

# VINTAGE PLANE



The Magazine of the **EAA VINTAGE AIRCRAFT ASSOCIATION**

MAY 2002

# VINTAGE

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# STRAIGHT & LEVEL

BY ESPIE "BUTCH" JOYCE  
PRESIDENT, VINTAGE ASSOCIATION

## Friends, Sun 'n Fun, and the Red Barn

I was at the 2002 Sun 'n Fun EAA Fly-In for the week, and I must say that the weather was great this year. The Vintage area parking crews had their hands full because this year a record-breaking number of vintage aircraft attended according to the physical count done on the field each day.

The most outstanding aircraft in the Vintage area was the Aeronca Chief owned by Paul Gould of Sardinia, Ohio. This restoration is most outstanding, and with any luck you will be able to see this aircraft at EAA AirVenture Oshkosh this year. Paul had the airplane at last year's EAA AirVenture, where it won the Reserve Grand Champion Classic Silver Lindy. A number of other aircraft that would cause you to pause and look them over were there as well.

The VAA has just this year created a judging category that recognizes champion custom aircraft, and there is a need for this award. Just as people have taken older cars and converted them into street rods, we saw this trend at Lakeland this year. There were several aircraft that would fit into the custom award category, and the workmanship was just outstanding. These aircraft and owners told me they would be at Oshkosh this year as well.

VAA Chapter 1 was having a great time hosting the Vintage headquarters building. It was a great place to catch up with friends during the day, sit back on the front porch, drink some lemonade, and eat popcorn. Because of the times, security was notched up somewhat, but it seemed to me that everyone was taking the small delays in stride. The attitude of the attendees was positive. It seemed everyone was determined to show the world that aviation was here to stay.

John Burton and the Sun 'n Fun folks made the stay a pleasant one for Norma and me. Also, a special thanks to Jo and Duffy Thomas for their extra effort to make Norma and me feel at home. It was great to see our friends Billy and Adair Henderson and be able to visit with them as

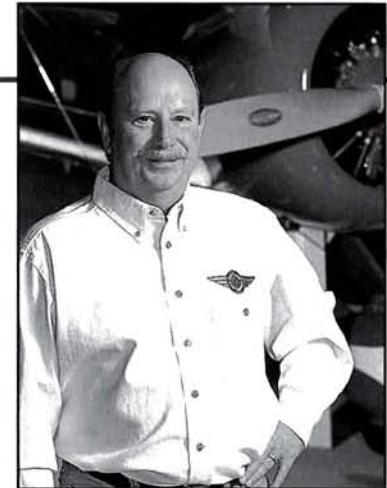
well. It made me proud to be a part of this event, and you know I will be back next year, as long as the creek doesn't rise.

As we now look forward to EAA AirVenture 2002, there are quite a few events that will take place in the months of May, June, and July. Some of our favorites include the National Biplane Association's convention at Bartlesville, Oklahoma, , The American Waco Fly-In at Creve Coeur, Missouri, and the SAA fly-in at Champaign, Illinois. There are plenty local events around the country as well. Looking at this list, it does not take long to realize that aviation is alive and well!

Many of you will by now have received my letter outlining our new program, the "Friends of the Red Barn." Many of you have visited Oshkosh and have been in and around the VAA headquarters building we refer to as the Red Barn. Even with this year's rather short time frame, a good number of you have already responded, and I really appreciate it! These funds will be used to operate VAA programs in the VAA area during EAA AirVenture and to improve the VAA area of the convention grounds. Both uses will benefit VAA members who attend this great event and enjoy our area.

We have a number of programs at EAA AirVenture that are not found in other areas of the grounds. For example, we give each member who brings an aircraft to the fly-in a participant plaque to take home. During the week we operate a special unit, "Toni's Red Carpet Express," to help members move their baggage to and from their aircraft.

The VAA also gives each volunteer a special name badge and a VAA volunteer cap. You might be surprised how many folks it takes to put on a fly-in of this size. We have some 60 chairman and 350 to 400 individual volunteers who help out during the two weeks surrounding the convention. We also host a special party for



volunteers with pizza and beverages—have you ever bought a couple hundred large pizzas?

We have a volunteer center, which is open daily during convention for an air-conditioned break and a snack. We operate a Type Club tent so that the membership can visit with the type clubs to which they belong. We have a special metalworking area that allows members to try hands-on techniques with experienced craftsmen. Members will now receive a special 10 percent discount on merchandise that is available at the VAA store during convention. We host the OX-5 area next to the Red Barn.

We have a special quiet area for those who might need a break or to rest during the day. We have our own AeroGram newsletter that is posted each day so that members can be aware of what activities are occurring in the area. We have a free tram that tours the Vintage area each day. We pay for the Vintage Awards (those below the Lindy awards—EAA covers the cost of the Lindys), which are given to the award winners that own those great airplanes. We own a number of the scooters that you see used by our volunteers while parking aircraft each day. Each year over a number of weekends, a group of hardcore volunteers does a good deal of maintenance to VAA buildings, trailers, point buildings, and judges' headquarters. We also have ongoing new projects to help improve the VAA area of convention grounds for the membership and visitors.

So you can see this requires a few bucks. Again, thank you for your help! Let's all pull in the same direction for the good of aviation. Remember, we are better together. Join us and have it all!

# VAA NEWS

COMPILED BY H.G. FRAUTSCHY

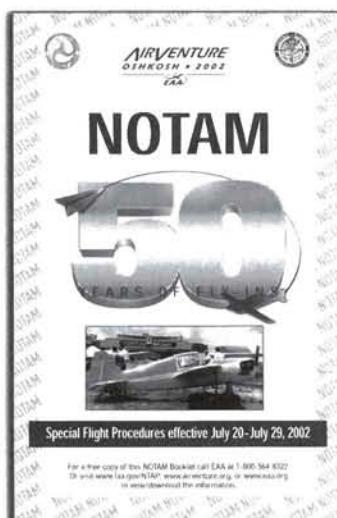
## 75TH ANNIVERSARY OF LINDBERGH'S SOLO CROSSING

MAY 20-21 1927. THE 33-1/2 HOURS used by Charles Lindbergh to cross the Atlantic from New York to Paris over those two days changed how people viewed the world, and in the coming years, transoceanic flight became a reality that today is simply an accepted part of daily life. Take a few moments on these days to remember what the state of aviation was on those amazing days, and lift a glass in toast to the 75th anniversary of what was the dawn of acceptance for the general public and aviation. Using the best available technology of the day, including a state of the art engine (the Wright J-4 Whirlwind) and instruments (including the new Sperry Turn Indicator and the

Earth Inductor Compass), Lindbergh carefully and methodically stacked the cards in his favor, so to him and many in aviation, it wasn't a surprise that he succeeded. He planned it that way. Today, with the hindsight and extraordinary gains in technology, most of us would never attempt such a flight in the *Spirit of St. Louis*, but at that time, the purpose-built, sleek monoplane was exactly what was needed to fly the Atlantic. And he did it first. Moreover, he inspired countless generations to get into the air and do something. Aviation advanced and America progressed on the wave of enthusiasm that engulfed the nation and the world. It was quite a time.

Here's to you, Charles Lindbergh!

## AirVenture NOTAM Now Available



The FAA-approved, EAA-designed AirVenture Oshkosh 2002 Notice to Airmen (NOTAM) is now available in *web-viewable format*, as well as in a downloadable and printable Adobe pdf file. A 30-page printed version is expected to become available sometime in mid-May, according to the FAA. You can order your copy today through EAA Membership Services at 1-800-JOIN-EAA (1-800-564-6322) or through any one of 15 selected Automated Flight Service Stations (AFSS) throughout the country. Canadian pilots looking for a printed copy should contact Transport Canada, General Aviation, at 613-990-1022.

All pilots of vintage aircraft not equipped with an electrical system and two-way radio are encouraged to use a handheld radio and a headset for their VFR arrival. If that is not possible, a special No-Radio (NORDO) clearance has been developed. Please be sure to obtain a copy of the NOTAM and review it carefully.

## VAA PICNIC

This year's VAA Picnic will be held at the EAA Nature Center Pavilion the evening of Wednesday, July 24, 2002. That's a bit earlier than in past years, so you'll need to plan on picking up your tickets right after you arrive at EAA AirVenture Oshkosh. Tickets can be purchased at the VAA Red Barn Information Center.

## RED BARN STORE

The VAA Red Barn store, chock full of great VAA logo merchandise and other great gear, will be open all week long. On the evening of Thursday, July 25, 2002, there will be a special VAA Members Only sale. Bring your VAA card (or your receipt showing you joined VAA at the Convention) and you'll receive an additional discount on specially priced merchandise. The VAA Members Only sale will be from 7-9 pm. See you there!

**FRONT COVER:** Andrew King's amazing time machine, his 1929 Ryan M-1. Andrew's Ryan was awarded the Champion Golden Age (1918-1927) Bronze Lindy at EAA AirVenture Oshkosh 2001. EAA photo by LeeAnn Abrams, shot with a Canon EOS in equipped with an 80-200 mm lens on 100 ASA Fuji slide film. EAA Cessna 210 photo plane flown by Bruce Moore.

**BACK COVER:** EAA has built two replicas of Charles Lindbergh's *Spirit of St. Louis*. The first has been on display in the EAA AirVenture Museum for over a decade, and the second now graces the skies over Pioneer Airport and occasionally the Midwest at special events. This shot by EAA chief photographer Jim Koepnick is of the second Ryan NYP constructed by EAA. The airplane also was one of three used to recreate the transcontinental flight of Lindbergh from San Diego to New York. On May 13, George Daubner will fly the EAA Spirit from St. Louis to New York as part of the 75th anniversary celebration of this epic flight. Kermit Weeks will fly commercially to Paris where he will fly the *Spirit* replica owned by Fantasy of Flight in a recreation of Lindbergh's arrival at LeBourget field, just outside Paris.

## PANCAKE BREAKFAST

We've been working on solving the problem of food service on the south end of Wittman field for a couple of years, and we're pleased to announce the first step—breakfast!

Starting with this year's convention, the VAA will be opening the Vintage Tall Pines Café, located just to the south of the ultralight runway, just north of the bus stop and shower facilities. We'll offer a limited breakfast menu starting the weekend before



EAA AirVenture starts.

One of the most enjoyable times many of us can recall has been centered around local fly-ins combined with a great pancake breakfast, and that's just what we'll have on hand, for a price we hope you'll find very palatable!

If the VAA Tall Pines Café proves to be a success, we'll look forward to expanding the offerings and schedule in the coming years. Come join us for a cup of coffee and hearty pancakes!

## CD Writer

As more of us use digital photography to capture our memories of special events, we're caught by one fact of life—those little Compact Flash or Smart Media cards don't always hold all the pictures we'd like to take. We're going to help you with this dilemma by offering to download your images and burn them to a compact disc (CD), all for a nominal fee. Bring your digital camera to the VAA Red Barn, and see how easy it is to savor your stay in Oshkosh.

## VAA's "Friends of The Red Barn"

The Vintage Aircraft Association is a major participant in the World's Largest Annual Sport Aviation Event – EAA AirVenture Oshkosh! The Vintage Division hosts and parks over 2,000 vintage airplanes each year from the Red Barn area of Wittman Field south to the perimeter of the airport.

The financial support for the various activities in connection with the week-long event in the Red Barn area has been principally derived from the Vintage Aircraft Association's general income fund. The Vintage Board has elected to more properly underwrite the annual Vintage Red Barn area Convention activities from a yearly special convention support fund.

For the July 2002 Convention, the Vintage Aircraft Association is establishing the "Friends of the Red Barn" program to financially support the Vintage Aircraft Division's activities during AirVenture Oshkosh.

This fundraising program will be an annual affair, beginning each year on July 1 and ending June 30 of the following year. However, for the July 2002 Convention, the initial fund raising program will run from April 15, 2002, and extend through June 30, 2002. There will be three levels of gifts and gift recognition:

**Vintage Gold Level** - \$600.00 and above per year gift

**Vintage Silver Level** - \$300.00 per year gift

**Vintage Bronze Level** - \$100.00 per year gift

Each contribution at one of these levels entitles you to a **Certificate of Appreciation** from the Division. Your name will be listed as

## VAA 2002 Convention Fund Raising Program

a contributor in *Vintage Airplane* magazine, and you will be presented with a **special name badge** recognizing your level of participation. During AirVenture, you'll have access to the **Red Barn Volunteer Center**, and we'll host you on a **special tram tour** of the VAA convention grounds.

**Gold Level** contributors will also receive a pair of certificates each good for a **flight on EAA's Ford Trimotor**, redeemable during AirVenture or during the summer flying season with your paid admission to the EAA AirVenture Museum and its Pioneer Airport. **Silver Level** contributors will receive one certificate for a **flight on the Ford Trimotor**.

This is a "first ever" opportunity for all Vintage members to join together as a special circle of key financial supporters of the Vintage Division. It will be a truly rewarding experience for each of us as individuals to be part of supporting the finest gathering of Antique, Classic and Contemporary airplanes in the world.

Won't you please join those of us who recognize the tremendously valuable key role the Vintage Aircraft Association has played in preserving the great grass roots and general aviation airplanes of the last 99 years? Your participation in this special circle of EAA's Vintage Aircraft Association Friends of the Red Barn group will help insure the very finest in AirVenture Oshkosh Vintage Red Barn Programs.

For those of you who wish to contribute, we've included a copy of the contribution form. Feel free to copy it and mail it to VAA headquarters with your donation.

## 2002 VAA Friends of the Red Barn

Name \_\_\_\_\_ EAA # \_\_\_\_\_ VAA # \_\_\_\_\_

Address \_\_\_\_\_

City/State/Zip \_\_\_\_\_

Phone \_\_\_\_\_ E-Mail \_\_\_\_\_

Please choose your level of participation:

**Vintage Gold Level Friend** - \$600.00

**Vintage Silver Level Friend** - \$300.00

**Vintage Bronze Level Friend** - \$100.00

Payment Enclosed

Please Charge my credit card (below)

Credit Card Number \_\_\_\_\_ Expiration Date \_\_\_\_\_

Signature \_\_\_\_\_

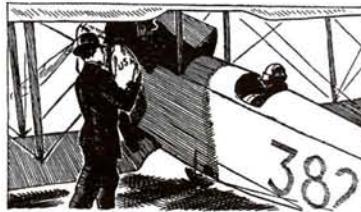
\*Do you or your spouse work for a matching gift company? If so, this gift may qualify for a matching donation. Please ask your Human Resources department for the appropriate form.

Name of Company \_\_\_\_\_

The Vintage Aircraft Association is a non-profit educational organization under IRS 501c3 rules. Under Federal Law, the deduction from Federal Income tax for charitable contributions is limited to the amount by which any money (and the value of any property other than money) contributed exceeds the value of the goods or services provided in exchange for the contribution. An appropriate receipt acknowledging your gift will be sent to you for IRS gift reporting reasons.

Mail your contribution to:  
**EAA**  
**VINTAGE AIRCRAFT ASSOC.**  
**PO Box 3086**  
**OSHKOSH, WI 54901-3086**

# VAA AEROMAIL



Dear Bob,

Do you remember August 28, 1994?

I remember the day clearly. The warm sun was high overhead. A brisk wind blew up dirt and clippings from the newly mown field, forming tiny tornadoes as they traveled down the tarmac. Sitting quietly in the grass was a tiny blue and yellow taildragger. "That's a Pober Junior Ace," a jolly, tall man told me, eyeglasses perched precariously on his nose. "It was built by hand," he continued, but I was only partially listening. My eyes caressed the creation from the shiny wood prop to the oil-streaked belly. This plane was a thing of beauty. I ran my hand along the wing, my fingers gingerly touching the fabric and delicate stitching. The plane looked perfect, its tiny wheels chocked by old faded triangles of wood connected by a frayed, barely yellow rope. The smell of burned avgas and exhaust filled my lungs. The pilot walked around the airplane. Like a lost puppy, I followed him, absorbing everything and nothing at all. He explained of ailerons, and engines, rudders, and elevators, even bolts and wires that kept the airplane together. Emotions of flight filled my mind. I twirled around shaking with anticipation.

There was a long expanse of grass, old hangars and trucks, and this little plane. Blue, yellow, and proud, it stood gracefully on the ramp. I knew it didn't belong here. Up in the air, riding the light zephyrs, playing hide and seek with the eagles, dodging the clouds, that was where this thing of beauty belonged. And for the first time, I was going to experience the thrill of its open cockpit.

The rest of the story becomes a blur. I can hardly remember the takeoff and landing, but the wind in my face, the incredible view, the freedom of flight all made a lasting impression, a wonderful adventure etched in my mind for all time. I often return to that small grass strip in Oshkosh and relive the wonderful feeling I felt for the first time. Occasionally, I see a young child following in my footsteps, and I can't help but revel in the joy I know he or she must be feeling. I haven't seen that Pober Junior Ace in a number of years, but I can still feel it in my blood. Every time I take the controls of an aircraft, be it a Cessna, Beech, or Piper Cub, I feel the same excitement, anticipation, and joy as those three wheels depart the ground. If only for a moment, I become part of the aircraft, free and weightless. I've come to realize that the sky is not my limit. It is my playground!

Of course, my first flight was a number of years ago. Since then I have flown many different planes, from soloing in a Piper Tri-Pacer in 1996 to taking my commercial checkride in a Cessna 182RG. But on that magical day in 1994, my fate was sealed!

There is one person to whom I am most grateful: Bob Lumley. Bob, you took me on my first airplane ride, and sent me a subscription to *Vintage Airplane* when I received my private certificate. I shall never forget these acts of kindness. They have set in motion a chain of events that have directed and positively impacted my life. I continue to look up to a man I respect and admire. My hope is to contribute as much to some other aspiring pilot's dream as you have to mine. I am writing this letter, Bob, to let you know what I have been up to, to thank you for your support, and to let you know I hope to follow in your footsteps and have a positive impact on other young aviators' lives as you have had on mine.

I am now 21 years old and a newly minted CFI. I am attending school at St. Cloud State University in St. Cloud, Minnesota, where I am majoring in aviation science with an emphasis in professional flight. While the events of September 11 have left the aviation industry in a slight slump, I still look to the future with great anticipation. I have enjoyed the little instruction I have given, and I found it to be not only rewarding but also extremely enjoyable. Just a few months ago I did a presentation for a troop of Boy Scouts, and took a number of them up on their first Young Eagles rides. The joy in their faces was unmatchable, and I truly believe I had more fun flying with them than they did.

Sean Gonia  
St. Cloud, Minnesota

*We've passed the 770,000 Young Eagles mark, and many of them were flown in antique, classic, and contemporary airplanes. We're all looking forward to a great season flying enthusiastic young people like Sean. Let's all get out there and fly our 10 for 2002!—HGF*

## Remembering Long Ago

Boy, did Bruce Miller's article on "Jack and the Airport Kid" bring back memories. I just went back to an old file on our model airplane club and found the following, which I wrote up about 15 years ago:

"Then there were the trips to the St. Charles Air Activities Airport in the coupe—

with kids in/on Cliff's car, the rumble seat, on the fenders, and on the running boards. Jack Jaehnnecke's aircraft collection would be a museum today—two autogyros, several primary gliders (one with a fuselage 'pod'), a Stinson Jr., some Waco and Travel Air biplanes (one elephant-eared 'Wichita Fokker' Travel Air 2000), and a couple of Heath Parasols. (Jack walked with a limp because of an injury while testing one such homebuilt. When he crashed, his high-top-booted foot was caught in the framework. It was said they pulled him out of the boot to get him out before it burned. That was the story at least.) The most modern plane there was the brand new Cessna Airmaster owned by the president of the Wander Co. and named Little Orphan Annie, complete with a decal of Annie on the cowl. It was painted Ovaltine brown with Ovaltine orange trim. There was an old Liberty engine on a stand in the back 'classroom' corner of the hangar. Our dream was to fly with Jack to the Cleveland National Air Races in the Stinson Jr.—which he did every year with friends. I doubt if he'd have wanted a bunch of kids!

"Yeah, we loved those trips to the airport. We went out there once to fly our planes. Jack told us to stay off the active runway. However, we gradually drifted over that way as we chased planes, so he came at us with the Stinson Jr., holding it down until he was almost to us before taking off. We didn't get the hint, so he landed and taxied up and 'told' us to get off to the side. I think that was a Prop Buster club trip that time."

The date of the above events was probably around 1938 to 1940 when I was 12 to 14 years old. I lived in Geneva, Illinois, and was a member of the St. Charles Prop Busters model club. As you can see, Bruce and I have different memories of Little Orphan Annie. (Monocoupe/Cessna Airmaster—maybe one replaced the other). I never really knew Jack, but I sure admired him. I too remember that old Aeronca C-3—or was it a C-2. I remember it dragged on the grass when it taxied!

Also in the list of "ghosts," Cap. Kohlert is mentioned. Kohlert's garage was the only place we could buy the 70 weight motor oil that we mixed with gasoline for our old Brown D's and Ohlsson 23s of those days!

Flying has been part of my life, mostly as a passenger, but I did work with JAARS in Peru (the air arm of Wycliffe Bible Translators) back in the early '50s. I worked in flight and maintenance. Then I married and moved into bible translation work in Ecuador where my wife and I worked with the Cofan people. One of our pilots there was my good friend, Bob Griffin, well known at Oshkosh, representing JAARS.

Thanks to Bruce Miller for his memories to add to mine!

Cordially,  
M. Bub Borman  
Dallas, Texas



## FEBRUARY'S MYSTERY PLANE

THE WEDELL-WILLIAMS WE WILL JR.

**L**et's get started right away with a letter from a regular participant in our monthly quiz:

Your February issue Mystery Plane is the Wedell-Williams We Will, NR-9471, S/N 101. Their first racer was built in 1929 with a 180-hp Hisso engine. However, Wedell-Williams modified the S/N 101, NR NO-9471 racer with a Hisso engine, becoming NR-278V, S/N 103. So the unfinished state of the mystery plane photo could be either one. This racer was also rebuilt in 1931 and became the first model 44.

Robert Taylor  
President,  
Antique Airplane Association

*We also heard from across the Pacific:*

Now, the February Mystery Plane is without a doubt the very early version of the Wedell-Williams "We Will" which later became the famous No. 44. The photo appears to have been taken in late 1929, and if you examine the photo, you can see that the outer wing panels are covered, but the belly from the wing attachment point to wing attachment point is still uncovered, and the radiator is not yet fitted. The 180-hp Hisso is very clear, as is the support ring for the forward cowl. A slightly later picture appears on page 275 of the EAA publication, *The Golden Age of Air Racing*. It must have been fun to land with those great big wheels, thin tyres and what looks to be no suspension.



BY H.G. FRAUTSCHY

JN.

Just a side note. What a brilliant engine the Hisso was. It featured very clever engineering and was way ahead of its time. In Australia, the very first engine to be approved for "manufacture" was the Harkness Hornet, which was basically half a Hisso. I had an original unmarked data plate years ago but can't find it.

Regards and keep up the good work.

David Dent  
Camden, New South Wales,  
Australia.

Other correct answers were received from: George Jevnager, Hopkins, Minnesota; Jake DeWan, Towanda, Pennsylvania; Dale Crane, Basin, Wyoming; Walter Albert, Ocala, Florida.

**THIS MONTH'S MYSTERY PLANE COMES TO US VIA THE COLLECTION OF CHARLES TRASK, YORK HAVEN, PENNSYLVANIA.**



SEND YOUR ANSWER TO: EAA, VINTAGE AIRPLANE, P.O. BOX 3086, OSHKOSH, WI 54903-3086. YOUR ANSWER NEEDS TO BE IN NO LATER THAN JUNE 10 FOR INCLUSION IN THE AUGUST 2002 ISSUE OF VINTAGE AIRPLANE.

YOU CAN ALSO SEND YOUR RESPONSE VIA E-MAIL. SEND YOUR ANSWER TO [vintage@eaa.org](mailto:vintage@eaa.org).

BE SURE TO INCLUDE BOTH YOUR NAME AND ADDRESS (ESPECIALLY YOUR CITY AND STATE!) IN THE BODY OF YOUR NOTE AND PUT "(MONTH) MYSTERY PLANE" IN THE SUBJECT LINE.

# Howard Stark

## The pioneer aviator of instrument flying

BY JOHN M. MILLER

First printed in the magazine of the *American Bonanza Society*, January 2000

*In about 1923 I became acquainted with Howard Stark when we both happened to be riding our motorcycles to Connecticut to an air show at Bethany Flying Field in Naugatuck. Howard's flying career and mine started about the same time. I would like you to know more about the accomplishments of this very shy and extremely modest person. This is a greatly condensed version of his career.*

Howard Stark was born before the turn of the 20<sup>th</sup> century on a farm at Pawling, New York. This typical farm boy was drafted into the U.S. Army in World War I, and since he knew how to drive an automobile, not a common skill at that time, he was assigned as the driver for a general.

While in France, he observed the military airplanes and decided he would like to fly. But without the required education, he was not accepted for transfer to flight training. Eddie Rickenbacker, a driver for General Pershing, had been accepted without the required education because of his fame as an automobile race driver. Rickenbacker became the ranking ace of American pilots in France. (Incidentally, I had the honor of knowing Captain Eddie well and worked for him as a captain on Eastern Air Lines.)

After World War I was over, many surplus Jenny training planes were sold to Curtiss, their original manufacturer, in Mineola, New York. Curtiss advertised them for sale for only \$500, about one-twentieth of their original price, together with some instruction for flying them. In the early 1920s, \$500 was the equivalent of perhaps \$10,000 today. Saving that much was quite an accomplishment for a country farm worker.

Howard saved for the \$500 purchase price while working on his father's farm and driving a car for a nearby family. He bought one of those surplus Jennys, was assisted in assembling it at Curtiss Field at the factory, and then was given a mere two hours of flying instruction. That's about eight hours less than is usually required for learning to fly well enough to safely solo.

There were no aviation regulations in those days, and Howard flew the airplane to his father's farm, crossing Long Island Sound on the way—a really surprising navigational accomplishment for such a neophyte pilot. Unfortunately, his inexperience showed when he crashed while attempting to land in a very short field.

### Flying for Pay

The way to make a living with your airplane in those early days was to barnstorm from place to place, taking passengers up on their first air flights. There were no airlines, only the U.S. Post Office Airmail Service to California. In 1926, the U.S. Post Office contracted with private corporations to take over the airmail flights. By that time, Howard owned a very modern airplane for its day, a Stinson cabin biplane—one of the first enclosed cabin airplanes manufactured in the United States.

Colonial Airways, the New York to Boston airmail contractor, had a shortage of modern airplanes and tried to buy the Stinson cabin biplane from Howard. Because he wouldn't sell it, they finally rented it and hired him to fly it. That's how Howard started to fly the mail between New York (actually Hadley Field in New Brunswick,

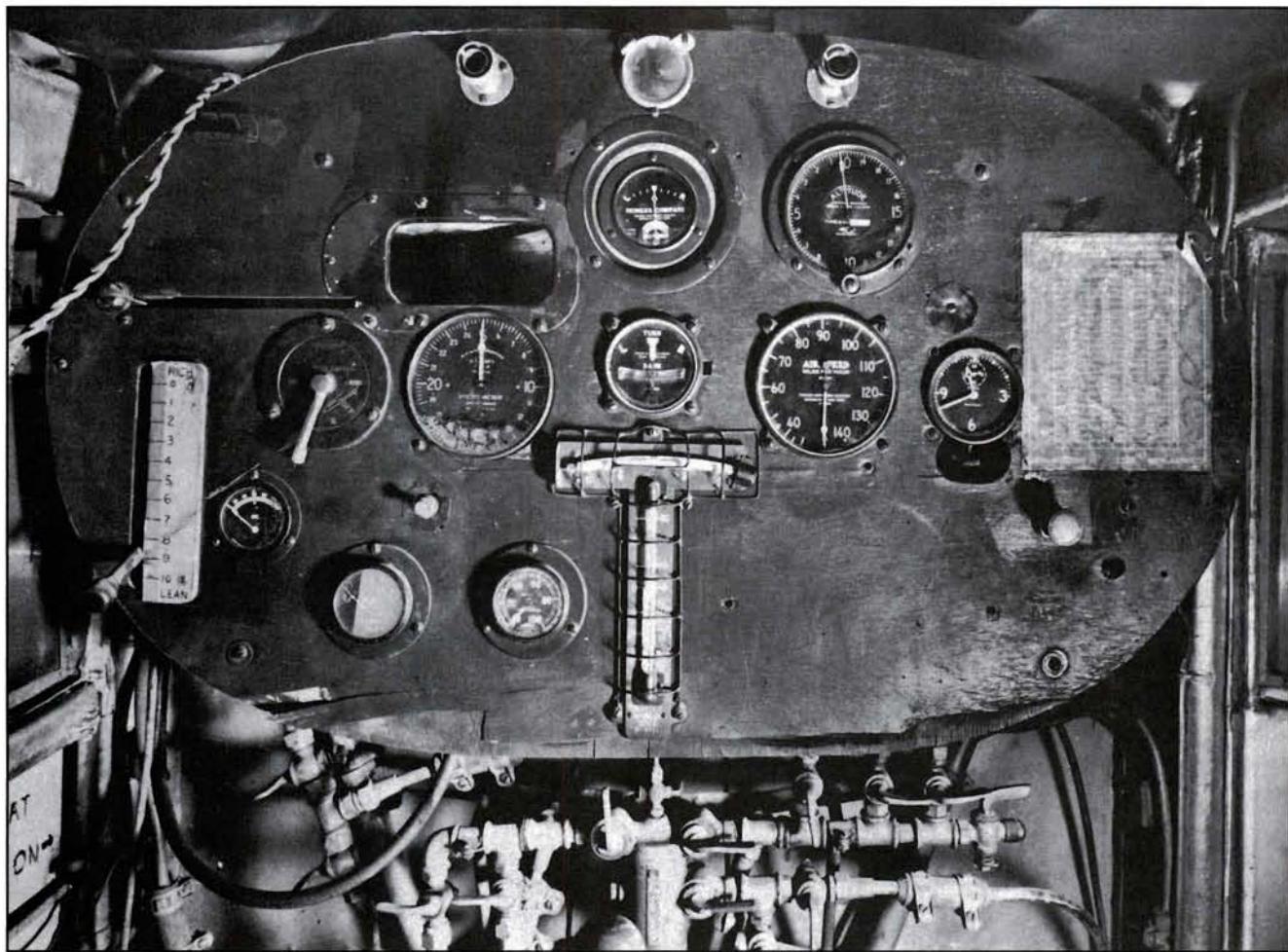
New Jersey) and Boston.

At the time, there was no known way to fly through the fog, so all flying in bad weather was made down low, under the clouds. Attempts to fly higher into the clouds were considered very dangerous. Flying under the overcast also caused a lot of collisions with terrain or other obstructions; therefore, flying the mail was a risky occupation. There were many fatalities, which gave aviation a bad reputation, actually much worse than it deserved.

The Sperry Gyroscope Company attempted to solve the problem of flying in the fog. They invented a small gyroscopic instrument called a "turn indicator" and delivered samples to the Army Air Service. Two experienced Army pilots, Capt. Ocker and Lt. Crane, were assigned the task of evaluating the instrument. They worked on the problem for about a year at San Antonio, Texas.

Then they wrote a report, which was published as a book. It was their conclusion that it was not possible to fly continuously in the fog by referring to that instrument without losing control of the airplane. In fact, the report said that one could not fly for more than about three minutes before losing control.

In the meantime, most of the airmail planes had been equipped with turn indicators, but the pilots soon discovered the same problem as Ocker and Crane. They could use it occasionally to zoom up to clear air; they could pass over the mountains by keeping the airplane going straight. But their attempts to fly for more than three minutes or so always resulted in a loss of control. Quite often



How important was the Turn Indicator instrument to Charles Lindbergh? He placed it in the very center of the instrument panel in the *Spirit of St. Louis*, just above the Rieker Inclinometers. Lindbergh personally thanked Howard Stark for publishing his instructional booklet, which taught him the Stark 1-2-3 System of flying in poor visibility, using the Turn Indicator for reference.

those flights ended in failure when the pilots suffered severe vertigo and disorientation, resulting in a false sense of turning and diving.

Stinson's cabin biplane was equipped with a turn indicator, but fortunately for Howard, he had not heard of the Ocker and Crane experiments. Therefore, he did not know of their conclusion that it was impossible to fly with the turn indicator in the fog for longer than a few minutes.

Except for the fact that he had been told what it was for, Howard viewed the turn indicator as a mystery. He noticed, however, that when he kept his hands off the controls and simply kept the airplane heading straight by referring to the turn indicator and the compass—using his feet on the rudder controls to do so—his airplane flew it-

self very well. The Stinson cabin biplane had a reputation as a very stable airplane. He found that he could fly the entire distance between New York and Boston that way. He simply adjusted the stabilizer trim to maintain his desired altitude, all without touching the control stick.

Across the route of the New York-Boston airmail line there is a low mountain ridge in the vicinity of the Connecticut River. When the cloud ceiling was lower than that ridge, it sometimes was not possible for the pilots to get past the ridge, even by an end run around the south end shore of Long Island Sound where the fog would usually be right down to the surface. When this situation occurred and the pilots could not find a slight gap to squeeze through, they would either

have to land and wait for the conditions to improve or else return to their starting point. This problem caused some fatal accidents when the pilots tried to get over the ridge in the fog.

In this modern day of aviation, people do not realize how many pilots lost their lives flying the mail, as well as others flying in bad weather during those pioneer days. As a matter of fact, from 1918 to 1926, during the Post Office's operation of the Transcontinental Airmail Service alone, there were 42 fatalities.

Even in fair weather, much of the flying was done at low altitude so the pilots could become very familiar with the terrain and the obstructions along their routes. In bad weather some flying was commonly done under ceilings as low as 100 feet or lower. Of course,

there were accidents and that was the very reason Colonial Airways had a shortage of airplanes and the reason they needed Howard's airplane.

Howard discovered that when he flew at a low altitude with his hands off the control stick, as I described, he could adjust the longitudinal trim to climb over the ridge. When he was past it, he would readjust the trim to descend to the original low altitude again on the other side. He recorded the time required to safely pass over the ridge and concluded after several such flights that if he could do it in fair weather, then he should also be able to do it in foggy weather.

### How Howard Got The Mail Through

So he did exactly that when the cloud ceiling was very low, arriving at Boston with the mail, while the west-bound pilot had found it necessary to return to Boston, unable to get over the ridge. Howard would then take that pilot's mail back to New York successfully, much to the embarrassment of the other pilots. They were very rankled when this country farmer pilot out-flew them.

When he explained to the other pilots—all of them experienced ex-Army pilots from World War I—how he had done it, they refused to believe him. They thought he had used a secret gap that he had discovered in the ridge. After one more pilot lost his life, they were finally convinced.

This type of flying was only done practically in a straight line. Whenever Howard attempted to fly in a higher overcast for practice in making turns, he would quickly lose control due to severe vertigo and disorientation. Such attempts invariably resulted in a spiral dive out of the base of the overcast. That was what had happened to several other pilots who had experienced fatal accidents; they dived into the ground or their airplanes disintegrated in the air due to the high-speed spiral dives.

As I said, Howard had not read the Ocker and Crane report and other literature about other pilots having this same difficulty. So he assumed that

since such an instrument existed, *someone* must know, or had known, how to use it. So he set out to teach himself how. The fact was that even the pilots for Sperry Gyroscope Company, the originator, and Pioneer Instrument Co., the manufacturer, were unable to use the turn indicator successfully in turning flight. All of them lost control, so flying by means of the turn indicator was considered to be just an unproven theory.

It was assumed that instrument flying would not be possible until an entirely different type of instrument was developed. Later, of course, Sperry did develop the gyroscopic artificial horizon and the directional gyro. All three instruments in various forms are used to this day and are the backbone of instrument flying.

In the absence of the false information that it was not possible to fly continuously with the turn indicator, my friend Howard was able to analyze the reason for always getting into a spiral dive when he attempted to fly turns in the bottom of the overcast clouds. The false sensations had to be forcibly ignored by the pilot, then the turn had to be stopped—first with the rudder, then the wings leveled by means of the gravity ball indicator, and finally, the airspeed adjusted with the elevator controls.

He accomplished what the scientists at Sperry and all of the other pilots had failed to do: He found that first of all, the pilot had to learn to ignore the false sensations caused by vertigo and must believe the instruments only.

### Stark's 1-2-3 System

To recover from a spiral dive, the pilot had to stop the turn first by reference to the turn needle and then by applying pressure on the rudder pedals. Then the ball had to be entered by the ailerons to level the wings. Third, the dive had to be stopped by means of the elevators and the airspeed indicator and only in the same order. And he knew the reasons for it.

He called it the Stark 1-2-3 System. It consisted of scanning the instru-

ments and making corrections for each reading. In only that way was it possible to regain and maintain control when one got into one of those potentially fatal spiral dives.

This was Howard's important discovery, and it is still known to this day as the Stark 1-2-3 System. All pilots must learn it when they obtain their instrument ratings. The important thing that Howard had learned was that vertigo had to be ignored by the pilot's own sheer willpower and complete dependence had to be maintained on the readings of the instruments.

### Blind or Instrument Flying?

With the assistance of his wife, Howard wrote and published a pamphlet called "Blind or Instrument Flying?" By "blind flying," he meant, "trying to fly in fog without instruments," hence the use of the question mark. He distributed the pamphlet by mail. He did not realize that he should have submitted the information to a scientific publication.

Numerous pilots bought the pamphlet. He gave me one and I used it successfully. In it he explained that those teaching themselves to fly in the clouds by the turn and bank indicator must learn to ignore the many false sensations that they were always certain to experience from vertigo. They must force themselves to believe in the instrument readings only and to use them in the proper 1-2-3 order.

After instructing the Colonial Airways pilots in the use of his 1-2-3 System, word spread about him. When the information reached National Air Transport, the contractor airmail line from New York to Chicago, they requested that Howard teach their chief pilots to use the turn indicator properly. Boeing Air Transport, the airmail contractor from Chicago to the West Coast, used Howard's instruction also. (Those two airlines later combined and along with Varney Airlines, formed today's United Airlines.)

The word spread quickly and American Airlines, Transcontinental Air Transport, and Western Air Express fol-

lowed. The latter two later combined to form TWA. The Royal Dutch Airline (KLM) hired Howard to go to Holland to teach their pilots. Pilots of Lufthansa and British Imperial Airways (now British Airways) were soon using Howard's 1-2-3 System, too. He became a pilot for Eastern Air Transport (later EAL) and taught their pilots.

He wrote some more updated pamphlets on the subject of instrument flying as the artificial horizon and directional gyro were developed and the radio range navigation system was installed. Howard became very well known in airline aviation. The U.S. Department of Commerce, Aeronautics Branch, employed him to teach their inspectors to use the turn indicator so they could make regulations for instrument flying (IFR) and finally for air traffic control, as we know it today.

In 1927 I deferred my flying while studying mechanical engineering at Pratt Institute of Technology. Several pilots were preparing to fly across the Atlantic to qualify for the Orteig prize of \$25,000. I occasionally went out to Curtiss Field to watch the preparations. Some attempts had ended in disaster.

On one of those visits I was standing there talking to Howard when one of the pilots came over to him and paid him a compliment on his instructional pamphlet on the use of the turn indicator. A day or so later that pilot successfully flew his airplane, which was equipped with a Sperry Turn Indicator and a Sperry Earth Inductor Compass, across the Atlantic. His name was Charles A. Lindbergh. He was the *one* contestant pilot who knew how to fly in the fog with the turn indicator—a crucial thing that made his flight successful. I remember watching him take off in that murky weather and thinking to myself that we might never see him again.

By 1929 Sperry had developed the gyroscopic artificial horizon and the directional gyro, both standard equipment in one form or another in all today's well-equipped airplanes. In that year the well-known James Doolittle practiced using all three instruments plus a radio direction finder

in a small Army training plane, under the hood and with a safety pilot, at Mitchell Field, Long Island.

Jimmy Doolittle was able to make complete flights under the hood from takeoff to landing and did so before many witnesses, resulting in a great amount of publicity about his demonstrations. Soon he was called the "Father of Instrument Flying." Of course, his accomplishment was very important and outstanding, but was he really the actual "father" of instrument flying when Howard Stark was the first to fly in actual fog in 1926?

### 1936 - End of Howard's Career

In January 1936 Howard was flying a Stinson Model S, a four-place cabin airplane, for the U. S. Department of Commerce, with orders to fly to the West Coast to give more instruction to D.O.C. Inspectors. At Cheyenne, Wyoming, on January 16, after a few days, delay due to severe winter weather, he got good weather reports and started to fly across the high route to Salt Lake City. He had never been there before and the plane and equipment were barely able to make the necessary altitude and distance by visual flying only. He ran into a severe snowstorm that had not been forecast and made an emergency landing in very deep snow in a remote area of the Wasatch Mountains. He froze to death trying to walk out in deep snow and minus 20-degree temperature.

The Stinson had nosed over onto its back in the snow, undamaged. It was quickly covered by new snow so that it was not visible to air searchers. A shepherd found it the next spring. Howard's body was not found until four years later. And so ended the career of a remarkable man, sadly, too early.

Howard Stark was so shy, self-effacing, and modest, that he never retained a public relations firm. Of course, the Army Air Service extracted all the publicity possible out of Doolittle's accomplishment—and he deserved it. But in my opinion, Howard Stark is really the almost forgotten but true father of today's instrument flying. His discovery saved many lives. It is a basic

ingredient of today's airline, military, and general aviation.

I am very thankful that I knew Howard so well. I feel he is an unsung and forgotten heroic pioneer of aviation. And it is too bad that his own hometown, Dutchess County, New York, has failed to name the Dutchess County Airport in his memory.

### Clyde Pangborn (another close friend)

In 1931 Clyde Pangborn was the first pilot to fly nonstop across the Pacific Ocean from Japan to the United States. After 41 hours in the air, he landed in his hometown of Wenatchee, Washington. The town was so proud of him, they named their airport Clyde Pangborn Memorial Airport. I worked for him on the old Gates Flying Circus. Wenatchee also has a monument at the entrance to the airport and a plaque in the terminal building dedicated to him.

"Pang," as his friends called him, used Howard's pamphlet to teach himself to fly with the turn indicator, making possible his long nonstop manually flown flight in a small single-engine Bellanca Pacemaker airplane powered by a Pratt & Whitney Wasp engine.

Whenever you fly to Japan in a jet, remember pioneers Howard Stark and Clyde Pangborn, whose accomplishments were extremely important to aviation in those pioneer days and right to the present.

Here I am in 1999—a veteran pilot with 75 years of flying behind me and still more ahead of me—but Howard Stark, Charles A. Lindbergh, and Clyde Pangborn are my civilian pilot heroes. 

*(Editor's Note—Howard Stark's 1-2-3 System has served as the basis for what we now know as partial-panel flying. His method also highlighted how important it is for your airplane to be properly rigged, so it can be flown hands off for extended periods. Even in VFR conditions, it can be disconcerting to look up from retrieving a map from the floor and find the horizon tilted at a goofy angle!—HGF)*



Philip Handleman with his Stearman at the Handleman Sky Ranch in Oxford Township, Michigan.

HANDLEMAN FILMWORKS

# *The Soul of an Airplane*

## A Stearman's past is a nation's history.

PHILIP HANDLEMAN

When I crank the engine of my Stearman, a puff of white smoke spits out the exhaust stack. Pounding pistons find their rhythm in a strangely euphonious throbbing, signs of a periodically dormant artifact reawakening to the splendor of impending flight. This magnificent old biplane, emblazoned in the colors of her exalted years as a trainer for the U.S. Navy, lifts ever so gracefully from the grassy field into the alluring sky with just the hint of backpressure on the stick to help her along. She rises methodically, the sun glistening off the taut fabric, an unmistakable yellow silhouette accenting the sea of blue.

This throwback to open cockpits and silk-scarf flying comprises more than her constituent parts. The fat wings, the long wheel struts, the round engine do not reveal much by themselves. But here, in the sky, the common thread in her experience, one can feel where she has been and how she has touched generations with the wonder, the magic, and the spirit of flight.

In January 1943 Stearman serial number 07479 sprang into being legitimately at the big Boeing plant in Wichita, Kansas, bearing the name of her gifted patriarch, the otherwise unheralded aircraft designer Lloyd Stearman. From the humble flatlands of Kansas, she traced the route of ten thousand of her brethren via ferry flight to a training unit in a corner of America. A war was on, and farm boys, emboldened by dreams of dashing through the stratosphere in the hottest new fighters, wanted to learn how to fly.

A week after her rollout, the Stearman was delivered

to the Naval Reserve Air Base in Dallas. Her life as a trusty workhorse had begun, though the Navy, in its infinite bureaucratic conjuring, almost immediately reassigned the trainer to Naval Air Station Reno, a training facility created in the wake of the Pearl Harbor raid. Thinking attacks on the mainland were imminent, the Navy built a cluster of western air bases far enough inland to provide a buffer against any invaders.

Of course, the invasions did not materialize, but nevertheless the cadets at Reno still had to contend with the ever-present burden of mile-high density altitude. In such an environment, the Stearman, featuring a high center of gravity, a total absence of forward visibility in the three-point position, and a closely coupled main landing gear, became even more of a handful when landing. The nagging tendency of the taildragger to want to swap wingtips upon settling onto the ground was accentuated by Reno's thin air. Perhaps the Navy, in its rush to churn out qualified aviators, felt that the challenging conditions imposed by Nevada's high desert would help speed up the process of weeding out those lacking aptitude for flight. The boys graduating primary at Reno had to have been really good.

Today Reno's most notable aviation connection is its annual air-racing extravaganza. Sometimes, during an interlude of a few minutes between competitions, a Stearman, albeit with extra horsepower and a non-regulation paint scheme, roars into the crystal clear dome overhead, trailing a plume of air show smoke. Gyrating through variations of the basic maneuvers learned in ad-

joining blocks of airspace more than a half-century earlier, a veritable cousin of my plane, conceivably produced next in line, thrills tens of thousands of spectators. Little did the cadets who trained at Reno know that one day people would pay to see this biplane cavort in the sky or that flips and reversals in an aged trainer would provoke cheers.

By the late summer of 1943, the Navy transferred my Stearman closer to the fleet, near picturesque San Francisco. At the Livermore Naval Air Station, she helped to train some of the more than four thousand cadets who passed through the Naval Aviation Primary Training (NAPT) program there. Only a year-and-a-half before, the first training plane landed at the newly constructed air station and its pilot was warmly greeted by the wife of one of the local ranchers who had baked a cake for the occasion.

Until primary flight training ended at Livermore in October 1944, my Stearman labored faithfully in the noble pursuit of teaching would-be aces the art and science of flight. There surely must have been innumerable instances of ill-coordinated turns, abrupt throttle inputs, and hard landings, perhaps even a groundloop or two. Yet, the old girl, her wooden wing ribs firmly fitted to the spar and her steel flying wires tightly wrapped, proved both the durability of the truss construction inherent in the biplane design and the longevity of true craftsmanship.

For the remainder of the war, records show that Stearman 07479 was assigned to the shore establishment of an aircraft carrier resounding in history for its propitious name and wartime exploits. When the U.S.S. *Bunker Hill* slipped out of the Quincy, Massachusetts, dry dock for its maiden voyage exactly one year after the Pearl Harbor raid, its namesake, the hallowed site of the historic Revolutionary War battle, was not far away. The carrier and its air group fought throughout World War II as if imbued with the fighting spirit displayed at the Battle of Bunker Hill on June 17, 1775. Attempting to hold the high ground in Charlestown, the American commander, Colonel William Prescott, who, outnumbered and facing a shortage of ammunition, is reported to have given his men the order: "Don't one of you fire until you see the whites of their eyes."

The *Bunker Hill* would have made Prescott proud. The carrier participated in the Rabaul strike, supported the landings on Tarawa and Iwo Jima, and stayed afloat after sustaining internal damage and more than six hundred casualties from two kamikaze attacks at Okinawa. The ship's defining moment came when sailing as part of a sprawling task force in the evening hours of June 21, 1944. During the Battle of the Philippine Sea, Navy planes, low on fuel and ragged from combat, returned to the fleet in darkness.

Regulations forbade nighttime illumination in enemy waters for fear of submarine strikes, but the task force commander, a wizened naval aviator, would not aban-

don his fellow airmen. Admiral Marc Mitscher, like Prescott of Bunker Hill, issued an order that would ring for years to come with the force of a great patriot's character. "Turn on the light," the admiral decreed. The *Bunker Hill*, along with the other carriers strewn across the open sea that night, served as a beacon for the beleaguered planes and recovered them as rapidly as possible. A new chapter in naval aviation history was written as most of the aviators survived.

When in homeport, the pilots of the *Bunker Hill* had Stearman 07479 available to them. That men of such conviction who touched her rudder pedals, stroked her throttle, nursed her into the air prompts me to think of them and their squadron mates every time I launch into the sky at the controls of this glorious relic. Their dedication and sacrifice ensured our freedom, and, not inconsequentially, the Stearman, lethargic though she may be, enabled them in their task.

The Livermore Naval Air Station was decommissioned the year after the war ended, and on June 30, 1946, the Navy struck Stearman 07479 from the government's inventory and sold her. The air station was considered as the site for the new Air Force Academy, but in 1952 it was converted instead into a branch of the University of California's Radiation Laboratory. Meanwhile, for just a few hundred dollars the Stearman, a piece of living history, entered an ignominious period as an agricultural applicator.

She racked up thousands of hours in her hardly glamorous new profession until a restorer rescued her in the mid-1980s. Spruced up in old Navy markings, looking no less immaculate as the first day of her existence, I took delivery of her at the annual National Stearman Fly-In in west central Illinois and flew her home in a formation that included two other restored Stearmans. The traverse at low level across Midwestern cornfields and cow pastures in the company of friends on a day marked by a sparkling blue sky was an unforgettable flight, a fitting renewal for a once adorned old training plane.

Every chance I get, I fly her with the war veterans whose first airborne experience was in the type as students. Because of the advanced age of the old flyers, some are no longer able to climb up onto the lower wing and raise their legs over the side of the fuselage to access the cockpit. And so they just stare at the plane they knew, the plane that gave them wings. There is always a sparkle in their eyes and enduring affection for the aircraft that offered them their first taste of life in the air.

Long before I was born, Stearman 07479 broke the bonds of gravity, fulfilling dreams of flight and exposing a cadre of purposeful young men to the promising and boundless realm of the heavens. The ideals, fears, and aspirations of the prior occupants have not left this sometimes ornery but always honest beauty. Rather, the qualities of her many pilots over the years live on in every flight. Woven into her fabric is the essence of her being, the soul of an airplane.



# SOUL OF

THE SPIRIT OF ST. LOUIS' SIRE IS

H.G. FRAUTSCHY

We've been lucky in the past decade. Many airplanes we never thought we'd see in the air are now plying the skies. The various Gee Bee replicas, the DH 88 Comet, the Wedell-Williams 44, some of the most perfect replicas of World War I-era fighters ever seen, and soon the Hughes H-1 and the Laird-Turner Special. You can add the Ryan M-1 to the list. Most of us have never seen one in anything other than a grainy black-and-white image included in books or on jumpy, ancient newsreel footage.

Thanks to Andrew King, the airplane whose structural design gave birth to the Ryan NYP, Lindbergh's *Spirit of St. Louis*, is flying once again.

Andrew had long wanted to rebuild an M-1, but sometimes dreams take a long time to ferment and come to fruition. Early Ryan mono-

planes are hard to come by, and Andrew figured he'd have to build it from scratch. No big deal to him, but there's a lot to do, with a ton of research, so the potential project slept in his mind.

While working for Ken Hyde, Andrew happened to mention the idea to an airline pilot friend of his.

Sure enough, the reply was the words you're all mouthing right now: "There's a fuselage of one of those sitting in a barn 30 miles from here."

"Yeah, right," Andrew thought.

Thank goodness for people who buy things and put them away, knowing they'll be useful someday. United Airlines pilot Bob Buck had bought a Curtiss-Wright 16E from a guy in the California desert back in 1969, and the same fellow also had a Ryan M-1 fuselage. Knowing he wasn't going to do anything with it, that fellow gave it to Bob, who

loaded the M-1 onto a trailer in California with the Curtiss-Wright and towed them both home to his farm strip in Lovettsville, Virginia. Because he didn't have any immediate plans for the M-1, Bob dutifully stored it in his barn, and it had been there ever since.

By the time Bob and Andrew hooked up in 1995, Andrew was ready to get to work, and M-1 fuselage was just the spark to get things going. Andrew loaded it onto the top of his car and drove down to Ken Hyde's shop, where Ken had graciously allowed Andrew some space to work on it. Andrew ordered his first tubing from Dillsburg Aero on March 13, 1995. Sections of tubing in his airplane are in fact from the original fuselage, but the majority of the fuselage structure is new material. That's for two reasons, the first of



# THE SPIRIT

QUITE AN AIRPLANE IN ITS OWN RIGHT

HG FRAUTSCHY

which was pretty obvious—the original was not in airworthy condition. Second of all, the actual fuselage has some historical significance. I'll let Andrew explain:

"We didn't know the identity of the original fuselage at that point. I managed to get paperwork for serial number 7, so that is how the airplane is registered. During the course of my research, I went to the San Diego Aerospace Museum several times, and there were several modifications on the original fuselage we had. There was an extra tube put in and fittings for brakes. It had extra sheet metal put on it on the front. You could tell where the attach points were.

"I was going through the photo archives in San Diego and came upon a picture of a fuselage modified exactly like ours. It was identified as serial number 11. There

were pictures of it next to the prototype Ryan STA (the Ryan ST at the time). So I'm 99 percent sure that the fuselage we had is in actuality serial number 11."

Andrew was in regular correspondence with aviation author John Underwood, and Andrew mentioned that he was sure it was S/N 11. John remarked that fact was interesting because Charles Lindbergh had flown serial number 11 on June 2, 1928, when Al Menasco owned it. It appeared that Andrew had an original Ryan M-1 fuselage that had been flown by Lindbergh. Oddly enough, Bob Buck owned the dataplate for S/N 11, but he had no paperwork for it. A collector in California offered to send the dataplate to Bob upon hearing that he owned the fuselage for an M-1. Neither one of them had any idea that the two pieces actually belonged to

each other!

The odds of them coming together after so many years are high indeed, even though not that many M-1s were built during the model's production run. Ryan built the first six, powered by the 200 hp Wright J-4 (the prototype was powered by a 150 hp Hisso, then converted to the J-4), for Pacific Air Transport. Thinking they'd be an immediate hit, Ryan continued to build five more, powered by the Hisso, but they didn't sell. In debt to the bank, which was covering construction costs with a loan, B.F. Mahoney and T. Claude Ryan, the principals in Ryan Airlines, were relieved when a fellow showed up with an offer to buy them "for an upcoming promotional tour."

The fellow left a deposit on the five airplanes, which were due to be finished and delivered a few days after a formal order was drawn up.



The day before the airplanes were to be delivered, the two aviation businessmen snapped open their morning newspaper and read about plans for a Mexican revolution that had been uncovered by the federal government. The revolution had collapsed when an agent for the revolutionaries was captured in the United States attempting to buy supplies. To the businessmen's horror, the agent turned out to be the very fellow who had placed a down payment for the Ryan M-1s!

Shortly thereafter a federal agent came to interview the Ryan principals. The upshot was that the Justice Department wanted to impound all five airplanes for the duration of the trial. T. Claude Ryan pled his case to the official to no avail, and got the same result from the U.S. attorney handling the case. Only the intervention of a local lawyer on the company's behalf kept Ryan Airlines from going under. The government allowed four of the five aircraft to be released. If it hadn't, there might not have been a Ryan Airlines around for Charles Lindbergh to contact in February 1927.

Ryan eventually got the fifth airplane back, with a coating of dust and rust from sitting unused in a Marine Corps depot on the other side of the field while it served as evidence during the Mexican revolution trial. Ryan sold it to Al Menasco, who used it as the test-bed airplane for a new engine he was selling. The engine was an air-cooled version of the 250 hp Salmson he had converted from its original water-cooled design at his shop in Los Angeles. When it was in the air-cooled configuration, Lindbergh flew it. After Menasco was done

testing his conversion, the 150 hp Hisso was reinstalled.

After a crash in the early 1930s, it wound up in Balboni's aviation junkyard in Los Angeles,

where a couple of Ryan Aeronautical students later found it. They bought and rebuilt it, adding the sheet metal and extra fittings Andrew would find years later. Unfortunately, it was again involved in an accident in 1936, and that's where the paper trail for S/N 11 ends.

Because the paperwork for Ryan M-1 S/N 7 still existed, that's how the airplane is registered in the experimental exhibition category. Since this category has a 300-mile operational limit, Andrew must call the local FAA Flight Standards District Office whenever he's planning a cross-country to a fly-in or an event such as EAA AirVenture Oshkosh or the Sun 'n Fun EAA fly-in.

Traveling cross-country isn't new to this project. Career changes had Andrew lashing the welded-up fuselage to the top of his station wagon to drive it from the East Coast of the United States to the West Coast, and then back again less than a year later when he decided to start his own business. By then, he had welded the tail group and done more work on the fuselage. While in California, he had the opportunity to do more research on the M-1, and discovered that even the information he'd thought was pretty reliable was not as solid as he believed.

Ed Morrow, who had been with Ryan since the conversion of the Douglas Cloudster into a cabin airplane, was also present during the construction of the M-1 and many subsequent Ryan projects, including the NYP. In the 1960s, he made a set of drawings of the M-1 (he also did a set of drawings for the Ryan NYP, the *Spirit of St. Louis*). Apparently, the original Don Hall

drawings were no longer available.

Unfortunately, Andrew thinks Ed couldn't resist improving the airplane while he was drawing it, and many of the details were simply recalled from memory 40 years before. Andrew found he had to sift fact from fiction by doing his own research and comparing it to the original fuselage. Ed Morrow's drawings were helpful, but not the last word on accuracy. Andrew's sure he'd have never been able to complete the airplane if he hadn't had the original fuselage to start the project—there were just too many problems with the drawings and other information.

He visited with Ty Sundstrom in



Andrew King, time machine builder

Visalia, California. Ty had rebuilt the M-1 that is on display in the Museum of Flight in Seattle, and he had a number of rusted pieces that were useful for reference, including the welded section of the lower fuselage, fittings, the fuel tank, and other bits and pieces. Andrew photographed, drew, and documented as much as he could.

Because the M-1, the later Ryan Brougham, and the *Spirit of St. Louis* all shared common parts or at least sections of parts (for example, the *Spirit*'s ailerons are the same as on an M-1, with the tapered outer portion removed), Andrew was able to use much of the accurate information to his benefit.

**TO GUIDE THEIR  
WAY IN GOOD  
WEATHER AND BAD,  
THE PACIFIC AIR  
TRANSPORT AIR-  
MAIL PILOTS HAD  
NOTHING MORE  
THAN A MAP, THEIR  
MEMORY OF LOCAL  
LANDMARKS, AND A  
PIONEER COMPASS  
BURIED IN THE  
TRAILING EDGE OF  
THE WING.**

By now you can see just how much book-work and research went into the project before the actual parts were made. It's also clear how that book-work paid off. Other than Andrew's use of a 300 hp Lycoming for an engine, the airplane's interior and exterior immediately take you back to the time of hand-spliced cables, flax cord, and Pyrene fire extinguishers. A time when a pair of inclinometers, a turn indicator, and the wind on your cheeks were all you had to keep the airplane upright during the inevitable encounter with poor weather. A time of optimism tinged with the fierce reality

The instrument panel of the M-1 has the same configuration as the *Spirit of St. Louis*. In the center is a turn indicator and a pair of inclinometers.



MARK GODFREY PHOTOS



The stops on CAM route 8 are detailed on the fin of the M-1.



LEE ANN ABRAMS

The roomy cockpit of the M-1 combined with the wing's low mounting was designed to give the pilots as much visibility as possible, but it still feels like you're peering down a narrow tunnel

when you look straight ahead. Stories abounded about the trim system on the M-1. For example, the airplane had to be slowed to near a stall before the handle (just visible on the right side of the cockpit) could be moved easily, but Andrew has found it to be delightfully easy to use throughout the airplane's speed range.

The tailskid geometry was a bit tricky to get right, with a fair amount of fiddling needed over the past year to get it to be dependable.

It incorporates a small roller at the tip for maneuvering the airplane on pavement. Grass field operations are preferred.



LEEANN ABRAMS



MARK GODFREY PHOTOS

Even the landing lights are correct, right down to the new, old-stock lamps installed behind the enormous landing light lenses.



While he would have loved to install a Wright J-4, one of the many engines offered for sale on the M-1, the rarity of that engine and its spare parts made it a less than ideal choice. But to keep the flavor of the J-4, he wanted a nine-cylinder radial, and the Lycoming's front-mounted pushrods help the airplane look just right. The Lycoming also makes the M-1 a bit more practical from an operational standpoint, with parts more available should a mechanical repair be needed. Kent McMakin of Brodhead, Wisconsin, found this particular Lycoming for Andrew. Kent's known for understanding how a Ranger engine fits on the front of the Ryan PT-22, and when a fellow came to him wanting that information, the 300 hp Lycoming became part of the conversion. It was bolted to the front of a PT-22 that had been modified in the 1960s as a hot

rod aerobatic mount. That wasn't what the new owner of the PT wanted, so he was ready to sell the radial engine. A quick call to Andrew sent him scurrying to buy it, and in short order he shipped it to Jack Lanning in Arlington, Washington, for an overhaul. Jack specializes in older Wright, Continental, and Lycoming engines, and Andrew couldn't be more pleased with the results. It hardly uses oil, burning what some would consider great oil consumption for a modern flat-opposed engine, one quart every four hours or so. "The engine has been magnificent," said Andrew.

Andrew had to jump a few practical hurdles along the way, like

Andrew neatly duplicated the landing flare tubes based on an original set owned by Steve Pitcairn. No, they're not loaded. Dropping a flare from the air has been illegal for a long time!

dealing with a one-piece, 36-foot-long wing. More than one person suggested he build it in three pieces, but Andrew didn't want to mess with the looks and structure of the original. So he did the next best thing. Knowing he'd be splicing the wing spars to make a wing that long, he simply built a pair of wing panels with the splice joints for the spars meeting in the center. He took the construction of the wings as far as he could by only working on one wing at a time, and then joined them at the very end. Flipping



LEEANN ABRAMS

the wing to work on each side was a big chore, requiring the help of six to eight people to flip it over. For much of the work, Andrew worked on the wing with it set on edge in a quartet of wing stands he built. Even then, he said that working on a wing with a 7-foot chord was pretty intimidating. "It was the only airplane I've ever worked on where I could kill myself falling off a ladder spraying the wing," he joked.

The airplane is covered in Conelite and finished with Randolph dope. "I was trying to make a time machine,

and I wanted it to smell like dope," Andrew said as he recalled his decision in using the older finish. The markings also were done the old-fashioned way—by hand. Patti House of Purcellville, Virginia, is a local sign painter, and Andrew found her by merely looking in the phone book. He took her the fin and had her do the lettering for Pacific Air Transport's stops along the CAM 8 route. A couple of days later it was done, and the total charge was less than \$100. Patti came over to the hangar and quickly hand-painted the lettering on the fuselage, again for what Andrew thought was a great price. "You need to work slower and charge more," he chided Patti. As a side note, she also did the lettering on



HG FRAUTSCHY

#### VINTAGE RESOURCES

PATTI HOUSE  
SIGN DESIGN INC.  
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540-338-5614

JOHN MURRAY  
TAILSKID, LEAF SPRING, AND AXLES  
NEW MELLE, MISSOURI  
636-398-4640

INSTRUMENT PRO INC.  
OAKLAND, CALIFORNIA  
510-635-1142

GOLDEN AGE AIR MUSEUM  
GRIMES AIRFIELD  
371 AIRPORT ROAD  
BETHEL, PA 19507  
PHONE & FAX: 717-933-9566  
E-MAIL: [INFO@GOLDENAGEAIR.ORG](mailto:INFO@GOLDENAGEAIR.ORG)

AMERICAN STRIPPING COMPANY  
MANASSAS, VIRGINIA  
703-330-2977

BALD EAGLE AVIATION  
P.O. Box 11  
ELKWOOD, VA 22718  
703-477-1577

the tail of Bob Coolbaugh's Mono-coupe, which Andrew helped restore.

Plenty of other folks from coast to coast had a hand in creating this time machine. Ken Hyde, in addition to his shop space and encouragement early on in the project, supplied a rare older-style turn indicator. The magneto switch came from Ray Folsom of Lomita, California, and Brian Coughlin of Cazenovia, New York, came up with the inclinometers. Dave Rogers of Instrument Pro at the Oakland In-

ternational Airport reworked the instruments, and American Stripping Company in Manassas, Virginia, blasted and then powder-coated the entire fuselage frame. John Murray of New Melle, Missouri, bent the axles for the landing gear and the leaf springs for the tailskid. The axles are an interesting piece of work. Each is made using a pair of 0.120 wall 4130 steel tubing pieces, telescoped one inside of the other. Then the double-wall tubing is heated and

*continued on page 26*

# "Keep Them Flying"

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# WHAT OUR MEMBERS ARE RESTORING

BY H.G. FRAUTSCHY



## BUTLER BLACKHAWK

Jeff Robinson of Blaine, Washington, sent in-progress and completed shots of the restoration of his Stearman C3B powered by a Wright J-5. Varney Air Lines first owned the 1928 biplane, restored by Kent McMakin of Brodhead, Wisconsin. It was first designated a C3L, powered by a 165 hp Comet engine, and later Varney converted it to the J-5. Jeff has all the cor-

respondence between Stearman and Varney regarding the conversion to a C3B. Still later, it was used as a crop-dusting airplane. Jeff bought it more than 20 years ago in a dilapidated condition. Now beautifully restored, it features Stearman's unusual color scheme option: yellow on the top of the upper left wing and on the bottom of the lower right wing panel.





## SCHWEIZER 1-26

I'll bet there are plenty of us who have had this experience. Roger Gomoll bought this glider, a 1955 Schweizer 1-26, Serial Number 016, in 1988 and flew it for a season. That October he stripped the fabric from the fuselage thinking it would be an easy wintertime project. While sandblasting the fuselage, he discovered, to his horror, that all of the longerons and much of the cockpit section was the 4130 equivalent of Swiss cheese.

During a 12-year period he built a jig, rebuilt the fuselage, moved three times, re-covered the airframe with Ceconite, changed careers, stripped the wings, changed jobs again, and finished the aircraft with the help of a new co-owner, Rodney Carey. It flew again on Armistice Day, November 11, 2001.

## 1929 TRAVEL AIR C-4000

Dan Neuman Jr. of Tucson, Arizona, has spent the last six years on the restoration of his Travel Air C-4000, and he is now in the process of covering the airframe with Grade A cotton. He's planning on painting the Travel Air's fuselage blue, with silver wings. The

C in C-4000 stands for the engine, in this case a rare 170 hp Curtiss Challenger six-cylinder radial. Juptner's U.S. Civil Aircraft shows 25 serial numbers for the C-4000, with a note that a few more were built. We look forward to seeing Dan's completed restoration.



# THE "ROCKET AIRSHIP"

## Oddball projects were not just limited to the Pioneer Era!

FERRELL F. POWELL

**O**n Friday, June 10, 1955, I was a young man with a year-old private pilot certificate in my wallet. I joined a growing crowd of people standing on a taxiway at the Emporia, Virginia, airfield. We were there to witness "aviation history in the making." A local man had announced that he was going to test-fly his new homebuilt airplane. One without wings!

Mr. Charles Pritchard, a gang foreman for the Virginia Railway Company, had spent about two years of his spare time creating the wingless airplane. Pritchard had a pilot's certificate and was regarded as a decent aviator. He was also an amateur inventor and a self-styled visionary who reputedly thought that traditional winged aircraft would someday be replaced by more advanced designs. He was getting a head start in this effort. Although his wingless plane had been fabricated locally in a roofing and metalworking shop, I could find no one in the crowd who knew exactly what it looked like. In fact, the configuration of the plane was a hot topic that morning and a matter of high speculation and anticipation.

Flashing lights riveted everyone's attention to a small motorcade approaching from the far end of the taxiway. A Ford police car, with red lights pulsating in the grill, led a pickup truck pulling a flatbed trailer.

Thanks to Ferrell Powell's Kodak Brownie camera, we have this series of photos of Charles D. Pritchard's spectacularly unsuccessful "Rocket Air Ship." Now if Pritchard had just used the wings from the wrecked Cessna 120 . . .

A Mercury sedan and an ambulance followed. The motorcade crawled to a halt with the crowd closing in on all sides. Mr. Pritchard, a confident-looking gentleman wearing a white shirt, sport coat, and dress trousers, exited the Mercury. Several reporters immediately took him under interview.

Behind the pickup and perched atop the flatbed trailer was Pritchard's wingless airplane, glistening brightly in the morning sun. For certain, this

airplane was quite different. There was a bit of Buck Rogers, maybe even a hint of Jules Verne, in the genes of this strange creation. Aside from its unusual appearance, the first thing to catch one's eye was the name that Pritchard had given to his plane. Embazoned in ten-inch letters on either side of the shiny aircraft were three words, "Rocket Air Ship."

Viewed from the side, the 22-foot-long, all-aluminum fuselage was



FERRELL F. POWELL PHOTOS





FERRELL F. POWELL PHOTOS



shaped like a blunt-nosed dart. Viewed from the front, its cross-sectional shape was clearly octagonal. On each side of the fuselage, three six-inch-wide aluminum fins ran laterally from the nose back toward the tail. I would soon find out that these elongated fins were a vital part of Pritchard's theory on why the airplane would be able to fly.

Flush Plexiglas windows, conforming to the overall smooth shape of the fuselage, provided visibility to the front and to the sides for the pilot who sat well back in the fuselage. Just forward of the pilot was the engine, also tucked within the confines of the dart-shaped fuselage. A metal propeller, tricycle landing gear, and a conventional tail-assembly provided evidence that Pritchard's "Rocket Air Ship" shared some of the familiar features of a normal airplane. Actually, a number of its parts had been scavenged from a Cessna 120 that had endured a near-terminal mishap in a cornfield near Covington, Virginia. These parts included the complete tail-assembly, two spring-steel landing gear legs, the seat, instrument panel, and engine.

I could detect no airfoil or major lifting surface anywhere on the air-

craft. The closest things to wings were two small "winglets," one on either side of the fuselage. Angled down at about 45 degrees, each winglet contained an aileron-like control surface to regulate the side-to-side rolling movement of the aircraft. One of the more flamboyant design features was a rather tall, odd-shaped vertical fin on the plane's nose. Placed there to enhance lateral control, it reminded me of a rooster's crown.

The apparent question was: Exactly what was going to provide the lift to get this aircraft into the air and keep it airborne? As the police moved the crowd back, and as the "Rocket Air Ship" was being unloaded from the trailer, I sought out one of the newsmen who had interviewed Mr. Pritchard to get an answer to this question.

A young reporter, notebook in hand, was willing to share some of the things that he had just learned. Pritchard theorized that the air passing over, under, and around the fuselage would be "held and channeled" by the six-inch-wide lateral fins, which ran along the sides of the fuselage. This, in theory, would provide the necessary lift to keep the aircraft airborne. Pritchard had mentioned to the reporters that he could have tested his airplane in the wind tunnel at Langley, but turned down the opportunity because he was so sure of his theory. He had suggested to the reporters that his wingless concept could soon revolutionize the whole world of aircraft design. The reporter volunteered that Pritchard seemed a bit on the eccentric side, a characteristic often found in those who think "outside the box."

As Pritchard climbed into the "Rocket Air Ship," he leaned out and smiled for a couple of news photographers. The as-per-regulation word, "Experimental," was painted on the side of the cockpit.

Somehow, this added a rather whimsical touch to the picture of Pritchard sitting in his unlikely machine. He then signaled for everyone to clear away as he started the engine. The 85-hp Continental sounded exactly like it was still located on the front end of a Cessna 120 light plane and clearly inadequate for this dart-shaped projectile.

Pritchard taxied slowly out to the 5,044-foot runway, the longest one at the airfield. He lined up and began a series of taxi runs. A chase car carrying a Civil Aeronautics Authority (CAA) official followed behind. The aircraft's speed increased with each run, until a vibration in the nose wheel halted the test temporarily while an adjustment was made. Then, a successful run at a much greater speed indicated that the time had come for an attempt to take the aircraft into the air. The moment of truth!

Taxiing to the end of the runway, Pritchard turned his airplane around and was looking down almost a mile of clear pavement. He gave it full throttle and the aircraft accelerated down the strip. A tense crowd watched as he pulled the nose wheel off the ground and tilted the craft's nose skyward. The aircraft kept rolling forward on the two main wheels faster and faster, with the nose up and the tail nearly dragging the pavement. Finally, it veered off into the tall grass at the edge of the runway.

Several other attempts resulted in the same failure to get the aircraft airborne. However, during these subsequent runs, Pritchard was able to keep it centered on the runway, even during a dicey braking procedure at the far end. After the fourth attempt, the CAA official stopped the test runs. He pronounced the aircraft unsafe and officially grounded it. This action, in effect, put an end to the active life of the airplane and to any further attempts to get it airborne. In the next day's newspaper, Mr. Pritchard was quoted as saying, "The Rocket felt like it wanted to fly."

# PASS IT TO BUCK

BY E.E. "BUCK" HILBERT, EAA #21 VAA #5  
P.O. Box 424, UNION, IL 60180

## Remembering the *Spirit*

Dear Buck,

I read your column in the February Vintage. Your recollection of Lindbergh flying over Rockford, Illinois, and dropping a message container brought back memories for me. I too remember him as he flew over Middletown, Ohio, on his nation-wide tour. I was only five years old, but I remember very clearly the bright silver *Spirit of St. Louis* as it flew very low over our neighborhood as he circled. We lived only about a mile from the airport. He did not land, but as he did at Rockford, he dropped a message container. The chairman of the Middletown City Commission, Marvin Clark, with the appropriate media attention, retrieved it.

The EAA *Spirit of St. Louis* duplicated this event in 1977. I believe

Gene Chas was the pilot. A much older Marvin Clark was again on the field to retrieve the co-n tainer. On the first drop,

the streamer on the container got hung up on the tail wheel of the Spirit making it necessary for a second attempt. It was successful. I've enclosed a photo of Mr. Clark with Gene Chase (I think) and the "Spirit."

Lindbergh has always been a hero of mine. I have also visited his gravesite on Maui, twice.

You have perhaps read A. Scott Berg's latest book *Lindbergh*. If you haven't, I highly recommend it. It is also on audiotape, read word-for-word. I like the tape as I can listen to it in spurts when I'm in the car. Also, I'm a lazy reader.

Hope you and H.G. can make it to Middletown to the Aeronca Convention, June 14 & 15.

Best wishes & happy flying,  
Bob Hollenbaugh  
Middletown, OH

Bob,

What a pleasure to hear from you and to find out you were bitten by the airplane disease the same way I was. Wasn't that a "HOOT" as the kids of today would say?

I guess Lindy had a little more experience by the time he got to Rockford, Illinois. His drop was clean and relatively on target. I was too young, four, to really appreciate what had happened, but I sure caught the excitement.

One little correction, the picture you sent of Mr. Clark and the pilot of the "Spirit"; it isn't Gene Chase, that's Verne Jobst. Verne was the foremost of the pilots that flew the tour and the subsequent tours afterwards. That airplane now hangs in the EAA AirVenture Museum above the replica diorama of Paris in 1927.



A very moving display along with some of the Lindbergh memorabilia. They have added some more things that a local lady had saved all these years, so it makes quite a display.

Thanks for the tip on A. Scott Berg's book. I'll have to get a copy of the tape; I could use a diversion like that.

Next time you see the movie *Spirit of St. Louis*, think of me. In 1957, I was privileged to fly Jimmie Stewart and the Warner Brothers Public Relations people on a 30-day tour publicizing the picture. We then attended the premiere in Hollywood where I met Jayne Mansfield, Gary Cooper, and several other prominent stars. It was one of the highlights of my career with United.

Jimmie Stewart was exactly the kind of person you saw in the movies and a great pilot as well. By the time the tour was over we had checked him out in the Convair 340 we had used for the tour. That airplane later was sold to Arthur Godfrey.

At the premiere I sat next to the Stewarts, and as sort of a joke, we had given him one of the seatbelts from the Convair to fasten himself to the theater seat for the takeoff scene. It might have been a joke to us, but he sure squirmed all through the scene.

Thanks again, Bob, and if at all possible, H.G. and I will be there.

Over to you,

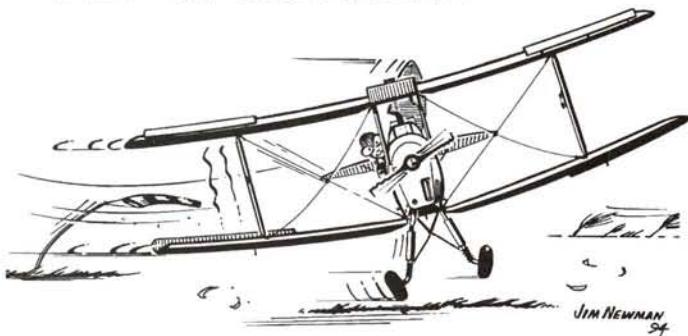
"Buck"



# NEW MEMBERS

John R. Gibbons .....	Sooke, BC, Canada	John Estes .....	Morrisville, NC
David Compton .....	Toronto, ON, Canada	Ferrell F. Powell .....	Emerald Isle, NC
Pierre Duval .....	Viroflay, France	James Clayton .....	Chester, NH
Don Ainsworth ..	West Midlands, United Kingdom	Robert W. Drake .....	Nottingham, NH
Janice Bobek .....	Soldotna, AK	Dale Turner .....	Hampton, NH
Ann L. Cunningham .....	Fairbanks, AK	Alan J. Ritchie .....	Pittstown, NJ
Paul Ross .....	Mesa, AZ	Morris Rippel .....	Albuquerque, NM
Andrew Spear .....	Phoenix, AZ	Keith Sandin .....	Boulder City, NV
Michael J. Brogley .....	San Jose, CA	Tom Warner .....	Boulder City, NV
Mark Cassen .....	Brentwood, CA	Clay Collins .....	Gilbertsville, NY
Kyle R. Cooper .....	Sonoma, CA	Raymond Matthew Kelly .....	Maspeth, NY
Robert Eilers .....	Livermore, CA	John Martino .....	Kingston, NY
Kenneth J. Fransen .....	Clovis, CA	William E. Sendell .....	Lindenhurst, NY
Daniel N. Haley .....	Dixon, CA	Douglas Willis .....	Ithaca, NY
Richard Kerker .....	Los Angeles, CA	Bruce Cairns .....	Garrettsville, OH
Tom Leatherwood .....	Paso Robles, CA	Henry P. Fodor .....	Norton, OH
Jim Sallee .....	Santa Rosa, CA	Larry Hoover .....	Millersport, OH
Carl Trautvetter .....	San Diego, CA	Vernon A. Lawson .....	Dayton, OH
Richard J. Wichlac .....	San Diego, CA	C. M. Shearer .....	Stow, OH
Kenneth Dixon .....	Golden, CO	Carl Simmons .....	Dayton, OH
Thomas L. Elsberry .....	Kissimmee, FL	Edwin Walford .....	Bridgeport, OH
George Gross .....	Miramar, FL	Reed A. Johnson .....	Mounds, OK
Barry James Landstedt .....	Fruitland Park, FL	Roger Smith .....	Ontario, OR
Leonard M. McGinty .....	Bronson, FL	John A. Morelli .....	Beaver Falls, PA
Frederick Messmer .....	St. Augustine, FL	James F. Nilon .....	Media, PA
Charles Monzillo .....	Clermont, FL	Curtis D. Ammons .....	Atoka, TN
Nelson Riet .....	Fort Lauderdale, FL	Stephen Brillaud .....	Shermanton, TN
Burr W. Skinner .....	Miami, FL	Warren C. Barry .....	Dallas, TX
Damian H. Weber .....	Plantation, FL	Jon N. Crouch .....	Montgomery, TX
Charlie Willwerth .....	Saint Augustine, FL	Joe S. Dobransky .....	McKinney, TX
Reginald L. Benford .....	Columbus, GA	Steven R. Kennedy .....	Friendswood, TX
Bart Stone .....	Carrollton, GA	Geoff Kimbrough .....	Katy, TX
Dal Turner .....	Brooks, GA	Bruce King .....	El Paso, TX
Donald E. Berrier .....	Bartonville, IL	Robert F. Lake .....	Manor, TX
Douglas Biagini .....	Peoria, IL	Frank Molsberry .....	Georgetown, TX
Jeffrey T. Bost .....	Poplar Grove, IL	Maybeth Nunn .....	Justin, TX
Alexander G. Von Bosse .....	Huntley, IL	Baylor Randle .....	San Antonio, TX
Nathan A. Dalrymple .....	Huntington, IN	Michael Reid .....	Azle, TX
Henry Hellert .....	Vincennes, IN	Thomas E. Stocks .....	Heath, TX
Jack R. Roberts .....	Morgantown, IN	Dave Wheeler .....	Midlothian, TX
Deborah H. Winters .....	Greenfield, IN	Frank B. Young .....	Conroe, TX
Gregory R. Hall .....	Wichita, KS	Edward C. Bunch .....	Harrisonburg, VA
Robert J. Gmyrek .....	Eliot, ME	Craig Gullakson .....	Alexandria, VA
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Wayne Meier .....	Eagan, MN	Nolan D. Prillwitz .....	Hortonville, WI
Donald M. Sektnan .....	Eagan, MN	Lanny L. Smith .....	Madison, WI
T. Baldenhofer .....	Waveland, MS	Robert E. Talley .....	Racine, WI
William L. Dawkins .....	Highpoint, NC	Michael James Wenkman .....	Madison, WI

# FLY-IN CALENDAR



The following list of coming events is furnished to our readers as a matter of information only and does not constitute approval, sponsorship, involvement, control or direction of any event (fly-in, seminars, fly market, etc.) listed. Please send the information to EAA, Attn: Vintage Airplane, P.O. Box 3086, Oshkosh, WI 54903-3086. Information should be received four months prior to the event date.

**MAY 16-18**—*Hayward, NV*—38th Annual Hayward Proficiency Air Race. Prizes, trophies, awards banquet. Limited to 75 aircraft. Entries close April 15. Info: [www.hwdairrace.org](http://www.hwdairrace.org) or [info@hwdairrace.org](mailto:info@hwdairrace.org)

**MAY 17-19**—*Columbia, CA*—Gathering of Luscombes 2002, 26th annual event. Aircraft judging, spot landing, flour bombing competitions, and more. Info: 559-888-2745; 619-482-8236, or [www.luscombe-cla.org](http://www.luscombe-cla.org)

**MAY 18**—*Fort Pierce, FL*—EAA Ch. 908 Pancake Breakfast, 7-11 a.m., EAA Hangar, St. Lucie International Airport. Info: 561-464-0538

**MAY 18**—*Cooperstown, NY*—(K23) Old Airplane Fly-In & Breakfast Sponsored by EAA Ch. 1070. 7:30 a.m.-Noon, rain or shine. Adults \$4.00, Children under 12 \$3.50. Pilots of 1962 or older aircraft eat free! Info: 607-547-2526

**MAY 18-19**—*Chattanooga, TN*—Airshow Chattanooga 2002 “Salute to Veterans,” Chattanooga Metropolitan Airport. In addition, will host aircraft from every era from WWI to those used in the war in Afghanistan today. Proceeds benefit children at T.C. Thompson Children’s Hosp. in Chatt. Info: 423-778-7373

**MAY 19**—*Niles MI*—(3TR) VAA Ch. 35 Fly-In Breakfast. 7-11 a.m. Info: 219-272-5858

**MAY 19**—*Troy, OH*—VAA Chapter 36 1st Annual Fly-In Barbecue at Waco Field. Info: 937-447-4145

**MAY 19**—*Romeoville, IL*—EAA Ch. 15 Fly-In Breakfast at Lewis Romeoville Airport (LOT). Info: 630-243-8213

**MAY 19**—*Warwick, NY*—EAA Ch. 501 Annual Fly-In. Warwick Aerodrome (N72). 10 a.m.-4 p.m. Registration for judging closes at 2pm. Info: 212-620-0398

**MAY 24-25**—*Atchison, KS*—36th Annual Kansas City Area Fly-In, Amelia Earhart Memorial Airport (K59). Info: 816-238-2161 or 816-363-6351, or [jsullens@kc.rr.com](mailto:jsullens@kc.rr.com)

**MAY 25**—*Zanesville, OH*—EAA Ch. 425 Fly-In/Drive-In Breakfast. Riverside Airport. 8 a.m.-2 p.m. Breakfast all day, lunch items 11 a.m.-2 p.m. Fly Market. Info: 740-454-0003

**MAY 26**—*Portage, WI*—EAA Ch. 371 Fly-In Breakfast. 7 a.m.-Noon. Info: 608-742-3300

**MAY 31-JUNE 1**—*Bartlesville, OK*—16th Annual Biplane Expo at Frank Phillips Field. Forums, static displays, seminars, exhibits. All types of aircraft and airplane lovers are invited. Biplane crews and NBA members admitted free. Info: Charlie 918-622-8400

**MAY 31-JUNE 2**—*Columbia, CA*—(O22) Bellanca-Champion Club West Coast Fly-In 2002. Forums, food, fun, camping, hotels, BBQ Fri., Steak Dinner Sat. Advance Registration encouraged. Info: [www.bellanca-championclub.com](http://www.bellanca-championclub.com) or 510-490-2865

**JUNE 1**—*Alliance, OH*—Young Eagles & Old Buzzards Day. Barber Airport (2D1). EAA Ch. 82. 10 a.m.-5 p.m. Food & fun. Pilots and aircraft needed. Info: 330-823-1168 or [www.fbarber@alliancelink.com](mailto:www.fbarber@alliancelink.com)

**JUNE 1**—*Falmouth Cape Cod, MA*—EAA/VAA Ch. 34 Fly-In. Falmouth Airpark. Breakfast, lunch, and awards. Rain date: June 2. Info: 508-540-1349

**JUNE 1-2**—*Utica-Rome, NY*—4th Annual Great Northeast. Oneida County Airport (UCA). The Firebirds, Oscar Boesch, The Canadian Harvards, Armed Services Demos, Parachute Teams and more! Special room rates for those flying in. Attractive rates for exhibitors. Info: 315-736-4171 or [ljraya@attglobal.net](mailto:ljraya@attglobal.net)

**JUNE 2**—*Cheboygan, MI*—EAA Ch. 560 w/Great Lakes Air, Annual Fly/Drive-In – Steak Out. St. Ignace, MI Airport. Noon-4 p.m. Info: 231-627-6409

**JUNE 2**—*DeKalb, IL*—38th Annual Ch. 241 Fly-In. (DKB) Breakfast 7 a.m.-Noon. Info: 847-888-2919

**JUNE 7-9**—*Reading, PA*—Mid Atlantic Air Museum WWII Commemorative Weekend, Mid Atlantic Air Museum. Tickets at gate \$13 adults, \$5 children age 6-12. Special 3-days for \$25. Info: 410-997-7404 or [fpierce@Avialantic.com](mailto:fpierce@Avialantic.com) or [www.maam.org/media.html](http://www.maam.org/media.html)

**JUNE 7-9**—*Gainesville, TX*—Texas Ch. Antique Airplane Association hosting its 39th Annual Fly-In. Gainesville Municipal Airport (GLE) Info: 817-429-5385; 817-468-1571

**JUNE 13-16**—*St. Louis, MO*—American Waco Club Inc. Fly-In. Creve Coeur Airport. Info: Phil 616-624-6490 or Jerry 317-535-8882

**JUNE 13-16**—*Middletown, OH*—11th Nat'l Aeronca Assoc. Convention. Hook Field. Aircraft judging, Air Force Museum tours, steak fry Fri., forum & banquet Sat. Info: 217-395-2522

**JUNE 15**—*Cooperstown, NY*—(K23) Old Airplane Fly-In & Breakfast Sponsored by EAA Ch. 1070. 7:30 a.m.-Noon, rain or shine. Adults \$4.00, Children under 12 \$3.50. Pilots of 1962 or older aircraft eat free! Info: 607-547-2526

**JUNE 15-16**—*West Bend, WI*—Southeast Wisconsin Airstfest. 8am-5pm ea. day. Air show, flight simulators, military and vintage airplane showcase, children’s entertainment area, vintage car show and parade, food, and more! Firefighters, Police, and active or retired military, admitted free with ID or proof of service. Info: 800-414-0065

**JUNE 16-23**—*Las Vegas, NV*—34th Annual Convention of the Int'l Cessna 170 Assn. Texas Station Hotel, 800-654-8888, Info 702-595-8019

**JUNE 20-23**—*Mason, MI*—Ercoupe Reunion National Convention. Mason-Jewett Airport (TEW). Everyone welcome. Info: 810-231-3392 or [mlrdunlap@yahoo.com](mailto:mlrdunlap@yahoo.com)

**JUNE 22**—*Zanesville, OH*—EAA Ch. 425 Fly-In/Drive-In Breakfast. Riverside Airport. 8am-2pm. Breakfast all day, lunch items 11am-2pm. Fly Market. Info: 740-454-0003

**JUNE 22**—*Wauseon, OH*—Ch. 149 Annual Pancake Breakfast Fly-In. Fulton County Airport (USE). Info: 419-636-5503

## EAA FLY-IN SCHEDULE 2002

### EAA ROCKY MOUNTAIN REGIONAL

[www.greelynet.com/eaaregional](http://www.greelynet.com/eaaregional)  
June 29-30, Longmont, CO

### NORTHWEST EAA FLY-IN

[www.nweaa.org](http://www.nweaa.org)  
July 10-14, Arlington, WA

### EAA AIRVENTURE OSHKOSH

[www.airventure.org](http://www.airventure.org)  
July 23-29, Oshkosh, WI

### EAA GOLDEN WEST REGIONAL FLY-IN

[www.gwfly-in.org](http://www.gwfly-in.org)  
September 6-8, Yuba County Airport (MRV)

### EAA MID-EASTERN FLY-IN

419-447-1773 (telefax)  
September 6-8, Marion, OH

### VIRGINIA STATE EAA FLY-IN

[www.vaeaa.org](http://www.vaeaa.org)  
September 7-8, Dinwiddie County Airport

### EAA EAST COAST FLY-IN

[www.eastcoastflyin.org](http://www.eastcoastflyin.org)  
September 13-15, Tougkenamon, PA

### EAA SOUTHWEST REGIONAL FLY-IN

[www.swrfi.com](http://www.swrfi.com)  
September 27-28, Abilene, TX

### EAA SOUTHEAST REGIONAL FLY-IN

[www.geocities.com/-serfi](http://www.geocities.com/-serfi)  
October 4-6, Evergreen, AL

### COPPERSTATE EAA FLY-IN

[www.copperstate.org](http://www.copperstate.org)  
October 10-13, Phoenix, AZ

- JUNE 22**—*Marquette County, MI*—First Annual Sawyer Aviation Expo. Sponsored by EAA Ch. 850 & Marquette County Area Chamber of Commerce. Celebrating the history of the former K.I. Sawyer AFB. Sawyer International is located 160 mi. north of Green Bay, WI. Info: [joel@bordergrill.net](mailto:joel@bordergrill.net) or 306-346-3567
- JUNE 23**—*Niles, MI*—EAA Ch. 865 Annual Fly-In/Breakfast at Jerry Tyler Municipal Airport (3TR), 7 till noon. Info: 219-271-8533
- JUNE 27-30**—*Mr. Vernon, OH*—43rd Annual Nat'l Waco Club Reunion. Wynkoop Airport. Info: 937-866-6692 or [WACOASO@aol.com](mailto:WACOASO@aol.com)
- JUNE 29**—*Prosser, WA*—EAA Ch. 391 Fly-In Breakfast. Info: 509-786-1830
- JULY 4**—*Mansfield, OH*—(MFD) Pancake Breakfast Mansfield Aviation Club, 7-11 a.m. Info: 419-774-7575
- JULY 6**—*Rensselaer, IN*—EAA Chapter 828 Fly-In at Jasper County Airport. Ham & bean lunch. Info: 219-866-5587
- JULY 6**—*Gainesville, GA*—(GVL) EAA 611 34th Annual Cracker Fly-In. 7:30 a.m. Pancake Breakfast & Fly-IN. Judging in 9 categories, awards, rides, food. Info: 770-531-0291 or 770-536-9023 or [www.eaa611.com](http://www.eaa611.com)
- JULY 5-7**—*Alliance, OH*—Taylorcraft Foundation, Taylorcraft Owner's Club Fly-In & Reunion. Barber Airport (2D1). Breakfast Sat. & Sun. by EAA Ch. 82. Info 330-823-1168 or [www.taylorcraft.org](http://www.taylorcraft.org)
- JULY 13**—*Toughkenamon, PA*—EAA Chapter 240, 28th Annual Fly-In/Drive-In Pancake Breakfast 8:00 a.m. at New Garden Airport (N57). Young Eagles' Rally. Admission free. Info: 215-761-3191
- JULY 13**—*Zanesville, OH*—EAA Ch. 425 Fly-In/Drive-In Breakfast. PARR Airport. 8 a.m.-2 p.m. Breakfast all day, lunch items 11 a.m.-2 p.m. Fly Market. Info: 740-454-0003.
- JULY 20**—*Cooperstown, NY*—(K23) Old Airplane Fly-In & Breakfast Sponsored by EAA Ch. 1070. 7:30am-Noon, rain or shine. Adults \$4.00, Children under 12 \$3.50. Pilots of 1962 or older aircraft eat free! Info: 607-547-2526
- JULY 20-21**—*Dayton, OH*—1st Eastern Region Nat'l Aviation Heritage Invitational coinciding with 2002 Dayton Air Show. Co-sponsored by Rolls-Royce North America, NASM, Nat'l Aviation Hall of Fame and Reno Air Racing Assn. No more than 50 aircraft are selected for each Invitational. Applications are due by June 15. For details on eligibility and judging criteria, entry application, etc. contact Ann, 703-621-2839
- JULY 21**—*Burlington, WI*—10th Annual Group Ercoupe Flight Into AirVenture. Wheels up at noon. Everyone welcome to join. Info: 715-842-7814
- JULY 24**—*Oshkosh, WI*—VAA Picnic at AirVenture. Nature Center Pavilion, 6-8 p.m., Tram at VAA Red Barn beginning at 5 p.m. Type Clubs may reserve tables. Info: Theresa 920-426-6110 or [tbooks@eaa.org](mailto:tbooks@eaa.org)
- JULY 26**—*Oshkosh, WI*—Moth Club Dinner at EAA AirVenture 2002. At the Pioneer Inn, Oshkosh, bar opens at 6:30 p.m., Dinner at 7:30 p.m. Directions distributed during Friday morning's Moth Forum. RSVP to Steve Betzler at [sbetzlr@empirelevel.com](mailto:sbetzlr@empirelevel.com) or fax: 262-538-0715
- AUGUST 4**—*Queen City, MO*—15th Annual Watermelon Fly-In. Applegate Airport. Info: 660-766-2644
- AUGUST 9-11**—*Alliance, OH*—Ohio Aeronca Aviators Fly-In and Breakfast. Alliance-Barber Airport (2D1). Info: 216-932-3475 or [bwmatz@yahoo.com](mailto:bwmatz@yahoo.com) or [www.oafly-in.com](http://www.oafly-in.com)
- AUGUST 10**—*Toughkenamon, PA*—EAA Ch. 240, 28th Annual Fly-In/Drive-In Pancake Breakfast. 8:00 a.m. New Garden Airport (N57). Young Eagles' Rally. Admission free. Info: 215-761-3191
- AUGUST 11**—*Auburn, IN*—Hoosier Warbird Fly-In/Drive-In and Airplane Auction. Dekalb County Airport. Pancake/Sausage Breakfast. Info: 574-457-5924 or [44gn@kconline.com](mailto:44gn@kconline.com)
- AUGUST 17**—*Cooperstown, NY*—(K23) Old Airplane Fly-In & Breakfast Sponsored by EAA Ch. 1070. 7:30 a.m.-Noon, rain or shine. Adults \$4.00, Children under 12 \$3.50. Pilots of 1962 or older aircraft eat free! Info: 607-547-2526
- AUGUST 18**—*Brookfield, WI*—VAA Ch. 11 18th Annual Vintage Aircraft Display and Ice Cream Social. Capitol Airport. Noon-5 p.m. Includes Midwest Antique Airplane Club's monthly fly-in. Control-line & radio controlled models on display. Info: 262-781-8132 or 414-962-2428
- AUGUST 23-25**—*Mattoon, IL*—6th Annual MTO Luscombe Fly-In. Luscombe judging & awards, forums & banquet. \$50 cash to Luscombe that flies farthest to attend. Info: 217-234-8720, [jerry10@advant.com](mailto:jerry10@advant.com) or 217-253-3934
- AUGUST 23-25**—*Sussex, NJ*—Sussex Airshow. Top performers. All types of aircraft on display. Info 973-875-7337 or [www.sussexairportinc.com](http://www.sussexairportinc.com)
- AUGUST 24**—*Janesville-Beloit, WI*—EAA Ch. 60 Fly-In Pig Roast. Beloit Airport (44C). 11 a.m.-2 p.m. Info: 608-365-1925 or [members.tripod.com](http://members.tripod.com)
- AUGUST 31**—*Marion, IN*—(MZZ) 12th Annual Fly-In Cruise-In, at the Marion Municipal Airport, 7-1 p.m. All you can eat Pancake Breakfast. All types of airplanes and vintage automobiles. Info: [www.flyincruisein.com](http://www.flyincruisein.com)
- AUGUST 31**—*Zanesville, OH*—EAA Ch. 425 Fly-In/Drive-In Breakfast. Riverside Airport. 8 a.m.-2 p.m. Breakfast all day, lunch items 11 a.m.-2 p.m. Fly Market. Info: 740-454-0003.
- SEPTEMBER 6-7**—EAA Ch. 376 18th Annual End O' Summer Fly-In. Sierra Sky Park (Q60). Camping or hotels. Fri. arrival & registration 4-6:00 p.m.; dinner 6-7:30 p.m. (\$6). Sat. pancake breakfast 7-9:00 a.m. (\$5); registration deadline for aircraft judging 10 a.m.; tri tip lunch Noon-1:30 p.m. (\$6); awards 2:30 p.m. Info: 559-435-6349 or 559-439-5371 or [we-sandjeanie@bigfoot.com](mailto:we-sandjeanie@bigfoot.com)
- SEPTEMBER 7**—*Cadillac, MI*—EAA Ch. 678 Fly-In/Drive-In Breakfast. Wexford County Airport. 7:30-11 a.m. Info: 231-779-8113
- SEPTEMBER 12-15**—*Reno, NV*—4th Annual Western Region Invitational. Co-sponsored by Rolls-Royce North America, NASM, Nat'l Aviation Hall of Fame and Reno Air Racing Assn. No more than 50 aircraft are selected for each Invitational. For details on eligibility and judging criteria, entry application, etc. contact Ann, 703-621-2839
- SEPTEMBER 13-15**—*Watertown, WI*—2002 Midwest Stinson Reunion. (RYV). Info: 630-904-6964
- SEPTEMBER 14**—*Hollywood, MD*—EAA Ch. 478 Fly-In, Open House, Young Eagles Rally, and Pancake Breakfast. Captain Walter Francis Duke Regional Airport (2W6). Info: 301-866-9502
- SEPTEMBER 14**—*Palmyra, WI*—(88C) Fly-In Lunch, noon-2 p.m. Info: 630-904-6964
- SEPTEMBER 14-15**—*Bayport, New York*—Antique Airplane Club of Greater New York Fly-In. Brookhaven Airport. Static display of vintage & homebuilt aircraft. Awards in various categories. Info: 631-589-0374
- SEPTEMBER 20-21**—*Bartlesville, OK*—46th Annual Tulsa Regional Fly-In. Frank Phillips Field. Type club forums, static displays, exhibits. Admission by donation. Info: Charlie Harris 918-622-8400
- SEPTEMBER 22**—*Hinckley, IL*—Ch. 241 Fall Fly-In Breakfast. (OC2) On the grass. 7 a.m.-Noon. Info: 847-888-2919
- SEPTEMBER 28**—*Millington, TN*—(NQA) 6th Annual Memphis Plane Pull. Benefits the children of the Special Kids and Families, Inc. charity. Teams pull a Boeing 727 in various categories of competition. Also, EAA Midsouth Reg'l Fly-In and Young Eagles event. Info: [spkids@wmm.net](mailto:spkids@wmm.net) or [cammons3@aol.com](mailto:cammons3@aol.com)
- SEPTEMBER 28**—*Hanover, IN*—(641) Wood, Fabric, & Tail-wheels Fly-In. Lee Bottom Flying Field. Cajun Avgas (15 Bean Chili). Beautiful scenery, great people, old planes. Info: 812-866-3211 or [www.LeeBottom.com](http://www.LeeBottom.com)
- SEPTEMBER 28-29**—*Alliance, OH*—American Military History Event. Barber Airport (2D1). Info: 330-823-1168, [wbarber@alliancelink.com](mailto:wbarber@alliancelink.com)
- OCTOBER 5-8**—*Wauseon, OH*—Ch. 149 Annual Mini Chile Fly-In. Fulton County Airport (USE). Info: 419-636-5503
- OCTOBER 12**—*Toughkenamon, PA*—EAA Chapter 240, 28th Annual Fly-In/Drive-In Pancake Breakfast. 8:00 a.m. at New Garden Airport (N57). Young Eagles' Rally. Admission free. Info: 215-761-3191



*"Soul of the Spirit" continued from page 17*

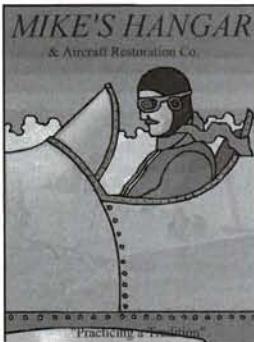
bent, resulting in a strong axle that will bend before it breaks. This construction avoids having to heat treat

a thinner cross-section of tubing, which, while lighter, would likely snap before bending.

The navigation lights are a unique touch, as are the landing lights, which

were made to duplicate one original supplied by Forrest Lovly. Jon Aldrich and Frank Pavliga contributed to the navigation lights, and Jerry Impellezari had the plastic lenses for the navigation lights, as well as the new, old-stock landing light bulbs. They look just like household light bulbs, except they have quarter-turn turn bases and are marked with the legend "Airplane Headlamp" on the bulb.

A few other folks have helped along the way. Andrew's parents, Bill and Jane King, were big supporters from the beginning, and he really appreciates their willingness to join in his dream to see a Ryan M-1 in the air. Bob Coolbaugh is another friend



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who contributed to the project and helped out whenever he could, even while he was up to his elbows in the second restoration of his beloved Monocoupe. And Bob Buck, who supplied Andrew with his shop space, the original Ryan M-1 fuselage, and consistent practical support, was always there when his help was needed. Only months after Andrew had taken him for a ride in the new M-1, Bob Buck passed away last December. It's obvious that the help of his friend is still deeply appreciated and will be long remembered.

A couple of people also signed the airframe while it was under construction. Reeve Lindbergh was giving a speech at the Smithsonian National Air and Space Museum, and she graciously signed a wing rib of the M-1, as did pioneer glider maker Paul Schweizer, who penned his name on the wing when he visited the shop one day.

If you'd like to see the M-1, it's kept most of the time at the Golden Age Air Museum in Bethel, Pennsylvania. Paul Dougherty has put together an interesting collection of airplanes, and if you're in the area I'm sure they'd appreciate a visit.

Each airplane has its own personality, and to some, the Ryan M-1 is pretty homely. It wasn't built for looks; it was built to do a job, and its popularity on the CAM routes attested to the work put forth by the Ryan people. Its son didn't do too badly either on its 3,600 mile journey across the Atlantic. The Ryan M-1 was just what was needed at that time, and when Don Hall had to adapt it for the New York-Paris ship, the design was equal to the task.

After a while, it grows on you. Just ask Andrew: "To me it looks like a 1920s or '30s metal pedal toy that is blown up to full size. It has that clunky, funny look to it. I love the look of it." Did a proud father ever speak truer words? 

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June 7-9, 2002	Corona, CA	RV ASSEMBLY	Sept 14-15, 2002	Denver, CO	SHEET METAL COMPOSITE CONSTRUCT. FABRIC COVERING INTRO TO AIRCRAFT BLDG. ELECTRICAL SYSTEMS & AVIONICS
June 21-23 2002	Griffin, GA	TIG WELDING	Sept 20-22, 2002	Griffin, GA	TIG WELDING RV ASSEMBLY
June 21-23, 2002	Frederick, MD	RV ASSEMBLY	Sept 20-22, 2002	Corona, CA	LANCAIR ASSEMBLY
July 12-14 2002	Griffin, GA	RV ASSEMBLY	Sept 27-29, 2002	Corona, CA	RV ASSEMBLY
August 9-11, 2002	Griffin, GA	TIG WELDING	Oct 4-6, 2002	Griffin, GA	ADVANCED TIG WELDING
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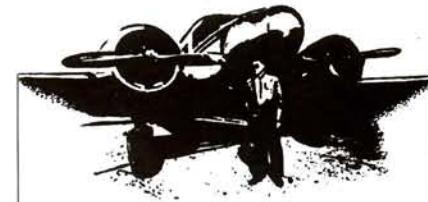
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