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About the cover: These crystals of optical calcite, which probably were from the Iceberg deposit near Dixon, N.M., were photographed in 1940 by Bausch & Lomb. The deposit was being mined by Dr. Edwin Mcintosh Stanton, Jr., who later moved his operations to Douglas. For the story, see page 23. (Bausch & Lomb photo)

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### **DOUGLAS AIRMAN SURVIVES 2,000-FOOT FALL**

**Editor's Note:** This article is printed almost verbatim from a U.S. Army news release that is in the files of the Cochise County Historical Museum in Douglas.

BUSHNELL GENERAL HOSPITAL, Brigham City, Utah-Sgt. Albert W. Vawter of Douglas, Ariz. plummeted 2,000 feet to the earth when his parachute failed to open after he jumped from a smashed Flying Fortress during a bombing mission over Germany this April.

End of the story? No. Sgt. Vawter, a 36-year-old gunner, is still alive. He is now receiving medical care at Bushnell General Hospital for his multipule injuries, including the partial amputation of his right leg.

A ball turret gunner, the Arizonan was on his seventh mission. During a raid Apr. 7, 1945 on rail yards at Luneburg near Hamburg, Vawter's B-17 was hit by an attacking German fighter.

"The Messerschmidt was coming in at us when one of the other gunners hit him in the wing. The plane went out of control and crashed into us near the tail, cutting the tail right off our ship," Vawter explained.

When he saw the collision, Sgt. Vawter began to prepare to jump from the ship, which at this time was flying at 19,000 feet at the start of its bombing run.

In the single minute it took him to rip off his oxygen mask, slip into his chest parachute and turn the ball turret over preparatory for jumping, the big ship was out of control and had started its death spin. Four of the crew members managed to get out, however, before the Fortress started its spin.

As the ship started its downward spiral, Vawter struggled to reach the open end of the turret but centrifugal force flung him back to the bottom of the plane and away from the escape hatch.

"Finally, by inching my hand along the turret floor I managed to grab the edge of the door," he said. Then with desperate efforts, he pushed and kicked his body until his second hand had a grip on the doorway also.

Vawter then squirmed until his head and shoulders were free of the plane. The terrific pull of wind yanked his body from the ship like the core slips out of a banana.

Sgt. Vawter took a quick look below – it seemed about 2,000 feet to the ground. He had fallen nearly three miles straight down since the ship had started its spin.

He fell free from the ship, end over end, and pulled the rip cord of the chest chute as soon as his feet were pointed downwards. He felt elated as the silk began to stream upwards by his face and Vawter set his body for the shock of the opened chute.

But nothing happened.

"I looked up," he said, "and the silk was just streaming straight in the air."

In those few seconds he was falling bullet-like beneath the unopened chute, the Arizonan struggled frantically with the shroud lines. Even as he tore feet first into the earth, he still was working the lines, still looking up at the long useless silk streamer.

When he hit, he was knocked unconscious. As Vawter reconstructs it, he hit feet first and then jacknifed over face first. He landed in a plowed field; the freshly dug rows were just cushion enough to save his life.

"I wasn't out very long," he said. "When I came to the plane was crashed about 150 yards away and burning. As I lay there in the dirt, the bomb load we hadn't dropped began to explode."

Then some of the black-uniformed S.S. troops arrived. One of the officers walked around the Arizonan.

"He called me 'swine' and then spit at me," Vawter said.

Another officer drew a gun. The Arizonan, so miraculously spared moments before, thought that this really was the end and waited for a final shot. But the shot never came.

Some German air corps men arrived and, after argument, took charge of the Yank. One of the air corpsmen removed Vawter's chute container and placed it under his head. Another gave him a drink of water to help remove the mouthful of dirt he'd gotten when he landed.

Looking around, Vawter found he had buried himself two feet deep into the earth. Although he "landed" about noon, it was 5:30 in the afternoon before the Germans moved him.

Instead of an ambulance the Germans used a horse-drawn hayrack. Sgt. Vawter was placed atop the load and covered with his chute.

"The air corpsmen were afraid the civilians would kill me if they caught me," he explained. "They went through Luneberg to the hospital as fast as they could."

That night his leg was amputated. On Apr. 22, British troops rolled into Luneberg and liberated the Yank.

A veteran of army service since Sept. 1942, Sgt. Vawter is married. His wife, the former Arnette Stuppi, lives at 1160 10th St., Douglas.



Sgt. Albert Vawter of Douglas, Ariz., survivor of a 2,000 foot fall beneath an unopened parachute when his Flying Fortess was shot down over Germany, shows WAC Pvt. Margaret E. Pakala, Blue Island, Ill., a souvenir from Germany at Bushnell General Hospital where he was a patient. Sgt. Vawter was miraculously saved when he landed in a freshly plowed field and was recovering from multiple injuries. (U.S. Army photo)

#### TRAINING AT DOUGLAS ARMY AIR FIELD

#### By Don J. Armand

Editor's Note: On Oct. 1, 1943, Don Armand arrived at Douglas Army Air Field for advanced pilot training. He had already completed eight months of training at bases in Hemet and Merced, California. The Douglas field was begun in the spring of 1942 and graduated its first class in January, 1943. A large number of pilots, including many from Nationalist China, underwent training here before the base was closed in 1946.

Douglas was a small town located in the southeast corner of Arizona, and about as close to the Mexican border as you can get. If isolation was part of the criterion for selecting locations for training bases, then Douglas was a good choice. The nearest town of any size was



The smokestacks of the C & A Smelter provided a fine landmark for pilots like Don Armand during training at the Douglas Army Air Field. (Courtesy Don Armand) Tucson, some 100 miles to the northwest. So for the advanced Aviation Cadets stationed at Douglas, there was little to distract them from their training.

The air field was located a few miles north of town and was another typical wartime base with mostly tarpaper buildings and barracks. The field itself consisted of runways instead of large mats as we had at Hemet and Merced.

It was located in a reasonably flat valley with mountains to the east and west. The elevation of the field was around 4,150 feet and the mountains varied mostly between 6,000 to 8,000 feet with some peaks going up to around 9,500 feet. You learned to pay close attention to your altitude when flying here, especially at night.

One landmark I remember very well from that area was the C and A Smelter, located near the town. It was a fairly large complex of typical plant buildings, but the thing that stood out were the smoke stacks. There were three or four of them, rather tall, and they belched smoke constantly. The weather here was usually good and that smoke could be seen from a long way off.

The cadet barracks were about the same as those at Merced, with rooms either side of a center hallway. The latrine was at one end of the building and followed the usual pattern.

We still had to keep up our quarters and inspections were a regular thing. Even though we were in advanced training and not too far from being commissioned officers, we were still Aviation Cadets. The tactical officers who were over us made sure we always remembered our position. They were a pretty decent bunch and as long as you kept to the business at hand, you had no problems with them.

Each day was still divided in two; half for ground school and athletics, including drill, and the other half for flying. The ground school subjects included aero-equipment, aircraft recognition, naval identification, bombing and armament, medical training, navigation, meteorology and code.

Our instructors in ground school were mostly commissioned officers who were not rated (pilots), but we did have one who wore pilot wings. He taught navigation and was somewhat older than most of the others. We wondered about this until someone found out that he was a pilot in World War I. Though he was considered too old to fly in World War II, he could still instruct in ground school. As I remember, he was a very good instructor and was popular with the cadets.

Our training in weapons handling continued with firing a specified number of rounds using the Thompson sub, Colt .45, .30 caliber carbine and skeet. Most of us did fairly well on everything but the Colt. As we had done in our previous courses, we had to fire it with one hand and it was just hard to get good scores. Some of the fellows, however, did very well with it.



The Cessna AT-17, or UC-78, was the first twin-engined plane aviation cadets encountered during their training. Nicknamed the "Bamboo Bomber," it was flown extensively at the Douglas Army Air Field. (Courtesy Don Armand)

Our physical training continued much the same as in basic. There were no new or different routines in this; it was merely the continuation of a program designed to keep us in good physical condition.

At Douglas, as at Hemet and Merced, our main interest was the flight line and the planes. Douglas Army Air Field was a multi-engine training school for advanced cadets. When you completed this course, you would be awarded the wings of an Army pilot and commissioned as a second lieutenant or appointed a flight officer. This was a new wartime rank and fell between master sergeant and second lieutenant, same as a warrant\_officer, junior grade.

The aircraft at Douglas were Cessna AT-17s and UC-78s. They were the same plane; one was classified as an advanced trainer and the other a utility cargo, but they all served as advanced trainers.

The AT-17 was a conventional twin-engine airplane with two main wheels and a tail wheel. It was of metal and wood construction with fabric covering. The wingspan was about 42 feet and it weighed around 5,700 pounds.

The two engines were Jacobs R-775-9 seven cylinder air cooled radials of 245 hp each. Some of the planes had fixed pitch wood props while others had the steel constant speed props which gave better performance. All the planes at Douglas were painted silver with large black identification numbers. The official factory name for the AT-17 was "Bobcat" but it was known affectionately as the "Bamboo Bomber" because of its partial wood construction.

The day we went to the flight line and met our instructors finally came and we felt as though we were back in our element. My instructor was 1st Lt. Perry B. Brakke, who had been instructing for a good while. He was quiet and easy-going most of the time but if you fouled up very much, he was not hesitant about expressing himself, quite bluntly, on your abilities as a pilot.

Lt. Brakke began familiarizing us with the AT-17 immediately and, needless to say, we could see it was going to keep us a bit more busy than the BT-13. The flight instruments were pretty much the same, but the engine instruments and controls were double and this took some getting used to. Again, as in basic, we had to take blindfold checks on the cockpit layout once we had learned it.

The cabin was pretty roomy, with a seat for the pilot and co-pilot which were side by side. Across the rear of the cabin was a long bucket seat which would seat three people. By using this seat for one or two extra students, the instructor could save having to return to the field when finished with the first student.

One thing which was different was flying an airplane with sideby-side seating for the pilots, which put you to one side of the center line. It took a while to get used to, as you felt the plane was in a crab all the time. After a while though, you didn't notice it.



The corners of 10th Street and F Avenue in 1943 had on them the post office, a Standard gas station, and Piggly Wiggly and Pay 'n' Takit grocery stores. (Courtesy Don Armand)

My first flight in the AT-17 was Oct. 7, 1943 and as such was a familiarization flight to show the flying area and feel out the plane.

In addition to the main field at Douglas, we had several auxiliary fields which we used; I believe there were four in all. The only two I remember were at McNeal, to the north of the main field, and Hereford Army Air Field to the west of Bisbee. Hereford was not a full time base and was used by us a little later on in our training as a bivouac base to simulate combat theater operations. There were only a few tarpaper barracks there and the only heat they had were pot-bellied stoves. At night we had to organize shifts to keep the stoves going as it really got cold there.

Two other fields we used on occasion were at Cochise and Rodeo. These were sod fields and were called CAA (Civil Aeronautics Administration) Intermediate Fields. Located adjacent to low frequency radio range stations, they were part of the airways system.

The AT-17 was not a hard plane to fly, once you got the hang of handling two engines. As soon as we had a little time in it, our instructors began giving us single-engine drill. This was to get us proficient in handling the plane with one engine out.

They could do this by switching gas valves while you weren't looking. When the fuel was exhausted from the lines on the engine they selected, you were suddenly on one engine. Another way they did it was simply to pull one throttle back. The Hamilton-Standard constant speed props were non-feathering, so with the engine in idling position, the windmilling prop simulated a feathered prop. It worked the same with the wood props.

There was no doubt about what was happening when an engine went out, as the plane slewed around decisively toward the dead engine. You had to correct immediately with full opposite rudder to maintain straight flight. The control pressures in the AT-17 were not too heavy and you could easily hold the rudder in yourself, but it helped to use the trim tab to relieve some of the pressure. Once you had maintained straight flight, you had to go through your single-engine procedure to get the plane set up for sustained flight on one engine.

Airwork in the AT-17 covered all maneuvers such as climbs, turns, slow flying, stalls and descents. All these were done with both engines running. We were also taught how to make turns on one engine, into the good engine or into the dead one. We also did stalls on one engine, straight ahead, in turns, clean, and with wheels and flaps down.

One feature of multi-engine flying which was different was flying with a yoke, or wheel, instead of a stick. You had to handle the yoke with your left hand and throttles with your right, which was opposite from the single engine trainers we had learned in. Of course, when you were in the co-pilot or instructor's seat, you were back to the old way.

It all took some getting used to, especially from the right seat, as

all the flight instruments were on the left side of the panel in front of the pilot. You had to switch attention back and forth pretty fast sometimes and your head did a lot of swivelling.

My first solo hop in the AT-17 came on Oct. 13 after 5- 1/2 hours of dual. It was solo in the sense that I was pilot-in-command, with a fellow cadet riding as co-pilot. Our solo work was always done this way; we each flew one half of the time scheduled to us.

There were four of us under Lt. Brakke, and we alternated flying with each other. Two of the fellows were okay, but the third was a little guy who was extremely cocky and had a short fuse. Each time I had to fly with him I liked it less and less. I knew it wasn't just me because the other two fellows had the same problems.

The straw that broke the camel's back came one day when I was riding co-pilot for him. While still rolling on the runway after a landing, he let the plane drift too far to the right and started passing dangerously close to the runway marker lights. These lights were high enough to damage a propeller and possibly the landing gear.



Part of Class 43-K posed in front of a AT-17 for a photo that appeared in an aviation cadet yearbook. Back row, left to right, John J. Askins, James W. Asmus, Don J. Armand, Charles S. Armstrong, Nic O. Arie; front row, Donald P. Allen, Lawrence W. Allen, and Dixon J. Arnold. (Courtesy Don Armand)

As he kept drifting toward the next light ahead, I realized he would hit it and told him so, but he did nothing. I knew I wasn't going to let us hit the light as long as I could do something, so I hit the left rudder pedal and touched the brake enough to miss the light.

He was stunned and immediately stopped the plane and started cursing me out for taking over while he was in the pilot's seat. I tried to explain what had happened, but he only screamed louder.

Lt. Brakke happened to be there in another plane with one of the other students, so I called him on the radio and asked him to taxi over to where we were so I could talk to him. When he came over, I went to his plane, engines still running, and explained to him what had happened.

After I finished, I respectfully told him I didn't want to fly with that fellow any more and he respected my request, which surprised me. The whole incident was upsetting to me because I got along well with my fellow classmates and had never had any such problem.

Formation flying in the AT-17 was nice. It was heavier than the BT-13 and thus more stable to hold in position once you got there. Response to throttle changes was somewhat slower, but this was overcome with experience as you learned to anticipate what was needed to hold a good position. We usually flew a three ship V, and occasionally a six ship group, with the second V a little below and behind the lead ship.

While in basic, we flew only day formation, but in advanced we started night formation too. I must admit it was different at first. All you could see were the wing and tail lights of the lead ship, and sometime the exhausts. The faint shape of the lead plane was rather hard to use in judging your distance from it, so we didn't fly as close as in day.

One thing that was hard to get used to was not having the horizon as a reference, with the resulting vertigo. You had to force yourself to ignore what your head was telling you and concentrate on holding your position relative to the lead ship.

By the time you had followed him around a few turns in both directions, your sense of balance was screaming that you were in a steep diving spiral. It was pretty tough to ignore your head when your eyes told you that you were okay in relation to the lead ship.

My first flight on instruments at Douglas was on Oct. 18 and Lt. Brakke gave me a good one – it lasted two hours and fifteen minutes.

The AT-17 did not have a canvas hood for the pilot's seat, as the BT-13 had in the rear seat. We had heavy celluloid sheets of a yellowishorange color which fit around the windows inside the cabin. The student then wore special goggles which made the windows look black and made it impossible to see outside. The instructor, or anyone not wearing the goggles, could see outside to watch for other aircraft.

The AT-17 was a pretty good ship for instruments, and we had to go through all aerial maneuvers such as climbs, turns, descents, single

engine drill, etc. on instruments. We also made instrument take-offs.

As we progressed in our instrument training, we began learning the various radio aids to navigation which were in use at that time. Principal among these were the low frequency ranges which blanketed the nation, making up the civil airways system of the United States. These ranges usually consisted of five transmitting towers, four of them set in a square, with the fifth in the center of the square. The radio range signals were transmitted from the four corner towers and voice transmissions were from the fifth or center tower.

The four outer towers were usually placed so their signal transmissions could be headed in certain directions and in this way continuous airways were made. The signals of two towers opposite each other were the letter "A" in Morse code, dot-dash, or dit-dah. The other two towers, usually nearly at right angles to the first two, transmitted "N" in Morse, dash-dot, or dah-dit.

Where the signals overlapped each other, the dots and dashes merged, making a continuous signal and this was the "beam." When near the beam but not directly in it, you heard what was called the bisignal zone, a steady hum for the beam and a faint "A" or "N" signal, depending on which quadrant you were in. When out in the clear of a quadrant, you heard only the "A" or "N" signal.

The range stations were usually placed so that one of the legs of the range passed over an airfield, if there was one nearby, and in this way you could find the field easily when making instrument approaches. By following beams in to a station and out from it, you could go cross-country by airways regardless of the weather.

Each station had its own code identification which usually consisted of two or three letters transmitted in Morse code. This transmission would usually interrupt the range signals at about onehalf minute intervals.

The way you knew when you had passed over the station was when you hit what was called the cone of silence. This was an inverted cone shaped area directly over the center of the station, where the antenna signals cancelled each other and no signal was radiated. As you approached the station on the beam, the strength of the signals gradually increased until you hit the cone, then they began to diminish as you flew away from the station.

It was pretty overwhelming at first, to have to be able to listen to all the signals, determine your position by bracketing a beam and identifying which leg you were on, and all the while keeping the airplane right side up flying on instruments. As we gained in proficiency though, it became easier to do, except that they always seemed to have something new for you to learn, just when you thought you had it down pat.

The new stuff was flying practice patterns on and off the beams, with climbs, let-downs and procedure turns. These were necessary to be

able to fly to a station, hold in a pattern at altitude if so directed and make a let-down for landing. About the time you reached a really crucial point, such as being in your let-down toward the cone with everything so far having gone reasonably well, the instructor would pull an engine on you.

With gear down and partial flaps, you were travelling at a reduced airspeed and the sudden loss of an engine made it imperative that you maintain single engine speed. The sudden swing toward the dead engine always pulled you out of the beam, since it was pretty narrow that close to the station.

Truly, it was a time leaning heavily in favor of pushing the panic button, since every sense of your being and every physical appendage available to you was extremely busy. But with God's help combined with our own meager abilities, we managed to cope and finally reached a state of proficiency which allowed us to pass the required check rides. As I recalled my problems in basic, I was surprised that I never had any real trouble with instruments in advanced.

A second aid to navigation was the radio compass with a loop, or circular antenna, installed on the aircraft. Some were fixed, some



In 1943, the Douglas post office towered over the palm trees planted in front of it.

rotated by switch and others were automatic in rotation.

The direction to the station could be determined by rotating the antenna until the minimum or "null" signal was received and the bearing could then be read on the bearing indicator. This system was useful as a back-up to the range stations.

Along with our instrument training, we received a more intensive course in using the E-6-B computer and in filing flight plans which included weather briefings for flying cross-country. We learned procedures for coping with rain, thunderstorms and ice.

Particular emphasis was placed on ice – the different types, where and when to expect it and how to cope with it. The AT-17s did not have de-icer boots on the wings or de-icing fluid for the props, but we had to learn about them so we'd at least be familiar with them when we got into heavy tactical type aircraft.

Cross-country flying in advanced was emphasized more than in basic. We received more instruction in all phases of planning such flights, both VFR and IFR. We also flew more hours of cross-country than in basic, with a lot of it being at night.

The terrain in that part of the United States was pretty rugged and not the best for a forced landing. There were places where you could have brought in a plane wheels up in daylight, but if you had to go down at night, your best bet was to bail out. We always wore chutes. Standard procedure for a forced landing in an aircraft with retractable gear was to leave the gear up, unless you knew the field you picked to be safe for a gear down landing.

I remember one of our night cross-country flights when one of my fellow students and I got lost. Cities and small towns are pretty scarce in that area and when you can't see any patches of light to identify as check points, you can feel mighty lonesome. The nights in that country are the blackest I've ever seen, and when you're in open areas between the radio ranges, you really need to keep close watch on your position.

Somehow, we finally located a small town and by circling rather low, which wasn't too smart, we were able to identify it since my friend knew the town. Knowing where we were made it a simple matter to pick a heading to the nearest beam and then go on back to Douglas. For a while though, we were in a sweat, but the old AT-17 carried enough fuel to allow for such knucklehead stunts.

On Oct. 28 I took my instrument check ride with Lt. Brakke. It lasted two hours. By passing this ride, I became qualified to receive the Instrument Pilot Certificate (White) as prescribed by AAF Regulation 50-3.

All students who successfully completed the course received the card, as all Army Air Corps pilots had to be instrument rated. Having this card allowed us to fly in any weather as long as the ceiling was 200 feet. If you were lucky and could go through the special instrument school at Bryan, Texas, you would be issued a green card and you could fly when even the birds were walking. This, however, was not for Aviation Cadets, only graduate pilots.



Lt. Don J.Armand

As our training neared the end, we were a pretty happy bunch of cadets. We took our ground school and flight checks in stride, though there were still a few wash-outs. For those guysit was heartbreaking, having gone so far and then not make it. For those of us who did, it was a time of excitement and relief that after 10 months of hard work, we'd at last be Army pilots.

We were given a uniform allowance to buy our officer's clothing and this was exciting – to select and be fitted for your own uniforms. I had never had anything like this before and, quite frankly, I was overwhelmed by the materials and the custom tailoring. They told us Uncle Sam wanted his officers to look good and, by gosh, they saw to it that we did.

About this time we were asked to make three choices of what we'd like to fly after our training. At the same time, we were told that our instructors would make a recommendation on what they felt we would do best at. Most of the guys wanted heavy bombers and gave this as one of their choices. Other selections were for medium or light bombers, transports and instructor. I put down heavy bombers, medium bombers and instructor.

Our flying was now at a point where we were taking our last check rides in each phase and working on final polish. Once you had passed your check rides, you could relax a little, but not to the point of getting careless or sloppy in your performance. In the back of your mind you knew you'd better be as good as you possibly could, as the day might come when your life, and the lives of others, might depend on you.

In addition to our instrument training in the planes, we also received about 10 hours in the Link. Counting what I got in primary and basic, I wound up with 26 1/2 hours of Link at the end of advanced.

My last few flights at Douglas as a cadet were all at night, with the last one being a 30 minute hop Dec. 1. These flights were all solo; that is two students, and were mostly landing practice. We made night landings using our wing lights and others without the lights. These "blackout" landings were done by watching the runway marker lights at each edge of the runway. When you were still high up on final approach, the two rows of lights seemed to be slanted downward at the near end. As you got closer and lower, the ends nearest you seemed to rise and in this way you were able to judge your height above the runway. The closer you got, the flatter the two rows got. As you came in between them over the runway, you levelled out, still with a little power on, and started feeling for the ground. When your wheels touched, you chopped power and held it on as you slowed down and let the tail drop.

We made only wheel landings in this way; in the daytime we made both wheel and three-point. Most of us got to where we liked the blackout landings better than using lights because all the prop wash usually stirred up enough dust to cause a light haze to hang over the runway. When the glare of the landing lights hit this haze during your flare-out, it was hard to judge your height above the runway and there was a tendency to level out too high.

Our graduation ceremony had been set for Dec. 5 and a lot of the



March, 1944 — a serious Lt. Armand, third from left, posed with his students in twin engine advanced school at the Douglas Army Air Field in front of a Curtiss AT-9. (Courtesy Don Armand)

fellows had their families coming for the event. My folks couldn't make it because they simply couldn't afford it and my pay as a cadet didn't help much. We drew \$50 a month, same as a private, and \$25 extra for flight pay. It was customary for mothers, wives or girl friends to pin on your wings and bars, but those of us who didn't have family there helped each other. We were all so happy to have made it that it didn't matter a lot.

At the ceremony we were dressed in our new officer's uniforms and were presented with certificates attesting to the fact that we had completed the prescribed training course and were appointed pilots and Second Lieutenants or Flight Officers. Those shiny little gold bars sure looked good to me, but those shiny silver wings were what mattered the most. As your mind went back over the past 10 months of plain hard work, you remembered the hours and hours of hitting the books, seemingly endless hours of marching, running, cleaning barracks, classroom work and the icing on the cake – the flying.

Ah, yes the flying. With its moments of naive innocence, the shock of your utter incompetence and ignorance, the agonizing dread of unacceptable performance, the childlike joy of knowing you had pleased your instructor who was second only to God – all these things came rushing back in like a flood and you knew it was all worth while to have made it.

For myself, I was proud in a very humble way, as I knew I'd have never made it without God's help. I was 19 years old.

We also received our orders that day and I found I had been appointed as an instructor in twin engine advanced at Douglas, based on the recommendation of Lt. Brakke. Out of a class of 291 graduating, they kept 40 of us as instructors, so I really didn't feel too bad. I knew the extra flying, especially as an instructor, would make me a better pilot and I hoped I could get an overseas assignment later on.

We were given 10-day leaves and I went home for the first time in 10 months. I spent three days on busses going, four days at home and three days going back. When I reported back at Douglas, it was to begin a crash course in instructing and then to work with the cadets. This, in many ways, was when I really started learning how to fly.



About the author: Don Armand served two years as a pilot instructor and was discharged in January, 1946. After working 38 years first for a railroad and then city government, he is now retired in Alexandria, La. He enjoys writing, reading, collecting aviation memorabilia and flying a 1946 Aeronca 7-AC "Champ," which he restored over a 3- 1/2 year period.

#### **HISTORY OF TENTH STREET USO - DOUGLAS**

Editor's Note: This article was found among the papers of the late Ruth Collins, wife of long-time Douglas physician Paul Collins. Dated Feb. 14, 1944, the article was given to CCHAS by member Jean Karger of Douglas.

Soon after Dec. 7, 1941, the first group of servicemen, a detachment of cavalry, arrived in Douglas. The commanding officer of the group appeared before the Douglas Forum, an organization composed of one representative from every civic club in the city. The Forum met once a month to discuss local problems and heard the CO's request that a club room be furnished for his men in downtown Douglas and that a weekly dance be given for them.

The Forum asked the newly organized Red Cross Canteen Corps to arrange for and supervise the club room. The first location was at the corner of 12th Street and G Avenue in the building now occupied by the Valley Transportation System. The owners of the building, Mrs. William Adamson and Mr. Alfred Paul, donated these quarters for the servicemen to use as a club.

The rooms were furnished through the generosity of the people of Douglas with radios, victrolas, ping pong and card tables, writing desks, chairs, couches, juke box, Coca-Cola machine and a pool table. Stationery, magazines and other games were also furnished. The club opened to the public on Feb. 14, 1942, and donations were received. On Feb. 15 the club was turned over to the soldiers.

A large group of volunteer workers was organized (most of whom are still active) both at the Southern Pacific Railway Station Canteen and at the USO. Mrs. Paul Collins was Canteen Corps chairman, Mrs. H. M. Lavender and Mrs. George Jackson, housing chairmen, and Mrs. C. A. Nichols, food chairman. Homemade foods were solicited by the food chairman from local women and served to the men.

Mrs. Phyllis Lewis, head of the Douglas Forum and secretary of the YWCA, began organizing weekly dances. Mrs. Randolph Nelson and Mrs. Neva Hopkins were appointed dance chairmen and they contacted local organizations to sponsor dances, which were held at the YMCA, St. Stephens parish house, the Womens Club and the canteen. Mrs. Lewis, through her YWCA affiliation, with the assistance of Mrs. Mary Crowell Read, organized a group of young women, then called "Young Women of the Douglas Forum" and later known as the "Victory Belles," under the guidance and chairmanship of Mrs. E. G. Wirick.

Mr. Floyd Kimble, at his annual sale of pedigreed Hereford bulls, donated a bull to the canteen. The animal was sold at auction to Sen. Ralph Cowan and the proceeds given to the canteen. At the time of the sale, cattlemen of the district took up a collection to be used for the entertainment of the men stationed in Douglas.

The canteen operated at its first location for about three months, then moved to the building now occupied jointly by the Coca-Cola Co. and YWCA. This building was donated by Mr. David Diamos of the Grand Theatre who had it under lease.

The number of servicemen in the area was increasing. A detachment of ordinance was assigned to Douglas and upon arrival was housed in the armory (the home of the present USO). The Douglas Army Air Field was now under construction and men were beginning to come in greater numbers.

Beside those activities which were routine with the canteen, there were weddings and wedding receptions; on Mother's Day a Legion Auxiliary Tea for mothers of servicemen; a dance at the Top Hat for the ordinance baseball team (which donated a part of its gate receipts to the canteen); and assisting the Chamber of Commerce in entertaining two cross country flights from Texas air fields.

Douglas began to realize that the recreational needs of these men would soon be greater than the town could supply and local people could handle. Overtures were made to the United Service Organization, through Mr. J. E. Carlson, chairman of the USO drive which had been successfully conducted that spring, for an operation to be established in Douglas. A representative from USO headquarters was sent to Douglas to make a survey and report on the need and the manner in which the USO could best serve the men.

Since the 10th Street building was being taken over by the Coca-Cola Co., the YMCA offered the canteen their large north room, and made all the facilities of the "Y" available to the soldiers at specially reduced rates. These services included the swimming pool, bowling alleys, pool tables, gymnasium and showers.

About this time an aerial photography and engineering group came to Douglas. The United Service Organization sent official representatives to Douglas to survey possible building locations as well as available buildings.

The Special Service Department of the Douglas Army Air Field at this time expressed a deep interest in the recreational facilities of the armory, which had been vacated by the ordinance men. There were a number of good basketball teams at the field, so there was an urgent need of a gymnasium since the present gym at the base was not then even under construction. Permission was obtained from the custodian of the armory by the Special Service Office for the use of the building, and they began putting it into shape.

At this time the first USO representative, a Mr. Moorman, arrived. He met with many of the local clubs and other organizations and clarified the aim of the USO locally. The United Service Organizations, Inc. assumed the financial obligations of the work Dec. 1, 1942, and



requested that the Canteen Corps continue to carry on their work until a staff could be assembled.

Mr. Paul McEvoy, the first director of the local operation, arrived just before Christmas, 1942, and almost immediately added Mrs. Gladys Chambers, the present secretary, to the staff. At the instigation of the Special Service Department of the Douglas Army Air Field, negotiations were begun with the Arizona Commander of the National Guard to obtain the armory for the housing of the USO and an immediate move was made from the YMCA to the armory. At this time an assistant director, Mr. Fred Wolz, was added to the staff. He was later succeeded by the present assistant or program director, William H. Cadwell.

As soon as the necessary papers of permission were received, the work of renovating the armory, which included redecorating, remodeling and refurnishing, was begun. The entire interior of the building underwent a complete change. The operation as it now stands was officially dedicated June 13, 1943.

Mr. McEvoy remained director of the work until the following December when he was transferred to another operation, and Mr. Francis C. Schlater was assigned as director of the Douglas USO.



Interior view of Douglas USO facility ( CCHAS photos)

### MEXICAN CRYSTALS: A DOUGLAS CONTRIBUTION TO THE WAR EFFORT

## By Lewis Orrell

The stained glass spanning the divided staircase still shines its jewelled luminescense over the lobby of the Gadsden Hotel as it did on a seemingly ordinary day in 1942. The war news for the country that day was unchanged – assurances of victory for the Allies, but reports of more humiliating defeats. There was little to say about the weather – it was neither hotter nor cooler than usual for May.

At the Gadsden, a man was asking the desk clerk for a room. In all respects save one, the man was as unremarkable as the day. He stayed in Douglas another 18 months without leaving an imprint on the community. He cemented ties with only one person in the city and had close business relations with only one or two others.

He was never in the public eye yet his appearance in Douglas upgraded the day from ordinary to notable. He would arrange for Douglas to make a unique and valuable contribution to the war effort by supplying Mexican crystals.

A few months earlier, space in the hotel had been readily available, often on short notice. But this was 1942 and the war had created a national housing shortage in which Douglas and the Gadsden shared. All the usual commercial and industrial activities in Douglas had expanded and increased the demand for accommodations.

For example, the need for beef to feed a growing military establishment and a meat-starved Britain-at-war created a booming cattle business. Cattle buyers and sellers thronged to Douglas and they slept and socialized at the Gadsden Hotel.

New activities worsened the situation. The Federal Office of Censorship established an Orwellian operation at the Gadsden to monitor telephone and telegraph traffic along and across the Mexican border. Its equipment and staff were housed on the top floor of the hotel reducing the number of available rooms.<sup>1</sup> Construction of an Army air base 10 miles north of Douglas brought scores of administrators, engineers and inspectors to the Gadsden for temporary housing.<sup>2</sup>

In the face of this shortage, the self-assured, would-be guest at the registration desk confidently expected to be accommodated. And he was – and not just for one night, but until he could find permanent housing for his family. This man seldom failed to persuade a potential grantor (from the lowly to the mighty) that his request deserved special consideration, whatever the rules, regulations or scarcity.

The new registrant was Dr. (as he habitually introduced himself to officialdom) Edwin McIntosh Stanton, Jr. He was tall and slender and appeared younger than his 39 years. Hazel eyes were wide-set beneath a high, intelligent forehead. This was topped by an enviable crop of straight, brown hair. Despite a sober expression and direct gaze, he projected a warm personality. He was accompanied by his wife, a pretty brunette of about equal height. An attractive dress complimented her slender figure.<sup>3</sup>

Stanton was born in Chicago, Ill., on Mar. 25, 1903,<sup>4</sup> the second of the four children of Edwin and Jessie (Moore) Stanton. There are no details of his childhood and youth except that his high school career was abruptly terminated. His father put him to work in the family's optometry business three months before his 16th birthday.<sup>5</sup>

Three years of menial tasks apparently convinced Stanton that the rewards of a profession outweighed the pain of an education. He took special preparatory work and passed a state examination for a certificate of equivalency for a high school diploma. In August of 1922 he became



a certificated apprentice to his father and in October he matriculated at the Northern Illinois College of Optometry.

As Stanton approached his 21st birthday, he was still working for his father and studying optometry. He must have, however, been acutely aware that attaining his majority would bring him two opportunities. He would be eligible to take an examination for certification as a registered optometrist and be able to marry without parental consent. He opted for both. Once determined on a course of action or a goal, he moved doggedly, aggressively, and, sometimes, blindly. That pattern would repeat.

When he applied for the examination, he had not met the requirements for length of apprenticeship or education, but, in the first display of his "open sesame" touch, persuaded the examiners to grant him eligibility. Within the next few weeks he and Leola Aikman repeated marriage vows before a county court judge.<sup>6</sup> This precipitated a crisis as, although he took the examination, he ignored the results (he passed, barely) and did not complete his registration.

Stanton's activities from 1924 to 1928 are unknown, but at the end of that time he was again picking up the thread of a career in optometry. He paid for his certificate as a registered optometrist on Aug. 28, 1928 and obtained a diploma as Doctor of Optometry (still 139 hours short of the stipulated 1,000 hours of study!).<sup>7</sup> For the next 10 years, he practiced in his father's office in Chicago and, beginning in 1934, in an office in nearby Evanston as well.<sup>8</sup>

In 1938 Stanton, Sr., retired in declining health from the State Street business and Stanton, Jr., stood at another fork in the road. He did not enjoy being confined to an office six days a week. His younger brother, Jack, was practicing optometry in the State Street office and contact between them often produced a shower of sparks.<sup>9</sup> If his father's retirement presented an opportunity for ownership of some of the business, he rejected it. Turning his back on optometry for the last time, he left Chicago to become a mineral developer.

There is no evidence that Stanton had formal training or prior experience in mining or geology.<sup>10</sup> How he immediately became established in a new field of endeavor is also a mystery, but he wasted no time starting his new career.<sup>11</sup>

By May of 1939, <sup>12</sup> he was mining crystals of optical calcite in New Mexico. His knowledge of the mineral and its marketing seems to have derived solely from the minimal relation between his former profession and the field of industrial optics. These considerations did not, of course, deter Stanton from his new goal of being an entrepreneur.

He leased the Iceberg Lode, which was located in an isolated, mountainous region between Santa Fe and Taos, and began working it with a partner. It could be expected that the Iceberg, as a novice's first venture, would prove worthless. If it paid expenses, that would be unusual.

The Iceberg proved to be the second largest optical calcite deposit in the world and the largest yet discovered in the United States.<sup>13</sup> When the United States Bureau of Standards later examined crystals from the Iceberg, they declared them "to be the finest in quality and the largest in size ever known."<sup>14</sup> During the life of the Iceberg, Stanton recovered in excess of 1,500 pounds of prime-quality, optical crystals.

For the next two years, Stanton intermittently worked the Iceberg and visited Washington, D.C. to sell the crystals. Selling the large quantity he was producing was not easy, as annual consumption of optical calcite in the United States had not exceeded 200 pounds. Stanton believed the country was facing a shortage of calcite crystals and that it should create a stockpile from his production. Worldwide war conditions, he thought, would not only increase the need for devices containing optical calcite, but would deny the United States access to foreign deposits which had been its only source of supply for over 20 years.<sup>15</sup>

He acted to force the government's hand by having a bill for stockpiling introduced in the U.S. Senate.<sup>16</sup> The bill died so on June 5, 1941 Stanton offered to sell the mine and 400 pounds of crystals to the federal Office of Production Management for \$100,000. Failure of the U.S. Army and Navy "to include optical calcite on the list of critical and strategic materials" defeated the proposal.<sup>17</sup>



This 32-pound calcite cleavage rhomb came from the Iceberg deposit which Stanton operated. (New Mexico Museum of Natural History photo)

Stanton persisted in trying to interest other government agencies, but only the Bureau of Standards shared his apprehensions. They bought all of his crystals their budget would allow. It was suspected that Germany was aware of Stanton's supply and would try to acquire it by some means. The British government became determined that the crystals be kept from the Germans. By agreement with the U.S. State Department, the British Purchasing Commission bought the balance of Stanton's Iceberg crystals, promising not to export them without prior approval.<sup>18</sup>

While promoting his crystals in Washington, D.C., Stanton extended his travels to New York City where he recruited financial backers for new mining ventures. Here he met Madeleine Keough, who he wedded in April of 1941. This was Stanton's second marriage.

After the wedding, she and her son, Jere, who took Stanton's name, returned with Stanton to New Mexico. Stanton had moved from Santa Fe to Soccoro so his family made it their home. Jere enrolled in the local high school and Madeleine helped her husband with the work at the Iceberg.<sup>19</sup>

Later in 1941, Stanton abruptly stopped work on the Iceberg. It has been suggested that the original vein was exhausted,<sup>20</sup> although Stanton maintained an active interest in the mine into 1943. Other explanations for depletion of the Iceberg have put forth,<sup>21</sup> but in any event Stanton had to look for other deposits to develop.

He discovered and filed a claim in southern New Mexico in December of 1941. If he worked it, he didn't protect it and subsequently lost it. It was near Trinity, the site of the first atomic bomb explosion.<sup>22</sup>

Having found new financial backers in New York, Stanton emerged in January of 1942 as president of Edwin M. Stanton Associates, Inc.<sup>23</sup> With his new company, he aimed for a broader scope of operation – more mines being worked and minerals besides calcite being recovered. He saw greater opportunity in Mexico for achieving these goals and decided on Douglas as a base of operation.

Jere went back to New Jersey to spend the summer with his grandmother while his parents drove to Douglas to begin house hunting. It was not until almost time for start of school that Jere was reunited with his parents.

The housing shortage in Douglas then was acute. **The Douglas Dispatch** appealed to the citizens of Douglas for rooms.<sup>24</sup> The Chamber of Commerce instituted a special housing service.<sup>25</sup> Newcomers found an answer to their housing needs from these sources, sometimes settling for cramped, shared quarters. Stanton, however, worked his will and the family moved into a cottage at 636 F Ave.

Before Stanton moved permanently to Douglas, he had visited and worked in and out of town for several months. During this time, he established a relationship with Ben F. Williams, Sr., who became his sponsor, if not one of his financial backers.<sup>26</sup>

Stanton could not have been wiser or luckier than when he successfully solicited Williams as a sponsor. Williams was one of the most influential men in Douglas. He raised cattle on a huge ranch, the Palomas, in the State of Chihuahua. He had an office under the management of Angel Moreno in Agua Prieta, just over the border from Douglas.<sup>27</sup> Earlier, he had travelled for many years throughout northern Mexico selling mining equipment and he had invested in small mining operations there. The acquaintances, respect and trust he enjoyed throughout the area enabled him to guide Stanton to those people in Mexico who could best help him.

Most prospectors spend a lifetime pecking in solitude at the sides of mountains in the vain hope that the next outcropping will prove to be the tip of their El Dorado. Not so Stanton. He prospected for land owners who already knew of outcroppings or, better, deposits of the type he sought. Thanks to Ben Williams, he found these people quickly and, within months, had opened, or caused to be opened, four deposits of optical calcite.<sup>28</sup>

Until November of 1942, Stanton's sole means of transportation was the dark-green Plymouth pickup truck he had driven down from



After some time at the Gadsden Hotel, Stanton moved his family to this cottage at 636 F Avenue. (Courtesy Lewis Orrell)



This restored Taylorcraft B-65 is the same vintage as Stanton's craft. (Photo courtesy of plane's restorer, Rollie A. Hatfield)

Soccoro. Paved roads were largely non-existent in northern Mexico and travel by truck over the dirt roads was slow and bone-rattling, especially in the mountains where most of his prospects lay.<sup>29</sup> Flying was an obvious (and over-simplified) solution to reducing travel time. So on the 25th of the month, he bought a used Taylorcraft BC-65,<sup>30</sup> barely avoiding a government prohibition against civilian purchase of aircraft.<sup>31</sup>

This light plane with yellow wings and blue fuselage carried only the pilot and one passenger. It had no radio and its cockpit was equipped with only three flight instruments. In order to control the plane, the pilot had to see the ground and the horizon at all times (no flying in fog, clouds or snowstorms). It had a range of about 250 miles at a cruising speed of 80 mph.

Stanton obtained approval for domestic flights and registered his plane with the Fourth Fighter Command in San Francisco. Civilian flying from airport to airport was restricted to urgent defense business, so Stanton must have presented promising and persuasive arguments.

One more restriction to his use of the plane remained – he didn't know how to fly it. Without membership in the Civil Air Patrol (CAP), permission for flying lessons was limited to those with a defense or military objective. Stanton was not in the CAP, but he was soon taking flying lessons.

Although the pioneering transcontinental flights that once stopped at Douglas were gone by 1942, the airport was still active. Its manager was Charlie Mayse, an aviation pioneer whose career was even more venerable than the airport's.<sup>32</sup>

Mayse added his flying school to the Civilian Pilot Training Program (CAP). The program, established in 1939, was intended to provide the tens of thousands of airmen who might soon be needed to protect the country.<sup>33</sup> Thus the "sky (over Douglas) was full of small Taylorcrafts darting about."<sup>34</sup>

When the military forbade civilian flying within 150 miles of the coast in 1941, scores of flying schools in southern California relocated to Arizona. Among them was the Monroe Flying School which moved to the Douglas airport, increasing the "clutter" in the air.

In 1942 CAP was made responsible for aerial patrol of 1,000 miles of Mexican border.<sup>35</sup> When Douglas became the western terminus



Carl A. Farnsworth

of the CAP's Southern Liaison Patrol in July, it became more convenient for people in and around Douglas to join and become eligible for flight training.

One of the first to take advantage of the opportunity was Carl A. Farnsworth. Farnsworth had worked in the underground mines at Bisbee for several years. For a long time he had wanted to learn to fly. Now, he lost no time in joining the CAP and enrolling in the Monroe School. His first instructor was Orville Wyett who was followed by C. B. Branen.

Before Farnsworth finished training, Stanton became another of Branen's students. Farnsworth completed instruction not very long after Stanton started, but Stanton did not obtain his pilot's certificate for another 10 months.<sup>36</sup> In the meanwhile, he arranged for Farnsworth to pilot the Taylorcraft on his frequent business trips throughout Arizona and New Mexico. During the next several months, they became fast friends.

As 1943 approached mid-year, the tempo of Stanton's mining affairs quickened and so did the affairs of the community of Douglas. The Army Air Force completed construction of its new base and started a flying school. Originally intended for training bombardiers, the base was converted to an advanced flying school to train cadets and officers in piloting twin-engine aircraft.

The base contributed a great deal to the economic life of Douglas. Tons of refrigerated meat, fresh vegetables and other supplies were purchased in or trucked from Douglas to the base each day. Anyone in Douglas willing to work (and some not so willing) found employment at the base.

The base also contributed to the social life of Douglas. Reflecting the military's ever-present concern with morale, the Douglas Airbase provided liberal amounts of entertainment, primarily for base personnel, but frequently for the community as well. Often the biggest stars and biggest productions were presented. Edgar Bergen and Charlie Mc-Carthy, the USO Camel Caravan and the USO Cavalcade of Music appeared at the base in one two-week period alone.

The advanced flying school usually had several professional musicians on its roster and used them well. Besides entertaining at the base, they presented musical programs on Saturday afternoons at the Lyric Theater on 10th Street. These performances were always well attended by the people of Douglas and were very popular.<sup>37</sup>

The best remembered of those entertaining in Douglas were Matt Dennis, jazz pianist, later with the Glenn Miller Air Force Orchestra; and Joe Bushkin, trumpeter, pianist, composer, arranger and coach, later with the AAF "Winged Victory Shows."<sup>38</sup> The singing cowboy, John "Dusty" King (Sgt. Miller Everson) was always a hit. "Dusty" had appeared on the screen in over a score of films (from romantic leads to "westerns") by the time he enlisted in 1942.<sup>39</sup> Thus his audience, especially young boys, felt a special bonding when he strode on stage. None was more loyal than Jere Stanton who was a staunch "Dusty" King fan.

Except for Jere's attendance at the Saturday afternoon musical shows, the social interaction between the airbase and the community did not attract the Stantons. The family remained aloof from all aspects of community life. If they attended church or belonged to fraternal or civic organizations, there is no record of it nor is it remembered.

Many in the community had neither the time nor the inclination during wartime for a social life. Most, however, were more attentive to civic responsibilities than the Stantons. Neither of the adults registered to vote in Douglas and Dr. Stanton never changed the registration of his pickup from New Mexico to Arizona. Athough he was quick to emphasize, whenever it might make an impression, that he was acting in Douglas and Mexico in the capacity of president of Stanton Associates, he never registered his corporation with the State of Arizona.



The Stantons moved from the F Avenue cottage into the Packard Apartments, which were above the First National Bank, the southwest corner of G Avenue and 10th Street. Behind the bank were the Palomar Hotel and armory building, which housed the Douglas USO. (CCHAS photo) If Stanton had little time for social activities, he had even less for yard work and house chores. The situation called for an apartment requiring no maintenance and because he was still attentive and affectionate toward his bride of two years, he wanted a more modern residence for her. Stanton worked his magic on the housing shortage for the third time and moved his family to the Packard Apartments.

These were above the First National Bank at the corner of 10th Street and G Avenue. Perhaps he had been helped by his flight instructor, Branen, who also lived at the Packard.<sup>40</sup> In any event, this was a prudent move, as circumstances were to thrust Stanton into another expansion of his activities. He was about to learn that Polaroid Corporation was looking for calcite crystals.

Polaroid had been seeking calcite crystals with cyclic earnestness for almost a year by the summer of 1943. The company used the crystals in a unique device it had invented and developed for the U.S. Navy. It had been supplying the military, primarily the Navy, with research and products for almost three years after signing the first contract for product development with the Navy in 1940.<sup>41</sup> Polaroid's productivity earned three Navy "E" Awards for excellence prior to Pearl Harbor and the reputation for being the Navy's foremost problem-solver.

The prime motivator at Polaroid was Dr. Edwin Land, who held three corporate titles including director of research. Land was convinced that victory in the war would go to the combatant with scientific superiority. "The thought drove him, and he drove his people."<sup>42</sup>

In the early spring of 1942, Land was in Washington for a meeting with the Navy's Bureau of Ordnance. Concluding his business with one young officer, Land paused, then pleaded, "Give us something more to do for the war effort." After a few moments of reflection, the officer listed the unsatisfactory characteristics of a telescopic bomb sight in use on dive bombers. He then described the features for an effective sight. With this, Land left for the return flight to his laboratory in Cambridge, Mass.<sup>43</sup>

Early the next morning, Land entered the office of one of his several bright, young physicists and asked for calcite crystals. He explained that he had formed the concept for a new aiming device during the return flight from Washington on the previous evening.<sup>44</sup> He needed the crystals for a working model. Within very few days, Land phoned the Bureau of Ordnance offering to show the young officer a prototype of the sight, if he were willing to meet him halfway. They met the next day in the terminal at LaGuardia Airport in New York City where Land demonstrated the first optical ring sight.

The optical ring sight was unique in that there was only the one element (no front and rear sights) which displayed a series of concentric, colored circles when a distant object was viewed through it. When mounted on a gun, once the target was fixed in the central circle,



The Mark 3 optical ring sight was manufactured by Polaroid Corp. The protective covers of this sight are folded to the left (photo courtesy Dept. of Geology, Bryn Mawr College)

movement of the gunner's head did not disturb the alignment of gun and target. This feature offered great promise for the sight in aiming flexible anti-aircraft guns. In addition, the sight was light-weight, simple, inexpensive to manufacture and did not require electrical illumination.<sup>45</sup>

The Navy and, later, the Army Ground Forces and the Army Air Forces were captivated by the device. The Navy immediately made two tentative assignments of the sight to weapon systems in order to rush it into production.

The sight was constructed of seven laminations of optical materials, the most critical of which was a wafer of sub-optical calcite. Thus the Navy's orders for the sight thrust Polaroid into the market for calcite crystals.

The differences between true optical calcite, which had been Stanton's objective, and sub-optical calcite were not great but they were significant. To qualify as true optical calcite, a crystal must be perfect in every respect. Sub-optical calcite crystals might contain traces of color and a few minor imperfections. The significance lay in the fact that however small or large an amount of true optical calcite a deposit might yield, it would also yield many times that amount of sub-optical. The prospects for producing at a profit were enormously enhanced.

From spring of 1942 until mid-1943, the military knew only that it believed in the usefulness of the sight and might need a lot of them, but had trouble deciding how many and when. With characteristic agressiveness, Land directed his company to be prepared by establishing an adequate, dependable supply of crystals. A deposit in the California desert was identified, developed and put into production in the fall of 1942. A few months later, one in Montana was opened. Initially, these seemed adequate to meet the uncertain production schedules for the sight.

By July of 1943, Polaroid had firm orders for delivery of 16,000 sights and prospects for orders for another 174,000. They had on hand

only 500 pounds of crystals and needed another 7,500 pounds almost immediately for the firm orders alone.<sup>46</sup> Production of crystals at the two domestic sources was much lower than expected and much more expensive than predicted.

Consequently, when Stanton somehow <sup>47</sup> became aware of Polaroid's needs in July and offered to supply crystals, Polaroid encouraged him to do so. Both he and Ben Williams were stimulated by this expanded opportunity and, their deposits in Sonora being depleted, intensified and extended their searches into Chihuahua.

Shortly thereafter, a deposit southwest of Creel, Chihuahua was brought to the attention of C. R. King. An American mining engineer living in Chihuahua City, his help had been sought in finding a market for the crystals. Through King's inquiries in the United States, Polaroid became aware of the find and arranged for Stanton to examine the deposit with King.

A small amount of work showed the deposit to have commercial value and Stanton quickly forged an agreement with the owner. He would buy crystals from the mine and import them to Douglas. There, he would sort the crystals into true optical and sub-optical grades.<sup>48</sup> The first were to be sold under contract to Bausch & Lomb and the second under contract to Polaroid. Stanton now had assured customers for amounts of crystals he could not have imagined previously.

Stanton pressed forward vigorously on two fronts. He worked diligently to find and motivate others to find more calcite deposits and moved to solidify his arrangement with Polaroid. King, Martin Nesbitt of Chihuahua City and others searched the area around Creel while Stanton concentrated on northern Chihuahua.

As Stanton intensified his Mexican explorations, he was quick to include Farnsworth in them as his companion, guide and informal partner. Farnsworth had been born in Colonia Garcia, one of the several Mormon colonies in Chihuahua. He had worked on cattle ranches there and had guided hunting parties through the rugged mountains. Like all the members of the colonies, he was bilingual. Moreover, he had relatives and friends in each of the colonies who could be helpful to Stanton.

The region Stanton and Farnsworth were exploring was rugged, sparsely-populated terrain in the eastern Sierra Madre Mountains, much of it accessible only on horseback. On one trip they stopped for horses and food at the home of one of Farnsworth's aunts in Chuhuichupa, the southernmost of the Mormon colonies. In the course of the meal, Stanton explained the purpose and object of their searches. A Farnsworth cousin then volunteered that he knew where to find crystals. He did indeed and led them to a limestone cavern in a bank of the Ares River that contained crystals weighing as much as a ton.<sup>49</sup>

By mid-October Stanton had shipped to Polaroid 157 pounds of

"very fine quality" crystals, promised another 500 pounds by Nov. 6, and given assurances of many tons of like quality, if he were able to expand his operation. Thereupon, Polaroid recommended that the War Production Board (WPB) should order 6,000 pounds of crystals from Stanton at a price of \$15 per pound and should advance Stanton \$37,500. Polaroid and Bausch & Lomb agreed to keep Stanton in operation until Nov. 15 while the proposal was studied.

On Oct. 28, the Navy advised the WPB that its requirement for sights had jumped to 100,000 and asked the WPB to "assist the Polaroid Corporation in obtaining a supply of Mexican calcite..." In early November, President Roosevelt signed an order proclaiming optical calcite to be critical to the war effort. The last bureaucratic roadblock to decisive action by the WPB had been removed.

Navy Lt. Frank W. McGinnis was the production officer responsible for procurement of the sights for the Bureau of Ordnance. "He was a very earnest young man" who pressured the WPB for calcite production. "In his view the outcome of the war depended on this."<sup>50</sup> With



Lt. Francis W. McGinnis (National Personnel Records Center photo)

optical calcite declared critical, he increased the pressure.

Stanton went to Washington (and, perhaps, Cambridge) to negotiate conditions for supplying Mexican calcite and there was a meeting of representatives of the Navy, WPC, Foreign Economic Administration and Polaroid. A definite agreement was reached which made Stanton the sole supplier of calcite crystals from Mexico. The government, Polaroid and Bausch & Lomb agreed to refer all inquiries regarding sale of Mexican calcite to him. There was one proviso – that McGinnis examine the two large deposits Stanton had reported. If McGinnis was satisfied with their potential, the WPB would grant Stanton a twomonth production trial.

R. B. McCormick at the WPB was in charge of the program to maintain a supply of quartz crystals for the war effort and was the key person organizing the belated program for supply of optical calcite. He was the one who most directly felt the pressure from McGinnis.

On Nov. 13, McGinnis visited McCormick confirming that he and Stanton were soon to be in Mexico. The next day, Sunday, McGinnis rough-housed with his 9-month-old son, Francis II, said some appreciative words to his wife, Ursula, on the progress of her second pregnancy, and, as he left to join Stanton, gave her a goodbye kiss. It was to be their last.



The barranca, or ravine, in Chihuahua's Sierra Las Brenas in which Stanton's plane crashed. (Photo by Lewis Orrell)



Douglas International Airport (now municipal) as it looked in 1943 when Stanton and McGinnis took off on their last flight. (Courtesy Cindy Hayostek)

The men planned to examine King's deposit first. The El Porvenir, below Creel, could be reached from El Paso by rail, truck and foot. The duo would then double back to El Paso and go west by train to Douglas. At Douglas, they would again cross the border to examine Stanton's find south of Chuhuichupa. Returning to Douglas, McGinnis would find either military air or train travel back to Washington, D. C.

The El Porvenir was located over 300 air miles south of El Paso. The most direct access to it was by rail from Cuidad Juarez to Creel. They met King either en route to Chihuahua City or at Creel where he or Batista, owner of the mine, supplied a truck and/or horses. From Creel, they went by truck through Pito Real and Areponápuchic to Monterde. This was a long, slow ride, in part along a railroad bed under construction. A walk of about 1-1/2 hours from Areponápuchic brought them to the Rio Urique canyon. The deposit was about 1,200 feet below the rim of the west wall of the canyon.<sup>52</sup> Attesting to the difficult travel conditions, the men did not arrive in Douglas until the morning of the 24th. McGinnis immediately telephoned McCormick in Washington asking for help in obtaining an export license for mining equipment Stanton was ready to take into Mexico. He confirmed the existence of El Porvenir and a "considerable amount of material above ground" (apparently, much less than the 20 tons boasted by Stanton). When the license was received, he and Stanton would return to Mexico to make arrangements for transportation of the material to the United States. McCormick had the license for Stanton within two hours of the call.

Shortly after noon and in good weather, Stanton and McGinnis left for Chuhuichupa in the Taylorcraft. Farnsworth saw them off. It was the day before Thanksgiving and their families would have to enjoy the traditional turkey without them.

The plan for this leg of the inspection trip called for Stanton to pilot the pair to a landing in a cow pasture in Chuhuichupa late that afternoon. His flight plan went east to Janos, south over Casas Grandes and, avoiding the mountains to the west, down the valley to a point opposite Chuhuichupa. Here he would turn west, circling below a high peak into his landing.

Farnsworth was to leave Douglas early the next morning in Stanton's battered, green Plymouth pickup, carrying gasoline and the mining equipment. Stanton and McGinnis would borrow horses from Farnsworth's cousins and ride to the caverns along the Ares.

Returning to the plane, they would refuel and fly to Chihuahua City to meet King again. Here they would work out details for exporting the El Porvenir crystals and Stanton would pay King for quartz crystals he had supplied and for his work at the El Porvenir. If further refueling were necessary, this was available at the well-established air field at Chihuahua City. The return from there to Douglas was a fairly easy flight.

Farnsworth arrived at Chuhuichupa on schedule and was perplexed when he did not see the plane. Recognizing that Stanton might have reversed the travel plan after take-off, he settled in to await the plane's arrival. When the plane did not appear by the second day, he retraced his route to Colonia Juarez where he telephoned Ben Williams. The men had neither returned to Douglas nor had been heard from en route.

Williams alerted Polaroid and the Navy to the missing men and plane. Polaroid immediately hired a pilot in Chihuahua City to make search flights. These were unproductive. The Navy arranged for the Air Force to make aerial searches from the Douglas Airbase. These were conducted until Dec. 13 when the search was canceled.

In view of his Civil Air Patrol status and his knowledge of the terrain, Farnsworth flew some of the flights as an observer. All the conscientious effort was to no avail - the men and the plane had disappeared.

The State Department sought the cooperation of the Mexican government in publicizing the missing plane. Advertisements in English and Spanish were placed urging citizens of both countries to look for the plane. Naval Intelligence investigated the disappearance but found no clues. The censorship office in the Gadsden Hotel monitored two telephone calls originating in Mexico that reported the wreckage but the sightings were never confirmed.

Finally, in August of 1944, two men hunting deer in an isolated, tortuous region of the Sierra La Breñas stumbled upon the wreckage. The plane, largely intact, rested on the steep slope of a narrow ravine, just short of a pass, the lowest within a considerable distance, called Puerto El Avion.

The cause of the fatal crash-landing is uncertain. Reports, collected after the disappearance, of hearing or seeing the plane in flight, of weather conditions and of flight path were often contradictory. The most probable situation was that Stanton left his intended flight path down the valley to follow, in clear weather, the road he had driven many times to Chuhuichupa. For some reason, low clouds or an exhausted fuel supply, he changed his mind and attempted to return to the valley through the Puerto El Avion pass.

For lack of only a few feet in altitude, the plane clipped the tip of a tall pine tree in the saddle of the pass and pancaked against the side of the ravine. If Stanton added risk to the flight, it was in changing his flight path with a plane he understood to be marginally powered for flying over the mountains.

Mormons from Colonia Juarez, local officials, the Mexican government, the Army, the Navy and the State Department all cooperated in the difficult physical and political business of recovering the bodies, which were soon returned to Douglas. Because of the terrain and the location, the plane could not be removed and was a total loss.

When prospects of finding the men alive dimmed, Ursula McGinnis moved from Arlington, Va., back to Alameda, Ca., to build for herself and her two small sons a new life among her family. Madeleine and Jere Stanton had remained in Douglas after the disappearance of the plane, hoping for favorable word of husband and father. With the return of Stanton's body, their vigil ended and they returned to New Jersey, their emotional and financial resources exhausted.

When it became apparent that Stanton's plane would not soon be located, Williams replaced Stanton as Polaroid's contract agent and King replaced Stanton in the field. Williams later reported that he solved the problem of expediting crystals out of Mexico and into Douglas with some unorthodox methods for cutting red tape.<sup>53</sup>

For the next year, until the calcite procurement program was

closed in November of 1944, Williams was the broker who, in effect, bought the crystals shipped from Mexico and resold them to Bausch & Lomb and Polaroid. If the War Production Board made the same arrangement with him that they had proposed to Stanton, Williams' gross profit for the year was about \$80,000.

King worked very effectively in the field. For a time he was aided by O. A. Reese, a mineral collector from Colorado Springs, Col., who traveled from mine to mine teaching the mine operators how to select and cleave crystals.

By the end of the project, more than 30 deposits and districts had been explored and/or developed. With terrible irony, the deposits near Creel, which Stanton and McGinnis examined by land, produced more crystals than any other mine in Mexico save the La Fe, while the crystals in the Ares caverns, which they were flying to examine, proved worthless.

By the time the program ended in November of 1944, Douglas had contributed to the American war effort 11,734 pounds of Mexican crystals – enough for over 23,000 optical ring sights.<sup>54</sup> These were supplied at the lowest cost of any producer in the Navy's program. The optimism of Stanton and McGinnis over the potential of the Mexican deposits was vindicated.

# ACKNOWLEDGEMENTS

A listing of each of the persons who so graciously and willingly provided data for this study would be almost as long as the article. However, the untiring and unstinting research collaboration of Ross Whistler of Massachusetts, the many communications of Mr. and Mrs. Carl A. Farnsworth of Missouri and the assistance and encouragement of Cindy Hayostek of Douglas must be cited individually. The author's debt to each and every person is sincerely and gratefully acknowledged.

## NOTES

- Telephone interviews with Capt. William Ronstadt, USN, retired, on 1/16/89 and 1/16/90.
- History of the Army Air Force Advanced Flying School at Douglas, Arizona, v1, 1942, 52. Historical Services Branch, Office of Air Force History, Bolling AFB, Washington, D.C. (Hereinafter, "AAFAFS History").
- Profiles of Dr. & Mrs. E. M. Stanton, Jr., were assembled from data contained in State Department reports and from descriptions furnished by Carl A. Farnsworth.
- Certificate of Birth #163393, Department of Public Health, State of Illinois.

- 5. Application of Edwin McIntosh Stanton, Jr., for registration as registered optometrist, Department of Registration and Education, State of Illinois. All further statements regarding Stanton's registration are taken from the application or attachments thereto.
- Marriage License #1024927, issued by Stanley T. Kusper, Jr., County Clerk for Cook County, State of Illinois, shows Stanton and Aikman to have been married by Joel C. Fitch, a judge of the county court, on Apr. 21, 1924.
- The title for his degree is stated in a letter from Delores L. King, records officer, Illinois College of Optometry, dated Sept. 30, 1987.
- 8. The Blue Book of Optometrists and Opticians, 1924, 1928-1940. Professional Press, Inc., Chicago, Il. Communication, librarian, Los Angeles College of Optometry, 2/1/90.
- Correspondance, Carl A. Farnsworth, Downing, Mo., July 27, 1989.
- Inquiries to most of the mining colleges in the country failed to produce evidence of Stanton's having enrolled in any formal mining or geology curriculum.
- Illinois College of Optometry, op. cit., cites a mailing address for Stanton in New Mexico as early as Feb. 16, 1939.
- Vincent C. Kelley, "Iceland Spar in New Mexico," American Mineralogist, v25 (1940), 357.
- Stuart A. Northrop, Minerals of New Mexico, Albuquerque (1959), 161. The world's largest deposit (long exhausted) was in Iceland, from which optical calcite derived the name "Iceland Spar."
- 14. R. B. McCormick, "Optical Calcite Policies and Procedures of the War Production Board and Predecessor Agencies," History of the Miscellaneous Minerals Division, 139. National Archives, Washington, D.C. Some of the cleaved crystals from the Iceberg were very large, ranging from over five pounds to almost 34 pounds. A crystal weighing 32 pounds, and believed to have come from the Iceberg, is now in the Smithsonian
  - collection. It is the next largest in the world, second only to one in the British Museum.
- Lauren A. Wright, "Calcite," Mineral Commodities of California, Bulletin 156, revised, December, 1957. California Division of Mines, Sacramento.
- Senate Bill 4401, dated Oct. 7 (legislative day, Sept. 18), introduced by Hon. Dennis Chavez, U.S. Senator from New Mexico.
- 17. McCormick, loc. cit.

- 18. Memo, Folsom to Heiss, National Defense Commission, Dec. 21, 1940; RG179, Records of the War Production Board, File 528.22, optical calcite, National Archives, Washington, D.C. (Hereinafter, "WPB Records"). It was understood that the Germans were using optical calcite prisms in range finders to reduce the glare over water.
- Telephone interview with "Doc" Zellers of Dixon, N.M., Jan.
  19, 1989, who remembers seeing two men and a woman working the Iceberg.
- Letter from Arthur Montgomery, former owner of the Harding Pegmatite Deposit and the adjacent Iceberg, Feb. 3, 1990.
- 21. After Stanton worked the Iceberg for about a year, the original owners were bought out by a Robert D. Thompson, who kept the claim in force for many years. It is unlikely that either Stanton or Thompson would offer to sell to the government in mid-year a deposit they even suspected was nearing exhaustion. Gwinn (G. Richards Gwinn, "Mining Optical Minerals," **Mining Congress Journal**, May 1945, 70) has stated flatly that the original vein was destroyed in a quarrel over ownership although it has not been possible to confirm this from other sources. After Stanton's abrupt severance with the Iceberg, he continued to visit Thompson as late as 1943, probably to see whether continued development produced a new vein or saleable crystals from the old. Destruction of the Iceberg seems best to fit the circumstances.
- 22. Office of the County Clerk, Socorro, N.M. Claim filed Dec. 29, 1941. For want of \$100 of work each year, Stanton lost the opportunity to sell the claim in 1944. It was very close to Trinity, site of the first atomic bomb explosion and the Army included its location in the White Sands Missile Range (letter from Albert L. McNeil, Real Estate Division, Albuquerque District Corps of Engineers, dated Feb. 15, 1989).
- 23. Certificate of filing, State Corporation Commission of New Mexico, dated Feb. 12, 1942, to which is attached a certificate of incorporation in New York State, dated Jan. 23, 1942.
- 24. AAFAFS History, v2, 184-5.
- 25. Telephone interview with Mrs. Jessie Butler Marusich, Phoenix, Ariz., Dec. 9, 1989. Mrs. Marusich was secretary to Michael McCue, head of the housing bureau at the Douglas Chamber of Commerce.
- Carl Fries, Jr., Optical Calcite Deposits of the Republic of Mexico, Geological Survey Bulletin 954-D (1948), 117. U. S. Department of the Interior (Hereinafter, "Fries"). Fries states that Stanton began his search for quartz and calcite

crystals in Sonora as early as 1941 "with the aid and under the sponsorship of Ben F. Williams..." Ben Williams, Jr., believes that "sponsorship" meant guidance and introductions, not financial assistance.

- 27. Teresa Williams Irvin, Let the Tail Go with the Hide (El Paso, 1984), 161-5, 178-183.
- 28. Fries, op. cit., 167-170, 172, 175.
- 29. Stanton was later to say that he acquired the plane for "prospecting" in Mexico. He may not have known of it, but pilots of the New Hampshire Wing of the Civil Air Patrol did locate from the air 10 outcroppings of mica, one of the critical minerals on Stanton's prospecting list. They later extended their search to include beryl, feldspar and quartz – another on Stanton's list. See Robert E. Neprud, Flying Minute Men: The Story of the Civil Air Patrol, New York 1988, 32.
- 30. Bill of sale, Civil Aeronautics Administration form ACA 502. Williams (see Irvin, **op. cit.**, 179) states that the Navy "authorized me to buy a plane for Stanton to use." However, the purchase was made a year before either Stanton or Williams had any affiliation with the Navy's program for optical calcite.
- 31. Patricia Strickland, **The Putt-Putt Air Force**, Federal Aviation Administration, 1970, 82. "By 1943 ...the War Production Board ...halted the sale, lease, rental, trade or delivery of any airplane to anyone other than the Defense Plant Corporation."
- Ruth M. Reinhold, Sky Pioneering: Arizona in Aviation History. Tucson, 1982, 36-7.
- 33. ibid., 122-5.
- 34. ibid., 194.
- 35. ibid., 200.
- 36. Neprud, op. cit., 11, 47.
- Pilot certificate #390455 with a rating for single-engine airplane, land, dated Oct. 14, 1943. Airman certification notification, DOT Federal Aviation Administration, dated Nov. 12, 1987.
- Telephone interview with Mrs. Janet Willis, Yuma, Ariz., Dec. 9, 1989.
- Leonard Feather, Encyclopedia of Jazz, New York, 1960.
  Lynn Farnell Group, ed. ASCAP Biographical Dictionary, New York 1966.
- Michael R. Pitts, Western Movies, Jefferson (NC) 1986. Interview, NFIS Research, Academy of Motion Picture Arts & Sciences, 1/25/90.
- 41. 1942 Douglas city directory.
- 42. Peter C. Wensberg, Land's Polaroid, Boston 1987, 68, 74.

- 43. Wensberg, loc. cit.
- 44. Interview with Stanley S. Ballard, Ltr. Cmdr. USN retired, at University of Florida, Gainesville, Apr. 25, 1986.
- 45. Telephone interview with Dexter P. Cooper, Jr., former physicist with Polaroid, Oct. 21, 1989.
- 46. For a more complete description of the optical ring sight and of the optical ring sight program, see F. L. Orrell and Ross Whistler, "A Sight So Good It Almost Succeeded," Periodical, **Journal of the Council on America's Military Past**, v15, n4, 3-14.
- 47. McCormick, op. cit., 142.
- 48. Fries, op. cit., 117.
- 49. Ben Williams, Jr. recalls seeing someone grading crystals in the backyard of his father's home. It is unfortunate that he cannot positively identify that person as Stanton, as this would confirm a business relationship between his father and Stanton prior to late November, 1943.
- 50. Carl A. Farnsworth, loc. cit., and Fries, op. cit., 173.
- 51. Letter, Simon D. Strauss, former vice-president of Metals Reserve Co., a subsidiary of the WPB, Dec. 9, 1986.
- 52. Fries, op. cit., 155-6.
- 53. Irvin, op. cit., 162-4.
- 54. Fries, op. cit., 150.

About the author: Lewis Orrell and his collaborator, Ross Whistler, began their study of the optical calcite program and the optical ring sight program five years ago when Orrell was living in the vicinity of the California crystal recovery operation. Orrell is preparing a book describing the full scope of both programs.

#### BOOK REVIEWS by Cindy Hayostek

# Border: The U.S.-Mexico Line by Leon C. Metz, Mangan Books, 6245 Snow heights, El Paso, Texas 79912, 476 pages, maps and photographs, \$29.95.

It has to be said right at the start – the title of this book really ought to be "Border: The Texas-Mexico Line" for it focuses the vast majority of its pages on Texas and the Mexican states next to it.

In the first half of the book, which examines the period up until the Mexican Revolution, Geronimo and the soldiers who pursued him get four pages while Col. Greene and the 1906 activity at Cananea get the same amount. The Arizona-Sonora portion of the border can't be ignored when talking about the Revolution, but after that, with a chapter or two thrown in about the Colorado River, it's back to Texas.

This is not to say the book is without merit. It's well written and the amount of research El Paso resident Metz put in to his 10th book is apparent.

Even so, the book is hamstrung by other problems. One is the totally inappropriate cover. The blue-green watercolor doesn't begin to convey the border's desert splendor. Other demerits are the perfunctory maps and photographs which tend to be "mug shots."

Metz ends his book by looking at the border in more recent times. The bracero program, maquilas and illegal aliens all come in for commentary, making for a wellrounded look at conditions in a truly unique area – the border, whether it be along the 1,253 miles of the Rio Grande or the entire 1,951 miles between the U.S. and Mexico.

#### In Search of Jesus Garcia by Don Dedera, Prickly Pear Press, P.O. Box 42, Payson, AZ 85547, 132 pages, numerous photographs, maps, soft cover, \$7.95.

On Nov. 7, 1907, railroad engineer Jesus Garcia lost his life as he chose to stay at the throttle of his train and take it and a load of burning dynamite out of Nacozari, Son. This heroic effort that saved countless lives has been generously recognized in Mexico with numerous monuments and an annual celebration in Nacozari with which many Cochise County residents are familiar.

What is not as readily recognized, was Jesus Garcia the loving son and brother, Jesus Garcia the hombre who wore his hat at a rakish angle, and Jesus Garcia the competent and hard working man. In addition, Garcia's deed was not widely recognized outside of Mexico.

Dedera started to remedy this situation in 1963 when the then Arizona Republic columnist wrote about Garcia. He soon learned his column was full of errors and over the next 13 years conducted an off-and-on search for the true facts about Garcia. The result was 1976's "Goodbye Garcia, Adios" – a hard cover book published in English and Spanish by Northland Press.

Now Dedera has, in essence, re-issued the book. The copy of "In Search of Jesus Garcia" is almost the same as "Goodbye Garcia, Adios." There are some minor changes and corrections, but huge chunks of copy are exactly the same in both books. The photographs too are much the same.

This, however, does not detract from the importance of Garcia's story. In a time when there seem to be few true heroes, the story of Garcia and his ultimate sacrifice to save the town he lived in is worthy of note.

After "Goodbye Garcia, Adios" was published, many copies of the book were distributed to schools and libraries in an effort to make children understand what a hero really is. One hopes this will happen again.