Dr. Herbert Swerdlow, my great-uncle, was in the Army Air Force from the middle of 1943 until the end of World War II. During this period, he served as a B-29 navigator in the Pacific Theater of Operations, 20th Air Force Command, 487th squadron.

In 1941, Dr. Swerdlow enrolled in Brooklyn college where he studied, chemistry, biology, and other sciences. However, he soon got word that he would be drafted. Instead of waiting for his name to be called up, he decided to enlist on his own so that he "could then select which ever area of the military [he] wanted to be in: the Army, Navy, Marines, or Army Air Force". Thus, after only a year of college, he elected to join the AAF. This choice was based on the potential the AAF would provide for developing and using his knowledge of math and science. While under the South East Training Command in Louisiana, he went through basic training and then went on to aviation cadet school. He emerged as a second lieutenant with training as a navigator. Following this, Dr. Swerdlow was assigned to the Pacific Theater of Operations. The AAF "had all they needed on B-17's and B-24's" he said, and for that reason he was sent off to fight Japan. The B-29 was not needed as much in the European Theater because the flight distance from England could adequately be covered by the older planes. However in the Pacific, the long range of the new B-29 was needed: "They knew we would be operating form the south Pacific and flying to the mainland of Japan. They needed an aircraft that could carry enough bomb load and fly that distance". For that reason, my Uncle underwent another period of special training to learn the navigation and handling of the new airplane. Picking up a B-29 in Nebraska towards the end of 1943, he headed over to the Pacific.

Originally, Dr. Swerdlow was stationed in the Marianas on a small island near Guam called Tinian. The Navy put down airstrips, and, because of the small size of the islands, the air bases ended up occupying most of the available land. While stationed there, he went on a variety of different missions. At first, most of the missions were incendiary raids on major Japanese cities . He described how "the populations lived in crowded areas in buildings which were very flammable. Once it got started, the fire would really spread." Weather was crucial: planes would fly up ahead and study weather conditions over the target zone to determine how or if the site should be bombed. If the weather was blowing from the North, the planes would come in from the North side and drop the fire bombs so that the wind would carry it. My Uncle recounted how in "the first few [incendiary raids] that you went on, you would get really upset because you were killing lots of people". The army would try to combat this by showing "propaganda at our end to show us the atrocities of the Japanese military to neutralize what we were doing. They convinced us that this was a way to get the people to start an uprising and convince the military and the Emperor up there to stop". Another argument by the AAF for the raids was that they would "disillusion the population of Japan. That way, it might turn the war around and they

might give up". My Uncle thinks that although "the approach... was feasible,... it did not work out".

Incendiary raids were not the only type of missions that he flew on. Over the course of the war, the B-29's played an important role in the aerial mining of Japanese waters. There was a river which ran from Tokyo to major port cities like Saka in which the Japanese were shipping equipment, munitions, and supplies. For several months towards the end of 1944, "we would drop mines along various water routes. They went down by parachute in the dark...[and] plant [themselves] in the water. Certain tonnage of ships would set them off". The mines would be set so that they would not all explode at the same time at each passage of a ship. This would prevent the easy clearing of mines. Dr. Swerdlow seemed to have a more favorable impression of these strategic and relatively safe missions: "You went up by yourself, you controlled your timing, you dropped them, and there was little resistance because they did not know that you were coming".

The B-29's were highly effective in the aerial mining of Japanese waters. Originally, the AAF embarked on the mining campaign grudgingly. It was the Navy that was most supportive of aerial mining but they lacked the planes to accomplish it sufficiently. The AAF were reluctant about the campaign and saw it as an unnecessary diversion from aerial bombardment[1]. Despite the AAF's initial hesitancy, aerial mining turned out to be a highly effective strategic use of the B-29's. The bombers enabled mines to be planted in areas inaccessible to anything but an airplane. 1 1/4 million tons of shipping were sunk or damaged by mines planted by the B-29's during the last five months of the war, sinking a total of 287 ships and damaging 323. Most of the B-29 mining was done near the mainland of Japan especially against the Shimonoseki Straits[2]. Despite their effectiveness, aerial mining encountered a number of difficulties. The supply of the mines could not meet the demand for them. Secondly, the more advanced mines of the German and English were not used. This deficiency was counterbalanced by the lack of sophistication in mine clearing on the part of the Japanese[3].

Following this period of aerial mining, he went on raids "after some factories where they would be making some munitions" followed by raids on other military targets. In total, Dr. Swerdlow flew 33 or 34 mission, just shy of the 35 mission tour of duty; the war had ended before he had a chance of finishing his tour. He attributed the high number of missions required for a tour to the fact that the AAF "did not want such a high turnover rate".

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[1] Wesley Frank Craven and James Lea Cate, *The Army Air Forces in World War II* (Washington DC, Office of Air Force History, 1983 vol 7) 664

[2] Kenneth P. Werrell, *Blankets of Fire: US Bombers Over Japan During World War II* (Washington DC, Smithsonian Institution Press, 1996) 231.

[3] Werrell, 172-6

As a navigator, my Uncle was occupied throughout the long flights in trying to keep the plane on its proper route: “the pilot would take off and then it would be turned over to auto pilot. I would then run the aircraft. Every fifteen or thirty minutes, you would check your course to be sure you were in the right direction”. Navigation was partly done through celestial navigation. Even if the bombing was to occur during the day, the plane would end up flying part of the time at night. The missions usually were 7-10 hours each way and therefore required the planes to leave at three or four in the morning to reach a target by mid-day. Radar was also used, however in “those days, radar was not so specific. It let us know where we were for navigational [purposes] because water and lands were very distinctively contrasted”. In addition to its relative unsophistication, it was also located in the unpressurized part of plane and was therefore subject to pressurization leaks, cold temp, and electrical shorts at higher altitudes. Furthermore, it was located in the rear compartment of the plane while the navigator was up the front. Direct access to the machine was therefore not possible[4]. As can be expected, bombing was “reasonably accurate, [but] not great”. For some type of missions, this was not such an issue: “for the incendiary bombs, there was no pinpointing. We would drop heavy loads of bombs in a sector. We would have the buildings catch on fire and allow the wind to spread it”. In other missions where greater precision was required, “by virtue of the numbers of explosives that went down there, we got the job done in an acceptable manner... If you dropped enough of them, you would get a random hit. And if you send a hundred, two hundred airplanes over a target you would blanket the target”. During the course of the war, Dr. Swerdlow served as a navigator on the leading plane of the bomber squadron. In addition to navigating his own plane, he had the responsibility of helping to guide the entire squadron to the target.

Although he knew how to fly and navigate a B-29 Superfortress, my Uncle had never learned how to drive a car. As the lead navigator, he had other responsibilities such as going to headquarters to pick up maps, supplies, and other equipment for the squadron which would be needed on the mission. To help him get around, he was given a jeep. However, because he did not really know how to drive so well, he recalled how “I stripped plenty of gears and I had to bring it back and they had to give me a new one cause I tore the transmission out of them”.

Flying over enemy territory, was always dangerous. Usually, the damage was inflicted flak. Parts of the airplane might be hit and the equipment knocked out. Sometimes, the wing tanks would be hit and enough gasoline would be lost so that it would be difficult to make it back to the base. “There was a lot of luck. In retrospect, it was an amazing feat to get out of that thing relatively unscathed”. He recounted two incidents in which the plane was damaged to such

[4] Werrell, 63

a degree that an emergency landing was required. The following is an account of one of these incidents:

> We were coming back form bombing a major city, and we got struck by flack that caused our airplane to not function well. We could not make it back to Tinian which was 700 miles away. We had to go into Iwo Jima. That was during the time that Iwo Jima was being taken over, and we did not have full control of it. We came back and we had to land. Iwo Jima was half way between Tinian and the Japanese mainland. We radioed in and we asked for permission to go in and emergency land our airplane. At that time, the marines were invading and taking over, the airport was not cleared, and the runway had not yet been put in completely. They suggested that we ditch, that is landing in the water in a particular location on the island. When we got down low, it was a rainstorm, and the seas were 10 15 feet waves up there. And we would have just been plouched. We elected, without clearance, to go into the existing airport. The airplane crash landed. There was no blacktop so we slid into a pile of dirt. The airplane dropped in half. Fortunately, the engineer on board, he shut everything down so there were no fires. I was knocked unconscious trying to get out of the airplane. The next thing I knew, I woke up in a tent on a cot with water running under the cot because it was raining. I though I was dead, I thought I was someplace in the eternal. But it turns out that it was a marine bunk. A marine told me that out plane landed here without permission and they were threatening to court marshall us. All I wanted to know was weather I was alive our dead. I was in the hospital for a while. I told the doctor that I really was not up for continuing anymore but he said that I was fine, mentally and physically all right. I had 25 missions at the time. I was sent back.

In the second such incident, his plane ditched in the water. “We were in a raft for over 2 days. We were concerned who would get to us first. Would it be the Japanese reconnaissance plane which would come down and shoot at us?”. Luckily, on the 2nd day, a Navy sea plane spotted them and they were rescued. Dr. Swerdlow felt as though it was not that unusual for crews to be stranded that long out in the ocean as the AAF and the navy lacked the capabilities of performing a more extensive sea rescue operation. Because of these experiences, the AAF presented my Uncle and the rest of the crew with purple hearts and distinguished flying crosses .

Sea rescues were troublesome issue in W.W.II. It was approximately 1400 miles between the Marianas and the coast of Japan. To increase the bomb loads, fuel was kept at a minimum. Thus, if there were navigational errors or if damage was inflicted, the plane might be in trouble far from any island on which to make an emergency landing. Survival on a raft and search missions were difficult in the Pacific: heavy clouds and rain reduced visibility, choppy seas made rescues difficult, and high winds and storms were common. Up until January 14, 1945, only 29% of the men on 315 sea ditched flights were rescued. As the war progressed, rescue operations were expanded and were able to cover more area. By the end of the war, chances of survival rose to 50%[5]. To combat the problem, submarines were used to patrol the oceans. Furthermore, a special B-29 called “Super Dumbo” was used to perform searches. Planes would

[5] Craven, 598-606

usually crash in the water on the way back from a mission, too damaged to make it home. By this time, the fuel tanks would be half full with air. As a result, the plane would float for ten or fifteen minutes, enough time for the crew to get out of the plane with survival equipment. 45% were rescued in less than 5 hours, 36% in 5-24 hours, 13% in 1-3 days, and 6% in 3-7 days[6]. Although unlucky that his rescue took so long to arrive, my Uncle was fortunate that it came it all.

As can be seen in many personal accounts of the war, food was often on the soldier's mind. Good food was sometimes hard to come by and was always greatly anticipated and looked forward to. In getting through the enormous stress involved in any combat situation, basic pleasures in life took on a whole new layer of meaning: "You look out for the good things in life besides going up and killing people". The crew on the bombing mission were often given food for their long flight. "You didn't feel like eating on the way up. You did not have an appetite. After we dropped our bombs, suddenly our appetite would develop. We had... turkey, bread. It wasn't great but you were hungry and you ate it". Sometimes, food would come from home. Dr. Swerdlow remembers how his brother "would send me seeds that I could plant behind the Quonset hut. There was a garden back there where I could plant tomatoes and vegetables which we did not get. I would also receive canned tuna fish and salmon. That was a like a breath of fresh air, when you could mix the fresh vegetables with the fish".

On other occasions, good food could be obtained through certain places within the military. Navy ships which would sometimes come ashore to make repairs or drop off supplies. The men on the islands would befriend the naval crew: "You made friends with [the sailors] just so that we would get to know what was going on elsewhere". In order to maintain the B-29's, the engines would be tuned up. However, after it was fixed up, the engine had to be broken in for three or 4 hours. Although the B-29 had extensive electrical equipment, it was still driven by propeller and all the gears, rods, and pistons had to be broken in smoothly. The sailors wanted to ride along on these brief flights and often flew with the crew. In return, the men on the island were invited aboard the navy ships. "On many nights they would have an ice cream machine and all kinds of great food. They were like floating hotels. We would have steak, french fried potatoes, frozen vegetables, pie, ice cream, and good drink. That was a treat".

In between each mission, the crew had 3-4 days off during which time they attended to their personal needs. Stationed on an island, they had ample opportunity to swim in the ocean. The officers club also provided some recreation. Every now and then, when nurses would come ashore, there would be a party or a dance. Correspondences and letters were also very important: "communications kept you sane, and connected you with your world". Although the military censors were strict about servicemen revealing anything that could resemble military

[6]Werrell, 142-4

intelligence, there were ways to let one's family know what you were up to. Ernie Pile was a famous war correspondent in the Pacific and published a syndicated column which gave descriptions of what was happening during the war. This column appeared in papers throughout the country three or four times a week. Dr. Swerdlow recounted how "my sister would cut those out and send them to me. I would then circle the area that I was involved in and mail it back to her". The censors would let this slide by seeing that no new information was being revealed.

Dr. Swerdlow had praise for the maintenance crew which helped keep the planes in shape. There were a large number of mechanics and ground crewmen who helped fix the planes and also make any special adjustments the air crew might require. Often, the air crew would ask for some modification and the mechanics would try to meet their requests, sometimes by "mak[ing] up pieces of equipment to satisfy [their] needs". Despite wartime conditions, there was never a shortage of gasoline or high octane plane fuel. The B-29's were not painted and were covered by highly polished sheet metal. If the exterior ever was dirty, they would frequently clean the plane with gasoline, using the fuel as an all purpose solvent and cleanser. Having a clean surface would reduce air resistance and make the plane faster and more efficient.

Military life is highly regulated and dutiful obedience is required. However, at times Dr. Swerdlow felt that it was necessary to bend the rules at times and not to do so was foolish. He was somewhat critical of the AAF and thought it was "unwieldy" and "did not have a sense of what was going on in all the different areas". Orders would come out of Washington from officials who were not present at the field of battle and were sometimes not aware of the everyday problems which surfaced. Therefore, the men would bend the rules "because we were in a better position to determine [what needed] to be done". Such a situation arose frequently in the decision as to what the bomb load should be. Dr. Swerdlow and the engineer in the air crew knew the maximum weight specified by the Boeing engineers at which the plane could perform efficiently and effectively. "There were time when [the AAF] wanted to reduce the altitude we would fly at because that way we could increase the bomb power on the plane". However, Dr. Swerdlow and the engineer would perform their own calculations with slide rules to determine if the added bomb weight would place the total weight above the limit specified by Boeing. At times, the AAF demanded loads which exceed the limit by 5000 pounds. Not wishing to compromise the safety of the ship, they would leave the extra bombs in the heartstand, or loading area, of the plane. After they returned from the mission, they would have to explain their actions: "We came back and the HQ command asked us why the bombs were there and we told him [about] our calculations and we said that we wouldn't make it. Do you want to have 48 bombs on the target or do you want to bring up 55 that would never make it?". After doing this, they were frequently threatened with court martial but this was only "a favorite word that they would throw around if they wanted to bang you on the head".

The calculations surrounding the bomb load were not just pertinent to the efficient performance of the plane but were of crucial importance to the very ability of the plane to fly. The runways on Tinian were over a mile long. In order for these propeller driven bombers to take off, they had to reach approximately 180 mile per hour. However, because the engines were not that powerful, all of the mile long runway was needed. Frequently, even this distance would not suffice and the B-29's would not have enough runway. This may not always be such a terrible situation, however, on Tinian, there was a cliff at the very edge of the runway which fell two to three hundred feet to the ocean. Dr. Swerdlow remembers how "Sometimes we would dip below the level of the cliff and we would buzz along the water to develop enough air speed to get that air plane up". It is in these situations that weight became crucial: "if you were 5000 pounds over, sometimes, the engines did not have enough power to hold you up, you would buzz the water and you dropped in". Thus, although they ignored certain orders concerning the bomb loads and the headquarters "raised hell about it all the time,...we survived".

Dr. Swerdlow's concerns about weight were well founded. Originally, the maximum weight of the B-29 had been set at 120,000 pounds. However, this was later increased to 132,000 by manufacturing engineers. Despite these limits, the average gross take off weight between November 1944 and January 1945 was 137,000 pounds. Many of the men, including my Uncle were concerned about the additional 5000 pounds. Some airmen reduced the fuel load form 8000 to 7400 gallons. This reduced the weight by 3600 pounds. Furthermore, with less fuel, one bomb-bay fuel tank was not needed which in turn saved 1500 pounds. In addition, the 20 mm tail gun and ammunition were removed from the B-29 in early 1945[7].

There were other situations in which it was necessary to voice objections to orders and not simply blindly follow commands. General Curtis Lemay announced that the B-29's would no longer fly at 25,000 feet and we would now fly at 10 12 thousand feet thereby enabling them to drop 10-15% more bombs. However, the planes were much safer at 25,000 feet as the flak and zero fighters did not have the range to threaten the bombers at that height. Unhappy about this change, the men told Lemay: "We will do this provided that you are in the front airplane. We want you to see what is going on". Lemay agreed and went on the mission. As the men predicted, when flying at the low altitude, "it was just like the 4th of July, fireworks on both sides of us". Although a number of planes were hit, all of them made it back. After returning safely, Lemay acknowledged the point the men had made and said he would reconsider the decision. "We are going to lose too many airplanes" Lemay had said. Dr. Swerdlow was angered by this focus on material loss and thought it was typical of the army's perpetual concern about the shortage of materials.

[7] Werrell, 137

After he assumed command of the AAF in January 1945, Lemay did lower the mean bombing altitude from 30,000 to 20,000 feet and sometimes sent planes on much lower altitudes. Sending the B-29's down lower did increase the threat of flak and enemy fighters but at the same time it increased bombing accuracy[8]. Furthermore, high altitude flying put a mechanical strain on the airplanes: it required more gas, it was harder on the engines, and it caused equipment to freeze and malfunction[9]. Lemay made a calculated risk and chose to accept the added danger of lowering the bombing altitude. However, as Dr. Swerdlow described, the extremely low level flying at 10-12 thousand feet was not implemented.

Many in the war could not handle the stress of combat and had trouble dealing psychologically with military life. Dr. Swerdlow feels thankful that he was able to maintain his emotional balance and complete the war: "fortunately, I was able to justify what I was doing. It was a means to an end". However, even though he found the justification for fighting, his attitude towards the war shifted over time. When he first entered the war, he described how "I was very young, I had not traveled very much, it was the patriotic thing to do, and I was very enthusiastic. It was like a sport game that you participated in". Over the course of the war, his attitude changed: "I realized during the three years that I was there, that war does not solve anything, it just kill people. It does not negotiate anything".

In July and August of 1945, "the Japanese were not putting up so much resistance anymore". With US air superiority in tact, Dr. Swerdlow was sent on some missions to drop warning leaflets to the Japanese populations: "we wanted them to give up and for the civilians to overthrow the military. If they did not capitulate there would be dire consequence and a big bomb would be dropped". The crew of the Enola Gay had come to the AAF base in which my Uncle was stationed to prepare for their mission. Dr. Swerdlow knew the crew from the officer club but did not know what exactly their mission was. However, the Enola Gay crew did not participate in any of the training runs and received some preferential treatment. This led some of the other men to suspect that they were involved in some sort of special operation. On the day the atom bomb was dropped, my Uncle was on a flight three to four hours ahead of the Enola Gay: "we reported the weather and it seemed that the weather was the best over Hiroshima. It was dropped during daylight hours so that we could see the target. We were on our way back, two to three hours from the mainland and we heard on the radio that the atomic bomb was dropped. As a matter of fact, the tail gunner saw a gold light way out on the horizon". At the time he did not even know that it was an atomic bomb: "we thought it was just a big mega bomb that was developed off England. [We heard that] they developed blockbuster bombs which could sink islands. Later we found out that it was through atomic energy". He was in favor of

[8] Craven, 650
[9] Werrell,135

dropping the atomic bomb "because we were getting tired and this was going to end it. We would to either sacrifice their lives or sacrifice our lives.... We saw so many of our friends that were killed during the time that we wanted any means to end this disaster that was getting no where". There had been a plan for an invasion in November in case the war had not ended by then. Dr. Swerdlow felt that such a plan would be very costly: "I knew the coast so well. It was a treacherous coast, because there were a lot of cliffs, and it was very difficult to get on. Thousands of lives [would have been lost] on both sides".

Following the dropping of the atomic bomb, Japan surrendered. Dr. Swerdlow's last flight over Japan was during the signing of the treaty which occurred on board the USS Missouri in Tokyo Bay. As can be expected, following the conclusion of the war, everyone was "anxious to go home". It was not clear how in fact they would make it across the Pacific. They almost went on a Navy ship but that option fell through. Eventually they decided "to leave everything on the island, the jeeps and the other equipment, and just bring the B-29's back". However on the way back, the plane in which my Uncle was flying experienced some engine trouble and one of the engines failed. He felt as though he "couldn't rely on [the plane] anymore and [he] took the train to be safe and sure" on his way back to New York City.

Following the war, my Uncle went back to school. Much college credit was given for military service and he was able to place out of a number of courses such as meteorology. Also, the GI Bill made university financially easier to get through. Dr. Swerdlow went on to get a degree in Dentistry and worked for the Public Health Service. Following W.W.II, he became increasingly anti-war. He decision to serve in the Public Health Service was in part motivated by the protection from military duty that it provided. He chose not to get involved in the American Legion or any veteran groups. He felt that in "an indirect way they would be pushing towards war" because whenever there was a war, "that is when they would become prominent". His antagonism towards the Japanese continued for some time but no longer persists: "the generation that did that now is a different people and you can't hold it against a society for eternity". Despite this gradual softening towards the Japanese, Dr. Swerdlow has no desire to return to Japan and refused to travel along with any veteran group. He is curious as to what they are doing today but prefers to get his information from the media.

Reading the political and military history of W.W.II only provides an analysis of the period from a certain vantage point. It is sometimes necessary to encounter a personal account of the event to gain a more complete picture of it. These perspectives complement one another and bring greater clarity to each other. In hearing my great-uncle's account of the war, my understanding of both the war and my family was enhanced.

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