M A U N A L O A O B S E R V A T O R Y-

A 30-YEAR PERSONAL OVERVIEW

by
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This paper is dedicated to the hundreds of people whom I met and worked with during my thirty one years at Mauna Loa Observatory (MLO). There have been many who have touched not only my life, but the lives of my husband and children as well, and to them I extend my fondest "aloha." Many have helped me personally and professionally, and to them I extend my deepest "mahalo." To all my bosses, thank you for allowing me to make my small contribution to the growth and development of the Mauna Loa Observatory. MLO has been not only a place to work, but an important part of my life as well. It is a pleasure to be here and to look forward to more years of participating in the enormously important ongoing work done at Mauna Loa Observatory.

INTRODUCTION

It was March 1966 and the second semester of my second year at the University of Hawaii (UH) at Hilo. I received a call one evening from a good friend's father, Mr. Howard Ellis. He told me that the observatory he worked for had recently moved into a building on the UH campus and they were looking for part time student workers. He wondered if I was interested and whether I knew a couple of other students who might also be interested in working for them. I did, and he set up an interview for us with the newly appointed Director, Mr. Lothar Ruhnke.

We walked into the office located in the Cloud Physics building of the UH the next day and met Mr. Ruhnke. He was very friendly and immediately put us at ease by asking, "Which one of you is Miss Aloha Hawaii?" I answered, "I am." He said, "Okay, you'll be my secretary." We laughed (unaware at that time of the political incorrectness of that statement!), and he promptly put us all to work doing data reduction from chart rolls and data sheets. I had to type letters using an antiquated manual typewriter and carbon paper, but I was thrilled to be working for such an important facility, one preparing to celebrate its 10th anniversary in a few months.

THE LOTHAR RUHNKE YEARS - 1966 to 1968

During the Ruhnke years I became one of the permanent members of the MLO staff, got married, and built my first home with the help and guidance of Lothar Ruhnke. People like Howard Ellis, Bernard Mendonca, Bill Cobb, and John Chin (who worked for the Cloud Physics group when I first started) became my work family. Mauna Loa was a place where co-workers worked and played together. I guess working in a small office was conducive to everyone being close-knit. We all ate lunch at the office together, and the first time I saw Johnny Chin eat his chicken salad sandwiches, banana, and carrots, I had no idea that I'd still be watching him eat that same type of lunch thirty years later, and every work day in between! If we could talk him into coming out to lunch with us, he'd bring his brown bag with him and eat that. Bernard's wife and children; Johnny; Barry Bodhaine, a graduate student working at the Cloud Physics Observatory; Charlie Garcia of the High Altitude Observatory co-located at the MLO site, his family; and my fiancé and later husband Jerry, and I, became avid ping pong players, poker players, potluck groupies, and Hapuna Beach campers. Lothar, Howard, Bill and their families occasionally joined us for these activities. During his two years at MLO Lothar Ruhnke accelerated the atmospheric electricity program in conjunction with the project Bill Cobb had been running there. He hired a Swiss man, Josef Mueller, as an electronic technician and instrument maker, and they spoke in German all the time. It was so new to me to hear "foreigners" talking. He also supervised the work of Ron Priebe, hired by Scripps Institution of Oceanography to continue John Chin's work monitoring atmospheric CO2 until Johnny rejoined the staff in 1968. Lothar bridged the observatory's transition from the Weather Bureau (headquartered in Honolulu) to the Atmospheric Physics and Chemistry Laboratory (in Boulder, Colorado). But his one stellar accomplishment, which set the observatory on its way to being an upgraded world-class facility, was his role in acquiring commercial power to span the 18 miles of isolated road between the Saddle Road and the observatory. Gone were the days of generator power whose pollution concerned everyone who knew of our work there, not to mention the enormous work load for staff members to keep it running. Lothar Ruhnke spent his second year commuting to the University of Hawaii in Honolulu, and left Mauna Loa in 1968 as *Dr*. Ruhnke.

HOWARD ELLIS, ACTING DIRECTOR - 1968 to 1970

The period following Lothar's departure was budget-lean, and everything was run on a bare-essentials-basis. Howard still cranked out his solar radiation numbers on an old Freden clunker-type calculator, and Bernard wielded his slide rule like a sword. I assisted in field work by making Gardner counter measurements in Hilo, near the erupting Kilauea Mauna Ulu vent, and at Mauna Loa whenever I went up. I changed the rain gauge chart at the Cloud Physics building and the hi-vol sampler bubblers behind the building. These were Bernard's duties, but he generously shared his knowledge of these tasks with me. I went on maternity leave for 6 months during this period when my son was born.

THE RUDOLF PUESCHEL YEARS - 1970 to 1972

Dr. Rudy Pueschel, his wife, Brigitta, and their three small children came to Mauna Loa and were immediately embraced as beloved members of the Mauna Loa family. With him came a resurgence of budget monies and increased staff. We took on a post-doc from Columbia University just before Rudy came to MLO. His name was Jim Simpson, and he and his wife Kim were in Hilo for a year. His work was in hi-vol filter sampling. We hired a senior electronic technician transferee from Las Vegas, Nevada, Mamoru Shibata, known affectionately as "Al". Soon after that Alan Yoshinaga, chemist, was brought on board. Barry Bodhaine had received his PhD from the UH-Manoa, and was given a post-doc appointment at MLO after Jim Simpson left. Rudy, Bernard, and Barry all shared the same passion for aerosol studies, and a fully equipped portable house trailer was set up at Cape Kumukahi on the SE coast of the Big Island (40 miles from Hilo) to make aerosol and meteorological measurements at the sea shore. Publications proliferated during this period, and new equipment was purchased and installed. Rudy requested and received two GSA propane vehicles for driving to the observatory to demonstrate our commitment to the "clean air" environment maintained at MLO. Bernard applied for and received a full-time, long-term university assignment to pursue a master's degree. In late 1972 he moved his family to Ft. Collins, Colorado for a year and a half and subsequently achieved his goal. Barry was converted to a permanent full-time employee of MLO, and Dr. Mark Goldman, a part-time chemistry prof at UH-Hilo became our 3rd post-doc. His 1-year position was called Presidential Intern and he studied carbon dioxide.

I took another maternity leave of 6 months when my first daughter was born in 1972. Rudy left MLO just as I returned from my leave of absence.

THE RON FEGLEY YEARS - 1972 to 1976

Dr. Ron Fegley came to MLO from GMCC, the new laboratory that took over the administration of MLO from APCL. Ron was sent to introduce a new lidar system to the retinue of instruments already operating at MLO. Dr. Earl Barrett of GMCC, Boulder, was sent here to assist in the installation of the lidar that Ron would be running, maintaining, and upgrading. Ron's appointment at MLO came at a time when budget problems once again stifled the growth of the observatory. A few new pieces of equipment and our first HP calculator (which then cost us $2000!) were purchased. Ron attempted to outfit a portable mini-trailer as a portable lidar building with the hope of eventually getting it sent to Barrow for use there. Ron was an avid flyer and owned a percentage of a Cessna

airplane that he flew every chance he got. Although my husband Jerry enjoyed flying with him, I never went, and told him I didn't care how good he was I wasn't getting into any toy airplane to go flying!

The four years Ron was here were bumpy, to say the least, and saw the departure of both Bernard and Barry to Boulder for jobs at GMCC. An NRC Senior Research Fellow, Dr. Kinsell Coulson, came to MLO on a 6-month sabbatical to do work in solar radiation and polarimetry. In 1974 I took my third 6-month maternity leave to have my daughter. I returned in early 1975 just before MLO became embroiled in an office space war with the University of Hawaii at Hilo. They needed their space back for their own expansion and wanted us out by the summer of 1976. GSA worked with Ron & I to acquire new space in the Hilo Federal Building in downtown Hilo. It took more than a year to finalize our new lease and to build a chemistry lab and electronic shop in the basement of the historic edifice. On July 1, 1976, a few days after Ron left to go back to Boulder for a new job at GMCC, we moved into our new offices. Sitting in the Director's seat was another young up and coming scientist, Dr. John Miller.

THE JOHN MILLER YEARS - 1976 to 1978

Dr. John Miller came to us from Air Resources Laboratory, Silver Spring, MD, the home office of GMCC. His assignment here was strictly to get to know the field operations of the observatory and to build up the rain chemistry program. Alan Yoshinaga had the new chemistry laboratory in the Federal Building set up in anticipation of John Miller's arrival and the accelerated rain chemistry program. John had arranged for our 4th Post-Doc, Duane Harding, to come to MLO to run an experimental rain chemistry program in Hilo, on Mauna Loa, and in the Volcano area. A scientist from Boulder, Dick Cram, was hired to replace Bernard, and Howard Ellis took on the lidar project from Ron Fegley.

John's time at MLO was very busy as he worked on plans and oversaw the completion of the newly refurbished MLO Main Building. We hosted the GMCC Annual Meeting here in Hilo in 1978 and held a dedication ceremony complete with an authentic Hawaiian Kahuna Pule (priest) at the new main building on Mauna Loa. We had two congressional representatives in attendance as well as several ARL and GMCC dignitaries. At the precise moment of cutting the maile lei that was strung across the front door and officially open the building, and with news cameras rolling as the ceremony proceeded, Glenn Shaw of the University of Alaska Geophysical Institute opened the door from the inside and walked right through the lei and the dignitaries gathered at the door. A very solemn occasion turned suddenly into a hilarious situation with everyone bursting into laughter at the awkwardness of the moment. Glenn will never forget that, I'm sure, and none of us at MLO will ever forget it either!

John's crowning glory, however, was the Mauna Loa 20th Anniversary Report. His wife was a JGR editor and assisted him in editing all the papers, scientific and reminiscent, that were submitted for the volume. Using an electric typewriter (word processors and computers had not yet come on the scene at MLO), I typed, re-typed, and re-typed again all of the submissions. John worked with the publication specialist in Boulder via mail and telephone (yup, no fax here either), sending galley proofs back and forth, and setting up the layout of the book. Finally it went to press and has been a widely requested and distributed publication. All copies are now gone.

On a personal note, John and Sylvia Miller had their first and only child, Katya, while he was Director here. He left to become Deputy Director of ARL in Silver Spring, MD.

THE KINSELL COULSON YEARS - 1978 to 1983

A few months after John Miller left, Kinsell Coulson was hired to replace him. Kin retired from the University of California at Davis and joined the MLO family in 1978. Kin and his wife, Vivien, had been on a sabbatical here at MLO several years earlier and fell in love with Hilo. It was so nice to have people here who were probably not going to stay for only a couple of years. And Kin was a known quantity, previously there was always the concern of "What is this new director going to be like?". Kin was a very likeable person whom the staff immediately embraced. He pulled duty on the mountain just like every observer at MLO. He had an open door policy and encouraged everyone to see him about anything that bothered them. The budget was still a problem, but we were getting used being told to watch our spending, and sometimes we'd even listen. We welcomed Tom DeFoor to our MLO family and bid farewell to Howard Ellis who retired shortly after Kin took over. We had our final post doc to date, Dr. Allen (Al) Dittenhofer, join us for a year and a half. He collected rain water samples and analyzed them with an electron microscope owned by and used at the University of Hawaii-Hilo campus. Tom and his family, and Al and his wife, became very close personal friends of my family, as did Lt. J.G. John Bortniak, a NOAA Corps officer assigned to MLO for 2 years. John is now a full Commander in the NOAA Corps stationed in Maryland. Al is Vice President of Enviroplan, an environmental pollution consulting firm located in New Jersey specializing in factory plume studies. Arne Austring joined our staff during this period and eventually became our computer expert. A new program set up by the US government, called the Junior Fellowship Program, brought us a very bright high school senior as the MLO Fellow, Darryl Kuniyuki. He worked at MLO during summers and vacations, and eventually moved into a permanent position after he graduated from the University of Hawaii at Manoa as an Electrical Engineer.

Probably Kin's most important achievement was the groundwork done for construction of a lava diversion barrier at MLO. He worked long and hard with Dr. Jack Lockwood of the USGS Hawaii Volcanoes Observatory to get plans drawn and approval obtained from the State of Hawaii Department of Land and Natural Resources (DLNR) for the construction. After many battles with DNLR the effort was finally culminated, although construction did not begin until after Kin left MLO. Mauna Loa has the only lava barrier in the United States. It was fashioned after the one built at Mt. Etna, Italy.

Kin was a kindly country boy at heart, and everyone loved him and his anecdotal stories which were always reminiscences of his youth and were always appropriate for the occasion. But he had trouble shifting from university mentality to government mentality. It took time for him to adjust to the mega-bureaucracy that we dealt with as a matter of course. Kindly as he was, he always stood up for what he believed was right, and several times I witnessed the "rath of Kin" in his dealings with cooperators and GMCC personnel as well. Placing bias aside, I can honestly say if he was angry enough to make an issue of something, he was nearly always right. For example, one of his pet objections was the development and installation of the CAMS data acquisition system at MLO. He really believed it was a mistake, and he voiced his opinion quite adamantly at a GMCC annual meeting I happened to be attending in Boulder. Nonetheless the CAMS system was put in place at MLO, but it was replaced several years later with a system similar to one Kin had suggested.

Kin had a habit of befriending vagabonds. He became benefactor of a former scientist who had left the real world to buy property and live in Kalapana (an area since destroyed by lava) to commune with the psyche of the earth. This man became quite dysfunctional in the traditional sense of normal life, and quickly found himself penniless. But Kin, over the objections of his wife, would take him food and loan him money to get him through the tough times. As it turned out, he sold his property, moved back to the mainland, and became a working scientist again. Kin had a way of knowing how to deal with people that others considered lost causes.

In 1983 Vivien finally decided that Kin was getting just the slightest bit too old to be going up the mountain as often as he was, and she convinced him that it was time for him to retire and move back to California. They had been here over 5 years and it was difficult to see them leave. But they've been living a very active life since then, and we still see them occasionally when they visit.

THE MAUNA LOA FLANK ERUPTION OF 1984

Unfortunately for us the eruption of Mauna Loa occurred when we were between directors. It was a difficult time for all of us because of the uncertainty of the duration of the eruption, the possibility of new outbreaks closer to the observatory, and the concern for getting power back to MLO since the power lines were crossed by the lava and cut. Not having a plan in place when the eruption first broke out, we had to depend on Boulder to make decisions for us and to quickly organize a measurement schedule to maintain. The stress of the situation bore heavily on us, tempers were short and instructions from Boulder were resentfully received. Comments from staff members were heard such as: "Taking Gardner counter measurements using a gas mask is ridiculous."; and, "Those guys in Boulder are just coming up with busy work for us to do to make sure we're not goofing off here." The very big job of getting power back to MLO fell on Tom DeFoor's shoulders. He and Charlie Garcia of the High Altitude Observatory borrowed a huge generator from the Mauna Kea Observatory that had to be worked on and put into operation at the 8300 ft. level on Mauna Loa. But they did the job and MLO was back in operation a few days after the eruption began.

THE ELMER ROBINSON YEARS - 1984-1991

When Elmer walked in we weren't too sure about what to think of him. He looked like a peer of Kin's, so we figured he'd be similar in style. We weren't entirely wrong, Elmer had stories and anecdotes of the "good 'ole days" just like Kin, but he definitely had a different style. He, too, had to adjust to the change between university and government, and as with Kin, it took some time. But he was far more accepting of "Boulder's law". He got along amiably with the powers-that-be and always kept to budget. Things went very smoothly with Elmer here, and his term was the longest any Director had ever had, 7 years. During Elmer's administration we changed a few staff people. Cindy McFee, NOAA Corps officer, was brought on board to take John Bortniak's place for 2 years. About that time Tom Garcia was hired temporarily to maintain the ozone program including doing weekly ozonesonde flights. After he left, Cindy McFee took over the sondes and ozone program. Arne Austring later left Mauna Loa to the disappointment of all of us here, but Steve Ryan was transferred to MLO from the Samoa Observatory and amply filled his shoes. This was the 4th and final observatory for Steve to work at, since he'd worked at the other three already. Another valuable addition to MLO was an old friend, Bob Uchida, who took Al Shibata's ET position upon Al's retirement. During this time, too, we did away with student help and hired a full time data clerk.

Computers were introduced to Mauna Loa for the purpose of word processing (data acquisition computers were already in place) and a whole new world opened up for me. What an incredible invention! What I would have given to have this when we did the 20th Anniversary Report! Arne Austring became mentor and guru of the PC system and passed on to me, and anyone else who wanted to learn, some of his knowledge of word processing, spreadsheets, and graphics. Because the computer took on additional applications, more PC's were purchased and the rest is history.

Elmer had what I called "the back door approach" to solving problems and proposing new schemes. He came up with obscure methods of doing things mostly to force everyone to dissect and thoroughly analyze the situation at hand, in order to figure out how he came up with his plan. Sometimes in doing so, people came up with even better solutions. This was a management style I both admired and often times misunderstood. But it was very successful.

One of the main events that occurred during Elmer's tour was MLO's participation in the Russian research vessel, Korolev's cooperative research effort with NOAA in the Pacific. We greeted the vessel, provided supplies and other requested items, and played host to not only the Russian scientists and crew, but the many NOAA and NSF officials, and the American science crew as well. It was a week of hustling and bustling and preparation of on-board facilities to accommodate the instruments from CMDL for the voyage. We had a huge celebration and feast for everyone and enjoyed the camaraderie with our foreign visitors. The Korolev returned for a second cooperative voyage two years later. By then we were old hands at this and everything went like clockwork. We now have some good friends in Russia to visit.

Another big activity was the hosting of the CMDL Annual Meeting and honoring of Dr. C.D. Keeling's 30 years of CO2 work at MLO. We also hosted a WMO meeting concurrently. So we had visitors from all over the world here to care for and impress.

When Elmer decided to retire in 1991 after 7 1/2 years at MLO it was like losing a family member. We didn't think we'd know how to behave with another boss. It was a long and difficult hiring process to find a replacement, and we all sort of expected another post-retiree to take over the reins. Boy, were we surprised! We received word that a Boulder-ite that we knew only slightly was coming to be Director: Dr. Russ Schnell.

THE RUSS SCHNELL YEARS - 1992-Present

"What's he going to be like?" We all tried to reassure each other that he would work out fine, and the fact that he wasn't over 60 didn't mean a thing in terms of what he'd be like. For me it was just another chapter in my long career at MLO, and I figured I could work with anybody who wanted to be Director here. I was right.

Russ has a management style like no other. He is dynamic, sure-footed, and unafraid of trying anything. He too had to shed the relative freedom of the university administration mentality and quickly learn the workings of the U.S. government. It was like pulling teeth in many ways, it's difficult to explain some of the ways we have to do things, even for a veteran like myself. At first he'd like to "test the waters" and do things according to "Schnell's Law". I must admit that half the time he succeeded, but he learned that it wasn't worth the effort to be overly innovative all the time, it took too much manipulation. For me it's the first time I am working with someone who is only a couple years older than me, rather than the normal 15-30 years. There was a bit of what might be called a power struggle at first, but we soon settled into a very amiable and cooperative relationship, with Russ very much in control. It was a first-time experience for me to be out of the administrative loop I used to be in, but my role at MLO became less hectic and more in line with my mature nature. Russ is very supportive of the staff and continues to work hard to ensure harmony among the crew. He expects a lot from everyone, and this is exactly what everyone wants. Challenges have always been well received by our staff, and Russ keeps them coming. He recognizes that we will rise to the occasion whenever called upon, and he provides a variety of new and interesting tasks for everyone. But he also listens and makes adjustments if anyone feels they're being over-extended. Tom DeFoor left

MLO during Russ' tour to take a job in Boulder. He was replaced by Dr. John Barnes who has taken over the lidar program.

The observatory changed drastically these last 5 years under Russ' administration. There are new buildings, renovated older buildings, add-on rooms, and new pathways. Everything not nailed down was taken out and thrown away, every building cleaned and painted, and new radio transmitters allowed in. The Global Oscillation Network Group (GONG) project, which for years had been trying to gain approval to co-locate with us at MLO, finally found a friend in Russ, and they presently have a site on the MLO grounds. Russ has a very good business mentality: do things for cooperators and they will pay handsomely in return. So far he's right. The big Network for the Detection of Stratospheric Change (NDSC) project is alive and well at MLO. Construction of a new building is underway. By this printing construction will be completed and the building occupied. Both projects have brought a windfall of dollars to the MLO and CMDL coffers. This is partly responsible for the many new computers we have at MLO these days. Since Russ came on board we've ordered dozens of computers for the office and mountain. We have real time data transfer from MLO to Hilo now, among other things. We've definitely gone a long way since the days of slide rules and manual typewriters. A recent addition to the staff is Les Pajo, an office automation data clerk who has already become an invaluable computer whiz. She is back up not only to me, but to our computer expert, Darryl Kuniyuki, and has become an important graphics program developer, new software examiner, and troubleshooter for existing systems. In a few years when I retire Les will become the "all-around" administrative and technical person here and will take my position. I feel good about leaving it in excellent hands.

INTERESTING SIDE NOTES:

1. *Prison labor* - During my first few years at MLO, our road maintenance work was done by the Kulani Honor Camp prisoners. In fact, it was the prison inmates who built the road between MLO and the Saddle Road. Before that the road to MLO went up past the prison (~20 mi. SW of Hilo) to the 8300' elevation, then hooked south to the observatory. The new access road went west from Hilo along the Saddle Road to the 6500' elevation, and then 18 mi. south to the observatory. This shortened the trip by 30 to 45 minutes. I'd hear the MLO staff talk about the camaraderie they shared with these prisoners, and I wondered how safe it was to fraternize with criminals. Well, I soon found out. We had a big picnic at one of the beach parks for the prisoners who worked on the road. We provided food, soft drinks, basketballs, volleyballs and nets. Everyone ate and played and had a good time. One of the guards pointed out some very hardened criminals to me: wife murderers, armed robbers, hit men, etc., all very frightening to think about, yet every one of them acted perfectly civil and quite gentlemanly. The prison warden became a good friend of the observatory, and often when we had special visitors, we'd call him up and he'd send a few inmates into the woods surrounding the prison to pick us the freshest, greenest, and most fragrant maile leis we could get anywhere, at no cost. After a few years and some liability questions the prisoners were no longer allowed to do government or community service jobs. It was a great disappointment to them and to us.

2. *Foreign visitors* - Over the years MLO has been host to dozens of visitors from all over the world. Some left more of an impression than others, mostly because of their personalities. The first that comes to mind is Yoshikazu Tanaka, a graduate student from the University of Kyoto, Japan. He lived in the shop adjacent to our office at the UH Cloud Physics Observatory for a few weeks while he did his measurement study. He cooked his interesting smelling foods which tasted very good the few times I was invited to partake. I was still single at the time, and would find little gifts left for me when I came to work, honed from materials discarded around the shop. Among these were "geta" slippers, a wooden clog-like thong; a wooden bracelet made on the lathe; a little leaf pendant; and several art items made from aluminum or steel. He had a passion for butterflies and could be seen chasing them

with a huge white net. He caught and categorized many different varieties and offered them to me when he left. I graciously declined. Dr. Tanaka received his PhD and became the director of a remote observatory in Japan. I understand he has made quite a name for himself these last 30 years.

Another interesting visitor-incident occurred when we had two low level Russian scientists visit us for three weeks. They were the first Russians I had ever met, and back in the early 70's there was still a "cold war" mentality, so their visit was even more intriguing than subsequent Russian visits. I remember them walking off the plane at the airport and thinking to myself, "Wow, these guys look like they stepped out of an old Humphrey Bogart movie"! They were dressed in baggy flannel pants with baggy long sleeve shirts carelessly tucked in. Their shoes were old and scuffed, but probably of fairly good quality. I approached them with two leis that John Miller had bought for me to present to them, and when I bedecked them and went to kiss their cheeks, they pulled back as if appalled at the boldness of my gesture. Understanding that our customs were not known by these first-time visitors to America, and Hawaii of all places, I smiled and pulled away. However, by the time they left three weeks later, we had become good friends, and they tearfully thanked us in very broken English (learned from us for the most part), at a going away party we threw in their honor. They accepted the leis and the kisses very enthusiastically at that point! I smile when I think of how rigid they were at first, and how loose they were at the end. I still have the gifts from them, and they left with Hawaiian music from me.

The Germans from Max Planck Institut were frequent and welcomed guests. One in particular who worked for Dr. Wolfgang Seiler, was here for the CO program every one or two years and became a very close friend of my family. He'd be a regular dinner guest at our house and it was interesting to hear him talk about the workings of his government and his institute especially. My husband enjoyed the good-natured arguments they had over U.S. vs. German ways of life. But of all the visitors, the Germans were more worldly and refined, appreciating classical music and literature. Worldy can be taken too far, however. One time our good friend, a German working for the CO program who was married to a woman we never met, came to MLO with a guest, his sister-in-law. They were busy sight-seeing when he wasn't working, so we only got to meet her once in the office. After their few days here, they left for the U.S. mainland for more sight-seeing. The day after they left, his wife called for him. I told her he had gone with his sister-in-law to the mainland. When she asked, "What sister-in-law?", I knew I might have gotten him into trouble. He never did come back to MLO after that and the CO project died.

A Chinese national, Dr. Guoan Ding, worked at MLO for one year to observe and learn about how an observatory is run in preparation of a new Chinese remote station in the mountains of the Tibeten plateau. We all grew to really care for Mr. Ding, he was a very sweet and agreeable person. We knew he missed a lot of what was going on around him because he could barely speak English, and could only understand you if you spoke very slowly and clearly. He was in the middle of his tour here when Mauna Loa erupted, so he saw everybody under stress and at their worst. On the other hand he saw how quickly we got things together and was impressed with how fast the observatory was back in full operation. He was a really interesting character himself. He lived as frugally as he possibly could, renting a small room in a Chinese family's home, walking the 3 miles one way to and from work, and eating butter and jelly sandwiches on white bread. (When asked why he chose white bread, he said "We cannot get refined wheat bread like this in China". He also loved white rice.) He saved every penny he could and went back home with more money than he could have earned in years in China. He was about 5' 10" tall and weighed about 100 lbs. His waist was 26". I once gave him a pair of shorts my son outgrew when he was 8! What was funny was watching him and John Chin try to speak Chinese. Because Ding spoke Mandarin and Johnny sort of speaks Cantonese, they could barely understand each other. We finally convinced Johnny that Ding could understand him better if he spoke in English! A highlight of Ding's time here at MLO was a Chinese pot luck lunch we had in the office. Johnny, Ding, and I cooked several dishes for everyone in the office. Johnny made beef

broccoli, I made chicken stir fry with red & yellow bell peppers, and Ding made pork with mushrooms and scrambled eggs with pork. We never saw any one use so much cooking oil in our lives! We three had a pint of oil among us, Johnny and I used 1 ounce each, and Ding used the rest and ran out cooking those two dishes! We told him he was using way too much oil, and he said, "But you must have oil to 'free' (fry) all of this food". We looked at each other and let him do his thing. It turned out to be very delicious!

In the late 80's a very charming and colorful visitor to MLO was Dr. Pedro Sancho-Dias, of Tenerife, Canary Islands, Spain. The Spanish were going to be starting an observatory on Tenerife and he was here to observe a remote sensing station first hand for a couple of weeks. He teamed up with Arne Austring, both bachelors at the time, to spend their evenings together. They enjoyed frequenting night spots and quickly built a reputation of being a fun-loving twosome. He was here in December and we invited him to a Christmas party at our home a week before Christmas. He had a great time, and he and Arne were the last to leave, feeling no pain, and they continued their revelry at a local bar where Arne decided, with coaxing from Pedro, to propose to a waitress he had admired for a while. Apparently this girl found Pedro more interesting than Arne and ignored Arne and his proposal. She was quite attracted to Pedro, and even though he did not return her advances, therein lay the reason for the fun-loving twosome to end their relationship. Neither of them pursued the young lady when they were sober, and they stopped the nighttime frolicking. At least Pedro left here with all the information he hoped to gain of how a first class observatory was run. I met up with Pedro and his new wife in Boulder at the 1994 CMDL Annual Meeting. He seems very happy and very involved with the Tenerife Observatory. Arne left MLO and now lives in Tombstone, Arizona pursuing his computer interests on his own.

3. *Exciting situations* - One of the most exciting incidents at MLO for me occurred during an eruption of Mauna Ulu at Kilauea in 1969. We heard about the outbreak and its 1200' fountain just off the chain of craters road at the Volcanoes National Park. Bernard Mendonca wanted to measure aerosols with a Gardner counter and asked me if I wanted to work one while he worked another. We got permission from the rangers to get close to the venting, and they even provided a jeep and driver. The ranger took us and a volcanologist as close as he could get to the fountain, so close in fact, that the cooled lava falling from 1200' hit the jeep with such force it made dents in the roof and hood, and scared the living daylights out of me! I kept begging to get the heck out of there, but Bernard was enjoying the spectacle, and since there was no point in making Gardner measurements (the instrument had gone off scale miles away from where we were), he decided to make this a photo opportunity and started snapping away from inside the jeep while I trembled in fear. Finally the ranger had enough sense to say "enough", and we sped off with lava falling on us for several miles! Later, when we looked at the developed pictures of the fountain, they appeared to have been taken with a telephoto lens, but they weren't!

A few years later I experienced probably an equally scary episode while at work in the UH Cloud Physics building. I had gone into the shop where several of us had gathered for different reasons. Suddenly the building started to tremble and all the steel and iron bars stored on ceiling supports and along the walls began to shake with the loudest noise you can imagine. The saws, lathe and other machines on the shop floor started moving around. I screamed "Earthquake!" and turned to run out the shop doors. The asphalt parking lot just outside the doors was moving in a waving motion with the parked cars dancing on it! I thought the world was coming to an end! The noise was deafening, the floor was unstable and as I ran towards the door I caught up with a Cloud Physics student employee who was also running toward the door. I held on to his arm for support only to have him push me away and say, "Hey, every man for himself!". In a tense moment like that you quickly find out who your real friends are! Once outside we stood clear of the building and slowly the earth stopped shaking. We reluctantly walked back into the offices where we felt a few minor after shocks, and the shop people went to clean up the mess in the shop. The whole earthquake probably took two minutes, but I can assure you it felt like half an hour!

Although not very scary, flooding is an event that can cause problems for anyone going up and down the mountain. Two situations come to mind, one in 1966 shortly after I started as a permanent employee, and the other 12 years later. The first occurred because Kaumana Drive, the road leading to the Saddle Road, sustained serious damage due to raging water overflowing the ditches along the road. Traffic on Kaumana heading in both directions were stalled for several hours. There was a street party going on between rain showers, and several people came into our house to use the phone. One of our summer intern students just happened to be driving down from the mountain alone and was caught in the line of cars waiting for repair work on the road to end. Fortunately for him he was stalled a few cars away from my parents home where I lived since I wasn't married at the time. I could see our MLO jeep from the front porch and ran up to the vehicle to tell him to come into the house. We kept an eye on the situation from inside the house where my mom had prepared enough dinner to include a poor stranded student at the table. He stayed for at least two hours before the line started moving. The second incident occurred when the Saddle Road flooded and had 80+ inches of water in one low spot on the road! Obviously traffic couldn't pass that area, so our mountain crew had to come back down to Hilo and get to the mountain by going north along the Hamakua coast past Waimea to the Saddle Road turnoff. They could then drive to the MLO from the Kona side. That was a three hour trip in both directions and could be considered service beyond the call of duty (although a stop at Tex' Drive Inn, the Portuguese donut house in Honokaa that sells the best commercial malasadas, made the trip almost worthwhile). A new culvert system in the Kaumana neighborhood spared that area from the damage it had endured several years before.

Life at Mauna Loa "continues on an even keel" as Kin Coulson always said. Nowadays we have mostly good days, everyone is hard at work yet comfortable in their jobs. Things around here are extremely hi-tech theses days, with all the support needed for a successful state-of-the- art observatory. There always seems to be another interesting discovery to be made, and more instrumentation to support the effort, so it never gets laid back here. The normal measurement program continues to ensure long-term data availability. We see cooperators come and go, happy with the results of their experiments. And the staff at MLO provides the competent work for most of these successes.