

HANGAR ECHOES

EXPERIMENTAL AIRCRAFT ASSOCIATION
CHAPTER 168 DALLAS TEXAS

Kerrville 1997
Reserve Grand Champion Plans Built
Bill Freckman's Acro Sport II

By Marvin Brott

One of the difficulties of putting together our chapter newsletter is getting all of the news in a timely manner. Unfortunately last month we missed a major item of news with the fact that Bill Freckman won Reserve Grand Champion Plan Built with his Acro Sport at Kerrville. Congratulations Bill!

Bill flew down on Saturday like many of us arriving about 10 AM. The judges showed up shortly after arrival. He was somewhat suspicious of what the judges were up to since they came by his plane several times later to take a look. Unfortunately he had to depart about 4:00 PM to get back to Hicks before dark. Therefore he did not find about the Reserve Grand Champion award until Nick Nickle called the next day and gave him the great news.

The Acro Sport which is based at the Hicks Airport, made its first flight on September 2nd, 1995. Bill indicated that he was fortunate to purchase a partially welded fuselage frame from Cleone Markwell (Casey, IL) in November of 1992. Once he got it to his garage, N169BF took over 2,000 hours to complete with lots of help from friends like Nick Nickle (Acro Sport N6N). This all resulted in one fine aircraft as duly noted by the

Kerrville judges. Bill completed the fuselage pretty much straight to the plans, adding spring gear struts, aluminum gear leg fairings and the two-place, Pitts-style canopy. The Pitts canopy is just that, he started with broken Pitts canopy frame which was re-built to be stronger and than a new lightly smoked gray canopy from Dayton Plastics glued on.



Bill Freckman and Acro Sport II
Kerrville, Reserve Grand Champion Plans Built

The wings were also built as per the plans, although he did epoxy counter-sunk brass screws in place of the nails that hold on the leading edges. The covering is poly-fiber HD 2x2 with PPG Del-Star Acrylic enamel with flex agent (colors: bright white with red). The instruments are basic VFR in the rear cockpit only.

The engine is a Lycoming O-320 E-2A (150 hp) with the SkyTec fly weight starter. This engine came out of storm-damaged Piper with only 168 hours on a fresh major overhaul. The propeller is a Sensenich metal 74/58. With this engine prop combination, the empty weight came out at 1,013 pounds.

As was to be expected, Bill indicates that the Acro Sport II is one fine airplane to fly. Its easy to fly and land. He does some aerobatics such as loops, rolls, stall maneuvers, etc. Cruise speed is around 110 mph indicated with top speed being around 125 mph.

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December 2nd Chapter Meeting

Our December 2nd (first Tuesday) Meeting will be held at the Farmers Branch Library, located on the Northwest corner of Webb Chapel and Golfing Green Drive. The meeting will be held in the auditorium and will begin at 6:30 p.m. and finish at 9:30 p.m. Please plan now to attend!

Our December 2nd meeting will feature the annual Holiday Party. Please bring your spouse for friend because this party has become a major social gathering. The library manager has graciously offered to extend our time to 9:30 PM so if we start early as possible we will have plenty of time. The chapter will furnish cold cuts, bread, drinks and utensils. Please bring a dish to share. It is suggested that "finger foods", salad or dessert would be great. The "White Elephant" gift exchange always promises a lot of fun, so don't forget to bring yours. Trash or treasure, male or female, wrapped with no tag. It doesn't take long to figure out how to play the game, so each person sure to bring a gift.

December 6th Fly-In / Drive-In

The December Fly-In will be at Red Bird Airport South of Dallas and will be hosted by Monroe McDonald, his home base. We will meet at the restaurant at the base of the tower for lunch. Monroe wanted to mention that the first three people to ask him for a airplane ride at this fly-in will get a tour of the area via his Mooney. This is his challenge to all of us to give rides to those how may be without wings at the moment.

December 11th Director's Meeting

The December Director's Meeting will be from 7:00 - 8:45 PM at the Farmers Branch Library on the 11th. The following is a report by Tom Emerson from the November meeting.

1. Storage of the chapter trailer. Tom Emerson will check with the Whitesell's to see if they have a problem with continuing to store the trailer on their property.
2. New Board members for 1998. The formation of a nomination committee for the 1998 Board of Directors was placed on the December agenda. Seven new members to the board are needed.
3. Chapter 168 finances: It was decided that \$5000. of the \$7100. in the Chapter checking account will be invested. The specific investment vehicle has not been determined at this time. This was done in an effort to increase returns on this money and increase chapter revenue.
4. The nonprofit status of the chapter is pending a response from Tom Moe. We have not heard back from him yet on this issue. Currently, the chapter's non profit status with the State Of Texas was not kept up to date. This issue is a priority to the 1998 chapter leadership and will be straightened out.
5. Strategies for increasing the attendance at the monthly chapter meetings were discussed. It was voted on and

approved to bring back the monthly door prize drawings. Some differences this time; members will place their names on a card and put them in the basket for the drawing, there will be no tickets sold. Door prizes to the lucky winner will be purchased by the chapter from chapter revenues.

6. Ann Asberry has accepted the task of organizing the chapter Christmas party. (Thank you Ann) She has arranged with the Farmers Branch library for extended hours on that night. The chapter party will begin at 6:30 PM and go till 9:30 PM. Volunteers for the food and supplies were selected at the November meeting.

December 30th Newsletter Assembly

The January issue of Hangar Echoes will be assembled at Nelda Sue and Jerry Mrazek's home on December 30th starting at 7:00 PM. The address is 907 Clemson Court, Arlington, TX 76012. Phone 817 265-0834.

New Members:

1. Christopher J. Pratt, (972) 386-4319, Building a Glastar
2. Ron Wisian, (972) 335-1671, No project

Calendar of Events

Cannot find any fly-ins (except our 168 fly-in) for December (sad situation)

Chapter Tool List by Ernie Ludwick

The following is a list of tools the chapter will loan to members. Contact Ernie Ludwick at 241-1185 to borrow any of these tools.

- * Magneto Timer
- * 24 inch Flexible curve rule
- * Two person differential compression tester
- * Small size tubing bender
- * Set of Greenlee punches
- * Instrument (2 1/4 and 3 1/8) panel punches
- * Smart level
- * Tach Checker
- * Cable cutter
- * Aircraft scales (3)
- * Borescope
- * Flaring tool and cutter
- * Swaging tool and gauges (Nikopress)



A Message From the President Monroe McDonald

It's been a fun year, but it's about all over but the Christmas party. Someone else will get to have the fun now, and I think the chapter is in good hands. I'll still be around; I've been in and out of our chapter activities for twenty years and plan to stay at it. There is a lot of job satisfaction to it, in spite of having to deal with the occasional sorehead, and I highly recommend it. Those who would like to meet more airplane people, see more airplanes, learn more about aviation etc. should get into the chapter activities. Ask a committee chairman what help they need, come to the directors meetings, be a director. Try it, you'll like it!

South-West Regional Fly-In a.k.a. Kerrville

That a.k.a. will have to change now. It's official after the board of directors vote on Nov 15, the SWRFI will be at Abilene Regional airport for the foreseeable future. It was a close call between the three finalists (San Marcos and Galveston were the others). Any of them would have worked, but after a lot of debate on all aspects of the concern, Abilene won. It was my choice, and I think we will have a winner.

There is a lot of work ahead, and I expect our chapter to continue to be a part of it. We have had the responsibility for a number of years for controlling all aircraft movements between the runway and parking areas. Expect to see more info. on this activity, the satisfaction and responsibility of it, and how to get involved.

Chapter 168 News

As Assembled by Marvin Brott

1998 Officers

Let me take this opportunity to represent the elected officers for 1998. Please offer your congratulations and support to them as they take office in January.

President: Jerry Mrazek
Vice President: Jim Quinn
Treasurer: Gene Spaulding
Secretary: Tom Emerson

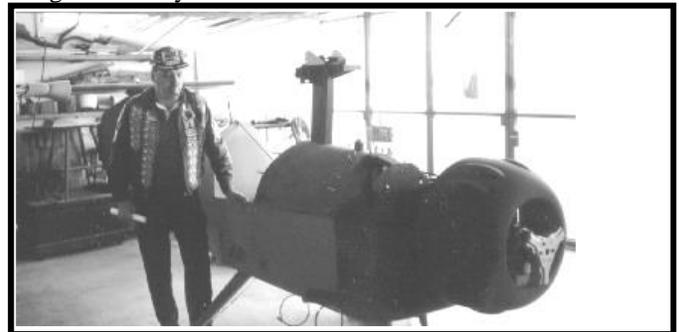
Glass Goose Presentation by Tom Scott

Thanks Tom for an excellent presentation on the Glass Goose at the last chapter meeting. Many of the chapter 168 members have watched Tom over the last twelve years turn the Glass Goose amphibian pusher into a "real" performance airplane. It hasn't been without a lot of preserverence on the part of Tom. Another outstanding attribute for Tom and his company is they tell it like it is. All the cards are face up on the table. If you get the opportunity stop by and see Tom at Lakeview Airport or check out his web page at <http://webwrks.com/glassgoose/>

Howard and Joanne Walrath Hosts at Hidden Valley

Thanks to Joanne and Howard Walrath and the many others at Hidden Valley Airpark for hosting our November Fly-In. For many of us this was our first time to Hidden Valley Airpark which is located just southeast of Denton between I-35E and Lake Lewisville. We had great weather and a super turnout. Howard and others took groups around Hidden Valley to see the different homes and projects. The first stop was to his home to see his Aerosport Scamp. Impressive work on his part on a unique airplane. He is getting close to flying. Next top was to see a completed Q-200 and in-process Fighter
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Escort Wings TF-51. This 2/3-scale replica of a P-51 was very impressive. Next stop was to see a recently purchased flying Lancair 320 and a Glasair III under construction. Many of noticed the thickness of the windshield which must have been at least 3/16 inch thick. Next we were on to see a T-18 with Subaru engine installation. Should fly soon. Finally on to see a big (empty weight of 1750 lbs) 4 place amphibian called the Adventurer. In conclusion, we all got a really good introduction to a really fine airpark (*Earl and I will be there after winning the lottery*) and Howard and all of his airpark friends really rolled out the red carpet. Maybe they will invite us again for a fly-in.



Howard Walrath and Aerosport Scamp

Air Salvage of Dallas 4th Annual Fly-In and Sale Dec 13

It's time again for the Air Salvage of Dallas fly-in and sale. This sale will be from 8 AM to 5 PM on December 13, 1997. Take advantage of this sale since everything is on sale from 10 to 50% off. This includes engines, engine parts, propellers, control surfaces, wheels and brakes, AN fittings, hardware, radios, instruments and much more. Air Salvage is located across from the Lancaster Airport and transportation will be provided for the short distance from the airport to the facilities. Remember, Air Salvage has been one of our long



term advertisers with Don Christensen being one of their best and most satisfied customers.

Election of Chapter 168 Board of Directors

During the March meeting we need to elect or reelect a new set of directors. Clair Button will be chairman of a committee to put a slate of candidates together for the election. If you are interested in helping Clair or would be interested in being a director, please give him a call.

Johnnie Hitt and Challenge Air

Johnnie introduced himself at the last meeting and provided us with a brief background on Challenge Air for Kids and Friends. He has recently been named Executive Director of Challenge Air. This nonprofit organization provides disabled and disadvantaged children the opportunity to soar above their disabilities by offering them free plane rides with a disabled pilot. Rick Amber founded Challenge Air in 1993 with the belief that every disabled person should see the world from a different view....up in the sky. He indicated, "when the kids see me, a paraplegic, flying a plane, they realize that they can do anything they want to... all limits are self-imposed." Rick lost the use of his legs when his plane crashed while returning from a combat mission over Vietnam in 1971.

During 1997 Challenge Air, with the help of other disabled pilots, had a goal of flying 2,000 children at Challenge Air events across the country. To date Challenge Air has flown over 4,000 children in 15 states including Canada. Johnnie was asking for our support be it financial or supporting the events with pilots. Disabled pilots would be present to set the example. They are conducting a **Sleigh Ride In the Sky** to see the beautiful Christmas lights on December 2nd and 3rd. The idea would be to provide a donation (\$250/2 seats) for a flight or help with the flights. Family flight would even include a picture with Santa and goodie bags.

Challenge Air is a Dallas based nonprofit organization and can be reached at (214) 351-3353.

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In addition to Kick Nicke, Bill would also like to thank Tommy Meyer (Meyers Little Toot), Phil Witt and Art and Connie Ackridge who helped with their sweat and time.

After the great news of the Reserve Grand Champion award, Bill started rethinking the events of Saturday remembering what the judges had said about making "more points". They suggested next time to bring the documentation related to building the airplane. Bill has now put together a permanent building documentation booklet that he will keep in the turtle deck.

Now for a final note. Bill has recently started building an RV-6A with the empennage nearly complete. It will only be a matter of time as I am sure Bill will pick up the Southwest Regional Grand Champion award with this RV-6A.

Three Hunters chartered a local bush pilot to fly them for a hunting weekend. Upon returning on Sunday afternoon the young pilot noticed additional cargo waiting for him. Camping gear, rifles, three large grinning hunters and each toting a deer from their weekend spoils. The pilot quickly explained the small aircraft was already going to be overweight and the deer were going to have to be left behind. The hunters protested dismissing the importance of being overweight and said " Last year we loaded all of this stuff and the deer!" The pilot, not to be outdone, caved to the excess load. The poor aircraft bumped and weezed down the short grass strip and inevitably ended pranging the bushes at the end.

Picking weeds off himself, the pilot asked the hunters: " are you sure you guys loaded all this stuff?"
"oh yes we did, but last year we crashed over there!"



"Last Flight" for pilots who have every flown

From Tony Geishauser tonypr@ti.com

To all pilots - present, but mostly past.

All pilots have heard the poem "First Flight." A former boss, friend and dual-rated Army pilot penned this poem dealing with the LAST FLIGHT when he left the Army and Army Aviation. I thought many of you and your pilot friends might identify with and enjoy it too.

Last Flight

Flying is just for a moment. From first flight to last, the time is measured in hours for a lifetime of years. Those moments of being detached from earth often humbled me... yet, planted my feet more firmly on the ground. Such brief flicks of time challenged me to understand the whimsical and sometimes unforgiving nature of God's ocean of air that I explore. Everchanging horizons have prodded me to not be content with what I am today, but to strive for what I must be tomorrow.

The moments are intoxicating; the more of them I drink, the greater is my thirst. The after-effects last forever...the whining, fire-belching, smoking rumble of a cranking radial will always bring chills to my spine and bumps to my skin...a kaleidoscope of memories whirl as my senses awaken to the oily, leathery, sweaty, tobacco-saturated smell of a Gooney Bird's cluttered cockpit...the distant drone of an airplane -- any airplane - - will put wings to my leaden feet and lift me, gawking, craning, oblivious to captor earth.

I am addicted to flight. It lingers warm long after...I caress an inanimate, now still possessoreess..and walk away...but, not without one last, long look back.

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The author penned these words to me at the end of the poem that I pass on to you: "May your manifold never need supercharging, may your RPM always remain in the green and may you always be number one for takeoff! Neal R. Christensen, USA, BG Retired - 6/2/83

How do you know when you are half way through a date with a pilot? Because he says: "Thats enough about flying, let's talk about me"! --Paul Bernard, paul@northern.co.nz



Flying in the Glass Cockpit

by *Brownie Seals*

Electronic Flying is NOT Fun Flying. Few who really know me will be surprised to hear me make that statement. As an old seat of the pants, pilotage navigation flyer, the addition of a lot of electronics in my plane just gets in the way of enjoying the freedoms offered by breaking the surly bonds.

I took my first flying lessons in 1937. I flew at every opportunity, frequently with pilots of questionable skill in planes of questionable performance. Some of my early training was acquired in a 40-HP J-2 cub, flying with a friend who was himself a student in the CPT program during the early days of WWII. I learned to fly when the only thing electrical in the plane was the magneto, and even that frequently refused to produce electricity.

To put my disdain for "regulated", electronically controlled flight in the proper context, I offer a few notes on my experience in that realm. I am instrument rated, in single and multi engine aircraft. I have nigh onto 10,000 hours as PIC in planes from ultralights through Turbo prop Aero Commanders. During that time I flew to and through 30 of the 50 states, frequently on the gages. I have endured over a million miles as an airline passenger in planes from DC-3s to 747s. I know what flying the electronic/regulated sky is like. When it is a travel necessity I acknowledge that it is the way one must go, but that does not make it "fun".

I am also acquainted with the insides of the electronic machinery. In 1952 I designed and put into production the first 360 channel VHF transmitter to be used in airline service. And for 30 years after that I made my living designing electronic devices for airline and military applications. I know what they can (and cannot) do.

One of the devices I worked with had the capability to be used to "auto land" an airplane on a carrier. The device, originally designed to be used as a data link, could be adapted for the landing application. The U. S. Navy completed the project and tested it. It worked. As it turned out, the carrier pilots would not use it. They believed that they needed to do the landings themselves in order to maintain "proficiency". Their concern was that on the day when the machine failed, they would be unable to execute a successful landing due to having no recent practice. In my opinion, a wise choice.

Another of my "experiences" that convinces me that dependance on an electronic machine can lull a pilot into dangerous situations, is the story of a friend who found himself totally lost over far west Texas and low on fuel. Listening to my enthusiasm about flying he bought a Cessna 172 and hired an instructor. The instructor taught him to navigate by VOR and little else. One day he flew to El Paso. Finishing his work late in the day, he set off to return to Dallas. Take off and initial route established he set the VOR and kept the needle centered. When his next airport failed to show up on time, he started checking only to find that the VOR had died leaving the needle in the center. Now, low on fuel and with no idea where he might be, he was terrified. God was with him. He saw a beacon and landed at an airport a

hundred miles from where he had intended to be. He took the bus home and sold the plane where he had landed it. He had narrowly missed becoming the dead victim of an electronic failure.

The real reason I got started on this topic is a small report I found in Aviation Week. Searchers finally found the memory portion of the flight management system from the Boeing 757 that crashed into the mountains near Cali, Columbia. From this device they learned that the crew of the plane had entered an incorrect waypoint into the system. (there is a debate over the paperwork from which the information was acquired, it may have been the real culprit) Depending on the "computer" to fly the plane the crew too late realized that the plane was not going where they thought it would go. By the time they took action to correct the mistake it was too late to recover and they hit the mountain.

An earlier report found in Aviation Week noted that a GAO report showed that - Flight crew management of electronic systems shows that they are not understood by the pilots, who are frequently surprised by equipment behavior. Crews have shown a lack of understanding of automated path control to such an extent as to permit flight into terrain. (as demonstrated above) An all too often occurrence in the cockpit these days, (heard on the cockpit recorder) is pilots asking each other - "What is the computer doing now?" The report noted that "because current aviation is already very safe, any changes should be made very carefully to avoid detracting from existing safety practices". The report expressed concern about basic airmanship skills in several areas.

Human Factor Studies for and by the FAA are highlighting the findings that many of the accidents and incidents in heavy aircraft are precipitated by failure of the human element. The practice of having the electronics make the decisions and do the "control" manipulation detracts from the currency and skill of the pilots. A report by the General Accounting Office (GAO) points out that the FAA is just getting started with human factors studies and that many of the agency departments have made little progress.

From the diatribe above you might recognize that I have not been a great fan of the rush to make GPS the answer to all air navigation activities. In another Aviation Week side bar I read that the chairman of the Air Traffic Services Committee of the International Federation of Airline Pilots Associations states that "over reliance on GPS could set the stage for single point failures and threaten future air safety." He calls attention to the plan for Air Traffic Management in the 21st Century to depend on GPS for primary aircraft navigation, ground surveillance, collision avoidance and timing signals for data communications. FAA plans for the 21st Century Air Traffic Control system calls for GPS to replace everything. VOR, ILS, Radar, Communications, even ATC itself. The plan will have every plane knowing exactly where it is via GPS and a data link telling every other plane where they are, based on the same information. Sort of a "see and be seen" on the video screen that replaces the instrument panel and the wind screen. When they do that I will no longer "fly for fun". (actually, neither will any one else) A failure of GPS would disable all these and leave a sky full of airplanes without guidance or



even basic communications. Today each of those functions are carried out by independent systems. The big advantage of today's system is that failure of any one system does not have a ripple effect into all the other vital services.

I believe that the GPS is being over sold. No doubt that it and other state of the art electronics will provide useful help to aviators, but the over-dependence on any such machines takes away the fun of flying and exposes you to being suckered into some really dangerous experiences. Over dependence on a single system (GPS) will set up conditions for catastrophic, single point, failures. Let's not fall into that trap. Learn to fly by pilotage and the seat of your pants and it will be "fly(ing) for fun". The motivation for all this hoopla is money. The politics of creating a dependency on government services in collusion with the marketing of Billions of dollars of new equipment and services combine to attract an army of GPS promoters.

Men longed to fly in order to experience freedom. Being led around the sky with your head in the cockpit takes away that freedom. Learn and practice flight with your eyes on the sky above and the ground below and really experience the freedom that flight can give. Fly For Fun! Pity those who only do it for money.

Brownie Seals rseals@flash.net



History of Paint

Several months ago Ken Krebaum sent to me an article on the early days of auto painting. I found it absolutely fascinating. Since he knows that I have gone through a lot of wet and dry sandpaper and have painted parts of my RV-4 more times than I would like to admit, he suggested that I was qualified to write a

multi-part article on the "The History of Aircraft Finishing.". Ken then went ahead what a suggested outline: Therefore, the first part of this "History of Paint" is by Michael Lamm on how cars got color followed by Ken's suggested outline for how airplanes got color. Read and enjoy!

How Cars Got Colors

By Michael Lamm

For the first quarter of this century, almost all automobile bodies were painted by hand, with brushes. Nothing held back car production like painting. Paint technology had not kept up with advances in other areas of mass production. Major automakers could assemble a car in four to five hours, but it took three to eight weeks to paint it.

Into the 1920s many car bodies were built by independent suppliers. These companies had sprawling paint areas that housed as many as 20,000 bodies at a time, yet they still had trouble keeping up with the ever-increasing demand. As one maker observed, without a faster method of painting, "it would have been necessary to put a roof over the entire state of Michigan." The logistics of moving bodies around the huge sheds was a nightmare in itself. First, unmounted bodies were dollied from prep and sanding areas to huge paint rooms. Then after the paint had been painstakingly applied, they were transferred to long, low sheds into which warm, filtered air was pumped to speed drying.

Manufacturers made virtue of necessity by boasting about the time and effort they put into painting. When Hudson introduced its inexpensive Essex closed coach for 1922, the sales literature trumpeted: "The finish has not been slighted as there are 25 paint operations, this being fully up to the normal number." In reality, manufacturers longed to eliminate this final vestige of hand-craftsmanship from their production lines--not just because of the time and space it required but because paint men, being skilled workers, were the only segment of the industry's labor force with a strong, independent union.

To apply varnish without leaving brush marks, painters had to be patient and meticulous. Each coat was brushed on at right angles to the one before it. Between color coats, bodies were rubbed with ever-finer grades of pumice and sandpaper. After four to eight color coats, the painter flowed on one or two final coats of clear varnish. Topcoats had the consistency of molasses, and each one took a week or two to air-dry.

After all that exacting work and care, a varnish job lasted only two to three years. Freshly applied varnish had tremendous depth--almost a glow--but within a year or so it would begin to oxidize and darken. Colors became clouded, clear topcoats turned yellow, and surfaces started to crack. Wealth car owners often ordered two custom bodies for each chassis and returned one to the coachbuilder every year for refurbishing and a total revarnish.

Black absorbed more heat than lighter colors and therefore dried faster. That's partly why from 1914 through 1925 Ford

offered the Model T in "any color as long as it's black." Black varnish, which used a carbon base, also resisted ultraviolet sunlight, so it lasted longer. Finishing a Model T body in black varnish took about a week. This was still too long for Henry Ford, so he kept looking for faster painting methods.

One alternative to hand-applied varnish was baked enamel. Bicycle manufacturers had used baked enamel for years, and automakers started experimenting with it around 1908. Baked enamel could be flowed or sprayed onto metal and oven-dried in less than a day. It was tough, had good luster, and needed very little handwork. Why, then, weren't Ford and everyone else using baked enamel? In fact they did make some use of it, but baked enamel had its own set of drawbacks. At first it came just in black, because only Gilsonite, a black pigment derived from coal, could withstand the heat needed to bake it. That restriction was no problem for Ford, of course, but another difficulty was the heat itself. Many car bodies still used wooden framing, and a body painted with baked enamel had to spend four and a half hours in a gas-fired oven at 450 degrees Fahrenheit, a temperature that would burn or split wooden members. So only bodies or parts with no wood in them could be finished in baked enamel. By 1923 Henry Ford had removed much of the wood from his open body styles and ordered his body suppliers to use black baked enamel as well. But since Model T bodies still had wooden tacking strips, Ford avoided the 450-degree ovens by specifying six thin coats of baked enamel instead of one heavy one, with each coat fired at 165 degrees and each body passing through the oven six times. Body finishing now took about three days.

The long-awaited breakthrough in automotive finishes finally arrived in 1923, when Duco lacquer became available. Duco was based on volatile nitrocellulose (similar to guncotton) in an acetate solvent, rather than the linseed oil of earlier varnishes. It had been developed by Du Pont for painting fabric airplane wings during World War I. After the war chemists at Du Pont and General Motors figured out how to dissolve more pigment in the lacquer, how to help it adhere by pretreating the steel and applying primers, and how to keep it from softening and peeling.

Duco cut painting time from weeks to days. It could be sprayed on with a gun, came in bright colors, didn't fade or yellow, and was more flexible than varnish, yet it didn't need high-heat ovens. Painting became another unskilled task, and the painters' union collapsed. As a result of savings on labor and storage, Duco cost less than baked enamel. The first



production car to use Duco was GM's 1924 Oakland. Some low-volume coachbuilders stayed with varnish for a while, but by 1929 most of them had switched.

Michael Lamm is a writer and book publisher in Stockton, California

SPRING 1997 @ - INVENTION & TECHNOLOGY

How Airplanes Got Colors

suggested outline

Part I: 1903 - 1920 The Unvarnished Truth

- This description of the early days highlights the search for an adequate finishing system.
- Eddie Rickenbacker is overheard in a Paris cafe, "Don't put no enamel on my Sopwith Camel! "And they didn't.

Part II: 1920 - 1940 The Wonder Years - High On Dope

- The first practical aircraft finishing system lifts the aircraft industry to a higher plane.
- The nitrate- and butyrate-induced hallucinations of the Granville Brothers and Steve Wittman take to the air.

Part III: 1940 - 1950 The Aircraft Industry Goes Natural

- A GI proclaims, "Willie! Joe! Kilroy! Hold it! If we don't paint the rest of this tub, we'll have a lot more time left to do the racy nose-art!" The natural aluminum finish is born.
- After the war, civil aviation realizes "If bare aluminum defected Hitler and Tojo, it'll get my Luscombe from Garland to McKinney!"

Part IV: 1950 - 1980 The Renaissance of the Homebuilder's Movement

- It takes 30 years to get the dope out of our system. Some remain hopelessly addicted.
- Auto enamel becomes popular; in 1975, Cessna's product line wins the Sunkist "Orange Peel" award for excellence.
- The invention of Bondo curiously coincidences with sudden gross weight specification increase on all homebuilts.

Part V: 1980-2000 Aircraft Finishing Becomes a Symphony In Two Parts (A and B)

- Homebuilders now have another common bond: isocyanate poisoning.
- The "wet look" becomes the term pathologists use when describing the internal state of homebuilder's lungs.

Part VI: 2000 and Beyond

- "Active Luminescent" aircraft finishes are developed. PPG's slogan is "The paint job you can plug in"
- The typical active finish draws 35 amps at 12 volts.
- Heard on the Forth Worth Center frequency: "Center, this is, ah, Glasier, ah, one-five-seven-bravo-sierra. Our, ah, paint job has tripped off-line and, ah, we can't seem to reset it. Ah, request vectors the nearest paint shop."
- In the usual Oshkosh grand champion theme of "what's best is excess," the 2003 homebuilt grand champion can only be viewed through No. 14 welder's goggles.

 Santa Claus, upon trudging out to his sleigh for his annual night freight trip around the world, was surprised to find a guy with a shotgun standing next to his rig. Santa asked him why he was there. The man replied, "I'm from the FAA, and this is an unscheduled 135 inspection. I'll ride right seat." Santa responded, "With all due respects, sir, I've been doing this flight for over 700 years but if you insist, well, let's go." As they both climbed into the sleigh, Santa noticed that the FAA inspector brought his shotgun along with him, placing it in his lap, with his finger on the trigger. Santa queried, "What's the shotgun for?" To which the FAA inspector grumbled, "You're going to lose two on takeoff..."

IN-FLIGHT BATTERY GAS EXPLOSION

By Lucky George Eagan, MN. (612)454-3745 Lancair

Plagiarized from the Chapter 983 newsletter:

On Saturday I flew my Lancair 320 for hour 30 minutes and decided near the end of the flight to check the free fall of my landing gear. I slowed to 80 knots, tripped the hydraulic circuit breaker, selected gear down and opened the bypass valve. The gear fell out and within a few seconds I got the main gear lights. but no nose wheel down and locked indication, I have a 4 inch by 2 inch landing light attached to the nose wheel strut and decided to take it off on the basis that it might create just enough drag to prevent the nose gear from locking down with the free fall system.

The following Wednesday I fired up the engine and off I went. I have dual electronic ignition on my engine so no mags to check. Temperatures, pressures and a prop check and away I flew. Ten minutes into the flight I decided to do the free fall check again. Same routine as before, BUT the gear went out missing the usual noise. Maybe I was just a bit slower. Anyway no lights, nothing, not even for the main gear. I reached for the hydraulic circuit breaker to pump them down when I noticed the fuel gauges showed empty. I had no electrical power and the instrument and alternator field circuit breakers were tripped. I flipped them on and had some engine instruments, but still no electric. Could I have inadvertently shut off the master switch? NO-It was on. I decided to cycle the master switch and BANG, EXPLOSION, SMOKE, and the sealed lead acid immobilized electrolyte battery compartment door goes flying from behind the copilot's seat cushion into the baggage compartment. I was at 3,500 ft and within 10 miles of home base, so I headed back not knowing the gear status. I had lost all radios, hydraulic pump, gear position indication lights, transfer fuel pumps, etc. I tried the



flaps. they worked OK. I later learned the flaps were powered from the electronic ignition backup battery due to a blown diode. Then I moved the copilot's seat cushion forward and saw that my sealed battery was not sealed any more! The hydraulic circuit breaker switch had blown off, the battery hold down board was missing and the battery box was shattered and deformed. With the engine dependent upon the electronic ignition system and whatever power is left in the small backup battery, and an unknown amount of fuel in the header tank, I decided to put it onto the runway as soon as possible no matter what the gear position. I even thought about the grass, but didn't like that idea. Remembering that the last gear free fall attempt was unsuccessful, I thought of catching up to a nearby aircraft and asking him to check on the gear, but no radio. So on short final I pulled the mixture and set full flaps. THANK YOU, THANK YOU, I'M ON THE GEAR! Now that was a great feeling. During postmortem, I remembered just before dropping the gear while waiting to slow down, I saw 18+ on the voltmeter. I switched to amps and read 29.5. Mentally I said I better check that out. I believe the over voltage condition overheated the battery causing hydrogen gas to collect in the battery box area and blow when it got a spark from that master relay that I thought was sealed, or maybe from the circuit breaker. Anyway, I'm installing over voltage protection and getting the relay out of that battery box after I make a new one. I will be ordering a new battery, 40 amp circuit breaker, master relay, a new voltage regulator, and most important--over voltage protection. All the radios are at the radio shop for repair. I used 15 auto fuses in place of circuit breakers, and upon checking later I had 8 fuses blown; Radio Master, Fuel Transfer Pump (2). Gear control and lights, KX 125., KT 76, Fuel Gauges, and GPS. Also seeing that the nose wheel did lock this time, I recommend no extra things on those gear leg. That landing light that used to be attached to the nose gear strut is an the shelf to stay.