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# THE CUNNINGHAM-HALL

The Remarkable Restoration of a Golden Age Workhorse

BY H.G. FRAUTSCHY

Imagine the scene in the Sulphur Creek Valley, high up in the Salmon River mountains of central Idaho. Ben Morgan, a rancher from the area, has a terrible predicament. A series of snowstorms has raked the mountains in the fall, earlier than anyone had figured they would. Ben has four horses stranded up along the creek, and the snow is piled too high in the passes and trails to allow them to walk out, even if they were led out by a man on horseback. He's got a tough choice to make. He'll either have to let them starve to death, or fly in when the weather breaks

and put them out of their misery. Neither choice appeals to the rancher, who, like many of his brethren, feels compassion for his stock and doesn't wish to see them suffer.

Then it struck him — he knew there might be a way to get them out.

Jim Larkin was the man Ben went to with his dilemma. He'd been busy that day flying cargo drops on some canyon floors about sixty miles distant, with a few short field takeoffs and landings thrown in as well. Ben posed the question to Jim, asking him if he could fly the horses out of Sulphur Creek.

Ben knew the airplane Jim Larkin flew was a capable hauler, perhaps the best in the back country of the western U.S. Jim knew it would be a rough flight, for the snow was deep, and the cargo had the potential for unruliness. In over a decade of flying in the wilderness, this would be one of the most unusual assignments he ever had. He'd flown with refrigerators half hanging out the cargo door and hay bailers that added their own drag as they nearly dragged on the ground, not to mention the crate of window frames that was once lashed to the top of the fuselage.



JIM KOEHNICK

Col. Virginuis E. Clark's "Y" airfoil is the section used in the high lift wings on the Cunningham-Hall PT-6F. The cargo version of the PT-6 was bare bones — no insulation, no padding, just plain corrugated aluminum and big tires to help cushion the landing on a sandbar or gravel strip. This particular PT-6F was built in 1938 for export to a Philippine mining company, but it never made it, and was finally sold in 1941 to Lon Brennan of Fairbanks, Alaska. Flown by Lon and his stepson Bob Byers for 9 years, they developed a healthy respect for the airplane's load hauling capabilities.

But horses were something else. How would he keep his cargo placated during the flight? What if they got upset and started bucking and kicking? The aluminum-lined cabin, strong as it was, couldn't hold up to that! The answer to that question was answered by one of Jim's human passengers on the flight. Dr. Bill Ewing, a veterinarian, climbed aboard the only airplane Ben Morgan was sure could save his horses — Jim Larkin's 1938 Cunningham-Hall PT-6F. Powered with a Wright R-975-30 engine of 300 hp, the Cunningham-Hall was the only one of its type flying. Only five or six of the airplanes had ever been built back in the late 1920s and the subsequent decade.

The cavernous cabin was lined in sheet aluminum, and the double wide cabin door made it possible to load in just about anything imaginable. The strong biplane wings were ready to lift it into the air once it got moving forward. The only "modern day" equivalent would be the Russian AN-2 biplane, although that airplane is much larger than the Cunningham-Hall.

At the start of the early winter storms, Jim had already replaced the wheels on the Cunningham-Hall with a set of skis, and with Dr. Ewing and two other helpers, Jim set out for the area along Sulphur Creek. After getting their "cargo" located, Dr. Ewing gave the first passenger a sedative, and

with a snort or two, it lay down and began to take an induced nap. Jim had borrowed a couple of roller ramps from a local brewery, and using a block and tackle, he and the others pulled the horse up into the cabin of the PT-6F. More than once Jim wondered what it would be like in the airplane if the horse were to come out of his sleep prematurely, but thankfully, it kept right on slumbering until it was well inside the Cunningham-Hall's hangar, laying on a bed of straw. Its three other equine pals joined it on subsequent trips in similar fashion, without one of them giving the slightest trouble to the bush pilot with the big cabin biplane. The takeoff didn't give Jim any problems either. As he later recalled, "I taxied slowly to the end of the short field, blasted the tail around, and after one last look at my slumbering passenger, poured the coal to the big Wright. Slowly, the old biplane mushed through the clinging snow. I rocked the wings to try to break the drag. I was almost ready to chop the power when suddenly, riding on that tremendous ground cushion of the lower wings, we staggered into the air. Free from the clinging snow, we had made it, and we were safely on our way back to Cascade."

This remarkable biplane was the product of one of the oldest names in transportation at the time of its manufacture, but few remember the name today. Like so many of its competitors, the Cunningham-Hall Aircraft Company barely survived during the depression, and then fizzled out after a couple of noteworthy designs. They entered the 1929 Guggenheim Safe Airplane Contest with their Model X-90(N), and later wowed the aviation world with their GA-



ARNOLD GREENWELL



LEE ANN ABRAMS

21, GA-21M and GA-36. The GA-36 still exists, and is currently being restored for static display.

James Cunningham & Sons Co., Rochester, NY, was founded in 1838 in upstate New York to build fine horse drawn carriages and coaches, and over the rest of the 19th century they established a reputation as one of the best of the many conveyance builders in the young United States. It was only natural that when the horseless carriages came to be, they would build them, too, and become known as a custom automobile maker.

When the flying machine came into being, they waited until the time seemed right, and then formed a separate company for the manufacture of airplanes. They didn't start without any idea as to what they would build — the design was already coming together on the drawing board. Cunningham-Hall Aircraft Company was headed by F. E. Cunningham as president and Randolph Hall as vice-president and chief engineer, along with W. T. Thomas, one of the original Thomas brothers of Thomas Aeroplane Co., makers of the famous Thomas-Morse Scout of WW-I. Randolph had been the assistant chief engineer at Thomas-Morse Aircraft Corporation, and had been a stress engineer and aircraft designer for a number of manufacturers since 1915.

T-M would soon be absorbed by



LESLIE HILBERT

(Above) Nothing about the Cunningham-Hall PT-6F says light, but it has hauled a 2,000 pound load out of the Alaskan wilderness when someone mistakenly loaded 800 lbs. too much pierced steel planking (PSP) for a runway under construction. A few trees had to be dodged on the way, but it got off the ground!

(Left) Greg Herrick, Jackson Hole, WY

Consolidated Aircraft, and some of the personnel, seeing that their time at T-M might be coming to an end, cast their lot with the new company formed by Hall and Cunningham. Before their end at T-M, Hall and the others had been working on the design for a large cabin biplane on their own. The expertise of the people brought in from Thomas-Morse, combined with the talents of the coachmakers at Cunningham would mix to produce a large, six-place cabin biplane with luxurious appointments. The passenger version of the PT-6 (Personal Transport, six-place) featured an insulated, plushly appointed cabin, with the elevated cockpit up forward (you could enter it either through a door in the forward bulkhead of the cabin, or open a door on either side of the cockpit). The co-pilot's seat could be retracted into the cockpit floor, giving you more room for cargo, or making it easier to get into the cockpit from the cabin. The first two produced were built for passenger use; the first fin-

ished out with a red leather upholstery on the seats, and the second with a gray crushed velvet. Optimistic about its new airplane's prospects, Cunningham-Hall bought enough materials to help build 25 examples of its type, and put together the first airplane in 1929. Distracted by the Guggenheim contest, and frustrated by the lack of orders for the new plane, the second wasn't built until the next year, after the beginning of the stock market crash in 1929. The price of all this luxury didn't help either — at \$13,900 apiece, few could foot the bill. The Great Depression would exact its toll on Cunningham-Hall, and only five or six of the airplanes would ever be built. The first two were built in 1929 and 1930, and then no more were built until 1938. By then the price had climbed to \$16,000.

At that time, three of them were built in a modified version of the plane, the PT-6F, the "F" standing for "Freighter." A set of dual doors 56" wide was engineered and installed on the right side of the cabin, and a hatch was also installed in the top of the cabin so loads could be lowered in place with a crane. With an uninsulated, corrugated aluminum interior, the plush PT became a workhorse! Large, low pres-



JIM KOEPPICK

A 440 hp Wright R-975 currently powers the Cunningham-Hall, although a 450 hp Pratt & Whitney R-985 is in its future. The cockpit is elevated above the cargo compartment, and with all of the windows, it has excellent visibility in just about every direction.

sure tires were installed, a tailwheel added and, according to the 1939 edition of *Jane's All the World's Aircraft*, it was equipped with a 365 hp Wright R975E-1 and a Hamilton-Standard controllable pitch propeller.

The PT-6F's came about as a result of an order from a Philippine mining company. Unfortunately, although the records are a bit hazy, it looks like the mining company couldn't pay its bill, so Cunningham-Hall was stuck with the three airplanes, including the prototype, NX-16967. After certification trials were completed with the Bureau of Air Commerce, it was given a registration number issued by the commonwealth of the Philippines, NPC-44. When the deal fell through with the mining company, Cunningham-Hall applied to have the registration changed to NC-444, noting on the application that it had been previously registered as NPC-44. It's listed on the data plate as having been built March 1, 1938, but it didn't go anywhere for quite some time. After the Philippine deal fell apart, NC-444 was placed in storage until 1941, when it was bought for use in the Alaskan bush. Alaskan Lon Brennan of Fairbanks bought the Cunningham-Hall, sending his stepson Bob Byers to pick up the airplane in Rochester. Later, in correspondence with the new owner, Bob recalled how the airplane was bought through an ad in *Trade-A-Plane*.

"I forget what he paid, but \$7,000 sticks in my mind. It had been sitting in a hangar two or three years since it was built and had zero time on the airframe and 10 hours on the engine, all of which

consisted of being cranked up once or twice a month to circulate the oil. This was in 1941, and planes weren't too plentiful."

Bob continued to fly the Cunningham-Hall until 1950, when he sold it to Earl Wyman of Wyman Photo Service of Fairbanks. Flying his photo missions at 17,000 ft., he loved the stability of the PT-6F, even if it wasn't the fastest airplane he flew — it cruises about 110-115 mph.

Its next owner was Al Letcher of Fairbanks, who flew it until 1958, when Jim Larkin bought it and flew it down to his base in Idaho. Getting home was an adventure all by itself!

He had only a few borrowed tools to turn the cylinder base nuts on two cylinders he had to change at Watson Lake in the Yukon Territory. That wouldn't have been too bad, but the temperature was down to ten below zero, and the wind was howling out of the Arctic.

Later in the trip, as the last gallon of fuel was draining out of the left fuel tank, he reached down and discovered the fuel selector valve was frozen in place, and wouldn't budge! A frantic couple of minutes were spent chopping a hole in the cockpit floor with a machete, and then running lukewarm coffee down the blade onto the recalcitrant valve until it finally would loosen up and allow the now much relieved pilot to change over to the right tank. After getting the plane to Idaho, he hauled everything imaginable, from the materials and carpenters needed to build two cabins and a lodge to the horses mentioned at the beginning of this article.

From there, it went to Sparks Flying Service, and then, in 1962, it wound up with one of aviation's long unsung heroes — Gene Frank of Caldwell, ID. Gene runs the "Barnstormers Collective," a collection that concentrates on those wonderful water-cooled engine powered biplanes of the '20s and '30s, plus a smattering of other notable projects. Gene has saved a number of old airframe relics from the smelter, and the Cunningham-Hall was one of them. Gene had owned the C-H for a long time, and he refused offers to buy it a number of times, but he relented in 1994 when Greg Herrick made a com-

mitment to restore the airplane and get it flying. Greg's thankful that Gene gave him the chance to take care of the Cunningham-Hall.

Greg Herrick (EAA 402961, A/C 19291), Jackson, WY, is an entrepreneur who has been fortunate to see his dreams come true while building a business, seeing it grow and mature, and then realize a tidy profit when it came time to sell the company. Fortunately for us, he has a deep seated desire to spend a substantial amount of his resources keeping antique aviation alive and well. He grew up near the Antique Airplane Association's home base, and antique airplanes have been a favorite of his for most of his life. Members may recall our recent article on the Fairchild PT series of airplanes Greg had Joe Denest restore to pristine, award winning condition, and the list continues to grow. In a recent list of flying aircraft and airplane projects he shared with us, Greg's Yellowstone Aviation's Golden Wings Flying Museum shows 26 different airplanes, including the last Kreutzer Air Coach and one of the last two surviving high-wing Stinson SM-6000B Tri-Motors, which is now undergoing a restoration. While the building of an actual museum building at Anoka County Airport in Anoka, MN is still in the planning stages, the compilation of an impressive collection is well underway.

Greg's most recent encounter with antique airplanes started innocently enough. His wife, Holly, an accomplished fly-fishing woman (she can cook it well too — she was graduated as a chef from the famed Cordon Bleu cooking school in Paris) suggested it. While Greg was flipping through *Trade-A-Plane* one day, she saw Bob Hathaway's custom Cabin Waco "Wind Harp," and said "... that's a beautiful airplane, why don't you get something like that." What airplane man wouldn't hear music in the air after a comment like that? Among her many interests is an enjoyment of the art deco period, and so many of the airplanes of the 1930s appeal to her. Their interests seem to dovetail into a neat marriage of two people's talents.

One of the nice things about buying a project from the man who took it in while still flying is that you're pretty likely to get a complete airplane. That's what Greg Herrick found when he went to bring the Cunningham-Hall home to



Greg Herrick shows off the dual cargo doors. The aft door can be removed by pulling a couple of pins linked with light chain, and if needed, even the forward door can be removed. If that won't work, then try this . . .



LEE ANN ABRAMS PHOTOS

Anoka so the folks at HO Aircraft could have fun restoring the big beast.

Restoring an all metal airplane, especially one with as much corrugated aluminum can be a real challenge, but Greg was able to depend on Dan White at HO Aircraft. Most of it is metal — the wings, tail and aft fuselage are covered in fabric, but the entire structure underneath is either steel or aluminum, and that includes the wing ribs and wing spars. The ribs are built using 3/8" .28 wall thickness duralumin tubing which is riveted together, and then bolted to a pair of chromoly steel tubing spars. Each spar consists of a pair of 1-1/2" steel tubing (reinforced at the wing strut locations with a length of .058 steel tubing over it) and built up with diagonal cross bracing. The fuselage and tail surfaces are welded steel tube, so that none of the airplane consists of wood, save the door frames and the floorboards in the cabin and cockpit. (You couldn't very well really call them floorboards unless they were made out of wood, now could you?)

While the airplane was pretty complete, over the years it had been flying in the bush, it had acquired a number of modifications, including a conversion from the 365 hp Wright to a 330 hp Wright with no cowling, and a fixed pitch Hamilton-Standard prop. Surprisingly, Bob Byers, who owned the airplane at the time the change was made, said there was little change in the way it performed; in fact, he always thought the PT-6F with the 365 hp

Wright and controllable prop was a bit nose heavy, requiring him to blast the tail down with a shot of throttle if he wanted to keep it down in a three-point landing. He said it seemed to land a bit better with the lighter engine/prop combination. They also installed an electric starter to replace the inertia starter, which must have been lots of fun to activate in sub-zero prop blast!

The goal was to restore the airplane as close as original while still retaining many of the bush modifications, because many of the small changes made, and there really were not that many, contributed to the success the airplane enjoyed during its years serving in the Alaskan and Northwestern U.S.

To help make it original, a set of blueprints would be very handy, and happily, the National Air and Space Museum does have a set of Cunningham-Hall PT-6F blueprints, about 300 of them donated by the chief engineer on the airplane, Randolph Hall. Hall's daughter, Mrs. Lois Hall DeVinney, had been in contact with Greg and was avidly following the restoration's progress, and she was able to fill in some gaps with information that was otherwise unavailable. She even recalled that her first airplane ride was in one of the PT-6's, while she was age 3.

The instrument panel is as it was, with only the addition of a removable modern radio package on the co-pilot's side. Added to the cockpit when the electric starter was installed was a large starter switch, one that looked

## THE BUHL SPORT AIRSEDAN

Alongside the Cunningham-Hall during EAA Oshkosh '97 was another recently completed restoration by HO Aircraft. It too belongs to Greg Herrick's Yellowstone Aviation, and is an historical airplane in its own right.

The Buhl Sport Airsedan, Model CA-3D/E, NC 8451, S/N 57 was built in 1929 by the Buhl Aircraft Company of Marysville, MI, and purchased by the Packard Motor Company, so it could be equipped with the new Packard Diesel engine they hoped to bring to the marketplace. Packard paid \$8,566.67 for the brand new airplane. Originally, a factory fresh 300 hp Wright J-6-9 engine was installed, which was removed to mount the newest Packard product. The Packard Diesel logo was painted on each side of the cowling while they owned it, and the airplane was used for extensive testing of the new engine. Sadly, with the tragic death of the engine's designer, L. M. Woolson, the Packard Diesel project was abandoned by the company as the economic grip of the Depression tightened on the nation.

As efforts are being made today to

**(Left) How about a cabin hatch in the roof so long, bulky items can be lowered into the cabin? Still can't get it in? Then you may have to try the method they used one time to haul 20 ft. sections of steel pipe. They undid the lower cowl skin just forward of the cockpit, and slid the tubing into the fuselage!**

like it had come right off a tractor. Mounted halfway up the firewall, you have to really lean on it to make contact and engage the starter.

With the exception of the seat cushions, there is absolutely no sound insulation or padding in either the cockpit or the cabin, making the Cunningham-Hall one rowdy airplane to sit in without headsets. The cabin has a volume of 156 cu. ft., so it's one big echo chamber with aluminum sides and

introduce the diesel engine to the mainstream of aviation once again, one can't help wonder "what if?" when it comes to the Packard Diesel engine project.

The historical achievements of this particular airplane were not completed yet. After Packard was finished with the airplane, they sold it to Aeroposta Argentina, and it was exported to Latin America in 1931. In 1934, a man destined for a higher purpose flew in the Buhl. Cardinal Monsignor Paceli went for a ride over Buenos Aires, Argentina while he was in the city attending the International Eucharistical Congress. Not much later, he was elected Pope Pius XII.

The airplane restored by HO aircraft was a much deeper restoration project than the Cunningham-Hall, particularly as far as research was concerned. Major pieces of the airframe needed to be fabricated or replaced, and the interior was a real puzzle that needed to be figured out. A beautiful nickel-plated French throttle quadrant had been installed at one time, and this was retained. Another wonderful find was made when it was discovered that the dome light in the cabin could still be bought new, from the original manufacturer, who were still using the same dies they had since the 1920s.

Pinning down details can often be done using photographs, and to that end, Greg contacted Susan Lurvey, EAA's Librarian, to see if there were

Plexiglas™ windows. On the passenger versions, the back side of the interior panels was filled with "balsam wool" as the sound and temperature insulation.

The wheels are original to the airplane, although the tires are not — the big soft bouncy airwheels are just not to be found, although if they could, they would add to the shock absorption abilities of the two struts on each of the main landing gear tripods. A big, beefy tailwheel completes the landing gear, and gives the Cunningham-Hall excellent rough field capabilities.

Stripped down to the bare airframe by plastic media blasting, and with all of the years of accumulated paint (the wings needed to be dipped in paint remover in Chicago)

and grime removed, the structure was pretty intact. Some weld repairs needed to be done to the steel wing structure, and many of the ribs needed to be riveted, but the basic airframe was in good shape. After the repairs were made, epoxy primer was used throughout, giving the airframe a good chance of seeing another 60 years of service.

The sheet metal work was extensive, since most of it had been "well used" during the years the airplane was in service. The effort included rebuilding the doors and constructing the cockpit door inside the cabin. At some point in time the door had been removed, and lost, so a new one needed to be built. The biggest obstacle to be met was from a material standpoint. The corrugated aluminum that lines the



JIM KOEPNICK

any Buhl Airedan photos in the collection. There were photos in the Boeing Aeronautical Library, a collection of seven glass plate negatives, all of the same airplane. After they were printed, to Greg's great surprise, he discovered they were all of this very airplane while it was owned by Packard, the exact same airplane they were restoring. You couldn't beat that for documentation!

The airplane is restored in the colors shown in those photographs, including special paint for the wings that glitters with real gold, not brass powder, just as the airplane was originally painted! No airworthy examples of the Packard Diesel are currently available, so the airplane has a powerplant similar to the original engine, a Wright J-6-9. Installed on the sesquiplane now is a more reliable 440 hp Wright R-975. Another aspect to the installation of a Packard diesel

engine is the special Hamilton-Standard prop that is needed. It too is very rare, and is a must if the engine/prop combination is to be pronounced airworthy.

Restorations of historical airplanes can be both fascinating, fun and frustrating all at the same time. Thankfully, there are men and women who will take on such a challenge and see it through, resulting in beautiful restorations like the Cunningham-Hall and the Buhl Sport Airedan. During EAA Oshkosh, both aircraft were selected as award winners — The Cunningham-Hall was awarded the Bronze Age Outstanding Closed Cockpit Biplane, and the Buhl Sport Airedan was selected as the Runner Up, Silver Age award winner. We look forward to the next projects from the cooperation of Greg Herrick's Yellowstone Aviation and HO Aircraft of Anoka, MN.



The cabin is lined with corrugated aluminum, and can hold up to 156 cu. ft. of cargo. The doorway at the front of the cabin is normally filled with a door, which is shown removed in this shot. It was one of just a very few items that had to be completely built from scratch during the restoration of the biplane.

interior and exterior of the cabin was not something you could just order out of your handy airplane supply catalog. Who still had some? Who still used it? The answer — the San Diego Aerospace Museum. They had just completed a total, stunning restoration of their Ford 5-AT-B Tri Motor, and still had some pieces left over. Plus, and this was a big plus, they had the set of original Ford dies used to corrugate the aluminum used on the original Ford Tri Motors, and when you held up a piece next to the Cunningham-Hall, it was identical! With the extra corrugated aluminum, Tim Cunningham (no relation) was able to provide from the San Diego museum, and the dies available to make more if needed, the restoration could really be first-rate. They were in business, and with the crimping and folding technique known to their lead sheet metal man, Curt Storby, and with help from Tom Oostdik, the beautiful lines of the C-H started to come together. Curt is a sheet metal man from the old school, and knew many of the tricks and twists that it would take to get the metal looking new. Amy Green did the excellent fabric work, and Dan White, who is HO Aircraft's manager, was able to fit the various pieces into HO's paint booth.

The paint question. This was a big



(Left) If the cargo is too bulky, or you just don't want to disturb it (the horses come to mind!), you can enter the cockpit through a door — there's one on each side. The huge exhaust is just as it was when the airplane was working in the wilderness.



(Left and below) The cockpit is still just as it was while the Cunningham-Hall was working the bush in Alaska and the northwestern U.S., although it's probably a lot cleaner than those days! The only addition is a removable radio stack mounted on the right side, between the co-pilot's legs. The co-pilot's seat (inset) is a novel affair — it can be folded and then stowed below the cockpit floor, giving a few more crucial feet to the cargo compartment.



tique airplanes into Oshkosh and parked them side-by-side in the Antique parking area of the Convention grounds. Once there, it didn't take long for the crowds to start gathering, and with the possible exception of late evening and early morning, they always had a crowd around them. For

piece to ponder, for Greg couldn't bring himself to have the airplane painted the original factory colors, at least not yet. When delivered from the factory, it had a black fuselage with red-orange wings, similar in color to the shade used on the Travel Air 6000. What could he do? It looked so nice, all shiny and bright like a new dime, so he compromised — it will stay natural aluminum for a while, until it needs a paint job, at which point it will go back to black with orange wings and tail.

Although it looked like the Cunningham-Hall would be done with plenty of time before EAA Oshkosh '97, Murphy has a way of fiddling with things, so that the final sign off was just three days before the big show. With its newest stable mate, the Buhl Sport Air Sedan alongside, the Cunningham-Hall PT-6F thundered across Wisconsin from Anoka, MN, piloted by retired Northwest Airlines pilot, Harry Thibault, and his son Steve, who is a flight instructor. The two pilots brought the pair of an-

most of us, both the Buhl and the C-H had never been seen in anything but the pages of Joe Juptner's nine volume set, **U.S. Civil Aircraft**, and yet here they were, very rare examples of their kind for us to smell and photograph and shake our heads in collective wonderment.

There was one other gesture by Greg that helped cement the attraction many felt for the airplanes. For each, he published a small booklet detailing the history of the airplanes, and they were free to anyone who viewed the pair at the Convention. Nicely written and illustrated with photos, they were a nice touch that was appreciated by members and guests alike.

The Cunningham-Hall is the only one of its kind left, and the Buhl nearly so. Thanks to the dedication of men like Gene Frank, who saved the Cunningham from extinction, and Greg Herrick and HO Aircraft, who rebuilt it to new glory, we can enjoy these remarkable aircraft once again. ♦