RAMSEY COUNTY
History
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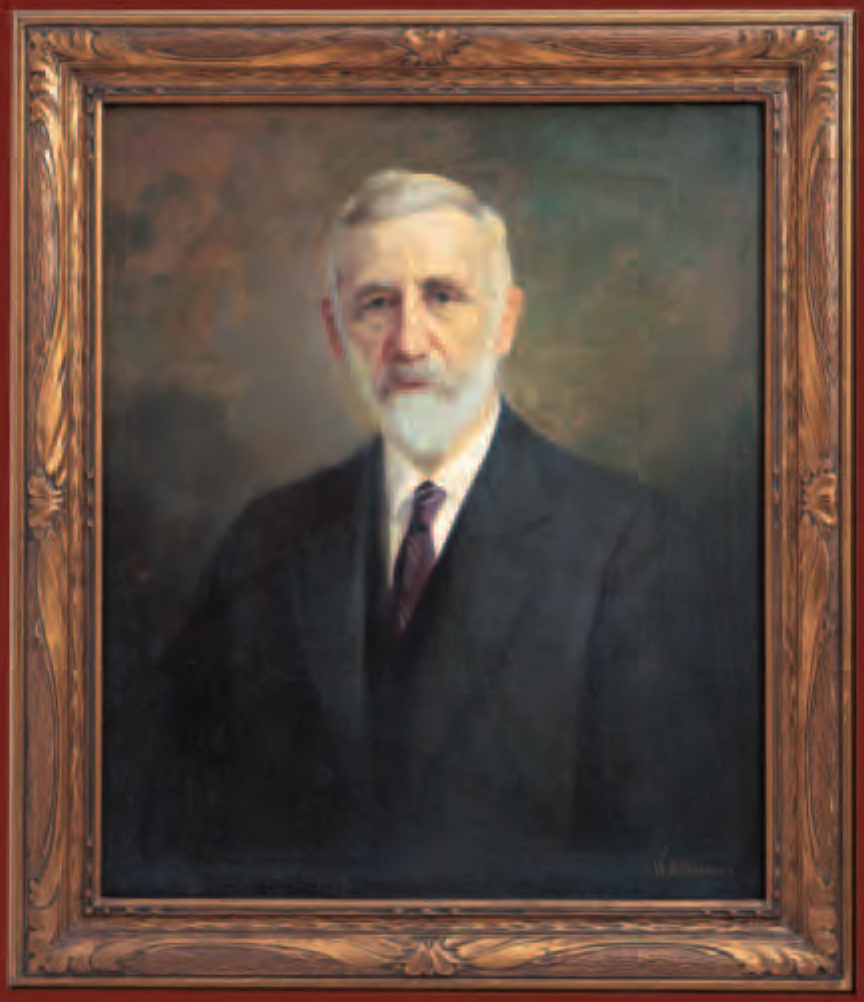
"*A Great Experience*"
Villaume Builds Gliders in World War II
Page 22

"If It Can Be Manufactured from Wood, We Can Make It"
A History of the Villaume Family and the Company They Built
— *Page 4*



Eugene Villaume. Portrait by Nicholas Brewer (1857–1949), one of America's finest portrait artists. Minnesota-born, Brewer trained in New York and later moved back to St. Paul. He painted presidents and official portraits of governors from Minnesota and ten other states. Brewer also painted portraits of a number of prominent Minnesotans, including Theodore Hamm, Ignatius Donnelly, George Dayton, and Archbishop John Ireland. Photo courtesy of Nick Linsmayer and Villaume Industries.

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RAMSEY COUNTY

History

Volume 41, Number 4 Winter 2007

THE MISSION STATEMENT OF THE RAMSEY COUNTY HISTORICAL SOCIETY
ADOPTED BY THE BOARD OF DIRECTORS IN JULY 2003:

The Ramsey County Historical Society shall discover, collect, preserve and interpret the history of the county for the general public, recreate the historical context in which we live and work, and make available the historical resources of the county. The Society's major responsibility is its stewardship over this history.

CONTENTS

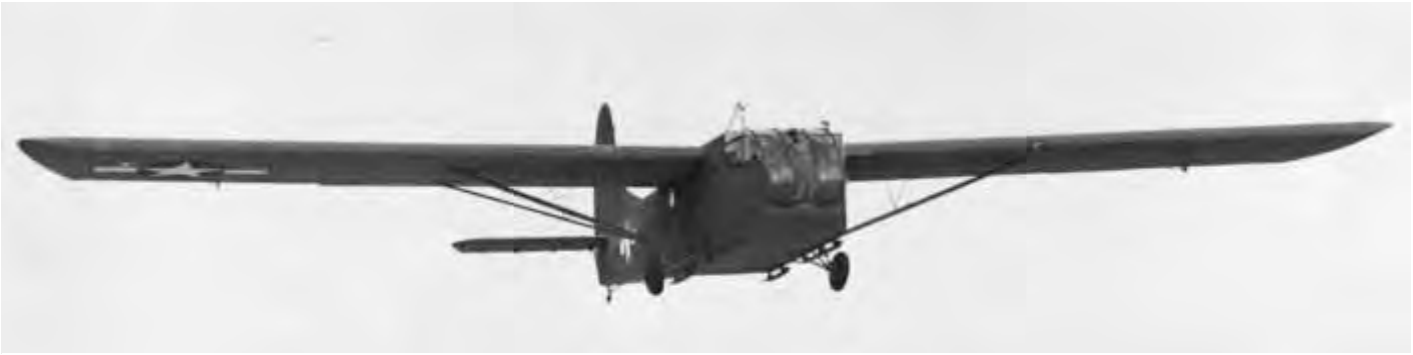
Publication of *Ramsey County History* is supported in part by a gift from Clara M. Claussen and Frieda H. Claussen in memory of Henry H. Cowie Jr. and by a contribution from the late Reuel D. Harmon

A Message from the Editorial Board

This issue of Ramsey County History showcases the significant history of Villaume Industries, formerly the Villaume Box and Lumber Company, which is celebrating 125 years as a continuously operated family owned business. Steve Trimble tells the fascinating story of this company, which Eugene Villaume, a French immigrant, started in 1882. The firm initially specialized in making commercial boxes and installing fine interior woodwork, such as can still be seen in the art deco interior furnishing of the St. Paul City Hall and Ramsey County Courthouse. During World War II, as John Lindley explores in a separate article, the Villaume Company helped defeat the Axis enemy by building glider floors and wings for the Army Air Forces. After the war, Villaume diversified into manufacturing roof trusses and custom wood packaging. The Winter issue concludes with a short article by Leo J. Harris about a little-known meeting in 1839 at Kaposia (now South St. Paul) between Bishop Mathias Loras and Dakota leader Big Thunder.

The Society is grateful to Villaume Industries and its president, Nick Linsmayer, for giving authors Steve Trimble and John Lindley access to the company archives, providing photos, and arranging for interviews with individuals who could tell the Villaume story based on their own experiences with the company. We hope that other local businesses will follow the example of Villaume and share their story with us.

Anne Cowie,
Chair, Editorial Board



A Waco CG-4A in flight. This nose-on view shows the Plexiglass-enclosed nose that surrounded the pilot and copilot and the struts that braced the wings of the glider. All photos are courtesy of Villaume Industries.

"A Great Experience" Villaume Builds Gliders in World War II

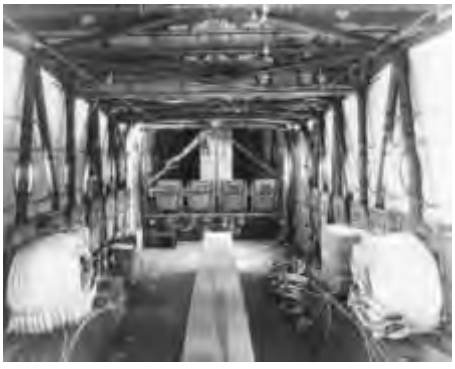
John M. Lindley

As a military weapon, gliders first came to the attention of Allied war planners on May 10, 1940, when German troops used them as a vehicle for attacking the supposedly impregnable Belgian fortress of Eban Emael and to capture the bridges across the Albert Canal. Because of the restrictions imposed on German heavier-than-air plane production in the Versailles Treaty at the end of World War I, Germany's military leaders encouraged the development of "sport" flying with gliders in the 1920s and '30s. Consequently they were able to achieve considerable glider experience and to develop a cadre of trained pilots prior to their surprise landing of troops on the top of the Belgian border strongpoint. The attackers then made deft use of explosive charges to disable the fortress' gun turrets and observation cupolas. Within thirty hours after the attack began, Eban Emael was in German hands.

The Germans also employed gliders in Greece and on the island of Crete as they expanded their operations in the Mediterranean as part of their plan to wrest the Suez Canal from the Allies. On May 20, 1941, the Germans attacked the British forces that were defending Crete. They employed eighty gliders carrying ten soldiers each as part of their massive airborne assault on three airfields on the island. The glider units landed successfully, but the accompanying paratroopers who were also part of the attack took heavy losses. The Germans quickly brought in additional troops and soon outnumbered the British defenders who yielded ground grudgingly. Unable to supply Crete with adequate reinforcements, the British then decided to evacuate the island. Hitler achieved a victory on Crete, but its high cost in men and material led him to abandon future use of airborne operations with gliders. Allied military leaders, in contrast, decided they needed to develop a glider program as part of their airborne assault capabilities. This strategic decision indirectly led to the Villaume Box and Lumber Company in St. Paul contributing in a significant way to the Allied victory over the Axis powers in 1945.

Developing the CG-4A

The story of how the Villaume Company got involved in producing wing parts and fuselage floors for gliders is indicative of the improvised methods that the United States sometimes had to employ to manufacture some of the weapons that it needed for the war with Germany and Japan. Among the many production problems that U.S. War Department planners faced in early 1942 was the question of how to build sufficient numbers of gliders without diminishing the production capabilities of the country's established



The interior of a CG-13A glider. The design of the welded steel frame, canvas covering on the fuselage, and hinged seats for the glider infantry maximized the available space.

A C-47 (right) pulls two gliders. Notice that the rear glider has a longer tow line than the one in front.

aircraft manufacturers. In the winter of 1941-42 the Waco Aircraft Manufacturing Company in Troy, Ohio, developed a design for a small troop-carrying glider. This design, which came to be known as the CG-4A (*C* for cargo, *G* for glider), called for a pilot and copilot to deliver to a combat zone thirteen soldiers and their gear, or a combination of troops and supplies, or troops and a ¼-ton jeep or a 75mm howitzer. Tests involving an experimental version of this glider in early 1942 proved it was reliable and durable. The tests also proved the Waco design would be one that relatively inexperienced aircraft manufacturers could handle and that mass production of this model could be done at multiple locations around the country.

Technically the CG-4A was an externally braced, high-wing monoplane with a wingspan of 83 feet and 8 inches that had a useful payload of 3,750 pounds. By raising the hinged nose section of the fuselage, troops or cargo could be positioned in a cargo compartment that was 72 inches wide by 65 inches high. Since there were no internal braces or supports in the cargo area that would impede the loading of troops, supplies, or rolling cargo, the CG-4A was ideal for its intended role of moving high volumes of troops and their equipment to the point of attack in an invasion. Wooden benches positioned longitudinally along both sides of the cargo compartment provided seating with seat belts for troops or the benches could be removed and cargo loaded instead.

In construction the CG-4A had wings that were rectangular in shape and strut braced from the fuselage. Wood and plywood were used in the wing structures such as the main spar, rear spar, and ribs, which were then covered with fabric, such as canvas, that was doped to keep it taut and to provide a surface that could be painted with camouflage colors and standard aircraft markings or insignia. The fuselage of the glider was a welded steel frame with a honeycombed plywood floor in the cargo compartment. The floor, which was extremely strong but had minimal weight, was bolted to side truss members to form the frame of the fuselage. The entire fuselage was covered with fabric and doped and painted.

There was an entrance door on each side of the fuselage at the rear of the cargo compartment with two triangular emergency doors at the forward end of the compartment. All the doors could be jettisoned in an emergency. The glider's tail was also a steel and wood construction with a fabric covering. The aircraft had an elevator and rudder, conventional landing gear, brakes, and a small tail wheel that swiveled.

Just over 48 feet long and standing more than 12 feet from the ground, the CG-4A had dual wheel controls for a pilot and co-pilot in the front of the aircraft. A rounded, Plexiglas-enclosed nose surrounded the cockpit. The pilots' instrument panel was quite simple: light switches, an airspeed indicator, a rate-of-climb indicator, a bank-and-turn indicator, an altimeter, and a compass. The cockpit also had controls for the brakes, rudder, trim tabs, spoiler, nose release, towline release, and a phone line that was connected to the tow plane.

The power to get the CG-4A airborne came from a conventional aircraft, typically the C-47, which was the military version of the Douglas DC-3 passenger airplane. A 350-foot 11/16-inch nylon towline connected the C-47 to the glider. If the C-47 was to haul two gliders, then a 425-foot nylon rope was attached to the glider on the right so that the two would be airborne at different distances astern of the tow plane. The phone line connecting the C-47 to the glider was either attached or woven into the towline. Later on in the war radios replaced the telephone.

As a glider, the CG-4A reacted to aerodynamic forces in the same way that a powered aircraft did. The biggest difference was that once the glider was released from the tow plane, the pilot of the CG-4A had no power from an engine to adjust the aircraft's descent to the earth. When towed, the CG-4A had a safe air speed of about 150 miles per hour. Once it was released from the tow and began its glide to the ground, the air speed of the CG-4A was between 60 and 72 miles per hour. This air speed gave the pilot some control of the aircraft in landing, which some pilots considered akin to a controlled crash, and was an asset when landing in a confined area, but it also meant the glider was vulnerable to anti-aircraft fire. CG-4As were unarmed and unarmored. Some soldiers who flew in them called their aircraft "flying coffins" or "tow targets." Flying into combat in a glider was not for the faint of heart.

The air force recognized that Waco would not be able to build all the gliders it needed. They had to find a way to overcome the inexperience and limited capacity of the manufacturing businesses that might be willing and qualified to build gliders. Consequently it sought out

Here workers at Villaume are checking a wing assembly and applying a lacquer with spray guns to a tail assembly (left rear) for a CG-4A.

Each joint in a wing of a glider was individually inspected as part of the assembly process at Villaume.

companies, such as Ford Motor Company and the Gibson Electric Refrigerator Company in Greenville, Michigan, that had the capabilities for building gliders but were not also making powered aircraft and contracted with them to build the CG-4A. By July 1942, sixteen companies had contracts to build gliders. These glider contracts stipulated that the firms that would build the CG-4A could not hire workers away from existing aircraft factories and the gliders were to be built using the least critical materials, such as wood and canvas. As part of this procurement process, one of the companies that received a glider production contract was Northwestern Aeronautical Corporation (NAC) in St. Paul. NAC was the brainchild of three lawyers at the St. Paul firm of Doherty, Rumble and Butler: Jack C. Foote, Irving Clark, and Francis Butler.

Villaume Gets a Contract

The three St. Paul lawyers had no expertise in building aircraft, so they brought in John E. Parker as NAC's president. Parker, who was based in New York and Washington, had considerable experience in aircraft financing. He also had ties to a Kansas factory that built small planes for civilian pilot training and connections with procurement officials in the War Department. Early in 1942 NAC received a contract to deliver 30 gliders. In March the number of gliders that NAC was to build was upped to 84; then increased to 300, all of which were due in 1942.

From the start, NAC planned to subcontract all the manufacturing work to local companies in the Twin Cities that had the manufacturing expertise, equipment, and know-how to build the various glider components. Northwestern would oversee this work, coordinate all the work among the subcontractors, and handle the assembly and delivery of the gliders. To facilitate the assembly stage, NAC rented space at Wold-Chamberlain Airport (today's Minneapolis-St. Paul International Airport) in Minneapolis.

NAC's primary subcontractors for the manufacturing of the glider components were Villaume Box and Lumber Company in St. Paul and De Ponti Aviation Company in Minneapolis. The De Ponti firm had responsibility for building the fuselages, landing gear, and tail assemblies for the CG-4As. Much of the De Ponti work was done in South Minneapolis near 53rd Street and Lyndale Avenue. Given its expertise in wood manufacturing, the Villaume Company's contract required it to build the wings and cargo floors, which was done in its plant on St. Paul's West Side. Both companies trucked their completed components to Wold-Chamberlain where the parts were either assembled for delivery of finished gliders by air or crated for shipment to U.S. bases or later in the war to overseas locations.

As John Parker explained in *Tow Lines,* NAC's employee newsletter, the company received the first drawings for the CG-4A in March 1942 and by September 30th its first glider was accepted by the air force. In addition to working with Villaume and De Ponti, NAC eventually employed nearly 2,000 people and also oversaw about fifty subcontractors in the Twin Cities area for the production of these gliders. According to Parker, NAC's subcontractors had to meet standard aircraft tolerances in their work. The air-force demanded the same high-quality manufacturing in gliders that it required in powered aircraft because gliders were going to be used in combat and had to perform reliably and predictably.

Consequently over 70,000 parts for each glider had to be "meticulously" fabricated using "tooling of a high degree of accuracy" so that all parts were "interchangeable on each and every" glider to ensure that "repairs and substitutions may be made readily in the field." Records show that by the time production ended on the CG-4A gliders, the air force also had authorized 7,000 design changes to the original Waco plans. Some of these 7,000 changes may not have affected the work at Villaume because they applied to components that were made by other subcontractors; nevertheless each time a design change was made supervisors, inspectors, and workers had to be informed and the changes implemented with consistency and uniformity across all the manufacturing steps that were affected.

Building Wings, Control Surfaces, and Floors

Given Villaume's long history of working with wood and doing fine millwork for buildings such as the Ramsey County Courthouse and the St. Paul City Hall, NAC's decision to have Villaume build the all-wooden wing and control surface structures as well as the honeycombed wood floor was critical to the success of this part of the larger contract. Villaume may have had no prior experience with building aircraft, but the company had the expertise necessary to build these critical parts.

A good example of the manufacturing demands inherent in building these gliders was the honeycombed floor of the CG-4A. Each floor measured 13 feet 6 inches by 6 feet 2 inches and had 216 individual cells within a reinforced spruce framework. Once it was assembled, the cellular framework was covered with a thin sheet of mahogany plywood. This design gave the floor the strength to support the weight of thirteen infantrymen and their gear or a jeep or a howitzer while the wood construction itself weighed only 300 pounds. On the other hand, workers at Villaume had to use 420 clamps to hold the parts of the floor together while the glue dried. Nearly all the wood parts in each glider were glued to save weight. Since the glue was specially mixed and had to be applied within two hours after it was prepared, speed and accuracy of assembly were critical.

In 1994 John A. Sablak of South St. Paul reflected on the work that he and his brother, James S. Sablak, had done at Villaume when they were building glider floors. This was John's first paying job. Brother James called their time in the Floor Department "a great experience." In 1943 James was drafted and after his stateside training, he shipped out to England and then to France, where he saw gliders in action at the front.

During World War II, Villaume produced more than $15,000,000 worth of products such as gliders ($7,000,000), glider crates ($1,500,000) and ordnance boxes ($1,800,000) for the U.S. military. The company employed over 1,500 people on a three-shift basis, six days a week to meet the obligations of its war contracts. At the time, Villaume had 8½ acres of fenced property on the West Side with more than 100,000 square feet of plant and office space, of which 71,000 square feet was utilized for its manufacturing operations. They also had the caves in the West Side bluffs for additional storage as needed. Equipped with three Moore Dry Kilns with a capacity for drying a million board feet of lumber, Villaume also had all the specialized woodworking tools (saws, shapers, sanders, planers, routers, jointers, drills, and the like) for cutting, shaping, and finishing the lumber needed for wings and floors. Throughout the war the company maintained its own plant security and had a force of uniformed guards. All Villaume personnel were screened for security purposes prior to employment.

In addition to building the wood components for the CG-4A, Villaume also began manufacturing similar parts for a larger glider that Waco had designed.

A nearly completed floor assembly for a CG-4A shows how it was made entirely of wood in a honeycombed design. A thin veneer of mahogany will be added on top of the honeycomb to complete the floor.

Known as the CG-13A, this glider was designed to deliver thirty soldiers and have an effective military payload of 8,000 pounds. Experimental models of this glider were flown in late 1943, with mass production beginning shortly thereafter. Military planners expected that the CG-13A would play a key role at whatever time the United States mounted an invasion of the Japanese Home Islands. By the time the government halted production of these gliders, NAC had produced forty-seven CG-13As.

NAC's *Tow Lines* newsletter kept everyone at Wold-Chamberlain, De Ponti, and Villaume informed of what was going on locally with the work on gliders. It also carried short reports on glider operations overseas in the fight against Germany and Japan. The newsletter devoted considerable space to information on the activities of employees. Thus *Tow Lines* reported the names of men and women at the various glider-manufacturing sites who were called up or volunteered for active duty during the war. From time to time it also recorded news from former workers who were now in uniform and at the front. At other times the newsletter gave the names of individual workers who had moved from one site to another in the glider-building work. Most of the time these workers moved from De Ponti or Villaume to NAC but not always. This shifting of men and women from one plant to another may have facilitated replacement of skilled personnel on short notice, but it also reinforced the need for strong training programs for new hires on the production floors of the subcontractors.

The U.S. Uses Gliders in the War

The U.S. Army first used gliders in combat in the invasion of Sicily on July 9, 1943. Although the initial Italian and German defense of the island was not very strong, the airborne assault was a costly effort. Strong winds, inexperienced towplane pilots, miscalculations in navigation of the tow planes, and friendly fire from the ships in the assault force below all took a toll on the gliders so that less than half the force of 137 aircraft actually landed on Sicily. In March 1944 a glider operation in Burma was more successful. In this action, a small force of gliders landed troops and supplies at night in clearings in the jungle 200 miles behind Japanese lines. Learning from operations such as the ones in Sicily and Burma, hundreds of gliders participated in the invasion of France at Normandy on June 6, 1944, the landings in southern France on August 15th, and in the costly airborne attack on German-held bridges in Holland in September 1944.

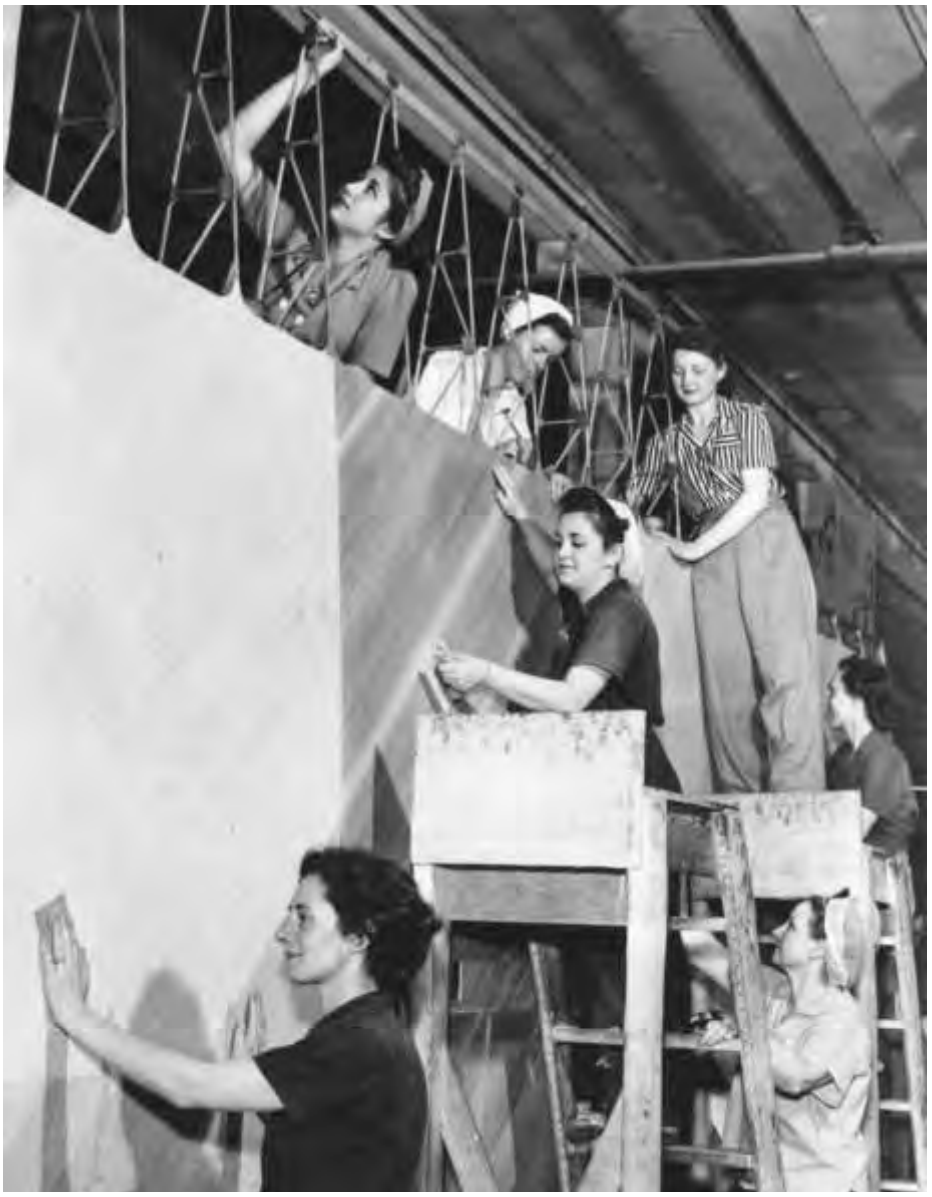
A radio operator who was aboard one of the many tow planes that hauled

gliders from English airfields to the beach at Normandy on D-Day later wrote that these silent aircraft "crashed, more or less successfully. Slow and easy targets, flying directly over enemy positions, gliders had to get down quickly." Another obstacle that the glider crews had to deal with in some parts of France was "Rommel's asparagus," eight-inch wooden poles that were about ten feet long and planted in fields behind the beaches that were likely places for gliders to land. To make these defenses even more potent, the Germans sometimes strung cables between the poles that would set off mines on the ground below as a glider tore into these obstacles.

Walter Chronkite, the famous TV news anchor, who was then a reporter for the United Press rode in a glider in the airborne assault on Holland in September 1944. Many years later, Chronkite described riding in a CG-4A as "like attending a rock concert while locked in the bass drum." The noise from the canvas covering over the fuselage "beat against the frame with enough decibels to promise permanent deafness." When the glider pilot dropped the tow rope to begin his landing, the aircraft "dropped like a stone—plunged straight down, it seemed to me. . . ." Somehow Chronkite's glider landed safely just as two other gliders "collided almost above us, and a jeep and a howitzer, and soldiers, came crashing down."

The biggest glider operation of World War II was the assault across the Rhine River on March 24, 1945. In all 1,348 British and American gliders participated in this operation. The attack was a success, but airborne losses were high that day. The last use of gliders in combat during the war took place on June 25, 1945, when seven gliders delivered artillery pieces and jeeps in support of paratroopers who had landed at a small, remote airstrip in northern Luzon in the Philippines.

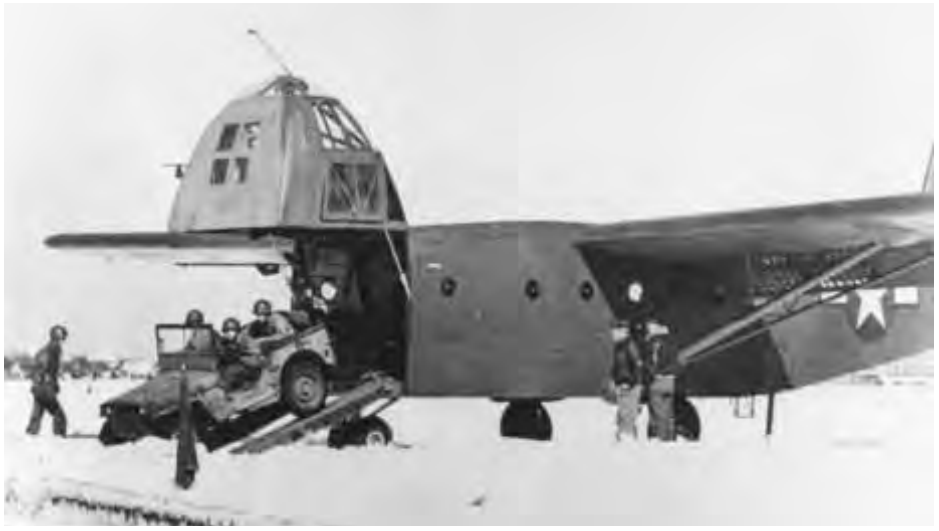
The combat achievements of gliders in the war are well documented. Less well known are the achievements of companies such as Villaume who helped manufacture the CG-4A and the CG-13A. To meet their production goals, NAC, De Ponti, and Villaume had to hire just about anyone who was willing to work.



This photo shows just how much handwork was required to finish the exterior surfaces of a glider wing.

One contemporary account of the glider-building work stressed how diverse were the backgrounds of the people who were hired: hotel waiter, orchestra leader, chiropractor, violin maker, bond salesman, music teacher, ordained minister, schoolteacher, palm reader, undertaker, and ex-bartender. As was the case with many other businesses that had war contracts, a substantial number of those who were hired were women. All these new workers had to be trained for their jobs. At Villaume there were managers, supervisors, and leading workers who knew and understood working with wood, but none had built a glider wing before 1942. Despite their inexperience, what was evident was that all worked hard at their jobs.

The night before the wings for NAC's first glider were due to be delivered to Wold-Chamberlain, John Parker visited the Villaume plant. He found the work crew struggling to get the first of the big wings from the plant's second story to a truck that was waiting below. It took five hours just to load both wings. Supervisors at Villaume quickly developed much faster procedures for this step and the many others in the glider production process. Fortunately they had help from



This photo shows how the nose of a glider would swing up to allow for troops and cargo to exit the aircraft quickly after landing.

a number of advisers who had experience in aircraft manufacture and from representatives of the air force who were assigned to the plant to keep tabs on production and see that the work met the tight specifications that were required.

Cost Accounting on Gliders

By the fall of 1944 when glider production was winding down, War Department analysts had some surprising cost figures on the glider program. Of the sixteen companies that had received contracts to build CG-4As, one company had delivered one aircraft at a cost of $1,741,809. Ford, on the other hand, had built 2,418 gliders at an average cost of $14,891 per glider. NAC had delivered 887 aircraft at an average cost of $24,543, which was about the average cost of a CG-4A across all the manufacturers at that time. By the end of the war, all the manufacturers had built a total of 13,909 CG-4As. Of this total, NAC had delivered 1,509, which made it the second largest producer after Ford.

Historians today marvel at what gliders accomplished in combat in World War II. They definitely contributed to the Allied victory. The record of the American companies that built the CG-4A and other U.S. gliders is uneven. Some like Ford and NAC and its subcontractors worked hard and produced a high-quality aircraft. Others were less successful. The production records of the glider contractors show that those manufacturers that were experienced in making high-quality products before the war, that had a sound financial basis for their existing operations, and that were familiar with manufacturing large quantities did much better in converting to wartime production. When the war ended in 1945, there was no doubt that Villaume Box and Lumber Company had all of those qualities.

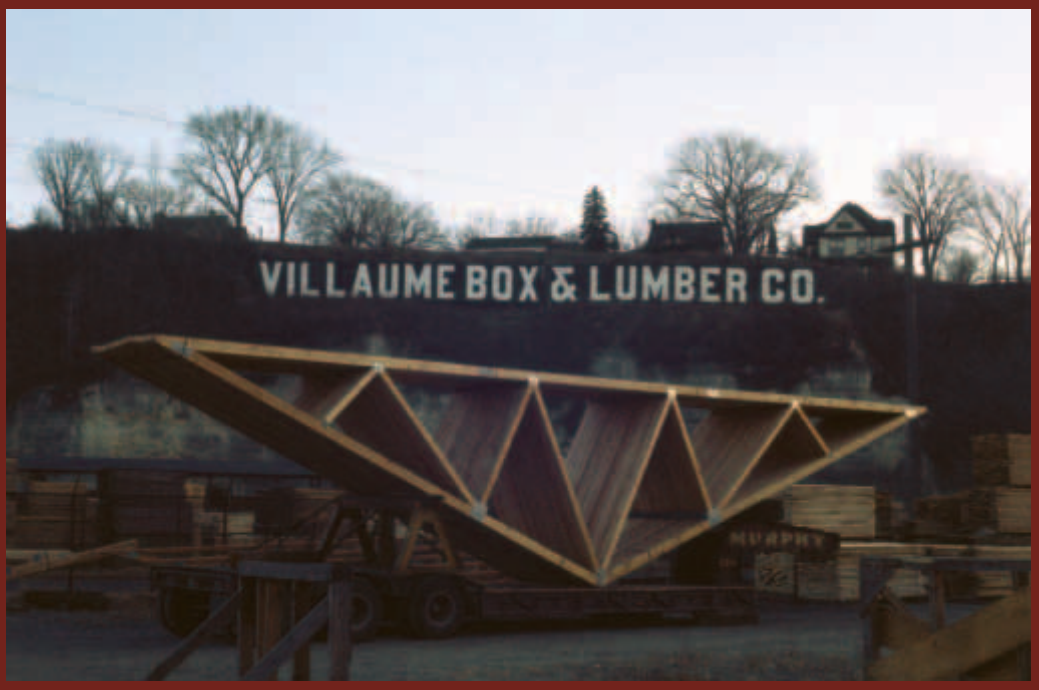
Today several air museums in the United States have exhibits on gliders in World War II or restored CG-4As on display. These museums are the Kalamazoo Aviation History Museum (Kalamazoo, Mich.); National World War II Museum, (New Orleans, La.); New England Air Museum (Windsor Locks, Conn.); Pima Air and Space Museum (Tucson, Ariz.); Silent Wings Museum (Lubbock, Tex.); Travis Air Force Museum (Travis AFB, Calif.); United States Air Force Museum (Wright-Patterson AFB, Dayton, Ohio); and the Yankee Air Museum (Belleville, Mich.). In addition a group of volunteers is restoring a CG-4A that will go on display at the Menominee Range Historical Foundation in Iron Mountain, Mich.

Sources

The best account of the how Northwest Aeronautical Company spearheaded the building of the CG-4A and CG-13 gliders in the Twin Cities during World War II is the summary (pages 229–232) in *Minnesota Aviation History, 1857–1945* (Chaska, Minn.: MAHB Publishing, 1993) by Noel E. Allard and Gerald N. Sandvick. For general information on the U.S. glider program during the war, see I.B. Holley Jr., *Buying Aircraft: Matériel Procurement for the Army Air Forces* (Washington, D.C.: Office of the Chief of Military History, Department of the Army, Government Printing Office, 1964): 324, 373, 552, and 558 and Frank Craven and James Lee Cate, *The Army Air Forces in World War II,* vol. 6 *Men and Planes* (Washington, D.C.: Office of the Chief of Military History, Department of the Army, Government Printing Office, 1958): 224–25, 621–25.

There is a very good wartime account of the U.S. glider program in William H. Nicholas, "Gliders—Silent Weapons of the Sky," *National Geographic,* vol. 86, no. 4 (August 1944): 154-55. Copies of *Tow Lines,* NAC's newsletter for its employees, are in the Villaume Company files. This collection is not complete. The Villaume Company files on the company's glider manufacturing also include oral reminiscences from former Villaume employees who worked in the plant during the war and from some relatives of former employees that were recorded in 1994. The Villaume Company files also have some general literature on the company from the 1950s that has some statistics on the company's wartime manufacturing activities.

The secondary literature on gliders in World War II is extensive. Many of these books have in-depth coverage of the many operational uses of gliders, the training of glider pilots, and the experiences of the soldiers who flew in gliders. This account made use of the following: Kevin L. Cook, "The Planes with No Engine," *American Heritage of Invention & Technology,* vol. 21, no. 2 (Fall 2005): 35–38; James E. Mrazek, *Fighting Gliders of World War II* (New York: St. Martin's Press, 1977); and his *The Glider War* (New York: St. Martin's Press, 1975). Walter Cronkite's recollection of his ride in a glider in 1944 is from his foreword to John L. Lowden's *Silent Wings at War: Combat Gliders in World War II* (Washington, D.C.: Smithsonian Institution Press, 1992): ix–xiii.



This late-afternoon photograph taken in the 1960s shows a supply of building trusses with their "Gizmo Gussetts," or metal connector plates, ready for shipping on a Murphy Trucking Company flatbed trailer in the yard at Villaume Box & Lumber Company. In the background is the Villaume sign, complete with hundreds of light bulbs, mounted on the bluffs on the West Side. Various residences are just visible beyond the sign and above the bluffs. Photo courtesy of Nick Linsmayer and Villaume Industries.
See Steve Trimble's article on page 4.

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