

EXPERIMENTAL AIRCRAFT ASSOCIATION
CHAPTER 35 NEWSLETTER

PRESIDENT	BARBARA MARTIN	690-9960
VICE-PRESIDENT	DR. JAMES BABCOCK	680-2848
SECRETARY	NANCY MASON	688-9072
TREASURER	SHIRLEY BAKER	690-1626
EDITOR	ME (Paul Mckinley)	490-8960,1

MEETING: SATURDAY, NOVEMBER 11, 1989
SAN GERONIMO AIRPARK (15474 FM 471W)

10:00 am - Work Party

7:00 pm - Meeting

Program by Julius Braun

PREZ SEZ:

WORK PARTY at 10:00 am. We still need to finish the soffits, and roughing in the wiring, to be ready to sheetrock. There will be adequate supplies to finish these two items. I intend that we will meet in comfort during the chilly winter months! (Have you ever had to flip a light switch to get water from a faucet? Well, you'd better not let me work by myself)! Many thanks to those of you who helped at the last work party.

7:00 pm Julius Braun will do a "replay" (by popular demand) on his adventures in New Guinea & with the New Zealand and Australia EAA Chapters. Don't Miss it! Our lighting situation is much improved and the slides will be easily detected!

November is also ELECTION month for this Chapter. Our only vacancy is for President...chief stick & rudder kicker.

If you missed last meeting, you not only missed a good one, you also missed seeing long time friend & member, Mike Rodriguez, who was in town for a few days.

Please join me in extending best wishes for a speedy recovery to Jim George who is convalescing @ SE Baptist Hospital.

Castroville Airport is expecting the additon of 15 more hangars, twin or larger in the very near furture...hope to have more about this at the meeting.

Kerrville Airport is a great place to go for a Sunday Breakfast! Yes, I know there is no restaurant on the airport, but the Chamber of Commerce has friendly volunteers who will meet you at your plane, drive you to the restaurant of your choice-- and return you to your plane! When? Any Sunday between 0800 and 1330. Phone or radio your ETA to Kerrville Aviation (CTAF 122.8U), (512) 257-8840....give A/C call sign & number in party. With 1 hours notice, they will meet you on arrival. If this proves popular, they may include Saturdays and events such as, "fly to breakfast & a golf game", or any thing else you'd like to do. John Davis & Elvira Rose of the Chamber were my gracious hosts, when I flew in last Sunday. I'm going again next Sunday..... coming along?

Congratulations to Lew Mason who has soloed into self-employment. May you become rich, famous (and generous!).

Real Estate
Property Management

VA Foreclosures
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LEWIS MASON REALTY

LEWIS MASON, Broker

15464 FM 471 Box 27
San Antonio, TX 78253

688-9072

Al Campbell contributed the following article on the Huntington Lift Reserve Indicator. Enjoy...See you at the meeting!

Huntington LRI, Revisited

4

Adding knots for each kid on short-field final approaches and guessing at the airspeed? Stop guessing.

We've been using a Huntington Lift Reserve Indicator in the company Mooney for some five years now and, though we still aren't sure how it works, we wouldn't want to be without it. It has proved itself to be a much more valuable resource in slow-speed flight than the airspeed indicator and the seat of our pants.

But twice now we've had to call Morgan Gurdon Huntington, the LRI's inventor, when what the instrument was showing just didn't seem quite right. Swapping the old-style indicator for a new one, which has a tougher metal bellows, did the trick a few years ago. Then, last spring, the LRI again appeared to be "off," leading us to make seemingly slower approaches than we were used to. Though Huntington responded immediately to our call, he seemed to suspect what we were using to sweeten our coffee. "We routinely, without charge, exchange a customer's LRI display gauge if for any goofy reason at all he loses confidence in what he's using," he wrote.

Simple System

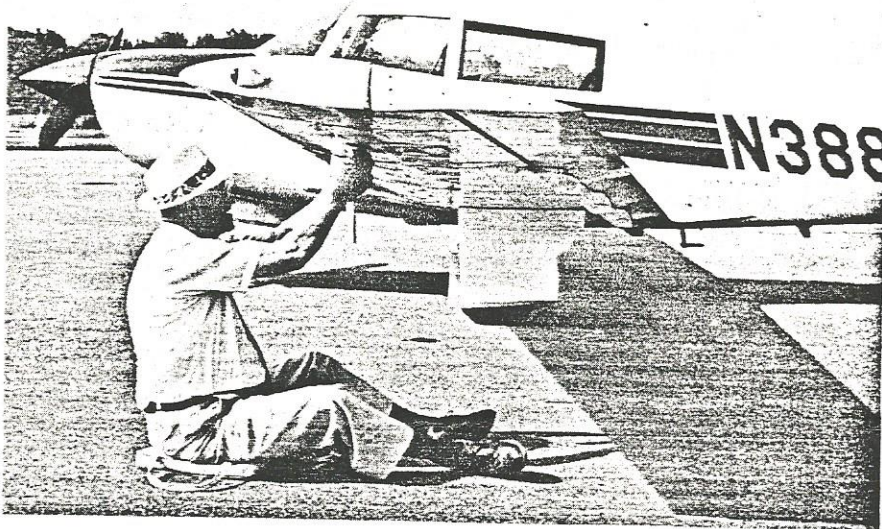
The LRI comes with a lifetime warranty, and Huntington sticks to it like glue. "The thing has to work," he says. "Whatever happens to the instrument, I will replace it free of

charge." Though he takes great pains to humor his customers, he maintains that once an LRI is installed and calibrated properly on any airplane, it will work unerringly, unceasingly. There certainly isn't much to break; the system is quite simple.

The major components are an anodized aluminum mast, which is installed on an inspection plate below the wing or nose, and a display gauge, which includes a 2.75-inch-round indicator inside a three-inch-square housing that's bolted into or atop the instrument panel. The mast and gauge are connected with two 1/8-inch nylon tubes. There's also a heating element that slips into the center of the mast and is wired to a switch and circuit breaker inside the cockpit.

The
Aviation
Consumer
October 1,
1989

Morgan Huntington says he'll replace an LRI if an owner loses confidence in it for "any goofy reason."



It's simple, but not so simple that we can accept Huntington's claim that it's maintenance-free. Like a buck tooth, the mast protrudes forward into free airstream beneath the wing or nose. Setting the "tooth" at the right angle is critical because the system does its thing by measuring differential pressures through vents drilled slightly above and below the foremost corner of the mast.

The mast is fixed in place by tightening one bolt that passes through its root. We just don't see how the mast could stay put forever dangling from the tightly sprung Mooney—or from any other air-

plane, for that matter. We suspect that, despite what Huntington says, recalibration is necessary every once in awhile, and our experience seems to bear this out.

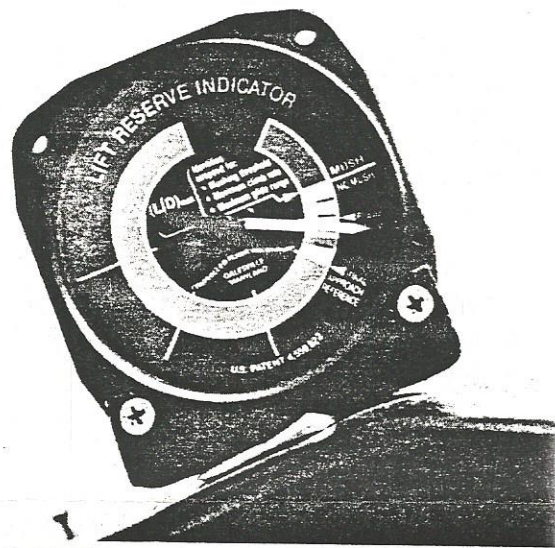
In any event, Huntington cheerfully replaced both the display gauge and mast on the Mooney. He also calibrated the device by watching the display while we shot a series of full-stop landings and by making fine adjustments in mast angle between flights until he was satisfied the instrument was reading properly. He inscribed a line on the mast, flush with the wing skin, so future recalibration should be easy to accomplish.

Imbroglia

You'd think that since the LRI is a relatively simple system, it should be easy to explain how it works. Well, we still get migraines when we try. Huntington is a delightful chap and has a wonderful sense of humor, but you've got to suspect that anyone holding dozens of patents for things like a "self-limiting radiant nuclear boiler and superheater" just has to be a genius. And when the razor-sharp, 80-year-old inventor tries to get his point across to those of us who were happy to merely have survived college math

and physics courses, there tends to be a lot of frustration on both sides.

(Huntington does, however, have a disconcerting habit of launching down some distressing side streets just as you think you might be on



In The Aviation Consumer Mooney 201 the LRI is mounted on the glare shield conveniently in the pilot's scan. It can, of course, be mounted in the panel if space is available.

the right path. One that loses us every time is when he starts denouncing ground effect as a "popular superstition of the technically untutored." There's no such thing, he says. Angle of attack is another red herring in Huntington's book. The guy wants to rewrite portions of *Aerodynamics for Naval Aviators*, for Pete's sake.)

Anyway, the best we can gather is that LRI theory is based on the premise that the slowest airspeed at which an airplane can be controlled is achieved at an aerodynamic state constituted by the maximum force ratio of lift to drag (L/D max). Suffice it to say that you know an airplane is in this aerodynamic state when the needle points to the juncture of the red and white arcs, at the three o'clock position on the display gauge.

Red, You're Dead

The theory is tough sledding, but using the LRI is stone simple. The

main thing is to stay out of the red arc, because that's where the airplane starts mushing (some lift is being produced, but not enough to sustain level flight). Huntington says that adjusting attitude and power to keep the needle nailed at the juncture of the red and white arcs (L/D max), however, will do several things in a pinch. It will give you maximum glide range, with or without partial power, or maximum endurance with power. It will give you maximum safe angle of climb.

That may be, but we've used the LRI mostly to stay out of trouble while maneuvering in slow, distracting patterns and to help us get the slippery Mooney down without thumping or floating. The drill on final is to keep the LRI needle at the juncture of the white and blue

arcs. Then, as you approach the runway, trim and adjust power during flare to position it at the "Flare Minimum" tick mark at the center of the white arc. The result invariably is a nice soft touchdown and a short roll-out. (The blue arc, by the way, is Fat City. Here, the airplane has bags of lift.)

Unlike an airspeed indicator, which borders on nervous breakdown at slow speeds in rough air, the LRI provides a nearly instant readout of lift margin (that is, the airplane's aerodynamic state in relation to L/D max) regardless of how smooth or bumpy the air is. And it matters not how much power you're carrying, where you have the gear and flaps, or whether the airframe is clean or covered with ice. Keep out of the red arc, and you're okay. (And by all means, don't call the LRI an angle of attack indicator; Morgan will have your head.)

Stalemate

Huntington maintains that if an LRI were installed and used in every airplane, there would be no airspeed control accidents. He asserts that there have been no such accidents in 300,000 hours of flying by the 400 airplanes that have had LRIs installed since 1981. And so far, no

one has stepped forward to claim the \$1,000 Huntington has offered to any pilot who experiences an accelerated stall with the needle outside the red arc of a calibrated LRI.

Though there are ample testimonials for the LRI, it suffers from a lack of understandable technical description. No one but Huntington and his son, a Ph.D. in physical chemistry, seems to know how it works. Roy LoPresti, who is going to evaluate an LRI on his hot new SwiftFury, told us, "I've flown it in other airplanes, and it works very well. Morgan seems to have a very worthwhile product, but I don't feel comfortable recommending it because I'm not sure I understand it."

If someone like Roy LoPresti doesn't fully understand it, what chance do the rest of us have? Certainly, the FAA hasn't a clue. Huntington has been dogging the agency 10 years now for an STC. "The FAA has never understood what I'm talking about," he complains. Indeed, the agency insists that he come up with some "verifiable documentation." Meanwhile, Huntington hasn't helped himself any by publicly accusing the FAA of "murderous fraud" in requiring pilots to use airspeed indicators during low-speed flight. Also, he has threatened to uncover in congressional hearings "the wholly preventable killing of some three hundred general aviation pilots year after year" unless the feds require LRIs aboard all aircraft.

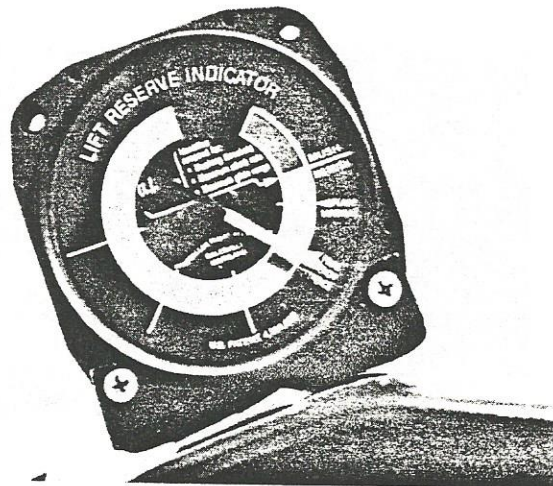
FAA says Huntington isn't playing by the rules. Huntington says the FAA is stonewalling. He told us the DER he hired some time ago to help get the instrument STC'd gave up after FAA backed out of two scheduled flight demonstrations. "He told me they weren't going to approve it, because it would make them look bad," Huntington said.

(It's interesting to note that Safe Flight Instrument Corp. used to offer the relatively low-cost, angle of attack based SC-150 Speed Control system, which was STC'd on several singles and piston twins. However, it withdrew the SC-150 a couple years ago because of concerns about product liability.)

Pragmatists

Though Huntington hasn't succeeded in getting FAA to approve the LRI, plenty of pilots who have flown it, including us, don't really give a fig how it works, we just know that the doggone thing does work.

One pilot who seems to have a very good intuitive grasp on how the LRI works is Dr. Kenneth Wolf, safety director for the Aerostar Owners Assn., who installed one on his Superstar conversion two years ago and has become quite an advocate.



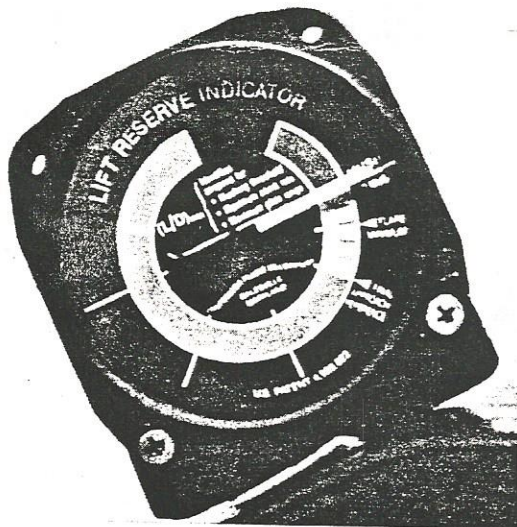
Here the needle is pegged right on the junction of the blue and white arcs for final approach.

"It's an incredibly valuable instrument," he told us. "I can't understand why anyone would fly an Aerostar without one." He noted two incidents in which the LRI indicated he was losing too much lift. One was during a landing on a perception-tricking, snow-covered runway. The other occurred when he had to reduce power on a sick engine after committed to a take-off. "On circling approaches, especially, I watch that thing like crazy," he added.

Though it isn't STC'd, field approval via Form 337 is possible. However, Huntington told us some FAA regions are reluctant even to go this route. The Eastern Region, he noted, is "notoriously bad." A field approval involves the determination that the LRI isn't interfering with anything else in the airplane, a change of weight and balance data (though the system weighs a mere two pounds) and a requirement for a placard reading, "Not to be used as a primary flight instrument."

The LRI costs \$937 and requires eight to 12 hours for installation. Calibration can take anywhere from 30 minutes to two hours, Huntington says. He markets the instrument through Controlled Flight Mechanisms, P.O. Box 135, Galesville, Md. 20765; (301) 867-1619.

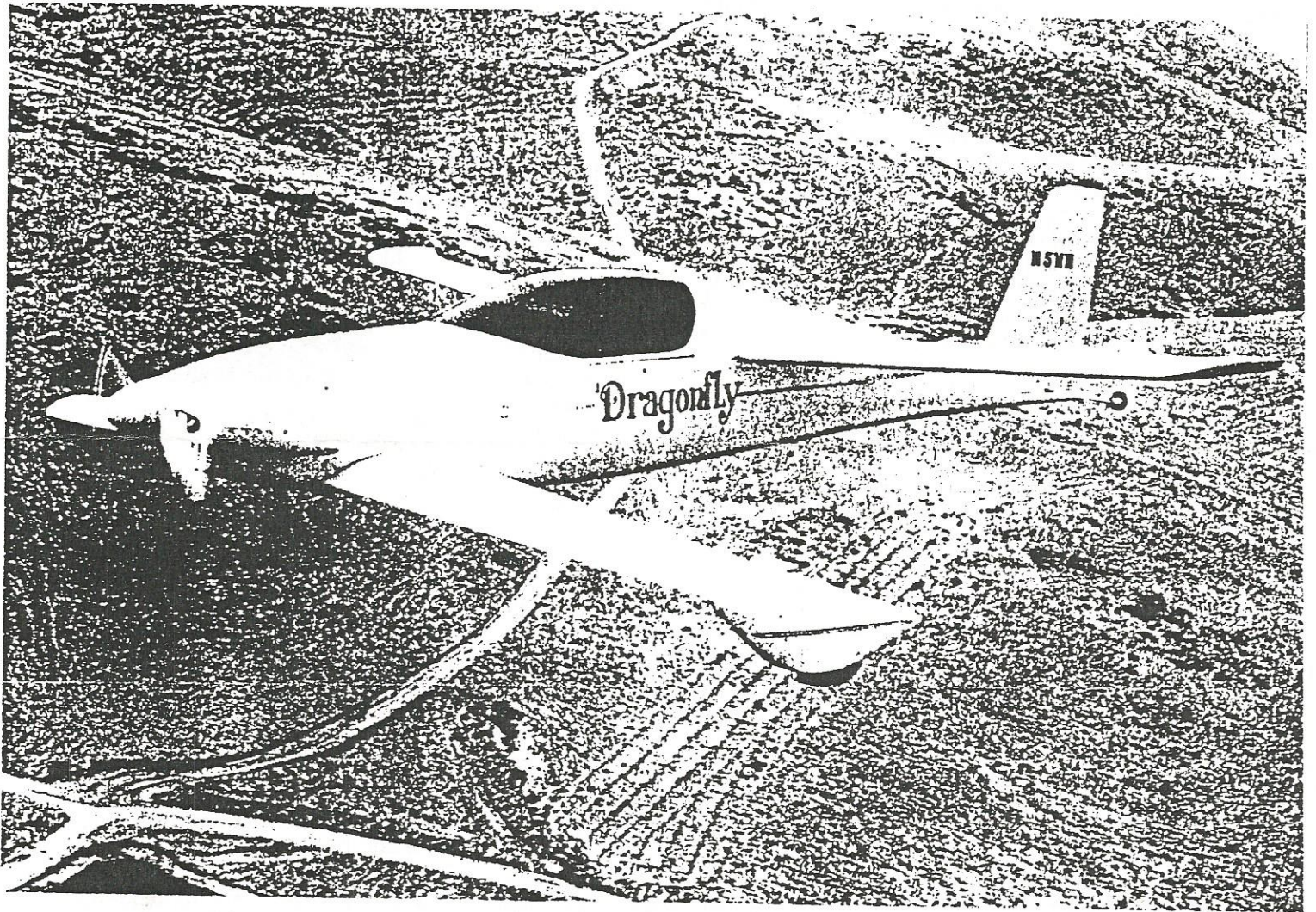
Mark Lacagnina



At the junction of the red and white arcs, on the "mush, no mush" line, the Mooney in slow flight was beginning to mush and buck (hence the blurry photo).



The LRI sensing vane juts below the outer wing surface at an angle set to custom calibrate it to each airplane. Differential airstream pressures entering two small orifices at the tip of the vane cause the bellows in the indicator to move the needle.



The following are excerpts from the Dragonfly brochure:

The DRAGONFLY is a low-cost, homebuilt sport plane with a canard planform. The canard design provides low wing loading to produce exciting performance with a VW-based engine, and brings the added plus of exceptional stall resistance. You can pick from three different landing gear options:

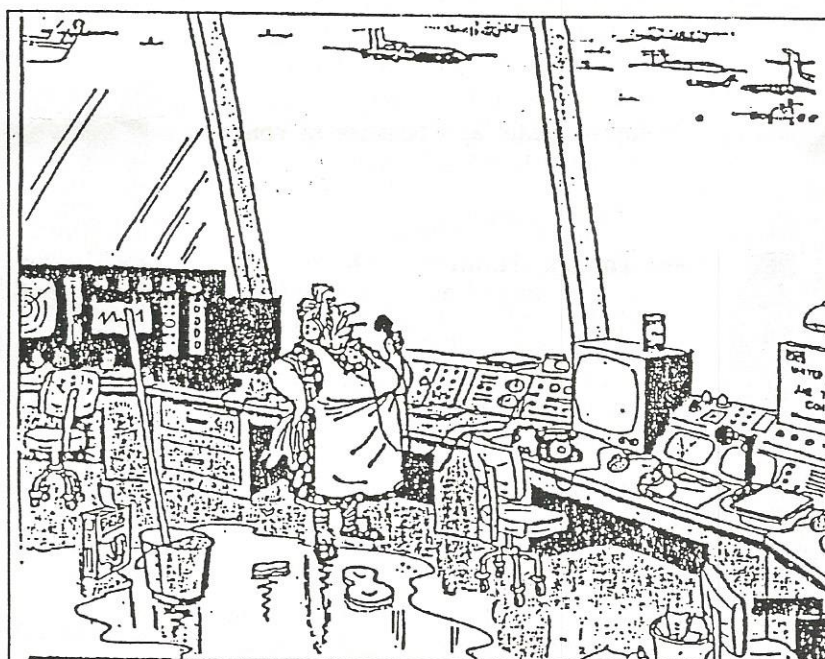
- efficient equal span canard planform••(wide stance)
- MARK II••is only 8 feet wide at wheel centerline and is rugged enough to absorb the bumps and jolts of landing on dirt strips or grass.
- MARK III••regardless of how easy a DRAGONFLY is to fly as a taildragger, many pilots simply feel more at home with the tricycle gear configuration. We

have designed the DRAGONFLY MARK III to retain all the good looks of the other DRAGONFLYS, while offering excellent ground handling and easy landing characteristics.

SPECIFICATIONS

Configuration - Canard
 Seating - 2, side-by-side
 Controls - Dual side sticks
 Canopy - One piece, molded
 Cockpit Width - 43" inside (same as Cessna 172)
 Construction - Moldless foam/fiberglass composite sandwich
 Empty Weight - 605 lbs (1835 HAPI Engine)
 Gross Weight - 1150 lbs
 Stall Speed - 48 mph indicated
 Fuel Capacity - 15 gallons

Fuel Consumption 3.4 gph at 165 (TAS)
 Range - 500 miles, with 30 minute reserve at 165 mph; 840 miles, with 30 minutes reserve at 130 mph.
 Wing Span - 22 ft.
 Canard span - 20 ft.
 Wing Loading - 8 lbs/sq. ft., solo; 11.4 lbs. at gross wt.
 Load Limits - +4.4, "g" -2 "g" working 6 "g" ultimate.
 Glide Ratio - 14.5 to 1
 Engine HAPI 1835 cc, 60 hp at 3200 rpm
 Takeoff Distance - 700 ft. at gross load
 Rate of climb - 1150 fpm, solo/ 850 fpm, dual
 Cruise Speed - 165 mph (TAS) at 75% power at 7500 MSL
 Maximum Speed - 168 mph (TAS) in level flight at S.L.
 Ceiling - 18,500 ft. (MSL)



Now hear this --- the big one with the yellow stripes is the last one I bring down --- I've got to finish mopping up the Kerrville Tower.

TAILS OF THE GOLD MONKEY (By the editor, Paul McKinley)

You will all be happy to hear that '250 will soon be terrorizing the WBY (Wile Blue Yonder). Ann & I have finished basically everything except putting the trim back on.

We put toebrakes on the right side, a feature sadly lacking heretofore. Ray was wanting to know how Piper specified the toebrake installation so we could make the proper logbook entry. Turns out it is an option, referred to by drawing number. I didn't realize, when I was sleuthing how to specify it (by calling the service manager at Brown Flying Service) that it was right there in the back of the Owners's Manual, along with the paint colors and everything else.

I still have to get a couple bolts to tie one bracket to the firewall, and a rubber hose bleed the brakes with. Then once it has it's blessing, with the trim, and Off We Go Into The WBY. Unfortunately probably won't be this week (unless I get the rest of the work done evenings this week because of a prior planned camping trip. Which also means I won't be there for the meeting.

I had heard from Francis Govers that there was a BD-5 in Randolph. I received a call last week from the fellow (Tex Willis) who bought that bird. Apparently it has most of the sheet metal work done, but no controls or engine.

Fairweather Flyers: dues \$5/yr, call Linda Pearson at 491-012. They are a loosely knit group who plan informal flyouts to various places. We used to do that in this chapter a lot, but no-one has been willing to take the responsibility of planning the flights.

CALENDAR

Nov 9 AIAA Dinner Meeting, Meatballs Restaurant, Loop 410 @ Blanco featuring L.J Bement, recipient of the NASA Exceptional Engineering Achievement Medal, on the "Application of Pyrotechnics in Aerospace." Reservations to Randy Tullos 522-2055.

Nov 11 EAA Chapter 35 meeting with our Continent Hopping Juli Braun.

Nov 12 Chapter 747 Fly-out Lunch - Sonora TX

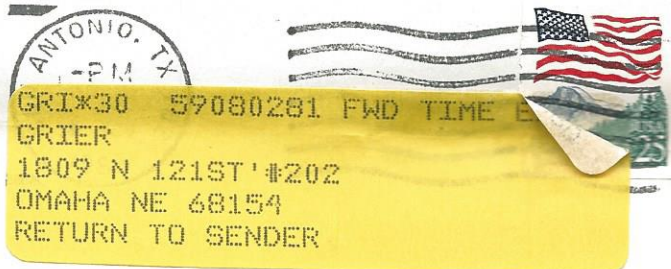
Dec 5-8 Las Vegas, Nevada National Agricultural Aviation Ass Convention.

Dec 9 EAA CHAPTER 35 MEETING, CHRISTMAS PARTY & NEW OFFICER ROAST AT SAN GERONIMO AIRPARK (SOFFITS & ALL).

WANTED: Aircraft spruce & plywood, any size. Contact Lew Mason (card in newsletter.)

SALE: A/C Trailer (orig. for BD-5). 8' wide, 4' tall inside (incl. fin for vert. stab.), and about 16' long. 490-8960

EXPERIMENTAL AIRCRAFT ASSOCIATION
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Paul McKinley, Editor
14114 Susancrest
San Antonio, TX 78232-4740



James & Margaret Grier
13230 Blanco Rd., #805
San Antonio, TX 78216

WEEKLY NEWS AND MARKET REPORT (continued)

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WEEKLY NEWS AND MARKET REPORT
San Antonio, TX 782-4750