



Official Newsletter of the Michigan Company of Military Historians & Collectors  
**June 8, 2015**

*“The publishers have to understand that we’re never more than a miscalculation away from war and that there are things we’re doing that we just can’t talk about.”* **JFK, 1963**

*Vietnam was the first war fought without censorship. Without censorship, things can get terribly confused in the public mind.”* **General W.C. Westmoreland in A Soldier Reports, 1976**

*If monarchy is corrupting-and it is-wait till you see what overt empire does to us. Look, all administrations, all governments lie, all officials lie and nothing they say is to be believed. That's a pretty good rule.”* **Daniel Ellsberg**

*“The essence of successful warfare is secrecy. The essence of successful journalism is publicity.”* **British Regulations for War Correspondents 1958**

*“Newspapers should be limited to advertising.”* **Napoleon**

**Our speaker in June will be Mr. Rick Saliers, an Airforce C141 pilot who flew all over the world beginning with (I'm sure) many missions to and from VietNam..**

**MEETINGS** take place the second Monday of every month at the **Riverfront Hotel Grand Rapids** 270 Ann St NW, Grand Rapids, MI 49504 (616) 363-9001. Socializing begins at 6:00 (1800), dinner at 7:00 (1900), business meeting 7:15 (1915), and program at 8:00 (2000).

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Michigan Company of Military  
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**Company Notes**

- ◆ Due to work conflicts we are in need of a new Adjutant, responsible for taking minutes (open to discussion) but most important, is next in line to become the Executive Officer. Past Commandants have come up with a slate of candidates. Six candidates have been notified. If you feel that you would be eligible please give your name to Gary Brown prior to our meeting.
- ◆ The Lakeshore Museum Center, Muskegon will be hosting a Civil War Encampment at Heritage Park June 13-14. Members of the Third Michigan Volunteer Infantry Co. F will be present. Learn about the war by exploring camps and talking to reenactors.

The editorial opinions and articles in **The Cannon Report** do not represent any official position of the Michigan Company of Military Historians and Collectors (MCMH&C) only the opinions of the editor. The MCMH&C is a non-partisan, non-ideological association. All members are welcome to submit material, letters, “For the good of the Company items”, etc. Direct inquiries or comments to [kuziaks@me.com](mailto:kuziaks@me.com)

# Jerry Cans

Little is ever written about the seemingly minor, sundry details involved in supporting large and complex military operations. Especially when an idea originates outside of the American armed forces. The implementation of a seemingly mundane article of a recent military necessity can have consequences that men with little foresight envisioned possible. During WWI the need for fuel was a minor concern but with the advent of tanks, planes and other vehicles that consumed vast amounts of fuel, little thought was given by the Americans for an effective field delivery system.

During World War II the United States exported more tons of petroleum products than of all other war material combined. The mainstay of the enormous oil and gasoline transportation network that fed the war was the oceangoing tanker, supplemented on land by pipelines, railroad tank cars, and trucks. But for combat vehicles on the move, another link was crucial--smaller containers that could be carried and poured by hand and moved around a battle zone by trucks.

Hitler knew this. He perceived early on that the weakest link in his plans for blitzkrieg using his panzer divisions was fuel supply. He ordered his staff to design a fuel container that would minimize gasoline losses under combat conditions. As a result the German army had thousands of jerry cans, as they came to be called, stored and ready when hostilities began in 1939.



The jerry can had been developed under the strictest secrecy, and its unique features were many. It was flat-sided and rectangular in shape, consisting of two halves welded together as in a typical automobile gasoline tank. It had three handles, enabling one man to carry two cans and pass one to another man in bucket-brigade fashion. The inside was coated so the can could carry any liquid after adequate rinsing. Its capacity was approximately five U.S. gallons; its weight filled, forty-five pounds. Thanks to an air chamber at the top, it would float on water if dropped overboard or jettisoned from a plane.

Early in the summer of 1939, this secret weapon began a roundabout odyssey into American hands. An American engineer named Paul Pleiss, finishing up a manufacturing job in Berlin, persuaded a German colleague to join him on a vacation trip overland to India. The two bought an automobile chassis and built a body for it. As they prepared to leave on their journey, they realized that they had no provision for emergency water. The German engineer knew of and had access to thousands of jerry cans stored at Tempelhof Airport. He simply took three and mounted them on the underside of the car. The two drove across eleven national borders without incident and were halfway across India when Field Marshal Goering sent a plane to take the German engineer back home. Before departing, the engineer compounded his treason by giving Pleiss the complete specifications for the jerry can's manufacture. Pleiss continued on alone to Calcutta. Then he put the car in storage and returned to Philadelphia .

Back in the United States, Pleiss told military officials about the container, but without a sample can he could stir no interest, even though the war was now well under way. The risk involved in having the cans removed from the car and shipped from Calcutta seemed too great, so he eventually had the complete vehicle sent to him, via Turkey and the Cape of Good Hope. It arrived in New York in the summer of 1940 with the three jerry cans intact. Pleiss immediately sent one of the cans to

Washington. The War Department looked at it but unwisely decided that an updated version of their World War I container would be good enough. It was a cylindrical ten-gallon can with two screw closures. It required a wrench and a funnel for pouring.

The one jerry can in the Army's possession was later sent to Camp Holabird, in Maryland. There it was poorly redesigned; the only features retained were the size, shape, and handles. The welded circumferential joint was replaced with rolled seams around the bottom and one side. Both a wrench and a funnel were required for its use. And it now had no lining. As any petroleum engineer knows, it is unsafe to store gasoline in a container with rolled seams. This ersatz can did not win wide acceptance.

The British first encountered the jerry can during the German invasion of Norway, in 1940, and gave it its English name (the Germans were, of course, the "Jerries"). Later that year Pleiss was in London and was asked by British officers if he knew anything about the can's design and manufacture. He ordered the second of his three jerry cans flown to London. Steps were taken to manufacture exact duplicates of it. Two years later the United States was still oblivious of the can. Then, in September 1942, two quality-control officers posted to American refineries in the Mideast ran smack into the problems being created by ignoring the jerry can. Richard M. Daniel, a chemical engineer was one of those officers. Passing through Cairo two weeks before the start of the Battle of El Alamein, he learned that the British wanted no part of a planned U.S. Navy can; as far as they were concerned, the only container worth having was the Jerry can, even though their only supply was those captured in battle. The British were bitter; two years after the invasion of Norway there was still no evidence that either governments had done anything about the jerry can.

Daniel learned quickly about the jerry can's advantages and the Allied can's costly disadvantages, so he sent a cable to naval officials in Washington stating that 40 percent of all the gasoline sent to Egypt was being lost through spillage and evaporation. He added that a detailed report would follow. The 40 percent figure was actually a guess intended to provoke alarm, but it worked. A cable came back immediately requesting confirmation. They then arranged a visit to several fuel-handling depots at the rear of Montgomery's army and found that conditions there were indeed appalling. Fuel arrived by rail from the sea in fifty-five-gallon steel drums with rolled seams and friction-sealed metallic mouths. The drums were handled violently by local laborers. Many leaked. The next link in the chain was the infamous five-gallon "petrol tin." This was a square can of tin plate that had been used for decades to supply kerosene for lamps. It was hardly useful for gasoline. In the hot desert sun, the can tended to swell up, burst at the seams, and leak. Since a funnel was needed for pouring, spillage was also a problem.

Allied soldiers in Africa knew that the only gasoline container worth having was German. Similar tins were carried on Liberator bombers in flight. They leaked out perhaps a third of the fuel they carried. Because of this, General Wavell's defeat of the Italians in North Africa in 1940 had come to naught. His planes and combat vehicles had literally run out of gas. Likewise in 1941, General Auchinleck's victory over Rommel had withered away. In 1942 General Montgomery saw to it that he had enough supplies, including gasoline, to whip Rommel in spite of terrific wastage. And he was helped by captured jerry cans.

The British historian Desmond Young later confirmed the great importance of fuel cans in the early African part of the war. "No one who did not serve in the desert," he wrote, "can realize to what extent the difference between complete and partial success rested on the simplest item of our equipment--and the worst. Whoever sent our troops into desert warfare with the [five-gallon] petrol



tin has much to answer for. General Auchinleck estimates that this 'flimsy and ill constructed container' led to the loss of thirty per cent of petrol between base and consumer. The overall loss was almost incalculable. To calculate the tanks destroyed, the number of men who were killed or went into captivity because of shortage of petrol at some crucial moment, the ships and merchant seamen lost in carrying it, would be quite impossible."

After U.S. Lieutenant Daniel and his colleague made their report, a new five-gallon container under consideration in Washington was canceled. Meanwhile the British were finally gearing up for mass production. Two million British jerry cans were sent to North Africa in early 1943, and by early 1944 they were being manufactured in the Middle East. Since the British had such a head start, the Allies agreed to let them produce all the cans needed for the invasion of Europe. Millions were ready by D-day. By V-E day some twenty-one million Allied jerry cans had been scattered all over Europe. President Roosevelt observed in November 1944: "Without these cans it would have been impossible for our armies to cut their way across France at a lightning pace which exceeded the German Blitz of 1940." In Washington little about the jerry can appears in the official record. A lone military report says simply: "A sample of the jerry can was brought to the office of the Quartermaster General in the summer of 1940."

## USAAF and the Jasons

Deep in the DNA of the "army air corp" during WWII lay a traumatic memory of its early life. Then it was a mere branch of the army, no different in status and with a budget lower than that of the artillery. In those days the air corp nurtured dreams and schemes of revolt and independence that were based on a dogma promoted by General Giulio Douhet (1869–1930), an Italian general, air power theorist and author (*The Command of the Air*). He was a great believer of strategic bombing in aerial warfare. He was a contemporary of the 1920s air warfare advocates Walther Wever, Billy Mitchell and Sir Hugh Trenchard. Douhet saw the pitfalls of allowing air power to be fettered by ground commanders and began to advocate the creation of a separate air arm commanded by airmen.

Douhet argued that air power was revolutionary because it operated in the third dimension. Aircraft could fly over surface forces, relegating them to secondary importance. The vastness of the sky made defense almost impossible, so the essence of air power was the offensive. The only defense was a good offense. The air force that could achieve command of the air by bombing the enemy air arm into extinction would doom its enemy to perpetual bombardment. Command of the air meant victory.

This Italian general also believed in the psychological effects of bombing. He felt air power could break a people's will by destroying a country's vital centers. Armies would become superfluous because aircraft could overfly them and attack the centers of government. Military and industrial targets could be saturated with impunity, a principle later called "The bomber will always get through". Targeting was central to this strategy and he believed that air commanders would prove themselves by their choice of targets. These would vary from situation to situation, but Douhet identified the five basic target types as: industry, transport infrastructure, communications, government and "the will of the people". The last category was particularly important to Douhet, who believed in the principle of total war, only airpower alone could bring an enemy to his knees. All these assumptions would later prove to be false but like the admirals in the Big Gun Navy where the battleship was thought to be supreme, the air force bomber advocates persisted in their conviction that



long-range load-carrying bombers alone would force the enemy to capitulate. Attacks would not require great accuracy. On a tactical level he advocated using three types of bombs in quick succession: explosives to destroy the target, incendiaries to ignite the damaged structures, and poison gas to keep firefighters and rescue crews away.

On the eve of WWII these air crusaders convinced themselves and others that the destruction of no more than 154 key targets, identified as critical to the German economy, would bring the enemy war machine to its knees within six months. Since the entire population was in the front line of an air war they would be terrorized with urban bombing. By smothering the enemy's civilian centers with bombs, Douhet had argued that war would become so terrible that the common people would rise against their government, overthrow it with revolution, then sue for peace, negating the need for massive land armies slogging across Europe. As it turned out, this ambitious assumption, based on the most diligent analysis of the German economy turned out to be wholly wrong. The 154 targets, even when they could be located and hit, either turned out not to be as vital to the enemy's war effort as supposed, or the Germans adapted by replacing them or using substitutes. British Air Marshal Arthur "Bomber" Harris, despite opinions to the contrary, tried to prove Douhet's theories with his combined Bomber Offensive. His ideas about forcing the population to start a revolution, when subjected to practical application, were shown to be ineffective. In fact, there is considerable evidence demonstrating that the bombings did nothing but antagonize the German people, galvanizing them to work harder for their country. Despite the massive loss of Allied air crews the final defeat of Germany was not achieved until virtually the entire country had been occupied by American, British, and Canadian land forces. In the Pacific USAAF General Curtis LeMay with his B-29s duplicated Harris' efforts, and if it were not for the two atomic bombs, US land forces would have had to invade Japan. In 1947 part of Douhet's theory was effected when the bomber generals' campaign for an independent service bore fruit and a separate air force was formed outside of army command without having to shed any of their core beliefs in the utility of strategic precision bombing.

Not long after WWII an independent group of scientists got together to advise the United States government on matters of science and technology, mostly of a sensitive military nature. The group was first created as a way to get a younger generation of scientists—that is, not the older Los Alamos and MIT Radiation Laboratory alumni—involved in advising the government. It was established in 1960 and had somewhere between 30 and 60 members. They were known as the Jasons and all had top-secret security clearances. They included physicists, biologists, chemists, oceanographers, mathematicians, and computer scientists, but theoretical physicists predominated. They were selected by current members for their scientific brilliance, and, over the years, have included eleven Nobel Prize laureates and several dozen members of the United States National Academy of Sciences. Its work first gained public notoriety when they were asked for technical possibilities relating to our military operations in Vietnam. In 1966 the war was going badly and air force planners first determined that a critical node existed in the North Vietnamese economy in the storage tanks located in Hanoi and Haiphong. These tank farms allegedly held most of the country's supply of oil. Furious raids on the targets produced gratifying fierce fires and towering columns of smoke, but it soon emerged that most of the oil was stored in hidden sites elsewhere. These were not the magic targets after all. Meanwhile the targeting committees set about expanding the target list, always in hope of finding the crucial node whose elimination would prove mortal to the enemy. Defense Secretary Robert McNamara, a determined technocrat, was eager for an alternative approach and thus sought counsel from the Jasons.

After a series of highly classified intelligence briefings the Jasons determined that the Ho Chi Minh Trail was the ultimate critical node in resupplying the communist forces in South Vietnam. They were confident that the trail could be blocked, preventing any further communist reinforcements

and resupply. The war would then slowly but inevitably come to an end. They crafted the blueprint for a fence to straddle the trail across thousands of square miles. It would be something never seen before: an invisible, electronic network that would detect, identify and destroy any enemy seeking to cross it. A variety of sensors would be deployed. Some were acoustic, microphones listening for the sound of trucks or footfalls or voices devices. Others were seismic, ready to detect movements of these same trucks or people. Even more sniffed the air for traces of ammonia, denoting urine and therefore people. Aircraft strew hundreds then thousands of these sensors across the jungle. Worried that the sound of sandal-clad Cong might not be detected, the area was also seeded with 300 million tiny firecrackers the size of aspirins. When detonated by a rolling tire or a stealthy footfall, they would make a sharp bang and thus trigger the sensors.

Fleets of assorted aircraft were deployed to circle day and night and relay radio signals from the sensors to a secret military base in northeast Thailand, Nakhon Phanom. It was so secret it did not officially exist. This base hosted a variety of unacknowledged black activities but at its heart was the largest air-conditioned building in Southeast Asia. This was the home of Task Force Alpha, the brain of the new, automated battlefield. Behind air locks pressurized to keep out the dust, teams of contracted IBM employees wrote software that tried to make sense of all the data that the sensors were sending back to the two IBM 360/65 mainframe computers. Sifting through the necessarily ambiguous information—a column of troops or a herd of elephants? Once birds and peasants had been eliminated the computer would order “response, immediate response” for attacking aircraft. The weapon of choice was the SADEYE/BLU-26B cluster bomb. After release it would blow open and disburse 600 yellow, shrapnel bomblets over a radius of 800 feet. On average, 10% would fail to explode thereby rendering the Laotian countryside almost uninhabitable with unexploded ordnance. Initially irked at having an operation dreamed up by civilian eggheads foisted on them, the air force chiefs reconciled themselves to the limitless funds available. By mid-1967 the \$800 million (roughly \$2 Billion in 2015 dollars) a year system was largely in place.

This plan that appeared so elegant and complete did not prosper in the real world. The network of trails, totaling 12,000 miles, radically changed each rainy season. The pill-sized firecrackers, intended to announce the presence of the enemy, were rendered as dangerous as a wet match in the moist jungle climate. Furthermore, the inaccuracy of the high-tech LORAN (long-range navigation) system used to drop the sensors was so ineffective that no one knew for sure where they were and thus the targets they might detect. “If we got within four or five miles of the aim point we were doing pretty good,” remembers Rex Rivolo, an F-4 pilot who dropped “hundreds” of sensors into the darkness. LORAN, which was also used to guide bombing runs, once led Rivolo inadvertently to bomb the American base at Da Nang.

Meanwhile, other components of the air force were fighting a very different kind of war. Marshall Harrison spent 1969 piloting an OV-10 Bronco, a slow flying plane with excellent visibility over South Vietnam as a forward air controller. His task was to visually find the enemy for bombing by jet fighter-bombers. He learned to look for signs that no sensor would ever catch: “fresh tracks along a trail, smoke coming from areas where there should be no smoke, too many farmers toiling in the paddy fields...or small vegetable patches where there shouldn’t be.” No computer would calculate that footprints on a muddy trail early in the morning if it had rained only during the night probably belonged to the enemy, since civilians were wary of moving at night and being killed if caught breaking curfew. No senior officers visited the dirt airfields used by these pilots, they instead sought a privileged visit to the futuristic complex at Nakhon Phanom where many believed lay the birthplace of future warfare.

Igloo White, the overall code name for this electronic fence, showed no concern for cost or practical results. The Jasons did entertain the possibility that the enemy might eventually adopt

countermeasures of some kind against the sensors, though they were confident that this would take some period of time. It took the Vietnamese a week! General Dong Si Nguyen, the transportation genius who commanded the entire Ho Chi Minh Trail recalled how they had vehicles run the same route, back and forth throughout the day (to make listeners believe the area was active) distracting the Americans while actual convoys safely ran a different route. In every section specialized teams were set up to hunt for sensors and either disable them or trigger them deliberately in unimportant areas. Herds of cattle were run down trails to simulate troop columns and fool infra-red cameras, and bottles of human and animal urine were hung from trees to confuse the sniffer-sensors. In the meantime, for much of the war the North Vietnamese moved a considerable portion of their supplies by sea via the Cambodian port of Sihanoukeville, thus avoiding the Ho Chi Minh Trail altogether. A CIA suggestion to recruit people to simply watch the comings and goings at the port was rejected in accordance with the officially accepted understanding that the enemy was entirely dependent on the trail.

The funds for this secret operation were so artfully hidden in the defense budget that for years Congress had almost no knowledge or oversight of this operation for which they were voting huge sums of money. To calculate enemy losses without sending in men to verify, the air force simply multiplied the number of bombs dropped by the number of people who could in theory be killed by the varying types of ordnance. Igloo White's first year tally was 20,723 enemy KIA, conveying an air of precision with no basis in reality. Some years later an air force historian tartly commented that: "This processes based on so many assumptions that the end product represented an exercise in metaphysics rather than mathematics." Truck kills were also assessed by similar esoteric methods. Year after year the Vietnamese still seemed to have the necessary number of trucks on hand to supply their armies in the South. The air force explain this by arguing that Russian imports kept pace with the claims of truck kills. Finally, by 1972 a faction at the highest level in the air force was getting increasingly disenchanted at having to shell out a billion dollars a year for with no appreciable return on a system that had not really been their idea in the first place. In April of that year the North Vietnamese launched an attack with hundreds of tanks and trucks that had passed down the trail completely undetected by Task Force Alpha. The army had been assured that nothing like this could ever happen. But the generals had to tread carefully for Operation Igloo White had powerful scientific, military and corporate sponsors. The idiocy of this program had to be exposed, so they air force sent for John. Colonel John "Forty-Second" Boyd became the new base commander at Nakhon Phanom, July 4, 1972.

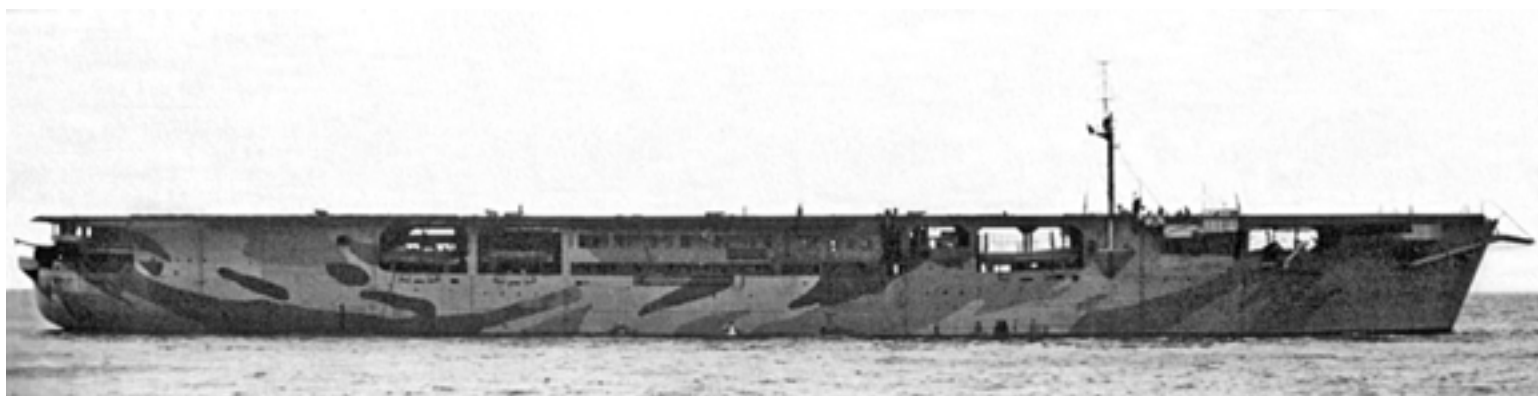
The base displayed many features emblematic of the disintegrating American war effort. Packs of wild dogs roamed unmolested across the base. Racial tension was so high that black and white servicemen dared not venture near each others' quarters. Behind the double razor-wire fence and the armed guards surrounding the Infiltration Surveillance Center, the heart of Task Force Alpha, where the mess hall provided metal forks and knives but only plastic spoons; all the metal spoons had been stolen by heroin-addicted personnel. Boyd gave orders to shoot the dogs then set out to research the truth behind the system's reported successes. All the barrier advocates could not produce a shred of empirical proof for their assertions. An average of one plane load of bombs had been dropped on Laos every eight minutes, twenty-four hours a day, for nine years. Roughly \$6 Billion was spent on the barrier overall (no one could ever agree on the exact total) that failed to achieve its purpose. On December 31, 1972, Boyd closed down the base. Among the items shipped home was a tape recording played at Christmas parties for years afterwards on air force bases across the country. It featured the unmistakable sound of someone out on the Ho Chi Minh Trail standing over an acoustic sensor and subjecting it to a long and leisurely piss.

*Much of the information for this article came from the book Kill Chain The Rise of the High-Tech Assassins by Andrew Cockburn. It is a fascinating, informative read and highly footnoted.*

# HMS Audacity

The opening months of WWII saw British shipping attacked and sunk by German U-boats often within sight of land. To curtail these losses the Royal Navy instituted hunter-killer groups of ships to seek out and destroy those submarines. An aircraft carrier in company with at least four destroyers would patrol the western approaches and far southern shores of Great Britain in search of German submarines. Less than two weeks after Germany invaded Poland the *HMS Ark Royal*, was fired upon by U-39 with two torpedoes. Quick action by the captain in turning toward the fish allowed them to pass harmlessly down both sides. Three days later on September 17, 1939 the *HMS Courageous* was not as fortunate. As a rebuilt cruiser she carried 24 Fairley Swordfish airplanes with a crew of 814. She had been tailed by U-29 for several hours, when her two escort ships were called off to respond to an attack. *Courageous* turned into the wind to launch her search aircraft and put U-29 in perfect firing position to launch three torpedoes. They all hit and the ship sank quickly. 518 lives were lost, including many Reservists, Pensioners and her captain. As a consequence of this loss and the earlier unsuccessful U-boat attack on *HMS Ark Royal* the policy of using fleet carriers for anti-submarine search and destroy patrols was abandoned. The Admiralty could not afford to lose any more of these valuable ships.

Britain did not have enough aircraft carriers and shipping was vulnerable to attacks by U-boats in the Mid-Atlantic Gap, where there was no air cover. It was decided by the Admiralty that small carriers were part of the solution, and a number of merchantmen were converted. *HMS Empire Audacity* was a British escort carrier and the first of her kind. She was originally the German merchant ship *Hannover*, captured by the Royal Navy in the West Indies in March, 1940. The conversion took place in the Clyde Shipyards, Glasgow, Scotland. The first deck landing was by a Grumman Martlet (a renamed USN F4F Wildcat) on July 10, 1941. A detachment of eight planes was assigned to the *Empire Audacity*. All her aircraft had to be stored on the flight deck, as the hasty conversion into an escort carrier did not include a hangar deck. The Admiralty disliked her merchant name, and *HMS Empire Audacity* was renamed *HMS Audacity* on July 31, 1941.



The use of only fighters was a major departure from later practice, where the main component was anti-submarine patrol aircraft, but she was used to support Gibraltar convoys and the only perceived threat was the German long-range Focke-Wulf Fw 200 Condor reconnaissance/bomber aircraft. *HMS Audacity* participated in four convoys during her short career. Her first convoy was OG 74. It sailed from Britain on September 13, 1941. On September 21, during her first run, one of *Audacity's* aircraft shot down a Condor bomber which had made a bombing run on the convoy rescue ship *Walmer Castle*. The *Walmer Castle* was damaged so badly that she had to be sunk by a Royal



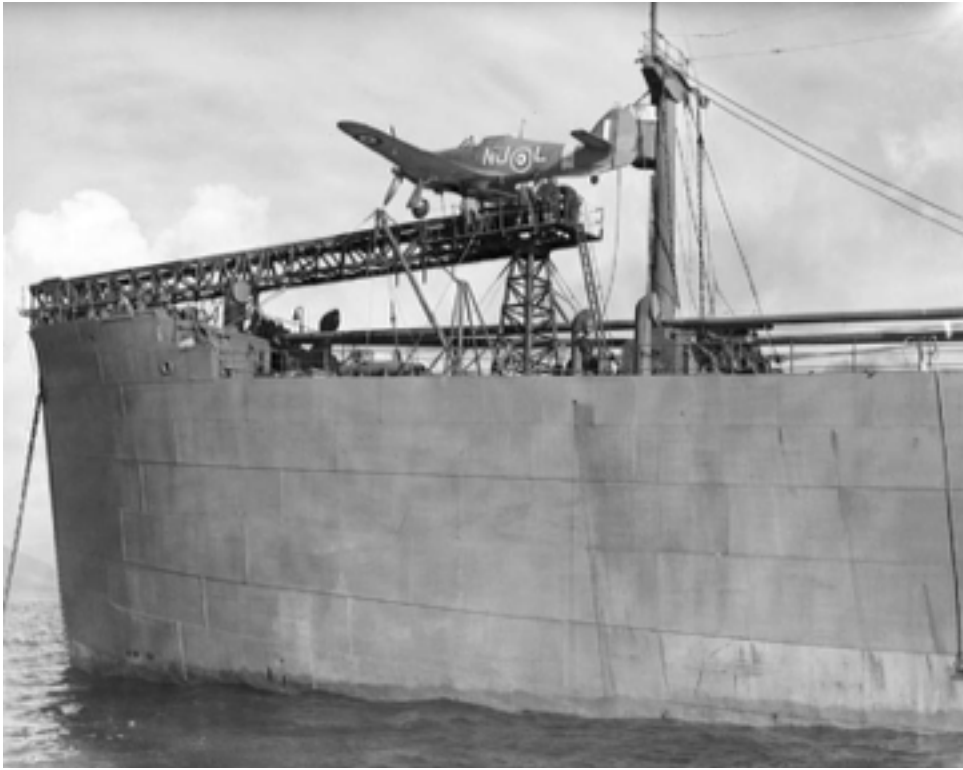
Navy corvette. Her return convoy was HG 74 which sailed from Gibraltar on October 2 and arrived at the Clyde on October 17. The trip was uneventful. The next convoy was OG 76 and it sailed on October 28 bound for Gibraltar. During the voyage, Martlets from *Audacity* shot down four Condors, one being the first aerial victory for Eric "Winkle" Brown. One Martlet was lost. Captain Brown later became a test pilot who flew 487 different types of aircraft, more than anyone else in history. He also held the world record for most aircraft carrier landings performed (2,407) and was the Fleet Air Arm's most decorated living pilot. He achieved several "firsts" in naval aviation, including the first landing on an aircraft carrier of a twin engined aircraft, an aircraft with a tricycle undercarriage and a jet propelled aircraft.

Her final trip was convoy HG 76 which sailed from Gibraltar on December 14. *Audacity* had only four Martlet aircraft serviceable. The convoy came under attack from 12 U-boats. Martlets from *Audacity* shot down two Condors and U-131 was attacked on 17 December. U-131 shot down a Martlet, but was unable to dive after the attack, and was scuttled by her crew, who were taken prisoner. As *Audacity* left the convoy on the night of December 21, one of the merchantmen fired a "snowflake" flare which revealed her in silhouette to the lurking German U-boats. The submarines had been given specific orders to sink her as she had caused a lot of trouble for the Germans both at sea and in the air. The first torpedo fired by U-751 hit her in the engine room and she began to settle by the stern. The next two torpedoes caused an explosion of the aviation fuel blowing off her bow. *Audacity* sank some 500 mi west of Cape Finisterre in 70 minutes. Her survivors were picked up by the corvettes *Convolvulus*, *Marigold* and *Penstemon*, one of the survivors being pilot Eric Brown. German propaganda claimed that *Audacity* was a 23,000 long tons *Illustrious*-class aircraft carrier, rather than an ex-merchant ship of less than 6,000 long tons. Part of the reason for her short life was her placement with respect to the convoy. Escort carriers could either sail within the convoy, giving them the protection of the convoy's escort vessels, but at the cost of limiting the maneuvering space which is required to turn the carrier into the wind to operate aircraft, or they could operate outside the convoy. Operating in the area near the convoy gave the carrier all the space it needed to turn as required for aircraft operations but necessitated a second escort for the carrier alone. The carrier could also prove a target for the convoy's attackers, leading them to target it first, to which the answer would be to operate at some distance from the convoy. *Audacity* had been operating outside the convoy, a procedure that was later prohibited by the Admiralty as too risky.

The German Luftwaffe had Focke-Wulf Fw 200 "Kondor", an aircraft with a range of nearly 2,000 nautical miles. After the fall of France, these aircraft could operate from western France against British merchant ships in the Atlantic. Flying from Bordeaux-Mérignac Airport, Fw 200s could reach the convoy lanes west of Britain while staying outside the range of British land-based fighters. The Royal Navy had no aircraft carriers available to provide close air cover for the convoys. The Fw 200s could shadow convoys, directing U-boat attacks on them, or drop bombs on convoy ships, without opposition and to deadly effect. Until production of escort carriers reached operation level the Royal Navy came up with the idea of CAM ships. These were British merchant ships used in convoys as an emergency stop-gap measure. CAM is an acronym for catapult aircraft merchant ship. A CAM ship was equipped with a rocket-propelled catapult launching a single Hawker Hurricane, dubbed a "Hurricat" or "Catafighter". These ships continued to carry their normal cargoes after conversion.

The pilots for these aircraft were drawn from the Royal Air Force (RAF). The RAF formed the Merchant Ship Fighter Unit (MSFU) on May 5, 1941. After training, MSFU crews were posted to Liverpool, Glasgow, or Avonmouth where they assisted in loading their Hurricanes onto the catapults. Each team consisted of one pilot for Atlantic runs (or two pilots for voyages to Russia, Gibraltar, or the Mediterranean Sea), with one fitter, one rigger, one radio-telephone operator, one Flight Direction Officer, and a seaman torpedoman who worked on the catapult as an electrician. MSFU crews signed

ship's articles as civilian crew members under the authority of the civilian ship's master. The ship's chief engineer became responsible for the catapult, and the first mate acted as Catapult Duty Officer (CDO), responsible for firing the catapult when directed. The single Hurricane fighter was launched only when enemy aircraft were sighted and agreement was reached via hand and flag signals between the pilot, CDO, and ship's master. The fighter would be launched into the air with rockets, and fly up to destroy or drive away the bomber. The Fw 200 was actually a rather vulnerable aircraft. After the combat, the fighter pilot would bail out or ditch in the ocean near the convoy, and be picked up if all went well. When a CAM ship arrived at its destination, the pilot usually launched and landed at a nearby airfield to get in as much flight time as possible before his return trip. Pilots were rotated out of CAM assignments after two round-trip voyages to avoid the deterioration of flying skills from the



lack of flying time during the assignment. In total, there were nine combat launches. Eight aircraft and one pilot were lost for eight German aircraft destroyed and one damaged.

As adequate numbers of escort carriers became available, CAM sailings on North American and Arctic Russian convoys were discontinued in August 1942. The aircraft maintenance unit was withdrawn from Archangel in September 1942. Catapults were removed from ten of the 26 surviving CAM ships while the remaining 16 continued to sail with the Mediterranean and Freetown convoys. Headquarters RAF Fighter Command ordered all

MSFUs to be disbanded commencing June 8, 1943. Twelve of the 35 CAM ships had been sunk while sailing on 170 round trip voyages. Two more ships, *Cape Clear* and *City of Johannesburg*, were briefly fitted with dummy catapults and aircraft for deception purposes in late 1941.

Until the shipyards could produce more purpose built escort carriers the British developed the idea of Merchant Aircraft Carriers. Also known as a MAC this was a limited purpose aircraft carrier built on a British hull designed for bulk grain ships and oil tankers. It was adapted by adding a flight deck enabling it to operate anti-submarine aircraft in support of Allied convoys crossing the Atlantic. Despite their quasi-military function, MACs retained their mercantile status, continued to carry cargo and operated under civilian command. MACs began entering service in May 1943 and although originally intended as an interim measure pending the introduction of escort carriers, they remained operational until the end of the war in Europe. More on the MAC will follow next month.

I must leave the reader with this bit of trivia. If the Chief of US Naval Operations, Admiral Ernest King wasn't such an anglophobe the British would not have been forced to improvise in such a hasty manner. His delay in allowing escort carriers to be built in America cost many Allied lives; along with his reluctance to fully investigate the failings of the Mk 14 torpedo. Eisenhower once mentioned that the war would have ended much sooner if only someone had shot Ernie King. This statement came from a British source but I have yet to find the original citation.