

TURN ^{AND} BANK

OFFICIAL NEWSLETTER OF RAAC CHAPTER 85

April 1999

Childhood Dreams



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of Your Lycoming Engine



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The TURN AND BANK is the monthly publication of RAAC Chapter 85 and is intended to keep members informed as to the club's activities, and to promote safety and technical excellence in the field of sport aviation. No responsibility or liability is assumed, expressed or implied as to the content of articles contained in the Turn and Bank: the intention is to provide a forum for discussion and exchange of ideas.

Newsletter contributions should be mailed to George Gregory, 19470-88th Avenue, Surrey, B.C. V4N 3G5 no later than the 12th of each month. Business Fax is (604)-469-3495. Please remember to indicate "attention George Gregory" on your fax.

Enquiries to the Membership Chairman should be mailed to Rob Prior, #204-130 E.11th St., North Vancouver, B.C. V7L-4R3

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AIRCRAFT
ASSOCIATION
CANADA
Delta Heritage Airpark
Vancouver, B.C.



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For inspections of Amateur Built Aircraft Projects contact the Recreational Aircraft Association Headquarters at 1-800-387-1028

Regular Meetings are held on the first Tuesday of each month at 20:00 hours in the clubhouse at:

Delta Airpark, 4103-104th Street
Delta, B.C. Clubhouse phone: 596-3644

Mailing Address: Chapter 85, RAAC

c/o Delta Heritage Airpark, 4103-104th St., RR#3, Delta, B.C. V4K-3N3

Executive meetings are held on the third Tuesday of each month at 19:30 hours in the clubhouse.

Chapter aircraft pilots, mail cheques (Payable to RAAC Chapter 85) to:
Brad Short, 8052-122a Street.Surrey. B.C. V3W-7R4

Technical Guy

From the Western Canada RVator

Care and Feeding of Lycomings Eustace Bowbay, Blind Bay, BC

After getting out of the Air Force in 1945, I became part owner in a small charter and flying school operation and continued to be involved in commercial aviation until retirement. With the switch from the air force paying the bills to me paying them I really got interested in how my engines were being handled. It didn't take long to see the difference in costs between an engine that was carefully handled and one that was handled by an inexperienced pilot or hot rodder.

My priorities have always been safety first and costs second, and over the years it became very plain that the best and cheapest way to accomplish this was to start out

with a new engine or a premium overhaul and don't cut corners under the cowlings. After a few years I finally settled on the following procedures and found them to do the best job. These are the power settings and handling procedures I have used on the Lycoming O-540, O-360, and O-320 engines over the past thirty years or so. I have found them to give the best combination of long life, speed versus fuel consumption, and most importantly, no engine failures. All of my life my engine handling priorities have been:

1. Do the best you can to prevent an engine failure.
2. Keep engine operating cost as low as possible by having every engine run its full time between overhauls.
3. Avoid propeller damage during ground running, and try to cause the least amount of disturbance to others from noise and prop wash.
4. Make maximum performance a consideration only when conditions warrant it.

In my opinion, "engine handling" begins when you first decide to start the engine. So these are the rules I have followed:

1. Never attempt a start below freezing

without pre-heating. Learn how much prime is required under various conditions to start in, say, three or four blades. Never prime with the throttle.

2. Keep engine RPM to 1000-1200 for a few minutes, monitoring oil pressure. Keep under the redline. You may have to drop below 1000 RPM initially if the engine is started close to freezing with heavy oil, to keep oil pressure within limits.

3. Move to the run-up area and, assuming one is on pavement, warm up into wind at 1400 RPM, to 100-120 degrees oil temperature. Check the mags (or electronic ignition) at 1700 RPM. In the case of a constant speed prop, exercise the prop a couple of times with a 300-400 RPM drop. I don't go above 1700 for a mag check, unless something shows up, for the good of the prop. Going into grass or gravel strips, if I have any concerns about prop damage, I will check the mags in the circuit before landing and then just check for a dead one prior to take-off.

5. Take off at full throttle, and, in the case of the RV, climb out at say 110-120 indicated, As soon as comfortable, throttle

Continued on Page 8

Homebuilt Aircraft Border Crossing Permits

Ask For: Federal Aviation Regulation (FAR) PART 91/91.715, Special Flight Authorization for foreign civil aircraft.

Give:- Make: Builder's Name

-Type and Model Number

-Serial Number (plans number will do)

-A/C registration number

-Name and Address of the registered

owner.

It is suggested you include Xerox of C of A and Journey Log pages showing most recent annual inspection.

Give a rough itinerary of destinations or events and first entry airport to the US as well as your point of departure going down. Give dates for which you need the permit although they will usually give you a 180 day permit.

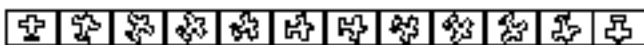
Carry your permit on board when you get it.

Send your request to:

Duty Officer
Federal Aviation Administration
Transport Airplane Directorate
Aircraft Certification Service
Seattle MIDO
2500 East Valley Road, Ste C2
Renton, Washington 98055

(I am advised that no Phone or Fax # was supplied. Try Directory Assistance - Ed.)

AIRFrame



Aircraft Portraits

Rob Prior

mail to: Airframe@istar.ca
http://home.istar.ca/~airframe

#204- 430 E 11th Street, Northvan, B.C V7L 4R3 Ph. 604-980.7723

Don't Miss the
Annual Bash
Casa Sleigh Restaurant
7:30 pm, Doors Open at 6
Contributions for Door Prizes
are requested.

BULLETIN BOARD

If you have questions or problems with your aircraft construction, we have members who have developed some expertise in various fields who have volunteered to advise you on methods, procedures and pitfalls in the capacity of **Builders' Counselors** something along the lines of the former designee programme. Please respect the fact that these are volunteers who may not appreciate late calls, and will not return long-distance calls on their answering machines. Also, none are inspectors, and although experienced in their various fields, cannot be held responsible. It is and remains **YOUR** project. Their names and numbers are on page two and will be a regular feature of our contents page.

Please note that the locks for the club-

house and the club hangar have been changed. If you want a key that works in both hangar and clubhouse, give Rob Prior a call at 980-7723.

Lost and Found Dept: **Lost:** one hat! Arlington Airport Thursday July 9. Blue. RCAF Association crest plus an enameled Long-eze Pin. Give Gordon Hindle a call at 535-0592.

Program: for our March meeting we will have two guest speakers: Ms. Danielle Rehm, inspector, General Aviation and Mr Roy Taylor from Victoria. He will cover various aspects regarding permits for homebuilts. Have your questions ready!

Memorabilia and Nostalgia Dept:

Don Souter uncovered some old documents relating to the club's purchase

("Experimental Aircraft Association Chapter 85") of the J-5 way back in the sixties. The bill of sale from Pacific Wings Ltd, is dated Nov. 8, 1960 indicates we bought it, damaged for \$52.80 (!) The Chapter paid cash. There was 5% tax to the amount of \$2.50. That has to have been a deal, even translated into today's dollars. Of course the bill of sale doesn't indicate *how* damaged it was.

As well, there was a set of rules printed up for the use of the aircraft. Some familiar names surface: Mrs. Diston (Darmels' wife, I assume) held the key, and Paul March was apparently the Aircraft Chairman. Jack Moran or his appointees were the check pilots. No unlicensed passengers were permitted.

Wow. I was four years old then...

Minutes

by Jim Hunter

Minutes of the General Meeting, 2 March, 1999

Call to order: 8:00 pm by President Pat O'Donnell.

Meyer/Prior I: that the Minutes of the General Meeting of 2 February, 1999 be adopted as printed in the *Turn and Bank*. Discussion Carried.

Correspondence: Letter received from Gogue thanking the Chapter for the donation to CMFT to be used for obtaining propeller blades for the Lodestar on display at DHAP. Apparently they have some from a Canso that can be made to look just about right.

Committee Reports:

Treasury: Verbal report by Treasurer Tim Novak.

Membership: Rob Prior: standing at 110 paid up for '99. Only about 35 of last year's members have not re-upped for this year.

Aircraft: Brad Short: no Turbi flying last month; mags looking a bit suspicious so

therefore, a motion:

Wilshire/Souter: that the sum of \$2039 be temporarily drawn from the fund set aside for the J-5 rebuild to buy a mag and harness set for the Turbi. Discussion Carried.

J-5 Re-build project: Gary Ewing: project taking a bit of a breather because the shop has been occupied by members doing essential maintenance on airplanes. Hope to be back at it soon. Still room for volunteers.

Buildings: Dan Weinkamp: Shop highly rented at the moment (as above) but thus producing good revenue. We still need a member to take over the technical side of the Building Chairmanship.

RAAC: Bruce Prior: Received from Brampton some Executive Minutes; highlights:

-DOT/RAAC have reached an agreement on funding of AIR-ABA Programme.

-Regional AIR-ABA Chiefs met at Cornwall Facility. Our region great but some of the Easterly ones having difficulties.

-The New Manual is in the mail (if you ordered one)

-Chapter Meeting Place Insurance from RAAC that was free to Chapters will now cost - probably \$100.

-Next RAAC AGM to be in St. John's, NFD.

-RAAC elections soon. could be eagerly contested one.

-Kelowna is now a MODE C airport to the not exactly delight of the light aircraft operators there. If a wedge can be slipped in that easily there, why not here?

DHAPCOM: Terry Wilshire: Our five year license from GVRD Parks up within a couple of years. Terry thinks that we should be able to get a ten-year license next time based upon our superlative behavior and etc. The establishment of the "Foundation" that would allow the construction for the multi-use building is moving forward glacially but positively.

Newsletter: George Gregory: Going fine. Always receptive to contributions.

Program: John Vlake: John introduced two DOT gentlemen who are visiting tonight. Mr. Stephen Ray is actually with DOT Airworthiness but has been able to persuade his govts to let him work on establishing a connection between DOT and the Recreational side of aviation - sorting out possible conflicts and such. Stephen can be reached at 363- 6863. He works out of Sidney on the Island.

Old Business:

1) **Annual Bash:** Casa Sleigh, ladner 23 April See Tim Nicholas for tickets \$25. Anyone with prizes to donate, also see Tim.

New Business:

1) **DHAP Fly In:** July 3. This under the sponsorship of DHAPCOM.

2) A **Fly-in** (brave souls) **Skagit Regional** (aka "Bayview") 10 April

3) Gen about **homebuilt border crossing** permits to be in April Turn and Bank (slightly new format).

Meyer/Prior I: that we adjourn.

Jim Hunter, Secretary.

Childhood

D r e a m s

by George Gregory

This is reprinted from the December 1993 edition of the Turn and Bank and is offered as a reminder of what you get when I run out of articles. So there.

AS FAR BACK AS I CAN REMEMBER, I've always been like this; at least I don't ever remember *not* being this way: just obsessed with the idea of flying.

It started with the dreams. I'd be playing tag with some friends and would jump out of someone's way, to find myself flying above it all. Other times, I was swimming, but in the air. And always, that sense of utter freedom.

When I was six or seven I tied some cardboard wings to my arms and jumped from my kid brother's crib to my parents' bed, flapping for all I was worth. I convinced myself this experiment was successful and believed that if I took these wings up to the garage roof and flung myself headlong, I would attain the airspeed necessary and somehow achieve flight. Mercifully, I never got around to trying it.

Later attempts grew in sophistication. When I was twelve I constructed a crude rogallo, made of 1 by 1 spruce and held together with nails and screws. I convinced my dad to tow me down our front street with the family station wagon; I suppose he was confident that this contraption was entirely lacking in its ability to propel his son heavenward in *either* sense of the word. At any rate, the undercarriage disintegrated on the rough pavement within the first five feet of its "takeoff" roll. Undaunt-

ed, I took the sail up to the roof of our house; while Dad with his camera actually encouraged me to jump. I chickened out.

In the spring of 1971 I read of the exploits of a fellow named Jack Lambie. The magazine's caption read "The Twenty-Five Dollar Airplane". Now 14 years old, I had achieved a level of material affluence

**...I suppose he was
confident that this
contraption was entirely
lacking in its ability to
propel his son
heavenward in either
sense of the word.**

appropriate to my age: I had convinced my folks I deserved a regular allowance. At last, a truly affordable machine, and one built from *someone else's* plans! Three dollars went into the mail, and I soon owned a set of drawings. Confident it would never fly (and perhaps because it kept me from other, more perilous adolescent pursuits) my parents lent what support they could, driving me to the lumberyard, helping me rip the spruce planks into spars, and so on.

Construction was straightforward; wing panels were twelve and a half feet by four

feet, constructed of spruce 1 by 1 1/2 members. The rigs were of bamboo, quartered lengthwise and bent over a gas flame to the necessary camber. They were tied to the wing panels with string dipped in white glue, and then poly sheets were fastened by stapling the sheet to the underside of the leading edge spar, pulling it over the top of the wing, and doing likewise at the trailing edge. The plastic was stitched to the ribs with a darning needle and string.

Common baling wire held the biplane configuration together, and a tail was added, also braced with baling wire. The only significant deviation from the plans was that I somehow couldn't figure out how to give the wings their dihedral; I passed over this as a minor detail, to my eventual peril.

It was BIG. It seemed to fill our entire backyard. A 25 foot wingspan, and 16 feet ling; just shy of 200 square feet of wing, and all this to be piloted by a 95 pound pilot. I could barely lift it.

On Labour Day I disassembled it, and we loaded it onto the family station wagon and headed to a small hill about 20 minutes from our Edmonton home. There must have been a dozen people who came out to see if I would kill myself, plus a few of the local constabulary in case I really did. We tediously reassembled the glider and toted it to the crest of the hill, facing into the wind.

I paused for a second. The breeze played on wings that already seemed

Continued next page

lighter. This was different than the other times; I had never really expected to fly before. This time...well, maybe I stood a better chance. I shuffled my feet a few times looked down the hill, and started to run.

I was flying. Actually flying. My feet kicked at the empty space below as the ground floated past. The wind breathed past my ears, and the sun was gold in my eyes; and I remember that it was magic. Like my childhood dreams.

I floated on for what seemed a long time; more likely it was 20 or 30 seconds. I touched down at the base of the hill, family and friends excitedly running down to join me. Congratulations all around. Wow! Could you believe it? Look here! Let me try it! And (though I didn't notice in the excitement) the relieved faces of my parents: I had flown and was still alive.

I made a few more flights before relinquishing possession to my younger brother, who seemed keen to give it a shot. He situated

Weight shift was the only means of control: and with an underweight pilot and no dihedral, setting the craft aright just wasn't happening. It started to sideslip toward the ground.

himself too far forward in the "cock-pit" and despite several tries couldn't get airborne. Now the experienced birdman, I deigned to show them how it was done: I ran down the hill again, and once more that magical flying/floating sensation; then a sudden gust from the starboard side got under my wing and in a few seconds I found myself much higher than I had anticipated and utterly out of airspeed. The glider hung in the air for a second, banked at a crazy angle. Weight shift was the only means of control: The wing went in at a 30 degree angle; forward speed was virtually nil to I had the peculiar experience of seeing the port wing roll itself up like a blind as it struck the ground. Then I hit, hard. What was left of my wonderful machine settled, with the dust, on top of me.

I checked myself over. I wiggled my toes, feet, hands, felt myself all over. Seemed ok, though my ankles were sure sore. I spit. No teeth came out; that was good. I remember the smell of grass and of the plastic wings as they sat there, broken in the afternoon sun. And I remembered that I had flown.

We gathered the pieces up and crated them home, where they mouldered for the winter. The next spring, I moved to the coast with my family, taking only memories and a few pictures with me. I'm sure I aged both my parents by a decade. Now that I am a family man I can only wonder at the courage they displayed in letting my chase that particular rainbow.

It took me a whole summer to build, all of my very limited resources, and I got perhaps two minutes of enjoyment out of it. I'm sure I aged both my parents by a decade. Now that I am a family man I can only wonder at the courage displayed by my folks in letting my chase that particular rainbow.

You know what? It was worth it.

The J-5 Rebuild Continues!

Want building
experience?
Thinking of starting
a project?
Here's a good place to
start learning...

Contact Gary Ewing
at 585-8278

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Classified Ads are free (within reason) to members. Display Ad rates are:

Business Card: \$25 per year

1/4 page: \$10/month \$100/yr

1/2 page \$15/month \$150/yr

1 page: \$25/month \$250/yr

Ads that have been in for more than 6 months are subject to removal if space is required for other stuff. Please contact George the editor if you want it kept in.

FOR SALE: New 4130 Tubing - most sizes available. **Used** - Tripacer Fuselage (comes with logs), metal prop off 150 hp Tripacer (comes with logs) Cessna spring steel gear legs, misc. wheels, axles, brakes and parts, misc. instruments (no altimeters!) A75 engine case, 7 Continental cylinders, some Lycoming cylinders (big), carbs, mags, pumps, old radios, etc. Call Pat at home, 533-1839.

WANTED: Medium size air compressor, with or without tank.

Doug 275-1405

FOR SALE: Icom handheld radio, brand new PTT with sidetone, charger, etc. \$500

George Gregory 882-8016

FOR SALE:

Walker prop 72x44 for 65 to 85 hp Continental; as new, \$500. Also Prestolite DC hydraulic power pack (for retractable gear)

\$125, 5" Venturi, \$40, 2" Venturi (brass) \$50. Complete set windshield/rear observer plexiglass for Taylorcraft L2A, \$350. One set of 4 Bungee Cords for J3, new, \$100. RV6A Stainless (321) 1 3/4 crossover exhaust system with stainless forged flanges \$750 obo

Bob Cutting 275-1603

Email rcutting@direct.ca

FOR SALE:

52" x 34" Shettler's propeller with hub, \$100.

Vic Gabas (604) 853-2778

FOR SALE: SIROCCO PROJECT

Fuselage, canopy, tail group complete. Air frame control components done except for cable. Main-wheel gear, wheels and brakes done. Tail-spring and wheel included. Panel made, no instruments. Lycoming 0-290 GPU Zero-timed. Will Neubert stainless cross-over exhaust with stainless muffler/shrouds. Bendix PSC5 carb. Bendix mags with non-shielded leads. no starter, starter ring or alternator. Weldtech engine mount. McCauley prop.

Wings: ribs and minor spars done. Spar diaphragms done. Two spar-grade spruce planks. No other wing parts.

\$15,000 firm, complete and not interested in parting-out

Jim Hunter 576-2678

FOR SALE:

1 set (8) 60810 (68763) M10 main bearings

\$295 per set

1/2 set (4) of same \$150 per set

1 set (8) 60810 (68763) M003 main bearings

\$295 per set

1 set (8) 61662 M10 Rod Bearings \$175 per set.

All bearings fit Lycoming 0-235 and 0-290 (without C/S prop). All are new, perfect but certs mislaid,

Gogi (604) 823-6428

FOR SALE:

1957 Tripacer Wings uncovered, all reworked. New leading edge. New ash tip. All Zinc Chromate ready to fabric. Included: 2-18 gal. gas tank, 2 - gas tank cover, landing light, aileron and flap, front and rear struts. Asking \$4000 Canadian.

Roger Gauthier (Kelowna) (250)-763-1529
(250) 212-0832 (cel)

WANTED: PA 18 or PA 20/22 Wings. Some damage OK. 946-5881

FOR SALE: Tailwind Project. I hate to let it go! All wood for wings, spars and ribs done, new wing fittings, control system, Cougar fuselage mostly modified for Tailwind use.

George Gregory 882-8016

FOR SALE: Mags, turn and bank indicator.

Classified continued on page 8

Classified Ads (Continued from page 7)

Fuel tank with gauge, cut down Sensenich prop, lots of other stuff.

George Gregory 882-8016

FOR SALE: Fleet F7 Biplane replica. Very close to original copy except for uncowed engine. Engine: Kinner R55 160 hp. Aircraft is modified for solo operation from rear cockpit. Extra bellytank with wobble pump. Original Fleet wheels, brakes, pedals and stick column. Original parachute accommodating bucket seats, oversize tires, Stits covering, voice activated intercom. Ted Hendrickson Propeller, manual and extra key magswitch.

\$35,000 Canadian. (604) 478-6048
Will consider small antique aircraft engine as trade-in.

FOR SALE: Some Cont.0-200 parts: Case (checked, no cracks) Camshaft, Gears, Rods and Pistons; Carb and spider, Starter (pull type) and Generator, mags (one is disassembled). \$2500 for the package, offers

considered on individual parts. Also, Prop hub for Cont. tapered shaft, \$350, Wing parts for Taylorcraft BC-12D (disassembled) including ribs, spars, compression struts, brace wires and strut fittings. Offers?

Contact David Smith (604) 513-0353
(604)513-0373 (fax)

FOR SALE: 1 pair David Clark Helicopter headset, 1 Telex MRB-2400 headset, 1 Marvel Schebler MA3-SPA and 1 MA4-SPA carburetors. June McMann 943-5369

Aircraft Painting

Will paint, finish off aircraft for cash or part share in airplane. Prefer Cessna or Piper. Value of work is \$6-8000 depending on condition of aircraft.

Kevin 580-6264

FOR SALE: One set of 1500 Murphy floats ready to go.

Ole #45-3931 198 st. Langley BC 514-1280

FOR SALE: 6 Factory new Franklin 180 hp cylinders includes installed valves \$300 each, will not part out.

Tim Novak 271-8586

WANTED: No bounce landing gear for Aeronca Champ

Ken Morrison (604)524-1762

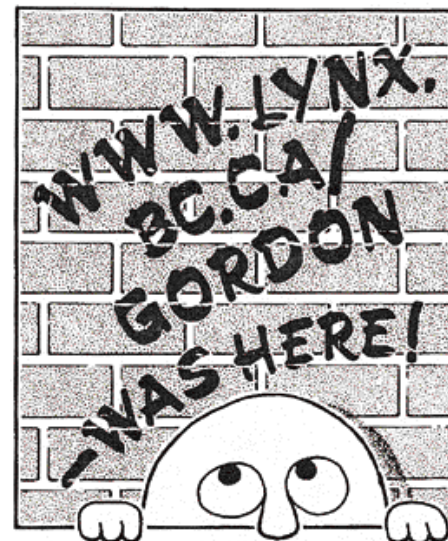
FOR SALE: Softcom 2 place Intercom ATC-2Y, with accessories \$110.

Stuart Gear (604) 941-9402

E-mail:sgear@infoserve.net

FOR SALE: Set of instruments, switches, breakers, sheet metal tools, misc aircraft parts and materials.

Grant 536-6945



Technical Guy *continued from page 3*

back to 24-25 inches of manifold pressure and, in the case of a constant speed prop, reduce to 2400-2500 RPM. I have always made it a rule to keep full throttle operation to one minute, maximum, unless circumstances dictate otherwise.

6. Continue climb-out at these settings until reaching desired altitude, starting to lean at 3500-4000 feet, and keeping well on the rich side of peak. On reaching cruising altitude, level off and cruise at 2400 and 21-22 inches manifold pressure for say 5 minutes, to stabilize temperatures. Then lean to peak on the hottest cylinder, less 50 degrees on the rich side.

7. Plan your descent to maintain 400-500 fpm at 18-20 inches manifold pressure, gradually reducing to say 14 inches on arriving at circuit height. This cools the engine gradually (prevents shock cooling). On levelling out in the vicinity of the airport, you can reduce power as appropriate to maintain the speed you desire. The speed is now low enough that this power setting will keep the engine temperature okay. Another reason for restricting

descents to 500 fpm is for passenger comfort. I have found that people who don't fly very often have sensitive ears, especially if one has been at a high altitude for an extended period. This means that if you have to let down 7000 feet you have to start the let down in an RV roughly 45-50 miles back. Using this method assures the proper control of engine temperatures and also allows for immediate shut down of the engine after landing.

All for the above RPMs pertain to a constant speed prop, which will be turning 2700 RPM in full fine for takeoff. I have no experience with a fixed pitch on an RV but in talking to others, procedures should be the same. The difference would be (in the case of the new Sensenich prop for the O-360, for example) that the RPM at the start of the take-off would be somewhere around 2200 to 2300, increasing with air-speed until reaching around 2700 in level flight at critical altitude. I believe, for the good of the engine, that it should never be operated over 2500 RPM continuously, which, with the Sensenich prop, would mean reducing the manifold pressure to around 20 inches.

The Lycoming manual says not to

operate at over 75% continuously. This equates to around 2400 RPM and 24 inches. The recommended TBO is 2000 hours, and this can be achieved if the aircraft is flown on a regular basis (at least every two weeks) and cruised at 65% power. This has worked for me. I have never had to change a cylinder on a Lyc, all have run their full time, and I've never had one quit except for fuel starvation.

Using these settings I ran nine light twins with O-540s and IO-540s for several years, each one flying 1000-1100 hours a year, without a single cylinder change and with every engine reaching its recommended TBO. Restricting RPM on the ground to 1000 or so will keep prop damage to a minimum.

Really all this boils down to is to use 75% for climb and as close to 65% for cruise as you can get. The rest is just common sense.

One need not feel restricted by these procedures. If you need it, use it. The small Lycs are famous for their reliability, but every time one strays from the above it takes a bit away from the safety and increases the cost.

More on this next month - Ed. T&B