

File

# The Citeco

Official Publication of the Experimental Aircraft Association  
EAA Chapter #393 POBox 272725 Concord, CA 94527-2725

APRIL 1996

## NEXT CHAPTER MEETING:

WEDNESDAY EVENING, APRIL 24<sup>TH</sup> IN THE TERMINAL BUILDING AT THE END OF JOHN GLENN DRIVE

This meeting will be a 25th Anniversary Celebration for Chapter 393. We'll have cake and coffee and some presentations. We expect about six ex-Presidents and other charter members.

## TREASURER'S REPORT:

Louis reports that Chapter 393 has \$1231 in the Checking Account and \$2681 in the Savings Account.

## NEW NEWSLETTER EDITOR:

As most of you know, Larry Laughlin will be leaving soon for greener pastures in Colorado Springs. After a lot of arm twisting, Bob Belshe has assumed the editorship and will try to maintain the high quality bulletin that you expect. Good luck, Larry, we will miss you.

My special thanks to Linda and Ken for their continuing contributions to the newsletter.

Please submit articles, ads, and suggestions to Bob at his address on the back page.

## NEW RAFFLE CHAIRMAN

Pat Peters has volunteered to take on the raffle project. Thanks, Pat.

## WELCOME TO NEW MEMBERS:

We would like to express a warm welcome to our two new members, Bill Black and Jack Reichel.

## BOARD MEETING MINUTES:

*by Linda McKenzie*

April 3, 1996: The meeting was convened at approximately 6:45 pm in the loft of Bruce Sequine's hangar. In attendance were Bruce Sequine, Bruce Hobbs, Louis Goodell, and Ken and Linda McKenzie.

## Old Business:

Garry Grover has donated some 4130 tubing to the chapter. All proceeds from the sale of this tubing is to be deposited in the Checking Account.

## New Business:

An agenda was discussed for the April chapter meeting. The charter members of the chapter have been invited to attend this celebration of the 25th anniversary of Chapter 393. Dwaine Duis will relate some stories of the chapter beginnings and will introduce other charter members who are in attendance.

We discussed the possibility of having an impromptu barbeque after the Photo Shoot on April 27.

## MINUTES OF LAST MEETING

*by Linda McKenzie*

March 27, 1996: The meeting was called to order at 7:35pm by President, Bruce Sequine. Bruce announced that a get well card would be circulated for **Ron Robinson**. Ron is recovering from a heart attack he had on a flight from the Southern California area. Ron was lucky that his 19 year old passenger noticed that he had passed out. The passenger was able to maintain level flight until he was able to wake Ron up for a successful landing. Ron is looking for assistance with the paper trail for recovering his medical certificate. If you have any information, please give Ron a call at home 228-3720.

**Frank Storm** then related the story of how he ended up having quintuple by-pass surgery about a month before. He said that it was his experience and that of a friend who just recently died from a heart attack that the outset of a lot of burping should be taken as a potential indicator of an impending heart attack. This is not true for everyone, but it should be considered. Frank thinks that it will take a minimum of six months before he can obtain a new medical certificate.

### **Old Business:**

**Gerry Greth** has put together a trip to Club Med in San Carlos, Mexico over the weekend of May 4 & 5. Twenty-three people have signed up for the trip, so the trip is fully booked.

**Pete Wiebens** is coordinating a photo shoot of our planes from the top of Mt. Diablo. The date is now set for Saturday, April 27. Staging for this activity will begin at Bruce Seguine's hangar on the Northwest Ramp. Each plane will make two passes around the mountain. The starting time will be announced at the April meeting.

**Linda McKenzie** and **Lisle Knight** updated us on the progress on the Golden West Fly-In planning. The Fly-In is scheduled for October 4 - 6 at Tracy Airport. Please put this **must attend** event on your calendar and plan to volunteer two hours of your time while you are there.

### **New Business:**

Buchanan Field's 50th Anniversary Open House will be held on Father's Day, June 16. Tracy Williams of the Airport Managers Office would like a large turnout from the EAA builders. This year will include aerobatic performances by Cecilia Arrigon and John Pigott. Rick Brophy will be driving his jet car. On Saturday, August 17, a 50<sup>th</sup> anniversary dinner dance will be held at the Sheraton. Tickets will be \$35 per person.

David Nye of the Concord Police Dept. spoke about starting up a local Police Activities League (PAL) for the Concord area youth, 4th grade through high school. Officer Nye wants to have Young Eagles programs in partnership with the PAL program. The kickoff event would be at the Father's Day Open House.

### **Introductions:**

**Glenn Werner** is planning to fly his Lancair 360 to Sun-N-Fun. Glenn finally sold his ultralight for \$8,500. His girlfriend **Linda** announced that she will be taking flying lessons.

**Lisle Knight** is bending up the structure for the nose gear that will go on his Osprey.

**Mike Parker** brought in a prototype RV wing-tip that he hopes to have in production shortly.

**Dick Rihn** has the ailerons completed on his One Design. He has completed 200 gussets, and has 500 to go.

**Ray Nilson** is flying his Eagle.

**Lyle Powell** has 700 hrs. on his Glasair III. For his latest trip, Lyle flew down to Castle AFB. There were 47 planes in good display condition. Among the planes on display were an SR-71, a B-17, a B-24, several fighters, and a Vulcan. The air museum is open daily from 10 to 4. The CTAF is 123.0. If you call the security gate at 385-3381, you can probably get a ride from the ramp to the museum.

**Pete Wiebens** announced that he will have some hangar space available for a small project.

**Will Price** has the alternator back in his Lancair 360. RNAV's development work is going slower right now, so Will doesn't have any new goodies.

**Bob Belshe** has about 30 hrs. on his Lancair 235. Most problems solved.

**Harry Heckman** is soldering like crazy on the panel for his Lancair 235 and says that the back looks as good as the front. **Scott Achelis** hopes to be flying next month. He also has a whole bunch of fuel filters for sale.

**Roger Raley** is working on the control column for his RV6.

**Mike Diaz** is working away on the outside of his RV4.

**Terry Gong** is waiting for the wing kit of an RV8.

**Rick Young** has 90 hrs. on his RV6 and has started work on a "hormone" Rocket.

**Gerry Greth** is still flying his twin Camanche. He reported that another test pilot has been killed in the Cirrus VK30. Bob Overmeyer, AOPA Pilot columnist and former Challenger astronaut, was doing deep stalls at 8000 ft when the plane went into an inverted spin. He was able to open the door, but couldn't get out.

**Fred Egli** has the empanage done on his Lancair IV and has the hydraulics laid in place.

**Don Baldwin** wants to drive to Oshkosh again this year and is looking for passengers who will share the driving and expenses. His Teeny Two is still gathering dust.

**Doug Paige** has the fuselage of his RV6 cleco'd together. The Frank Justice manual is an excellent reference; so is the on-line RV group.

**Charlie Adkins** still has his Beech Skipper. He is becoming a partner on a Dragonfly project. Charlie will be doing the building.

**Larry Laughlin** is moving to Colorado Springs. He already has hangar space at Meadow Lake airpark. The EZ is doing great and the Avid is packed for moving. Larry mentioned a crash of a Cessna 206 where the prop was found 1/4 mile from the rest of the wreckage. It appeared that the prop bolts were over-torqued, and the whole prop assembly came off.

**Bruce Milan** is waiting for an IO-550 from Lycon to install in his Questair Venture. He is also selling a Cessna 150 that is fully IFR equipped.

After the break Larry Laughlin conducted the raffle.

### **LAST MONTH'S PROGRAM**

*by Linda McKenzie*

Bill Hadley from the Civil Air Patrol and three cadets gave a presentation on what the CAP does and what it is like to be a member. These young men were very mature for their ages, and were obviously enthusiastic about the program. Annual dues are approximately \$100 per year and members buy their own uniforms. To join the Cadets a youngster must be between 12 and 18 yrs of age. Once a cadet has joined, he or she may remain in the Cadet program until the age of 21. The cadet program primarily focuses on community service. They work at airshows, help locate downed planes, and assist with emergency services. The cadets earn military style ranks through the leadership program. The program involves

encampments, developing skills, military drills, as well as flying activities.

The senior program accepts persons 18 yrs and older. Adults generally join to participate in search & rescue missions.

## NEWSLETTER SUBMISSIONS

All contributions for the newsletter are welcome! If you have something to say or share with the rest of the club members, do it here! Please submit any articles and/or photographs you think others will enjoy and learn from. The deadline for submissions to the editor is the 14th of every month (newsletter is produced and mailed by the 17th). Submissions should be done in writing and mailed directly to the newsletter editor. Submissions may be hand written, typed, or on any IBM diskette (in ASCII or MS Word).

## DUES REMINDER

### YOUR 1996 Chapter #393 DUES WERE DUE AT THE MARCH MEETING

There are about 30 members who have not yet paid their 1996 dues. If you see "LAST ISSUE" below your mailing label, believe it! Bring Louis Goodell a check for \$20, made payable to: EAA Chapter 393 (cash is still accepted) or mail it to the address on the masthead.

If you are not a member of NATIONAL EAA, PLEASE RE-UP THERE AS WELL.

Think of your annual club dues as being \$55.00 (\$20 goes to local, \$35 goes to National).

## YOUR SECRET, TREASURED TIPS PLEASE

We have had a number of excellent tips in previous newsletters. This section can only exist if you take a minute to write down some of your expertise and send it in.

## TECH TOPICS

### Dealing With Stuck Valves

*by John Schwaner (jschwaner@avweb.com)*

If your engine seems rough when first started, it might be giving you an early warning of a stuck valve. Failure to heed this warning and correct the situation promptly could cost you an engine teardown, or even result in a catastrophic engine failure and a forced landing. Here's the lowdown on why valves stick and what to do about it.

Each cylinder of your piston aircraft engine has two valves--intake and exhaust--that open and close by sliding in and out through a close-tolerance valve guide. A stuck valve is one that no longer slides readily in its guide. A stuck valve may refuse to open, or once open it may refuse to close. Either situation is quite serious.

Stuck valves are usually caused by a build-up of deposits and/or corrosion on the valve stem. Because the fit of the stem in the guide is so snug, it doesn't take much build-up on the valve stem to interfere with free movement of the valve within the guide.

### "Morning sickness"

The clearance between the valve stem and its valve guide are at a minimum when the engine is cold. Consequently, the first sign of a stuck valve usually occurs when the engine is first started, and is often identified by an intermittent hesitation, or miss, in engine speed. We call this "morning sickness".

Morning sickness is a warning that should be heeded immediately. Sticky valves never get better by themselves... they always get worse, usually fairly quickly. Flying an airplane whose engine exhibits morning sickness increases the risk of serious engine damage and possibly in-flight engine failure. Hence, the aircraft should be downed for maintenance at the first hint of valve sticking.

### What makes valves stick?

Valve sticking is influenced both by the design of the engine and the environment in which it is operated. Lycomings have more valve sticking problem than Continentals. Hot-running engines stick valves more often than cool-running ones. Valves are more likely to stick in hot summer weather than in cold winter months. The use of heavily-leaded fuels and inadequate leaning can lead to valve sticking, as can infrequent oil changes.

Heat is the primary cause of valve sticking. High temperatures in the exhaust valve guide oxidizes oil and forms carbon deposits on the valve guide, and these deposits can cause the valve to stick. The most frequent reason for elevated valve temperatures is valve leakage.

All of the combustion gas must pass around the valve face as it goes out the exhaust port. The large heat-absorbing surface of the exhaust valve face must conduct heat away from its surface. A valve that is not contacting its seat properly (i.e., is leaking) cannot conduct as much heat into the cylinder head as a valve with good seating.

### Sticky Lycomings

Lycoming valve stems operate at higher temperatures than Continental valves stems. Continental engines use solid exhaust valves whereas Lycoming engines use sodium-cooled exhaust valves, which have hollow stems filled with metallic elemental sodium. The sodium in the Lycoming valve melts at 97.5°C and conducts heat from the valve head into the valve stem, where it is conducted through the valve guide into the cylinder head. The Lycoming valve stem normally operates 100°F hotter than the Continental valve stem. The higher valve stem temperatures in Lycomings make them more susceptible to valve sticking.

Most of the heat conducted from the head of the Lycoming exhaust valve goes out through the valve stem into the cylinder head fins. In addition, the Lycoming guide boss allows 5% of the guide to extend past the end of the boss and protrude into the exhaust port. The protruding guide absorbs heat from the flow of exhaust gas. Because of the high temperatures and combustion deposits on the exhaust valve stem, this area of the guide "bell mouths" or gets bigger. This increases the clearance between the guide and the stem and allows combustion products and heat to travel up the valve stem. These combustion products create lead deposits and acids which increase the corrosive environment.

Lycoming valves also stick because of corrosion buildup on the valve stem. Corrosion increases the diameter of the valve, thereby reducing the valve stem-to-guide clearance. The high stem temperatures, combined with a design which allows more combustion products into the guide bore, create a corrosive environment which is seldom seen on Continental engines.

Lycoming TIO-541 engines installed in the Beechcraft Duke use an oil-cooled exhaust guide. Cooling oil circulates in a groove between the exhaust guide and the guide boss. If this groove cokes up with oxidized oil and becomes blocked, the exhaust guide and valve overheat and stick. If you have a stuck exhaust guide on this engine, be sure to check the oil passage by blowing compressed air through the oil fitting in the cylinder head. Continental engine design is more resistant to valve sticking. Big-bore Continentals rarely stick valves. We do see a tendency for intake valves to stick on Continental engines in the O-200, O-300 series. A stuck intake valve disrupts the breathing of the entire induction system. The power loss results in a forced landing.

### Engine operating environment

Environmental influences that create valve sticking are: high temperatures, dirty oil, high-lead fuels, hot engine shut-downs, and poor engine baffling. Improper leaning can also be a culprit: an engine that is run excessively rich will build

up carbon, lead, and other combustion-related deposits on exhaust valve stems more quickly. On the other hand, an engine that is leaned excessively during high-power operation will experience high valve temperatures, and this contributes to valve sticking.

Engine overhaul shops can't do much to prevent valve sticking. They cannot change the engineering of the engine, and have little control over its operating environment. About all they can do is to use the correct parts (valves, guides, seats, rotators, etc.), to dimensionally match the parts carefully, and to control the surface finish of the guide by careful reaming and honing.

Your regular maintenance shop can influence the operating environment by checking the engine's health regularly (via compression checks, oil analysis, filter inspection, etc.), by making sure the cooling baffles are in good shape and the magneto timing is correct, and by changing the oil frequently.

### What happens when a valve sticks?

When an engine has a stuck valve, one of five things can happen, each of which is bad news:

1. The pushrod bends.
2. The surface of the camshaft or cam follower fails
3. The valve opens but won't close.
4. The rocker support breaks.
5. The valve rotator cap falls off the end of the valve stem. (Lycomings only.)

A valve that sticks closed will often result in serious and costly engine damage. Each time the cam-tappet-pushrod-rocker try to open that stuck valve, you risk catastrophic engine damage. With a stuck valve, the valve doesn't want to move. Tremendous valve train forces develop as the camshaft lobe tries to force the valve open. The camshaft follower and lobe are the most highly-stressed components of the engine even under normal conditions...the additional loading caused by a stuck valve may induce catastrophic failure of the rocker support, pushrod, cam follower, or cam lobe.

A damaged camshaft lobe requires complete engine removal and teardown. The same is true of a damaged cam follower if it is the mushroom-head variety used in many Lycoming engines.

Sometimes an exhaust valve that is stuck closed can cause the intake pushrod to bend or the intake rocker support boss to break. How can this happen? If the exhaust valve sticks closed, exhaust gases will not exit from the cylinder. Gas pressure within the cylinder then prevents the intake valve from opening. If this happens, something's gotta give. Either the pushrod bends or the rocker support breaks.

You might think that a valve that sticks open is a much less serious situation, but that's not necessarily so. If the valve is an intake valve, you lose power and will need to make a

forced landing. If the valve is an exhaust valve, there will not be any compression on that cylinder.

In either case, if the valve spring can't close the valve, the entire valve train (cam follower, pushrod, and rocker arm) unloads. The end of the pushrod that rests in the socket in the cam follower may come out of the socket and fling around inside the tappet boss. If the pushrod ball does not locate itself back into the socket when the cam lobe comes around, it may jam against the tappet housing, usually causing crankcase damage.

The valve rotator cap on Lycoming engines is kept on the tip of the exhaust valve stem by the rocker arm. If the valve sticks open, the rocker may move far enough away to allow the rotator cap to fall off the valve stem tip. When this happens, not only is valve clearance excessive, but also the rocker face pounds into the spring seat. The rotator cap is too big to fall down the pushrod tubes. It just lays in the rocker box until you take the rocker box off. It then quietly falls unnoticed onto the hangar floor. If you notice a missing rotator cap, it is likely that the exhaust valve was stuck open in the past. Look in the rocker box or around the hangar floor and you might find it.

Engine damage does not always occur when the valve sticks, but the longer the engine operates in this condition, the greater the chances are that some damage will occur.

#### Remedial action

Repairing a stuck valve can be done without removing the cylinder from the engine. The procedure is described in Lycoming Service Instruction 1425 and consists of dropping the valve into the combustion chamber, reaming the guide, and then reinstalling the valve.

Another method is to tie dental floss to the end of the exhaust valve and lower it down into the cylinder. Ream the guide and then pull the valve back up into the guide.

If it's necessary to remove the cylinder, we recommend you inspect the condition of the camshaft lobes and the cam follower. You may want to review the operating environment of the engine. Pay particular attention to the oil change intervals, baffle condition, and operating techniques.

The procedure outlined in Lycoming Service Instruction 1425 and described here can also be used on Continental engines.

Do not use Marvel Mystery Oil or other solvents to un-stick a valve. Solvents may un-stick the valve in time but not immediately. Eventually the valve may un-stick, but not before your camshaft lobes have been damaged.

Solvent treatments dissolve the outer deposit layers in the guide boss and temporarily un-stick the valve. The remaining deposits push the valve over to the opposite side of the guide and cause rapid, uneven guide wear. The valve stem may stick or it may cause rapid guide wear where the stem is forced against the guide material opposite of the deposit buildup.

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*John Schwaner is AVweb's powerplant expert. John is a world-class authority on piston aircraft engines, and a specialist in the engineering analysis of engine failures. John runs Sacramento Sky Ranch, Inc., a leading distributor of aircraft and engine parts, and probably the foremost aircraft hose shop and magneto overhaul facility in the U.S. John and his wife live in Sacramento, California.*

*John has also written two superb technical books: Sky Ranch Engineering Manual and The Magneto Ignition System. Both can be previewed in and ordered from the AVweb On-line Bookstore.*

## BEST OF THE INTERNET

*by Ken McKenzie*

Everybody loves quotes. Everybody loves flying. Here is the best of both worlds, a mixture of quotes, humorous sayings poems, etc. (Much thanks to everyone who sent material in. Email new quotes, money, corrections, blah blah to David Bratzer at dbratzer@is.dal.ca)

"Combat flying is long hours of total boredom interrupted by seconds of sheer terror."

-Unknown

"When we walk to the edge of all the light we have and take the step into the darkness of the unknown, we must believe that one of 2 things will happen: there will be something solid for us to stand on, or we will learn to fly."

-Anonymous

If God meant man to fly, He'd have given him more money.

The three things that never did anybody any good: the altitude that's above you, the runway that's behind you, and the gas that's still in the truck.

The purpose of a propeller is to keep the pilot cool. If you don't believe it, turn it off and watch him sweat.

"To put your life in danger from time to time....breeds a saneness in dealing with day-to-day trivialities."

from SLIDE RULE by Nevil Shute

"A midair collision seriously erodes climb performance."

Barry Schiff

Airplanes are near perfect, all they lack is the ability to forgive.

Richard Collins

The following statements are taken from Flying Magazine August 1993. They are a collection of "Rules for Pilots" that Len Morgan put together from all his years of experience in the aviation industry.

Flying is not dangerous; crashing is dangerous.

Flying is the perfect vocation for a man who wants to feel like a boy, but not for one who still is.

There are four ways to fly: the right way, the wrong way, the company way and the captain's way. Only one counts.

An airplane may disappoint a good pilot, but it won't surprise him.

Any pilot who relies on a terminal forecast can be sold the Brooklyn Bridge. If he relies on winds-aloft reports he can be sold Niagara Falls.

The friendliest stewardesses are those on the trip home.

Being an airline pilot would be great if you didn't have to go on all those trips.

The nicer an airplane looks, the better it flies.

Jet and piston engines work on the same principle: Suck and squeeze, blow and go.

There are three rules for making a smooth landing: Unfortunately, no one knows what they are.

Passengers prefer old captains and young stewardesses.

The only thing worse than a captain who never flew as copilot is a copilot who once was a captain.

Any pilot who does not privately consider himself the best in the game is in the wrong game.

If an earthquake suddenly opened a fissure in a runway that caused an accident, the NTSB would find a way to blame in on pilot error.

A smooth touchdown in a simulator is as exciting as kissing your sister.

Tell someone you work for another airline and he'll tell you how much better yours is.

Any attempt to stretch fuel is guaranteed to increase headwinds.

A thunderstorm is never as bad on the inside as it appears on the outside. It's worse.

Most airline food tastes like warmed-over chicken because that's what it is.

Everything is accomplished through teamwork until something goes wrong, then one pilot gets all the blame.

If it doesn't work, rename it; if that doesn't help, the new name isn't long enough.

A good simulator check ride is like successful surgery on a cadaver.

Asking what a pilot thinks about the FAA is like asking a fireplug what it thinks about dogs.

Trust your captain .... but keep your seatbelt securely fastened.

When a forecaster talks about yesterday's weather, he's an historian; when he talks about tomorrow's, he's reading tea leaves.

A thunderstorm is nature's way of saying, "Up yours."

#### Heard on the air (late at night)

ATC: "33Y, say altitude"

33Y: "Altitude"

ATC: "33Y, say airspeed"

33Y: "Airspeed"

ATC: "33Y, say cancel IFR"

33Y: "one two thousand, one fifty knots"

#### CALENDAR

- April 20 Fly-in at Davis. Cal UCD flying Farmers. They are looking for airplanes, and will have shuttle going from airport to town
- April 27. Photo shoot from Mt. Diablo. All meet at Bruce Seguire's hangar (Northwest hangars, row C).
- May 4-5 Great Valley Fly-in, Woodland
- June 7-8 39<sup>th</sup> Antique Fly-in, Merced
- June 14-15 46<sup>th</sup> Moonlight Fly-in & Airshow, Porterville
- June 15 EAA Northern California Regional Conference, Oroville
- June 16 Buchanan Field's 50th Anniversary Celebration. 10am to 5pm.
- August 15 50th Anniversary dinner.
- October 4-6 Golden West Fly-in at Tracy airport, volunteers needed.

## CLASSIFIED ADVERTISING

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Items for sale by club members may be placed in this newsletter for **FREE!**

*All I ask is that you submit your **FOR SALE** item to me in writing and no later than the 14<sup>th</sup> of the month. Normally, your ad will run for two issues, unless you request more or tell me that the item is no longer for sale.*

**PROJECT FOR SALE:** As an experienced EAA composite builder (a Vari-Eze 1980 and a Cozy 3 1988), I'm looking forward to the next project. The Cozy is nearing completion, all major structure is finished except for strakes. On gear and canopy on fuselage. It is close to wiring, instruments, paint, and upholstery. Kevlar engine covers and wheel pants are included, as well as heavy duty Cleveland wheels and brakes and pre-formed strake leading edges. Controls installed and all plans and newsletters included.

For the Airframe only (chap. 1-20) only \$16,800

For the Engine only (1252 TT 160hp O-320) \$6700

Completed Cozy 3's sell for \$35-60K, so this is an opportunity to save many years and dollars. For pictures, more information, please call Alan McPherson, 707-785-2947 or write: P.O. Box 195, Stewarts Point, CA 95480. West Coast P/U or Delivery can be arranged.

**FOR SALE:** "new in box", Cleveland Wheels & Brakes (p/n 050-07600). Ideal for small aircraft (Vari-Eze, Kitfox, etc. ) \$450. (over \$600 anywhere else).

Prestolite Starter for Lyc. 320/360 - \$200.00

Microfiche Reader that prints - \$50.00, smaller table top reader - \$20. Call Larry @ 510 758-3533

**FOR SALE:** IO360 Continental Engine

210 HP, 1700hrs, no engine log, timed out, all cyls still measure above 60lbs, includes all accessories, Prop. governor, starter (24v), etc. \$4,500 (core value should exceed \$6,500)

Also, MAULE WING, std from M-4, \$2,500  
(909)684-2258 or (502)879-6126

**FOR SALE:** RV-4, 250 hrs, O-320 eng.

\$38,000 or best offer. Lost Medical, must sell ASAP.  
Jack Hogman (707) 253-0164.

**FOR SALE:** Custom Vari-eze, almost completed, including 125 hp Lyc O-235 f2b, Catto 3 bladed prop, Hunter wheel pants, electric nose gear & speed brake, Prop. Extension, Cleveland brakes, Stainless Exhaust, and much more. All the good stuff! Call Ron Richmond (510) 672-3210 for a great deal. No reasonable offer refused!

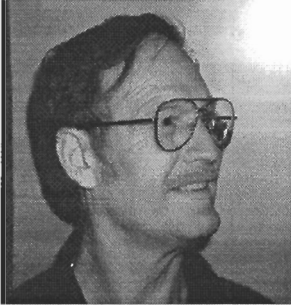
**FOR SALE:** Q235 project. Nearly finished. Lost medical and enthusiasm. Lyc. O-235, 327 SMOH, Carbon fiber spar, reflexors, speed brakes, new mags. Call for more specs. and photos.

Asking Only \$10K. Call (510) 254-7843

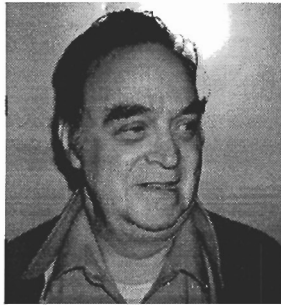
Quent Durham, Orinda, CA

# JOIN THE EXPERIMENTAL AIRCRAFT ASSOCIATION

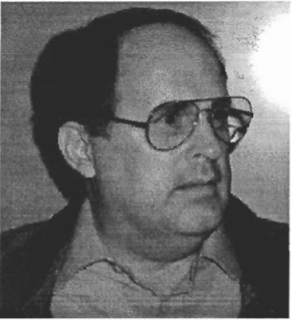
BLAME THESE GUYS FOR EVERYTHING!



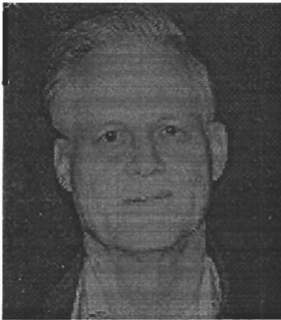
PRESIDENT  
Bruce Sequine 671-4943



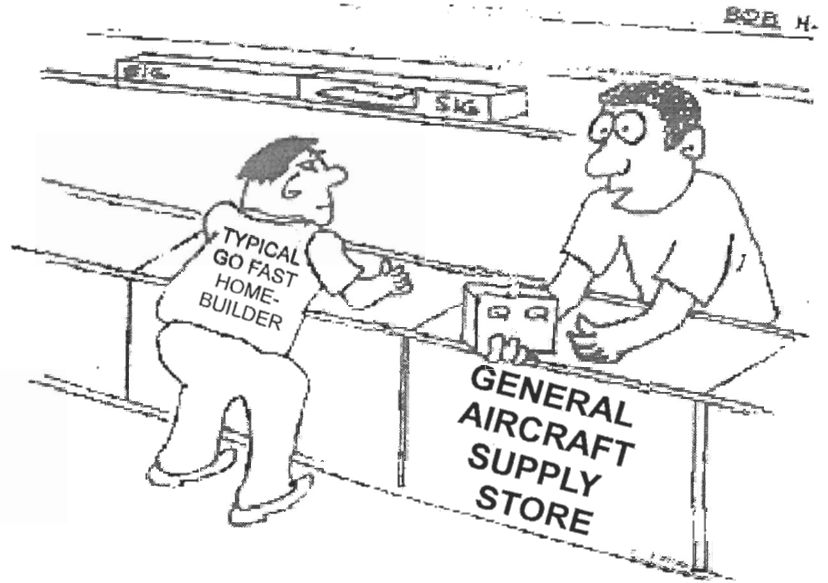
SECRETARY/TREASURER  
Louis Goodell 682-4198



VICE PRESIDENT  
Bruce Hobbs 757-0618



NEWSLETTER EDITOR  
Bob Belshe 376-7677



JUST HOW FAR BEYOND YOUR MEANS DO YOU WANT TO GO?

From: EAA Chapter #393  
The New Newsletter Editor  
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*"Homebuilders do it with BETTER PERFORMANCE"*