, an ex-Glaswegian and a professor of political science at the Hebrew University in Jerusalem, where they lived in Jerusalem for many years.

In the summer of 1957 my maternal grandmother died and willed me some money. Although I always thought of her a rich woman, very little money was found on her death. I learned the story of her death later, which was a mystery involving theft and possible murder by her physician. She left me 300 pounds sterling in her will, which was quite a bit in those days. This was before our decision to come to the US. In fact it was only 4 months after our wedding, and our decision on pursuing studies in the US was not made until the summer of 1958. We decided to use the money for a vacation in Italy, something Mimi had been dreaming of for years. In order to do so we both needed permission from the Israeli Army, to leave the country since Mimi was of military age, and I needed to be released from reserve duty.

Mimi went to the local office of the ministry of defense for a permit to leave and sat for a whole morning without seeing anyone. The secretary in charge announced that the office would close for an hour for lunch. Mimi lost her temper and barged into the inner office yelling that she had wasted a morning of her precious time, and that she would report this to higher ups (Ben Gurion) since she was an employee of the Ministry. This threat seemed to work, and she got her exit permit very quickly. However she was asked stupid questions like, "why are you going to Italy?" On vacation, "Whom are you staying with?" No one, in a hotel, "which Hotel?" I don't know. "What, how can you go abroad without knowing anyone?" etc. etc. However in the end there was no problem, just a stupid clerk in an inefficient office.

I had no problems getting released, and there was some mix up at the office of the ministry of interior, resulting in my using my British passport to leave Israel since I was denied an Israeli Passport. I will not go into this complication. This mix up, really as to whether I was an Israeli citizen or not continues until this day. It all stems from that little piece of paper I signed on arrival in Israel and the loss of my initial identity card in the laundry.

This was a year fraught with problems, most of which turned out to be minor and had positive results. I am not certain of the order in which they occurred, but the effect on us was profound. After 6 months at work, I was told I would be laid off for one or two days. This was done so as not to give me a permanent position, and thus not pay fringe benefits, retirement etc. Although I was doing my job well, I could not be hired permanently since I did not have the required qualifications for the position. Although I thought this very unjust, this was the agreement between government ministries and the Histradut, the Israeli trade union organization. The Histradut did not seem to offer much protection to its workers. This pattern would continue no matter how long I worked for the government. I discussed this with Mr. Zvi Ben- Adam, the head of the department, and he suggested the best course of action, since I was still young was to apply to universities in Israel and the USA and that he would support such an application with a strong letter of recommendation. He suggested I apply to Cornell University in New York where he had friends in the Department of Poultry Husbandry, a very respected department in a very good school. Of course I felt there was little chance of my being accepted, since I did not have a high school certificate. Mimi and I discussed the situation and came up with three possibilities. 1. She would tutor me for the equivalent of the High School Certificate (administered by London University) and I would apply for admission to the Hebrew University School of Agriculture, 2 Apply for admission to Glasgow University or the West of Scotland College of Agriculture, based on the fact that I

had taken a course there a few years prior on Farm Management or 3 consider moving to the US for a few years and attend some college, possibly Cornell. This last possibility had support from Mimi's father who was living in New York. Thus applications were sent off to all three institutions. This must have been in the early spring of 1958.

Thus for about a year I studied under Mimi's guidance mathematics, English, Ancient Greek History, Modern Hebrew and Chemistry. I passed the exam in all subjects except mathematics in the summer of 1958, just before we left for the USA. It turns out that none of this was necessary. Mathematics ironically has always remained one of my weaknesses, although much later in life I used statistics in my research without any problems.

Meanwhile unrelated to this my mother -in-law Rutta, left for the US to join her husband, she had no idea that we might follow. Following our wedding my mother-in-law decided to join her husband in New York. He had been there four years. She felt that her only daughter was now in good hands. She had eked out a living all these years by being a dressmaker, and Salo, my father in law had from time to time sent some money.

We were very happy that first year of married life and did not think of leaving Israel. We budgeted our expenses but lived quite well. Both of us were working, I in the Ministry of Agriculture and Mimi for the Ministry of Defense. Thus we brought home two salaries. We allocated money for all items, buying books, records, and going out to eat (very rare in Israel those days), and had planned our vacation to Italy. We had lots of friends both "Anglo Saxim" and Israeli. We even were invited to our first cocktail party by one of Mimi's "friends" in Haifa. It was then we discovered we did not belong to the cocktail circuit. We had no desire to get drunk or stoned. We stood around holding our one drink and making inane conversation. I suppose we were beginning to see

the changes that were to occur in Israeli society in general (alcohol, drugs etc.) but at that time it seemed another world to us. These were kids with no idealism in a country still full of ideals.

In general we were very positive, and our apartment was always open, to visitors from both those who had left the kibbutz and those who stayed behind. Most of our friends from the kibbutz moved to the suburbs of Haifa (Kiryat Ata, Kiryat Motzkin) so that we moved in the same circle. My closest friend at that time was Les Collins, my buddy from the sheep rearing days. He lived in a nearby suburb. Mimi had a large family in the Haifa area, aunts and uncles and of course lots of cousins about our age or slightly younger. We made new friends, occasionally going to the nearby Kibbutz, Ramat Yochanan and meeting with Peretz Nadel, a well-known folksinger. He later became part of a group known as the Adler Trio. We became acquainted with some of our neighbors, mostly "Anglo-Saxim", which meant either British or American, who also lived in Kiryat Bialik, in a parallel row of apartments, playing cards or scrabble. Our life was busy and pleasant. We read, listened to music and discussed life and politics. There was no TV as yet in Israel..

Many "funny" things happened to us and we laughed at them together. We applied for housing for immigrants from Anglo-Saxon countries (since we did not want to live with Mimi's mother for long, although that changed when she decided to go to the States). I was told that the organization of immigrants from Anglo Saxon countries (U.K. USA, S. Africa) could not help us, since we were a "mixed" marriage, that is a Romanian Jew with a British one!

Although I had sent my application to universities right after being informed that I could not have a permanent position it was not until spring of 1958 that I did get a letter from Glasgow and from Cornell admitting me to their respective programs. The response from Glasgow was positive, but with a caveat that I might be called up to Her Majesties Forces. From Cornell University it was

admission to the Agricultural School, the Department of Poultry Husbandry, with credit for the course I had taken these years ago in Glasgow. I would love to get hold of the letters of recommendation and figure out why I got a semesters credit for the course. I owe an immense gratitude to Dr. Ben Adam and later to Drs. Marble and Baker of the Poultry Husbandry Department at Cornell. Their obituaries are below.

http://ecommons.library.cornell.edu/bitstream/1813/18862/2/Marble_Dean_Richmond_1966.pdf and

http://www.nytimes.com/2006/03/16/nyregion/16baker.html?_r=0.

Dr. Ben Adam and Dr. Marble were “ old” friends and I’m certain this influenced the decision. Dr. Marble had spent some time in Israel in 1955 working with Dr. Ben Adam.

Our decision was easy. We go to Cornell University in Ithaca, Upstate New York. . The semester started in September, we needed tickets and more important visas to the USA. The US consulate issuing visas was in Tel Aviv. I travelled down to Tel Aviv (I must have taken time off work) and found a long line of people. I was given a number and told it might take more than a day until my turn comes. Each applicant would have to be interviewed by someone in the office. Even in these days it was difficult to get a visa to the US. I had one advantage, instead of applying for a temporary visa as a student; I could apply for an immigrant visa under the British quota, which in that year was undersubscribed. I physically pushed my way into the consulate. I had to fill out an immigration application, sit a medical (both of us), be checked by the police, I suppose of both countries, and get our visas all within a few months. This they could not promise. I returned after about a month, physically jumped to the head of the line (after all this was what most Israeli’s do) and I remember being evicted from the office. Finally I did get to talk with someone who was helpful, and we had our immigrant visas just in time. Next stop was New York and we

thought Cornell, and Ithaca. As far as we were concerned this was only a temporary absence from Israel, although I had applied for immigrant status to make the transition easier.

DIFFICULT TIMES IN NEW YORK, 1958

We arrived in New York at the end of August 1958 with \$10 in our pocket (perhaps it was a little more or less). We stayed with Mimi's parents for a few days and then boarded the bus for Ithaca, New York. The bus trip was about six hours and we started house hunting as soon as we arrived. It was the week before the term began, and the type of housing available for rent shocked us. I suppose had no idea what to expect. We had not registered for student housing, (our fault and lack of time) and looked at old decrepit clapboard houses, with an offer to rent, provisional on cleaning snow, or some accommodation in a basement with no windows. Most would have cost us more than any salary Mimi might earn. Having just arrived from white, gleaming sunny Haifa, Ithaca, or at least "College Town" seemed gloomy, run down and grey. Actually Ithaca itself is in a very beautiful area, with abundant lakes and waterfalls, but the downtown looked neglected.

Since I was considered a foreign student, an Israeli student David Prihar drove us around and from him we got an idea of the expenses incurred in attending Cornell. I could call these years of our life the years of naivety. Certainly this was not the America we had imagined, although in all honesty I don't know what we imagined. It was obvious that we could not afford the tuition or the rent, and thus we opted back to New York City to live with Rutta and Salo (Mimi's parents) who had moved into an apartment in the Bronx. Luckily I was able to delay my acceptance by a year, during which period I became a resident of the State of New York and thus qualified for New York State tuition considerably less than out of state. The School of agriculture at Cornell was part of the State system. I also learned from my friend Tommy Berman of a fellowship for Jewish students

in agriculture, which I applied for and duly received. This was during a period when certain segments of the Jewish population wanted to encourage Jews to be farmers. New York and New Jersey as well as California were dotted with Jewish Poultry farms.

We also learned from David Prihar of the presence of another foreign student, Ralph Mitchell, from Ireland, who had a connection to Israel. Since my mothers' maiden name was Mitchell and I had heard of family living in Dublin and Belfast, I was anxious to contact Ralph. I phoned and asked whether he had any connection to the Glasgow Mitchells, and he replied " yes, he had visited his uncle many years ago". This was probably my grandfather or more likely my grandfather's brother Robert, who had more Irish connection, having lived in Belfast for a few years. From my Aunt Betty's writings, I learned that my great grandmother, and thus Ralph's grandmother had died in Belfast after an IRA attack on a nearby barracks. Ralph was my mother's first cousin, and we had thus found a new relative in the USA! Interestingly Ralph was studying for the Ph.D. in microbiology. If I had not been so set on studying Poultry Husbandry, I might have met and discussed the future of microbiology and my own future with him. As it was, we agreed to meet sometime during the year in New York City. I also learned that he had been an active member of Habonim in Dublin and that we had a number of mutual acquaintances. He had worked a year at the Weizmann Institute in Rehovot, Israel before coming to Cornell. Thus our lives were quite parallel and got me wondering about the genetics of the family.

Mimi's father had been living with his brother Paul and family. Rutta arrived without knowing that we would be coming, and they had found an apartment on 190th Street and the Grand Concourse in the Bronx. Thus, we moved into their apartment and slept in the living room. We paid Rutta and Salo a nominal sum (I cannot remember how much) for room and board. Mimi's Uncle Paul had been living in the USA since some time in the mid 30's and he and his

wife Dushka had two daughters, Claudette and Madeleine. Madeleine was approximately Mimi's age, and she assisted my enrolling in evening classes at CCNY. I do not recall meeting "Claudie" in New York. She and her father had a terrible row before our arrival. Apparently he wanted her to lead a "social" life of dance, mix with a certain set, wear makeup, all of which she refused to do. She was interested in more intellectual pursuits, even contemplating the idea of immigrating to Israel, or so at least I have been told. Paul was very much against this. She thus left home and lived with a man, Dick Ehrlich. I do not know whether they were married or not, but she had two children delivered under very primitive conditions, some say in the woods of Connecticut. Claudie ended up having many children, Dick was a drug addict, and as can be expected, had many problems later on. Paul was a very domineering individual. He was a physician in the Veteran's Administration Hospital, always formally dressed with a bow tie and jacket, and insisted on everyone behaving and dressing like him, being "American". In fact he did not approve of my dress (open shirt, no tie) and made some caustic remarks about dressing like a kibbutznik. Dushka on the other hand was a very submissive and kindly person, and I don't know how she suffered all these years of marriage to Paul. There were other "Reifer" relatives in New York, whom we would occasionally visit. Thus we had a new family. Unfortunately we did not maintain these connections on leaving New York. My in-laws and Paul and family eventually followed us to California. After something like 50 years we have met Claudie in California and have become good friends with Janie, one of her daughters.

What about my education? This was the reason for coming to the States! Had we made a mistake? Living in the Bronx was certainly not my dream of the USA. This area of the Bronx, 190th and Grand Concourse was considered an upscale Jewish middle-class neighborhood. The major landmark was Alexander's Department store on the Grand Concourse, a busy shopping street. The

neighborhood was quite safe. We had advice from Salo and also from Mimi's uncle Paul, as to the direction to take for the future,. The plan was to attend evening school at CCNY, to complete basic courses, so that when I did return to Cornell University the following year, it would be easy to transfer credit (I still was not familiar with this whole idea of credits). I thus enrolled in courses in freshman physics, chemistry, geology, and psychology. Of this latter course all I remember was the lecturer standing on the desk to make a point. I do not recall having learned very much, although I did finish with A's. In the geology class we made many field trips to the N.J. Palisades to study the different strata, I enjoyed the field trips, the course was well taught, and this course was the most interesting. Thus I received a semester of credit later on at Cornell and with credit for the farm management course I was able to graduate in two years. .

Mimi found a job as an analytical chemical lab technician with the cosmetic company, Revlon. She earned enough to support both of us through this period. The lab was situated in Harlem, and the subway ride was quite unpleasant in the winter when it was dark, and we often worried about her safety. In fact after Haifa, New York seemed to us dangerous, with drunks, pickpockets and other petty crime. The upper Bronx was not bad, but the area of CCNY around 125th street was undergoing change and was quite seedy and decrepit. The drive in the subway was unpleasant, crowded, smelly, and unsafe. There were drunkards in the evenings, sometimes with vomit and piss on the floor.

I went down to the HIAS (Hebrew Immigrant Aid Society) office in Manhattan and they were successful in finding me a job. In fact they found me a series of jobs, none of which lasted long. First as a bookkeeper in the fruit market. This job lasted one day, since the owner could not read my handwriting, which tends to be small and messy, and I had no idea how to balance the books. I then worked in a small workshop that produced tools for sculptors and artists, certainly a job with very limited potential, and then later after this job fizzled (not

through any fault of mine) packaging Neon lights for a wholesaler. These jobs paid very little and were quite far from the Bronx. They were located in lower Manhattan, below 14th Street, at that time a poor neighborhood, but today gentrified and full of skyscrapers and high-rise apartments. Exasperated with the situation of poor paying lousy jobs, I began to search the New York Times classified section. I found a job advertised for a person with mathematical experience. In fact it stipulated a degree in mathematics.

Although I did not have degree in mathematics, I had sat the London University Matriculation (High School) external exams. Mimi had tutored me in this. I did not do very well in Mathematics, however I just mentioned London University to the person doing the interviewing, and I was hired on the spot. No one asked to see my credentials and I did not lie. I think Howie my new boss just assumed I had a degree in mathematics, or it really did not matter since no one else had a degree in math. The company was called Arbitron, a TV and radio rating company. Small electronic gadgets were placed in individual's TV sets, and we in the office on 53rd Street received a transmission indicating the channels people were watching at any specific time. This was recorded and then we calculated the percentage of a population (in a specific city) watching that program. The extent of the mathematics was calculating percentages on a Monroe calculator! It was a great job, it paid well, and my work colleagues were good company. A reporting board would light up to indicate what home was watching what broadcast. We would record this and thus calculate the results. This information was then sold to the networks and advertisers for large (enormous) sums of money. In fact it gave me some idea of how much money changed hands in the advertising and TV industry, signifying the importance of ratings.

It was interesting to note how fickle the public could be. Wagon Train was one of the most popular programs. Anytime President Eisenhower addresses the

nation there would be massive switching of channels. Westerns always won out. In these days there were no more than 6-7 channels available, the three major networks and a few local N.Y. channels.

The group of co-workers at ARB was terrific. There was Howard, the boss, a rather portly 30 something, then the work crew of Harvey (BS in history), Robert (part time Opera singer and actor), Thelma (ex- beauty queen of somewhere in NY), and Victor, of whom I do not remember very much, other than that he had a great sense of humor. We all worked in the same office on 3rd Avenue and 53rd street.

Robert was quite a character. He loved women, particularly women with black stockings. He would stand by the window, looking out over 3rd Avenue, and as soon as a woman passed by with black stockings he would run down the stairs, catch up with her, and somehow (or so it seemed) arrange a subsequent date, if her face matched her legs. It was a sort of fetish that all of us laughed at. We really did not believe his stories. He claimed the best place to pick up young women was the New York Metropolitan Museum (or Momma). The technique was to approach the victim, who had to be wearing black stockings, and enter into conversation on the painting being viewed, and then enchant his way into a subsequent meeting or into bed. These were the days before the sexual revolution although I do not think he had any inhibitions. He was quite a charmer, was good-looking, very Italian and had great style. He also could sing.

Two years later while at Cornell University, we became acquainted with a couple of fairly attractive female, Israeli students. They were planning a weekend in New York City. Bihla, the older of the two wore black stockings, fashionable in these days. After the weekend in the city, she told us that she had surprisingly met an acquaintance of ours at the Met. She in fact confirmed the stories we had heard from Robert; she was wearing black stockings and he had picked her up as

described by getting into an “ art” conversation. I don’t know what happened after that, other than my name came up in conversation, and the information got back to me. I met Robert many years later, after having completed my Ph.D. and while attending a meeting in New York, and found a rather down and out ex-actor, most of the charm having gone, and carrying a broken arm, as the result of being thrown out of the window by an another actor who found him in flagrante with his wife. He was still performing in summer stock in Upstate New York. I would really have like to have spent more time with this guy; it would have been very interesting to hear his life story. He would be a great character for a novel.

I was to return to ARB again during my years at Cornell for summer employment. Howard asked me many times to stay on and not return to Ithaca, that I could have a permanent job. If I had done so and moved up in the company as others did I could have retired as a millionaire at the age of 40. ! I never really gave it a second thought, since our idea was still to return to Israel, after obtaining my BS in agriculture. I was still very much an idealist, and both Mimi and I agreed that this was our ultimate aim. The thought of living in New City did not appeal to Mimi. She is just not a city person. I on the other hand found the city exciting. We did not consider ourselves permanent immigrants to the US; this was just a temporary situation, a first step in my education. I have no idea what happened to members of the ARB group. I know that Harvey, the history major retired early, since I contacted him on one of my visits to New York. ARB is still in existence, but not nearly as successful as its rival Neilson, and recently it has run afoul of the State of New York Legal System.

I do not want to give the impression that life in New York was gloomy, far from it. It was just that Mimi was unhappy in the city, and this transferred to me. She hated using the subway, and the noise and crowds of the big city. I think she suffered from agoraphobia, since all large cities affect her in the same way. We enjoyed the lovely countryside at weekends going out with Rutta and Salo; we

explored the area north of New York City, the Hudson River, and Bear Park Mt. I loved going to the Cloisters just north of Manhattan. We went for walks in the Bronx zoo and Botanical gardens, one of the best in the world. We went to concerts at Carnegie Hall (Van Cliburn was the rage), to the Metropolitan opera, to the museums. Our social life was not bad either. We had family in the city, Mimi's cousins, we made friends with other students, met with an old friend from Glasgow/Israel, Tommy Berman whom I have mentioned before, and spent a few weeks on the island of Nantucket that first summer, a place we loved to return to.

We also met Ralph Mitchell and wife Muriel, by listening for someone with an Irish accent on Columbus Circle one Sunday afternoon. We immediately became friends, a friendship that has lasted all our lives. This is an interesting story in itself. We had no idea what Ralph and his wife looked like. We arranged to meet in Columbus circle on a Saturday afternoon, not realizing how busy it would be with people going to the movies or just walking around. My wife had the bright idea of each one of us follow the couples of suitable age and listen for an Irish accent, which we knew they had after our telephone conversations. After about 30 minutes of this she recognized the accent, stopped and asked if they were Ralph and Muriel and of course they were. Looking back it seems ridiculous, looking for someone with an Irish accent in New York. There are probably more Irishmen in the city than in Ireland itself.

I joined the international student organization at CCNY. Immediately we were befriended by a couple of students, one I remember Albert; the other I cannot remember his name. Both were left wing Jewish students who identified with the Soviet Union rather than with United States or Israel. I found their pride in being of Russian "origin" peculiar. We went to a few parties with them and a few meetings. We both felt very out of place with this group. Although from a socialist background, we did not identify with communism or feel sympathy for their cause. However through them we met students from Nigeria, Ghana and

other African countries. It was an interesting period. Dances were held at the international center and one did not know with whom one would end up dancing with. Mimi ended up dancing with someone with tribal markings on his face. She thought they were paint and only in the light did she see they were scarified markings. She was quite shocked. I think both of us were rather insular, never having been exposed to such exotic people. At the time we left Israel, Africans were rather rare. This was before the immigration of Ethiopian Jews.

Politics did not interest us too much. This was the height of the cold war and everyone worried about a nuclear attack. I remember on New Year's Eve we went to see the movie "on the beach" about a nuclear war, with just a few survivors in Australia. It was a depressing film and why we went to see it at New Year is beyond me now. If I remember correctly Tommy and Debbie were in town, we met at an automat restaurant in Times Square and then went to see the film.

During this period I became a resident of New York State, since I worked and paid taxes in the State. On the advice of Tommy I applied for a fellowship for Jewish boys in farming, and since my intention was to join the Poultry Husbandry Department at Cornell, I certainly qualified for the fellowship. Thus after one year in New York City we set of again for Cornell University. By this time I had applied for student housing and we obtained, in Cornell Quarters, an old army duplex, reminiscent of my days in the kibbutz and army in Israel. Thus in the fall of 1959 we arrived at Cornell University.

Looking back 1958 was a difficult year. Mimi was quite unhappy. Our marriage was strained either because of that, being in a "foreign" environment, my lack of work, and I don't think that Mimi's father had much confidence in me. After all I was still uneducated, could not earn a earn a living, and certainly was not ready to support a family on my own. He did not approve of our idea of

returning to Israel. Salo had his own problems; his own position at work was not assured. In fact he was laid off a number of times. These were difficult times.

Cornell University, Ithaca, N.Y. 1959-61.

Ithaca is 200 miles North of New York City the southern end of one of the Finger Lakes, Lake Cayuga. The town of Ithaca is in a beautiful hilly area of Upstate New York, with Cornell University situated at the top of the highest hill. The town can be divided into two parts, college town, surrounding the campus, mostly run-down apartment (student housing) many of which are potential firetraps and larger clap -board siding houses running all the way down the hill to the downtown. College town was also full of Pizza joints, small groceries, and laundromats. Here and there, particularly along the canyons were spacious stone or brick houses built in the 1880's-1900. These were houses belonging to faculty and professionals and were much admired by Mimi. In those days downtown Ithaca was mostly redbrick with just a few main streets with one large department store Rothschild.. There was so much snow and ice during winter that driving into town was extremely hazardous, and vehicles required chains in the winter months. Close by are spectacular parks with cascading waterfalls such as Buttermilk Falls and Tremens State Park.

Unlike our first attempt at living in Ithaca, when we could not find suitable housing, this time we had applied for and received married student housing. Cornell Quarters was a large area of small duplex huts left over from the US army. The huts were small, either one or two bedrooms with a small living room with kitchen facilities along one wall. To us they were heaven since they gave us a sense of independence and some privacy, although there were times when we could hear the next-door couple clearly arguing or having sex. We became friends with a number of our neighbors, mostly graduate students and I walked into campus every morning with a student from Ghana, whom I suspect became later the minister of agriculture. The whole area was watched over by a super-

intendant or janitor, a Mr. Bell, a kind, middle-aged man who offered after a few months to teach me how to drive our first car.

Even though I had a fellowship, which covered part of my expenses, we both needed employment to sustain ourselves. Mimi found a job as a lab technician in the chemistry department working with Dr. Harold Scheraga, considered one of the great protein chemists of his time. She was an assistant to his graduate students and post-docs, studying the enzyme ribonuclease's physical structure. I found a part time job in the main library, cataloging books dealing with Jewish subjects. I was hired because I was able to read Hebrew. Later on I dealt with cataloging government documents. This latter position was very boring, but it did bring in minimum wages.

I also worked part time for Dr. Marble in the poultry husbandry department, recording weights of eggs and matching these to specific breeds. I occasionally did some tractor work for Dr. Baker, my advisor in the department of Poultry Husbandry. Dr. Baker was what could be described as the "typical American", big and loud. His specialty was marketing and he organized and ran the Cornell University Booth at the New York State Fair. We students were expected to man this booth during the State Fair and persuade the public to buy chicken hot dogs, which at that time were quite a novelty. We also participated in poultry judging. I enrolled in a class on this and found it very difficult to feel up a hen or cockerel and judge its health and quality. In fact it was poultry judging which made me think twice whether I was in the right field. I could tell the difference between a skinny chicken and a fat one, but to judge by feathers and look the chicken in the eye and judge its health was beyond my abilities.

Dr. Baker in his retirement opened a 30-acre farm of gardens and nursery stock, as well as a café in Ithaca. This is probably the same farm that I plowed as an undergraduate. On reading his obituary I realize he was quite a force in the

marketing of chicken meat, introducing chicken nuggets as well as chicken hot dog and ground chicken meat.

I received an excellent education in Poultry Husbandry, and I was a very good and attentive student. I attended a class in avian anatomy taught by a famous poultry geneticist, Robert Hutt. I knew the name of every bone in the chicken and every hole in that bone by the time I finished the course. I still have somewhere the term paper I wrote (probably the first in my life) on the feather and its development. Mimi did the much-needed drawings for the paper. I actually found feather development and structure fascinating. Knowing all the bones and joints of the chicken has helped with carving at the table. Unfortunately Turkeys are not built the same way, and they still give me difficulty.

I completed courses in agriculture economics, which really was general economics, a course in basic biology, which I remember included the preparation of microscope slides with insects and plant material, courses in Mendelian and population genetics, as well as organic chemistry and some math (differential equations). I must admit I remember very little of the course work. However four of the faculty influenced me greatly. Dr's Marble, Hutt, Baker, and Everett who taught genetics. Dr. Marble took me under his wing, I suppose, because of the letter of recommendation from Dr. Ben Adam of Haifa. I recently learned that in 1955 he spent several months in Israel on a special assignment as a consultant to the Israel Ministry of Agriculture in planning poultry breeding programs. He was very nice person to work with, and I must have taken his class, probably in poultry breeding. Dr. Hutt on the other hand who taught avian anatomy as well as genetics was very exacting, and a strict disciplinarian. Dr. Everett, as I will discuss later guided my graduate school application. Dr. Baker as mentioned above was my advisor.

Another feature of Cornell avian life was the ornithology center. It was situated outside the campus in Sapsucker woods. It was a place to sit and watch the birds and had wonderful exhibits. We have been back a few times since I graduated and we always head to this and to Cornell Plantations, an area of beautiful extensive gardens and green houses. Some of the major attractions of the Cornell campus were the extensive flower gardens. The campus was very beautiful, not so much the actual buildings of the campus, which in these days tended to be mock -Gothic or built in the utilitarian style of the turn of the 20th century but for natural beauty. In particular there were stunning flower gardens around Home Economics and near the President's House. The campus, or at least part of it was within walking distance of Cornell Quarters, and since we did not have a car during the first year, and I do not remember a campus bus, we must have walked every day. The campus landscape is wild with waterfalls, and lakes formed by glacial movement. Apart from the, canyons and water falls on the campus there is a small lake that in our time had a small restaurant where one could have a snack or cup of tea. This was Beebe Lake and Noyes Lodge. It was not too far from the chemistry building and we would meet there for lunch, and remark on the other students who appeared too poor to even buy tea and would bring their own tea bags. One could sit for hours looking at the lake, and the waterfalls. Noyes Lodge is no more and has been turned into a language resource center Unfortunately a lot of that beauty has been spoiled by expansion and the crowding of buildings. I was at Cornell, a few years ago, and although still beautiful, the campus was ruined by excessive over building. We took our children and grandchildren to see the campus, 50 years on. It no longer seemed as beautiful as I remember it. I have been in the interim and realized then that I did not know the campus well, but only a portion of it, mainly around the Ag school and central campus. I was unaware of the large area of student housing.

The winters in upstate New York are unbelievably cold. Ithaca is in the Snow Belt and it is no exaggeration to say that there was 3-4 feet or more of snow on the ground all winter long. We would have ice form in the corner of our little hut in Cornell Quarters. To get to the school, we would wrap ourselves up with multiple layers of clothing and run from building to building until we arrived at the correct one. From Cornell quarters we would rush past the cattle barn, famous in summer for its dairy and ice cream, through the Ag school, and eventually reach the chemistry building, frozen stiff. For the first year we did not have a car or washing machine, so that we would lug a load of wet laundry in a basket or bag through the snow and bring it back damp from the laundromat. In the spring this would be hung out to dry, a very European idea

The Chemistry building where Mimi worked was not in the Ag school and had just moved into a new building near the lake. This was an architectural experiment in which all the pipes, made of a transparent plastic were in the open, and one could see the drainage from the sinks flow through them. It somehow reminded me of the Pompidou center in Paris.

We had an active social life. It centered mostly around Israeli students on campus. Most were graduate students. It is quite possible that Benyamin Netanyahu would have been present since his father was on the faculty and he grew up in Ithaca. We were friends with David and Esther Prihar. David had shown us around the first time we visited Cornell and introduced us to my mother's cousin Ralph. Through David we met other Israeli' students and hung out with them. We both did not feel at home yet in the US, and of course still thought of returning to Israel as soon as possible. Through Mimi's work we met Jan, another lab technician and her husband Ed who was physics major. They were a couple from some small town in Virginia. I think they thought us very exotic, having never met Jews before. We would go out together to restaurants and each other's house went to our first football game together and we have

maintained contact by Xmas cards to this day. Ed is I believe one of the inventors of the Star Wars Missile shield, proposed during the Reagan era. He has been very successful as a missile engineer, and Jan has been involved in various businesses. I wonder whether he was involved in the development of the Iron Dome. They have now retired to the quietness of Maine.

I have mentioned previously my cousin Ralph. He was the son of my grandfather's brother, thus really a first cousin to my mothers. He and his wife were very Irish, from Dublin, and had quite a number of Irish friends. They were a happy lot, often a little drunk, and to us a bit crazy. They lived in College Town; in an old wooden Victorian style ramshackle building that I was sure would catch fire one day. I never expected to see it still standing and looking as dangerous as it did 50 years ago but there it was a few years ago, still the same. We often went out to the only movie house in town, and to the few cafes on the main street. While we were in Ithaca their first child, Susan was born, and we were the first babysitters. Susan of course is now a mother of two children, and lives in the Washington DC area. Ralph was a graduate student in soil microbiology, and later was hired to an endowed chair in the department of engineering at Harvard.

After one year we bought our first car and I learned to drive. It was a white and red Buick, quite a monster by today's standards. The body was a little rusted and apparently it ran on 5 out of 6 cylinders. It was very noisy and could be heard for miles. I was taught to drive by Mr. Bell the super at Cornell Quarters. Since there were so many parking lots nearby, it was not difficult to find an open space to practice driving. I obtained my driving license after one test. I quickly became accustomed to the roads of Ithaca, and I would occasionally drive to New York City and drive in the city and surroundings. One major characteristic of all the cars in Ithaca was their rustiness. Since there was so much salt on the roads, car rusted very quickly. My cousin Ralph who occasionally drove us around that first

year had a car with no bottom, that is one could almost pedal with one's feet it was so rusty, in particular on the passenger side.

During the first summer I decided to return to my job at Arbitron. They were delighted to have me back, and again offered me a position when I graduated. How different life would have been if I had accepted the offer. We also spent two weeks in Nantucket, our first vacation in the US. We had a great time on the beach and rented a room in a small B and B. The island was very picturesque, and people very welcoming. I remember that there was a patriotic celebration with a clambake, shrimps, crabs and lobsters. Although we did not keep kashrut the idea of eating these creatures still revolted us and we foolishly did not participate. It took as a few more years until we tried to eat shellfish.

In the second year of my studies I was nominated for the honors society of the Ag school. This was known as Ho-nun-de-kah, an Indian word meaning "Keepers of the Sacred Corn Council Fire". To join this society one needs to be in the top 20% of students in the Ag school or maintain an A average. I don't remember our initiation ceremony, there wasn't any hazing that I remember, and I made quite a few friends in the organization. I think the initiation was a hike in the dark.

Mimi also decided to study. She was interested in mathematics or architecture, but the tuition in this part of Cornell was too great. In order to study she was accepted into the Ag school and majored in biochemistry. This thus was able to take classes in economics and mathematics.

Graduate School decision:

While I was still toying with the idea of going back to Israel and working for the Ministry of Agriculture, a Dr. Bornstein appeared on the horizon. He was visiting the department to deliver a seminar, and we invited him for tea. During conversation he inquired of my plans, and I told him that after the bachelor's degree, I planned on returning to Israel and applying for my "old" job. He said "

not a good idea “. He thought that since I was successful with course work, that I should continue studying or the MS or MA in agriculture. This surprised me, since I had never given it a thought, and had no idea how to apply to graduate school. My interest in poultry husbandry had waned and did not know what I wanted to study. I enrolled in an elementary course in microbiology from Dr. Van Denmark the first summer when I was not working at Arbitron and found it interesting. I thus realized that there was more to science or agriculture than poultry husbandry, or rearing sheep (still my great love at that time and perhaps still next to viruses).

At the time of the conversation with Dr. Bornstein I attended a class in genetics taught Dr. Everett, a plant geneticist. This was a basic course, mostly Mendelian and population genetics. One day I talked to him after class and asked for his advice about graduate school. He suggested I write directly to the top individuals in the field of genetics, and gave me a list, among who were Nobel Prize winners as well as future Nobel Laureates. These included Hermann Muller of Indiana University, and Joshua Lederberg of Stanford, as well as professors at Berkeley, Michigan, and the Rockefeller. I sent in my applications to these various laboratories and schools, as well as to Purdue University Poultry Husbandry as a backup. These were the day before the GRE was required, and admission depended on grades and letters of reference. If I remember correctly the application had to be in by December, but the universities only sent out admission letters with offers in Mid-April. Before the time, probably in March, I received a letter from Purdue University offering me a full fellowship in the Department of Poultry Husbandry with a request for an immediate answer. This threw me into a tizzy, since I did not want to say yes, before I had heard from the other schools. I wrote to the other schools, telling them the situation. I got a long letter back from Hermann Muller explaining that I should not give into Purdue's pressure. He could not tell me whether the answer from IU would be positive, but

that Purdue was behaving in an unethical fashion (I did not know at that time of the rivalry between Purdue and IU). On the basis of this letter I decided to wait, and I must have responded to Purdue somewhat ambiguously. Unfortunately I did not keep the letter not realizing that Herman Muller was a Nobel Laureate with an interesting history.

Sure enough in Mid- April I received an offer both from Indiana and Stanford of a full fellowship (NIH training grant). I may have also received a positive response from Berkeley and Michigan but without support. Mimi and I debated the relative pros and cons of both places, and after having spent two years in “ cold” Ithaca we opted for warm Stanford and California. How different my scientific career might have been if I had accepted the Indiana University offer. There I would have been in the lab of Hermann Muller and studied classical drosophila genetics. I have been told that he was rather a difficult person, so I do not know whether I could have stuck it out. Josh Lederberg wrote that he did not have any room in his laboratory, but that he had passed my file on to a new colleague, Charles Yanofsky, and that I would work in his laboratory. This turned out to be one of the major laboratories in the country deciphering the genetic code. Of course if I had studied at IU I probably would not be in Bloomington today. How ironic! Life is full of such accidental happenings. In fact this sequence of events, the visit by Bornstein, the talk to Everett, and the letter from Herman Muller put me on a distinctly different career path and changed my life. We gave up the idea of returning to Israel for the time being, and eventually moved to Palo Alto and Stanford, California, which later had an influence on all of Mimi’s family. The whole family, including Mimi’s Uncles and cousins from New York and family moved to California.

Before this we had to have our European vacation. The idea of a European vacation was one that dates back to the death of my grandmother in Scotland and her leaving me a small inheritance. We had used the money for the trip to the

USA. I don't know how we saved enough to make a trip that included Scotland, England, Italy, Holland, and France. In the UK we stayed with my parents in Glasgow, and with my Aunt Betty in London. In other places we stayed in youth hostels or bed and breakfasts, which at that time were considerably cheaper than hotels, and travelled everywhere by rail. We visited the major museums in major cities, attended the wedding of a close friend in England. and met with friends who had been on the kibbutz at the same time, including my old army officer, Zvi and his wife Chava. He was studying Chemistry in London.

The stay in Glasgow was successful, Mimi met my parents and extended family, and I met my young brother Maurice for the first time. He was a kid of about 9 or 10. I could see my childhood and myself in this. My father took him to the same park and same pond that he would take me to, as a child, to sail my little boat and fish for minnows. They still lived in the same house that I had grown up in. The Glasgow accent stumped Mimi, she hardly understood a word, and I think the family had difficulty with her " American" accent. Neither of my two sisters was married and both lived at home.

The visits to Paris, Florence and Rome are mixed up in my memory with subsequent visits. We did not visit Germany and were very suspicious of Germans. One incident I do remember, we were travelling by train from Amsterdam to Rome, and of course the train had to pass through Germany. We had considerable luggage, and Mimi had placed a suitcase in the corridor outside our compartment. No conductor seemed to object until we crossed the German border. An official demanded in German that we put the case back into the compartment, although there was hardly any room. Since he addressed us in German, Mimi lost her " cool" and started screaming at him, also in German. Some Dutch students in the compartment succeeded in quieting her down and took the suitcase into the compartment until we were out of Germany.

On return from Europe we proceeded to Uncle Paul's house in Connecticut to pick up our clothing and goods as well as our "old" 1953 Buick and started out trip across this continent in the Fall of 1961.

Stanford University, Palo Alto, California (1961-66)

Stanford University conjures up images of palm trees, Spanish Mexican style architecture and sunshine. What a change after two years in Ithaca, where we were snow bound for a large part of the year and ran bundled up in winter from building to building to keep warm and prevent frostbite. Although Ithaca and surroundings were very scenic, the cold got to us, and a reason for choosing Stanford over Indiana (the other possible graduate school with a full fellowship) was weather.

We got into our old Jalopy, an old Buick, running on three cylinders out of four, or was it five out of six, all our worldly possessions, and drove across the USA. We started from Paul Reifer's house (Mimi's uncle) in Connecticut, across the mid -West, and then through the Rockies and Sierras. We had never been west of New York State. It seemed that the further west one drove the larger the portions of food in the restaurants, and the unlimited cups of coffee. In New York we paid for each cup, and in the mid-west we could have refills as much as we wanted for 25 cents, or perhaps it was only in the chains like Denny, and Howard Johnson where we ate most of our meals. It was difficult to call the coffee "coffee"; it was more like brown water with a slight flavor. This was in the days before Starbucks "improved" the taste of American Coffee. Now it is the other extreme, the coffee is often too bitter. We crossed the country on old highway 40 and 66 then north to the Donner Pass. We crossed the Donner Pass with difficulty, the car chugging along, making a terrible racket, but eventually arriving in Palo Alto, our destination. Even though our car was ancient we passed many steaming cars that could not make it over the pass. These old Buick's with their large fins were "dream cars" and could take one anywhere. We sold or dumped it shortly after our arrival in California. Its rust embarrassed us. In those days, early

1960's, California was still the "promised land", relatively empty and just beginning to undergo development.

We immediately started apartment hunting and found one that was affordable (at this time, rent in California was not very different from that of the East Coast). This was in a strip of ten apartments perpendicular to the railway line, on the boundaries of Atherton and Menlo Park, a mile or so from campus. The apartment was cheap because of the proximity to the railway but there was little noise, since most of the trains were electric commuters between San Francisco and the Bay area. There was a small area of a Chinese Herb garden separating us from the trains.

Atherton was at that time, and probably still is today one of the wealthiest towns in the USA. Many Hollywood stars lived there in large mansions. Shirley Temple, the childhood idol of the 1940's was a resident. We of course lived on the wrong side of the railway track. The house was quite close to the El Camino Real, a busy road with non-stop new and used car lots, strip malls, motels and restaurants. It was quite an eye-sore, and shocked us, since we had never before encountered such blatant commercialism.

A Mr. and Mrs. Kwong owned the apartment. The Kwong's grew Chinese Herbs for commercial purposes. Mrs. Kwong spoke very little English, worked in the field all day, dressed like a Chinese peasant, large coolie hat and simple smock. Mr. Kwong on the other hand dressed like a gentleman; small and dapper, he was the property owner and his wife the field hand. They sold their herbs in the Chinese farmers market on Saturday morning in Menlo Park or in Chinatown in San Francisco. The Kwongs were very nice to us, Mrs. Kwong was always bringing us dumplings filled with pork. She could not understand why Mimi would not eat them (I did eat them). Mimi at that time was a vegetarian and had been since I met her. To Mrs. Kwong it was strange. She also told us in very bad

English that her daughter's husband would not eat pork, he was a Canadian and he belonged to some "peculiar" religion that did not allow this. Difficult to understand! Although she was from a peasant background and I am not sure whether literate or not, she was very proud of this daughter who had received a Ph.D. from Stanford and had been photographed with President Eisenhower. There were photographs of her all over their apartment.

The apartment was quite spacious; however the previous tenants must have had a number of dogs (or cats). The place was alive with fleas. One could see them jumping on the walls. We went around the apartment swatting the fleas, drowning them by washing the walls, and trying to sweep them out. They may have died out or left because of lack of food! At least they did not eat us! We had no furniture and no bed and initially no money since bank transfers were slow, so we left the apartment, after scrubbing it down and drove down to LA to be with Mimi's parents. They had moved west at around the same time and had rented a small apartment in Los Angeles. Mimi's father (Salo) had found a job in the aerospace industry, working first for North American aviation and later for Hughes industry. This put him back in the correct career track, as an engineer, since most of the previous jobs had been rather menial. He had a degree in mathematics from Czernowitz University, but since the war had not been able to teach or work in his profession. They had had a very tough life, first the Soviets moved them out of their house as capitalists, then the Nazi's persecuted them and put them in the Ghetto with threats of deportation because they were Jewish, then after the war the Russian's returned. They then fled to Transylvania and finally they were imprisoned by the British in Cyprus on their way to Palestine. They both seemed very happy in California, after the travails of Europe, and being laid off every few months in New York.

After a few days we returned to Palo Alto and settled into our apartment. I started working in the lab and taking courses. The Stanford campus was very

beautiful; Spanish influenced architecture, with a large quad and nearby lawns. We would spend lunchtime on the lawns, lounging around with other students and faculty. Stanford University had not yet reached its peak of excellence. The Biology Department and Medical School were just beginning to expand although the medical school already had on the faculty future Nobel Prize Winners. These included Joshua Lederberg, Arthur Kornberg, and Paul Berg; I had contact with all three of them and with Esther Lederberg, Josh's wife through course work and research. The Yanofsky lab was in the basement of Jordan Hall part of the quad in the center of the campus. (My life seems to revolve around Jordan Hall, since this was the name of the biology building at Indiana where I had my laboratory. All called after the same Jordan.) The building was relatively old, there was little light from the outside in the lab, and one had to go outside the building to go to the toilet. The story I heard was that Mrs. Stanford did not approve of men's toilets being in the buildings. (I do not know what happened with women's toilets). I quickly adjusted to the laboratory; that year there were three new graduate students, only one of whom, me, completed their studies. Of the other two, one dropped out and one failed his qualifying exam. The latter was an Israeli student, with whom I was a friend. He and Charlie (my mentor) did not really get along, and he thus failed his qualifying exam. He eventually ended up at Indiana University Medical School and received his Ph.D. from a future colleague Ed Hodes. I collaborated with Ed on viral oncolysis many years later. Finally the Israeli student returned to Tel Aviv University and was chairman of genetics for many years. He had a successful career. The qualifying exam was certainly subjective, the results depending on one's advisor.

Mimi found a job as a lab technician working with Dr. Clifford Grobstein, a renowned embryologist. We soon made friends with many of the graduate students in both the Yanofsky and Grobstein labs and in the department in general, and had an active social life, going to graduate student parties in the

foothills, between Palo Alto and the coast at a house rented by a group of students. Among these were a number of today, well-known biologists, now retired, such as John Pearse, Mike Soule, and David Cameron. For a change we fitted in and were not “weird foreign students”. If we were regarded as such we were not aware of it! Even the younger faculty were involved in these social events including the eminent environmentalist Paul Ehrlich and the future head of Food and Drug Administration, and later president of Stanford University Don Kennedy. I am sometimes surprised that both Don Kennedy and Paul Berg remember me, and I have had some contacts with the latter on scientific matters.

I really did not have the scientific background for the Yanofsky lab, and I remember my first few seminars were a disaster, not knowing how to pronounce correctly scientific terms, and not really having a grasp of the subject matter. Charlie called me aside after the first such seminar, which I remember was on a paper by Kaiser and Hogness, both faculty in the medical school and later to be on my thesis committee and instructed me how to pronounce terminology. This was a time of great excitement in molecular biology and our lab was trying to solve the “genetic” code, using mutations of the tryptophan synthetase gene, followed by amino acid analysis correlating changes in DNA with changes in the amino acid sequence. This should have been a very exciting project. I do not know why I decided that my interests were elsewhere, so that rather than joining in the group effort, which was very successful, I looked for an alternative project. Perhaps it was because my first project, to find mutants in E.coli in the tryptophan synthetase gene using a drug called proflavine did not work. I decided to work on a sideline, namely, to study the integration of a bacteriophage (bacterial virus) into the host DNA. It was related indirectly to the major lab project since this specific phage, known as phi80 had incorporated into its DNA the host gene for tryptophan synthetase. This project involved collaborating with a research associate in the lab, Dr. Naomi Franklin. She had discovered the

relationship between phage 80 and the tryptophan synthetase gene. This was not a good choice since Naomi was very possessive about her work, and worried that I was stealing her ideas. The research led to a couple of publications and a Ph.D. thesis but not to anything great. With hindsight not working on the major research topic of the lab was a mistake. It left me out in the cold scientifically and was detrimental to my future. My advice to graduate students today is become involved in the major topic of the lab and not a fringe project. Better move to another lab if the research is not of interest.

Other ongoing research was exciting: the discovery of bacterial suppressor genes and the structure of the tryptophan synthetase enzyme by two graduate students, Stuart Brodie and Tom Creighton respectively. We were quite friendly with Tom and Judy, who later on moved to Cambridge England. Tom has written an excellent book on protein structure. However he and Judy are no longer together. Another student, Marsha was just completing her Ph.D. She left the lab during my first year and went onto MIT. There she met Tommy Berman, an old friend from Scotland and the Kibbutz whom I have written about before. Marsha married a physicist, Mathew Allan with Habonim connections from Edinburgh, and after a few years we resumed connections and have become good “old” friends, seeing each other every few years. Interesting how this connection led back to Tommy, and subsequently to other acquaintances of his from his MIT days, including Milton and Sondra Schlessinger, well-known virologists.

The Yanofsky lab was a great one to work in. The atmosphere was very convivial. Charlie as he was called was a very pleasant, and yet a no-nonsense individual. He respected hard work. I think our relationship would have been better if I had stuck with my original project of working on a mainstream topic. He had an open office and open lab, that is, there were no office hours, you could come and go as you pleased, and he was always available for discussion. I tried to run my own lab in the same fashion.

Others in the lab included a group of post-docs. John Hardman (today Professor emeritus at the U. Alabama), Ted Cox (later a dean at Princeton, now still active at Princeton), Ron Somerville who joined Purdue later on and has just retired, Bruce Carlton (Dean at Rutgers University) and Don Helinski (U. Calif. La Jolla). Don became quite well known for his work in genetic engineering. As in any lab there was the usual “ hanky-panky” as one of my friends would say. One of the post-docs and one of the lab technicians were having an affair. We had to cover up for him, as his wife was always phoning, and we would tell her that he was working and could not be disturbed. I think she later caught on and sued for divorce. Charlie originally had a strict rule that there should be no “affairs” in the lab, and in fact had asked a post-doc to leave because he (or she) was playing around with one of the post-docs of the opposite sex.

As part of the lab routine we had journal club once a week. Each week a different student was assigned to go through the literature and discuss briefly major advances, or controversies, that mostly were related to our work. Charlie invited the lab after journal club, once a week to his house for coffee and ice cream, and to play croquette, which could be done in the balmy evenings of the bay area. Wives were included and thus everyone became acquainted with each other. It was a very democratic atmosphere, everyone who attended journal club made their way to Charlie’s house in Faculty Housing, a fancy Eichler home: technicians, graduate students, post-docs and the few undergraduates who worked in the lab. Carol Yanofsky was a gracious hostess. Mimi feels that Charlie owes his success in part to his devoted wife, who took care of everything, leaving him time for science and research. While I was a graduate student Mimi did the same, devoting her time to bringing up the children, first Yuval, born in 1963 and then Jonathan, in 1965. Note both born in California while I was a graduate student.

On Saturdays, the lab met in the morning and went to a local pub for lunch. This was a particular Haufbrau which served excellent Bratwurst and other sausages. However the main attraction for Charlie was the kosher style pickled cucumbers. I did not attend every Saturday, and at times felt out of it, because scientific discussions often occurred over the lunch. I felt that Saturday mornings were family time, and we often went down to Los Angeles at weekends to visit Mimi's parents.

I took a lot of courses at Stanford, but apart from Phys Chemistry in which I did poorly, I did well in the others. There was a course on plant evolution taught by Holmes, the molecular biology courses taught by Yanofsky, which I enjoyed, and after which I fashioned my first course at Indiana University. David Perkins who had an adjoining lab taught a course on Neurospora and yeast genetics, and Grobstein a course in embryology. These courses covered a great deal of material, and the qualifying exam in part was based on course material, this was required in the second year of graduate school. I took a lab course in biochemistry administered by Kornberg, but I do not remember seeing him much in class, but I met the teaching assistant from the course a few years ago at a meeting at Cornell, where he is now on the faculty. He remembered me, but I did not remember him. I don't know whether I created a bad or good impression. I have a feeling that I was a little lost in the course, since my chemistry background was not stellar.

After a year and half in Palo Alto our first child was born (Feb 1963). Mimi decided to stop work just a few days before she gave birth to Yuval. We decided on the name Yuval, since at that time we still thought of returning to Israel. Yuval is a modern Hebrew name. It means brook, or tributary. It first appears in Genesis 4, 20-21 and Yuval is considered the ancestor of all who play the lyre and pipes (flute). He was a beautiful baby and developed into a very intelligent and precocious child, who could read at the age of 3 years old.

We moved out of Mr. Kwong's apartment and rented a small house in Menlo Park. This was a small "neat" house owned by a faculty wife (Mrs. Mazur). It had a nice enclosed porch, a living room, dining room and two bedrooms. Although it seemed substantial after a few days, while our baby, Yuval was out in the porch, a segment of the ceiling collapsed, but luckily not on the baby. The nicest feature of the house was the garden, a lawn in front and a wonderful apricot tree on the side. This tree was loaded with the most luscious apricots. In fact the yield was such that we transported them to a nearby fruit drying plant for processing. A pleasant young couple lived in the back of the house in a separate apartment. They were into electronics and built themselves a colored TV. They helped us with setting up a high-fi system, using our old "imported" gramophone.

We drove by a few years ago, and nothing had changed on the street. The house, in Fremont St. is still standing, and has not changed in 40 some years. No apartment complexes, as we discovered in S. California in the place we used to live, and the bountiful apricot tree was still there. It looked as if the same neighbors still lived in the surrounding houses.

Menlo Park was an ideal place to live. We were a few blocks from the center of the town (a real town center), and also close to campus. I could cycle to campus without getting caught in traffic, and there was a park where all the young mothers with their children would meet. Palo Alto was even prettier, with a main street lined with stores and restaurants, and a movie house. It impressed one as very prosperous town. However if one went towards the highway it changed radically to an area of shacks, bars, liquors stores and run-down apartments. This was the area of East Palo Alto. It was separated from affluent Palo Alto by a creek and highway. This was the influence of Stanford University, which had a "dry" zone around it. The region near the Highway was known as "whiskey gulch". Ironically whiskey gulch was close to the highway (101), which

meant one could easily drop off for a drink before reaching San Francisco or San Jose. I learned that the area was torn down in 2006 and replaced with a large Four Seasons hotel. A number of our friends lived there because of the low price of housing. This included John Pearse and his wife Cathy with whom, we became very good friends. John Pearse became a professor of biology at Santa Cruz, and Cathy is now an artist in Laguna Beach. The marriage split up still in the 60's and they both remarried.

During this period I taught my first biology course. This was a general biology lab, and I was a teaching assistant. I was most of the time just one lab ahead of the students. Most of the material was completely new to me, and much of it I did not understand.. Don Kennedy, later to become head of the FDA was in charge and being a neurobiologist a lot of the labs were about measuring electric currents, and physiological measurements in twitching frogs. I was quite a novice in this area. Luckily I had a fellowship, so I was required to teach only one semester.

We have lost contact with most of our Stanford friends, an occasional Xmas card from some, and others no contact. We became acquainted with a few of the Israeli students during our time there. One was Alan Rosenthal, whom I had previously met through Habonim in England. He was studying film production. I have not seen him since, but I know he has been quite successful as a documentary filmmaker, and lives in Jerusalem. Another was Mordecai Kurtz, who was either a post-doc or new assistant professor of economics. He returned to Israel to the Hebrew University but later in 1966 returned to Stanford as a faculty member.

I should mention another family with whom we became close friends. This was the family of a young assistant professor from Glasgow, named Julian Davidson. His brother Terry had been visiting his family in Glasgow from

Jerusalem, where he was a physician. It was in the local Glasgow Jewish newspaper, the Jewish Echo, that he would be visiting Stanford. While in Glasgow, my parents who were acquaintances of his parents, contacted him and asked him to deliver regards. Thus through Terry we met his brother Julian, and wife Ann. Julian was an endocrinologist testing the effects of sex hormones in rats. He bored holes into the rat brains, injected the hormones and studied changes in behavior. We met and discovered we had quite a lot in common, a common kibbutz background and children the same age. We both had spent time in Israel, were from similar Scottish backgrounds and similar youth movements. Julian had been active in Glasgow B'nei Akivah and had been one of the model characters in Chaim Bermant's book "Jericho sleep alone". Ben his son and Yuval our son would soon be playing together. We all got along very well. Julian was a bit "far out". When I visited the family a few years later, I found that Julian had continued searching for the "truth" by spending time in a Buddhist monastery in Nepal. We would meet quite regularly and after we left Stanford, we attempted to see them when we occasionally visited the Bay-area.

At a very early age of 59 Julian developed Alzheimer's disease. We visited him at the early stages of the disease, and he could not remember his way back from the physiology building to his house. It was very sad. Ann his wife has written a book of her experiences of nursing and living with someone at the late stages of Alzheimer's. It is called "Alzheimer's a love story: one year in my life husband's journey". It is a very sad book, a description of Julian's deterioration, her struggles with breast cancer, an ailing father, and yet her love for Julian as he deteriorates to the stage of a "toddler". Julian died after the long illness in 2001, at the age of 70. We have contact with Ann and have visited a few times. Their children went in very different directions. Ben is advisor to the LGBT program in Stanford, a younger son, Jeffrey became a professional dancer, musician and composer and their daughter Karen a reporter for the San Jose Mercury news.

California in those days was relatively cheap and empty compared with today. Palo Alto had a wonderful climate, sunny and warm. We explored California, going quite often to the National Parks with the children, and camping at the foothills of the Sierras. Our camping was quite primitive, sleeping outside with sleeping bags, rather than having a tent. Other campers thought us very poor. We were not into fancy camping equipment. We even had others give us items thinking we were too poor to afford them. There was a feeling of camaraderie among the campers. We would drive up North to Lassen National Park, which was always empty. Occasionally we would go to the opera in San Francisco. We were always surprised by the difference in climate between San Francisco and Palo Alto. Whereas in Palo Alto it was warm and sunny, we would travel 20 miles into the fog and cold. It was like living in two different worlds.

Towards the end of my Ph.D., I started to think about a post-doc position. We wanted to stay in California, primarily because of Salo and Ruta (Mimi's parents), and the close relationship they had to the children. I discussed the options with Charlie, and although I thought of Dulbecco's lab at La Jolla, he suggested I work with John Holland at University of California Irvine, which had just opened up. I wanted to continue working in the field of virology. I think he did not think I was "high powered enough" for the Dulbecco lab, a very large group. John Holland on the other hand had a very small group and was not as well-known as Dulbecco. Looking back I think it was a mistake, since John and I never really hit it off. However we did move in 1966 to southern California, found a house in Laguna Beach and for a year or so lived a blissful life near the beach.

While in Palo Alto both our children were born, in nearby Redwood City to be exact. Yuval was born in February of 1963 and Jonathan in August of 1965. They were both beautiful children, very intelligent. Mimi stopped work after Yuval was born and devoted full time to the caring of the children. With the

moving of Mimi's parents to California they would visit us often, and we would drive down to Los Angeles to visit them. By this time they had bought a small house in the Inglewood district and were settled and happy. Mimi's father worked for the aerospace industry as a materials engineer and was successful. He first worked for North American Aviation and later for Hughes. By this time the Reifer family had followed, his brother Paul, his wife Dushka, and daughters, Madeline and Claudie with their respective families. Dushka's family followed later. Thus our immigration to California triggered a "mass migration" west.

Mimi's parents, as expected for grandparents, doted on the children. We even took an extended vacation in Mexico and left Yuval with them. He quickly got used to them and was not terribly happy at our return. This was our first of many trips to Mexico, and we visited Mexico City, Taxco and Guanajuato.

Looking back, our time in Menlo Park/Palo Alto was a happy period. We got along personally, my studies went well, despite being in a high-pressure laboratory and department, we made lots of friends, in some cases the friendship has lasted to this day and our family was growing. While in California we began to note changes that were worrying. El Camino Real, as stated above became the main shopping drag and new shopping centers and chain stores went up at an alarming rate. The street looked very tacky and was a forerunner of what was to happen in California, which was becoming a very consumer oriented and hedonistic society. A lot of money was spent on "dining out". Chain restaurants popped up everywhere. This was a not a very attractive picture of what California, in particular Southern California and the Bay area was to be. Cemented over with strip Malls, large shopping Malls, and chain stores galore.

Laguna Beach, Irvine and Hippiedom. 1966-67.

In the spring of 1966, Mimi , I and two small children, aged 3 and a few months, drove down to Southern California from Palo Alto to look at the University of California, Irvine. In 1966 the Irvine Ranch was a beautiful place. This was the site of the newest campus of the University of California system, consisting at that time of a few white, modern buildings surrounded by acres of orange groves, hilly and green. One could not predict that in 20 years all these beautiful hills would be flattened and covered with track housing, chain hotels, shopping malls, and even an international airport: John Wayne International airport called after the “tough guy” of Western Movies. More appropriately it is also called Santa Ana airport, because of the proximity to Santa Ana, an older town. It also serves as the airport to Disney Land, Knott’s Berry Farm, other amusement parks, the University and the myriad businesses in the area.

Santa Ana itself is an older city, founded in 1869. It is called after the Santa Ana River, and was originally part of old Spanish Mexico. Don Gaspár de Portolá, a Spanish explorer, discovered the picturesque valley and river, called it Santa Ana, in honor of Saint Anne, on July 26, 1769. José Antonio Yorba, and his nephew Juan Peralta, both solders were given a Spanish land grant for the area. They developed the Rancho Santiago de Santa Ana for cattle grazing and productive farmland. 70 acres of it were purchased in 1869 to establish the city. Today it is really part of the great urban sprawl known as Los Angeles. The Irvine Ranch was developed from various segments of the Spanish ranch, purchased about the same time as the founding of Santa Ana by the Irvine family and partners. It was developed originally for agriculture, but in the 1950’s some land was put aside for the future campus, and massive development, housing, and business started in the early 70’s. Today the town of Irvine is full of high -rise apartments and

swallowed by nearby Newport Beach. Balboa island nearby has somehow retained its laidback character.

I met with John Holland, my potential mentor as a post -doctoral fellow, viewed the lab, and discussed some interesting projects. John was a tall, skinny guy, very open and friendly. He was a good scientist but had a very mercurial temper and could not stand “ bullshit” or interference from authority. His temper would often get him into trouble, and after a couple of years he left UCI for UC La Jolla. I do not know what precipitated the move, but he spent the rest of his academic career there. He finally retired to Taos, New Mexico, and later to Nevada, where he died in October of 2013. He abandoned the projects we worked on at Irvine, concentrating instead on studying the mechanism of viral evolution. He never wanted to be an administrator and continued to work at the bench until his retirement.

This was the first year of UCI as a university. The campus was very small, only a few buildings and very few undergraduates. There was really no difference between post-docs and faculty, we all mixed quite freely. Everyone was young. The Holland lab consisted of three post docs (including myself) one graduate student and a few high school students. We all worked on John’s ideas, which unfortunately changed quite often. Most of the time I worked on methods of purifying tRNA and analyzing tRNA profiles on chromatographic columns from different tissues. We were investigating whether these profiles were in any way related to cancers of various types. The other post-docs in the lab were Clayton Buck, and Morrie Granger. Clayton had an unfortunate life, his first wife died of a brain tumor while still young, and his second wife I believe committed suicide. Despite this he had a very successful career in science. Morrie went on to become a professor at UCI. We met again a few years ago while visiting Laguna Beach. Morrie’s fame lies in the discovery of Lymphotoxin while a graduate student, which later became known as TNF (tumor necrosis factor). As the name implies

it was hoped it would be a general anti-cancer agent, but it has proven to be too toxic. Still it has been a great research tool in immunology and in cancer research. I notice that Morrie was honored by the arthritis society in April 2014 for his lifetime of work. He died sometime in 2018.

The atmosphere in the lab was not intellectually as stimulating as it had been at Stanford. I missed the journal clubs and seminars. Since we were such a small group there were not sufficient people for these discussions. The department was new, as was the faculty. There was one virologist (John), one yeast geneticist (Cal McLoughlin), one phage geneticist (Dan Wolf) etc. As discussed below the use of drugs was rampant at that time, LSD was big, and many of the high school students would routinely use drugs. We were afraid to drink our coffee in case it was laced with LSD. The story I heard was that two of the high school students jumped from the roof under the influence of LSD and one was blinded by staring at the sun for too long a time. We personally were made aware of the drug problem when some friends, the Duncan's, immigrated to Australia because they were afraid to raise their teen children in Laguna Beach (they eventually returned not particularly happy with Australia). Mrs. Duncan could not stand the snakes and the primitive conditions that they encountered on that continent. I was not very influenced by this very hedonistic society and never took drugs, and it really did not worry me whereas this society and its excesses worried Mimi. We were just too "square" or was it "normal". As Mimi has pointed out, the atmosphere was such that if you were not enjoying yourself or happy all the time then you had a problem. One had to be constantly happy. This was the America of the constant smile, and Southern California was the embodiment of this.

We decided to try and find a rental on the coast. There were two appealing small towns within 15 miles; Corona Del Mar and Laguna Beach. Laguna was at that time an "artists' colony", very hip and arty on the one hand and very

conservative and wealthy at the same time. Today the hipness has gone but the wealth has remained. Corona Del Mar was an island of wealth, that we could not afford. Today most homes are in the 2-3-million-dollar range. We had no difficulty in renting a house two blocks from the beach in Laguna. The house was owned by a couple of men who were only too happy to have a “ doctor” living in the area. It enhanced, or so they thought, the value of the surrounding property. In fact at the beginning I was called a few times by neighbors asking for medical advice. I had to explain I was a Ph.D. doctor and not a physician, although I did give advice, usually just common sense. No one ever offered to pay for my consultations.

The house had been completely remodeled, had a beautiful front yard, with the largest avocado trees overlooking the porch, and a couple of fig trees out front. It was more than anyone could desire. The avocados were the large kind, and every time one fell the house would shake. I learned to harvest avocados by taking a coffee can, cutting out a triangle so that it had a sharp edge, attaching it to a pole and with some manipulation cut the avocado stem. I felt I was living in the jungle, a very tame one, albeit on the beach and harvesting fruit in a primitive fashion. The children who were only 3 and 1 year old would sit under the fig trees and eat all the ripe fruit. I have a passion for ripe figs, ever since I lived in Israel, and I need to ask the children sometime whether they do! The scent of a fig tree would drive me crazy.

At that time Laguna Beach was predominantly villas with small gardens, climbing up the hills of the nearby canyons. We had a baby-sitting co-op so that we got to know various areas of the town when we baby- sat for other people. Almost all the small houses near the beach have now been transformed into apartment blocks. We had the option to buy our house, and often have thought if only we had, since property values skyrocketed soon after we left, and the property we were renting for \$250 a month would have been worth a few million

dollars today even after the crash or 2008-10. We have visited Laguna Beach many times since the 1960's , the house and adjoining lot has been replaced with an apartment complex. Mimi's father at that time kept urging us to buy, but we had no thoughts of staying in California, and I suppose did not think of investing. We were too young and naïve.

Laguna Beach is famous for its festival of the arts: tableaux's of famous paintings would be presented by groups of actors. That is painting would be recreated with live actors and suitable backdrops. I don't know whether Goya's Nude Maja has ever been presented.! The whole pageant is rather kitschy although thousands flock to it.

The city hugs the Pacific Ocean, surrounded by hills and mountains. Today these hills are covered with small houses, and every few years there are landslides after the heavy winter rains, and some of the houses tumble down the hills and canyons. This occurs every 5 to 10 years, with lots of damage. Insurance must be very expensive! There are beautiful beaches with small coves, and the promenade along the beach is astride gardens and flowerbeds. In our days the major landmark on the beach was a very elegant French Restaurant called the "Victor Hugo", too expensive for us to afford. We ate there once to celebrate a birthday or anniversary. Today it is less expensive, and is now Las Brisas, a Mexican restaurant, where one can sit outside on a wide veranda and look at the waves and surfers and drink Margarita's. The center of the town consists of three shopping streets with boutiques and banks, as well as stores selling tourist paraphernalia, ice cream salons and a few great bakeries. The town has the atmosphere of a resort, and we would not venture out at weekends since the beaches and roads through the town were packed. The last few years the town has suffered from fires and mudslides as it expanded up the hills and into the canyons. The town is surrounded by large housing tracks, mostly built as retirement communities, but these do not infringe on the town itself. These go by

names such as Leisure World, and Laguna Hills. A new town has developed just South of Laguna, Dana Point, indicative of the fast growth of Southern California. I remember it as a single pier jutting out into the sea with one or two structures. Today it is large and busy, has a population of over 30,000 with areas of enclosed housing and very expensive homes and hotels.

In those days as one entered the Laguna Beach one met the town greeter. This was a figure with a long white beard and long white hair. He would wave to every car and greet the drivers and passengers. This was Eiler Larson, the official town greeter. He stood on the Pacific Coast Highway from the 1940's through the 1960s every weekend and waved to passersby. By profession he was a gardener, and lived in a room at the Laguna Hotel, a small hotel, still standing, in the middle of the town. We thought of him as being rather "crazy". However after his death the city put up a statue of him near the pottery shack, another old landmark, which is no longer making pottery, but now an expensive restaurant, where one can sit on the deck and watch the traffic on the Pacific Coast Highway !

Mimi was very happy in Laguna Beach, she would take the kids to the beach, and we made quite a number of friends. Her parents, who lived in Los Angeles, would often come down for the day. I would drive 15 miles back and forth to Irvine. Sometimes, the fog was so dense, that I had to get out of the car to ascertain I was still on the road, and not slipping off a cliff into the sea. The Pacific Coast Highway (Highway 1) hugged the coastline and in many places there was a sheer drop of a 100 feet or more. At that time there was very little between the campus and Laguna Beach, not like today where there is Spanish style housing on one side of the highway with major roads to the University, as well as remnants of parks fought over between developers and environmentalists.

We had two sets of friends, one connected with the university world, the others from the town. The latter gave us a view of a society that to us at that time

was strange, and influenced our decision not to remain in California. Perhaps a mistake, but we still thought of possibly retuning to Israel. Yuval had piano lessons near our house on Cypress Drive and parents would wait for their children to finish. Mimi befriended one of the mothers, Greta, and since the children were the same age we decided to meet at their house one evening for dinner. Greta lived with her “ family “ on a house on the beach. In these days one could rent or buy very primitive and cheap houses, really shacks right on the waterfront. These shacks today have been converted into modern expensive homes. Greta was from Denmark, a striking blonde. Greta and Philip her husband, and another male friend lived together in the house with the children. Philip was an artist. To make a long confusing story short, Philip and Greta had been married and were now divorced, and the other man was Philip’s lover. I understand that Greta and Philip later remarried. This was in 1966 **before** the great sexual revolution. Perhaps we were too square and conservative, but we were not accustomed to these relationships, at that time although I really did not mind. They were very kind and friendly people and introduced us to the pre-hippy (intellectual) society of Laguna, including poets and other artists. Everyone was smoking marijuana, and some even into LSD. We felt a little out of it. I remember walking along the beach with a poet reciting his poetry and enjoying it. A pity I cannot remember his name, so that I don’t know whether he ever published his stuff. It was not too bad.

We have returned to Laguna many times in the last few years and have never been able to find any of our “old’ town friends other than those connected to the University. In searching the internet for information on Laguna beach of that period, I found that Timothy Leary had connection to the town, and that Laguna Canyon was well known locale for LSD production.

To quote from a 1985 newspaper article (Glendale news press) *“Laguna Beach was the LSD capital of the world starting in mid-1960s and was still home to*

droppers, dopers and dealers until 1981, according to an unpublished book, "The Jesus Dealers," written by Ted Taylor in collaboration with former Police Chief Neal Purcell. In its heyday, the Brotherhood of Eternal Love, founded by Timothy Francis Leary, was allegedly selling dope in Laguna at health food stores, juice bars, psychedelic shops, record stores, surf shops and even a used car lot. Woodland Drive was considered their base, known to local law enforcement as "Dodge City."

As I mentioned in a previous chapter on our time at Stanford, we had befriended Cathy and John Pearse . John and Cathy had gone to Egypt to teach at the American University in Cairo for a few years. Cathy's mother Mrs. Reap opened a store in Laguna selling imported goods (as far as I know not drugs). I can picture the store, a small corner store at the corner of Thalia and Pacific Coast Highway, full of stuff from the Orient and Middle East. The store is still there but different owners and different knick-knacks. We saw a lot of John and Cathy at weekends. John was looking for a faculty position, which he later found at U California Santa Cruz. Interestingly we talked a lot about their sojourn in Egypt, and how primitive the Egyptian army was despite the bellicose statements from Nasser. This was just before the six-day war and their impression, proved correct, that the Egyptian army was no match for the Israeli Army. The Egyptian soldiers did not even have boots.

Cathy and John were having some problems, I am not sure of what nature, but they had decided on a divorce. Mimi might know the reasons, since Cathy had given birth while we were in Palo Alto to a stillborn child as the result of an E.coli infection and Mimi had helped Cathy during this period. Also Mrs. Reap had helped us when Mimi had a miscarriage, and we had become quite close. After leaving Laguna, we lost contact with Cathy until a few years ago when we called on her, after discovering that she was still in Laguna Beach, and was a successful artist, now Cathy Jones. We even have one of her paintings in the dining room . She had remarried, had been at one time a vice-chancellor in charge of publicity

at UCI and had a number of children. This last year we also have had contact with John, her ex-husband, a well-known marine biologist at UC Santa Cruz.

One might ask, why did we not try and stay on in Laguna and UCI in 1966? I know that Mimi, more than I was afraid of bringing up children in the hedonistic atmosphere of Laguna Beach. There was also a lack of culture at that time. No concerts or classical music performances, and Los Angeles was too far away.. The area was just developing, and UCI could hardly be called a campus. On the other hand we should have considered Mimi's parents living in LA who most certainly did not want us to leave, and would have helped financially in purchasing a house. I really had no idea where I wanted to live, Israel was still a definite possibility and I really did not know the USA other than New York and California. One day I received a letter from a Dr. Howard Gest, a friend of Charley Yanofsky, my advisor at Stanford, asking me whether I would be interested in interviewing for a position at Indiana University in Bloomington, IN. I knew nothing about Bloomington, nor for that matter Indiana but was told by members of my Ph.D. committee whom I contacted that it was a good place to perform science. I thus started looking at other possibilities for comparison. I was invited to give seminars at Oak Ridge, St Jude's Hospital in Memphis, and at the microbiology department at the U. Michigan at Ann Arbor. I met Howard Gest in La Jolla while he was visiting a friend, and was impressed by what he told me. Indiana University from his description was not as isolated (or backwards) as I imagined, and Howard certainly was a very cultured person. Memphis, I ruled out after seeing how segregated the city was, although Alan Granoff the director of the research wing of St Jude's a very personable person made me a very good offer. I brought home a local Memphis newspaper to look at housing costs, and both of us were shocked to see that housing was segregated. Oak Ridge was attractive, but was a cultural wasteland, and I was not the number one candidate at Michigan. My visit to Bloomington was enjoyable, and I was very impressed by

the faculty, the physical set up (lots of lab space, probably double that of John's space at UCI) and I was blown over by attending a musical production in the Auditorium and could not believe the number of concerts performed in one week !. I also had dinner with some of the micro faculty at the home of Drew Schwartz during the job interview. Drew was in the plant sciences group, a very distinguished geneticists, and Pearl his wife was a gracious hostess. Drew later became President of the American Genetics Society and had been involved in the discovery of transposons in corn. We also found that we had both been in Habonim, and that he had lived in Israel at one time. Interestingly he has retired to Israel, and currently lives in Jerusalem. I returned to California with a glowing report. Mimi did not want to stay in S. California, not the place to bring up kids. We talked about the Mid-West, a place we had never been to unless you consider driving across the country to California, and stopping o for a meal in Kansas as being in the Mid-West. None of the other places I interviewed compared with the attractions of Bloomington. Memphis was very segregated, and Oak Ridge too isolated from cultural events. It was not really a university but a research institute run by the US government. However it had been part of the Manhattan project, and had quite a number of very distinguished scientists.

A decision was made, the Mid-West for us and goodbye to California. Was it the correct decision?

One final note, despite not wishing to bring up our children in Southern California, Jonathan our younger son has returned to California, to Fullerton in the heart of Orange County. and our grandchildren are being brought up in this still very hedonistic, materialistic and crowded environment. Orange County has become more diverse, and has a different atmosphere from 50 years ago. When we lived in Orange County it was known as " John Birch" country, ultra conservative.. It was totally " WASPish" Today it is demographically Hispanic, Chinese, Korean, Vietnamese , Arab and other ethnic groups, one shopping mall

after the other, with the same chain stores and chain restaurants, and the car unfortunately is still king. Laguna Beach still remains unique, however no longer “hip”.

Bloomington, and Indiana University. First year.

We arrived in Bloomington, Indiana in September of 1967. It was never our intention to stay in Indiana for more than a few years, but as fate would have it, it is now nearly 50 years later. We have aged in this city and I expect we will be buried here (unless we move or have an accident elsewhere). We thought of Indiana as a temporary haven until another position opened up in a more interesting part of the country, or until we returned to Israel. In fact at that time we were still determined to return to Israel.

We drove from S. California with our portable belongings and two small children ages 4 and 2. As far as I remember the trip was uneventful, except that as usual Jonathan developed a fever, and we had to take him to the emergency ward in Salt Lake City. He chronically suffered from strep throat, and it was not until he had his tonsils removed a few years later that he got over this.

The town.

My initial impression of Bloomington was of a “laid back” small town, surrounded by green hills, forests and a few nearby lakes. There is a large lake, Lake Monroe (reservoir) completed in 1965, 10 miles south of the city. The town itself was not architecturally distinguished, the downtown appearing run down. Like most mid-west towns the central square was dominated by the courthouse, surrounded by memorials to the dead of America’s many wars. On the courthouse square were a few department stores of that time, Woolworth, Ben Franklin and a Penny’s catalog store. In the 1960’s there were only a few apartment complexes within proximity of the university. There was one shopping center, the recently opened College Mall, mostly catering for students who made up a sizeable percent, close to 50% of the town population. Most of the development, suburban type housing was at the eastern edge of town close to the university. There were few good restaurants, and no ethnic restaurants other than Chinese. There were

many Pizza parlors and a few bars, the most famous being Nick's on Kirkwood Ave, the main student drag close to the campus.

In 1967 Bloomington was a town of about 50,000 "native" inhabitants, and 30,000 students. Most of the buildings in town were either clapboard, redbrick or occasionally Indiana Limestone. It was obviously very different from Laguna Beach, or Irvine or Palo Alto but in many ways similar to Ithaca, N.Y. but without the steep hills. The campus on the other hand was beautifully landscaped the buildings uniformly built of local limestone, but looking as if it all developed in the 1940-1950s. Even the new buildings such as Simon Hall, just constructed in 2009 looks as if built in the 1940's. This is what is termed Collegiate Gothic. The campus has extensive landscaping, with large lawns, trees, forested areas and flowerbeds, and a small arboretum on the site of the stadium previously used for the bicycle race called the little five hundred. It is considered by many one of the most beautiful campuses in the USA, partly because of the uniform limestone architecture. I disagree with this since there is no variety, and the campus is missing a modern look. In winter it looks very drab.

The university dominates the economy of Bloomington, although when we arrived there were some industries, an RCA plant, Otis Elevator and Sarkis Tarzian a company that made components for television and the film industry. None of these exist today. As stated were very few restaurants, the most popular being Sully's Oaken Bucket, a sports bar on the square. The Oaken Bucket was a trophy awarded to whichever team Purdue or Indiana won the football game for that year. The trophy is an old beaten up bucket with chains attached to it, found somewhere in S. Indiana in 1925. Even Indianapolis some 50 miles away did not have good restaurants and was locally known as "Indiana No Place",

The downtown square has gone through many renovations with time. The courthouse has been spruced up and the dome redone. New more fashionable

shops have appeared, and there are reasonably good restaurants today on the square. Large apartment complexes are springing up everywhere. Kirkwood the main “college town” drag had a few bars and pizzerias, some of which such as Nick’s are still functioning and served good pizzas and submarine sandwiches as well as good beer. I had never had a submarine sandwich before and it was quite a treat. This is a sandwich with various kinds of meats, cheese slices and relish served usually on a large roll. Nick’s was my lab’s hang out for lunch during the first few years at IU We even had lunchtime lab meetings at Nick’s with a black board provided by the restaurant. Nick’s has been in the national news the last few years. Both Barak Obama and Hilary Clinton visited Nicks while campaigning for president. . When Mimi and I and the kids wanted to go out we would go to the Pizzeria next door, which was under the same ownership. The Hrisomalis family, newly arrived from Greece, started this restaurant and bar in 1924. However the family sold it in 1964. I have had a number of the younger Hrisomalis family members in my classes through the years. One of the granddaughters of the original Hrisomalis family and my son Yuval went to France as part of a group of teen exchange students. They family have gone from being restaurant owners to physicians and dentists within one or two generation.

On Friday and Saturday evening local young people from the surrounding countryside would come into town with their SUVs and trucks, and drive up and down Kirkwood, visiting the bars and looking for co-eds. It reminded me of the James Dean movies of the 1960s. The noise of the trucks, the catcalls and the scene of these large trucks driving up and down a narrow street with radios blasting. . .

The first really ethnic restaurant, open in the 1960’s was the “Dow” run as an Ashram. It served a mixture of western and Indian food. The nephew of the Dalai Lama, whose brother settled in Bloomington, opened a Tibetan Restaurant, the Snow Lion. The father, Thubten Jigme Norbu the brother of the Dalai Lama

was on the faculty and his presence in Bloomington resulted in the immigration of quite a few Tibetans to the city. The story of Norbu and the eventual founding of the Tibetan Culture Center in Bloomington can be found at <http://tmbcc.org/SITE/index.html>. The Tibetan Cultural Center, on Snoddy Rd not far from our house is where monks clad in saffron colored robes live, and celebrate their religion and customs. The center also contains rare works of art and houses a museum and gift store.

Before settling down to work our first priority was to find housing. Before our arrival, Gene Weinberg, one of my new colleagues offered to find us an apartment, which he did in Barth Villa, an apartment complex on 2nd street, opposite the elementary schools, and within walking distance of Jordan Hall. In the 1960's the rent in Bloomington for an apartment was not different from the rent we paid for the house in Laguna Beach. Fifty some year's later Barth Villa apartments are still standing and functioning. I passed them by today and they look the same as they did in 1967..

We enrolled Yuval in pre-school, I believe called Small World, and Mimi remained at home with Jonathan. It was through Small World that we met other parents, some of whom are still our friends to this day. Jonathan learned to finger paint from a new friend, Alexandra Smith. We became friends with her parents David and Weezy Smith, a friendship that has lasted all these years.

We lived close enough to campus that I could walk or cycle to work, and the children eventually went to school, Rogers and Binford, across the road from our apartment. After the cultural wasteland of Stanford and Irvine, we enthusiastically attended concerts and operas. The opera was held in the University Elementary School Auditorium, and concerts mostly in Recital Hall. University elementary school, alas, is no more, and is part of the computer science and information technology component of the university. When we

bought a house and moved to Park Ridge in 1971 our children attended University School. This was an excellent school, with an extremely capable and well-intentioned principal, Mr. Rowland. Opera and major concerts are now held in the Musical Arts Center, built in 1972, a first-class facility for opera. The education building in the heart of the campus was converted to the music school, in the 1990's, one of the largest, if not the largest in the USA with superb facilities for chamber music and small ensembles.

Although I mentioned that university school was excellent, the education system did have some flaws. Foreign languages were not taught, and we had to fight for the introduction of French into the curriculum of Middle school. Initially foreign languages were taught after or before the school day started or ended. There was opposition from Monroe county school administrators to the idea of teaching any foreign language. . Mimi also lobbied for a separate class for “bright” (should I say gifted) students. It took many years before this was achieved. I believe this has continued to this day, although the opposition at that time was due to the belief that this was elitist. The teaching did not improve, but the brighter children were in the one class and that seemed to work well socially. These children bonded and have remained friends for life.

The department

I had an appointment as an assistant professor in the bacteriology later called microbiology department (at that time part of the Biology Division). The Biology division was divided into Bacteriology, Zoology and Botany along very traditional grounds, and Anatomy and Physiology, part of the Medical Sciences Program. Of these, the bacteriology department was the strongest, and had very good facilities, including a media kitchen and stock room that a few years later supplied the other departments as well as microbiology. This was run by Helen Arthur, a wonderful person, and very efficient top-notch administrator. She had

helped plan Jordan Hall and knew the building intimately. She also was an expert on all the equipment and knew how to “fix” anything that did not work. All of the basic biology departments were housed in Jordan Hall, with the Medical School Departments, anatomy and physiology in nearby Myers Hall. Biochemistry was a component of the Chemistry Department, which was always a problem since the biologist thought it should be part of their department. It did not become a separate department until well into the year 2000, but it still had to supply faculty to teach basic chemistry.

Jordan Hall was a massive structure. The laboratories were large, and it was used for both research and teaching. Many of the teaching labs were in dire need of upgrading and modernization by 1967. The building was constructed between 1954-1956. The walls are so thick that today cell phone reception is almost zero. The walls of the corridors were tiled so that they could be easily washed down. The building not only housed laboratories, and classrooms, but also a large library with open stacks. The one item lacking was a restaurant or snack room. The original building was U-shaped; however the U was filled in in 1984, increasing the space by 33% allowing for the addition of a large atrium, containing a cafeteria and computer spots.

In 1967 the Director of Biology was Frank Putnam, and Assistant Director Leland McClung. Frank Putnam was a renowned biochemist. He worked on the amino acid sequence of Bence-Jones proteins; serum proteins produced by multiple myeloma patients. These proteins are monoclonal antibodies produced by plasma cells. His research helped elucidate the structure of immunoglobulins and antibodies. He arrived in Bloomington two years before I did and gave the department of biology direction. Biology had been a powerhouse of famous scientists in the 1950s and early 60's. The Nobel Laureate Hermann Muller had died just a few years prior to my joining the department. On the faculty there was Tracy Sonneborn, an outstanding geneticist and teacher, John Preer, one of

his students who continued the work on paramecium, and Marcus Rhodes and Drew Schwartz both renowned corn geneticists. They had been involved in the discovery with Barbara McClintock of transposons (jumping genes). Robert Briggs who developed the technique of nuclear transfer, which played an important role later in embryonic cloning, headed the Zoology Department. His research pioneered the way to today's embryo transplants.

Bacteriology had also been a very renowned department with members like Salvatore Luria and Renato Dulbecco, both Nobel Prize winners. Jim Watson of DNA discovery fame had been a graduate student of Luria's. However they had left for other universities a few years before my arrival. The department had been decimated with the departure of many of the faculty including those mentioned above, as well as Howard Rickenberg (to Denver), and Jean Poindexter (to New York). Leland McClung, a world expert on pseudomonas had headed the department the last few years.

There were four hires into microbiology that year: David White, Arthur Koch, Robert Ramalay and myself. David and Arthur remained here at IU. Bob Ramalay did not get tenure although he subsequently did very well at the U. of Minnesota. Someone else's gain as often happens, when tenure is denied. Unfortunately Arthur recently died of Alzheimer's disease, and David is not in good health. Arthur was a bacteriologist, studying theoretical questions relating to bacterial structure and motility. David had worked on myxobacteria, a "slimy" gliding bacteria that formed interesting structures that resulted from single cell cooperation to form a multicellular organism.

The department was quite strong with the new additions. Apart from Howard Gest, the chairman, and well known for his work on photosynthetic bacteria, there was Dean Fraser, a phage virologist, with whom I co-taught virology for a number of years, Walt Konetzka, a basic microbiologist, who had a

wonderful reputation as a teacher, Tom Brock, one of the founders of the field of microbial ecology, Leland McClung, the worlds expert on pseudomonades and food toxicity, and Gene Weinberg, who studied iron metabolism in bacteria. Thus with the four new additions we were a group of ten. This was an all-round good bacteriology department but no representation of animal virology other than myself. I would remain the sole virologist for many years, although I was not hired as one, but rather as a bacteriophage geneticist.

I was allocated a large suit of labs: two large rooms, an autoclave room for sterilizing material and adjoining animal facilities which were shared with other faculty. In these days there was no such thing as set up money (or at least I was not told about any,) since it was assumed that one would quickly obtain an NIH grant. I inherited a functioning lab from Jean Poindexter, who had just left the department. The only new pieces of equipment I requested were a -70 Freezer, and a Beckman isotope counter. Fifty years later both these pieces of equipment are still in use, with the -70 freezer being shared by a number of virology labs in the new Simon Hall biochemistry/biology center. All other equipment was purchased from grants throughout the years.

First year of research

The strength of any research laboratory is the graduate students and post-docs who work in it. Microbiological Research is very labor intensive, and demands a core of people, including lab technicians, to prepare buffers, chemicals and grow organisms, whether bacteria, cell culture or virus. The problems that one deals with apart from scientific research are the same in any group, personal problems involving members of the lab. In many cases I had to act as father or big brother to graduate students, their spouses or “ friends”. In other cases I had to arbitrate petty arguments and spiteful acts among members of the lab. There are jealousies, “patriotism to the group” accusations of cheating, suspicion and

paranoia. I won't go into these in detail but they can ruin the atmosphere and cohesiveness of the group. From the very first year I had to deal with marital problems of my graduate students, and learned how easy it was to make mistakes. One or two stable romances and marriages developed in the lab as well as some disasters.

I was quite happy that first year at Indiana University. I had a number of projects, the destructive effect of viruses on tumors (now known as viral oncolysis or virotherapy) research pertaining to virus replication, and the role of transfer RNA in tumor development. I inherited a graduate student, RW from Jean Poindexter who had left the Department. RW was a very handsome young man from Florida, married to his high school sweetheart. However this marriage was to be disturbed by an undergraduate student who joined the lab and later became a graduate student. Although this affair did not result in marriage, RW and his wife split up. I very naively did not know what was happening and became involved. Despite his stormy personal life RW had a very successful scientific career.

A second graduate student soon joined the lab, this was GZ. He was in many respects similar to RW, a very tall, suave, handsome young man, He could not decide whether he wanted to work with me or Tom Brock who had isolated different species of bacteria that lived in the hot springs of Yellowstone National Park. Although we produced papers together his main interest was in the Brock lab. Tom had isolated a bacterium that grew at 80-90 degrees, and I was interested in whether tRNA isolated from it could be charged at such a high temperature. This organism was called appropriately enough *Thermus Aquaticus*. If only we had recognized its potential. The enzyme that replicates DNA at high temperature (taq polymerase) was isolated from this strain, and became the basis of Polymerase chain reaction (PCR), a major and Nobel prize winning technique in biotechnology many years later. If only we had thought of

this! I met GZ many years later now head of an ecology institute at Michigan State University.

Anyone entering my lab at that time would have been astounded to find large glass chromatographic columns of an inch or so diameter stretching from the floor to the ceiling of one of the rooms. We were separating different types of tRNA's on what was called MAK and BD columns by liquid chromatography. We needed a ladder to both pour the columns and load the samples. The various types of tRNA would be separated on the basis of charge and/or size. Allan Volker, a post-doctoral fellow from Newcastle, England had joined me in this endeavor. He was my first post-doc. We were convinced that the difference in elution profiles would have some significance to cancer, since the tRNA's were isolated from liver tumors and compared to tRNAs of normal liver. Although there were differences, these were not followed up, since we did not have the chemical background and probably reflect modifications of specific bases or as known now epigenetic effects. Whether they have anything to do with cancer is doubtful.

At the end of my first year in Bloomington, I was invited to give a seminar in Denver by Howard Rickenberg, who previously had been a member of the Indiana Biology department. He offered me a position at the National Jewish Hospital in that city. Both Mimi and I quite liked the city and debated seriously whether we should leave IU for Colorado. However I believe I was more against the move than Mimi since I worried I would not have access to graduate students, since the lab was at a hospital, and not on the campus of the University of Colorado. The appointment would have been a joint appointment with the U. Colorado Medical School and National Jewish Hospital. In this I was mistaken, since a future colleague, Norman Pace took the position and built up a very large and successful research group.

While on this visit I did meet a scientist who was to have a lasting influence on my research, and this was Ted (Theodore) Puck. He had started a new field, called somatic cell genetics, in which he developed genetic systems in mammalian cells (Chinese Hamster Ovary cells, known as CHO) in culture, analogous to what had been done with the bacterial strain E.coli. He convinced me, to take CHO cells back to Bloomington and to try to isolate mutants of the cell line. This was reminiscent of the type of work I started to do but unsuccessfully as a student in the Yanofsky lab at Stanford. I later took a course on cell culture in which Ted Puck and Phil Marcus taught the art of cell culture. I became close friends with Phil Marcus, who died last year. We would meet every year at the interferon society meetings and spend an evening together having dinner and attending the annual banquet. I learned a great deal from that course, and for a few years I was active in the society for cell culture.

I had received a 3-year grant to work on phage, which I used for the animal viral work. I received grants from the Damon Runyon Fund and American Cancer Society to work on tRNA modifications and profiles in cancer cells and a grant to work on mutants of Chinese Hamster Ovary cells. The isolation of mutants of the purine salvage pathway led to an interest in purine metabolism and the enzyme APRT which also became a focus of the laboratory. In retrospect it was a mistake on my part to pursue so many topics at the one time. I should have stuck with one or perhaps two of these projects instead of branching out in so many directions. Each one of these projects could have led to being an expert in a specific field and a lifetime of research. Thus my research was unfocused, and this had consequences later on.

The Jewish Community of Bloomington.

When we arrived in Bloomington, we thought of ourselves as Israeli's, and were not that interested in the local Jewish community. This attitude persists among many secular Israelis even today, who show no interest in the local Jewish community. My colleagues Gene Weinberg and Drew Schwartz introduced us to the local community. We sent our children to nursery school, as described above, and found it awkward when there was celebration of Christian Holidays and not Jewish holidays. The Jewish community (if it could be called that) was quite small. The last few years before our arrival had seen the hiring of a number of Jewish faculties in various departments, in particular in the music school. Among the older faculty in Biology there was as mentioned above, Drew Schwartz and Tracy Sonneborn. I don't believe there was any bias against hiring Jews; I think there was little desire for Jews to move to Indiana, which had a reputation of being a center of the Ku Klux Klan. The first Bar mitzvah held in Bloomington was in 1948. (Arthur Fell). The Fells were businesspeople, who played a large role later in the formation of an organized community. There was a Hillel house already in the 1940's since there were a large number of Jewish students mostly from the Chicago area. Herman Wells the president of the university had made a point of hiring Jews fleeing Europe in the 1930s and 1940's, but many of them tried to hide (or did not broadcast) their Jewish identity. In the 1950's the number of Jewish Faculty increased substantially due to the influence of Herman Wells. Fran Weinberg the wife of my colleague Gene Weinberg organized the first Sunday School classes in 1958 in Hillel House

We initially looked for friends among Israelis or those who had spent some time in Israel. Among these was Miriam Fried and her husband Paul Biss. Miriam was a renowned violinist, born in Romania, but grew up in Israel. Within a few years we had met other Jewish faculty, in particular Mort Lowengrub, from the math department and Alvin Rosenfeld and his wife Erna who also was born in

Romania. We did have a desire to celebrate Jewish Holidays, and thus we would get together with different members of the Jewish Faculty. Since we wanted our children to have some Jewish education (although we ourselves had the usual Israeli attitude of being aloof from religion), we looked for some type of Sunday school for the kids. There was an organization, I think led by Dr. George Lewis, and Andy Mallor to establish a Sunday school with Hebrew and religious instruction in one of the university halls. The Jewish community (organized) was growing very fast, and before our arrival in 1965 had become incorporated with 42 families. There was also a Shabbat morning minyan. There was no central building, and the community used either classrooms at the university or in someone's private home for Sunday school. There was also thus a need for a separate facility, which eventually ended up in the building which is today Beth shalom. The community is now at least 200 families, representing about 50% of the non-student Jewish population, has a resident rabbi, and boasts a Jewish Theater. The Jewish presence is felt in the city, although the synagogue was the target of arson by neo- Nazi's in 1983. It was quickly rebuilt and enlarged, an act of defiance. After our children's bar mitzvahs which were held at Beth shalom (1970 and 1972), we were not active in the community for many years. We rejoined probably around 2000.

In parallel with the development of a Jewish community there was the building of a large and strong Jewish Studies Program. This was one of the earliest such programs in the USA and is today one of the strongest in the nation. The program was originally started by Dr. Fischel, a holocaust survivor from Germany, who arrived in Bloomington in 1961. He taught Aramaic, Hebrew, biblical and Talmudic studies. Alvin Rosenfeld arrived in 1968, and although recruited by the English department, he was persuaded to join the nascent Jewish Studies program. He threw himself into the program, fund raising, and quickly

became the director of the program. It was due to Alvin that the program developed and became one of the outstanding programs in the USA.

First summer. 1968. Israel

After one-year Mimi and I had still not settled down in Bloomington, and still thought of returning to Israel. After having set up the lab in Jordan Hall, we decided to spend the summer at the Weizmann Institute, in Rehovot, Israel giving myself time to look for a faculty position in Israel. I really did not consider industry (there certainly was not much biotech in Israel at that time) or a government job. I am not sure why, other than that I already had an academic job and that seemed the direction to take.

We quickly settled into the Weizmann Institute, living in Beth Europa, and I enjoyed tremendously the atmosphere of the “ machon” as it was called. I was working with Uri Littauer on tRNA modifications, a subject I had brought with me from John Holland’s lab and my own lab in Indiana. I fitted into the Machon without any problem, my Hebrew was passable, and I think Mimi was happy. Beth Europa was a very beautiful modern apartment complex, and I walked through orange groves every day to reach the biochemistry building. Mimi renewed contact with her friends and family, and we celebrated Jonathan’s 3rd birthday with lots of his second cousins. However my attempts at finding work in Israel were not so successful. This was a period when a new university was being set up in Haifa, and I was interested in a position there. I talked to those responsible for setting up a biology department and was more or less promised a position once the new director of biology came from Wisconsin. I argued (rather naively considering I was a junior assistant professor) that I had experience of Israel, and was willing to make sacrifices and accept a position now. I knew how tough Israel was as a place to live, which the guy from Wisconsin did not. I left at the end of the summer with some hopes that a job would materialize and we would move back. There were a number of obstacles in setting up a department

of biology at Haifa University, the main one being the opposition from the Haifa Technion. The faculty of the Technion considered themselves very high powered (true) and did not want competition. Thus negotiations between the two bodies dragged on. The department of Biology at Haifa was not founded until 1971 and then called Evolutionary Biology. The medical school, which was going to be attached to this university, was shifted to the Technion. Thus my attempt at moving at this time fell through. I think the main reason was that the individual hired to head the department left Israel after a few months. I might have found a position if I had been more persistent. It is interesting that in the last few years I have re-established contact with Haifa University and have given talks in the Department of Evolution. Also that summer of 1968, a year after the Six-Day war, Israel was economically in bad shape although the moral was very high.

This was an interesting summer. There were many expeditions from the Institute into the newly liberated or now referred to as the West Bank, or Judea and Samaria areas of the country, giving us an opportunity to see archaeological sites previously closed. I remember one tour to Herodium the site of Herod The Great's winter palace in the desert of Judea. His tomb has recently (2016) been excavated at the site. It was quite safe to go into the " West Bank", and there was a lot of travel between this part of Israel and the " original Israel", mostly organized by the Israeli Nature Preservation Organization. Israelis flooded into the Arab cities to shop, drink coffee, and there was little obvious enmity. We took a number of trips of this nature, including one to a Bedouin encampment in the South of the country.

If a job had materialized I believe we would have returned to Israel. Even later, during a second Sabbatical in the 80's we considered the possibility of living on a moshav, a collective village, but by that time we were considered too old! The pull of Israel was always there, but we remained in Bloomington. I think it was the fear of bringing up children in Israel, with the constant threat of war that swayed

us to stay in the USA. Did we have the right to bring up our children in a place where they would be drafted into the army?

Teaching at IU.

I had some limited teaching experience before I arrived at Indiana University. During my adolescent years in Scotland I taught piano to a few elementary school pupils. This was during the period between leaving high school and waiting to go on Hachshara. This was, if I remember, quite easy, teaching children to recognize the notes on the piano, and how to read music. FACE for the treble spaces, and “ Every Good Boy Deserves Favors” (EGBDF) for the treble lines. I don't remember there being any specific catchy notation for the bass clef. I had a few students, and taught very easy pieces of music. I recall that the students would come to the house on Holeburn Rd. where we had an upright piano.

Our house was a typical Scottish sandstone terrace house, built I think in the 1930's We did not have a grand piano, but an old upright placed in the front parlour, among the Victorian bric-a-brac and Bergere suite. This was the formal room for visitors, since we had a “living room “ facing the back garden for sitting in evenings and it also used as a dining room.

I had been a good student at Hebrew in Sunday school in Glasgow. I even received the “ dux” prize, given to the best student in the class. I have this memento of my success to this day, a copy of Valentine's Jewish Encyclopedia, published in 1938. I was awarded this in 1944 at the age of 13. Thus some 14 years later I decided that I should be capable of teaching Sunday school. I applied for such a position at the local Sunday school of a Jewish community in Mountain View, a small town close to Palo Alto. This was in 1961 or 1962. I enjoyed teaching Jewish History and some Hebrew. I carefully avoided religious subjects. Unfortunately my left-wing leanings and atheism got me into trouble, and after quoting Karl Marx that “religion was the opiate of the masses” or some such

rubbish I was fired. It was an embarrassing situation. One of the students had reported me to his parents, who then complained to the Rabbi, I must have been stupid and immature.

My third stint of teaching was as a TA (teaching assistant) at Stanford University. I was an instructor in a basic biology lab class taught by Don Kennedy, later head of the US FDA and later still President of Stanford. Since he was a neurobiologist, most of the labs were on electric shocking of frog muscles, and I was only one lab ahead of the class. It was not a good experience, and I was delighted it lasted only one semester. I felt as if I needed an electric shock before each class, and in all honesty had no idea what I was teaching. Somehow I got through the experience. Thus I arrived in Bloomington with minimal teaching experience, and no course in pedagogy. I had to improvise the first courses, and followed very much my mentors at Stanford and Cornell, who would lecture the class with the aid of blackboard, chalk and textbooks.

Using the black board had its hazards, since I write back hand, and my script had a tendency to slope downward. I was also a terrible artist so that I could not produce good models on the board. Luckily bacteria can be drawn as circles, and bacteriophage as blocks with squiggly tails. I began teaching in the days before computers and power point. I would later purchase slide sets that someone had professionally, produced and this was a great help in lecture. I always tried to make my lectures interesting by telling personal anecdotes or occasional jokes. I did not go as far as to mark “ joke goes here” as one of my colleagues did. Occasionally I felt like a performer, and played the role of a stand-up comedian.

Later with the advent of power point, and the demise of slides, I was able to produce decent illustrations of principles, lecture outlines, pictures of viruses etc., that made lecturing easier, and more enjoyable. I borrowed power point presentations from other sources, being too lazy to produce them myself. I also

found myself depending on power point to guide my lectures. This may have become monotonous for the students, and a student assistant in education advised me to encourage more student participation in the course. The students (mostly seniors) enjoyed this and once a week, usually on Fridays' a small group of 3-4 students would lecture with a visual presentation of the subject. This was during my final years of teaching an advanced virology class, M430. I recently heard a lecture in which the lecturer claimed that power point had destroyed the art of lecturing. I must admit he gave a terrific lecture without any power point. But this was on a political subject not requiring data.

The first class I was assigned to, following my arrival in the fall of 1967 at IU, was a class in molecular biology (M610). Dr. Drew Schwartz, a well-known corn geneticist taught the class using corn genetics as his model system. This was during the period when "jumping" genes or transposons in corn and their molecular activity were discovered. Of course what happened in corn was subsequently discovered in other systems. However there was a lot of excitement in the air.

I was asked to teach the class instead of Drew Schwartz, and I modeled it on the course taught by Charley Yanofsky, my Ph.D. mentor at Stanford. I used as a text "The Genetics of Bacteria and their Viruses" by John Hayes. This was a fantastic book; unfortunately no new edition has been produced in the last few years, but is still available at Amazon for a few dollars. I assume it is considered dated since it was written before the recombinant DNA revolution. As a graduate student this text was the "bible" of bacterial and bacteriophage genetics.

There were between 25-40 students enrolled, mostly graduate students, and I taught the same course during my first few years at IU. A major section of the course was devoted to bacteriophage genetics, the area of my Ph.D. research. Phage genetics was my first love in microbiology and I am today sorry I did not continue research in this field. In fact the first grant I received from the NIH was

for a study of bacteriophage lysogeny, the relationship between the viral chromosome and bacterial chromosome, and the microbiology department originally hired me as a phage geneticist. In retrospect I do not understand why I abandoned this field of research. Was it not glamorous enough or was it too crowded with other young scientists? Certainly many important basic principles of molecular biology were developed from bacteriophage research. Could it have been that I was afraid of competition from Naomi Franklin, with whom I had “crossed swords” at Stanford, and that I did not want to meet with her scientifically again. However I had completed my post-doc in animal virology, and had chosen this field for my future research. Thus after a few years I was persuaded to teach virology, and ironically the phage part of the course was taught by someone else, Dean Fraser.

Possibly I thought animal viruses were more medically important. When it came time to decide on a post -doctoral career, I chose to move into animal virology. Whether I went into the correct lab is something I often think about. I had wanted to join the lab of Renato Dulbecco at La Jolla. Charley, my advisor persuaded me not to do so. He possibly thought the Dulbecco lab was too high powered and that I was not up to it. His argument was that it was a large lab and I would not get personal attention from Dr. Dulbecco. I regret this decision to this day.

Having completed a post-doctoral year in animal virology, (as opposed to bacteriophage and plant viruses) this became my major interest. After a few years at IU, I started co-teaching a general virology lecture class and virology lab with Professor Dean Fraser. Dean taught the phage component, which was about 50% of the material and I taught animal virology. We also established a laboratory course. I introduced tissue culture (cell culture) and Dean taught bacteriophage and some bacterial genetic techniques. I enjoyed teaching cell

culture, this was my forte and I felt truly comfortable teaching these techniques unlike my experience with neurobiology and frogs at Stanford. My relationship with Dean Fraser was cordial, but we were not great buddies. I think he resented this young upstart, whom he thought was quite arrogant and forceful. In fact in a letter I found for either my promotion or tenure dossier Dean described me as aggressive. I think he was annoyed by my requests for more space for research. I was constantly occupying more space each year and “ hogging” lots of graduate students. This was a continuous problem, since my projects were exceptionally popular with graduate students and I was the only virologist. This was at the expense of other faculty who were not working in such a popular subject. After a few years I took over the virology course and the lab (M430 and M435) by myself when Dean became chairman of the department of microbiology, a component of the newly created Biology Division.

Dean was much older than I, born in 1916, already in his 50's when I arrived in Bloomington. He had been one of the early pioneers of phage research, and co-discovered how phage DNA entered bacterial cells. He taught an important undergraduate course ‘ the strategy of life”, which introduced modern molecular biology to undergraduates. He also worked with Dr. Henry Mahler of our chemistry department on the mode of replication of T2 bacteriophage.

Dean and his wife Rosemary were very colorful characters. He was very much the non-conformist, lived in a house full of animals including a talking parrot and an iguana. They threw the wildest parties, made “ obscene “ cookies and I think thought of Mimi and I as being very “ square”. Rosemary in particular was very uninhibited. I remember her cooking cookies in the shape of men with erect penises. She later opened a store to help artists in the community sell their paintings. Her gallery became a center for art in Bloomington, and many well-known artists such as Pozzatti, Markman and others sold their art in the store. She was a patron of the Arts. From her obituary “She was predeceased by her

parents, her sister Phyllis Debus, two husbands, eight dogs, five cats, an iguana, plus several birds, miscellaneous small mammals, fish, and amphibians.” She was born in 1930 in Lawrence Kansas and died in Bloomington in 2009 at the age of 79. Every time I pass by what was her gallery on 6th Street in downtown Bloomington I think of her.

When Dean became chairman of the department he ceased teaching, and so I was responsible for both the lecture and laboratory class in virology. With the help of Judith Surzcycki, an instructor in the department, we thoroughly revamped the lab class, making it 90% mammalian cell culture and animal virus. We had a free hand as to which viruses we could use (this was in the days before the biohazard committees interfered with their restrictions), and we used viruses that typically infected mouse cells, not necessarily mouse viruses and we did occasionally grow herpes simplex virus a potentially human pathogen. Our enrolment in the lab class was limited to 24 students, which was the maximum we could manage given that we had only a few biohazard transfer hoods, essential for the safety both of the students and of the experiments. The conditions in the teaching laboratory were primitive the lab being designed for teaching old fashioned, that is, bench top, bacteriology. It had regular fume hoods but no biosafety hoods for transferring cells in culture and certainly none suitable for virus transfers. We scraped around and found a few discarded biohazard hoods, mostly of a type no longer approved for this type of work by the NIH, thrown out by other labs. Instead of a curtain of air to protect the worker, the filtered air was blown out onto the researcher. Later on, after much urging the department bought a few smaller hoods, with pull down screens to protect the student (and cells), but not sufficient for a class of this size. We often had four students work at the one hood, or the students had to take turns at using the hood. I don't think the labs on the fourth floor of Jordan Hall had been renovated since built in 1955. In fact it seemed very “Dickensian” and reminded me of my

high school in Scotland of the 1940's. The lab was a disgrace and should not have been used, certainly not with potentially hazardous agents. We taught basic cell culture, some immunology, and the high point of the course was the "unknown" virus. Towards the end of the semester we gave a single vial of a unique virus (out of 5-6 different viruses) to the students, and after a few easy exercises they had to discover the correct identity. We gave them a lot of hints and nudges. Each group (usually two although sometimes three students) gave a presentation, mostly quite professional with what was then new technology, first overheads and later power point. It is difficult to think how we managed without these "modern" techniques. The unknown virus was the high point of the course, and the student generally worked very hard to come up with the correct answer, which of course was not based on microscopy of the virus but on its behavior in culture. We did not have microscopes powerful enough to see any virus, for that we would have needed Electron microscopes.

The virology lab class was also taught with two or four teaching assistants depending on the size. While I was on Sabbatical in Italy/Israel, three of the assistants collected the experiments we had developed over the years and with Judy wrote an excellent lab manual. This became the lab manual for the course with modifications added in all subsequent years. In fact Judy and I used this manual until I stopped teaching this class in 2004.

Some intriguing tid bits about the teaching assistants; I had one student from China who could never pass the English proficiency exam. Although he could make himself understood in regular conversation, he was unable to write an essay on the subject asked of him, for example, "What I did on Independence Day"? I think he sat the English exam for foreign students every semester. In order to obtain the Ph.D. he had to teach at least one semester. When he was close to finishing his Ph.D. research I suggested to the department (or his committee) that he teach in my class, since Judy and I could oversee him as

needed. He turned out to be quite a successful instructor, the students had no problem understanding him, and he won the outstanding instructor award of that year (based on student votes). Needless to say he went on to be a highly successful researcher and teacher. So much for the English exam for foreign students!

Another time I was called to the teaching lab in the early hours of the morning. There was a strong smell of alcohol, and the lab doors (two) were locked. The campus police were called and forced open the doors to enter the lab. They found one of the teaching assistants and a few students stretched out on the floor unconscious. One of the female students had to be rushed to Bloomington hospital and treated for alcohol poisoning. Yes, one of my teaching assistants had decided to have a “make up” session and at the same time a cocktail party using lab alcohol as a base. We never found out how many students were involved, but this A.I. was expelled from the microbiology program. I understand he was quite successful elsewhere (Kentucky). I wonder how much of this he recalls. Since this was a mixture of male and female students we often pondered what sort of orgy occurred at the “party.”

Judy was a gem to work with. The course would never have worked without her input. She grew all the cells for the course. Originally she had help from Betty Hammel, who maintained the bacterial and cell culture stocks. Later when Betty retired she grew all the cells needed for the class. She pretested most experiments, so that unlike the situation in other lab courses the experiments actually worked. She would spend long hours in the class. Although not required I also spent time in the teaching lab, getting to know the students, and interacting with them. I enjoyed this interaction with “youth”. Through this class I was able to recruit a few students into my lab as either undergraduates or graduate students. In fact one of my best graduate students, Juan Alfonzo, now a professor at Ohio State was a product of this lab.

I continued to teach both virology courses for many years. For the lecture course I developed the course from a number of different textbooks, Luria and Darnell, *Virology: White and Fenner* (originally Fenner as sole author) *Medical Virology*, Straus and Strauss, *Basic Virology*: and later *Viruses and Human History* by Michael Oldstone. I later used Flint et al, *Principles of Virology* as a reference. To my surprise the syllabus and lecture outline of the course, as I taught it, is still on the Internet. A Turkish graduate student in Education constructed this web site. As a result of working with Hassan Deniz I introduced as mentioned above student participation every Friday. I think after teaching the course for many years, it become “ dry” and needed some changes. Simply, I was bored and I assume that the course must have been boring to students. Hassan urged me to involve the students more and thus we had student presentations. Three students would be assigned a topic, current with the lecture, and would present a power point review of the topic. This worked remarkably well and the student enjoyed the opportunity to teach. This was done weekly and continued when I co-taught the course with my successor, Richard Hardy. Hassan Deniz is currently an assistant professor in education at the University of Nevada in Las Vegas.

After two years of co-teaching Richard Hardy completely took over the course. Richard and I got along very well. He was a much more dynamic teacher than I and this might have reflected our differences in age.

After a career of teaching graduate students and senior undergraduates, I offered to teach freshman!. This was a non-majors course at the 100 level. It was quite a challenge since I had to lower my standards, and prepare an entirely new set of lectures. I choose *Viruses and Human History* as my subject, following and expanding on Oldstone’s text of that title. I enjoyed the interaction with these young students who came from all “ walks of academic life”, music physical education, business, psychology etc. Some were exceedingly bright and interested in the material, others were just in the class to meet a biology requirement, and

were downright lazy. I tried to make the material more fascinating by introducing short movies, and class participation. The students often were lost in the material and had problems whenever a subject became too biological or chemical. It was a difficult class to teach without including some molecular biology, and this posed a problem to students who never before had a science class. Many seemed to have forgotten their high school biology/chemistry. At times I was disappointed in those who did not even attempt to learn the material and who would receive a 20% on the exam. One year I had a group of “ friends” like this, all business majors, and all from Florida. I tried to shame them into working harder, but I am not sure I succeeded. However there were other students who were a joy to work with, particularly among the foreign students.

In summary, I enjoyed teaching. I enjoyed the interaction with the students, and to some extent the play- acting, it was like performing. In order to keep the class interesting I had to come up with spontaneous jokes, move around and prepare slides that would grab attention. In particular in teaching Freshman I had to be a bit of a showman. In fact I have since discovered that I quite enjoy acting in plays and teaching must have satisfied this longing. I never thought of myself as an actor!!

One thing I must add, I had no formal education in teaching. It was just something that came naturally. I have given a few talks this last year on various topics to Emeriti, and laymen, and have had excellent reviews. However I never received any teaching awards. I put this down to the fact that I did not teach the right courses. I should have taught large major undergraduate courses, instead of very specialized courses. I was exposed to a very small number of students even my final classes in non-majors biology were below 100 students. I never went out of the way to garner any prizes, not asked anyone to nominate me. About that I feel a little bitter.

Sabbatical in England. (1973)

My first sabbatical leave was in England at the Chester Beatty Cancer Research Institute, a section of the Royal Marsden Hospital, located in Sutton a suburb south of London. It was later called the London University Institute for Cancer Research. The year was 1973. I remember this year very distinctly since we were in England during the Yom Kippur war and also during the great English (Welsh) coal strike. The Chester Beatty was an institute famous for studies of leukemia. I had chosen to spend a year there because of the late Dr. Peter Alexander and his publications on macrophage activity and response to double stranded (ds) RNA. Macrophages are cells of the immune system that “eat” and clean up the body of foreign material and bacteria, and even destroy virus-infected cells. We worked in my laboratory with a virus that during its replication produced large amounts of double stranded RNA, although the virus itself contained single stranded RNA. The addition of double stranded RNA to macrophages led to what were called “angry macrophages”. Microscopically the cells became very ruffled and appeared to move around the petri dish and destroy nearby cells. Adding ds-RNA to a mixture of macrophages and mouse L-cells, a cancerous cell line resulted in the L-cells being “gobbled up”. This was at a time when in my own lab Barbara Cordell, a graduate student, discovered that the addition of viral dsRNA to a culture of cancer cells was toxic to the cells and killed them. At that time we had no idea of the mechanism of this activity. These results were published in 1971 in the Proceedings of the National Academy of Science. Peter Alexander had published a number of papers in Nature on macrophage activation by double stranded RNA. We found or claimed that the dsRNA killing of cells happened without new protein synthesis, which was a surprise. I now think it was due to the binding of the dsRNA to what are now called toll like receptors on the cell surface, triggering a whole series of reactions

leading to cell death including interferon production. The Alexander lab was also a top lab in the science of immunology and I had a Fogarty International Fellowship from the USPHS.. Thus the aim of the Sabbatical was to investigate this mechanism of double stranded RNA toxicity ,and learn some immunology and to learn to culture macrophages,

We were allocated housing within a few blocks of the institute. This was a typical English semidetached house, we had one half and a Dutch couple also on sabbatical in the other half. We became quite friendly and we “ child” sat for each other giving us a lot of freedom to go into the city in the evenings. They had children slightly younger than ours. Yuval was 11 and Jonathan 8 at that time. We hooked up the houses by means of a walkie-talkie, which meant we could sit in our own house and listen for any noise from next door.

The house unfortunately was very dirty, the previous occupant having worked with sheep and there were sheep droppings (recognizable pellets) in various nooks and crannies particularly in the clothes closet. These must have fallen out of trouser turn-ups. Sheep were obviously not kept in the house or garden. The garden was well maintained with rose bushes and lilac, and in general quite pretty. The house was only a few yards from the bus stop with access to the center of Sutton in a quiet residential area .We very quickly bought ourselves a car, a Datsun, which we used for the total length of the sabbatical, drove it to Scotland and many other parts of the UK and sold at cost when we departed for home. I became used to driving a stick shift, and being on the “ wrong” side of the road. However I did find roundabout’s very confusing, and was often on the wrong side going around and around in circles.

The labs were spacious and well equipped but very little publishable work was accomplished during that year, since most of the work was done in mice, or macrophages isolated from mice and unfortunately the mouse population was

infected with a protozoan like parasite, which potentially could influence our results. This was not identified until quite late into the project. However I did gain experience working with tumors in mice, culturing immune cells and learned immunology from attending talks and seminars. This was a subject I had never studied, and this area of cancer research was advancing very quickly.

The typical workday went something like this: arrive at work between 8-9a.m. Coffee or tea break for about 30 minutes around 10a.m. Lunch and a walk on the Downs opposite the institute from 12 -1.30, and then leave for home around 4.0 to avoid rush hour. Since I lived close by, none of this schedule applied to me, and I worked a normal 8-5 day. Apart from the short workday I also found the English class system disturbing. There was very little social interaction between the lab personnel, such as technicians and secretaries and the faculty. This became most obvious at Xmas when parties were announced and we would turn up, to find ourselves the only “professionals” among the “ hoi poloi” of secretaries and maintenance people. Professor Peter Alexander would appear for a few minutes to welcome every one and add his greetings, but no other members of the faculty were present. One just did not associate with the lower classes.

Professor Peter Alexander was a larger than life character. He was a hefty, good-looking man, with a booming voice. His English had a trace of a German accent, and I believe he was born in Germany. He was born in 1922, so that when I got to know him he was already in his early 50's. I felt small and insignificant beside him. To quote from his obituary in the Independence “Peter Alexander's talents were those of a publicist, a communicator, a teacher and a leader rather than those of a bench worker. He was a strategist rather than a tactician. He was basically a romantic and science for him was a personal crusade in which a struggle against daunting odds was a stimulus and not an obstacle. He could only function properly if he felt himself to be at the centre of the affairs that interested him. Then ideas erupted from him in rapid succession and ranged from the

penetratingly astute to the hare-brained and often exceeded the resources provided for their completion by several orders of magnitude.” I do not know whether this obituary is flattering or sarcastically nasty.

The Alexander’s lived in a large house out in the country, near Redhill. We were invited for dinner one evening with some other “ visitors” to the lab. This was to be quite an elegant affair, so both Mimi and I dressed for the occasion. Unfortunately it was pouring, coming down as they say in ‘Buckets”. Peter appeared with his car to take us to his house, a red convertible. He could not get his convertible to convert so that we arrived slightly damp. We were introduced to Mrs. Alexander (Jane) who was a “ horsey” sort of woman, of a very specific upper-class English type. She insisted we see her horses, which were used for fox hunting. She put on her Wellingtons, but we had to trek through the mud in our good shoes to the stables. This was particularly galling to the ladies in the company who had put on their best high heels.

At dinner she proudly announced that all we were about to eat was produced on the estate. I think Mimi asked rather innocently whether this included the venison that was served as main course. Of course she exclaimed, I hit this particular animal with my car (I assume accidentally) and brought it home. She then told us a story which I think is classic. She had been breeding hamsters for some time and had too many of them. She called Harrods of London, and asked whether they carried this breed pretending she wanted to purchase some. She was very indignant when they told her they did not have any in stock. A few weeks later in a disguised voice, she called Harrods and asked whether they would be interested in purchasing such a strain of Hamsters. Remembering the last conversation, and quite sure there would be a demand; they offered to buy them from her. Thus she was able to dispose of her unwanted animals. I don’t know why she was breeding them unless watching them gave her a sexual thrill,

since the dinner conversation that evening was very risqué and slightly embarrassing.

The year in London was enjoyable. We went quite often to the theatre and to opera. We could not afford the best seats in the old Convent Garden Opera House, so would climb an interminable amount of stairs to the top balconies, from which you could barely see the stage. The stairs were totally unadorned and reminded me of the stairs up the tenements in the poorer parts of Glasgow. Theatre was not as expensive as the opera, and I remember we saw a fantastic performance of Shakespeare's *Pericles* performed in the round. We found an excellent Italian restaurant in Wimbledon, one where large Italian families gathered for Sunday lunch. This was the days before there were large numbers of good Indian restaurants in England. We would occasionally meet my cousin Alan and wife Francis and have dinner together, usually to an Italian Restaurant in the city. There was a bus service from the institute into the city frequently during the day, but not in the evenings and Mimi would often go into the city to museums and shopping.

The children went to English public school, that means school run by the local councils. Yuval was in the class that sat 11+ exams, and Jonathan must have been in 3rd grade. We were worried about the kids attending a "foreign" school, but that was unnecessary. The first day at school, Yuval phoned and asked if it was O.K. to go to tea with one of the kids he had met. He became very good friends with two of his classmates, a Jamie Pimstone, and Marcus Wright. He seemed to fit in very well. We also became quite good friends with the Pimstones, who were South African Jews who had moved to England. They were from a rather famous family of S. African lawyers and doctors. Years later I met other members of the family at scientific meetings. We often were invited for dinner and other parties. Yuval sat his 11+ exams with flying colors and if we had stayed in Sutton would have gone to a prestigious grammar school. Jonathan also

adapted very well, his teacher remarking how well he did considering he was an American. In fact at the beginning of the school year, it was assumed by the teachers that our children would not be up to the standard of the other children, but they were quickly proven wrong. One of Jonathan's teachers even remarked that he spelt rather well for an American! This negative attitude to American kids even carried over to a vacation in the country. This was a farm vacation where one stayed on the farm, ate with other visitors, and generally "lazed" around, went hiking etc. On our first evening on the farm, we were segregated from the other guests, and put in a separate room for dinner. The following evening we were allowed to join the other guests. Our hostess was worried that the "American" kids would have no manners and make too much noise.

I remember driving the length and breadth of Britain to visit manor houses and castles. Jonathan was crazy about toy soldiers and we took the opportunity to visit places such as Blenheim Castle and many others with their large collections. Mimi loved gardens, and there was no shortage of these in Britain. We explored the border country of Scotland and spent some time exploring the Welsh countryside. We have returned to these places many times since.

We did go up to Glasgow a few times to visit the family. The family lived in the same house I lived in when I was 16, before I left Glasgow, at 90 Holeburn Rd. I do not remember very much of these visits. Maurice my brother must have been around 21 years old. That is also 21 years younger than I. I do not remember whether he was going out with Barbara, his wife to be or not. My sisters Adelaide and Beatrice by this time were married and had children. In fact we visited Beatrice and Noah in Sheffield, and made some trips to York and the surrounding areas. Adelaide and John lived in Glasgow, their children Aaron about the same age as our Jonathan and Naomi a toddler. My parents were delighted to meet their grandchildren, and I remember the children being spruced up for my cousin Muriel Mitchells wedding. I should add that this is one cousin I have no contact

with. She divorced shortly after the wedding, and completely disappeared. Rumor is that she fell out with her father when he remarried after the death of Sadie, his wife.

The visits to Holeburn Rd touched an emotional raw spot. No 56 was where my grandmother and grandfather had lived, until the death of my grandfather. I was very close to my grandparents and spent many weekends with my grandmother. I was the first grandchild, and my grandparents really made a great deal of fuss over me, and during the war years I spent as much time with them as I did at home. My leaving school, and then home must have been a great shock to them. I do not think my grandmother (by this time my grandfather had died in 1951) ever understood why. Unfortunately she died shortly after I married Mimi in 1957 without ever meeting her. . She most certainly would have approved of the marriage and my subsequent life.

We also visited my Aunt Betty, my mother's sister and her husband Ernie in Brighton. She would phone Mimi at odd times and keep her on the phone for hours. She was a very neurotic person, spending half her life in bed. We would make arrangements to go out to a concert together (I remember in particular we were going to hear the famous Flamenco performer, Manitas de Plata, who recently died), and at the last moment Ernie came by himself, Betty was not feeling well. She drove him quite crazy; he had to attend to her hand and foot, and all her whims. She never recovered from the death of her son (Jeffrey), killed in a car accident at the age of 20, and she was not particularly fond of her other son Derek. He was not a match to Jeffrey, either in looks or in personality. Together she and Ernie ran an antique store in Brighton, having closed two very successful stores in London, and moved out of the city to the coast. Much later Ernie left Betty; he could not take her anymore. My aunt Betty deserves a chapter or book on her own. I have a copy of her memoirs written for my son Yuval during this

time, which give a lucid account of the family history, all the scandals and affairs, which certainly would have been of no interest to an 11-year-old.

We also went on some great holidays from England. These were the days of cheap charter flights. We flew to Tunisia for a week, to Hammemat, staying in a resort called Les Orangers. We rented a car and drove into Tunis City and into the desert and Kairouan, a Muslim holy city. Tunisia was fascinating. The hotel and food were great, there was dancing in the evenings, once even accompanied by a knife brawl (after all this was North Africa). We got stuck in a wadi in the desert (the edge of the Sahara) and had to have the car pulled out by a group of Arab children. This was a time when Tunis was a benevolent dictatorship under Bourguiba, and very open to visitors. It was not particularly “Muslim” in the current sense, although women did cover themselves. However there was also a secular side to the country. The ‘souk” in Tunis was fascinating as was in particular Kairouan with its mosques. This is regarded as the fourth most holy city in Islam, and dates to the 7th century. It has a huge mosque and fortress. We wandered around the city with no problems, not something I think could be done today. In those days it was quite safe.

Over spring vacation we went to Spain to Mohacar, a very windy isolated village near Almeria. We stayed near the top of a mountain and the wind howled non-stop. It felt as if our hotel would be blown away. The village itself is completely white, and looks similar to the villages on the Greek islands. The same square shaped houses. We had planned to cross the Sierra Nevada and visit Grenada. We rented a Volkswagen “ bug”, unfortunately not in the best condition, and headed out over the mountains. We had not driven very far when people started making signs to us to turn around. We had no idea why until we hit a terrific snowstorm. The car was a catastrophe; the windshield wipers did not work and the brakes were weak. Here we were on a narrow mountain road going over very steep passes, with no turn offs, and being blinded by the snow.

Eventually we did find a spot on the road wide enough to turn round, and drove slowly back to the coast. It was not until many years later that we actually did get to see the Alhambra in Granada, not in winter and not from the coast.

Another short trip was to Paris for the weekend. This trip had specific meaning for me, since before making it I had been summoned to the local police station to register as a foreigner. All foreigners had to register after being in the UK for three months. I explained to the girl working in the office that I actually was not foreign, but born in Glasgow, Scotland. She did not quite know what to do with me, and sent me to another office of the interior ministry in London. I explained my predicament. I had arrived in the UK with an USA passport (Mimi actually had used her British passport, not yet being a U.S. citizen), and thus technically I had overstayed my welcome, and needed permission to continue working. I was asked whether I had any plans to leave the UK for a short time. Since I did, I was told to leave on my US passport and return to Britain with my new British Passport, which was issued within a few weeks. This satisfied the computer (?) the bureaucrats or records. The weekend in Paris was a great success. We stayed in luxury at the Scribe Hotel, an old 19th century hotel near the Place L'Opera and Pl Vendome. The hotel dates from 1860 and was famous at the turn of the century as the home of the Jockey Club, a society of owners of racing horses. We did the usual, went to the Opera, ate well, and spent time at the Louvre.

I should add a few words about this particular year. As stated above it was the year of the great coal miner's strikes, and also the Yom Kippur war. I remember watching the war unfold on television with great trepidation at the beginning and relief afterwards at the Israeli victory. There was a general shortage of fuel in the UK and the government imposed all sorts of measures to preserve electricity. This was a result of the miners' strike. The British people behaved again as if in WWII. Shops ran by candlelight in the evening instead of

electricity. People talked about how great it was to re-live these austerity conditions again. The British obviously love nostalgia, and longing for the good old days. Austerity created a unique atmosphere. The disputes lasted for 16 weeks, and it was only after a general election that the strike was settled. Both Mimi and I voted in that election as citizens of the U.K. I remember voting for the “liberal” party, but I cannot remember why other than that my brother Maurice was active in the party and convinced me to do so. Anyhow Labor won, and the miners received a 35% increase in salary.

Looking back, it was an interesting year. We were all quite happy in our surroundings, and lived relatively well as the English middle class. We probably could have adapted long term. Scientifically I learned a great deal of immunology, however because of the mishap in the mouse colony, there were no publications and unfortunately no long-term connections. It was important for my parents and my children to spend some time with each other. Both children remember the year fondly, and it added to their experience. However we were glad to return to Bloomington. We started building the house that we still live in until this day.

Aunt Betty.

My memories of my aunt Betty go way back. She was 16 years old when I was born, and I became in her own words a substitute doll. She loved to dress me, take me for walks, and apparently I slept in the same bed with her when I stayed at my grandmothers, which was nearly every weekend. I was the first-born grandchild on my mother's side of the family, and apparently I was a very precocious and adorable child. Old photographs vouch for that. My aunt claims that she taught me to read, and that I knew my letters by the age of 3, quite possible. Rather than toys, I used to play the gramophone non-stop. I don't remember whether I would wind it up, or whether she did, and I have no recollection of what music I played, but apparently I always played the same record over and over again. Somehow I think it was a Souza march. I must have got on everyone's nerves.

There was always a dog at my grandmother's house. When I was little it was a golden retriever. It actually belonged to my aunt and her brother David. They had bought it without permission and smuggled it into the house. They called it Arispa, after a Russian ship that was in the Port of Glasgow that day. However as it turned out the dog was so friendly he would have answered to any name. There are many stories about Arispa, who caused a lot of consternation to my grandmother, a very orderly and tidy person. To quote Betty in her memoirs on the first encounter between Arispa and the family: "As we reached the door I let Arispa off his leash and he showed sufficient sense to run into the dining room, we hurried after him to the delight and surprise on everyone's face. Well the family were just speechless, not so much by his beauty, but that he ran to the leg of the table where my mother was sitting, raised his leg and relieved himself, leaving the largest puddle we had ever seen. My mother ran out to the hall and

returned with her umbrella, and as she raised it to strike the dog, my father in his usual calm way, took it from her with the remark “ Do not disturb it as he will go elsewhere and you will have two puddles to wash”. My father was convinced that the poor dog was excited and would soon be trained to ask to be allowed out, but unfortunately every time he was allowed out we had to have a search party go out and look for him as he never returned on his own. Likewise David, (Betty's brother, my uncle) my father and Nancy the maid of that time, would search the flat in the morning for accidents he had during the night, and sprinkle perfume to disguise any smell before my mother got up. Between the cost of the perfume and the reward money we had to pay to people who brought him home, which was almost every day, we realized why we had got him so cheaply.”

One day as my grandmother was out visiting she saw a man with a string tied round the neck of a large Golden Retriever. She came to the conclusions that this could only be our dog, so she approached the man and thanked him for taking the trouble to return the dog. But the man said he had just purchased the dog and that was why he had no collar and leash and was using string. My grandmother, who was very prim and normally wore a stern expression, became very indignant and accused him of stealing the dog. She demanded he go with her to the police station. The man thought this was the fairest way to settle the dispute, so off they went. They both told the policeman their stories, and after contemplating the matter the desk sergeant asked my grandmother to call the dog by his name to see if he would go with her. When this story was related to us, my grandmother said it was the worst moment of her life. As she opened her mouth to call the dog no sound came out of it, as in the excitement she had forgotten the dog's name. After a few moments of feeling a fool she had the presence of mind to say that Nancy, the maid could identify the dog. The policeman and the man got into the police car and drove round to our house. As my grandmother was looking for the keys, Nancy heard her and opened the door. Out ran Arispa, who attacked the

other dog, who in turn ran around my grandmother's legs, almost pulling her over and knocking her down. The brave Arispa then ran off to be lost once again. After that they all sat down for a cup of tea in good Scottish fashion and everything was straightened out with no bad feelings on anyone's part.

My grandmother was extremely embarrassed by this incident. What would the neighbors think of a police car and policeman at her door? In those days that was a terrible thing, since the neighbors would think a criminal act had been committed.

Arispa did not last long. While playing with him he bit me. I am sure it was an accident but he left a small mark above my eye. I think my grandmother was only too glad to have an excuse to get rid of him.

The dog I do remember better was a terrier with the name of Punch. He was white and had a black area around one eye. He was called punch after the dog in the Punch and Judy show. This was a common seaside puppet show, with Punch always beating Judy, and Toby the dog barking. He should have been named Toby but for some reason was called after the show itself. I would look after Punch, and take him for walks most of my childhood. Punch survived in my grandmother's home for 14 years, long after I had left Glasgow.

My aunt Betty must have been my "second mother" for about 8 years. I believe she and my mother had many quarrels about my upbringing, and my mother accused her sister of taking me away from her. The two sisters never really liked each other, and according to Betty my mother had a terrible temper. However this intimacy to me was to come to an end, when Betty, now 23, eloped with a member of the RAF. Apparently she met Ernie at a dance and went out with him a few times before he proposed to her. Since they knew that both my grandparents would be against any such marriage, they decided to elope to Gretna Green where a hasty marriage could be arranged. This was a time in which marriage out of the Jewish faith was considered a great catastrophe. I was staying with my

grandparents as usual, sleeping in the same room, that fateful weekend. When my grandmother awoke, she found a letter from Betty in a crystal bowl on the dresser. Betty informed her that she was married to Ernie Baker, a RAF private stationed nearby and not to come after her. My grandmother made a terrible scene, and vowed never to speak to Betty again, and most certainly not accept Ernie into the family.

My mother did not have such strong feelings, and I met Ernie soon after. A tall handsome Englishman, who always seemed happy and initially adored his wife. Betty now became an “RAF wife” and went with Ernie to wherever he was stationed. The first stop was a small town in the north of England, called Grantham, in Lincolnshire. During the war it housed a large RAF camp, perhaps the largest in England. The town itself was at that time very small, and mainly a market town, with two or three streets. It was very difficult for a city girl to get used to. Betty and Ernie eventually rented a small cottage 13 miles outside the town and appeared to be quite happy. Jeffrey their first son was born there. She describes it as a beautiful three-bedroom cottage, with a lawn out front and a small pond at the back. She loved it, and put a lot of work into making it habitable. She did not mind the isolation and kept company every morning with a neighborhood cow. A bus could take her into town once a week. It had one drawback, there was no running water, and Betty had to collect enough water every day for cooking, tea, and a bath. Despite this she describes the house as paradise, and it was a very happy time of her life.

My aunt Betty’s memoirs are full of interesting stories, many of which are difficult to believe. One of the most fascinating (besides the family scandals which I will not repeat here) is how she either caught a German spy, or at least identified a traitor during World War II.

Betty would regularly go the market, held once a week in this small town. As typical in Britain of that time, there was always somebody spouting words

against the war, often accompanied by Anti-Semitism and pro-German sentiment. In order to disturb such a character, Betty and some of the RAF boys hatched a plot to get rid of this speaker. She rushed around the street corner with an empty pram, screaming “ help, help someone has stolen my baby”. One of the boys had removed Jeffrey from the pram for safekeeping. To quote my aunt ” So I charged right around the corner at such a speed that the traitor fell flat on his face, and not only our RAF boys attacked him but the local farmers with their studded boots. Naturally the policeman walked around the corner to see why I was running and screaming, it had been agreed I would say that someone had stolen my baby, so that the policeman would assist me first, and then from the next street one of the soldiers would come with the baby he had rescued. I pretended to cry with fright. By the time the policeman got back to the corner, he had to phone for an ambulance as the man had taken a real beating, and everyone was adding bits as to what the Nazi had said. We later heard that he was imprisoned for the duration of the war”.

Another time she became suspicious of a woman, who owned a laundry, who tried to befriend her. She claimed that this woman gave her the creeps, and that she had a sixth sense that something was wrong. One night she was told by one of the guards of the camp that her friend had visited, and he allowed her in because of their friendship. She had no idea who this friend might be, and went higher up to alert the authorities that someone was spying on the camp. They gave her a book of photographs and she picked out the laundry owner. According to Betty this woman was a suspected German spy. In the same book she came across a picture of the arrested man, and he was identified as the sister of this specific woman, and was later arrested. I really don't know whether to believe these stories or not. But as we will see subsequently she was game for anything, and could certainly cause havoc.

Betty moved around a great deal during the war, including some time in Ceylon,

where Ernie was stationed. After the war she spent some time in Glasgow and re-established a good relationship with my grandmother, who by now had given in and fussed over her two grandchildren Jeffrey and Derek. I don't remember much of this period, since I was already on Hachshara in the South of England. Eventually Betty and Ernie moved to London and opened an antique shop in the center of the city. Later they expanded this to two shops, successful businesses and bought a "luxury" apartment on Baker Street. She claimed that this was the same address used by Sir Arthur Conan Doyle for Sherlock Holmes.

I know that Betty was the boss in the business, and held the purse strings. I must have visited my aunt and uncle a few times while I was on Hachshara at Reading or Horsham, not too far from London. I remember that on one occasion I was asked to accompany my uncle Ernie on a delivery of an antique to Group Captain Peter Townsend, the beau at that time to Princess Margaret. She was not allowed to marry Group Captain Townsend, a war hero, because he had been divorced. Ernie asked me to pretend he was the deliveryman rather than the owner of the business, and when he delivered the piece of furniture he put on a very strong Cockney accent. He (and I think I also) received a generous tip for delivering the goods, which all went to Ernie with the declaration "do not tell Betty". It became clear that she held the purse strings.

I did not have contact with Betty and Ernie (or their children) for many years after moving to Israel and the USA. We met again in 1961 when I took Mimi to Glasgow to introduce her to the family. Betty came up to Glasgow and took control. She and Mimi cleaned my mother's house from top to bottom one day when my mother was out. My mother quite honestly was not very fussy, and the china was very tea stained. What followed as one might expect was quite a row. "How dare they take over the house". I just stood by and let them fight it out. On that same occasion I met my cousins Jeffrey and Derek. Jeffrey was by far the better looking of the two, and much more debonair. He drove a fancy car and

appeared to have lots of girls hanging onto him.

In September of 1961 Betty and Ernie's' life was hit by tragedy. Jeffrey, Betty's first born died in an auto accident. As stated above he was a very handsome young man, and she doted on him. Of the two children he was the favorite. The death hit her very hard, so hard that in fact she never recovered from the event. She seemed to lose her will to live for a time and stayed in bed, surrounded by large numbers of pills. They eventually gave up the stores in London and moved to Brighton, a bustling coastal town, a favorite resort for Londoners.. I think the move was made in order to be near the beach. Ernie loved to sail and this gave him the opportunity to do so. They remained in Brighton through the 1970's.

We did meet occasionally during my visits to London to attend conferences. I remember on one occasion staying with them. For some reason I had a bath one evening (I must by now have been in my late 30's or early 40's), and without knocking Betty entered the bathroom and sat at the edge of the bath to talk. I was terribly embarrassed, and I had the feeling that my Aunt was seducing me. She went on talking, I don't remember the conversation. My embarrassment must have been obvious since, she remarked about how she remembered me in diapers.

In the interim Derek got married, and had a child, Joanne, who after a few years was discovered to be autistic. Here in lies another tragic story. Derek's wife sued for divorce shortly after the child was born, and once the divorce was granted she left for S. Africa her place of birth.. The child was placed in an " orphanage", since the court decided that Derek as a young working man, could not offer the child a stable home. Apparently the court case dragged on for a couple of years, and the child was finally given to her father. The autism appeared within a few years and eventually a full-time nurse was employed. At about age 5 she was placed in an institution and I have no idea what happened to her

afterwards. I know that my sister Beatrice and Derek did visit her quite often.

Derek worked or managed a pub in the outskirts of London. I feel that Betty was ashamed of this. He had another child, Daniel, to the live-in nurse, whom he eventually married and later divorced. I have been unable to track Daniel down, and no one seems to know his whereabouts. Derek died of alcoholism (or was it a broken heart) in 1997. Daniel was born in about 1970 When Betty was visiting us in Bloomington.

We really got to know one another again when we spent a Sabbatical year in London in 1975. By this time Betty was quite depressed and spent a lot of time in bed. However her depression life had been very active the last 14 years. She had joined, I assume, a reform synagogue. She pretended that Ernie was Jewish. Poor guy suffered from all the talk about the “goyim” and smiled through it and she was I gathered a mainstay of the community. She told me she officiated in some sort of gay marriage ceremonies, something hard to believe in England of that period. She certainly was a proponent of “gay marriage” and of course as she said, being in the antique business she met and associated with many gay men. Homosexuality among men (and women) in the antique trade was quite common and most certainly not a secret. However this was Britain of the 1970's and homosexuality was a criminal offence and could result in imprisonment.

One incident stands out for some reason during this time. Both Mimi and I were very much into Flamenco music. Manetas De Plata, a famous Flamenco performer was appearing in Brighton. We very much wanted to go, and ordered tickets for the four of us, Mimi, Betty, Ernie and myself. We drove down to go out together, dinner and concert. We met Ernie at the restaurant without Betty. She as usual had taken to her bed and would not join us. Ernie was very upset; this appeared to be the routine of his life. He looked after her continuously. I had the feeling then that he was very frustrated and could not take this way of life much longer. I had the impression that Ernie late in his marriage led a very miserable

life. When she did go out she was very well dressed, animated, full of vitality, and the dominant person in any party. She was full of fun. I felt sorry for Ernie and Betty in different ways. She was not interested in Derek or her grandchildren, but lived for the minute, and in a very selfish self-centered manner.

At other times she was very active, talk to Mimi on the phone incessantly, and life of the “ party”. Was she bi-polar and never diagnosed as such ?. I would not be surprised. She loved my children, in particular Yuval, who must have reminded her of Jeffrey. Her memoirs, from which I have taken some of this material was written for him. He was 11 at the time, and the memoirs started off as if for a child, and then developed into a full family history, describing closeted secrets I had never heard. How my grandmother’s sister (my dour Aunt Katy) had a boyfriend in London despite being married, a sister of my grandfather was killed in an IRA attack in Belfast, and myriads of family gossip that was unfamiliar to me. I have given this memoir to a number of my cousins to their delight and astonishment. It is difficult to discern what is true and what is imagination.

On our return from Sabbatical to the States, we had little contact. Perhaps I had grown weary of her. We did correspond however by letter, mostly aerograms, in which one could not write too much. One day one arrived informing me that “ Uncle Ernie” had passed away. I was quite shocked, but by then he was in his 70’s and I assumed he had some sudden illness. I found out a year or so later than this had been a lie. Someone had either met Ernie or Derek, and was told the Ernie had walked out on her. He just could not take her antics anymore. What happened later was inevitable. There was some type of divorce suite, and it was found that Betty had banked large sums of money in the Island of Jersey. Some of this obviously belonged to Ernie. Betty had also not declared this money for tax purposes. The court decided to “ confiscate” the money and pay Betty an allowance from this. This was not sufficient to keep her in her usual style. She eventually had to give up her “ luxury flat” in Brighton and move to a

council house in London, not far from Heathrow.

Being rather lonely she decided to remarry. She met an elderly widower in Glasgow, dated him a few times and remarried. I have no idea whether this was a “love” marriage or one of arrangement between two elderly people. However it did not last more than a year. He was diagnosed with cancer and she decided to leave him. This caused a lot of bitterness and scandal .

A few years later we met again. We were in London on a visit and decided to call on her and invite her out for dinner. The evening was a disaster. We went to her flat in London and when she opened the door I had trouble recognizing her. She looked very old, her face was covered with rouge, and her lips badly smeared with lipstick. Her apartment was lacking all the beautiful antiques of before. She showed us photographs of all the young men who took her out, mostly sailors she met on cruises. Although we went to a decent restaurant it was not in Mayfair, which she assumed was where we would dine. Perhaps I was too stingy, it had not occurred to me that she expected a night on the town, the life she was used to from bygone years. She also appeared to be slightly drunk. Again I felt very sorry for her, she was a shadow of the Aunt Betty I had known.

My nephew Aaron was living for a period in London and he started to visit her quite often. He replaced me in her eyes. He was young, handsome, worked for Playboy as a fashion designer and was gay. He is a very kind young (not so young now) person, and took her out and showed her a good time. Betty came to visit his mother, my sister Adelaide, many times in Miami, and I thought recovering.

The last time I saw her was in Miami at my niece Naomi’s wedding. This was a lavish affair at a Miami Beach hotel. Betty was missing at the reception and dinner and was nowhere to be seen. We all began to worry, since by this time she appeared to be a frail old woman. Aaron phoned her room and received no reply. He then went up to her room and could not get in. In alarm he approached hotel

security and they decided to open the door. Betty was in the bathtub, quite drunk, and could not climb out. Eventually he got her dressed and no one discussed the incident. However it remained with me, a sad ending to a life of both hope and tragedy. Betty died a few years later. She left her apartment and what money that remained to my sister Adelaide, with a note that she had been the only one to respect and treat her nicely in her waning years. My sister needed the money, and not Aaron who had done very well financially. She left nothing to her remaining son Derek, who died a few months later. I have no idea what happened to Ernie, whether still alive or not. He disappeared from our lives.

FIRST TRIP TO INDIA. -1985.

In 1985 I visited India to participate in the International Congress of Genetics in New Delhi. A number of Indian post-docs had worked in my laboratory in the 1970's and some of them had become close personal friends. One of these was Dr. Raman Kothari, who had returned to India the previous year. Dr. Kothari had spent two separate periods in my laboratory, 10 years apart. The announcement of an international meeting in New Delhi, allowed me the opportunity to visit India and simultaneously, the possibility of touring India with Raman and experiencing for a short time a different lifestyle. I must admit I do not remember much of the scientific meeting, but was more impressed by my touring with Raman. Unfortunately Raman died last year (2018)

Raman was a small, wiry, very dark young man. He hailed from Baroda on the West Coast of India. Today the city is known as Vadodara, and has a population of approximately 2,000,000. When he first came to my lab he was in his early 20's, married with two daughters. A major reason for working in the US was to earn dowry money for the future weddings of his daughters (which might be 15-20 years hence). He was a devout Hindu, his apartment containing statues of Indian gods whom he devotedly worshipped. His wife and children did not accompany him, he feared they might be corrupted by exposure to US values, or should I say sins: the wrong food, too much flouted sex in films and TV. He shunned the Western way of life and culture. However he was an extremely kind person, willing to help the sick, students and other post-docs in the laboratory. He made friends easily, and was very trustworthy.

He had an unusual scientific background being both an industrial chemist and a professor in the department of chemistry (or biochemistry) at the University of Poona. He was an expert in the separation of natural substances such as vitamins

and plant products by column chromatography and in my lab extended this expertise to DNA and nucleic acids.. He published extensively in the Journal of Chromatography prior to joining my laboratory. His interest in my laboratory stemmed from our own work on tRNA chromatography a project I had initiated in my laboratory at Indiana.. He was a natural fit into the lab of 1972-75. Due to his eagerness we published many technical papers and reviews during that period.

He was very sociable and invited us to dinner shortly after his arrival. I remember that the first time we received an invitation, we were quite apprehensive, a single man cooking and Indian food to boot. Since he was a strict vegetarian, we should not have worried too much. The food was an array of rice and rice dishes (or lentils) and only mildly spiced. We survived the experience without mishap.

Shortly after his arrival, he informed me of a medical emergency. One of his friends (or colleagues/students) Shankar was in Huston, Texas for heart surgery. He was among the first to receive a heart transplant, performed by the famous pioneer of this technique, Dr. DeBakey. He needed some place to recuperate, and Raman indicated that he was bringing him to Bloomington to stay with him,. A few days following his arrival in Bloomington Shankar became ill with hepatitis B. I do not know what the specific treatment was in these days, but he remained in the Bloomington hospital for the required period of time, without charge! Bloomington hospital at that time was a not-for-profit city hospital and was administered by an elected civic board, overseen by the League of Woman Voters. There were special arrangements for cases like Shankar's, a foreign student without funds. Shankar stayed in Bloomington for about six weeks and helped Raman write one paper. He then returned to India and took up a position in Poona. Raman left in the mid 70's for Baroda and then returned to my lab in the early 1980's for another couple of years, with the same aim, to earn money for a

dowry for his daughters. It turns out that this was quite unnecessary since both his daughters become physicians and had no need of dowries. However Raman really worried that they would not be able to find husbands without the money. An old tradition that has not died.

My visit to India began in New Delhi. On my arrival I was hit with the most horrible smell and foul air. In order to heat houses the locals burn cow patties. The cow manure was collected, dried and sold as heating fuel. The aroma was overpowering, and this smell lingered every evening. This was in the 1980's. I have been in Delhi only once since then and did not notice this aroma but I have been told by other travelers that the air pollution is still terrible. I stayed at a very luxurious hotel the "Imperial". It turns out to have a long history and is now considered one of the great hotels of the world. The Hotel was designed to present a unique blend of Victorian, Old Colonial and Art Deco styles. All the staff wore colonial style uniforms. I did not think too much about its luxuriousness, although I did pay attention to the architecture and detail. I spent most of my time when not at the meeting wandering around Delhi, which I found a fascinating city. It was a city of contrasts, extreme wealth, and extreme poverty. I only once ventured into "old Delhi", which I was warned off by a friend I made among the hotel staff. "Old Delhi" was a shock, masses of people crowded together, an accumulation of colors, funeral processions, turbans and saris of all colors. I had been warned to beware of pickpockets. The streets were so crowded that only pedestrians or cyclists could move. As everywhere in India there was the ubiquitous cow.

There is nothing more amazing than to see a cow chewing the cud in the middle of a busy road with cars attempting to dodge her, or a cow sitting in the middle of a four-lane highway holding up traffic. Not only are there cows, but the occasional pig, and lots of stray dogs.

I stood out as a foreigner, and I was ripped off as one! The first was while walking in New Delhi, towards the parliament buildings. A young man stopped me and asked if I could tell him the time. By the time I had looked at my watch he had bathed my shoes in cow (or was it human) excrement. He said something like ‘ “your shoes need cleaning”; in response I was about to say no thank you when I looked down and saw the mess. I had no alternative but to remove my shoes, at which point he started to tear the insides out. . “Hi, wait a minute, what are you doing” but he continued and asked innocently something like where the shoes were made. I don’t remember what kind of shoes I was wearing, but he gave me new insoles, cleaned them and smilingly asked for a few Rupees. I had no alternative but gave him what he requested, an amount that Raman said when I told him later was about a month’s salary. A day later I was walking in another part of Delhi, when a young man approached me and smilingly asked me “what is the time”. I knew what to expect and I said politely I do not need my shoes cleaned. However it was too late, and they were all shitty again. I had learned this time and gave him little money. He argued but I was determined to be stubborn. From then on I only wore sandals. No one tried to polish them..

At that time the main means of travelling around Delhi was with human drawn rickshaws or occasionally motorized ones. I hailed a motorized Rickshaw (I learned from a recent film that they are called tuck-tucks) to take me to the Red Fort. I had never thought before of using a human as a horse. There were all types of Rickshaws, some pulled just by human labor, some with bicycle wheels, others with mopeds. When I arrived at the Red Fort I made it quite clear that the driver should not wait. I was in the Fort perhaps an hour or so, and when I came out the driver was still in the same place waiting for me. I had already paid him and wanted to hail another tuck-tuck, but no, he would not hear of it, he would not charge me for waiting ... I was wrong. When we got back to the hotel I was presented with a hefty bill, including waiting time. He pretended not to

understand English, and I succumbed. In actual fact the amount in dollars was very little.

However the high point of my trip was not the International Meeting on genetics, or the time spent in Delhi, but the time spend with Raman Kothari, and going “ native” for a week or two. I must have taken the train to Baroda without mishap, since I do not remember the trip. Raman lived in a small cottage outside the city. There was no landscaping and animals seem to roam around freely. The house was simply furnished, and there was an atmosphere of complete calm and serenity. Radha his wife made me very welcome. She was an attractive, and intelligent woman.. I do not know whether she was as religious as her husband or just conformed to his wishes. I had met her father when he visited Bloomington, and he appeared to be a man of the world, drank alcohol, which Raman didn't and was not averse to joking and enjoying the pleasures of western society.

We discussed the simplicity of their lifestyle in Baroda, and how free from stress it was compared to the life of an associate professor in Bloomington. I quite easily adapted to their lifestyle, not so different from the days of living on the commune in England. We ate only grains, the diet consisting mostly of daal and rice, and homemade chapatti or nan. The cooking was done outside on a primus like stove. There was no shower or bath, and water, collected from the local well was heated in a large tub, and one stood outside and poured water from a pitcher onto the head and body. All was simplicity. Toilets were in the house (I think) but the squat type. I stayed with them for a week before embarking on a trip with Raman to the holy sites of that part of India. I had many discussions with Raman about the need or lack of need for material goods. I could see myself leading this simple life and being quite happy. I had no idea where Raman was on the economic scale of the Indian population, but since he then worked for Sarabai industries, I assume his salary was more than adequate..

Baroda itself was interesting having many museums and palaces. It had been the capital of a princely state. The maharaja's palace is known as the Laxmi Vilas Palace, and the complex is larger than Buckingham Palace. The city appeared prosperous, and has close to two million inhabitants.

Our first stop in our trip was to the country of the JAINS and their holy sites. This was Mt Abu in Rajasthan, quite some distance away. The Jains are an ancient religious group who believe in non-violence, to all creatures not only man., an ascetic lifestyle and vegans in diet. I don't think Raman was a Jain, but he certainly believed in many of their principles.. Mt Abu is famous for its temples, among the most famous being the Delwara Jain Temple. I must admit I do not remember much about the temple; I was more attentive to the discomfort of the trip from Baroda to Mt Abu by train. Raman and I argued over the "comfort" of our trip. I wanted to go second or first class, since the trains in India are overcrowded with people hanging on and even riding on the roofs. He insisted we go 3rd class to avoid being robbed and possibly murdered. He felt that any show of ostentation would lead to trouble. I gave in. He ordered a berth in 3rd class, since it was an overnight trip. The berth turned out to be a wooden platform, in a regular coach, with peasants spitting Betel nuts sitting underneath. Raman brought some blankets to keep us warm. I could not sleep and held my hand in my pocket containing my wallet all night. I decided that in future I would take the risk and travel first or second - class, no more of this. In Mt Abu I became an honorable Jain, and had a red mark placed on my forehead a symbol of religiosity by a Jain priest who resided in a cave in the mountain. It was like a Biblical scene.

Travel by Train in India is full of hazards and one has to have a sense of humor to cope with it. One day while waiting for the train I entered the first-class waiting room. There were leather easy chairs, to which I gladly attached myself. As I leaned back and made myself comfortable I felt a scurry of activity

underneath my bottom, and out ran a pack of mice. I must have sat on a nest of mice. I assume that all the chairs were havens for rodents. Luckily this time it was not rats, although I saw plenty around.

I did finally take a first-class cabin on my way from Baroda to Bombay from where I was taking my flight back to the USA. I shared a cabin with private berth with some Indian businessmen. It was comfortable, no hassle, and no thieves. Although there may be the occasional high-jacking and kidnapping, I do not think it is any more dangerous than in other countries. .

After Mt Abu we continued North into Rajasthan to the beautiful city of Udaipur, which is situated on Lake Pichola. It is a magnificent city. We took a boat trip to one of the luxury hotels on the lake to have a look. It was too expensive to stop for a drink or to stay, or at least so claimed Raman. The place left an everlasting impression on me. Our next stop was Ahmedabad. This was the town of Gandhi. The city was the headquarters for Gandhi's independence movement, and contained two of Gandhi's Ashrams. It also was the site of many anti-British riots and riots between Moslems and Hindu's. I remember it as a busy city with wide boulevards, but Gandhi's Ashrams did not impress me. . Once again my trip was colored by transport conditions. This time instead of train we decided to take an overnight bus from Ahmedabad back to Baroda. It was a very comfortable bus, and I was exhausted from our daytime wanderings. As soon as we started the 12-hour trip the driver switched on a large screen playing "Bollywood" movies. I desperately wanted to sleep, and politely asked the driver if he could turn off the film or at least make it quieter. As soon as he did this there were angry shouts from all over the bus, I suppose curses in Hindi that I had dared to have the volume lowered. I think some of the passengers would have become violent if the driver had not turned the volume up again. Somehow I arrived back in Baroda in one piece. I must admit that despite these entire comic 'misadventures" I enjoyed my time in India. I was fascinated by the color, by the

people, many unbelievably beautiful, and one can enjoy India if one can ignore the poverty. I met with many Indians mostly from the middle class, and I got the idea that they just ignore the poverty around them. Only a few make any effort to help the poor. When in Delhi I met a young man working in the hotel, I think his name was George, and he was a Christian. We became good friends and he told me how he helped abused women and found them shelters or places to live. He was one of the few I met who really cared about the poor and the social problems of India. He had a degree in mathematics, and could not find a position, and thus worked in the gift store of the hotel. There are few like him. Indian society in general appeared to be very individualistic and at that time very disorganized and not very caring. George was an example of an over educated individual in a country and society that did not offer him a future. I discussed this with Raman and he was quite indifferent. Even on my second trip many years later, our guide and driver had a law degree and could not find suitable work. The difference between societies such as Japan and China and India are quite striking. I became more conscience of this after my visit to Japan and China a few years later. India is a much more heterogeneous society, and certainly the individual has more freedom, if he can overcome the poverty. The big problem is population, and until population growth is controlled India will always remain as is, disorganized and poor.

Second Sabbatical: Israel 1985/86.

I decided to spend my second Sabbatical, half in Israel and half in Italy. There were a number of reasons for choosing Israel, one was the “ call” of family, since Mimi wanted to devote some time with relatives and friends, and scientifically I wished to join a lab in which I could learn to use restriction enzymes and gene-cloning technology, and also be near a group working on interferon to confirm work done in my laboratory.

We had come up with the idea that perhaps interferon was induced by heat. This was a period of time when heat shock proteins were being discovered in many types of cells. Their function was unknown at this time. Tom my lab technician had heated lymphoblastic cells slowly to 41° in a water bath. When we measured interferon production using the normal assay of inhibition of VSV on L-cells or HeLa cells, there appeared to be some interferon (or at least an anti-viral activity) induced. I was under pressure from one of my post-docs, Hector Martinez-Valdez to publish the results. I hesitated and wanted to confirm the assays, since we were not an established interferon lab. I also felt now was a good time to take a sabbatical, since Hector was perfectly capable of running the lab in my absence.

Mimi had always wanted to spend time in Italy, and I had established a good relationship with Dr. Raul Perez-Bercoff at the Institute of virology in Rome. We both worked on picornaviruses, and thus I planned a split Sabbatical. I applied for a fellowship from both the Weizmann Institute, in Rehovot Israel and to the NIH for support while in Rome, and both fellowships were forthcoming.

In Israel, we were given housing at Lunenfeld-Kunin residences, a modern apartment on the campus, thus saving me the hassle of finding an apartment in Rehovot. I had arranged to work with Dr. Ernest Winocour, an ex-Glaswegian, who made aliya in the 1940s. His work was mostly with the SV-40 virus, a virus that was suspected of causing tumors in man. At that time he was studying DNA

recombination by co-infecting cells with DNA from SV-40 and other non-related viruses. Ernest was a member of the virology department .

I was allocated a student to work with. It was none other than Jeff Rothenberg a student who had worked for a short time in my lab in Bloomington. I don't know whether there was a resemblance, but others would refer to him as " little Milton". Jeff went on later after completing his degree in Bloomington to perform his Masters work at the " Machon" as the Weizmann was locally known He describes his experience in <https://www.weizmann-usa.org/news-media/feature-stories/weizmann-alum-dr-jeffrey-rothenberg-the-art-of-science-and-medicine>. He is now a professor of Gynecology in Indianapolis and I believe ceo of a large hospital in that city. . That summer we worked at the bench together.

I enjoyed the few months working in Israel. I felt I learned recombinant DNA techniques. I also in collaboration with people in Michelle Revel's group tried to repeat the heat induction of interferon without success. Louisa, Dr. Revels technician ran many experiments and assays and could not detect any interferon activity. Mimi brought samples from my lab in Bloomington, but these also had no activity, although this could be because of the travel conditions. I had no idea why these experiments were not reproducible.

The work in the Winacour lab involved studying DNA conformational structures on acrylamide gels. Of course if recombination took place, the DNA would be different in size from either input DNA and this could be discerned by staining with ethidium bromide under UV light. I must have been in the lab on my own one Friday evening, and either could not find the shield to protect against UV irradiation , or thought I would look at the gel without the shield. I could see the bands, but however in the process I burnt my eyes. I had no idea how to treat this. Mimi was not with me, she must have left for the States, and I wandered around Rehovot looking for a clinic. Unfortunately it was " Shabbat" and nothing was

open, neither clinics nor pharmacies. I must have walked the breadth and length of the town until I found an emergency clinic open. My eyes were washed and treated, but they were very painful for a long time afterwards. Luckily they were not damaged. I learned my lesson the hard way, as did one of my students later on who had huge burns on his arm from resting it under UV light.

Apart from work, we took many trips to the Galilee, and to visit Mimi's family. We so much enjoyed being in Israel that we thought of staying in the country, and looked into joining a moshav or tazpit (new settlements in isolated locations) . Thinking back it was quite foolhardy, since I children were at college in the USA, and I doubt whether they would have joined us. Also I had no job, and it would have taken me some time to find one. Mimi had the dream of living on a farm and being self-sufficient. As it turned out the Moshav movement was not interested in us, we were too old, fifties, and there was no guarantee our children would join us. .

I made many scientific contacts at the Machon, which proved useful later on. Louisa , Michel Ravel's technician joined my lab on return, and one of Menachem Rubenstein's students, Zvi Reiter joined my lab as a post-doc. I would join the Israeli interferon group socially at the many interferon meetings I attended. Thus it was a fruitful few months, even though we could not reproduce the anti-viral activity by heating cells. This led to a nasty period in my laboratory with accusations of cheating against Tom my lab technician, although there was no rational reason for him to cheat. Since then others have seen slight induction of interferon (or an anti-viral activity) in certain cell lines, and the phenomenon may be confined to certain classes of cells of the immune system.

From Israel, I flew to Rome and started the other half of my sabbatical in Rome.

Sabbatical in Italy. 1986.

My second sabbatical was half in Israel at the Weizmann Institute and half in Rome at the Institute of Virology, a Department of Sapienza University, Rome. I decided on Italy, because of common scientific interest with Raul Perez-Bercoff and Mimi, my wife, wished to live Rome for an extended period and visits its museums. Raul worked on picornavirus, as did I for many years. I first met Raul at a meeting he organized on this class of viruses in Maratea, Italy in 1979.

Maratea is an ancient, whitewashed town climbing up the mountainside of the Bay of Policastro in the province of Basilicata on the Tyrrhenian Sea. Raul discovered the locale and made it a center for NATO conferences, not only in virology but also in physics and other sciences. It is a beautiful area, and does not get the hordes of tourists who flock to the Amalfi peninsula just a few hundred KM up the coast.

Through this meeting I met many of the scientists working with picornavirus, including Elkhart Wimmer one of the world's experts on poliovirus. Elkhart later became a controversial figure for publishing the technology that allowed the creation of poliovirus in the absence of living cells in the test tube: I also met Fred Brown and his group working in Pirbright, Surrey, on Foot and Mouth Disease virus (FMDV) as well as American scientists from Plum Island, the only place in the USA where research on FMDV was allowed, and Roland Rueckert who worked on picornavirus structure and maturation, an area of particular interest to me. It was a 10-day meeting similar to a Gordon conference, all of us confined to a limited space, eating and drinking together (elegant service and wonderful food) and becoming acquainted with one another and each other's research. Such meetings are vital in science or in any discipline. Today I suppose this is called networking.

Raul and I became good friends and maintained contact over the following years, since our scientific and even our political interests overlapped. Raul was

born in Argentina, and I surmised that as a child or young man suffered from Anti-Semitism. He was an ardent Zionist then, and now in his senior years volunteers once a year to serve in the Israeli army for a few weeks. This Zionism formed a bond between us, and like me, he was not religious. He was an outstanding organizer and continued to organize international meetings, called Europic on an annual basis.

The Sabbatical in Rome must have been in 1984 or 1985. I arrived in Italy on my own from Israel, and started looking for an apartment to rent. Mimi returned to the States after our six months in Israel to deal with Jonathan, who wanted to quit college, I found an apartment close to the institute (not in a particular nice part of the city) through a mutual colleague. A professor from Sapienza University was renting his apartment, while on his Sabbatical in Belgrade. I agreed to rent it unseen, He was a bachelor and on entering the apartment it was obvious he did not care much about cleanliness and order. The apartment was filthy, and I started cleaning, and cleaning and cleaning. I think I cleaned for five days; I even scrubbed the walls, but could not get them clean enough. I was afraid that I would do more damage than good since the walls looked very streaky and the wallpaper began to peel. Apparently I did not do too much damage to the walls since I never heard from the owner, and never met him. When Mimi arrived the apartment was still not sufficiently clean, as far as she was concerned, and the location above a coffee -pizza bar was not the most desirable. It was a noisy run-down area. I cancelled our rental and we looked for something better. I discovered a weekly newspaper aimed at English speakers and found an ad for a small apartment not far from the via Nomentana. This is a major road close to the Villa Torlonia, a Roman landmark. Mussolini rented this house from the Torlonia family from 1924 until 1944, but is now and was then in the 1980's a public park. For those who know Rome our apartment was close to the Piazza Bologna considered an affluent part of the city. It was within walking

distance of the Virology Laboratories. I found strolling through the city to the institute fascinating, past small stores, villas, interesting statues and fountains.

Our apartment was a small section of a larger apartment, possibly built for elderly parents, consisting of a bedroom, living room, and kitchen. It was owned by and we shared the same apartment door with the owner, Senior Fornacari , whom I believe worked in the Italian Senate. Once inside we went to the left to another door opening into our mini-apartment. This was on Via Giovanni Batista de Rossi a street with three and four storied apartment buildings, probably built in the 1920s or 1930s, and considered one of the better sections of the city. The apartments were painted a sort of yellow ochre or burnt Sienna on the outside, the street wide and tree lined.

Parking both near the apartment and near the institute was always a problem. In fact I am usually a very calm person, but I became very agitated when trying to find a parking spot in Rome. It was a case of “ playing chicken” as to whom got into the space first. I ended up behaving like an Italian, screaming and shouting, although I never gave anyone the finger, a common practice in Rome, but I did lose my manners and grabbed the first spot I could find, even if someone else was approaching and may have seen it first.

The Institute of Virology was on the Viale Porta de Tiburtina not far from the Main railway station, and the main campus of Sapienza University, and had seen better days. It had been a villa and was converted into a series of laboratories. From the outside it had the appearance of a turn of the 19th-20th century villa, painted yellow and surrounded by a small well-kept garden. It still looked like a villa inside, since most of the rooms remained intact, and had been fitted with extra sinks, lab benches etc. It stood quite independent of the rest of the university in a side street; about 10 minutes walk from the main campus. Nearby was a very gritty area, San Lorenzo with small restaurants with wonderful fare, including the most delightful fish restaurants serving every kind

of sea food imaginable (calamari, squib, mussels) followed by fried fish, all served on paper table cloths or newspaper. It was very cheap and the lab would go there periodically for lunch. This area is apparently now the center of “ Bohemian” Rome.

I was introduced to the staff of the Bercoff lab, as it was known. There was Paolo, who was everyone’s technician. He was a very gentle quiet, unassuming person with a great sense of humor. Aldo Venuti, who a few years later worked in my lab for a short period, was studying to be an MD. Aldo always looked unshaven, hair never combed, and smoked non-stop. You could smell the cigarette smoke on his clothes from a few yards away. Anna Degener, a research associate was Raoul’s’ right hand. An attractive blonde, half German, but more Italian than German in looks, with whom we became good friends, and small but attractive Nicoletta Santuzzi, who was a sort of independent post-doc. I never really established her status. This was a very friendly outgoing group and we would enjoy our espresso breaks together. At every opportunity we would run to the local bar a few blocks away for our espresso. My stomach must have changed color, and I could taste the burnt coffee all day long. There were also one or two students (undergraduates) in the lab. One of these, Raniero De Stasio, later became one of my graduate students, and close friend. Today he lives in London, and although trained as a virologist works for the cosmetic company L’Oréal, as an expert on hair dyes. While in my lab he worked on herpes virus, and now he lectures ladies on hair care on British TV.

Raul ran the lab to my surprise with a tight controlling hand. This reflected a constant lack of funds, quite different from my own experience in the States, during that period I had quite a number of NIH grants, and my scientific budget was quite large. He ran his lab on a “ shoestring”, and could not afford waste of any kind. He also had a personal problem, in that he did not get along with the director of the institute, Fernando Dianzani. I think Raul worried constantly

about Anti-Semitism, causing him problems in dealing with other people. He was born in the Argentine, and I think suffered there during the military dictatorship, although he never talked about it or his family in Argentina. His wife Giovanna was a very intelligent and interesting person teaching ancient Slavic languages and commuting once a week to Urbino where she had an academic position. They lived not far from St Paulo outside the wall, a 'suburb' of Rome, however still within the subway line. We would go to visit them quite often for dinner, and meet their two young daughters, Danielle and Ruth. Superficially it seemed a happy family, and Raul and Giovanna were great hosts, but underneath there must have been tensions since they divorced a few years later. Raul was a very generous person to visitors, including both of us, often inviting us for dinner at fantastic restaurants or to his home, as he did to other visitors of the institute. I myself was not very accommodating, wanting to work on my own project, and not the one being pursued in the lab, which was attempting to grow hepatitis A virus in culture. Hepatitis A (jaundice) is a major health problem in Italy. This is a difficult virus to grow and no one had succeeded in growing it to high levels. It is classified as a picornavirus and I should have been interested. Perhaps I was and I was kept away from that project. I continued to work on "heat" induced interferon discovered in my lab.. I tried to repeat this work, almost incessantly and could not. I must have also worked on a project started in Israel, since I ordered restriction enzymes. Raul was against my interest in interferon, and I found out later that it was because half the virology section, headed by Professor Dianzani, the head of the Institute worked on interferon. Dianzani in fact had been head of the International Interferon Society at one time, and I was not aware of this nor that he was in the department, and in the same building until the last few days of my stay in Rome when I accidentally met him and found that we had a lot of common scientific interests. We have become friends, and meet at international meetings. (He died last year-2018) I have also reviewed papers for

his staff. Luckily I was not aware or involved in all the intrigues occurring in the department. However, as I was to learn intrigue is part of academic life in Italy.

Apart from research, I spent most of my time exploring Italy. We had acquired an old “ jalopy”. This had been a car abandoned in the gardens near the math department at the University of Florence. Somehow during a casual conversation, back in Bloomington at a colleague's house I learned about the car from a math professor who had been in Florence on sabbatical. He sold me the car for \$200, with the instructions to pick it up in Florence at the math department. Thus I bought the car unseen, but reckoned I could not lose much money. This old Fiat was known as the “sabbatical car” since it had passed many hands. A day or so after our arrival in Rome we traveled by train to Florence to retrieve it. We arrived at the Math department and were told that the caretaker would take us to the car. It was abandoned under a sycamore tree, and the leaves covered it, and had stained the body so that it really looked terrible. It was all blotchy. I really felt sorry for this tarnished green Fiat. It was completely spotted, and the stains could not be removed. It resembled some weird animal or as if painted by some psychedelic person. The caretaker was against our possessing the car, since he did not believe it could be driven, certainly not all the way to Rome. However we eventually extracted it from the mud did get it started and drove it into a nearby garage, where they fixed up the electrical components and gave it a “ tune up”. We then started on our trip to Rome, against everyone’s advice. It was pouring, rain, coming down in sheets. We did not get very far before we realized that the car leaked from all its seams. However undaunted we continued our drive and after 6 or 8 hours, rather wet, we reached Rome. This car lasted us my entire sabbatical. It did get me into trouble on some occasions since it was similar to the getaway car, an old green Fiat, of members of the “ Red Brigade’ who had assassinated a professor at the university, and I was stopped by

the police a number of times since the car looked suspicious. However we got the car fixed up, and drove all over Italy, from the lakes in the extreme north to Sicily in the south. We were often followed and stopped by the police. In fact this happened in driving in Northern Italy. A police car kept following us for no apparent reason. We were going the speed limit; I suppose something unheard of in Italy. They eventually overtook us and passed us by. We continued to drive quite happily. Rounding a corner there they were again, and flagging us down. They wanted to know what we were doing in such a car and to whom did it belong. I explained in my bad Italian that the car belonged to a friend, Senora De-Stasio and that satisfied them. They could not believe that Americans would drive such a jalopy. I am surprised we made it over the Italian Alps, to Lake Como and other high spots of Northern Italy.

When we first picked up the car we did not realize that non-Italians were not allowed to own a car. When I went to get a title, I had to substitute the name of one of the mothers of a graduate student as owner, Signora de Stasio. Thus the car was in her name until we left. On leaving we graciously gave the car to her for her younger son to use, and within a few days it had been totaled. Thus the end of the Sabbatical car!

We saw large parts of Italy, spending every weekend on the road. Orvieto, the hill towns north of Rome, Siena, Lucca, Urbino, San Gimignano, and of course Florence. We also took a break from work and went to the Italian Riviera, Portofino and Santa Margherita. Our old car took us everywhere, although occasionally we did go by train. Raul was our guide to many of the churches, palaces, and museums in Rome. Mimi and I wandered around the ruins of the Forum and the Coliseum and got to know the old city of Rome very well. From where we lived we could get into the center of the city very easily by bus. We walked along the Tiber past the Castel de Sant Angelo, actually the mausoleum of Hadrian but also where the story of the opera Tosca takes place, close to the old

Jewish quarter and Ghetto, with its restaurants serving Artichokes Jewish style “Carciofi alla giudia”. We saw quite a number of operas at the Rome Opera. I remember one in particular which shocked my host, Raul, this was La Perichole by Offenbach, and he did not expect nudity in the Rome Opera house.

We also attended concerts in the churches of Rome. There was a concert nearly every weekend in one of the churches. We also bought tickets to concerts in St Cecilia the concert hall of Rome and the Vatican. It was often annoying and at the same time amusing to buy tickets for these events. We would arrive early and stand in line for a concert before the box office opened. I am used to standing in orderly lines from having grown up in Britain, and also from living in the USA. However in Italy as soon as the gates to the box office opened, the line disappeared, and there was a free for all. We lost our places in the line. This was Italy, where there really was no discipline, either in standing in line, or driving. This same lack of discipline can often be seen in the state of public parks and roads. The roads could be littered with garbage and plastic bottles, no one paying much heed to it. However most of the homes we visited were spotless inside. Another example of this is the planting and disappearance of flowers from the ‘small’ gardens along the road. One day the municipality would plant flowers on the Nomentana and within a day or two they would disappear. There was little respect for public property.

Socially we had a great time. Shortly after arriving (it must have been in late January) the lab started preparations for Carnival. This is a Catholic festival celebrated all over Italy (of course it is also well known in other countries). It is a time for dressing up, wearing masks, and being utterly free of inhibitions. Everyone in the lab discussed the costumes, and spent quite a bit of time preparing them. Mrs. De Stasio, a mother of Raniero de Stasio, and the “owner” of our car took it upon herself to prepare a costume of an American Indian for me (I do not know where the head dress with feathers came from) and for Mimi who

had not yet arrived, but was due to come soon, a costume of a Dutch girl. The highlight however was the costumes of Aldo and Paolo they were Bacchus and Cupid. They were dressed (or undressed) in toga like costumes, and had grapes and laurel wreaths decorating their head. The party was quite lavish at the parental home of Anna Degener. They had a beautiful house in the country about 10 miles outside of Rome. Mr. and Mrs. Degener (senior) acted as hosts. It was like a large family affair with everyone's aunt and niece and cousin being present. We drank, laughed and ate a lot of delicious food. Although my Italian was very rudimentary I somehow managed with smiles, nodding my head and grimaces to take part. . Perhaps being drunk helped.

Through Anna Degener we got to know others in her circle of friends. These were mostly middle-class or even upper-class Romans associated with various professions such as lawyers and judges. We also continued a friendship that started in Bloomington many years before with Franco Merli and his wife; Franco had been a post-doc in the chemistry department with Milos Novotny. We had met him many years prior to this in Bloomington at a party. He was a very handsome guy, and we joked around, particularly since all the girls in Bloomington wanted to go to bed with him, and he did not quite understand, was there a shortage of beds in Bloomington? He was now back in Rome, married to Alicia, and had a small child. He worked at the Sanita, in the department of environmental studies. From him we learned to cook rugetta with spaghetti and many other pasta dishes.

Being in Italy after Israel was quite an experience. The work ethic was quite different, very laid back, and the system in general very bureaucratic. For example in order to obtain material, such as restriction enzymes from my lab in Bloomington, I had to appear personally at the customs to claim these as " tools of work". We had to drink the eternal espresso with the custom official, and Raul suggested I send him a small gift of appreciation, at which I balked. There seemed

to be a lot of intrigue, both within the institute as well as among scientists in general. Politics, by that I mean adherence to political party played a large role in appointments to chairmanship and other positions. This was particularly true in the Sanita, the Italian equivalent of the NIH as I found out later.

I discovered another group at the Sanita (Italian equivalent of the NIH) working in the area of interferon research, and I became good friends with the professor heading the group, Giovanni Rossi. Our interests overlapped, and he was interested as was I on gene therapy using the interferon gene. The following year one of Giovanni's student came to my lab, (as did a number of Raul's students), and many years later, after the premature death of Giovanni, I did spend some time with one of his assistants, Philipo Bellardelli. This was seven or eight years later during a second sabbatical in Italy, a more productive one scientifically, but less interesting socially. Giovanni Rossi was a great person, well-liked by all who knew him. He also was a good scientist and built up a top-notch group despite all the political intrigue and jockeying for positions around him. I think he just ignored it. He had spent time in the States and decided to run his group the " American way ".

It is difficult to describe the atmosphere in an Italian university. There seemed a lot of competition for limited resources. Success was to a large extent dependent on whom you knew. I think the Italians found me unusual in that I was very open with my feelings and did not hide my likes and dislikes. However we certainly formed lasting friendships with the members of the laboratory.

This had been an enjoyable year. We know Italy very well. It's people are on the whole very friendly, although often puzzling and to some extent given to xenophobia. The Italians are not very law abiding, whether it be taxes or public property(Mimi had her purse snatched and stolen in Palermo, another story for another time) and this could be seen also in driving habits. It was an interesting year, with many friendships that have persisted for the rest of our lives.

Part two of our sabbatical in Italy will describe a series of events that occurred in Sicily, which actually started by delivering some cells to the Biochemistry Department of Messina University.

Sicily. 1984 . Wondering about the Mafia.

A description of our year in Italy, 1984-85 would not be complete without a chapter on our “ adventures” in Sicily. Although one can drive to Sicily from Rome, and there are no passports or visas required, it is quite a different country. The language is different, that is, the dialect is quite pronounced, and the customs and even the people look different. It is a mixture of the Mediterranean: Italians, Greeks, Arabs, and the descendants of the Crusaders, who used Sicily as a port of call during the crusades and left a lot of blue eyed, blonde children, still seen in many isolated villages.

Messina is the gateway to Sicily. It is a large port city, the first city you arrive in when you leave the toe of Italy. It is a pleasant place with palm trees lining the streets, and a Mediterranean atmosphere. It was our first port of call, since Raul the director of the lab in Rome had asked me to deliver some cell cultures to the lab of Dr. A at the Microbiology Department at the University. Instead of actually going to the department we met Dr. A and his boss, the chairman of the department, Professor L at a restaurant in the city. We had not intended on staying in Messina any length of time, since we planned a vacation and tour of the island. Our first stop was to be Taormina. However we stayed overnight in Messina at the Jolli Hotel, the best hotel at that time in the town. We did meet with Dr A and Professor L both very friendly individuals, who insisted in paying our hotel bill and they decided (not us) that they would call on us within a few days in Taormina and show us around. We actually were not keen on this since we wanted a vacation on our own but they insisted. This was Italian hospitality.

Taormina is a beautiful small picturesque town South of Messina. Today it is a town for the jet setters, and the ritzy set with very fancy hotels. I don't

remember where we stayed other than that it was on a very narrow street, on the top of a hill, overlooking the city. We spent our time walking around the town, with its Greek ruins and old Jewish Quarter. It is a very colorful town, as are most towns of Sicily, with gaudy hand painted doors, and painted decorated wagons, often used to display flowers and pulled by horses. We took walks exploring the nearby villages, which were picturesque but poor compared to Taormina itself.. As expected after a couple of days Dr L called on us. Dr. A could not make it. Dr. L drove a large Cadillac which with difficulty could maneuver in the narrow streets of the city. He insisted we come with him to a restaurant on the beach, just outside Taormina, in a small town called Naxos. It seems its real name is “ the Gardens of Naxos”. I remember the name because of the association with Greece since we have been recently (2010) to the Island of Naxos. Professor L had everything arranged. When we arrived at the restaurant there was much hugging in the Italian fashion, and we did have a pleasant meal. When we arose to return to the hotel (in the Cadillac), no money changed hands that I could see. Knowing this was Sicily, I said to myself, must be some Mafia arrangement, but I could be wrong. I had probably seen too many movies including the Godfather. It was just that Professor L fitted into the stereotype, soft hat, heavy overcoat, rather portly, he looked like my or Hollywood image of a Mafia “ godfather”.

From Taormina one obtains a great view of Mt. Etna. The mountain was usually covered by cloud or smoke. It still is a living volcano that erupts periodically. At the foot of the mountain there are still quite a few small white villages and we drove around, I was rather scared of possible eruption.

I will not give you a tour of Sicily, suffice to say that we drove through all the ancient Greek and Roman cities, Syracuse, Agrigentum, and passed through the center of the island past snowy peaks (this was spring or early summer), stopping at Piazza Armerina, famous for its Roman (period)Villa. This was a villa belonging to a wealthy Roman. The frescoes on the walls of the various rooms

are extremely well maintained, and depict scenes from everyday life, including 10 women wearing two-piece bathing suites (bikini's) playing various sports, as well as more prosaic frescoes of wild animals and hunting scenes. I really was amazed at the murals of the women in Bikini's. As it says in Ecclesiastes "What has been will be again, what has been done will be done again; there is nothing new under the sun".



We drove back up to the North coast finally reached Palermo, with its magnificent cathedral. As we walked down one of the main streets of Palermo, looking at the shop windows, Mimi my wife started yelling in a loud voice, stop, stop, For a moment I had no idea what had happened. I stood paralyzed. A motorcyclist riding on the pavement had snatched her handbag. It contained quite a bit of cash, credit cards and keys to our apartment in Rome. We approached a driver in a small car who was close to us, but he would not give chase to the cyclist. My suspicion is that he was in league with the thief. We wearily made our way to the nearest police station, where they took down all particulars of the theft. Being robbed was not a nice feeling, it was a personal affront, and left us feeling rather foolish. The previous day a group of tourists had their bus held up at gunpoint and stripped of all their jewelry.. However in this event the Mafia did intervene and insisted the robbers give back their loot, since such happenings were destructive to the tourist business. Unfortunately in our case, the police did nothing, or at least said they could do nothing, and we had to spend the next few

hours phoning around cancelling our credit cards. We also had to call Senor F in Rome and tell him that the apartment was in danger since the keys and address of the apartment were in the handbag. Realizing that we were in some panic, he suggested we meet with his cousin, a Professor of Physiology, a resident of Palermo. He would supply us with needed cash, since without our credit cards and stolen cash we had very little money left to pay our hotel expenses. In fact I did not think of it at the time, but once we cancelled our credit cards how would we pay the hotel?

Professor S. appeared, gave us an envelope containing about \$500 and invited us home for coffee and drinks. This show of hospitality certainly calmed us down and was very much appreciated. On our way back we had planned on staying the night in Messina, and again our “guardian angel” paid the bill. I think I had told him of our misadventure in Palermo by phone. . Dr L invited us to spend some time on his house on one of the Aeolian Islands of the coast of Sicily, but we declined. Perhaps we should have taken the opportunity of seeing a different side of life.

I was invited a few weeks later to come down to Messina again and give a seminar. Again I stayed at the Jolli hotel. During my first evening I was shown around Messina and told of the devastating earthquake and Tsunami of 1908 which destroyed the city, and killed as many as 100,000 inhabitants. I had previously experienced an earthquake in Mexico, and so could imagine what it must have felt like. The earthquake in Acapulco was probably around 6, and really did shake up everything. The story of the 1908 earthquake made me very nervous and apprehensive. What would I do if it happened again?. In contradiction to what I have written above I said to myself, history does not repeat itself, and I am worrying over nothing. I had just got into my pajama and into bed, when I began to feel everything shaking. Was this my imagination or a dream ? The shaking and swaying continued for some time. I rushed downstairs

(I was on the top story) and found most people standing outside, discussing the tremors. Their attitude was very nonchalant, since this is a common occurrence in this part of the world. I eventually went back up to bed, but could not sleep because of the aftershocks. It was not a serious earthquake in that there were few casualties, a few heart attacks and panic attacks, but I was quite shaken . I had pictures in my mind of waking up in the morning and wondering around a devastated city.

Anyhow the next day I gave my seminar, met with the faculty, and Dr. L asked me whether he could send one of his students to my lab in the States as a post-doctoral student. I met D, she seemed eager to come, and was well qualified. Her English was good, and so the arrangements were made that she should join the lab on my return. D. was a nice person to work with and her stay was quite productive. I later found out from a colleague in Denmark, that Dr.L. had been shipping D. to my lab (as he had previously done to Denmark) in the hope that she would find a husband. That was not to be,; however she did marry a native Sicilian a few years later.

After D had been in the lab some time, I received a communication from Dr. L and Dr. A that they would be in the States and would like to visit me in Bloomington. I arranged for a seminar for Dr A., which was actually of very little interest to our faculty, and invited the two of them plus a few students for dinner. After the seminar they visited the lab, and one of my more outspoken students, a native “ Hoosier” who had never been out of the USA says to Dr. L when he came into the lab “Hi, you look just like what I imagined a Mafioso to look like “ . As mentioned Dr. L was a bulky well-dressed gentleman with a topcoat, and soft hat, not at all like a scientist, who might go around with jeans or at least short sleeves. This particular student, JD had been working on interferon, the same area of research as Dr. A and thus had seemed appropriate to invite home for a dinner party.

Somehow at dinner the conversation came round to the trial of a group of mobsters going on in New York , the trial of the “ five families’ and Dr. L let drop in the conversation that one of them was a distant relative. There was an embarrassed silence all round. I think JD realized the faux pas he had made in the lab. Was Dr. L in the Mafia, was he a “god-Father”. ? I don’t know. D indicated that he certainly looked after the members of the department, and that it was difficult to achieve the position of head of a department in Sicily without such connections. I don’t think I will ever know the truth and I let it rest at that. I have often wondered.

Despite the misadventure in Palermo, our visit to Sicily was very memorable, a beautiful and interesting part of Italy., and certainly the faculty of the microbiology department were very hospitable, and my seminar well received.

Post Script. From the Daily Telegraph 2000.

Headline: One of Italy's leading universities has been infiltrated by the Calabrian Mafia for 25 years, say investigators.

They made the claim after police arrested 37 academics, doctors and students linked to the University of Messina in Sicily last week. A further 79 professors and researchers have been placed under formal investigation.

The unprecedented police raid, which has shocked the rest of Italian academia, followed a three-year inquiry into allegations of Mafia-run violence and corruption at the 452-year-old institution.

Italy's university system is famously corrupt with rampant nepotism and sinecures, but Messina is the only university to have been exposed as having direct mafia connections.

In recent years two Messina professors have been kneecapped by unknown assailants, four bombs have exploded in university buildings and the cars of several academics have been set on fire outside their homes. Lecturers have been threatened before examinations by students claiming Mafia backing at all levels of the university hierarchy.”

However I could not find Dr. L or Dr. A's name on any of the published list. Most of those involved were in the medical sciences as were these two. I am still left wondering.

Japan and China., 1990's

. I have visited Japan many times, to attend scientific meetings and for personal reasons, visiting my in-laws, visiting my son in Okinawa or combining scientific meetings with side trips to explore the country. I enjoy being in Japan, although the first time I did meet with some hostility, not personal, but because I was part of a group of Americans. The owner of a Yakitori bar in Sinjuku , a part of Tokyo did not want a group of us to enter his restaurant. Foreigners are “gaijin”, which I assume is similar to the Yiddish “goy”. It is used to describe an outsider or foreigner. Japan is a very homogenous society and someone who is different in appearance and dress is looked upon with suspicion. On the other hand it is a very polite society, well organized, and clean. The country has excellent hotels, and restaurants, albeit a little expensive for the average American tourist.

My first visit to Japan in July of 1988 was to participate in an international meeting on purine and pyrimidine metabolism. The venue was Hakone, a resort famous for its hot springs and lakes, not far from Tokyo. I had belonged to the International Purine and Pyrimidine Society since its founding in 1972 and this organization held wonderful meetings every 3 years, in the major cities or universities of Europe and Asia, where a local group of scientists organized the meeting. I do not remember much about the scientific content of the meeting but was favorably impressed by Japan, and the hospitality shown to us. Of course there was a book published after the conference of the scientific papers allowing for detailed recollection.

A non-scientific highlight of this visit was immersion in a hot spring. These are naturally occurring hot springs that occur all over Japan. I was surprised at the pre-cleaning, scrubbing and attention to hygiene that the Japanese performed before entering the springs. Everyone scrubbed themselves at little basins before

entering the water. Hakone has dozens of hot springs, some for either sex individually, others are mixed. The one we (I and some other participants of the conference) attended was mixed and it was slightly comical observing elderly ladies and men walking around in the nude quite uninhibited, with a small towel held in front. In contradiction to what I just wrote, I suppose that means there was a certain amount of inhibition.

Hakone is a very beautiful verdant area in the mountains with a fast-flowing river and a lake with boats looking like pirate ships. There are many museums in the area, including a famous outdoor sculpture museum. The hot springs are spread over a few miles, surrounded by large Ryokans (Japanese style hotels)

A second visit in 1990 was to attend a meeting on "Differentiation Therapy" held in Chiba, again not far from Tokyo, in a very elegant golf resort. The resort contained a wonderful French restaurant called Boulogne in the hotel Trinity. Interesting how the Japanese love to copy European culture in their names, and to my surprise there were French restaurants at many locations. I arrived at the Chiba resort in the evening and was shown to a cabin following registration. I entered the cabin, and went directly to bed, tired after the long flight, although I did notice small shoes by the other beds, and thought it peculiar. Well perhaps Japanese males had small feet! When I awoke in the morning I found I was in a cabin with female participants. The Japanese coordinator was not familiar with the name Milton and had placed me with the women. The next day I moved to a more suitable accommodation. Everything was very elegant, and no expense was spared in making us comfortable and providing us with gourmet food. I remember talking to one of the Japanese scientist at the opening reception and he remarked on the expensive sandwiches of sliced meat we were enjoying. It was the only time in his life he had eaten Kobe Beef, something normally unaffordable.

Professors Giovanni Rossi, from Rome and Sam Waxman from Mt Sinai Hospital, organized the meeting. I had collaborated with Giovanni while on Sabbatical at the virology institute in Rome. The meeting's object was to explore whether treating cancer cells with agents such as interferon or other cytokines would induce cancerous cells to revert to normal, and whether cytokines would inhibit cancer growth and thus be of clinical significance. From this was born the idea of using innate immunity and cytokines to inhibit cancer growth, now a very active area of clinical research, immunotherapy.

Giovanni died of non-Hodgkin's lymphoma in February 1994. At the time of the meeting or even in the following few years none of us knew he was ill. He continued working at the Sanita (equivalent to NIH) in Rome until the end of his life. It was because of Giovanni that I returned for a second Sabbatical to Rome to work with his students and group.

In 1992 the annual International Conference on Interferon Research was held in Tokyo. I convinced Mimi to accompany me.. She was hesitant, since she did not expect to enjoy the Far East, with its overpopulation, in particular a city like Tokyo with 20 million plus inhabitants. She also had doubts about the Japanese aesthetic and culture, including food. To her surprise she did enjoy the Japanese aesthetic, cleanliness and superb organization. She and some of the other wives of scientists explored Tokyo and surroundings and enjoyed the visit. After the scientific meeting we spent a few days on our own exploring central Japan, including a trip to Kanazawa to a textile museum, with a world -class collection of Kimonos. Kanazawa proved to be a very interesting town. It does not get many foreign tourists, and everyone went out of the way to be nice to us, offering to share food at the bar in the hotel, and encouraging us to order some local dishes, which were to our taste buds inedible (daikon pickled in Saki). It was during this trip that we acquired a taste for "Shabu-Shabu" and Mongolian Hot Pot.

In May 1993 I made a whirlwind speaking tour of Japan to promote the use of consensus interferon in the treatment of hepatitis C. Everything went so fast that I do not remember all the details. The trip was organized by Larry Blatt, representing Amgen. I was the scientist and he was the salesman. I gave lectures at a large number of University Medical Schools. This included Tokyo, Osaka, and Kyoto to mention just a few. I do remember staying in great luxury in Tokyo and Kyoto where I delivered numerous lectures. I stayed in Tokyo in the Hyatt in Shinjuku, a very modern section of Tokyo, with expensive hotels and restaurants, and in Kyoto in the very elegant Miyako Hotel, where breakfast was served on Royal Copenhagen dinnerware. The tour was very successful, and the Japanese physicians were very interested in the product. Wherever I went I found people very polite and hospitable. Apparently I also convinced them to use the Amgen Consensus Interferon in the treatment of hepatitis C. Amgen later sold the right of production and distribution to a Japanese pharmaceutical company, Yamanouchi.

While in Japan I followed up on an invitation from Dr. M. and Dr. D., who had worked in my lab as visiting scholars, to visit Hangzhou University in China and give a seminar. I flew from Narita, Tokyo to Shanghai where I was met by a driver from the university. This was before the economic boom and building spree in China. The drive from Shanghai airport to Hangzhou was interesting, past farms with farm laborers working under the most primitive conditions, fields being ploughed with oxen and primitive wooden ploughs. The road was in bad condition and it took us six hours to cover 100 miles. I stayed in the university guesthouse, which was very simple and felt quite Spartan compared to the 1st class hotels of Tokyo. The room was small, and I was provided with a thermos flask of hot tea rather than a coffee or teapot. The view from the window was grim; the guesthouse looked onto factories, and in the early morning

a group of people exercised outside. The air was thick with smog. I felt quite depressed and not really excited by my surroundings.

Dr. D. hosted a dinner that first evening. It was an elaborate banquet, but not to my taste. I indiscreetly asked what kind of soup I was imbibing and told snake soup. It did not spoil my appetite, but did not add to it. The next course was some kind of crab in its shell, which tasted as if cooked in rancid oil. I was able to drown out the taste with bad wine. I may have become quite tipsy as a result. However my host thought I really enjoyed the wine, so much so, that on my departure from China I was given a few bottles to take back to the States. I cannot remember the other courses but the meal went on for a long time.

The next day I gave my seminar, I assume on gene therapy or interferon. Following the seminar I had a frightening experience. The taxi driver took me to the wrong guesthouse or he did not know where the guesthouse was located. He let me out at a location that was supposed to be nearby. However I did not recognize the area and since no one talked English, I wandered around quite panicky. I could not read a sign nor talk to anyone. Eventually I saw a modern building in the distance that from its appearance could be a hotel. I made for it, and luckily someone at reception did talk English, gave me a map and instructions how to get to the guesthouse. I really don't remember how I got there, I think the receptionist called another taxi, but I eventually did and was able to rest so that my panic subsided.

Two students had been assigned to show me around the campus and town. They were a delightful couple. One of them Cheng-ju Hu joined my laboratory a year later.

I did see a more attractive part of the city. Beautiful parks containing extensive peony gardens. This was probably the Hangzhou Botanical Gardens. West Lake was very pretty with large old-fashioned ships sailing in the quiet waters. The lake is surrounded by mountains and has pagodas and temples on its banks.

What I found most appealing was the open-air ballroom dancing that was occurring at the cafes on the lakeshore. People seemed to be happy and enjoying themselves. I did not realize that the gardens of Hangzhou are world famous and this is now a UNESCO heritage site.

The next day and my last in China was to culminate in a trip to Shanghai accompanied by Dr. M. It had been arranged that her niece, a young girl of 16, or 17 would be our guide. She was attending an international training school for future diplomats.

Our troubles started at the train station. The officials would not allow Dr. M to accompany me in the same compartment. I had to take the compartment reserved for foreigners, and she had to sit with the “locals”. There ensued a shouting match between Dr. M and the officials, not only about the seating but I think also about the cost of the ticket, since she was paying for me, and there was a different rate for foreigners. Finally the official gave in and we sat together for the 2-hour train ride in the “foreigners” section, which was much quieter than the rest of the train.

On arrival in Shanghai, we needed a taxi to meet in the center of the city with Dr. Ma’s sister and her daughter. Again an argument occurred. There was a separate line for foreigners (who had preference) and another line for local residents. Dr. M stood in line with me, and there were shouts and abuse from other’s standing by who insisted that both of us get in line for locals. Eventually we got a taxi (I think through the foreigners line) and off we went to meet her sister. Dr. Ma was one very tough lady.

Dr. M’s niece was an attractive young girl, full of enthusiasm for the communist party and the regime. We started our tour in “downtown’ Shanghai, where there were numerous large department stores, and we passed by what appeared to be elegant restaurants with tables nicely set with good linen and china. I noticed the price for lunch was very reasonable, even with the skewed rate of exchange for

foreigners. When I suggested we have lunch in one of these, the niece (I can not remember her name) stated under no circumstance would she eat in a private, capitalist restaurant, but only at the “workers kitchen”. We ended up having lunch of chicken that was so blue and tough with age, that I could hardly eat it.

I wanted to go shopping to purchase Mimi some pearls or a coral necklace. Again the same experience: only in stores run by the communist party or city of Shanghai, not in any of the new developing “ private” stores. Thus it continued throughout the day non-stop praise for the communist party. Eventually we arrived at the Yangtze River. She pointed out to me the highest building on the river, and declaimed it as a “ Jew building”. I think she had no idea what she was talking about. It was the building built by the financier Sassoon, who came from a British- Iraqi Jewish family. She obviously was spouting what she had learned in school. At that time it was the tallest building in Shanghai and was in fact the first tall building to be built in the far east. It is now a hotel (it was at one time the headquarters of the “ gang of four”) . I imagine it is now dwarfed by skyscrapers.

After the tour they took me to my hotel, where no one spoke English. Since Dr. M or Hangzhou University was paying for this, she had avoided a tourist hotel. I ended up eating dinner by myself, since Dr. M had returned home.. I was shown a menu with pictures, and as a first course I ordered some dumplings, thinking I would get two or three. When the dish arrived I had sufficient dumplings to feed the whole restaurant. I tried offering some around but all declined. I cancelled the rest of the meal; the dumplings were very good and I went to bed gastronomically satisfied but stuffed.

I flew the next day back to Narita and then home. This really was an interesting trip. I had been wined and dined in luxury in Japan, and an “ honored” guest in Hangzhou. I had later many students from that university, all of whom I think, stayed in the USA, and have been very successful and contributed to science.

These include Gen-sheng Feng and Cheng-ju Hu both now professors at major US universities.

Trip to Rajasthan, and the Pushkar Camel Fare. Fall 2006.

In the early Fall of 2006, George Malacinski, a colleague in the biology department asked whether I would be willing to go on a trip with him to the camel fair at Pushkar, India. I agreed to read an article in National Geographic about the fair and respond in a few days. Mimi was not keen on my going, particularly at my age of 75, and she worried about my falling prey to some bacterial infection (correctly) However despite this, the idea appealed to me, and I came up with the 'brilliant' idea of co-opting two of my ex-postdocs in India, whom I knew were acquainted with each other. I contacted Prabhakar Ranjekar and asked whether he and Raman Kothari would be interested in joining us. They both agreed with enthusiasm. Prabhakar did more than I expected, he made all the arrangements for the trip, booking hotels and arranging for a driver and where necessary a guide. We were unfortunately too late to book a hotel at Pushkar, but arranged to stay in a fancy encampment set up for the period of the fair, which is attended by thousands. One report writes of 100,000 pilgrims. As we were to find out it is not only a camel fair or sale, but also a time of "carnival" and sideshows, with stalls selling jewelry, fabric, kitchen utensils, and even barber shops.

Our journey got off to a bad start. Our flights were planned as such that we had excellent connections. Indianapolis--Chicago-New Delhi (an overnight to Delhi) and then a flight the next morning to Jodhpur. Our flight from Indianapolis was delayed but it still gave us enough time to catch our connection. However although we landed in Chicago O'Hare with time to spare, we were stuck on the tarmac for over an hour before we could come to the gate. In that time our connection to New Delhi had left, we could actually see the plane take off without us on board. United placed us on a flight to London, Heathrow, with a connection the next morning. We arrived in London at some ungodly hour and spent about 12 hours in the airport. We were booked on an Air India or (Jet Air) Flight, which

compared to the United was luxurious, with linen tablecloths, real dishes and silver cutlery instead of plastic, excellent food and service. We arrived in New Delhi with about 1 hour to spare for our next flight, which left from the domestic airport, and not the international airport. The arrival in Delhi airport was a culture shock. After Heathrow it certainly was primitive. People were milling around trying to sell hotels and taxis to everywhere. The short 15-minute drive from one airport to the other for 150 rupees (45 to the \$) was in an old ram shackled car, which looked as if it were held together with "Scotch Tape". The car dodged everything from trucks, cows, people on bicycles, motor cyclists wearing sari's etc., it was frantic but we did arrive on time, and the people from Jet Air, an internal Indian company, were very helpful.

Once we got on the plane to Jodhpur, we could relax and breathe. Although a short flight of about an hour, the service was excellent. Delicious lunch, juice and wine, and we both felt rested. I had not seen Raman or Ranjekar for at least 20 or so years, and did not know what to expect. Although I had contact with Prabhakar, arranging the hotels etc., I had not heard from Raman Kothari in many years.

Prabhakar, his son and daughter-in-law, and Raman met us at the airport. Prabhakar was full of energy, and the tour organizer. Prabhakar was, as I remembered, except much grayer. Accompanying him was his son and daughter-in-law. His son was a deaf mute and a little retarded. His daughter in law was also mute. This made it very difficult to converse, since neither George nor I knew sign language. I understand that the son was not born that way, but as a child had developed meningitis. The family had moved to Canada for a time, so that the son could receive medical treatment. Apparently he was near death, and it was considered a miracle that he survived. Obviously there was lasting brain damage. Raman looked very old and quite ill. Large black rings around the eyes and marks across the nose, which I found out later, were due to the glasses he was wearing.

He has lost most of his teeth, and his jaw had thus collapsed. He struck me as being quite unhappy, and old perhaps he was ill and did not tell us. He died shortly after the trip.



George and I with our guard, to our left Prabhakar and Raman, and at the ends Prabhakar's son and daughter in law.

There was a great deal of excitement, and eventually we all got into the car and drove to the hotel. The Ranbanka Hotel, which was not in any of the guidebooks, was a pleasant surprise. It was a red sandstone palace with extensive

gardens. It had beautiful lawns set with tables which was the location for meals. The hotel swimming pool was unbelievable; set in the lawn with bougainvillea all around, very tempting. The hotel had been built as a palace for one of the sons of the Maharaja of Jodhpur in 1927.

The room we were given was huge; it was the size of four rooms together and the bathroom equally huge with bath, and two showers. George and I shared the room This was a first -class hotel by any standards. We had dinner on the hotel grounds, a buffet, typical Indian food, but not too spicy. Musicians and two dancers one of whom was a child performed throughout dinner.

Jodhpur is basically an oasis in a vast desert. When one comes in by plane, there seems nothing around for miles except a few isolated villages. That this is so we found out the following day when we got lost trying to find a specific village. This is a continuation of the vast Thar desert that stretches into Pakistan and Afghanistan. Jodhpur is not a large city by Indian standards, just over a million inhabitants, the streets are not crowded, and the air is not polluted, like other Indian cities. People in the streets were friendly, and the city is full of western tourists. It is one of the most visited cities in India.

After settling down and before dinner, we went for a walk (after being driven a few km) in the Mandore Gardens. The Gardens contained a variety of 16th century monuments, of the various rulers of Jodhpur and statues of religious significance. I photographed some of these. Many are brightly colored edifices or statues of gods and heroes made out of sandstone or rock. Most of the monuments were not visible at night, but I saw them on a subsequent visit. A kid playing a type of Sitar who was hoping for a few rupees accompanied us.



The next morning after a wonderful breakfast we visited the Umaid Bhawan Palace of the last maharaja of Jodhpur. This is one of the largest palaces in the world, finished in the 1930's. The workmanship was exquisite. It took 16 years to build with 3,000 workers. It reminded me of Ceausescu's Peoples palace in Bucharest. It gave the same impression of grandeur. However here the Maharaja was king, and what is amazing the people today still talk with respect of the current Maharaja, who lives in part of the palace. The rest of the palace is a hotel owned by the "royal family". Raman feels that this feeling of respect towards the

Maharaja reflects a slave mentality that dominates India. Certainly this is in contrast to the feeling of the inhabitants of Bucharest towards Ceausescu.

However the palace was built deliberately to give employment to local people during a crisis in the 1930's. It was completed in 1942, and has 247 rooms. It was not intentionally built as a hotel.

We then went on to the Mehrangarh Fort, very impressive, and massive both from the outside and inside. The fort was built around 1460 and is one of the largest in India. It resembles a walled city with numerous gates to enter. These gates are approached by a winding pathway, and it is possible to join a group on elephants that go back and forth from the plain to the entrance to the fort. There were spectacular views of the city (a blue city) from the fort, which is about 420 feet above the city. The architecture of the fort is very "Moorish". In the interior of the fort there are multiple galleries and pavilions. I took dozens of photographs of the palace, both within its walls and outside. It is a wonder.

In the afternoon at my suggestion we decided to go to see the Guda Vishnoi. This is a village about 22 kilometers from Jodhpur, famous for its peaceful atmosphere, its wildlife and carpet weaving. Our guide could not find the way and we wandered around the countryside for a few hours. This is a very barren, scrubland, very poor with a few pools of water. What struck me most was that the people are not very dark, and could be Afghani's or some other tribe. The countryside must also be similar to Afghanistan. We eventually found the carpet maker recommended in Fodor's who weaves flat carpets out of natural dyes. The designs are very much like "Navajo" designs. He told me that he carries them in his head; no paper plan and depending on the size of the rug a few people will weave it together.

We returned to Jodhpur for lunch in the old city. I wandered into a store specializing in silk textiles. Although very beautiful they were quite expensive. The salesmen were very aggressive and I fled from the store empty handed.

Jodhpur is known as the blue city. Many of the houses are painted blue, and when one stands on the fort and looks down, one sees a panorama of blue. Why blue?. There are many reasons given. One that it was the color favored by the Brahmins (upper class) and signified their dwellings. Another that the paint contained copper sulfate, and that this was used to eliminate termites a problem in this hot climate. Having spent time in the Middle East, I thought it may be a similar to the color used to ward off the evil eye. Despite the blueness of the old city, and its attractiveness from afar, it is of a city full of garbage, and very run down. There are not a lot of beggars, in the streets, and one is not hassled. However, it was extremely hot, the temperature in the “cold” season reaches 100 F.

One of the most striking sights is the color of the clothing worn by the inhabitants.. The Saris worn by women are very bright and colorful, many women wear heavily embroidered dresses, while others are covered up completely with an embroidered veil. The wearing of the veil possibly developed to prevent being burnt by the fierce sun. Men wear multi-colored, predominantly yellow-orange turbans. In the villages around Jodhpur the men dress mostly in white with white turbans. Our guide explained that they were from a different tribe. Although Raman says the white turban signifies a farm worker.

Our guide was a young guy, 28 years old, with a degree in law, but with no employment opportunities. He had never been outside of Rajasthan; We had a long discussion about the salaries of the middle class in India: about \$200 per month is considered good. They cannot afford

much, and get perks like a car with their jobs. Normally they cannot afford to stay in places like Ranbanka Palace, which cost about \$80 per day including breakfast and dinner. Although the concept of dowry has been officially abolished it is still expected and is the reason many hold multiple jobs. There is no social security system and everyone has to save for old age. In Prabhakar's case this is tough since he supports his son who is handicapped. I do not know whether he has other children.

By day 3 .I feel we have exhausted the city. The heat and dirt are getting all of us down. We returned to the Mandore Gardens, which during the day was more impressive than at night. The tombs of the past rulers of Jodhpur are a style similar to Angkor Wat. They date to the 10th century and are large carved mounds. The park itself was disappointing, in terrible condition, with garbage everywhere. There are monkeys, dogs, and cows at every corner.

Our Sitar player and a younger version accompanied us everywhere. I had to give them a few rupees. We then drove to a small lake (man-made?) outside the town. There was a quiet small resort on the lake, (Lake View Hotel) where we stopped for tea, and a lively discussion with Prabhakar and Raman on life , or our respective values.. We then drove around Jodhpur with here and there a nice building, but no obvious planning or zoning. We stopped at a very good restaurant for lunch, however my stomach could not take much. I am not ill, I just seem to be overeating with all the lentils, beans etc. I prefer the yoghurts. The restaurant was the Kalinga, a popular restaurant near the railway station.

The afternoon and evening were a waste. We thought of doing some shopping, but either the items were too expensive (jewelry, very beautiful, but in the 100-1000s dollar range) or were just too junky, K-mart or Target style. Dinner was the same as other nights, on the lawn with music and dancers. However the food was the same as the night before, except for spinach soup,

which was just water with boiled spinach and did not have much flavor. I am quite partial to Indian deserts. I would rank the food at the hotel as moderately good.

The next day we set out for Pushkar, the high point of the trip. We arrived in Pushkar around noon. The town was very busy, lots of stalls and hustlers everywhere, and people trying to sell you everything. We drove to the camp site in the dessert. Noon in Pushkar was unbearably hot. My first reaction on seeing the camp site was “ my god, Mahane Nathan”. That was the name of the camp near Beersheba, in Israel, where I did some army duty. The tents were as described in the brochure, large, with full bathroom and shower attached., unlike Machaneh Natan. We had lunch in a large marquee, the food was good, but again old memories of sweat dripping in the soup took me back to other times.

The camel fair itself was a disappointment. The camels are not really decorated. They have been shaven in different places to make a decoration. The major decoration was the inverted swastika. We drove around the fair and town in camel drawn wagons. On dismounting from the wagon I wandered around the town. I braved the crowds and went into the temple, which was crowded. I hate taking my shoes off and walking in the dirt.. We then went down to the lake where a young man cornered me and gave me marigold heads to throw into the lake. He then insisted I throw roses into the water and say some blessing after him. Of course it cost 100 rupees. We returned to the camp for dinner and a night of entertainment, which included quite a spectacular fire-eater. This is the exotic orient! Next morning George wanted to take a camel ride, as did Prabhakar’s children. Raman went for a dip in the holy lake, and I just sat in the car. We then drove to Ajmer, which is a very large city with a small lake and in the mountains. It is the site of a Sufi Fort, Ajmer Sharif Dargah, the domed shrine of the Muslim Sufi saint Garib Nawaz. We climbed up to an old fort on a serpentine one-lane road .The fort turned out to be a collection of small shops and houses

surrounding the mosque. This was different from the rest of India. The boys (men) wore white and had head covers. I had to turn my cap around to conform to the " kippah". Inside I was again led by one of the young men to a "priest" who covered my head with something like a prayer shawl, and recited a blessing over me in Arabic. Surprising many Hindus come to be blessed. Prabhakar's felt very uncomfortable in this situation. I found the similarity with Judaism fascinating. In the middle of the mosque was a "Bamah" in which the blessing was given. The women (Moslem) in black were covered, the Hindu women in color. I did not realize until writing this, that this was an important Sufi Shrine.

George was asked to leave the mosque compound because he was wearing shorts. Again it was the heat of the day and we returned to the encampment around noon. I tried to sleep after lunch but it was just too hot.

Day 5. We had quite a sandstorm last night. It started around 3.0 a.m. and blew all night. The tent shook, and everything filled with sand very quickly. Apparently the tent used as a dining room collapsed, since there was chaos at breakfast, one tent fulfilling the need of two. Amazing the number of tourists who come to Pushkar. I took some more photos of the camels and we departed. The town is so full that we had to go around the whole city to get out, since the main roads were closed off. We again drove to Ajmer and booked into the Man Singh palace, part of a chain. It was holiday Inn or Days inn standard room, but at a cost of \$200 per room. This was due to the Puhskar Fair.

We went to see the burial place of a Dervish Priest, probably Ajmer Sharif Dargha. The streets leading to the mosque were crowded with animals and people. Cows everywhere, even wild pigs and goats scavenging in the streets. There was the smell of open sewage. There were beggars in the hundreds, deformed men and children, women with babies etc. It made me feel sad and want to give them money, but Raman and Prabhakar's insisted I not give them

anything. I felt bad about this, since a few rupees will not hurt me. I decided, as did the others not to go into the mosque. None of us could take it! Going back to the car we were constantly harassed by beggars.

That this country can ever become an economic power without changing is hard to believe. . First they have to get rid of the street animals. You cannot drive without encountering cows every few meters.

I have the feeling that if it had not been for the problem with his son, Prabhakar would have left India a long time ago.

In the afternoon we went to a Jain temple, Fantastic workmanship but very neglected. I also went with Raman to the market to find a perfume shop. They make all kinds of extracts for perfume.

Next day we drove to Jaipur to the Om Tower Hotel. We then went to the impressive Amber fort. on the top of a mountain just outside of Jaipur. Actually the town is called Amer. The fort is built in the Mogul style and similar in many ways to Granada. Jaipur could be a beautiful town if it were not for the terrible traffic and the run-down nature of the city. It is a little cleaner than other Indiana cities I have seen. .. We had a guide join us, not particularly liked by any of us. . He only wanted to show us what interested him, and mostly it was handicraft and carpet stores, where I suspect he hoped to receive commission. He even chooses the restaurants for us, but I insisted on going to one of the restaurants described in the guidebook, and although he protested we ended up going there and it was very good.

On the next evening we ate in the revolving restaurant in Jaipur.. The food was good, and Raman was delighted with the classical Indian music. Later we went to the city palace, where the Maharajah of Jaipur still lives, but part of it is now a museum, we also visited the observatory which was a 17th century structures for calculating time, months, phases of the moon, astrological clock all by the interrelationship between sun and shadow. Quite a marvel.

Although we went again to the revolving restaurant in the evening, I began to feel sick. The next day I awoke with terrible diarrhea, and started to vomit. It got so bad that I could not even take antibiotics, nothing would stay down. I thus requested by noon that they call a doctor. I must admit the hotel staff was very good and kind. They cleaned out the room, disinfected it, and the receptionist came up a few times to see how I was doing. The hotel was not very clean, and that may have been part of the problem. Anyhow the practical nurse came, took my pulse, said it was too high, and indicated that I needed immediate attention. A physician (a Dr. Bandhari!) came, said that I was seriously dehydrated, and that the peristaltic motions were 6-8 times normal, and that either I go to hospital or he had to fix up intra-venous feeding in the hotel. We did the latter, and by the evening I felt good enough to talk to George about changing our plans and flying home instead of going on to Pune. . These arrangements were made through help of American express (insurance) and we left the next morning for the ride to Delhi. Since our flight was not until Tuesday, we stayed in Delhi overnight. My impressions of Delhi were more favorable, a modern city with good highways, beautiful stores, tree lined streets etc.

It took us about 24 hours to reach home.

My Research

My research topics varied a great deal during my tenure at Indiana University. Although I was hired as a bacteriophage geneticist, and my first NIH grant was on this subject, I never initiated a program in this subject. Since my post-doctoral experience was in more general molecular biology, and I worked in John Holland's laboratory on animal viruses (picornaviruses.. small RNA viruses) and tRNA modifications I initially did research in these areas. A short time later with the accidental discovery of viral oncolysis (virus induced destruction of tumors) I pursued research in viral oncolysis later known as viral therapy. Following a meeting in Denver with Dr. T. Puck, I started isolating mutants in CHO cells (Chinese Hamster Ovary) with an eventual aim of entering the field of gene therapy. Since the mutants we isolated were selected in inhibitors of purine salvage enzymes, I thus found myself exploring the enzyme adenine phosphoribosyl transferase, an enzyme of the purine salvage pathway. A second class of mutants were sensitive to interferon-gamma due to a lack of an enzyme in tryptophan metabolism, and this enzyme was studied further. Unfortunately this was too much for any one lab to handle, and basically the research began to flag. Another project as the result of the connections with an ex-student developed into the characterization of a "novel" interferon and eventually its use in the treatment of hepatitis C, ending up with my being involved in a large clinical trial of interferons. Looking back these were far too many topics for any one laboratory, and to keep the lab afloat, I was constantly writing grant proposals (often bad ones). At one time there must have been 20 or so graduate students, and post-docs in the lab, mostly from China. I have lost touch with many of them.. My lab was to a large extent student driven, and that once a problem had been decided upon, the student was left alone to pursue his or her

interests. Of course I gave advice and read all publications and contributed to them.

I will discuss here these different topic in more details.

The tRNA project.

The tRNA project began in Dr John Holland's lab while I was a post-doctoral fellow. It stemmed from the observation that specific viruses such as mengo and bovine enterovirus-1 produced few virus particles in some cell lines, yet gave a very productive infection in other cell lines. One hypothesis proposed was that differences in population of tRNA between cells or selective use of specific tRNAs might explain these differences, i.e. if a specific isoaccepting species, such as valine tRNA were absent, inactive or modified, this could prevent translation of viral proteins. As a first step in this investigation we examined the methylated albumen kieselguhr (MAK) column elution profiles of specific charged t-RNAs from MDBK and Hela cells, two of the cell lines used one permissive for virus infection and the other not, but found no differences. However in comparing other cell lines, in particular tumor cell lines, differences in elution profiles were detectable between Ehrlich Ascites tumor tRNAs and "normal" mouse cell tRNA (extracted from liver) as well as between other tumors and non-tumorous material.

To summarize the first paper in the series: specific transfer RNA's of mammalian origin (from organs and cultured cells) were compared by double labeling using tritium and carbon -14 labelling and elution from MAK columns. We were looking for differences that might be organ or tumor specific. No major differences were detected between tissues or species for the major tRNAs .

However, differences were observed in the elution profiles of minor tRNA species of glycine and serine. Major differences were observed in the elution patterns of phenylalanine, serine, and tyrosine tRNA derived from Ehrlich Ascites tumor cells when compared to normal mouse tissue. (Taylor et al PNAS 1967). However it should be noted that EAT cells have been in culture for many generations. This was followed with a more in-depth study of the changes that occur in tyrosine tRNA, demonstrating changes in MAK column profiles between tyrosyl tRNA from fibroblasts compared to epithelial cells, white blood cells and specific tissues and organs. We proposed a specific type (fibroblast type) of tyrosyl- tRNA was present only in such cells or in retrospect it could just be the result of base modifications in the tRNA.. Other scientists had found similar chromatographic modifications of specific tRNAs following virus infection, e.g. during Herpes virus infection, and others during T4 phage infection. The working hypothesis was that these tRNAs were either synthesized or matured in response to differentiation or virus infection. We proposed that these results might involve methylation patterns of the tRNA as suggested by Borek and colleagues.

When I arrived at Indiana, I continued this work, examining phenylalanine tRNA. I assume that the reason for picking phenylalanine tRNA was that it was the easiest to work with. Although differences in profiles could be found between EAT cells and other mouse cells, no difference in codon binding, or incorporation into protein could be found. At this stage I suggested to Greg Zeikus, a graduate student to compare tRNA profiles from a series of mouse liver tumors, and also in the delving sea urchin, in collaboration with one of my colleagues, Rudi Raff. For these studies we used a series of liver tumors known as Morris hepatomas. We therefore studied tRNA from 3 hepatomas of varying degrees of differentiation, namely 9618A (highly differentiated), 5123D(well-differentiated), and 3924A (poorly differentiated). We did find differences in the profile on reverse phase columns between a number of tRNAs indicating that different tumors might have

altered isoaccepting species of tRNA, not necessarily related to growth rate or extent of malignancy.

Shortly after arrival at IU the MAK (methylated albumen kieselguhr) column used for this type of analysis was replaced with the BD-cellulose or reverse phase column. (Benzoylated DEAE -cellulose) Such columns gave much superior resolution and identified more peaks of each tRNA than found on the MAK column. In fact some of the variation reflected different techniques in analyzing tRNA. In October of 1970 I was invited to attend a NIH Fogarty International meeting on modifications of tRNA. The main scientist behind this project was Ernest Borek, whom I remember as a towering figure. He was working predominantly on the role of methylases and methylation of RNA and how it affected function. He was working with his student (and later his wife) Sylvia Kerr and one of his post-docs (or students) Robert Gallo, who became famous later on for the discovery of human tumor viruses and later still on the controversy surrounding the discovery of the AIDs virus. . Borek was of Hungarian origin, and like other Hungarians scientists I have met, could never be wrong! It was Robert Gallo who claimed later on at another meeting that he was responsible for my invitation to this meeting. Our work was well received and was comparable to what other labs were doing, discovering differences in tRNA profiles between normal and neoplastic tissues without being able to identify the function of such changes. Alan Volker, a post-doctoral fellow from Newcastle, England did most of the work on the hepatomas. We concluded that the reverse phase columns gave us the best resolution. A very efficient lab technician, Suzanne Prather, who later on became a Ph.D. student, helped Alan.

Around 1972 a post-doc from India joined the lab. This was Raman Kothari. Raman was a small, dark, very intense, hard- working individual. He came by

himself to Bloomington without family since he was afraid that the US culture would corrupt his family. He was a very devout Hindu. His apartment was decorated with pictures and small statuettes of Hindu gods. He was a very ambitious scientist, and I think a good one, who was keen on publishing as much as possible. He loved to write reviews, and we published a whole series of reviews on column chromatography. He did most of the writing. On rereading these I realize how informative and good they were. They appeared in the Journal of Chromatography. One of the first reviews also contains the name Shankar. This was a student of Raman's who had come to the US for a heart transplant. He must have been one of the first of these done in Huston, TX. I do not know who the surgeon was but I think it was DeBakay. However Shankar came to visit Raman before leaving for India. While here he became seriously ill and was rushed to the Bloomington Hospital. He had contracted hepatitis B while in the Huston hospital, probably from blood transfusion. Although he did not have any money or health insurance, the Bloomington Hospital treated him without payment. This was a surprise after hearing all the stories of hospitals than turn people down. He stayed on for a few weeks after treatment, worked for a short while with Raman, writing reviews and then returned to India. did a tour of India together. He was still working, in a biotechnology company.

Raman influenced me scientifically in that I became an "expert" on HPLC (high pressure liquid column chromatography). He had a very strong work ethic, and was very principled. He did not approve of the Western way of life, and I think he was in the States not only for science but to make money (he lived very frugally) so that he would have enough for a dowry for both his daughters. In fact he did not need the dowry since both daughters went eventually to university and became physicians. He had a small apartment in University Apartments, cooked his own food, and would never eat out. We occasionally sampled his cooking, which was good but completely vegetarian and very limited mostly

being rice or lentil dishes. Raman decided to spend two years in Bloomington, and after one year his wife joined him. She was a charming person, not as fanatical as Raman. She left the children with Raman's parents, apparently a custom in India. Her father also came during this period to visit. He was the opposite of Raman, a portly businessman who knew how to have fun, drank alcohol, and went off on his own to explore different parts of the US. Later on I got to know Raman and wife more intimately when I spent a few days staying with them in Baroda, India.

By this time the lab had expanded hugely. Bob Fleischmann had joined the lab from Purdue University. He had been a Ph.D. student of Ed Simon, and had worked on interferon. Bob and his wife Chris were both biochemists-virologists. Bob tried working on the APRT project, which I will describe later, but could not give up on interferon. It was he who introduced me to this whole field of research, which was to have a major impact on my life. Bob was a very meticulous worker, and found it difficult to accept the variability we found working with tRNAs and later mammalian cell mutations. He became very close friends with Raman, a friendship that continued for many years afterwards. Bob later on became an editor of the Journal of Interferon Research, and played a major role in the interferon society. After completing his post-doc (not a very productive one) he found a position at the U. Texas Medical School in Galveston, where he resided for a long time. He is currently at the University of Minnesota.

Another student who joined the lab early was Andy Ouellette. He was a very affable, and sociable and got along with everyone. He worked on the tRNA acylating enzymes. Unfortunately this was not a great project, since we were unable to really find any differences between tumor enzymes and normal enzymes. The choice of projects, which was my doing, was not the best in retrospect. However Andy spent three-four years working on this project, which resulted in a couple of publications.

A little later another student, a transfer from physics joined the lab. This was San Wang. In collaboration with Raman Kothari and Paul Hung a colleague from Abbott laboratories, we set out to examine whether infection with avian tumor viruses altered the tRNA spectrum, and also to look for tRNA in the virus itself. I really do not remember what triggered this project, whether it was my idea or Paul Hung, or San's. We did discover that tumor viruses contained not only their own genomic RNA but also a 4S RNA, which was an active tRNA, charged by cognate enzymes. We unfortunately concentrated on the methionyl tRNA, and did not recognize, as was discovered later that some of these tRNAs interacted with the viral genomic RNA and acted as primers of the reverse transcriptase. The tRNAs we examined were packaged with the virus but did not play a role in the virus life cycle. Despite this we produced two papers, one published in Nature New Biology, the other in BBA. We then expanded our study to include other RNA tumor viruses of avian origin. In all cases we found an extra peak of methionyl tRNA, that was packaged by the virus. I could not find any follow up papers, and this appears to be an area of research "abandoned". With the discovery of the reverse transcriptase and role of tRNA as a primer, a different emphasis was placed on this type of research. Robert Gallo, who had published many papers of tRNA differences paralleling our work, now concentrated his efforts on the mechanism of the reverse transcriptase and eventually human tumor viruses.

San was a very shy hesitant individual. He had a Ph.D. in physics, received another Ph.D. in biology and then went on to become an MD. He is still active in research, and as a practicing physician at Mass General and associated hospitals. However I note that as of 2009 he is still only an assistant professor.

Thus ended the tRNA story. The techniques were not available to sequence and analyze the tRNAs, and in fact the research was not going anywhere. Numerous groups have made the same observations without coming to any conclusions.

Subtle differences have been found in phenylalanine between liver and tumor cell. The difference lies in the extent of modified guanine derivatives adjacent to the 3' end of the anticodon loop and in O-methylation in the 5' portion of the anticodon loop. The hypo modification in the tumor affects the rate of translation and incorporation of phenylalanine. However none of the data supports our original hypothesis that the levels of tRNAs would be crucial in tumor development or differentiation.

Cancer Therapy: Viral oncolysis.

As a post-doctoral fellow in the laboratory of John Holland I learned to grow tumor cells in the body cavity of mice. These were tumors that arose spontaneously in mice, had been grown in culture or maintained by passage through mice for many years, were easy to transplant, and grew rapidly. They were 100% lethal to the mice.. One held the mouse by the back of the neck, as one would pick up a cat, and injected the tumor into the body cavity. Within a few days the abdominal cavity puffed up like a balloon. It was rather horrible , and after a week to ten days the animal could barely move. The tumor cells were harvested by withdrawing them with a syringe from the body cavity, and cells could be kept “ alive” by placing them into a flask with media. We used these cells for RNA isolation. In particular this approach worked with standard tumor cells lines such as Ehrlich Ascites Carcinoma (originally isolated by Paul Ehrlich) and sarcomas. We could harvest large amounts of cells, free of contamination.

I really do not remember how the idea arose to produce virus in these tumors after transplanting them into the animal. I thought it might be a way of reproducing the virus in large amounts without the need of cell culture. I myself did the original experiment, of injecting bovine enterovirus-1, which we happened to have handy (again brought with me from the Holland lab), and injecting the virus into a few animals. To my surprise the tumors regressed within a day or so and the mice returned to a healthy appearance. I was very excited by this discovery and felt I had made an important novel scientific discovery. A cure for cancer! The magic bullet! I decided this was worth pursuing further and asked an undergraduate (JD and now a retired professor at Lexington Kentucky) working on an independent project to test this further, and discussed the phenomenon with some of my graduate students. We then tested the virus,

(BEV) against a large number of tumor cell lines. In all cases, both *in vivo* (in the mouse) and *in vitro* (cell culture) the virus destroyed the tumors.

Quite a number of students were involved in this work, including Suzanne Prather, the wife of Larry Prather who was the department “tech” person. While studying for the Ph.D. she was diagnosed with breast cancer. After receiving her Ph.D. she took a position at the University of Nebraska, but died a few years later. She was a very strong-willed person, not wanting to give up, and fought her cancer vigorously, suffering through many surgeries. She would come to the lab on crutches as the cancer spread.

Others involved in this work include Gerry Sedmak, a red headed graduate student, who was difficult to distinguish from his twin brother, who was also in the department. The brother, James (Jim) went on to work in the field of interferon. I probably have met them both at scientific meetings, not able to tell them apart. Others working on this project were Barbara Cordell-Stewart, and a visiting physician Magda Souhrada. Magda had recently arrived from Czechoslovakia, having fled after the Soviet invasion of the country. Her husband had found a job in the physics department, and although a MD she could not work in that capacity until she passed exams to practice medicine. After a year or so she did begin working with Dr Riley Schaffer, a local pediatrician. Barbara was a graduate student.

A perusal of scientific-cancer literature indicated that this unfortunately was not a novel finding but an old phenomenon, reported many years ago. Viruses of various origins were used to treat cancer in both the US and in Japan going back to the 1940's. This was based on an observation made around the 1900's that some patients with cancers went into remission after a viral infection or rabies vaccination. At that time viruses were still unknown entities. It was not clear in the 1940's whether this resulted from activation of the immune

response or due to direct action of the virus on the tumor, or a combination of both. A large body of research was performed in the US in the 1940's and 1950's testing various viruses, particularly exotic ones, that is viruses that occurred predominantly in the tropics, on terminal cancer patients ,with only limited results. Most patients died, but there was some objective regression of tumor mass. These patients were terminally ill when treatment was initiated. .This research was discredited in the 1950's when it was found that patients in one hospital had been injected with cancer cells to test the effect of various anti-cancer agents including virus. In most cases the injected tumors were rejected by the immune system, although occasionally they had to be surgically removed. The researcher involved was later criticized for this type of work, since he had not gone through the normal protocols for protection of human subjects even at that time. I am not certain there was a human subjects committee.

A group in Japan used mumps virus to treat a large number of patients with some transient effect on tumor growth. There was some limited success with the prolongation of life of terminal cancer patients, but the treatment was not performed in sufficient numbers to be statistically significant. The experiments in Japan, although performed better than those done in the US had very mixed results. It was obvious that before this could proceed to the clinic there was need for considerable basic research.

I therefore asked some graduate students and undergraduates to work out the basics: and we decided to use BEV-1 as a model viral system. We published a number of papers on viral oncolysis, or virotherapy as this phenomenon is now called, in influential journals (Nature New Biology, PNAS). BEV-1 destroyed tumors of various kinds, not only ascites tumors and not only in mice. In collaboration with Dr. E. Hodes at the Medical School we showed that the virus also destroyed tumors of rabbits and dogs. If we could obtain the funding we were set to begin clinical trials. However I, and others working in viral oncolysis,

found it difficult to obtain grants. The idea that viruses could be used as therapeutic agents in the 1970s was way before its time. Until very recently it was difficult to get funded by the NIH for this type of work.

When we published our papers on viral oncolysis, the local and national press picked up the story, after a press release by the IU news department. I received letters and phone calls from as far away as Australia asking for the virus to treat tumors in dogs and in humans. I constantly had to point out that this was an experimental system. I had a visit from two scientists from Japan, Dr. Teruo Asada and Dr. Yamanishi from Osaka University, to consult and discuss their results with mumps virus. The Japanese scientists came laden with presents. One of my colleagues Bob Togasaki acted as interpreter. I just noted on Dr. Asada's paper in *Cancer*, 1974, that he thanked myself, and Dr. Hodes of Indianapolis as well as Dr. Togasaki for discussions of the work. I remember that we hosted them at home, Mimi prepared an elegant dinner (as usual) and they came laden with presents. It was a bit like Xmas, presents for Mimi (pearls), presents for the house, for Dr. and Mrs. Togasaki. I did not quite know how to respond, but Bob Togasaki's advice was not to reciprocate otherwise the exchange of presents would go on forever. In a way this was my moment of fame. The work was quoted in many sources. I received acclaim from the American Cancer Society, and I found it very hard to let go.

However because of lack of funding viral oncolysis lay dormant as a project for quite a number of years and I became involved much more with other projects. One can question my judgment, in whether it was wise to give this up, or in fact would have been better to re-apply for funding and continue the work. My attitude, which in hindsight was probably wrong, was to give up on a project that was not funded the first or second time around. I have learned from my colleagues and having been on many grant study sections, that it may take multiple re-writes to satisfy everyone on a study section committee, and to “

knock” the score up by a few points so that it is within the fundable range. However at that time there seemed no future in viral oncolysis. I went for a job interview at the university of Georgia in the late 1970’s (I am not certain I would have even moved), but although my talk went down well, my host, the chairman of the department took me aside and told me he thought I was working in the wrong area. An area without a future. He may have been correct, but it is difficult to give up an idea that seemed so promising. Today I am much more skeptical about research in general, certainly as to its applications. Basic research for knowledge sake is something else.

Today, fifty years later experiments treating cancer with a virus is still being pursued and in China viruses (adenovirus and herpes viruses) are used in the clinic in combination with chemotherapy or other treatments. Quite a number of biotech companies have been launched with this idea, and just as many have folded. Amgen, the company I worked with in the 1990’s has just bought out another biotech company B-vec for 1 billion dollars to explore viral oncolysis. Currently a modified herpes virus containing a gene associated with the immune system (GM-CSF) is undergoing phase 3 trials for the treatment of melanoma and head and neck cancer. The reported rate of remission for melanoma is 25% with the virus containing the GM-CSF gene and only 2% using GM-CSF alone. Other oncolytic-modified viruses are being tested in the presence of chemotherapeutic agents with some success. It appears that the obstacles to viral therapy are still the ones we discussed in the 1970’s. These include how to get the virus to the target, the immune and interferon response against the virus, the development of antibodies against the virus, and possible adverse effects of the virus. These same obstacles have hindered progress in gene therapy, and are difficult to overcome. However viruses have been engineered, by deleting or adding genes, sometimes from non-viral sources that overcome many of these difficulties.

Viral oncolysis reappeared again in my own career many years later when we did experiments using another virus (adenovirus) in gene therapy experiments using a virus carrying an interferon gene. That is a separate story under the heading **gene therapy**. Perhaps I should go back to BEV, modify the virus, and restart my career.

Somatic Cell Genetics

One of the first projects initiated in my laboratory was the isolation of mutants of mammalian cells in culture. The major advances in molecular biology, such as the solving of the genetic code, that occurred in the 1950-60's were due to the use of specific living systems, such as the bacterium *E.coli*, bacteriophages (viruses that attack bacterium) that replicated in *E.coli*, neurospora (a type of mold) and yeast. Mutants of specific genes, such as the tryptophan synthetase gene, a gene coding for an enzyme necessary for tryptophan (an essential amino acid) metabolism, and genes involved in lactose metabolism were isolated. With the discovery of DNA as the genetic material it was possible to construct mutants (single base changes or "frame shift" mutations) resulting in identifiable changes in the proteins coded for by the DNA using known mutagens. The work of Yanofsky and co-workers showed that there was co-linearity between the gene and the protein, a unique change in the DNA at one site could be related to a change in an amino acid at a related site on the protein. One could identify the change that occurred at the level of DNA from protein (amino acid) analysis. Having come from this background, I realized that it would be essential to establish a similar system in mammalian cells if one wanted to do a similar analysis in higher organisms Others had also arrived at this conclusion, and Ted Puck, at the U. Colorado, working with various cell lines found that Chinese Hamster Ovary Cells (CHO) could be grown easily in culture, colonies could be developed from individual cells and harvested (this was called cloning) and using known mutagens and ultra-violet light that one could isolate mutants of such cells. Because of loss of chromosome (or chromosomal rearrangement) the mutation frequency was quite high, since many areas of the genome in cells in culture were haploid and some of the cell lines used already contained mutants.

After one year in Bloomington I received an invitation from Howard Rickenberg, an ex-member of the microbiology faculty at Indiana, to visit him in Denver, and consider a possible move to that city. The primary appointment would be in the Jewish Children's Hospital with a secondary appointment at the University of Colorado Medical School. While in Denver I visited the laboratory of Dr. Puck and learned from him the basics of growing CHO cells and brought back some cells to my lab.

As far as the position at Jewish Children's Hospital, now known as National Jewish, I turned down the offer.. We were really not ready to move after one year in Bloomington, and I was afraid that being in a hospital or medical school would place me at a disadvantage, both in terms of having sufficient graduate students, and being a Ph.D. rather than an M.D. It turns out that both of these worries were misplaced, since the individual who took the position, Norman Pace, was able to develop a very successful program and career, better than my own. He later ironically would move from Denver to Indiana, and much later back to the University of Colorado.

Thus on return to the laboratory I started looking for mutants in Chinese Hamster Ovary (CHO) cells. I used a technique developed by Puck, in which bromodeoxyuridine (a toxic compound incorporated into DNA) was used for selection. Under normal growth conditions (minimal media) mutant cells would not take up BuDR and would survive selection whereas wild type cells would incorporate it into DNA and following exposure to light would die. By varying the conditions of the media, adding essential amino acids, or purine and pyrimidine bases we were successful in identifying and isolating a large number of mutant cell lines. We, in particular, selected cell lines that appeared to be deficient in purine metabolism although other mutants were isolated and put aside for further work. Further experimentation indicated that these first cells were

defective in the purine *de novo* pathway. Since this was an exciting observation and no one had isolated such mutants before we sent the manuscript to Science, where it was published without problem in 1971. The coauthors on this paper were Judy McColl who was my lab technician (or MS student) and Magda Souhrada, a young physician who had recently escaped from communist Czechoslovakia. Magda was working in the lab until she could obtain permission to work as a M.D. She later joined Dr. Shaffer, a local pediatrician. I think she and her husband Josef eventually left for Colorado. I have pieces of memorabilia from them, an illustrated guide to Prague, and a recording of Dvorak symphonies. Both have been extensively used. However I do not know what eventually happened to them. Perhaps they returned to Prague.

We then analyzed a sub-group of these mutants to identify the steps defective in the purine pathway. Rhoda Feldman, an excellent post-doc did this work, Using standard biochemical procedures we identified that these indeed were mutants of the *de novo* purine metabolic pathway . Rhoda Feldman left the lab when her husband Fred received a position and they went on to successful careers in biochemistry. Fred worked in the pharmaceutical - industry for many years, but both retired recently to New Hampshire.

Although we struggled to utilize these mutant cell lines for some time, we had difficulty analyzing them, because of “leakiness” in activity. This was the days before gene cloning and my laboratory was not truly a biochemical lab. I did not have the expertise to proceed with further analysis. Perhaps if I had been persistent and hired a biochemist as a post-doc after Rhoda left we might have made progress. Unfortunately I also became involved in other subjects, such as viral oncolysis, which took a lot of my time and effort.

During this period I became very familiar with other laboratories doing somatic cell genetics, in particular the labs working with the Lesch Nyhan syndrome or HGPRT deficiency. This was a horrible disease of humans resulting in severe

mental retardation and self- mutilation. It has been shown that it was quite easy to isolate mutants at this genetic locus, since it was on the X-chromosome and the loss of this enzyme resulted in resistance to thioguanine in the medium. De Mar's group in Wisconsin and Puck's group in Colorado had shown that it was possible to isolate mutants resistant to the adenine analog 2,6 diamino purine in cells in culture. Since the isolation of drug resistance was easier than the isolation of auxotrophic mutants we decided to concentrate our effort in isolating and characterizing APRT mutants of CHO cells. Such mutants after mutagenesis occurred at a high frequency. Looking back at the literature of this period somatic cell genetics as it was coined was a very competitive field. Many other labs were doing similar work, with similar aims, and all appeared to be well funded. We isolated a series of APRT negative mutants after treatment of CHO cells with commonly used mutagens such as ICR-170 and nitrosoguanidine. These cells grew in 2,6 diaminopurine which is normally toxic to wild type cells. The ICR induced mutants were assumedly frame shift mutants since they did not have any APRT activity and did not revert, whereas the others had some remaining activity and did revert to wild type levels. These mutants were described in a paper in Somatic Cell Genetics with authors Jim Pipkorn, Rudy Pozzatti Jr., and Mariko Tokito. Apart from describing the mutants we also looked at the effect of mutation on the feedback of de novo purine biosynthesis and on the regulation of the de novo pathway. It appears that the feedback loop requires ATP, defective in these mutants, and there was really no effect on purine de novo synthesis.

Jim Pipkorn was a very bright student from Michigan, and he began working towards his Ph.D. with great enthusiasm. However he came from a farming background (mink farming) and his wife was not enthusiastic about his staying on as a student (thus he told me) and he left after two years with a MS degree. Rudy Pozzatti Jr. was an undergraduate in the lab, the son of a well -known Bloomington artist and faculty member. He was a very hard worker, and

appeared to enjoy science. His experience in the lab led to his going on for a Ph.D. in biochemistry, to Stony Brook, and then to NIH. Rudy Pozzatti is current co-chief of the National Human Genome Research Institute, at the NIH. Mariko was a technician, whose husband was a music student with James Pellerite, a foremost flutist. She was a wonderful technician, very fastidious, Her husband became the 1st flautist with the Philadelphia Symphony.

The isolation of the APRT defective mutants led to multiple papers on APRT and regulation of purine biosynthesis. One of the phenomenon studied was that of purine less death. Today cell death is described in terms of apoptosis, that is a mechanistic pathway to describe how cells die, step by step, rather than by necrosis which is what occurs when some viruses infect a cell, and cell essentially bursts. William Hrynuik coined the term purineless death in a paper in Cancer Research in 1972 describing cell death after treating cells with methotrexate. Such cells ceased DNA, RNA and protein synthesis but could be rescued by the addition of hypoxanthine (a purine). We thus examined the effect of starvation for adenine in the purine mutants. As expected initially DNA and RNA and protein synthesis decreased, but after a time these resumed due apparently to breakdown of ribosomal RNA, which replenished the nucleotide pool. When a picornavirus was added to the “starved” cells virus replication occurred normally, indicating either the pool was large enough to support growth of the virus or that nucleotides were “salvaged” from other components. At that time we were unaware of the presence of different species of RNA other than ribosomal, messenger or tRNA. However labeling of the RNA did suggest that the nucleotides came from ribosomal breakdown. This was published in J. Biological Chemistry in 1977. A lot of this work was done by a post-doctoral student, Kailash Gupta. Kailash was originally from India but had spent a short period in Hungary as an ‘exchange” student. He was a very industrious individual and contributed greatly to the overall problems related to purine metabolism and

later other types of mutants. After leaving the lab he did a second post-doc at St. Jude's hospital in Memphis, and then had a tenured position at Rush Medical Center in Chicago. He then left this to join NIH as a director of one of the AIDS programs. At NIH he oversees a portfolio of grants, contracts and program projects with a goal to promote, encourage, and facilitate research toward reducing the burden of AIDS.

Apart from studying APRT deficient cells, we also isolated a series of Azaguanine resistant V79 hamster cells. These were defective in the enzyme HGPRT. An analysis of our mutants indicated differences in the effect of the mutation on regulation of purine biosynthesis, particularly under conditions of starvation for the precursor amino acid glutamine. This was in agreement with the *in vivo* human analysis. This work was done before the advent of PCR techniques and fast DNA sequencing techniques which would have described the genetic defect in more detail, and determined whether the mutations were in the structural gene or regulatory sequences. Unfortunately we never went back to these mutants for further study. These mutants were described in a paper in *Biochemica Biophysica Acta* in 1978.

Shortly after we also isolated a series of *aprt* mutants in mouse L-cells, which would prove to be very useful later for gene therapy experiments. These mutants were isolated by a Thai graduate student, Umnarj Paraetikal. He was a very bright, decent, helpful, hardworking student. He grew lots of pepper plants on the window-sill of the lab, hot peppers, which he would occasionally harvest and eat as a snack. Unfortunately he never finished his Ph.D. He was called back to Thailand, due to his father's death. On his return to Thailand he ran into legal problems, in that his father's concubine and her children were claiming his inheritance. This kept him in Thailand while the case dragged on. He eventually lost the case and could not afford to return to the US. He now teaches a course in microbiology at a Thai University. Many of my former students have visited him,

as have my son Jonathan and his wife Etsuko.

APRT and mutants in the APRT gene then became the focus of the laboratory. Simultaneously with our work, Jay Tischfield a colleague at Indianapolis was examining the cells from human subjects who were APRT negative. APRT deficiency is an autosomal mutation as opposed to HGPRT, which is X-linked recessive metabolic disorder that can lead to accumulation of the insoluble purine 2,8-dihydroxyadenine (DHA) in the kidney, with resulting kidney stones. Clinical features include renal colic, urinary tract infection, and, in some cases, renal failure. However, as many as 50% of APRT-deficient individuals may be asymptomatic. Jay and later Amrick Sahota , a post-doctoral fellow from England in my lab initially devoted their careers to this ailment.

We launched research on the comparative biology of the APRT protein (and gene) and also investigated whether APRT locus and phenotype would be a good model for gene therapy type of experiments.

With Roy Levine we first examined the purine salvage enzymes in E.coli. This system in E.coli is very complex. Adenine inhibits growth of wild type E.coli, this effect known as adenine toxicity. This has not been studied in depth and appears to involve other nucleotides. We isolated mutants at the apt, gpt, and Pur R locus and examined the interaction between the salvage enzymes and the de novo pathway. Later on, the E.coli gene for APRT was isolated and sequenced by Howard Hershey, a long-time research associate and Rachel Gutstein a visiting scholar from Israel. A paper published in the influential journal "Gene" by Howard Hershey and myself is one of our most cited papers. Roy Levine later took a position at Cornell University and is still on the faculty in the Vet school. He has moved from E.coli to cancer of dogs as a model system.

We subsequently cloned the yeast *apt* gene and compared it to the mammalian and E.coli gene, showing large sequence homology. This research was performed by Juan Alfonzo, a student from Venezuela, who worked for a number of years as

a lab technician, then a graduate –Ph.D. student. He was an amazing individual, very helpful to other graduate students, and was the mainstay of the lab for a considerable time. Our relationship was a wonderful one, he was like a son to me and he regarded me as a “father”. He had previously been an undergraduate in one of my classes. Although performing as a B student, he was interested and active in the class. I later found him working in a bakery (Ashram) and offered him on the spot, a job as a lab technician. I got him admitted into the Ph.D. program after some struggle. He performed very well, and was everyone’s favorite student. Following graduation he worked as a post-doc at UCLA in biochemistry, and later took a position at U. Ohio Microbiology Department in Columbus. He met his wife (Mary Ann) while a teaching assistant in my virology class, and both of them work together as a husband and wife team at Ohio. He is very successful.

Juan must have been in the lab about 10 years. His first publication was in 1987, the isolation of aprt mutants in yeast. This paper is co-authored with Prabhakar Ranjekar a visiting professor from Puna, India. He arrived in my lab because of his friendship with Raman Kothari, a previous post-doc in the lab. Interestingly my friendship with Prabhakar extends to this day, and a few years ago we went on a trip to Rajasthan, India, organized by both Prabhakar and Raman. Raman passed away last year (2012). Juan went on to participate in many projects in the lab. Another graduate student, Tim Crother, with whom I have also maintained close contact, continued the work on characterization of the structure of the yeast aprt protein in the 1990’s. Tim is now at USC in Los Angeles and his wife also a graduate student in my lab, Alicia Collado from Spain. We occasionally meet when I visit Southern California. Tim has a research associate position at USC and Alicia works for NIG, a company that at one time supported my research, through the good offices of Larry Blatt, who was a consultant for the company.

To back track, the period of working in the purine metabolism and APRT was a

very active and stimulating time. The work was well funded by NIH, the projects were attractive to graduate student and I was invited to many international meetings. Amrick Sahota, a post-doctoral fellow from London also worked on this enzyme. He came from a background of purine genetics, and together we organized a very successful international conference on Purine and Pyrimidine Metabolism in Man in Bloomington in 1994. This was the 18th conference in the series. We established an organizing committee of Amrick, George Weber from the IU Medical School and myself. Over 200 participants attended the meeting, dedicated to the late Ann Simons of London. At that time she was alive and presented with an award.

One can ask what was the practical use of all this research on APRT and purine metabolism ?. One of my students, Anne Simon had proposed different mechanisms for the origin of APRT mutants, either by gene inactivation or mutation in one allele giving rise to APRT mutants with 50% activity or by inactivation on one allele and mutation on the other giving rise to mutants with almost no activity. This research basically confirmed a theoretical model proposed by the geneticist Knudson. We (or was it Anne) thought it important enough to publish it in PNAS. The Knudson hypothesis was a two hit theory to explain the frequency of the cancer retinoblastoma. This was a well-established theory for retinoblastoma, and we basically proved that this happened at other loci.

We also learned a great deal about the structure of the APRT protein and how it interacted with its substrates. Moreover we did use it as a target gene in gene therapy experiments. It was an easy system to work with, and although not very important from a medical viewpoint, it was very useful for basic research. As discussed in the next chapter gene therapy itself became a very controversial subject and did not live up to expectations.

Gene Therapy.

I have always been fascinated by gene therapy, the idea that one can place a healthy gene (DNA sequence) into a vector, be it virus or plasmid (a circular piece of DNA, like a mini-chromosome found in bacteria) directly into a human to repair or replace a mutant gene. The ultimate aim is to “cure” specific genetic diseases.

In practice two different approaches have been tried, one to isolate cells, usually lymphocytes (a type of white blood cell), from a patient with a genetic defect, grow such cells in culture, add a normal gene in the form of DNA to these cells to repair the affected function (this is known as transformation or transfection) and after a few rounds of replication transplant the cells back into the individual from which they were originally harvested. This is known as *in vitro* gene therapy. This technique has been performed successfully in the case of children with adenosine deaminase deficiency, a severe condition of the immune system. These children were maintained in isolation all their lives and often referred to as “bubble babies”. Until recently this experimental approach was not approved by the US FDA, but performed in Europe.

In the early 1990’s a second approach, known as *in vivo* gene therapy was developed. A specific gene is inserted by recombination and integration into a virus, for example the normal gene defective in cystic fibrosis patients, and this recombinant virus is injected directly into patients with the disease. Adenovirus - 5 used in these experiments is an innocuous virus occasionally associated with symptoms of the common cold. This approach has been only partially successful, in part because of variable low expression of the inserted gene, and the inability to target the gene to the required organ. Although theoretically it should be simple to perform such treatments, gene therapy research has had a large

number of failures, and the occurrence of accidental deaths, due to over-zealous treatment and over-zealous researchers. These accidents halted research for a number of years, and led to skepticism and lack of funding for some time.

There has been some success in the transfer of the ADA gene to a group of Italian children, who have been able to live a normal life after receiving the ADA gene in their lymphocytes.

The reason for isolating APRT deficient mutants of mouse L-cells in my lab, was to use them as targets for gene therapy, after isolating and cloning the *aprt* gene. I decided to use adenovirus 5, a well-studied non-pathogenic virus previously utilized in other studies. To test feasibility, we infected (or transfected with DNA) mouse L-cells with an adenovirus containing the Chinese hamster *aprt* gene DNA, inserted into a non-essential part of the virus (known as the E3 region) not required for viral replication. This virus was constructed by Vincent Konan, a Ph.D. student from the Ivory Coast, with the help of Dr. Frank Graham, from McMasters University in Canada. Frank had developed the technique of calcium transformation, a technique in which DNA bound to calcium was taken up by cells in culture and expressed for a long time, forming what were called stable transformants. He also developed the techniques for cloning foreign genes into adenovirus. We used mouse L-cells since the virus does not replicate in mouse cells and thus does not destroy them, although the transgene is expressed, implying that the virus persists in the cell over a long period. These experiments were very successful, and this work formed Vincent's MA thesis. Thus we could use adenovirus to transform APRT negative mutant cells to APRT positive cells. Evidence would indicate that the APRT gene had been integrated into the mouse genome (DNA) at random locations. This was the result of a double recombinant event since in those clones examined viral DNA was lost.

This project was then joined by Qing Wang, a Ph.D. student from China (Nanking). Qing was a very serious young woman. Unusual for Chinese students,

she was a practicing Catholic, married and had a young child. I never met her husband, who worked as a watch repair man, and I had the impression she considered him intellectually below the students in the lab. They had apparently been childhood sweet- hearts. The marriage did not to last long. She divorced him before finishing her Ph.D. and when she left Bloomington she had the custody of her son and he moved with her to California.

Qing used a variety of constructs of the CHO aprt gene, and transfected known CHO mutants with the recombinant adenovirus. Such mutants after transfection had normal levels of APRT. In order to get high levels of recombinants the APRT promoter region appeared to be required. The transductants, as in the case of the L-cells described above appeared to be the result of double cross-overs, since little viral material remained. This was targeted recombination and not a random event. This was an important observation and we should have spent more time investigating the mechanism of recombination. The fact that the aprt promoter was required for this event was also interesting.

On completion of her Ph.D. Q W took a position with Cell Genesis, a new biotech company started by Raju Kucherlapati of Princeton University. The company was located in Foster City, South San Francisco. Its original aim was to produce vectors for gene therapy, and it then turned attention to the development of cancer vaccines (stimulation of the immune system) using viral vectors. Qing has her name as first inventor on a patent developing new adenovirus constructs useful in gene therapy. I visited Cell Genesys in the very early days of the company and gave a talk on aprt as model for gene therapy. As in the case of many biotech companies, none of the products passed phase 1 or phase 2 trials, and Cell Genesys eventually merged with another drug company after a financial collapse. Quing has since gone on to work for a number of other biotech companies, married a Jewish engineer and resides in Palo Alto.

We then decided to use the consensus interferon gene, supplied by Dr. Larry Blatt in a gene therapy approach. The scheme was to clone the gene into a virus vector, deliver it directly into tumors, check for interferon activity, and examine whether it inhibited tumor growth. We first cloned the gene into a small virus, that was considered useful as a vector, and this was the adeno-associated virus (AAV). This is a defective virus and requires adenovirus for growth. Thus the recombinant virus was grown in the presence of adenovirus-5, and the AAV recombinants harvested and separated from adenovirus. The consensus IFN was expressed in all the cells infected with AAV which was under a zinc promoter, i.e. addition of zinc to the medium turned the gene on . The cloning efficiency of the tumor cell lines was greatly reduced by the presence of the interferon gene. When the transformed tumor cells were injected into nude mice, no tumor growth occurred in contrast to untransformed tumors. Likewise when established tumors (eskol) were treated with other cells producing the consensus interferon, tumor growth was inhibited. Whether the tumor regression was due to the consensus interferon or to activation of other components of the immune system is unclear.

The next stage in “ adventures” in gene therapy was using the consensus interferon gene in the adenovirus vectors. Here our aim was loftier, to inject the interferon gene into mice with breast cancer and look for an interferon effect on the tumor growth and size.

In collaboration with Larry Blatt (who provided the funding through Amgen) , we constructed a number of viral vectors containing the consensus IFN gene. These were placed under different promoter sequences, and transfected into the leukemic cell line K562. Such constructs reversed the tumorigenic phenotype of the leukemic cells.

Much of this work was done by a post-doc, Yipping Geng. Yipping had the equivalent of a Chinese MD, but could not practice medicine. She worked very

hard, and on leaving my lab she completed her M.D. and is a practicing physician in the new York City area. At this particular point in time I had a very large group of students/post-docs in the lab, and the basic language was Chinese. Apart from Yipping there was Jian Zhang , another post-doctoral fellow (or visiting scholar), very gifted with his hands, , Chen Ju Hu, already mentioned elsewhere and Yanlin Huang my lab technician. Our big experiment was to inject human breast cancer cells into nude (lacking immune system) mice. We injected adenovirus containing the consensus interferon gene into the tumors at different times. The end point of these experiments was tumor regression. These experiments were quite successful. Tumors regressed completely when the site was injected with adenovirus/interferon. However the tumors also regressed when injected just with the adenovirus control, but not when given saline. Interferon injection directly also had some effect on the tumors but less than the combination. Thus we appeared to be looking at a virus effect as well as an effect of the interferon.

This combination was never tried on humans, perhaps because of a disaster that occurred around this time at the University of Pennsylvania in the treatment of a young man with adenovirus carrying a gene constructed to reverse ornithine transcarbamylase deficiency. Two investigators, Jim Wilson and Bill Kelly treated a young man, Jesse Gelsinger, age 18, for ornithine transcarbamylase deficiency using an adenovirus construct. Gelsinger suffered from OTD an X-linked genetic disease of the liver, the symptoms of which include an inability to metabolize ammonia - a byproduct of protein breakdown. The disease is usually fatal at birth, but Gelsinger had not inherited the disease; in his case it was apparently the result of a spontaneous genetic mutation after conception and as such was not as severe - some of his cells were normal which enabled him to survive on a restricted diet and special medications. It appears that an overdose of adenovirus was used resulting in an especially severe immune response. Unfortunately the researchers made some very serious errors

of judgment. They did not report adverse effects in other patients, nor the fact that monkeys had died after a similar dose of adenovirus. As a result of this accident NIH froze all gene therapy trials for a number of years. A few years later another setback occurred using mouse leukemia virus as a vector in children suffering from combined immune-deficiency. Although for the first few years the treatment seemed to be effective, eventually four of the children developed leukemia, which resulted from insertion (recombination) of the virus into a location on the chromosome near an oncogene, thus activating this gene. This was a reflection of the randomness of the integration process. Thus gene therapy has had a very checkered history

Thus although our results were positive, tumor did regress following treatment, it was the predominantly the result of viral oncolysis and not the expression of the interferon. By this time Amgen was no longer interested in the consensus interferon, they had sold it to a Japanese company, and it was near impossible to get funding for a continuation of gene therapy, so that this project basically died as a result of a low funding priority. As stated elsewhere, I should not have given up but resubmitted the grant proposal with novel ideas.

This was a period when my lab was very busy, and a very happy place to work. I had an excellent group of students, and they interacted with each other very well, and perhaps at times were a little too zealous in trying to please me.

Mexico City and High-Pressure Chromatography

In the early 1980's Hector Martinez Valdez, a graduate student from Mexico joined the lab. We met at a scientific meeting in Mexico City and I invited him to join my lab for a short period to study High Pressure Liquid Chromatography and develop techniques for the purification of nucleotides in collaboration with an expert on chromatography, Dr. Raman Kothari from India, who had previously worked for two years in my lab. Hector remained 2.5 months in the lab resulting in two publications on HPLC methods, and then returned to Mexico to complete his Ph.D. and MD degrees.

Shortly after I was invited, by Hector to teach a course on HPLC techniques at the National University in Mexico City. On the day of my arrival the Mexican Peso collapsed, going from 8 to 80 to the dollar. This was during one of Mexico's recurrent economic crisis. I stayed with Hector and Patty in their small apartment since the biochemistry department discovered after inviting me that it could not afford a hotel or even pay for my services due to the devaluation. This did not distract from my enjoying the city and its great restaurants, including a famous Polish restaurant visited a few days earlier by the then reigning Pope. Hector and his wife Patty were extremely hospitable, and we fast became close friends.

The course itself was not a great success because of the lack of specific equipment. I had asked whether I should bring spare parts with me, and insisted that the organizers test that everything worked, but on arrival I discovered that essential components of machinery were lacking. The course was scheduled to begin at 9.0 a.m., the students would arrive for my lecture around 10.00. I felt that the whole course was a fiasco. This was Mexico! I recall that I gave a few lectures, but there was no hands-on work as promised. No one seemed to care.

I enjoyed the stay in Mexico City, and was joined by my son, Yuval and later the rest of the family, thus making a vacation out of it. I remember this visit quite vividly since Yuval arrived in an old grungy overcoat much too large for him. He was a student at Princeton and apparently this was the fashion among the undergraduates. His coat was I suspect third or fourth hand and looked the worse for wear. He looked like a bedraggled refugee alighting from the plane, and I felt like sinking into the ground since the outside temperature must have been in the 80's. How could I introduce my son to this well-heeled group of Mexicans! We all disliked the overcoat and luckily it was too hot to wear. A few months later Yuval spent the summer vacation in Bloomington and Mimi would not allow the coat into the house, thus it stayed in the garage. At the end of the summer Yuval returned to Princeton minus the coat, and Mimi took the opportunity to place it in the garbage. He has never asked to this day what happened to his coat. Just as well it was forgotten.

I actually have great memories of that trip and stay in Mexico City, and the visit to the Volcanoes and surrounding area. Hector was a great guide. He later joined the lab as a post -doctoral fellow.

Interferon.

Interferon is the name given to a group of proteins, part of a larger family of immune response mediators generally known as cytokines. Interferon is induced in viral infected cells and in the body as the first line of defense against virus infection. Different types of interferons are produced by diverse cells of the immune system. Interferon itself does not act directly on the virus, but activates a number of different immune pathways, all directed towards inhibiting virus production. Scientists originally hoped that interferons could be used clinically as a general anti-viral and anti-cancer agent like antibiotics, but its use has been limited to the treatment of a few types of cancers, and to a few viral diseases such as hepatitis C and hepatitis B. Newer anti-viral drugs are more effective and accompanied by less side effects.

I became aware of interferon research while a post-doctoral fellow in John Holland's lab at University of California, Irvine. John had published a paper on interferon in the 1960's, probably as part of his Ph.D. or post-doctoral work. When I moved to Indiana University in 1967 I had not planned to work on interferon in my lab, because I felt this area of research was already too crowded, and I was not convinced at that time of interferon's importance. When Barbara Cordell a graduate student, discovered that the addition of viral double stranded RNA, an intermediate of virus replication, to cells resulted in cell death, one hypothesis was that interferon was involved. Our tests for its production were negative. In retrospect this was surprising, since double stranded RNA definitely induces interferon. However the cells we were using were not immune cells.

An early post-doctoral student in my lab was Bob Fleishmann. Bob had graduated with a Ph.D. from Purdue University in 1972 from the laboratory of Dr. Ed Simon, working on the induction of interferon by Newcastle Disease Virus.

Bob was a well-built, red headed young man, and arrived with his wife, Christina (Chris) who found a position in the department as a lab technician. They were a very devoted couple. She later obtained a Ph.D. at the age of 40 but did not live very long to enjoy her success. She died a few years later of breast cancer.

Bob joined my lab to work on purine metabolism an ongoing project, but he could not shake of his addiction to interferon research. He influenced me by the constant talk and discussion about interferon and its clinical potential. However, during his stay in the lab, I avoided working with interferon. Bob was a post-doc for only a short time and left prematurely to establish his own lab in Galveston, Texas. He eventually became an editor of the Journal of Interferon Research and very influential in this area ..

During these early years at IU my research area was predominantly on the isolation of mammalian cell mutants defective in purine metabolism, and the development of chromatographic methods for the separation and quantitation of nucleotides, components of DNA and RNA. We examined whether Bloom's syndrome resulted from nucleotide imbalance. Individuals with this inherited condition are small in stature, are sun sensitive, and have a high frequency of cancer. We hypothesized that this may be due to a lack of specific nucleotides, or a defect in the purine biosynthetic pathway. This hypothesis was wrong, Bloom's syndrome was later found to result from a defect in an enzyme (helicase), involved in DNA structure and DNA stability.

Heat shock proteins and interferon

On returning to the lab we embarked on a new project. This was a period of great interest in many labs on "heat-shock" proteins. These were proteins that were induced very quickly (10-30 minutes) when mammalian cells were exposed to a few degrees above normal temperatures. In a water bath. They were identified as discrete bands by poly-acrylamide gel electrophoresis. These

proteins were normal components of the cell, but their synthesis was induced on exposure to temperatures above 37C. Their function was unknown and hypothesized to be involved in cancer and/or the immune response. These proteins were also induced by chemicals that caused cellular stress. We thus asked the question whether interferon was basically a heat shock protein, since it was known that stress responses led to interferon production. We now know that all organisms including bacteria contain genes that code for heat shock proteins, and these are involved in maintaining the integrity of other proteins. Some of the heat shock proteins are over expressed in cancer and are thus a signal of aberrant growth. These proteins have been given the name chaperones, since they interact with other proteins to maintain stability and shape.

Hector returned to my lab after completing his graduate studies wanting to work on an immunology related project, and we thus decided to look at Bloom's syndrome lymphocytes, normal lymphocytes and a variety of cell lines to determine whether small increases in temperature induced interferon.

We initially found that two cell lines, a normal Epstein Barr (EB) B virus transformed B-cell line, and a Bloom's syndrome B-cell line (also transformed by EB virus) were incubated at 40° C for up to 4 hours, that an antiviral activity could be detected in the media. This antiviral activity appeared to be due to the production of very low levels of interferon-gamma that synergized with spontaneously produced alpha interferon or some other antiviral material of unknown property. We performed a series of experiments to characterize the products. The results indicated that the lymphoblastic cell line produced IFN-alpha spontaneously and IFN-gamma following heat treatment. The antiviral activity was reduced by both anti-IFN-alpha and anti-IFN-gamma antibodies confirming that both types of interferon were present. The experimental data appeared to be very clean and unambiguous. We now know that there are many more types of interferon than we knew of then, and some of the anti-viral activity

might have been due to unknown interferons. These however would not have been inhibited by the anti-serum antibodies we were using.

There was no heat induction of interferon or anti-viral activity in any other cell lines that were tested (those were all either epithelial or fibroblast cell lines) suggesting that this phenomenon was unique to Epstein Barr transformed B-cells. These results were published in the influential Proc. Natl. Acad. Sci. USA. Although the work seemed very thorough and convincing, on rereading the paper I have the impression we ourselves were not a hundred percent convinced that the inhibition of virus was due to interferon gamma. Also, the amount of anti-viral activity induced was very low, compared to what is normally found in human cells after infection by virus.

At this time, I left the lab in the capable hands of Hector and embarked on a Sabbatical to Israel and then later Italy. The Weizmann Institute had a large group working on interferon, headed by renowned scientists such as Michel Ravel, Menachem Rubinstein.. Although I was not working with this group I brought cells, and the "heat shocked" material with me. I wanted to confirm that our results were really true. One of the principles of experimental science is confirmation of the results by other groups. I also thought there would be interest at the Weizmann in our data. However, all attempts to repeat the experiments at the Weizmann failed. I cannot remember whether there was some background interferon-alpha, but we could not detect anything after heat shocking the cells. Likewise, the material I brought with me did not contain interferon, or if it did very low levels. I had others do experiment for me, and again there was no induction. I wrote to Hector, that someone else other than T should do the experiments. I was completely puzzled by the lack of reproducibility. When I arrived in Italy I again performed the same experiments without success. At one time Mimi had to return to the US and brought back some cells. Again, I could not persuade them to respond to the heat treatment.

On my return from Sabbatical we attempted to repeat the experiments. They always seemed to work for T, that is, he always induced anti-viral activity but not when I or Hector or a new visiting scientist, Louisa, who had joined the lab from the Weizmann, followed T's protocol. I must admit that I was afraid to go to my office in the morning and face the wrath of Hector and Louis about something T had or not had done correctly. He was always the butt of their complaints. I felt that the morale in the laboratory was becoming very bad, and I had no alternative other than to fire T. I could not believe that anyone would deliberately make up data to curry favor with others or myself. That did seem the situation (I did see the same phenomenon later on with another student). This was all very embarrassing. I requested that our paper be withdrawn and was told that there was no mechanism for withdrawing a published paper at PNAS. I reported my "revised" data to the Journal of Interferon Research in a short communication but this was not accepted, and I was referred back to the original journal. To this day I do not know what really happened. I was embarrassed in front of my interferon colleagues, and for a time found it difficult to live it down. I did not cheat, nor knowingly publish fake data. I find it difficult to believe that anyone would. The observation of heat induction of interferon in hindsight was not all that important, and some *in vivo* work being done in parallel in the lab by another graduate student supported the *in vitro* work. However, we could conclude that interferon alpha and gamma are not heat shock proteins. Others have reported similar observations in cells derived from mice and suggest that heat may enhance the activity of interferon, rather than its production, something we did not consider. More recent papers have indicated that this may have been a real phenomenon, but an unusual type of interferon. Looking back we should have looked for real heat shock proteins after induction of the cells. This protein on its own might have had some anti-viral activity, or be an induced by

interferon. There were many experiments that could have been done, but I am afraid that I decided to wash my hands of the whole affair.

Jim Downing, a combined MD-Ph.D. student, decided with my blessing to examine whether there was any relationship between fever, body temperature and interferon induction. This work was performed in collaboration with Professor Elizondo of the Department of Physiology who had the required animals and equipment. Initial experiments were performed on three moneys housed in the physiology department. They were restrained on chairs, and their ambient (surrounding) temperatures increased to 45 degrees so that body temperature rose by 2 degrees. The results were confusing in that an anti-viral material was induced into the plasma, but by our criteria, testing with specific anti-bodies it was not a known interferon. However, blood cells collected from the animals “heat shocked” produced 10-fold more interferon on induction with a plant substance known to stimulate immune cells or following treatment with a bacterial extract also known to induce interferon than in control animals. This anti-viral substance appeared to be gamma interferon. Similar results were achieved when fever was induced by non-viable bacterium. Thus, in rhesus monkeys there is a link between fever and interferon gamma priming although not direct induction. It is possible however that other types of interferon, unknown at the time were being induced.

Jim performed the most audacious experiments on human subjects (of course with permission from the human subjects committee). He convinced fellow graduates to sit in a hot tub (in the physiology department) at a water temperature of 40-45 degrees C, with an inserted rectal thermometer connected to a device that recorded body temperature every 30 minutes. He collected blood samples for immune cell isolation and performed interferon assays at intervals as

body temperature rose. The threshold for maximum changes in the white blood cell population appeared at 39°C. The levels of IFN-gamma in the blood did not change although the white blood cells appeared to be primed to make interferon if challenged. From these studies we concluded that there was a relationship between fever and interferon, but the relationship was not a direct one. Further experiments were performed with Rhesus Monkeys and similar results were obtained when fever was induced by natural or hormonal means. At that time, we were only aware of IFN alpha, beta and gamma. Since then many other classes of interferons have been discovered as well as many other cytokines, involved in the immune response, some of which might have had anti-viral activity. Our inability to understand the data resulted from our ignorance of the mechanism of the immune response and the complexity of the interferon response.

I was now ready to abandon the interferon field, but that was not to be.

While on Sabbatical in Italy, although working in Raul Perez Bercoff laboratory on picornaviruses, I found that nearby (physically) was an interferon laboratory headed by Dr. Fernando Dianzani, highly respected in the interferon/cytokine field. I spent my last few days in Rome talking to him, and I constantly met him later at interferon meetings. I also interacted with a group at the Sanita, (the Italian equivalent of the NIH) working with interferon and cancer headed by Giovanni Rossi, with whom I became good friends. Unfortunately, Giovanni died a few years later of lymphoma. He kept it hidden from his colleagues and students until near the end of his life. I would later spend another sabbatical, seven years later, with one of his students, Philipo Bellardelli, who inherited his mantle. Moreover, a post-doctoral student from the University of Messina also joined my lab, and she came from an interferon background, thus circumstances kept me active in this area of research.

On my return from Sabbatical in Italy/Israel I had a series of individuals join my research group for short times. The first of these visitors was Louisa Chen from the Weizmann Institute. She actually was a technician in Michel Ravels' lab and had developed techniques for the assay of interferon. She was a very enthusiastic lively middle- aged woman. She and Hector tried to solve the problems of the irreproducibility of heat shock interferon but were unable to do so. Louisa only stayed a year and was a useful resource person. She was followed by Daniela from Sicily. Since her background was virology she wanted to work in the area of herpes virus biology. We examined whether white blood cells from patients with genital herpes were more prone to produce interferon than uninfected controls. We were unable to find any differences, thus bringing this project to a halt. Daniela returned to Sicily and I have had no contact with her since.

Raniero De Stasio and Interferon-herpes research

A year following my return from Rome, Raniero De Stasio, a student from the department of virology in Rome joined the lab. I met Raniero while working in Raul's lab. I knew him well, and we became friends of his family: mother, father, brother and sister. His mother made Mimi and I costumes for Carnival while in Rome, I an American Indian and Mimi a "Dutch girl" .I have written about Carnival in Rome elsewhere.

We were also invited to the De Stasio country house (ancestral home) near Caserta. This was a small house, very primitive, in the hills North of Naples. Despite not having much of a kitchen Mrs. De Stasio cooked an excellent lunch and made us feel like family. I don't think she was very happy with the idea of Raniero following me to the USA which had already been discussed. When I left Rome, I handed over my old green fiat (described elsewhere as a "Red Brigade" getaway car) to Raniero's brother, who immediately "totaled" it. Raniero's father,

Dr. De Stasio was a microbiologist at the University of Rome. I did not know him well, since he and his wife had temporarily separated during the time we were there. I believe they later reconciled (but eventually separated later). Raniero's sister "Pupa" left Italy in 1999 and is a professor of physics at U. of Wisconsin, Madison, and for a time was head of their cyclotron.

Raniero wanted to pursue his PhD on a virology project, and since Daniela was working with herpes virus (indirectly) we decided to look at the effect of interferon-gamma on Herpes simplex (HSV) type 1 replication. This was a complicated project since HSV has a complex replication cycle. Its replication is divided into early, middle, and late gene expression, each part of the cycle controlled by genes expressed in the previous part of the cycle. Raniero's work indicated that interferon-gamma inhibited HSV replication at a very early step of replication after the viral DNA had penetrated the cell. However, we were unable to pin -point exactly where in the complex this occurred. Later reports showed that HSV in turn could inhibit the activity of IFN-alpha but apparently not IFN-gamma. As far as I am aware the mechanism of inhibition of HSV by IFN-gamma has never been solved.

Jump ahead a number of years. Raniero married in Bloomington, an Italian woman, Giovanna, 10 years his senior. Although we held the wedding at our house, we and others in the lab, advised against the marriage. We did not think they were suitable, not only because of the age difference, but also in character. Initially everything seemed fine, Raniero moved back to Rome on the urging of his wife, two children were born, and he found a job in cosmetics (regulatory affairs) with Proctor & Gamble. This worked required living in England, which Giovanna did not like and after ups and downs they divorced. His-wife moved to California with the children, and Raniero remained in England. He then worked for L'Oréal, and now works for Estee Lauder is an expert cosmetic regulatory and

safety, is happily remarried and has two more children. He basically has found a niche in the cosmetic business, as an expert on Regulation and Safety.

Gensheng Feng and IDO

During this period two Chinese “visiting scholars” from Hangzhou University joined the lab. There existed an exchange program between Hangzhou University and Indiana University. I was to visit Hangzhou University a few years later. Both Dr. Ma and Dr. Din recommended one of their students Gensheng Feng as a potential graduate student. They considered him brilliant, although he came from a “peasant “background. He had left his village and family (probably illiterate) and moved to the city or was selected by the communist party because of outstanding grades in high school to study at university.

I remember picking Gensheng up at the airport. His English was just passable, with a peculiar “English “vocabulary. I think he referred to me as ‘old fellow” and used dated colloquialisms. We had him over for a meal the next day, and taught him to use a knife and fork, and general “American” manners. He certainly caught on very fast. He arrived in the category of “visiting scholar” which was not the same as a graduate student. He arrived by himself, but showed me photos of a very pretty girl, whom one day he hoped would be his wife. It did not take long for him to assimilate into the lab and his surroundings, although again I had to teach him the “American way” of behaving. He expressed a wish to work on interferon, which he had previously done in China. We decided to work on two independent projects involving interferon-gamma. Mike Shepherd of Genentech had constructed a plasmid that contained both the interferon-gamma and tumor necrosis factor (TNF- β) gene. It was hoped that this plasmid construct, which could be grown in *E. coli*, would have the activity of both interferon-gamma and TNF and be used in cancer treatment. Although the product did work in cell culture and quickly destroyed tumor cells TNF proved to

be very toxic *in vivo* in mice. There was evidence for the production of a hybrid protein. With Mike Shepherd and a coworker from Genentech who constructed the plasmid, we published a paper in Science. However, our data indicated this combination would not be suitable for human clinical trials.

The second project, which was to give far reaching results, was to isolate cells that would be genetically resistant to either interferon-gamma, tumor necrosis factor or both. We decided to use the cell line ME180, of human cervical cancer origin, since it appeared to be uniquely sensitive to both cytokines. (This cell line may be an offspring of HeLa or a contaminant of the same). Gensheng treated the cells with a well-known mutagen, and isolated colonies (clones) of cells that grew in the presence of either interferon or TNF- β . Although we isolated cells resistant to both “drugs” we decided to concentrate our research on resistance to interferon-gamma. These mutants allowed us to separate the anti-viral function from the anti-proliferative function of interferon, since interferon treatment of the cells still prevented virus (herpes) growth. We then searched the literature for a clue as to the mechanism of this resistance. I discovered, what I now consider a classic paper, a 1984 publication by Elmer Pfefferkorn describing how interferon-gamma blocked the growth of the intracellular parasite *Toxoplasma gondii* by inducing the breakdown of the essential amino acid tryptophan. This was through the activation of an enzyme indole amine 2,3 dioxygenase (IDO). We hypothesized that our mutants were possibly defective in this enzyme and thus were resistant to interferon. This was confirmed by direct enzyme assays, showing that the two mutants examined had decreased amounts of IDO. We then decided to do a thorough literature search on IDO, discover what was known about the enzyme, its history, and possible relationship to disease and tryptophan metabolism. This review was co-authored by Gensheng Feng and myself in FASEB (Federation of American Societies of Experimental Biology) journal, and to date it my most cited paper. It was an excellent all-encompassing

review. Through this work we became recognized as an IDO lab and had communications with other labs working in the same area, both in the US and in Japan.

It still surprises me to this day how much trouble I had in obtaining Gensheng's admission into graduate school, and later the completion of his Ph.D. One of our faculty objected to the automatic admission of a "visiting " scholars and perhaps correctly insisted that any such student should take his class and sit exams. This was a difficult course in which many graduate students once admitted avoided or received poor grades. Gensheng took the class and proved his worth, there were no problems, other than one of language. Unfortunately, he never was able to pass the English exam for foreigners, so that we had to make an exception and allow him to teach without passing this exam. He taught my virology lab course as an assistant and was voted by the students an outstanding teaching assistant. Gensheng went on to contribute to other papers on the subject of regulation of IDO. He received his Ph.D. in 1990 and following a stay in Toronto as a post-doc he took a faculty position at IU Medical School. He is currently a full professor at UC La Jolla (San Diego). He is undoubtedly one of my most successful students. Dr Ma and Dr Du proved to be good judges of character.

Amgen and consensus interferon

I went to the annual interferon meeting in Florence, Italy in October 1990. Usually one goes to meetings to meet colleagues, listen to a few papers, present some work (in 15 minutes), and enjoy the sights and restaurants of the location. The Interferon and Cytokine society rotate the meeting among continents, usually in great places (as do most scientific society) as a way of encouraging participation. In 2010 it was again in Florence, in 2012 in Geneva, and in previous years in Vienna, Bologna, Montreal, Jerusalem etc. At this particular meeting in 1990 I met a student who had been a student in my virology lab class, and also

had worked one summer in the lab of Stephen Surzycki during his undergraduate days. He had graduated sometime in the late 1980's. He introduced himself during a cocktail party (all these meetings begin with a very lavish cocktail party, usually thrown by the host city), his name Larry Blatt. He was a very outgoing person, and we talked a little about his past. After graduation he had worked for a time in biotechnology at Monsanto in St. Louis and then moved to Amgen, at Thousand Oaks, California. He suggested we have dinner one night together since he wanted to discuss some work and possible collaboration.

Amgen was one of the new biotech companies and had established itself quite early by patenting the cloning and production of Erythropoietin (epogen) a molecule used in enhancing growth of red blood cells, used in the treatment of patients on kidney dialysis and recovering from cancer chemotherapy. At that time this drug was the mainstay of the company, although since then other companies have produced variants of the drug, and the effectiveness of epogen itself has become controversial. Amgen has also developed recombinant drugs mostly involved in maintenance of red and white blood cells, and TNF receptors that block the activity of TNF. Larry had been working a short time at Amgen, and in looking for a project (that was the way Amgen worked in the early days) he came across an interferon, labeled consensus interferon, that had been created as a "theoretical " molecule containing the amino acid sequences of the most common alpha interferons (there are probably about a dozen of these). The story is that a group of Amgen workers, one evening over beer, decided to perform evolution in the test tube constructing the perfect molecule. Thus, consensus interferon was born. The production of the consensus interferon is described by Feischko and Ritch (1986), (Chemical Engineering Communications). Initial data indicated that this interferon had high anti-viral activity. However, this interferon had not been tested thoroughly *in vitro* (for anti-viral or anti-proliferative response) or for *in vivo* activity. Larry suggested that we compare its activity

with that of other commercially available alpha and beta interferons, for both activities, and I agreed. Amgen initially supported this research for a small sum of money. From this started an ongoing relationship both scientific and personal with Larry and continued with support from Amgen for many years even after Larry left the company. Unfortunately, Amgen lost interest in the consensus interferon and licenses it to a Japanese company, Yamamouchi in 1996.

Shortly after that meeting, a new post-doc from Israel joined the lab. He was like a whirlwind of activity. Zvi Reiter had come from Menachem Rubinstein's lab at the Weizmann Institute in Israel. He was very ambitious and wanted a hand in everything taking place in the lab. His aim appeared to be to produce as many papers as possible, even if the work was repetitious, and even if I doubted the importance of the publication. His enthusiasm often carried him away, and later led to clashes with Larry. He resented the fact that we were doing work for industry, that Amgen reaped the profits even though he himself was supported by a grant from Amgen. This was reminiscent of the old socialist ideology of no work for the capitalists! He was willing to bite the hand that fed him. On return to Israel, after about a year he dropped out of science and became a high school teacher, and later a principle in a prestigious high school.

We must have started work with the consensus interferon (later called infergen) shortly after the meeting in Florence, characterizing its activity and comparing it with the activity of commercially available interferons made by other companies: Intron-a from Schering and Roferon from Roche. We indeed found that it had 10-fold higher antiviral and anti-proliferative activity compared to other commercially available Interferons. This first paper on its biological activity has been often cited (237 citations) and this work was the basis for clinical trials later on. Consensus interferon has been used for treatment of AIDS and hepatitis when other interferons have failed. It is still used in the treatment of hepatitis C although will probably be replaced by nucleoside analog inhibitors.

I note from the authorship of this first paper that I had a completely new crew working on interferon. Susan Klein, a biophysicist arrived in Bloomington because the physics department hired her husband. She joined the lab in 1990 and was a mainstay for a number of years. She lived in the country a few miles from Bloomington and her house became the venue for great New Year and other lab parties. Her golden retriever became the lab dog, and she welcomed the families of all the foreign students joining the lab. Her approach to research was very quantitative. Another author on this paper was Osman Ozes, a graduate student from Turkey, who completed his Ph.D. working on the biology of IDO, but also contributed greatly to the work on the consensus interferon. Osman later returned to the lab after a few years as a post-doc for a short period. He then worked at Intermune when Larry was director of research at that company. His son, Ali, whom we all remembered as very "wild" kid graduated from the biology department with the Ph.D. in 2016 a very nice young man. Osman later started his own biotech company in Turkey then moved to California. Ali also returned to California and is involved in biotechnology.

One of the techniques that Zvi Reiter taught me (and the lab) was the isolation of a specific class of immune cells known as NK cells (Natural Killer cells). These are a type of lymphocyte that non-specifically destroy virus infected cells and tumor cells. They are activated against their target by exposure to interferon, and in turn produce other types of interferons. We examined the effect of consensus interferon on NK cells and found enhanced activation compared to the other commercially available alpha interferons.

For the last few years, I myself had not really been working at the bench. The group was so large (at least 20 people) and the need for money to support so many technicians, post-docs and graduate students was so great, that I devoted my time to writing grants and papers. Since most of the lab researchers were foreign, I wrote the majority of the papers. Although someone like Zvi Reiter, and

Osman Ozes could write English, their manuscripts still needed considerable editing. Most of the Chinese students had a very rudimentary knowledge of English and I had to completely write up their work.

Work on genetics of the interferon system continued, with Gensheng Feng isolating new mutants resistant to interferon-gamma. This was done in collaboration with a group in Austria, and in due course I visited their lab in Innsbruck. Zvi Reiter pursued the effects of various drugs on NK cell activity, and published the work in minor journals, some of which did not last more than a few years. The number of projects going on in the lab overwhelmed me. I had received funding from NIH for work on IDO, from Cell Genesis for work on adenovirus vector and gene therapy, and by 1992 I was receiving about \$100,000 per year from Amgen to continue the work on consensus interferon. I used most of this to support post-doctoral fellows and graduate students and bought new equipment.

In 1993, when it was obvious that the consensus IFN had clinical potential for the treatment of hepatitis C. Larry asked me to accompany him on a lecture tour of Japan. This was to explain the basic biology of the consensus IFN and to “sell it” to Japanese physicians, since hepatitis C was a large problem in Japan (and also in China). Hepatitis C is caused by a virus, HCV, and still is the leading cause of liver disease, and liver cancer. Until recently the only treatment has been interferon, and a combination of interferon and an anti-viral drug ribavirin. However, the rate of response to this combination is only about 40 %. At the time that this trip was made, only interferon was being used and the response rate was approximately 20 %. The normal course of treatment lasts 48 weeks, was accompanied by severe side effects, and was expensive. It was hoped that the consensus interferon would be better, and for some cases of HCV it would be the drug of choice.

This was not my first time in Japan, and I enjoyed going to this country . I have written about this trip and also a subsequent trip to China in a separate chapter.

We continued work on the consensus interferon, studying the kinetics of action, host range, receptor binding and many other aspects. Meanwhile it had entered the clinic and was being used as an alternative to Roferon and Intron, with similar or better response.

Meanwhile the work on IDO, its structure and biological role continued. After Gensheng Feng had finished his Ph.D., Koaukou Konan, a student from the Ivory Coast, continued this project. Vincent, as we called him, was an unusual graduate student. His native language was French, and he arrived with a poor knowledge of English. Although he had an undergraduate degree from a university in the Ivory Coast, his knowledge of biology, and in particular biochemistry was very limited. Initially the other students in the lab were impatient with him, and really had no time for his naïve technical questions. However, he learned very quickly, and for his MA thesis project decided to work on APRT/ adenovirus vector. After his MA, which resulted in two publications with other students, he decided to work on the sequencing and regulation of the IDO gene. He very successfully cloned the gene and identified the promoter region (that region involved in regulation of the gene). IDO continues to this day to be of interest to immunologists, since there appears to be a relationship between T-cell tolerance and tryptophan degradation, and it has been suggested that IDO plays a role both in interferon induced depression, and in maintenance of the embryo during pregnancy. The effect on depression would be due to alterations in the levels of brain tryptophan and serotonin. At this stage our work on IDO stopped, since the grant proposal to continue this work was not funded, and my interests on interferon moved in another direction. Larry Blatt had by

this time left Amgen, but I continued to receive support for work on consensus interferon.

Following a seminar given at the University of Illinois Medical School on consensus interferon, I met with Don Jensen and Scott Cotler, both renowned hepatologists. Since I was interested in the mechanism of consensus interferon and its effects on other cytokines (hormone like molecules that acts on different cells of the immune system) we collaborated and measured the induction of other cytokines after initiation of treatment. Samples of white blood cells were shipped to us from Chicago and we measured cytokine production using commercially available ELISA kits. This is a kit in which an antibody to a substance is linked to a substrate, so that if an antigen (in this case a specific cytokine) interacts with the substrate a color reaction occurs. We found that IL6 is induced within a few hours of treatment with interferon and then declines within 12 hours. Other cytokines measured did not show any change within the time measured. The response of IL6 was very fast, within 4-6 hours, and correlated with the increase in fever and other side effects in the treated patients. Similar results were found with the IL1ra (a receptor analog for IL-1). This cytokine or cytokine inhibitor has previously been shown to be induced by interferon. There was no difference found between hepatitis C patients who responded to interferon treatment and those who did not nor in a group of African American patients compared to Caucasian patients. Thus, we could conclude that all patients responded to interferon irrespective of early viral response. This implied that interferon interacted with its receptor irrespective of the state of the patient. Another interesting clinical observation reported around this time (1999) by an independent group was that African Americans patients had a lower response rate to interferon treatment than Caucasians. A proposal to examine this was funded by Amgen, and support continued even after Larry left the company.

Shortly afterwards Amgen lost interest in consensus interferon and sold the rights to a Japanese company (Yamanuchi) but retained the American rights. It was obvious to Larry that Amgen had abandoned interest in the commercialization of the consensus interferon even in the USA.. Subsequently Consensus IFN was sold to a new biotech company, Intermune. Larry Blatt left Amgen, spent a short period at National Genetics Institute, a private hepatitis C testing company, and then moved to Intermune. It is difficult to understand why Amgen abandoned it's interferon program since it did have clinical potential. The CEO of Amgen wanted to pursue novel biochemicals and interferon did not fall into this class of molecule. Intermune has recently been purchased by Roche for 8 billion dollars. This was not on the basis of interferon but on another drug pirfenidone. t Osman Ozes a graduate from my lab did most of the groundwork. This drug failed in the first clinical trials but was successful in a second trial.

Virahep C clinical trial.

I was still interested in pursuing the research initiated with Drs. Cotler and Jensen, whether other cytokines were induced (or regulated) by interferon and submitted a grant proposal to continue this investigation, using blood samples from patients with HCV, obtained from Dr. Paul Kwo, a hepatologist at the IU Medical School. This grant proposal was rejected.

While perusing a publication from the NIH I came across a request for proposals (RFP) that was very similar to the grant proposal just rejected. It was a request to establish a consortium of clinical and basic laboratories (called ancillary laboratories) to investigate the effect of interferon at the gene level (among other items) in hepatitis C patients. The main thrust of the proposal was to investigate whether reported differences in response rates between Caucasian and African American, was correct and whether the basis for this difference was

in gene expression or selection for virus resistant to treatment. This was similar to work already done with the consensus interferon.

I called Eli Ehrenfeld, the head of the NIH grants division to discuss the strategy to pursue, and she suggested I make minor modifications to the rejected proposal and resubmit. I rewrote my proposal in lines with the RFP and it was assigned to a special grant committee. To my surprise the proposal received a high score and was funded.

The outcome was a “consortium of laboratories to work on the differential response of African Americans and Caucasians to interferon/ribavirin treatment in the case of hepatitis C”. There were 8 clinical laboratories, where patient blood samples would be collected and 4 basic laboratories. each one studying a different aspect of treatment. My lab was initially consigned to look at interferon signaling, in other words to examine the spectrum of genes induced by interferon, with initial emphasis on other cytokines. John Tavis (St Louis) was to examine the effect of interferon/ribavirin treatment on virus and whether the virus sequence differed in AA from CA patients, Leland Yee (Yang and group, Philadelphia) to analyze genetic polymorphisms in genes that were induced: and Hugo Rose (Washington-later Denver) to analyze the immune response in patient samples. The consortium met once every three months to plan experiments. This was the first time I worked in a group, and I found it stimulating. The fact that we met routinely and were expected to present data certainly helped the work along. At each meeting I had to make a presentation (as did others) of progress, plans for the future, and problems. We could also propose other projects along the way, which were discussed by an ancillary committee. Most meeting were taken up by clinical problems, adverse effects of the treatment, how to deal with patient drop out, and discussion of the optimum statistical methods to use for analysis. Initially I had intended to just examine the response of a few genes, and to construct DNA microarrays for that purpose. After a few tries at constructing our

own arrays, I realized how difficult it was, and how non-reproducible were the results, that I decided to look at alternatives. I learned that the Human Genome Center in Indianapolis, at the IU Medical School, already performed DNA microarray analysis using commercially available chips. I discussed the research with Dr. Howard Edenberg the director of the institute and reached an agreement. We would purchase the chips and pay for some labor costs, and they would allow us to tap into their software system for analyzing the data. Dr. Jeanette McClintock provided statistical help. We would receive the blood samples from the various hospitals and separate out the white blood cells, extract the RNA, clean it up on mini-columns and send it to Indianapolis for micro-array analysis. Later, the RNA extraction was handled by a commercial company, we cleaned up the RNA and sent it to Indianapolis. Since we were receiving samples from 90 patients, at different time points, there was an appreciable amount of bookkeeping, which was performed by my lab technician Mary Ferris. I spent hours (days, weeks) analyzing Excel spread sheets with the data from 20,000 genes from 70 patients (some samples were discarded) at different time points. The data were initially blinded so that I did not know the response or ethnic origin of the patients. This information was provided later for the final analysis. I must admit I learned a fantastic amount of statistics and employed a couple of people (William Grosse and Takuma Tsukahara) to help with the analysis.

At the same time, we exploited both the availability of funds and access to the Affymetrix microarrays system to analyze the effect of interferon on gene induction on cells in culture, comparing gene induction after treatment with IFN-alpha, IFN-gamma and both together, examining the synergistic effect. For this analysis I collaborated with a statistician in Israel (Haifa University), Leonid Brodsky, up until my retirement in 2008. We also performed similar work for Intermune (and Larry Blatt) on gene induction in liver cell lines in vitro with the consensus interferon - indergen and with pegylated gamma interferon.

Our preliminary work, once I had received the grant and was able to hire a post-doc and technician was to study the effect of interferon on peripheral blood monocytes (white blood cells) incubated with interferon for either 4 or 24 hours. This was to test the system, and to obtain experience using the “portal” as it was called in Indianapolis, and to determine genes induced, and to examine whether genes known to be induced by interferon were detectable in this system. The first paper describing this work is, in my opinion one of the most thorough papers analyzing the hundreds of genes induced by interferon, and the relationships between and among these genes. It has been used in building what has been called the interferome, web site for searching tissue specificity of genes, etc.

Receiving this grant allowed me to hire a number of people. Among them was Corneliu Sanda, a young physician from Romania. He and his wife Alina were a delightful couple and because of Mimi’s Romanian background we became good friends. They also became our guides when we visited Bucharest in the summer of 2003 or 2004. They showed us around the city, bought tickets to the National Opera, and introduced us to some good restaurants. Corneliu really was not all that interested in continuing in research, decided to go back to medical school, and is now a practicing physician in the area of drug rehabilitation, specializing in psychiatry. Alina is an infectious disease clinician. Both of them live in New York

The story of Bill Grosse is rather a sad one. He applied for a position in bioinformatics. I called his references and got positive feedback, except one of them mentioned that in the past he had some personal problems. Despite this I decided to hire him, he came across as very knowledgeable with extensive experience in microarray analysis. It was obvious after a short time that he was an alcoholic. He had been married was divorced, and had one child, a son, of whom he was very fond. His parents lived in Zionsville, but I gathered the

relationship was not good. I first became aware of his problem when he and a student (undergraduate working in the lab) attended an American Society of Microbiology meeting at McCormick's Creek State Park. He disappeared in the evening. Not attending the session, he took the undergraduate with him, and went to a local Karaoke bar. He got very drunk and was helped back to his room by the student, who was in a state of shock, never having experienced this type of behavior before. He was supposed to return to Bloomington the next day with Bill, who was so inebriated that he was unable to drive back, and I had to make alternative arrangements. Bill then brought to Bloomington a "lady " friend , body builder who was tattooed from head to toe. She was from somewhere in Pennsylvania and had five children. I assume she left them with her ex-husband. Shortly after her arrival in Bloomington they were wed, despite the active opposition of Bill's parents. Within a few weeks there was obvious trouble. She was ordered back to Pennsylvania to look after the children (I do not know the details), and he told me that he would have to look for another job in that State in order to follow her. He left shortly for Pennsylvania, and then I believe moved to St Louis, I assume without her. In September 2005 I received a phone call from a lawyer asking me if I had any property or papers belonging to Bill Grosse. I was surprised and asked what the problem was. He informed me that Bill had died from binge drinking a few days before. He was 41 years old. What a waste of a talented life.

The clinical trials on this project continued for approximately 5 years. We had meetings in Washington (Bethesda) or at other clinical sites throughout this time, and we built a very good relationship with both the people in the other ancillary labs and other investigators. The general idea was that we would identify genes whose expression was altered by interferon treatment and analyze whether the level of gene expression differed between those patients responding

to treatment and those not, or those partially responding. A second aim was to identify differences in gene expression between African American patients and Caucasian patients. Leland Yee and his group in Philadelphia would examine genetic differences in these particular genes. John Tavis, University of St Louis, examined changes in virus sequence in these specific patients and Hugo Rosen looked at the immune response *in vitro* in lymphocytes from these patients. We accrued masses of data. We performed DNA microarrays on 69 patients, at multiple time points during the first few months of treatment and examined some 20,000 genes. We found that some 1000 genes either had increased expression, were turned on, or had decreased levels of expression after treatment, and these changes were observed within 24 hours of the first injection of interferon. Many of these were genes previously identified by others as being related to the interferon response. Our list of genes was the most comprehensive ever produced. Although we found that levels of gene expression correlated with response, this appeared to be global, and not due to any specific gene. We also were unable to identify differences between African Americans and Caucasians. This may have been due to using blood cells (lymphocytes) rather than liver tissue, but there was no way we could justify doing liver biopsies every few days. There were many variables that might have affected our work, including the collecting of blood at different centers, the shipping to another center for RNA extraction which often took a few days, and the conditions in which the RNA was held in that laboratory before shipping to us. We processed the RNA further to clean it up, and it was shipped again (or delivered directly) to Indianapolis for array analysis. We (I and some statisticians) received the data for further analysis. After the departure of Bill Grosse, I hired a very good MS student from Informatics Takuma Tsukahara, and together we did most of the analysis.

This ViraHep C project resulted in many publications, some collaborative with the other laboratories involved, and some just from my lab. At least 14

papers were published from my laboratory, and another 4-6 as a result of collaborations without my name as an author.

As a result of this work, representatives of Schering approached me and requested that we do a similar analysis with patients treated with their interferon (Peg-Intron A). Their scientists believed that their interferon was superior to that used in the above clinical trial, which had been supplied by Hoffman-Roche (Pegasys). In collaboration with Dr. Paul Kwo we mimicked the protocol used in the virahep C trial, but used different time points, and the interferon and ribavirin were administered on the bases of body mass, rather than a standard dosage. Twenty patients were enrolled, without race being a factor, and similar DNA microarray analysis performed. We again could not find any major differences between those patients that responded to treatment and those who did not, and the values (fold induction) were very similar to the previous trial. As in the previous trial the majority of genes were induced early, with return to normal for many genes within a few weeks of treatment. The data was disappointing both to me and to the scientists at Schering.

Work being done at other laboratories where liver was used for analysis rather than blood, indicated differences between responders and non-responders, but not as expected. Non-responders appeared to have higher levels of interferon induced genes before treatment initiation, and this was only in a subclass of liver cells. Thus, when the grant period finished the situation was murky and still is. However, treatment with interferon seems to be dying out. New drugs, protease inhibitors and nucleoside inhibitors are now entering the market. Larry Blatt who in a way was responsible for my venture into the world of consensus interferon is now CEO of a company, Alios that is developing some of these new anti-hepatitis C and anti-viral drugs, one of which is in phase 2 trial. Alios was sold in 2014 to Johnson and Johnson for 1.5 billion dollars.

I have continued to use the data generated by the microarrays, and in collaboration with a group at Yale have published some of the unpublished data. The data was also used by an informatics student, Rahul Gupta, to complete his MS degree in informatics. I will not be surprised if the data continues to be used in the future. It was on this note that I basically ended my scientific research career.

CZERNOWITZ.

Early visits to Czernowitz (Chernivtsi, in the Ukraine).

If someone had told me that in my old -age I would be an annual visitor to the Ukraine I would not have believed it.. I have two memories about this vast country from my childhood. During World War 2, I would put tacks on a wall map signifying the advance of the German troops into Russia (I did not distinguish the Ukraine from other parts of the Soviet Union) and the other was stories I read of the pogroms that occurred during the early 20th century and the story from my grandfather of the fear of conscription for life in the Tsar's army.. This was one of the reasons the family immigrated to Scotland. Even worse were the reports of Ukrainians being actively on the side of the Nazi's, and the massacres that were perpetrated, not only by the Nazi SS but also by Ukrainian paramilitary in villages and cities alike. Now I have now visited some of these same towns and villages.

My wife Mimi was born in Romania in Czernowitz in the province of Bukovina. For a short period, 1940-41 the city was part of the Soviet Union as a result of the Molotov-Ribbentrop pact which gave half of the Bukovina to Russia. Despite this agreement of non-aggression, the Germans invaded in 1941, and the city was occupied again by Romania, with the assistance of the Germans. Mimi and her family had a harrowing experience during the war, were in a ghetto for a short time, hid, and escaped transportation to the camps in Transnistria in the Ukraine. Their lives were saved due to the pressure of the Romanian mayor, Trajan Popovici who claimed the city could not function without its Jews. He saved 20,000 lives, my wife's family among them. After the liberation from the Nazi's by the Soviets the city became part of the Soviet Union and annexed to the Ukraine. My wife's family left as soon as was feasible after the war, lived for 2 years in Transylvania, and made their way to Israel via Cyprus. My wife, Mimi, made the same journey via Holland instead of Cyprus.

We met on a kibbutz in Israel and were married in 1957. For the first 40 years of our marriage the idea of visiting Czernowitz (now called Chernivtsi) never occurred to us. The city was part of the Soviet Union, we were both afraid to visit, and in particular Mimi was worried as to whether she would be allowed back out (her US passport gave Czernowitz as place of birth). We had been to Romania in the 1970's and although the experience was not wonderful, we saw Czernowitz from afar across the border. This was during the Ceausescu communist regime in Romania, with shortages of food and a nasty bureaucracy. Although Romania is a beautiful country and we have visited many times the first Romanian visit was not too pleasant.

With the fall of communism, Mimi began to think perhaps the time had come to visit her birthplace. She had also joined an E-mail group of ex-Czernowitzers, which started as a genealogy group, and expanded into nostalgia for the "good old times" of the city. Thus ,we decided in 2002 to visit the city.

I had nightmares before this visit. In my dreams I visited the graveyards of my ancestors murdered in the pogroms. I saw myself being beaten up by Anti-Semitic thugs and skinheads. I saw a wasteland, a depressed place, nowhere to stay, bad food. I agreed to go along with the plans, fly to Budapest, drive to Suceava not far from the Ukrainian border, leave our rented car and find a driver to take us to Chernivtsi . This was easy since many travel agents provided this service. However crossing the border itself was not easy. We had to bribe the custom officials and soldiers at both sides of the border. It was expected. Slip a few dollars into the passports, which were handed to the officials by the Romanian driver. I suppose everyone got a cut. We were accustomed to this since we previously had similar experiences in communist Romania.

Unlike Western Europe or even Romania the road from Suceava to Chernivtsi was empty except for trucks. There were no or few private cars. We had booked into the only reasonable hotel in town, the Cheremosh, a large Soviet style piece of

architecture. What I remember most was the lack of smiles on the part of the people working at the reception, the small dingy room, and the most awful breakfast served in a “don’t care fashion” and no choice. However, we were met by a smiling guide, Zoya, and a pleasant driver Sasha. He had some official tourist job but was moonlighting as a driver. The two of them were great and made our trip extremely pleasant. We first visited the house that Mimi had lived in as a child, before the war, and the house in the ghetto when their property had been confiscated (never returned to them up to this day). Mimi became very emotional, and when the current owners allowed us inside, she knew her way around and remembered where the oven had been, what the flooring used to look like and overall felt she was “ home”. Nearby was the factory for making processed meat that belonged to the family and had been started by her grandfather. Our driver and guide took us to the places she remembered, in particular the central park (similar to Central Park in New York), the sunken rose garden near the Theatre and to what had been the Jewish palace of culture. This was an ornate building, which is still beautiful from the outside, but the inside seemed dark and neglected. The Russians had removed the Star of David that decorated the banisters and anything else that was related to Judaism. These have been restored. The accompanying photograph was taken much later as can be seen by the cars parked outside.



In general, the city did not look as neglected as I had expected. The buildings were freshly painted, Mimi complained that it looked like an opera set. There were good restaurants; we did not have to eat at the hotel. Zoya and Sasha recommended a gourmet restaurant in what had been the Romanian officers club. I don't remember what we ate, but I know it was delicious. To our surprise they arranged a special dinner for us at this restaurant of " Jewish Food" for the following evening. We had a private room (we had brought along another visitor from the hotel, a young Canadian, who was on a " roots" trip). The food was elegant; the owner made chopped liver in the shape of little mice, Gefilte fish, really stuffed fish, Borscht, and the vodka flowed. We tried different brands. When we went to pay we found out that Sasha our driver had paid for the vodka. What a pleasant surprise and pleasant evening.

We visited the Jewish cemetery to find the graves of Mimi's grandparents, but discovered that the cemetery, a huge expanse with approximately 50,000 graves was completely covered with weeds, bushes and trees. Even the pathways in between the rows or blocks of graves were impassable. We hired someone who knew his way around to find the individual graves, using an old plan of the cemetery.

The visit to the city was a very emotional one, yet was inspiring, in that the people we met, mostly non-Jews were very helpful. Our guide was of great assistance introducing us to members of the Jewish Community, mostly "newcomers" from various parts of the ex-Soviet Union who had settled in the town. Very few old " real" Czernowitzers

I remember it was Shavuot (a Jewish festival-Pentecost) and we visited one of the local "shuls", a far cry from the great Temple, which stood in the center of the city and had been converted into a cinema. The rabbi insisted that Mimi sit separately from the men, although she was the only woman present among a group of elderly congregants. I got very annoyed and walked out of the service. A

number of the congregants ran after me and explained that this was an orthodox community and that after the services Mimi could join us for “Kiddush”, the drinking of wine and snacks. Mimi was quite satisfied, and I stayed on for services.

I have since made many visits to Czernowitz. During our second trip we paid a side visit to one of Mimi’s family ancestral villages. Shortly after the war’s end, one of Mimi’s great uncles returned from a concentration camp in a very bad condition. He had lost his wife and two small children. Before the war he and his family lived in a village, Clevedin, some 50 miles from Czernowitz. My mother-in-law looked after him for a short period, and suggested he return to the village to claim his house and property. He was gone a couple of months and returned to Czernowitz in much better health and spirit. One of his neighbors, a young woman, had fed and taken care of him. We set out after some 60 years to find this individual. We drove with our translator and driver to the village. We had no idea how to begin this quest. We saw an old woman working in the fields, hoeing potatoes. We stopped and asked her if she had known anyone by the name of Yaacov Fruchter who had been taken away by the Nazi’s. She did not know of him, but mentioned some other family, and also that her father had been taken away by the Russians. However, she was much younger in years than she looked, and suggested we talk to the oldest woman in the village. We found her bedridden, and Mimi and Zoya entered the house. Initially she did not understand whom Mimi was asking about, she had never heard of a Yaakov Fruchter. Mimi then used his name in Yiddish, Yankel Fruchter, and she opened up, a stream of knowledge came out of her mouth. She remembered the whole family, not only Yankel but also his parents, brothers and sisters. The family had been well liked in the village. Mimi finally asked who had looked after Yankel when he returned after the war. “Maria” she said. She had been a neighbor and had tried to shield the children at the time of the deportation, but everyone knew

they were Jewish and could not do anything to save them. When Yankel returned, she cooked for him and brought him back among the living, a natural thing to do. We met her, and she insisted she had not done anything out of the ordinary. I have a picture of the three old women with Mimi. Again this meeting was very emotional, and we participated in a “ ceremony” of drinking water from the well and the same cup, a sign of everlasting friendship.



After that, we returned to Czernowitz, back to Romania, spending a few days in the Bukovina at the Casa Elena, a first class resort and eventually back to Bloomington .I have made many more visits to Chernivtsi since then, a return to Clevedin to give some money to Maria, a trip with my son Yuval and family, and many more accompanying Mimi on her project a restoration of the cemetery. Mimi eventually put up a plaque on the house of Trajan Popovici honoring him, and reminding visitors of what he did to save lives. Yad Vashem in Jerusalem has listed him as a Righteous Gentile, who saved 20,000 lives.

Czernowitz, part 2.

The drive from L'viv (Lvov) to Chernivtsi (Czernowitz) was long and bumpy. Many parts of the road were washed out completely and the car swung from side to side to avoid the deep potholes. Other parts of the road had been newly repaired. L'viv itself gives the impression of a large busy city, with a new, ultra-modern airport. It had just opened within the last year and was a sign of the progress made during the last few years. It was built specifically for the European Soccer competition. From L'viv to Chernivtsi is about 150 miles, but it took 4 hours of driving because of potholes and heavy truck traffic. We passed through many towns in which no road existed, prompting the question as to why these small townships did not repair their own roads. The drive took us through a number of large towns including Ivano-Frankivsk and Kolomya. Prior to 1939 both of these towns had large Jewish populations which were massacred by the Germans and locals during the war.

I have seen many changes in Czernowitz during the years. There were more cars on the streets, a sign of increased prosperity. The main street, which Mimi called the Herrengasse, had been turned into a pedestrian walk, with many restaurants, and cafes, full of people sitting outside drinking coffee or mojitos'. We stayed at a new hotel, with the pretentious name, the Allure Inn. It opened in 2015 and we may have been one of the first tenants. It is in the center of the city, in the Central Square in an old building, probably built around 1800, which had been appropriately remodeled inside. The plaque outside the hotel tells its history as one of the first hotels in the city. The reception area was all colored marble, and the lounge opposite the reception desk was furnished in period furniture, with chandeliers, marble floors and balustrades. The whole décor was late 19th-early 20th century. It is a very comfortable place to stay. The room was small but pleasantly furnished with ample sitting space, and a large bathroom. Last year a restaurant has been added at the back entrance, partly inside and partly outside,

the outside being covered with a large canopy. It specialized in grilled meats done over an open fire. A nice place to spend a few hours to enjoy Ukrainian specialties.

I accompanied Mimi, my wife, on her annual trips to work on the cleaning and restoration of the Jewish cemetery. This is one of the largest remaining relatively intact Jewish cemeteries in Eastern Europe. Before World War II, Czernowitz had a Jewish population of about 50,000, approximately 50% of the total population. It was a thriving, intellectually active community, giving birth to such luminaries as the writer Paul Celan, poetess Rosa Auslander, Yiddish writer Itzik Manger, the Israeli writer Appelfeld and many others. Many of its Jewish inhabitants died in the holocaust. Others succeeded, as did the scientist Erwin Chargaff in immigrating to the USA. It had been a thriving Jewish community with the usual divisions between Zionists and Bundists and was close to the birthplace of Chasidism. A suburb of Czernowitz, Sadagura, was the site of the court of the famous Sadagura Rabbi. The Sadagura Rabbis 'palace" was restored in 2018. Hundreds of Chasidim are expected to descend on Chernivtsi and Sadagura to worship the Rabbi. The restored temple is already in use and we visited it in the spring of 2019. It is now being used by the Lubavitcher Rabbi of Chernivtsi.



Palace of the Sadagura Rabbi (Ukraine travel)

My impression is that by the mid-1930's the Jewish population of Czernowitz (not Sadagura) was quite secular. The main temple, found on a street of that name, was affiliated with Reform Judaism. The cantor of the temple in the 1930's was Josef Schmidt, who later became a famous opera tenor and actor. Today the temple still stands in the center of the city but is used as a cinema.

When one stands in the middle of the Jewish cemetery, one sees a field of black and grey tombstones. Many were designed by Bernard Reder (1897-1963), later recognized as a famous architect. They are in all shapes from large sarcophagi's, mausoleums, stele and Black marble with photographs of the deceased. (Figure 2) The older stones are traditional Jewish style tombstones with set sentences in Hebrew and sometimes in German. (Figure 3) The cemetery covers 14.5 hectares laid out in squares. When we first visited in 2002 it was completely overgrown with weeds, brush and spindly trees, and a few larger trees. There had been no attempt to maintain the cemetery.





The original Jewish population of Czernowitz who had survived the War had mostly immigrated to Israel or the USA. They had been replaced by immigrants from other parts of the Soviet Union, who found it to be more comfortable, and perhaps more prosperous than other parts of the post-war Soviet Union. Most of these, or their children left for Israel in the 1970's and 80's. Only a few Jews remain in the city, many old and poor, and they did not attempt to restore or maintain the cemetery, but in some cases looked after individual graves.

After the visit in 2002, my wife Miriam (Mimi) decided that she had to do something about the state of the cemetery and also to put up a plaque to honor Popovici, the mayor of the town during the early days of WWII who convinced the Romanian dictator Antonescu to allow some Jews to remain in the city rather than being shipped to Transnistria, a wilderness area of the Ukraine. He claimed

the city could not function without its Jewish inhabitants. He was given permission by the Fascist government to authorize 2,000 certificates, allowing that number to remain and avoid transportation. About 50% of those “transferred” died of hunger, starvation, beatings or were outright murdered. Instead of 2,000 Popovici issued certificates to 20,000 Jewish inhabitants thus saving their lives. My wife’s family was amongst those. Popovici was removed from his position as mayor a year later and died shortly after. Yaad va Shem, the holocaust museum in Jerusalem has recognized him among the “righteous among the nations”.



Aici a locuit
Traian Popovici
(1892-1946).

În 1941, ca primar al
oraşului Cernăuţi,
a salvat de la deportare
în Transnistria şi probabil
de la moarte 19 600 evrei.
Cu recunoştinţă veşnică
şi amintire eternă.

Evreii Cernăuteni

У цьому будинку мешкав
Траян Попович
(1892 - 1946)

Будучи керівником Чернівців
у 1941 році, він врятував
19 600 євреїв від депортації
у Трансністрію та можливої
смерті. Наша щира
подяка і вічна пам'ять.

Євреї Чернівців

In this building lived
Traian Popovici
(1892 - 1946).

In 1941, as mayor of
Czernowitz, he saved
19 600 Jews from
deportation to Transnistria
and probable death.
Remembered in eternal
gratitude.

by the Jews of Czernowitz

Fortuitously there existed a Google E-mail group of ex-Czernowitzers, initially established for genealogical purposes. Through contacts with this group the idea

was born to establish an organization to restore the cemetery and through contacts with a young man, Christian Herman in Germany, to attempt to enlist the help of volunteer organizations that might come and work on the cemetery. As a result since 2004 there have been annual camps of youth organized by SVIT Ukraine (Service Civil International (SCI). Later a group from Germany affiliated with "Action Reconciliation Service for Peace (ARSP)," made up mostly of older people, volunteered to work on the cemetery for two weeks every summer. However the cemetery is so large, and since weeds and brush grow back it has been impossible to complete the task. Description of the SVIT Ukraine camp indicate that the "students' did not only work but learned a great deal about local Jewish history of the region, and had the opportunity to travel around the Ukraine". Thus it has become an educational experience.

Work is ongoing in the cemetery all year round. A group of Sabotnicks has been hired and is in the process of cleaning these areas not cleared by the work camps. Sabotnicks are a Christian sect who celebrates the Sabbath from Friday evening to Saturday evening as done by Jews. They also emphasize the Old Testament. To quote "They belong to the Russian sect, Molokani or milk-drinkers, one of the various sects that arose, during the sixteenth century, in those provinces of Southern Russia which were at that time under the supremacy of the Polish crown, all of which sects displayed a Judaizing tendency".

During trips in 2016 and 2017 I met with both groups of volunteers. The students come from all parts of Europe and even from far away as Japan and Australia. The Germans are mostly in there 60's or 70's, very decent people, who obviously wish to atone for the misdeeds committed by their fathers and grandfathers. I have ended up becoming friends of two of them on Facebook.

Since our earlier visits there have been many changes for the better in the state of the small Jewish community, or at least in how Jews are represented in the city. There is a small Jewish museum in one corner of what had previously

been the “ Jewish Center”, a massive building in Theater Square. the cultural center of the city. The museum was established in 2010, called the Chernivtsi Museum of the History and Culture of the Bukovinian Jews. It has a wonderful web site (<http://www.muzejew.org.ua/Koncept-En.html>). It is small but interesting and has a very devoted staff. The director and staff are not Jewish, but very interested in the collection. Money has been allocated to build a holocaust museum at the entrance to the Jewish Cemetery. This will involve the restoration of what was a prayer hall and mortuary, with an addition for the museum. Work has already started on repairing the roof of the building and the outside had been restored by 2019.

A Lubavitcher Rabbi, Menachem Glicktenstein, arrived from Israel about 6 year ago. He has done a wonderful job of renovating one of the many abandoned synagogues. He has been instrumental in building a mikvah, establishing a school for young children, and imported Israeli teachers for the children, so they may learn Hebrew. It is estimated that there are about 1500 Jews remaining in the city. There is a high proportion of mixed marriages, with a high rate of conversion to Judaism. Due to ongoing problems in the Ukraine some families recently immigrated to Israel. Since Chernivtsi is about as far west as one can go in the Ukraine, the war with Russia is not obvious to the tourist or visitor. Only when one talks to local people does one hear of the dire economic impact, and the local currency has been steeply devalued. In fact it is so cheap that I would recommend a visit.

Chernivtsi has a history of tolerance. Before World War II many ethnic groups lived in the city, apparently in harmony. Jews, Germans, Romanians, Ukrainians, Ruthenians, and Armenians. One cannot escape noting the Jewish past of the city. In the main street carved into the sidewalk is the name of the city in Ukrainian, German, and Yiddish. (Fig 5) Many buildings have the Star of David carved into them. There are streets called after famous Czernowitz Jews. e.g. .Eliezer

Steinbarg St. This apparently is not typical of other Ukrainian cities and reflects the fact that the city was part of Austria-Hungary until 1918 and was transferred to Romania only after WWI. The city is worth a visit if only to admire the various architectural styles, the center having been



spared destruction during the war. I basically went on an architectural tour with my camera.

The visit in 2016 was shortly after Mimi fell and broke her hip. Despite recovering from surgery, she insisted on a visit, we did not attempt to work ourselves in the cemetery. We visited a number of times to inspect what had been done, and to socialize with the volunteers. Since all our visits have been confined to a small area of the Ukraine, we decided to travel into the Carpathian Mountains, to the north- west of the city. This was a long drive by car, about six hours to cover perhaps hundred miles. I had booked into a hotel that turned out

to be very isolated in a small village nestled among rolling hills. Unfortunately it was too isolated, and difficult for Mimi to navigate, since our accommodation was down a steep hill from the main building containing the dining room. The building and surroundings reminded me of Brown County Park, the Abe Martin Lodge, but with better food. We had trouble making ourselves understood since no one spoke English. Fortunately one of the guests approached us, and acted as an interpreter (his English was quite good) and helped arrange a day trip to a nearby city, Mukachevo, which was of historical interest. It had previously been part of Czechoslovakia, then Hungary and now the Ukraine. It was quite beautiful and reminded us of a Transylvanian city, typical architecture, and lots of churches of various denominations. We cut our stay short in the resort since we had difficulty getting around and making ourselves understood. We spent our last day in L'viv, which is quite magnificent. This used to be an Austrian city, called Lemberg, then Polish, and now completely Ukrainian. Under the Soviet Union populations were moved (or expelled) and replaced with Russian speaking peoples. A similar exchange of populations had occurred in Mukachevo (which used to be called Munkash). Thus, ended the trip of 2016. I am writing this at the end of 2019, and we have made a number of trips to Czernowitz since 2016. Not only to work on the cemetery project but for Mimi to give interviews for a book being prepared, and to meet one of her childhood friends. She has become a celebrity in the city.

Epilogue.

I am close to completing this autobiography. I am now 88 years old, a long-varied life. Luckily I am still healthy, although I have been diagnosed with stage 3-4 kidney disease. These may cease functioning at any time, or can last a few more years.

The last few years our lives have revolved around grandchildren. We have four, and do not expect any more since our sons are now in their fifties and their wives close by in age. Each had two children, a boy and a girl. Thalia our oldest granddaughter is now in her senior year in college, here at Indiana University. She is not only beautiful, but very clever and talented. She is majoring in international politics and may go to law school. Her brother Jacky is a freshman at Rutgers. Both are wonderful children. Although Yuval married a non-Jewish wife, both children were brought up in the Jewish tradition and at least to Thalia, being Jewish is very important.

Jonathan's wife is Japanese, from Tokyo. We held a Jewish wedding in Bloomington to which a large segment of the Japanese family attended and participated. It was a wonderful spring wedding, held in the Indiana University Union and later a party (dinner) in our garden. Rina, Jonathan and Etsuko's oldest is now 15, an awkward teen. I think being Japanese-Jewish American has been hard for her. Her brother Alex is a totally different type, very outgoing personality, mischievous and a lover of nature. He can spend hours outdoors, hiking, always with his camera, and catches animals and birds on film that I and others don't see. At time of writing he is only 11 years old.

Thus despite wars and the holocaust our lives have been successful. There have been ups and downs as in all families. We have faced many challenges, most concerning whether to stay in the USA or return to Israel, whether to remain in mid-west America or move elsewhere. One cannot judge whether our decisions

were correct ones. In the last few years I have become involved with the local Jewish Community, not religiously, but as a secular Jew, identifying with other Jews, and participating and organizing cultural events.

Most of our life has been spent in Bloomington , Indiana, a place we never heard of until we were in our 30's. It was not a bad place to live in and bring up children. Yuval graduated from Princeton and after many years as an editor and writer, has moved into the finance business. Jonathan graduated from Washington U. in St Louis and received a Ph.D from U. Kentucky in geography, spending a couple of years in Okinawa, Japan. He is an academic and teaches and does research in geography at Cal State Fullerton.

The larger family presented in chapter one has also expended, probably in the hundreds by now. They are scattered throughout the world, some still in Scotland others in England, USA, Canada, Australia and Israel. It is impossible to be in touch with all of them.