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COMBAT AIR MUSEUM

PLANE TALK

January-March 2025
Vol. 41, No. 1

October Membership Luncheon

By Kevin Drewelow

Three Air Force officers who are currently attending the U.S. Army Command and General Staff College at Fort Leavenworth, Kansas, spoke about their careers during our membership luncheon on October 14. Majors Bobby Gulla, Tyler Quinn and Gary Sweatte shared part of their Columbus Day holiday with us and described three very diverse and fascinating career fields.

Major Bobby Gulla graduated from the Air Force Academy and became an aircraft maintenance officer. His first assignment was to the 44th Fighter Squadron to support the Boeing F-15Cs at Kadena Air Base on Okinawa. Major Gulla had a personal connection to the island as his grandfather fought in the Battle of Okinawa in 1945. The major spent 18 months supporting the F-15s before being assigned to the 33rd Rescue Squadron at Kadena. The 33rd's mission is Combat Search and Rescue and they fly heavily armed Sikorsky HH-60 Pave Hawk helicopters. After three years on Okinawa, the Air Force assigned Major Gulla to Osan Air Base in Korea to look after the Lockheed F-16s of the 36th Fighter Squadron. "Fight Tonight" is the motto of United States Forces Korea and Major Gulla did his part to meet that standard for two years when it was time to broaden his career. The Air Force sent him to Hill Air Force Base (AFB) in Ogden, Utah to learn about acquisition and sustainment of the Fairchild Republic A-10 Thunderbolt II ground attack aircraft, better known as the "Warthog."

Major Gulla ***(Air Force photo)***

Hill AFB is home to the Ogden Air Logistics Complex, where heavy depot-level maintenance is accomplished on the A-10 and other aircraft and engines. The A-10 has been in service since 1977, the original manufacturer is no longer in business, and parts are difficult to come by. A-10s had been flown hard in Afghanistan and Iraq and some were coming up against their service life limits. The Department of Defense had let a contract for the construction of new wings but their delivery was in the future and the Air Force needed wings quickly. Major Gulla helped analyze the service life remaining on Warthogs stored at the 309th Aircraft Maintenance and Regeneration Group – the aircraft boneyard – at Davis-Monthan Air Force Base in Tucson, Arizona. They identified and retrieved 17 sets of wings with suitable service life remaining for installation on currently serving Warthogs until the new wings became available.

Gulla's experience with Warthogs at Hill AFB set the stage for his next transfer, this time to Moody AFB near Valdosta, Georgia. The 23rd Fighter Wing, descendants of the famous "Flying Tigers" of World War II, operates two squadrons of A-10s and Gulla

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INSIDE

COMBAT AIR MUSEUM

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We welcome your comments!
Newsletter Layout by Megan Garner

MUSEUM HOURS

January 2 - February 28/29
Mon.-Sun. Noon - 4:30
Last Entry Every Day is 3:30 P.M.

March 1 - December 31
Mon.-Sat. 9 A.M. - 4:30 P.M.
Sun. Noon - 4:30 P.M.
Last Entry Every Day is 3:30 P.M.

Closed
New Year's Day, Easter,
Thanksgiving, Christmas Day

Your membership is important to us! Join the COMBAT AIR MUSEUM

From the Chairman's Desk

By Gene Howerter, Chairman, Board of Directors

As promised in the last newsletter, I want to share the final 2024 year-ending museum attendance number with you. Yes, we did break our all-time annual museum attendance number, as the final 2024 count reached 15,176 paying guests on December 31st. It was an interesting challenge for those who work at the museum most days of the year. We had those who were pessimistic that we would reach 15,000 and others, including myself, who remained positive that the Museum would top 15,000. Again, this was a big deal because, if you remember, our first goal for the year was to reach 13,000. After achieving that number, we increased our goal to 14,000, and who would have ever guessed we could finish the year with over 15,000? Giving credit where credit is due, the Sunflower Summer program in Kansas was the single factor that made our year successful attendance-wise. It is our sincere hope that this program will continue in the future. Currently, there are some questions as to its 2025 implementation. Let's hope the Kansas Legislature will again see fit to continue this positive program for another summer. It has been a real win-win for Kansas citizens and organizations like the Combat Air Museum. Finally, I would guess that 99.9% of the money created from this program winds up going back to Kansas businesses one way or another. That is why I say it is a win-win program.

One of the worst blizzards Topeka has ever seen ushered in 2025. We had to close our doors for several days at the Museum. With approximately 15 inches of sleet, ice, and snow, clearing our parking lots and museum interior ground took several days. Even though we are only open to the public for half days in January and February, we have had visitors most days, including a big bus tour, which kept our January attendance ahead of January 2024. Most museum staff members still arrive early in the morning and attend business as usual. In early February, we discovered our Bob Dole Educational Center furnace had seen better days, and with a call to Blue Dot, we were told it should be replaced. When it hit -12 degrees outside, the thirty-year-old furnace said, "That is it, you need to replace me!" The new furnace is working wonderfully and is more efficient than its predecessor. Don't forget to attend all membership brown bag lunch membership meetings, as I know you will be plenty warm. You will find the days and times listed in this newsletter.

This would be a good time to remind all members that this will be a hectic spring at the Museum. This a polite way of saying you might want to consider volunteering if you want to get involved in various ways at CAM. Here are a few suggestions that you can consider: we will set up for the Celebrity Pancake Feed on Friday, April 25 and hold the event on the next day and we really need helpers in numerous ways. As the weather permits, we will begin construction work on the museum's new storage addition starting in February. This might be the case if you like carpentry or just using your hands for labor. You will need to get your name and contact information on our list to receive notifications about when workdays and times will occur. It will be essential for you to get in the loop and stay informed to help prevent confusion. If you take the time to survey our web page or read our newsletter, you will also find numerous other events that will take place at the Museum; these will require additional volunteers. Finally, the

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October Membership Luncheon *Continued from page 1*

looked after them for two years. His next assignment would be quite an adventure!

In 2021, Gulla became the maintenance officer for the Thunderbirds, the US Air Force's air demonstration squadron. The Thunderbirds fly the Lockheed F-16C Fighting Falcon, so Gulla's past experience with F-16s at Osan helped him keep up with the demands of the job. The Thunderbirds put on 75 demonstrations between March and November and have never cancelled a display due to a maintenance problem. A regular Air Force F-16 squadron has 300 maintenance personnel assigned to look after the jets; the Thunderbirds make do with 90 maintainers, one senior non-commissioned officer maintainer and one commissioned maintenance officer! He clearly enjoyed his three years with the Thunderbirds and said many of the people he served with on the Thunderbirds were in Topeka the week before at the Thunder Over the Heartland air show at Forbes Field!

Our next speaker took us from the flight line to the front lines. Major Tyler "T.Q." Quinn is a Tactical Air Control Party-Officer, or TACP-O. His job is to embed, either individually or with other TACP members, with units on the ground to call in air strikes, coordinate air support and integrate space and cyber resources. He serves as a liaison between the Air Force and ground forces.

T.Q. enlisted in the Air Force in 2004 and began his TACP career after completing basic training and technical school. He went to Ft. Bragg in North Carolina and deployed six times over the next nine years to Iraq and Afghanistan with the 82nd Airborne, 101st Airborne and various special forces units. He received his commission in 2013 and remained in the TACP business, serving first with the 10st Airborne at Ft. Campbell, Kentucky and later at Ft. Cavazos (formerly Hood) near Killeen, Texas, where he became a flight commander. In 2017, he deployed to Iraq and Syria; afterwards, he was posted to Joint Base Langley-Eustis near Newport News, Virginia where he served as a staff officer for three years. He then returned to Ft. Cavazos before reporting to the Command and General Staff College.

Major Quinn showed several photos taken on deployments throughout his career. On his first deployment, he was teamed with an experienced JTAC and began the long learning process. They referred to themselves as ROMAGs, which stood for Radio

TACP at work ***(Air Force photo)***

Operator, Maintainer and Driver. He continued to apprentice in this fashion over several deployments. In 2008, he was embedded with a small team of U.S. Army special forces "Green Berets" at Forward Operating Base (FOB) Tycz in Uruzgan Province, Afghanistan. Their mission was to train local forces. He called in his first air strike during this deployment. One photo showed T.Q. in a thick dust cloud stirred up by the Army CH-47 Chinook helicopters arriving to transport his team. Deb Lamere, a CAM member and former Chinook flight engineer, mentioned that she might have been aboard one of those Chinooks as her unit was operating in that province during T.Q.'s deployment...what an interesting coincidence!

One of T.Q.'s last photos was taken during his most recent trip to Syria in 2017. The picture was taken on the day he was promoted to captain. His unit was supporting Kurdish-led Syrian Democratic Forces soldiers who had surrounded the city of Raqqa, held by ISIS fighters. T.Q.'s team called in an air strike which breached the city wall and enabled the SDF force to enter the city and free civilians being held hostage by ISIS.

Our third speaker, Major Gary Sweatte, grew up on Army bases and got hooked on aviation while watching an air show at Ft. Bliss, near El Paso, Texas. Sweatte graduated from the Air Force Academy in 2006 and was selected for pilot training. His training was delayed due to so many pilot candidates in the training pipeline, so he was sent to Dover AFB near Dover, Delaware and assigned to an intelligence unit. His office was located near the Mortuary Affairs section at Dover, which was the first stop for the remains of American troops returning from the wars in Afghanistan and Iraq. That experience reinforced the importance of military service to him.

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Chairman's Desk *Continued from page 2*

Museum always needs additional gift shop workers and tour guides. Volunteers for the last two positions must be serious and you will receive on-the-job training. Won't you please give some thought to these? We hope to see you at the Museum. ◆

From Young Aviator *to* Naval Aviator

By Kevin Drewelow

(l-r) Gene and Austin *(K. Hobbs photo)*

Former naval aviator Austin Fick spoke at our December membership luncheon. This wasn't Austin's first visit to the Combat Air Museum; years ago, he attended a Young Aviators class when former naval aviator Dick Trupp was teaching. Austin returned to visit CAM in December of 2014, by then an experienced naval aviator himself, where he received a warm welcome from Dick!

Austin received his bachelor's degree in aeronautics from Kansas State-Salina in 2010; during his time there he earned several aviation licenses and ratings and served as a flight instructor. After graduation, he joined the Navy, completed all required pilot training to earn his naval aviator's Wings of Gold, and spent a lot of time flying the Boeing EF-18G Growler, the electronic warfare version of the F/A-18F Super Hornet. Austin graduated from the US Naval Test Pilot School and then worked in flight test on the Super Hornet and 20 other military aircraft. He flew combat missions over Iraq and Syria during Operation INHERENT RESOLVE. Austin has returned to Topeka where he owns and operates The Gun Garage and Shooting Range in north Topeka.

Austin spoke about the future of air warfare, specifically, about modern and future air warfare, changes in flight testing over the last 80 years; and the challenges and path forward for the American aerospace industry.

Air warfare hinges on the man and the machine. Nations design and build aircraft in parallel competition until a perpendicular technology arises to challenge an adversary. Austin gave some examples of parallel technology, such as the Sopwith Camel and Albatros D.II biplanes of World War I, two aircraft with similar capabilities where the skill of the pilots would decide the outcome of a dogfight; or even a jet-powered Messerschmitt Me-262 versus a piston-powered North American P-51, an obvious mismatch which the Mustang overcame by quantity of aircraft and better training and tactics, including catching the German jets at takeoff or landing.

Examples of perpendicular technology include the first use of aircraft instead of tanks against ground troops in World War I, the switch from battleships to aircraft carriers as the dominant threat from the sea in World War II, and the switch from conventional to nuclear weapons at the start of the Cold War.

Over the last 60 years, air warfare has been defined by three main pillars: an increase in the use of precision weapons; an increase in the standoff range of precision weapons; and the survivability of those systems against defensive systems, especially against surface to air missiles. Future warplanes will need longer range missiles, faster speed, lower radar and thermal visibility, even more advanced electronic offensive and defensive systems and the ability to accommodate and control drones. Adversaries are always working to counter our developments, as we do theirs; lots of weapons are counter-counter weapons. Great power conflict will be defined by the ability to get weapons in range of their targets-not a simple task!

Austin then turned to a brief discussion of changes in the flight test process over the last 80 years. He observed that North American Aviation took 120 days to design and fly the first example of what became the P-51 Mustang. Lockheed required three years from contract award to the first flight of the F-117 Nighthawk, better known as the world's first stealth fighter. Lockheed Martin was awarded the contract for the F-35 Lightning II in 2001 and it introduced the concept of concurrent production while still being developed; the first F-35 flew in 2006 and began to enter service in 2015. Why has the development time taken so much longer over the years? Missions are more complex and change much more quickly, while aircraft and their systems are not made to easily and quickly adapt. He gave the example of a next-generation electronic jamming pod; the contract was awarded in 2013 but the pod made its first flight seven years later...a pod! A combination of very demanding engineering, strict testing, budget and program restrictions contributed to this long period to first flight. Austin said a lot of patriots are working on programs like these but these programs require a lot of hard engineering; the good news is that our adversaries face the same problems.

This led to a discussion of the future of the American aerospace industry. Austin observed that the development and

production of American airliners and business jets has been great while the small piston aircraft industry has lagged. The average age of the single engine aircraft powered by a piston engine fleet is 50 years old, due to a big shift in the legal and regulatory environment. Civil lawsuits brought the industry to a halt years ago until aircraft liability laws were addressed to reduce the amount of time manufacturers were held responsible. Austin made a case for relaxing rules to promote innovation and said we need to find our "why" in industry. Military aviation in the 20th century provided milestones for decades. Now we need to focus on how aviation can contribute to human thriving.

Austin then took questions from the audience. Asked what lessons we're learning from the air war over Ukraine, he said the extremely intense and multi-layered surface-to-air missile threat has rendered strike aircraft useless, but the same missiles are useless against a fleet of low and slow drones. He pointed out that using a five-million-dollar missile to down a $500 drone is an example of perpendicular technology.

When asked about the current state of the air forces of China and the United States, Austin recommended the book, "The Hundred Year Marathon" by Michael Pillsbury to help understand how the leadership of the Chinese Communist Party thinks and views the world. Austin said our air forces are challenged by technology and the tyranny of distance-range and endurance problems caused by operating over the Pacific Ocean. Time is the problem. While the United States is risk averse, spending years to carefully test each and every step of a new aircraft or system, the Chinese are not; they take risks and fail often, making their innovation more dynamic. As he mentioned before, this engineering is hard and that we should not believe everything we hear about amazing advances made by our adversaries.

Austin was asked to give his opinion on the F-35 and its three variations: land-based, carrier-based and steep/vertical takeoff aircraft. He said all three are very good at putting weapons on target, but that other types of aircraft are still needed to ensure the F-35s get to the target.

A question arose about the effect of artificial intelligence (AI) on future aircraft and if they will render pilots obsolete. Austin replied manned aircraft will never be irrelevant. He said some AI is very mature and can be effective in war, but that there is a great challenge integrating it with all other force components. He said the Department of Defense is not keen on allowing machines to decide when to pull the trigger. He sees drones or unmanned aerial vehicles as being a threat multiplier, not the threat. As he said earlier, accepting risk leads to realizing that risk, especially in advanced systems and programs. ◆

2025 Calendar of Events

March

1—Normal hours resume, Museum open Mon-Sat 9 a.m. to 4:30 p.m., no visitors admitted after 3:30 p.m. Museum open Sun noon-4:30 p.m.; no visitors admitted after 3:30 p.m.

9—Daylight Savings Time begins

April

14—Membership Luncheon, Brown Bag

20—Easter Sunday, Museum closed

26—CAM Annual Pancake Feed

May

26—Taps Across America

June

9—Membership Luncheon, Brown Bag

TBA—Young Aviators class

July

TBA—Young Aviators class

August

11—Membership Luncheon, Brown Bag

September

TBA—Girls in Aviation Day

TBA—Be Filled/CAM Truck Pull

October

TBA—CAM Car Show

13—Membership Luncheon, Brown Bag

November

2—Daylight Savings Time ends

27—Thanksgiving, Museum closed

December

8—Membership Luncheon-bring a covered dish

25—Christmas, Museum closed

The Doolittle Raider *from Kansas*

By Keith Fulton

Kevin Drewelow, the director of the Combat Air Museum, asked me several months ago if I was interested in assisting with the development of a new display in the museum for a fellow Kansan. This individual participated in the famed "Doolittle Raid" on Japan in April 1942. Sergeant Harold A. Spatz, a native of Lebo, Kansas, was a member of the unit participating in this raid, a retaliation to the bombing of Pearl Harbor, Hawaii five months prior. In reality the raid itself was not designed to satisfy a strategic goal but it sure provided a morale boost for the American forces that were preparing to go to war in the Pacific and let the world know that this island nation was susceptible to attack. My recent visit to the United States Air Force Museum in Dayton, Ohio, inspired me to write this article as a forerunner of the future display at the Combat Air Museum for Sgt. Spatz.

Part One

It was Saturday, April 18, 1942 and the United States was under pressure to send a message to the Emperor of Japan after his surprise and unprovoked attack on the Hawaiian Islands by Japanese naval forces on December 7, 1941.

On this morning there stood 16 armed and fueled U.S. Army Air Force (USAAF) North American B-25B Mitchell medium land-based bombers on the flight deck of the U.S. Navy aircraft carrier USS Hornet. Each bomber was loaded with four 500-pound bombs, either contact or incendiary, or a combination of both. Also on board the Hornet were 80 USAAF personnel to man the bombers when the appropriate time came. The B-25s would take off from the carrier deck and fly to designated military and industrial targets where they would release their bomb loads.

One member of this volunteer group was a native Kansan. Sergeant Harold A. Spatz who answered to "Skinny," a nickname given to him by his father at birth. Harold was the middle of three children to Robert and Gladys Spatz of Lebo, Kansas where the family resided and operated the town's gas service station. Lebo is a small rural farming community located in Coffey County in east central Kansas. Harold was born in the family home on July 14, 1921 and joined his older brother Robert "Bob," born in 1919. Two years later the family was completed by the birth of Harold's sister Reba Jean.

Harold grew up in the small community participating in sports, including football, basketball, and other community activities. With the family business just steps away from their home, I am sure Harold learned the art of repairing machinery and automobiles brought in to the service station.

Harold's father also worked for the city of Lebo preparing the ground work and pouring concrete for sidewalks throughout the city. Soon after a length of the concrete work was finished, but still wet, Harold came along, etched his name, and placed his palm in a corner section of the cement.

Harold Spatz, 1939 ***(Doolittle-raid.net photo)***

The Spatz children lost their mother in a 1927 traffic accident when Harold was only six years old. Robert, Harold, and Reba Jean were raised by their father and other close family. Harold became a popular teenager, did well in school, was elected president of his senior class and graduated from Lebo High School in 1939.

After high school Harold joined the Army Air Corps (AAC) on November 25, 1939 at Fort Riley, Kansas and soon left for basic military training, serial number 6936659. He later received further technical training to become an aircraft mechanic. The 1940 U.S. Census lists Harold at March Field in Riverside, California, living in the enlisted barracks. He was interested in flying on the large bombers of the day and volunteered to attend additional training to become an aircraft flight engineer and aerial gunner. After his flight training, he was assigned to the 17th Bomb Group (BG) at Pendleton Field, Oregon, the first unit to receive the new B-25 bomber.

The aircraft flight engineer assisted the pilots in monitoring the aircraft systems during the flight, such as engine performance, electrical, hydraulic, fuel, and other mechanical systems. During the flight he was also required to man a defensive gun position. Once on the ground, after the mission, the engineer provided aircraft servicing including refueling, checking engine oil levels and other overall general aircraft maintenance to turn the aircraft for another mission. Also, as an aerial gunner, he was responsible for the maintenance, care, and cleaning of the gun(s) at his position.

In early February, 1942, now two months into the war, Lieutenant Colonel James "Jimmy" H. Doolittle asked for volunteers for a secret mission from the B-25 crews of the 17th BG. Since receiving the new bomber in September 1941 these were the only units now experienced in the B-25 who were, at the time, participating in operational anti-submarine missions off the west coast of the United States. Volunteers poured in from all the experienced crews in the area. There were soon 24 bombers and the crews to man them.

Jimmy Doolittle ***(af.mil photo)***

Doolittle, at 14 years of age, saw his first airplane in 1910 and was hooked on an aviation career. Leaving college in 1917, as the U.S. entered "The Great War" (later named World War I), he enlisted in the U.S. Army

North American B-25B Mitchell *(af.mil photo)*

Signal Corps to start his flying career and in 1918 became a flight instructor teaching other young men to fly the fragile aircraft at the time. After the war he continued his college education and in 1925 was the first to receive a Doctorate in Aeronautics at the Massachusetts Institute of Technology in Cambridge, Massachusetts. After leaving the U.S. Army Air Service, Doolittle was active in air racing, winning several competitions, test flying new and more advanced aircraft, and later was influential in the development of instrument flying, or "blind flying" as it was called, where the pilot depended on ground-based radio signals transmitted to the aircraft instruments while flying the airplane to a successful landing without any outside visual references. Fearing the threat of war, the AAC recalled Doolittle to active duty on July 1, 1940 at the rank of major. He had to leave a corporate position and accept a drastic reduction in salary.

When the Japanese attacked in December 1941, America was not prepared for war. In fact, as late as the summer of 1941 the U.S. Army trained with mockup wooden weapons and trucks labeled as "tanks." There was strong opposition for the United States to stay out of the war in Europe and Pacific. However, President Franklin Roosevelt understood how the war was going in Europe and Japan's invasion of China; in the spring of 1941 he had the foresight to initiate several programs to rebuild the U.S. military services after the Great Depression. One of these programs was to train young men interested in becoming pilots. As it turned out the majority of the young pilots, involved in what was to become "The Doolittle Raid," took advantage of Roosevelt's initiative and gained their pilot wings just before the United States entered the war.

Just days after the Pearl Harbor attack President Roosevelt asked his senior military staff to look into what it would take to bomb Japan. The Navy did not want to risk their aircraft carriers, for the naval aircraft at the time required a carrier to travel within 200 miles from the Japanese coast to launch their aircraft and remain nearby for an extended time to recover them. Japanese land-based bombers could very easily destroy the carriers at this distance if discovered.

Initially identified as the "Tokyo Raid" or "Special Aviation Project #1," Captain Francis Low, a U.S. Navy submariner serving as a staff member to the Naval Chief of Staff, Admiral Ernest King, presented a plan using medium bombers and placing them on an aircraft carrier. Low was returning to Washington, D.C. after observing the successful sea trials for the newest carrier in the fleet, the USS Hornet. While flying over a naval land base airfield, he observed the silhouette of an aircraft carrier deck painted on the concrete runway surface. This was done for the Navy's pilot training, to take off and land on the limited space of an aircraft carrier. Low noticed two USAAF medium bombers landing on the runway crossing over the painted marking of the carrier silhouette. Once he arrived back at the office his first stop was to Admiral King presenting him with a possible solution for President Roosevelt's request. King liked the idea and asked Low to research it further.

Initially the plan called for the bombers to take off from and recover to a carrier after the bombing mission was completed. A basic plan was sent up to the Joint Chiefs of Staff who approved of the daring feat. General Henry "Hap" Arnold, the Army Air Force Chief of Staff, selected Doolittle, now a lieutenant colonel, as the mission commander. This selection was due to Doolittle's previous aeronautical education and experiences; he was to coordinate and execute the daring plan to bomb Tokyo.

Several medium type bombers were considered but the best, selected by Doolittle, was the B-25 Mitchell, named for Brigadier General William "Billy" Mitchell, a famed World War I aviator who addressed the importance of air power. The history of the B-25 started in March 1939 when the AAC issued specifications to all aircraft manufacturers for a medium bomber to carry a payload of 2,400 pounds over 1,200 miles at a speed of 300 miles per hour. North American Aviation took the challenge and the B-25 was developed from a rejected variant the company had already presented to the AAC the year previous under different specifications. The Air Corps ordered this upgraded and re-designed version of the bomber into production. The B-25A and B-25B entered service in 1941. The B-25 is a two-engine medium bomber with a tricycle landing gear, a length of 53 feet 6 inches, and wing span of 67 feet 7 inches. The tail section consisted of an elongated horizontal stabilizer with twin vertical stabilizers at each end. A normal crew consisted of six: pilot, copilot, navigator/bombardier, flight engineer, radio operator, and tail gunner. However, on this mission Doolittle wanted the navigator and bombardier as two separate manned positions so he eliminated the radio operator and tail gunner. The bombardier had an additional duty, if needed, with a single Browning .30 caliber machine gun position in the nose and the flight engineer also was available to man a twin Browning .50 caliber machine gun upper turret located just aft of the wings.

On February 2, 1942, flight tests were conducted launching a medium bomber from the flight deck of an aircraft carrier. Doolittle boarded the USS Hornet before it departed from Norfolk, Virginia with two B-25s on board. Just prior to these tests the two escorting destroyers located what they believed to be a periscope from a German U-boat. They launched depth charges and the Hornet fired on the target. They soon observed an oil slick; however, under closer observation it was found to be a mast from a sunken cargo ship.

As the Hornet turned into the wind the first pilot, entering the aircraft for the test takeoff, saw that the airspeed indicator was already reading two thirds of the airspeed necessary for the B-25

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Museum Notes

By Kevin Drewelow

Michael Eichten *(M. Eichten photo)*

CAM marks Veterans Day... Local recording artist Michael Eichten commemorated the service of our nation's veterans in a series of live performances at the Combat Air Museum on Friday, November 8 and Veterans Day, Monday, November 11. At the top of each hour from 9 a.m. to 3 p.m., Mike performed "The Star-Spangled Banner," "Taps" and his own song, "Veterans' Tribute," along with songs written and performed by veterans such as Johnny Cash and Kris Kristofferson, among others. Our visitors and volunteers appreciated his music and it was a pleasure having Mike here. We look forward to having him back!

14,000th visitor sets attendance record... Bob Thurman of Wichita walked in to CAM on November 19 and set an all-time attendance record at the Combat Air Museum as our 14,000th visitor this year! He received free admission and Gene Howerter, our chairman, presented him with a hat and shirt. The record didn't last long as you'll soon see!

(l-r) Bob Thurman and Gene Howerter *(K. Drewelow photo)*

Pouring the foundation (K. Drewelow photo)

New storage room at hangar 602... Our Fix-It Friday teams plus some friends were busy throughout December making progress on the new storage room on the south side of hangar 602. They began by excavating for the foundation and slab in mid-November, poured the slab, built forms for the foundation and walls and then poured that concrete two days before Christmas. The Federal Aviation Administration approved our project and construction will resume as soon as weather permits.

Winter hours at CAM... The New Year arrived and brought a return to our winter hours for January and February. During those months, we open at noon, take our last admissions at 3:30 p.m. and close an hour later. This is due to the often-severe winter weather with snow, high winds and low temperatures, combined with our lack of heat in the aircraft display areas of our hangars. Mother Nature did not disappoint; we closed for several days in early January thanks to the record snowfall and bitterly cold wind chills. We put the safety of our volunteers and visitors first on such days.

Chairman Gene Howerter honored... Mike Welch, a member of the CAM board of directors, recognized Chairman Gene Howerter for leading the recently completed landscape project around the main entrance to hangar 602. Mike presented Gene with a small sign marked, "Gene Howerter Gardens" to place outside the entrance. Gene designed, installed and maintained the original beautiful landscaping at the main entrance decades ago, but the passage of time necessitated a new look and Gene once again rose to the occasion!

Gene Howerter and Mike Welch *(D. Murray photo)*


Melissa Atkinson and family
(K. Drewelow photo)

15,000th visitor sets new attendance record!... Melissa Atkinson and her family visited the Combat Air Museum on December 29th and she became our 15,000th visitor to the Combat Air Museum in 2024! She and her family were surprised and delighted and Melissa appreciated the Bag o' Swag that came with the title. Our final attendance for the year was 15,176, a new all-time record for CAM. We are grateful to everyone who visited our museum last year and for those who spread the word which helped us set the record!

Aviation merit badge classes... The Combat Air Museum has offered Aviation merit badge classes for Scouting America (formerly Boy Scouts of America) for several years. Scouts come to CAM, spend the day learning about aviation, take a knowledge test to complete the requirements, and then spend the night in hangar 602. In January, we hosted our first all-female class, Troop 6149 from Bonner Springs, Kansas. The girls spent a busy day on activities for the badge, including a visit to the air traffic control tower at Topeka Regional Airport. We invited local pilot Joyce Parker to speak to the ladies after dinner. Joyce talked about her Air Force career, learning to fly and her past and upcoming participation in the annual all-female Air Race Classic transcontinental air race! Joyce then spent time with the Scouts in our flight simulator. We couldn't tell who enjoyed the evening the most, the Scouts, their parents or Joyce! If your Scout troop would like to learn about our Aviation merit badge classes, email our director and merit badge counselor, Kevin Drewelow, at director@combatairmuseum.com. ◆


Joyce Parker (top center) and Troop 6149 *(K. Drewelow photo)*

In The Hangar: the Ryan Firebee

By Kevin Drewelow

Drones are in the news almost daily and seem to have come out of nowhere, but uncrewed aircraft have been around since World War I when Great Britain and the United States designed and flew pilotless aircraft. The Combat Air Museum has an interesting collection of drones, mostly from World War II and used primarily as gunnery targets, but our most successful drone sits outside our main entrance.

The Ryan Firebee is one of the most versatile and longest serving military drones in the world. It was the most successful aircraft produced by the Ryan Aeronautical Company of San Diego, California. T. Claude Ryan, a native of Parsons, Kansas, founded the company in 1934.

With the advent of jet-powered aircraft, the Air Force needed jet powered target aircraft for fighter pilots. In 1948, they issued a request to industry for a jet-powered target drone. Ryan won the contract and the XQ-2 made its first flight three years later. The Air Force placed a large order in 1951 for the QA-2 Firebee. The Army, Navy and Royal Canadian Air Force soon placed large orders for their own variations on the Firebee. These early Firebees had a blunt nose and engine air inlet, rather different from the sleek, shark-like Firebees that soon followed.

The Firebee could be launched from an aircraft or from the ground; ground launches involved the use of a solid fuel rocket booster. The Firebee was then controlled by radio from a ground station. Despite being target aircraft, the hardy little Firebees made several flights thanks to an onboard two-stage parachute system that could be automatically deployed once the drone was hit or by radio control if it completed its mission undamaged.

Ryan continued to evolve the Firebee to meet customer demands for higher performance and new missions. The Q-2C, redesignated BQM-34A in 1963, featured many changes, including the pointed nose and chin air intake as seen on the Combat Air Museum's example. It was powered by a Teledyne Continental J69 centrifugal-flow engine, the same type used on the Cessna T-37 "Tweet" trainer aircraft. The J69 is a license-built version of the French Turbomeca Marboré II and produces 1,700 pounds of thrust. The BQM-34A Firebee drone has a maximum speed of 580 miles per hour and a maximum gross weight of 2,062 pounds. Its maximum range is 600 miles and it can fly for up to 75 minutes. Some Firebees were equipped to carry two

Early Firebees ***(Ryan Aeronautical photo)***

Towbee targets under each wing; the Towbee was tethered to a cable which allowed the Towbee to trail the Firebee at a safe distance to permit gunnery training. The Firebee's adaptable design led to it being used to gather photographic and electronic intelligence over Vietnam and other hostile environments. An attack version of the Firebee was used in Iraq in 2003, where Firebees preceded the first wave of attacking aircraft and dropped chaff to blind enemy radars. The Firebee also evolved into a supersonic target drone, the Firebee II.

Dick Trupp, a longtime member of the Combat Air Museum and former Museum Wing Commander, often passed through Blair, Nebraska while traveling to visit family. He'd seen a Firebee on a pole in front of the American Legion post in Blair and finally stopped one day to inquire about it. His timing was perfect as the post planned to construct a veterans' memorial where the Firebee was; the deal was done when Trupp agreed that CAM would cover all costs to remove and transport the little Ryan and its display pole.

CAM Firebee in Nebraska ***(CAM photo)***

New & Renewing Members

CAM Firebee today *(CAM photo)*

Four Combat Air Museum members traveled to Blair one day in May of 2004 to retrieve the Firebee and its display pole. Don Dawson, Martin Moyer, Ted Nolde and Dick Trupp made the trip and got to work. A local crane company donated their services and by the end of the day the little drone was ready for the trip to Topeka. The team returned later to retrieve the display pole.

The restoration of the Firebee languished until 2012 when CAM partnered with the Washburn Institute of Technology's auto collision program and its instructor, Eric Showalter. The arrangement worked well for both organizations: the Washburn students gained experience with aluminum, corrosion control and tools they would not otherwise have encountered, while the Combat Air Museum gained a new aircraft, ready for display. The Washburn students began with the wings, painted them in the bright orange used on most BQM-34A drones and delivered them to CAM in May, 2013. CAM members then took the fuselage forward and aft sections to the school for the class to restore. The fuselage required more work than the wings, and the Washburn students completed their work and returned the fuselage to CAM in June of 2015. During this time, Mark Hasvold, owner of MFH Sandblasting and Painting, restored and painted the mounting pole; Museum volunteers then poured a concrete pad and installed the pole on the west side of hangar 602 near the main entrance.

A larger group of Museum volunteers began assembling the Firebee. They also added the various insignias and markings. Our Firebee's data plates had been removed before we received so the team didn't add the serial number to the vertical fin. They also added additional items to keep insects out of and birds off of the drone. The Firebee was ready to install on its pole on September 14, 2015, but then the rain and winds began. Two weeks later, the ground was dry enough to bring in equipment to raise the Firebee. Our friends at J.B. Turner & Sons Commercial Roofing and Sheet Metal Services volunteered a crane and two operators. The team made short work of the job, lifting and bolting the Firebee in place in less than an hour!

Today our Firebee serves as a landmark at the Combat Air Museum, its conspicuous orange paint catching the eye of everyone who drives by and welcoming our visitors. ◆

New:

Tim & Mary Johnson | Abigail Robbins

Renewing:

Duane Armfield & family | Neal Baughman & family | Nathan & Beth Benfield | Ted & Cindy Berard | Col. Jon & Peggy Boursaw | Michael & Candace Bush | Bradley & Star Caywood | Steff Cunningham | John Dietrick | Kevin & Susan Drewelow | Donald & Rebecca Duncan | Spencer Duncan & family | Russ & Kyle Elliott | Leonard Faulconer | Adam Fast & family | Angela Francis | Eugene Francis | Frank Gannon | Nichole Goodwin & family | Frank Holsburg | Maegan Hutchison & family | Darrell Jones & family | Lucas Keck & family | Larry & Nancy Mann | Mary Naylor | Loren Otis | Col. Ronald McKay USMC, Ret & Susan Stokes | Jerry Milbradt | Todd Morgenstern & family | Dennis & Galene San Romani | Marlene Urban | Steve Wodtke

New Lifetime Members:

Rob & Jennifer Goodrich

In Remembrance

Jane Fortin
July 23, 1932- August 13, 2024
CAM #3683

Jane and her husband Paul were strong supporters of youth aviation education for decades, volunteering with the Kansas Commission on Aerospace Education and impacting children across Kansas, including at the Combat Air Museum. Jane raised her family while Paul flew surveillance missions over the Soviet Union and combat missions over Southeast Asia during his Air Force career. The Fortins were members of the Combat Air Museum since 2001 and it was always a pleasure to see them on their frequent visits to CAM. ◆

The Doolittle Raider

Continued from page 7

to get airborne. Both B-25s departed the carrier successfully, but with no payload, extra crew on board, and just enough fuel to make it back to a land air base.

After these test flights, Doolittle found that a launch was possible with about 500 feet available for takeoff but recovering the bomber back to the carrier was not possible. He began looking for possible landing sites. Russia was the closest location from the island nation but they refused entry because of a non-aggression pact signed with Japan. China was currently at war with Japan and the only viable country to accept the bombers, but it took extra fuel to get there. Since large portions of eastern China were already occupied by the Japanese at that time very little information was provided to the Chinese government concerning the mission, just that lighting to mark runways, extra fuel, engine oil, and radio beacon signals were needed at several safe runway locations further inland of China's eastern coast. The bombers had to find an airfield or a good flat spot to land; as far as 500 miles over China from the eastern coastal areas to avoid those sections currently occupied by the Japanese Army.

Doolittle, with the input of the squadron commanders, selected the men from a vast number of potential volunteers from the 17th BG headquartered at Pendleton Field, located northwest of the city of Pendleton, Oregon. The squadron commanders gathered their crews and briefed them about volunteering for a dangerous "top secret" mission, without any indication what the mission entailed. If a crew member chose to back out, additional crew positions stepped in to volunteer until 120 total men were selected.

During their reassignment each volunteer, now selected for Doolittle's mission, was still assigned to the flying squadron from which he came and remained attached to the 17th BG. Doolittle's newly formed unit came to be known as Project #1. Only a select few knew what the mission entailed; the majority of the volunteers were not told of the specific nature of the mission, just that it was dangerous and highly secret. If anyone approached the volunteers and inquired about their mission or training, they were to contact Doolittle himself, who would notify the Federal Bureau of Investigation. The aircrews were not allowed to tell their families what type of training they were doing. They were also ordered not to discuss the mission between themselves, but this was virtually impossible as every man involved had an opinion what they were about to do.

Being away from their home stations of Pendleton and McChord Fields, each member received lodging and ground transportation reimbursement after completing the necessary paperwork. The per diem flat rate for three meals and incidental expenses was set at $6.00 a day ($114.00 in 2024 dollars).

Training began immediately for this highly secret mission. The newly formed volunteer group moved to airfields in Florida, as far from the west coast as possible. Marker flags were posted at 100-foot intervals along the isolated runways selected for the training, away from spying eyes. The crews were to start at the end of the runway at full engine power, wing flaps fully extended, and flight surface trim settings set at an ideal position; they were to become airborne as soon as the airspeed permitted. The standard takeoff roll for a B-25 at maximum gross weight was 3500 to 4000 feet depending on wind direction and weather conditions. Full flap settings are normally used during the landing attitude as the aircraft is slowed while approaching the runway. For these short field takeoffs this training required the extra lift capability full flap settings provided for the takeoff roll in the short distance. As the training progressed, most of the pilots could be in the air by 400 feet. Training demanded over 14 hours a day and into the night from the 24 crews.

During the month and a half of intense training two of the B-25 aircraft were damaged as a result of the short takeoff training; these crews and aircraft were soon scrubbed from the mission. Additional training consisted of cross-country flights, navigation flights (sextant use for celestial shots), night low level sorties over water, low level bombing runs, and evasive maneuvers. A few times during the intensive training each crew position had to sit in another crew's seat and learn the basics of that position as well, in case someone either could not make it to the aircraft for launch or had become incapacitated somehow during the flight and was not able to perform their assigned duties. The crews had to certify at all levels of the training, even Doolittle at 45 years of age. He is known as stating, "if I do not qualify on the short takeoff certification I will still go on the mission as a co-pilot" – of course, he qualified. Doolittle became the pilot of Crew #1 after the original pilot became ill and could not continue with the training.

Some of the flight crews had a pretty good idea what the mission entailed as Lieutenant Henry Miller, a Naval officer and carrier fighter pilot, assisted in their flight training in Florida and held a class on Navy etiquette.

Lt. Col. Doolittle was well known by most all of the USAAF personnel due to his aerial exploits and achievements between the war years. However, most base commanders or contract supervision who held the rank of full colonel or a civilian equivalent gave him little respect. If Doolittle needed something for his mission, which was still top secret and only known to a select few, and someone raised an obstacle, all it took was a phone call or a visit to General Hap Arnold and people soon bent over backwards to give Doolittle what he wanted.

Each of the remaining 22 aircraft selected for the mission underwent further modifications. Extra weight items such as gun positions, radios, and other non-essential equipment were removed. The tail guns were removed and replaced with broom sticks to simulate the gun position as still active from an enemy fighter perspective approaching from the rear of the B-25. The engine carburetors were modified to help in conserving as much

October Membership Luncheon Continued from page 3

E-3C JSTARS *(Air Force photo)*

(l-r) Howerter, Gulla, Sweatte and Quinn *(K. Hobbs photo)*

Sweatte reported to Laughlin AFB near Del Rio, Texas in October, 2007 to begin flight training. He learned to fly the T-6 Texan II, the Beech-built version of the Pilatus PC-9 trainer. He soloed the T-6, but determined that he could better serve the Air Force in another capacity. He had enjoyed his exposure to the intel business while at Dover, so the Air Force sent him to Goodfellow AFB in San Angelo, Texas. While attending the school, he saw an officer in a flight suit, which was odd as there are no aircraft nor even active runways at Goodfellow. He spoke with the officer and learned the gentleman was an intel officer who served aboard the now-retired E-8C Joint STARS (JSTARS) ground surveillance aircraft. Here was a way to combine his love of aviation with the intel business! After graduating from the intel school, he requested and was assigned to the 116th Air Control Wing at Robins AFB in Georgia to become a JSTARS intel officer.

According to the Air Force, JSTARS was a joint Air Force and Army "airborne battle management, command and control, intelligence, surveillance and reconnaissance platform. Its primary mission [was] to provide theater ground and air commanders with ground surveillance to support attack operations and targeting that contributes to the delay, disruption and destruction of enemy forces." JSTARS could detect and track multiple ground targets moving 5 mile per hour or more. Northrop Grumman modified 17 former Boeing 707-300 airliners for the mission. Up to 30 mission specialists, including intel, crewed the E-8 during each flight. Major Sweatte's responsibilities included inflight protection of their aircraft and coordinating their efforts with E-3 Airborne Warning and Control Aircraft (AWACS) and RC-135 reconnaissance aircraft. He also worked with Army air directors onboard to support deconfliction and battle management.

Major Sweatte deployed to Southwest Asia with the 116th four times in his career. His aircraft was airborne one night when they received a call to clear a certain block of air space; they later learned that the strike force that located and killed Osama bin Laden had passed through. As the JSTARS fleet began to retire, Major Sweatte was assigned to U.S. Indo-Pacific Command in Hawaii where he worked with the Navy on a cruise missile program and became involved in geospatial intel. He now serves in the Air Force Reserve Command.

Over the years, CAM has invited military members from the Command and General Staff College to speak at our October luncheons, and their presentations have always been fascinating. You can see this presentation by visiting the Combat Air Museum Facebook page and selecting "More" and then "Videos." We greatly appreciated these three majors taking the time to visit and speak with us! ◆

The Doolittle Raider Continued from page 12

fuel as possible at low level altitudes. Additional fuel bladders were installed above the bomb bay and inside the fuselage providing the bomber with almost twice its original fuel capacity. Additional fuel was also stored in ten 5-gallon cans and secured at the vacated radio operator's crew position. This fuel could be poured into the fuel bladder during the flight.

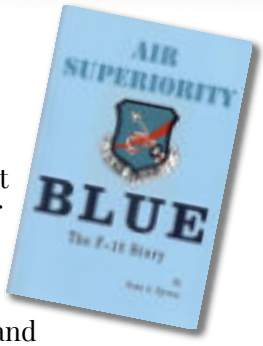
The highly secret Norden bombsight and its components were removed and replaced with a device developed by one of the mission pilots, Captain Ross Greening (later Crew #11 pilot). It was a rounded sheet metal plate with degree markings along the

Continued on page 15

Pilot's Notes: a Book Review

"Air Superiority Blue: The F-15 Story"

by Donn A. Byrnes



Reviewed by Kevin Drewelow

The arrival of our McDonnell Douglas F-15A in July of 2022 drove some of us to learn more about the history of this iconic American fighter, so we started looking into books about the Eagle. "Air Superiority Blue: The F-15 Story" by Donn A. Byrnes is a superbly written account of the design, construction, testing and development of the jet.

The need for the F-15 arose from the Air Force's experience with the McDonnell Douglas F-4 Phantom. The F-4 began as a Navy interceptor which relied upon its powerful radar to identify and shoot down Soviet bombers at great distance from the fleet. Dogfighting was considered obsolete so early Phantoms didn't even have cannons, just missiles. Then the Phantom went to Vietnam where the rules of engagement required visual identification of enemy aircraft, which gave the advantage to lighter, more nimble Soviet fighters. The Phantom's limited visibility and two-man crew hindered the F-4 in air-to-air combat and the high ratio of maintenance man-hours to flight hours limited its availability. All that, plus the Energy Maneuverability/OODA Loop (Observe/Orient/Decide/Act) theory of John Boyd led the Air Force in the mid-Sixties to seek a pure fighter that specialized in air superiority.

McDonnell Douglas took the Air Force's requirements and started with a clean sheet, rather than business as usual where they had once improved and built on what went before. One very interesting story involved the design of the cockpit. Byrnes said cockpits are normally not designed by pilots, but it was on the Eagle, at first, in secret. Company pilots found an unused room where they began making a foamboard control panel to help envision where to put things to help the pilot keep his eyes outside the jet during an engagement. They invited other company and Air Force pilots into the secure room to get their input. Eventually, the foamboard mockup evolved into a more sophisticated model and even lead to the design of the first HOTAS-Hands On Throttle And Stick-control stick, where the most essential and most used controls were placed on the engine throttle control handle and flight control stick, where the pilot could find what he needed without looking into the cockpit.

This and many more forward-looking design features produced an extraordinary fighter plane which has morphed from a pure air-superiority fighter into a ground attack version and the Eagle remains in production over 50 years after its introduction, serving with the United States Air Force and six other nations. No F-15 has ever been downed in air-to-air combat in that time.

Byrnes describes the design and production of the revolutionary Eagle in a fresh and accessible writing style that makes the reader want to keep going. And that's remarkable as the author led an amazing Air Force career, enlisting as an aircraft mechanic before becoming an Air Force cadet, officer, and fighter pilot. After receiving his electrical engineering degree, he became a flight test engineer on the Lockheed SR-71 and later held several positions in the F-15 System Program Office. ◆

Visitors

1,024 people from 36 states, Washington, D.C., Australia, Austria, Belgium, Cambodia, Canada, France, Germany, Great Britain, India, Japan, Mexico, the Netherlands, New Zealand, Poland, Russia and Scotland visited the Combat Air Museum in November.

In December, 949 visitors from 32 states, China, Colombia, Ecuador, Guatemala, India, Japan, New Zealand, Spain, Taiwan and Vietnam toured your Museum.

445 people from 17 states, Brazil, the Dominican Republic, Finland, Guatemala, Japan, the Republic of the Philippines and Switzerland visited the Combat Air Museum in January.

Ways You Can Support the Combat Air Museum

Dillon's Community Rewards Program

If you shop at Dillon's and have a Plus Shopper's Card, you can help support the Combat Air Museum with just a phone call or a few keystrokes. Dillon's Stores donates millions to non-profit organizations. Our Museum benefits from CAM members who have registered with Dillon's Community Rewards Program. Enrolling in this program will not increase your grocery bill and will not affect your fuel points.

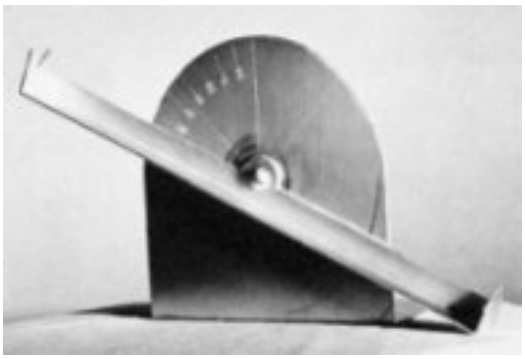
Enrolling in the Community Rewards program is a one-time event and no longer requires annual registration. If you've already signed up, no further action is required. Go to https://www.dillons.com/i/community/community-rewards to create a Dillon's account before enrolling in the Community Rewards program. You can also call **800.576.4377** and the Dillon's customer service representative will register you. You'll need to provide them with the Combat Air Museum's new five-character Non-Profit Organization (NPO) account number, **GA302**. Thanks to your generosity, each quarter the Museum receives a check from Dillon's that really helps us maintain the collection and facilities and provide the classes and service our visitors enjoy. Last year, Dillon's donated $815 to CAM; that amount is less than the previous year because we have fewer donors than before. If you haven't joined, why not take a few moments now to do so: Dillon's and CAM will do the rest!

Volunteer

The Combat Air Museum exists solely upon the money we raise from admissions, donations, grants and gift shop sales. We rely on volunteers to run our gift shop, and the need for these volunteers has become even more urgent. We'll train you for this crucial and enjoyable task. If you could spare one day a month, please call the Museum Monday through Friday between 9 a.m. and noon at **785.862.3303** and ask for Nelson, our office manager and volunteer coordinator.

The Doolittle Raider *Continued from page 13*

side and a length of metal that could be rotated at its axis. From his position in the nose of the bomber, the bombardier set the device to the proper degree setting knowing the bomb's weight, aircraft speed, and the altitude during the bomb run. As they approached the target, he simply looked down the angled device length (just like sighting a rifle), and released the bomb(s) as the target was centered in the sight. The crews called this device the "Mark Twain," a reference to a lead line for measuring depth used by river boat crews, and joked this locally developed bombsight cost a grand total of 20 cents each compared to the Norden that cost over $10,000. Besides, they were going to bomb at low level: the Norden was a high-altitude device and the USAAF did not have to worry about it falling into enemy hands if an aircraft crashed during the mission.



'Mark Twain' bombsight ***(b-25history.org photo)***

Each time he had the group together for a briefing Doolittle asked if anyone wanted to back out of this mission, no questions asked. Initially, he did not receive any response to this request. But as the group met for one of the last meetings in Florida one crew member considered the danger of the short takeoff training and the low-level bombing run and requested to be replaced.

(To be continued. Abridged from the original article by Keith Fulton, a retired KC-135 Stratotanker inflight refueling specialist with the 190th Air Refueling Wing, Kansas Air National Guard, Topeka, Kansas). ◆

COMBAT AIR MUSEUM
7016 SE Forbes Avenue
Topeka, KS 66619

PLANE TALK

Visit the Combat Air Museum for fun, information and an educational experience.

COMBAT AIR MUSEUM 16

Crashed

By Alexandra Etheldreda Grantham

An hour ago or less this piteous tangled heap
Made up of metal bits whose scattered fragments show
Black trace of flames attacking it with deadly leap
An hour ago.

Soared in the blue, triumphant like a star, sheer glow
Of silver on great wings spread wide in spirals steep
To rise and climb o'er midnight clouds of ice and snow,

And he who swept it upwards – slain, never to reap
The harvest of his dreams, nor wondrous joys to know
Of coming home, nor wake again. He laughed at sleep
An hour ago.

(ww2aircraft.net photo)

The author's son, Pilot Officer Godfrey Grantham, Royal Air Force Volunteer Reserve (RAFVR), was killed on June 21, 1942