

free flight • vol libre



4/2000
Aug/Sept

PRIORITIES

Howard Loewen

As a means of introducing the SAC board to members, Richard has asked me to write this month's *Priorities*. I'll take a moment to introduce myself. I consider myself a long term Winnipegger, although I spent about a decade going to university and working in Southern Ontario. I spend my work-days designing and writing software. This is my fifth year on the board as the Prairie Zone director. I fly an IS-29D2 with no special distinction at the Winnipeg Gliding Club. I am dad (with some distinction I hope) to two daughters: Amy (3) and Emma (7). I am very pleased to have served on the board under Pierre's leadership and look forward to acting as Richard's Vice President.

Recently I had the good fortune to have had a "demonstration" (that means free) flight in a *Katana Xtreme* motorglider. A local FBO had the factory demonstrator in town for a few weeks and I was able to arrange a flight. It is a pleasant aircraft although it does not offer spectacular performance with the engine off (a 240 feet per minute sink rate).

It is interesting to consider what advantages such an aircraft might bring to our training program. This flight was timely, as the ability to fly a two seat motorglider with a glider pilot licence is one of our "rights" that SAC has been defending over the past couple years. When the CARs were introduced, the restriction that only single seat motorgliders could be flown with a glider pilot licence was dropped. Since that time Transport Canada has twice tried to amend the CARs to reintroduce this restriction. On both occasions SAC, or more specifically our executive director Jim McCollum, has been able to have the amendment defeated. This is another example of SAC working hard simply to maintain the status quo. "Why fight for the right to fly two seat motorgliders?" is an obvious question – there are less than a dozen in Canada and glider pilots fly only a few of these. "To keep our options open." In Europe, motorgliders such as the Xtreme are routinely used in ab-initio instructing. It is likely that what works in Europe will work here, and might be even more effective given our short season.

Pierre Pepin will be administering the Peter Corley scholarship this year. This scholarship is geared towards young students who are attending university or community college and who are glider pilots. Details and application forms will be posted on the SAC website soon.

On a sad note, George Graham, one of the founding members of the Bluenose club in Halifax, was killed in an accident that occurred while he was launching his glider. I would like to offer my condolences to his family and loved ones as well as to his fellow members at Bluenose. It seems that every year in Canada a SAC member dies in a soaring related accident. A review of the accident statistics for the past twenty years confirms that on average we have one fatal accident per every 1500 members per year – a little less than one fatal accident every year. It is difficult to relate to odds like 1 in 1500 – to know whether or not this represents an "acceptable" fatality rate. The average SAC club with 100 members will have a fatal

accident every fifteen years, a club with 50 members every thirty years. A fatality every thirty years doesn't sound unreasonable. However, if a SAC club had 700 pilots, as Lasham in England does, it would have a fatality every other year. Here are two more comparisons: in Canada we have one fatal accident per year for every 1500 members. Norway has one fatal accident for every 9000 members. In Canada we have a fatal accident for every 35,000 launches. In the Netherlands it's one fatal accident for every 145,000 launches.

A number of initiatives are underway to try to improve our safety record. The Flight Training and Safety committee has held safety seminars in most major cities. The SAC insurance plan has been changed so that premiums reflect club as well as individual accident records. Finally, the FT&S committee would like clubs to complete the "SAC Safety Audit" this year. To be effective, these initiatives need your support.

SAC needs you! We would like to expand the group of volunteers that administer the SAC website. As our website grows the demands on the volunteers maintaining it have also increased. This is especially true of the French portion of the website. If you would like to contribute, contact either myself or Susan Snell.

Bonjour. Je suis Howard Loewen. Je siège au conseil d'administration de l'ACVV depuis cinq ans en tant que directeur de la zone des Prairies. Au début mars, j'ai succédé à Richard Longhurst à la vice-présidence. Il m'a confié sa page éditoriale dans le but de vous présenter un autre membre de votre conseil d'administration. Je vole sur IS-29D2 à partir du Winnipeg Gliding Club.

L'ACVV vient d'acheter des locaux au 107-1025 Richmond à Ottawa. Grâce à cette mesure, nous pourrions réduire nos coûts en plus d'acquérir un actif qui s'appréciera dans le temps tout en nous protégeant des inévitables augmentations de loyer. Notre présence dans la capitale nous permet d'assurer une liaison efficace avec Transport Canada, un besoin essentiel pour nous.

La bourse Peter Corley est offerte aux jeunes membres de notre association qui désirent poursuivre des études post secondaires. Pierre Pepin en est l'administrateur. Les détails et formulaires d'inscription seront sur le site web de l'ACVV.

Nous avons à déplorer le décès accidentel de George Graham du club Bluenose. Notre feuille de route est déplorable. Nous avons pris des mesures concrètes pour renverser cette tendance comme les séminaires de sécurité de ce printemps. Le programme d'assurance sera modifié pour refléter la performance de chaque club au chapitre de la sécurité. Nous vous recommandons de plus de faire l'audit sécurité à votre club cette année. Votre coopération est essentielle pour que ces initiatives portent fruit.

Nous avons un besoin urgent de volontaires pour entretenir et améliorer notre site web. La version française a aussi besoin d'un éditeur. Si vous voulez contribuer, communiquer avec moi ou Susan Snell. Incidemment, vous trouverez un «lien» avec l'Association aéronautique Provence Côte d'Azur (Fayence Tourettes) sur notre site web. ❖

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4/2000 Aug/Sept

The journal of the Soaring Association of Canada
Le journal de l'Association Canadienne de Vol à Voile

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Attention!
the SAC office
has moved.
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Cover
A complete view of the day
as Stephen flies SOSA's
Astir CS-77 towards York.
photo: Stephen Liard

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The Genesis of the Geoid

the story of the 7 level-headed scientists

Alan Murphy

a little tale for the topographically-challenged GPS owner

Alan lives at approximately 51° 00' N, 01° 22' W

- 1 In the beginning there was a great Mathematician who invented the *sphere* – a massless figment of his imagination.
- 2 He soon grew bored with the sphere and wanted a more challenging shape for his deliberations. By making one axis shorter than the other two he created the *ellipsoid*. The points at which the axis crossed the surface he named the North and South poles. The line on the surface which was an equal distance from the poles he called the Equator.
- 3 Along came a Physicist who had been thinking heavily about mass. He filled the ellipsoid with a perfect fluid. However, in order to maintain the mathematician's ellipsoid shape he had to rotate the body at a uniform speed.
- 4 Now the Physicist soon discovered that if he rolled an apple on the surface from the North pole to the equator, he did no work at all. In other words he needed no energy, not even a bite from the apple!
- 5 He weighed the apple on a spring balance and found it weighed more at the pole than at the equator even though it had not left the surface of the ellipsoid – a curious result. He explained that the centrifugal force created by the body's rotation had helped to move the apple further from the center of the body and against the force of gravity.
- 6 The Physicist needed a new word to describe this surface of different gravities but which had no "uphill". He called this surface *equipotential* and he was pleased to find it was identical to the Mathematician's ellipsoid.
- 7 A Geologist arrived on the scene, but thinking that all new words should begin with "geo", he coined the word *geoid* for the equipotential surface.
- 8 The Geologist liked big lumps of rock and so chucked a few into the rotating body creating local anomalies. The geoid was no longer an elegant mathematical shape, but it had bumps in the surface. The Physicist could still roll his apple over all the bumps without consuming or gaining any energy. However the equipotential surface was no longer identical to the Mathematician's ellipsoid.
- 9 Next came the Chemist who thought that the body would look much nicer covered with sodium chloride solution, but because he had not stirred the solution very well, the liquid was not of uniform density. This meant that the liquid surface did not fit the geologist's geoid exactly. The new surface became known as the chemist's level (or C-level for short).
- 10 It was now the turn of the Meteorologist. He added winds, temperature differences, and lots of other nasty things. This changed the shape of C-level to the Meteorologist's Special Level (or *MSL* for short).
- 11 Not to be outdone, the Oceanographer, who had been circulating, then chipped in that he had just discovered currents (and because he discovered them he called them Ocean currents) – but this just made the whole story even more complicated.
- 12 And the last to appear was the Environmentalist with his dire warnings of global warming. He talked of melting ice and great changes to the MSL. He said that in 100 years time everyone else would be wrong anyway!

*That explains why the seven level-headed scientists are not the same height.
And if you want to know your height, it depends in whose shoes you stand.*



The SOARING ASSOCIATION of CANADA

is a non-profit organization of enthusiasts who seek to foster and promote all phases of gliding and soaring on a national and international basis. The association is a member of the Aero Club of Canada (ACC), the Canadian national aero club representing Canada in the Fédération Aéronautique Internationale (FAI), the world sport aviation governing body composed of national aero clubs. The ACC delegates to SAC the supervision of FAI-related soaring activities such as competition sanctions, issuing FAI badges, record attempts, and the selection of Canadian team pilots for world soaring championships.

free flight is the official journal of SAC.

Material published in *free flight* is contributed by individuals or clubs for the enjoyment of Canadian soaring enthusiasts. The accuracy of the material is the responsibility of the contributor. No payment is offered for submitted material. All individuals and clubs are invited to contribute articles, reports, club activities, and photos of soaring interest. An e-mail in any common word processing format is welcome (preferably as a text file), or send a fax. All material is subject to editing to the space requirements and the quality standards of the magazine.

Images may be sent as photo prints or as hi-resolution greyscale/colour .jpg or .tif files. Prints returned on request.

free flight also serves as a forum for opinion on soaring matters and will publish letters to the editor as space permits. Publication of ideas and opinion in *free flight* does not imply endorsement by SAC. Correspondents who wish formal action on their concerns should contact their Zone Director.

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5th January, March
May, July
September, November

L'ASSOCIATION CANADIENNE DE VOL À VOILE

est une organisation à but non lucratif formée d'enthousiastes et vouée à l'essor de cette activité sous toutes ses formes, sur le plan national et international. L'association est membre de l'Aéro-Club du Canada (ACC), qui représente le Canada au sein de la Fédération Aéronautique Internationale (FAI), laquelle est responsable des sports aériens à l'échelle mondiale et formée des aéroclubs nationaux. L'ACC a confié à l'ACVV la supervision des activités vélioles aux normes de la FAI, telles les tentatives de record, la sanction des compétitions, la délivrance des insigne, et la sélection des membres de l'équipe nationale aux compétitions mondiales.

vol libre est le journal officiel de l'ACVV.

Les articles publiés dans *vol libre* proviennent d'individus ou de groupes de vélioles bienveillants. Leur contenu n'engage que leurs auteurs. Aucune rémunération n'est versée pour ces articles. Tous sont invités à participer à la réalisation du magazine, soit par des reportages, des échanges d'idées, des nouvelles des clubs, des photos pertinentes, etc. L'idéal est de soumettre ces articles par courrier électronique, bien que d'autres moyens soient acceptés. Ils seront publiés selon l'espace disponible, leur intérêt et leur respect des normes de qualité du magazine.

Des photos, des fichiers .jpg ou .tif haute définition et niveaux de gris peuvent servir d'illustrations. Les photos vous seront retournées sur demande.

vol libre sert aussi de forum et on y publiera les lettres des lecteurs selon l'espace disponible. Leur contenu ne saurait engager la responsabilité du magazine, ni celle de l'association. Toute personne qui désire faire des représentations sur un sujet précis auprès de l'ACVV devra s'adresser au directeur régional.

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Pour signaler un changement d'adresse ou s'abonner, contacter le bureau national à l'adresse à la gauche. Les tarifs au Canada sont de 26\$, 47\$ ou 65\$ pour 1, 2 ou 3 ans, et de 26\$US, 47\$US ou 65\$US à l'extérieur.

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5

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We have a winner!

When my eagerly awaited copy of *free flight* arrived in the mail this week I scanned the table of contents for articles of interest. Although I read it cover to cover, I like to choose what to read first. I noticed we had another submission from "the Bald Eagle". He told me that he wants to get an article that has nothing to do with soaring published in *free flight*, could this be it?

Great article, even shared a passage with my non-pilot wife. I think that he is well on his way to his goal of entertaining while informing, please keep up the good work. The soaring community needs more people like this; sometimes we take ourselves too seriously. Oh, and by the way, when he was towing me at the recent instructors course, I checked and my airspeed was just about the same as his. As for his attitude, I think it is fine, shiny side up!

Dave (pen name withheld) Donaldson
Great Lakes Gliding Club

Sequel to the elevator story

This is a sidebar to Jim Oke's article in the April/May issue of *free flight* about not connecting the elevator. Our little story was prompted last year by the fatal accident of Clem Bowman in the USA when it was found that the pin securing his elevator assembly on his Genesis was never installed. I share a beautiful ASW-20A "R2" with two other glider bums, Kalli and Trevor. When the cause of Clem's accident was revealed, Kalli wondered how easy it might be to forget to install our pin.

Our rigging procedure is soooo easy and can be done in about ten minutes from start to finish. Not much talking occurs between as we each know the routine. There are at least two partners doing the job. Usually one of the guys pulls out the fuselage from the trailer and gets things ready. I usually put out a wing stand and the tail dolly. For rigging I normally take the wing tips as the roots are a bit awkward for me. Once the wings are on, the person at the root hooks up all six control connections while I get the tape from the trailer. The first thing I do upon returning is to doublecheck the aileron, flap and spoiler connections first by feel and then by sight (each time counting ... one, two, three ...). Then I tape down the cover. Meanwhile the other partner is getting the elevator from the trailer.

Now here is where things differ between my partners. Trevor puts the pin in his mouth

(wrapped in a rag) before getting the elevator out of the trailer. This prevents him from talking to any curious onlooker and it's also his way of not forgetting the pin. On the other hand, Kalli puts the pin in his pants pocket before getting the elevator out of the trailer (I do the same on the odd occasion of my rigging the tail). The elevator is put on and the connection made. By this time I've finished taping the cover plate and one wing. I go around to the tail, doublecheck the connection and tape the gap but I never knew if I consciously checked if the pin was in.

Can you do a positive on the tail where everything is seemingly hooked up and not have the pin in? You bet. We tested this. We inserted the tail as usual, connected the elevator, taped the gap (which did look a little wider than usual) but left the pin out on purpose. We wiggled the whole elevator assembly. It seemed stable and firmly held in place. We did a positive and felt the resistance. We then called over two ASW-19 pilots since the -19 and -20 tails are virtually identical. We specifically asked them to take a look at the tail and see if they noticed anything. They knew we were up to something, but only after careful inspection did they see that the pin was missing.

Whoa so it can happen, to anyone at any time. We found that with our -20, doing a positive is not enough. A visual check is imperative. I do that now and to make sure, I tape a small Vee around where the pin is inserted. Sometimes we elect not to tape the wings but we always tape the cover plate and the tail. Ever try to remove a wing that's still taped? We sometimes joke with onlookers when they ask why we tape, saying that it holds the wings on. Would taping the tail be enough to hold things together without the pin? I wouldn't want to test that theory.

So, sometimes a positive is not enough. Learn the procedures, try to follow them religiously and have a good flight. Watching out for each other has proven in many cases to have saved a lot of butts.

Heidi Popp

Membership decline action

SOSA held a kids' day in May. A group of grade 8 students took intro flights on a Friday. The kids went home with positive impressions of soaring. They'll brag about it to everyone for a long time to come. Why was it done? Those active in gliding have known about the worldwide decline in numbers for some time. There are several issues here, but one of the main problems comes from our focus on constant analysis. Numbers ⇨ p24

Grunau Baby days - part 1

Barrie Jeffery, SAC Historian

They were days of joys and agonies for young green glider pilots of the 40s and 50s – a history of the Grunau Baby in Canada

Dull, dark days were the rule in our neck of the woods in March and April this year, but on March 31st the sky was a field of dreams. I wonder if you saw it in Boucherville, or Kingston, or Whitby? We happened to be in Deep River that day, driving home to Ottawa in the afternoon. The temperature was a brisk 8°C, a light breeze blew from the northwest. It was clear and sunny before noon, but by one o'clock the sky was dotted with very healthy-looking powder puffs.

It was only to the east of Chalk River when we cleared the forests that we realized what a prodigious sky it was, and the old soaring corpuscles began to flow.

From a height of land near Renfrew, as far as the eye could see, the sea of clouds marched on until only the silvery tops could be seen above the curve of the earth. They seemed to be at four or five thousand feet and less than 1000 feet thick. Whether they capped 1 ft/sec thermals or 10, who knows. There was a good bit of streeting in stretches of two or three miles, marching towards the southeast.

The Ottawa Valley stretches for almost 700 kilometres. On into the Eastern Townships of Quebec it's a quilt of farm and pasture lands, dotted with airfields, ideal for cross-country soaring — envy the Bonnechere Soaring Club, at the upwind end of all this.

The clouds were the same at three o'clock at Arnprior. Still they hovered, looking tired, when we reached Ottawa an hour later.

Why am I telling you all this? Just because I flew a Grunau Baby down the Valley 51 years ago, in warm summer thermals, and I've had GBs on the brain lately.

What follows are a few of the stories of Grunau days. They are just a sample: dozens of other later pilots flew Grunaus over a period of fifteen years. A few flew one or two remaining active GBs for another decade or two, even into the eighties. The first licensed home-built glider in Canada, the first three Silver Cs, ridge soaring in heavy traffic, 8 hours over the Gatineau Hills, and incredible high thermal flight, some spectacular prangs and the persistent winter works programs of restoration, and a vexing question about the safety of the GB — read it all here. And a GB even made a spectacular Gold distance! I'm sure only the tip of the iceberg will show; perhaps in a year or two another set of GB tales will materialize.

GB in traffic, 28 November 1953

... from Peter Sneyd's "flood of memories" on the 50th anniversary of the Gatineau Gliding Club and Pendleton A/P.

"Visit to Harris Hill, NY, with Shorty, Mel Miller, Brother Hormsdas, and ?*. Quite interesting, this ridge soaring. My introduction to such advanced technique is as memorable as those cold, cold nights we slept in the Harris Hill bunk-houses meant for summer use only. Instead of taking a launch on a winch, the Grunau ZBD* and I were tied by a very short string to a very powerful Stearman biplane. No problem there, all I'd ever seen in front of me was a yellow biplane, except for that awesome extra 100 horsepower, the short-springy string and the extra 25-40 knots.

"Thankfully, it was a brief tow and we released just above and a little away from 15-18 other gliders "soaring??" on the half-mile ridge above Chemung County Airport — home of Schweizer Aircraft. It wasn't long before I was in amongst the others, all at the same level (low) — all scratching to remain airborne with very light winds blowing up the hill. Staying aloft really wasn't the problem; my time was over 50 minutes (close to the time limit we set for ourselves), it was to survive without arriving unconventionally in little pieces of plywood, spruce and cotton either on top of the hill or at the bottom, on top of Ernie and Paul Schweizer's factory. If I'd been older and wiser, I'd have been scared out of my wits. It was exciting to say the least and I think some of my fellow pilots got a kick out of my unorthodox way of leaving the ridge to land back on top. I waggled my wings to get the attention of the two or three ships that were in my way, then stuck my arm out and turned in. They saw my signal and moved over. It worked. Arrived back in Ottawa towing ZBD, to be greeted by a two-inch snowfall. "Yaaaay", I said and went skiing the next weekend." *Peter has been an instructor at the Ottawa Flying Club for several years now.*

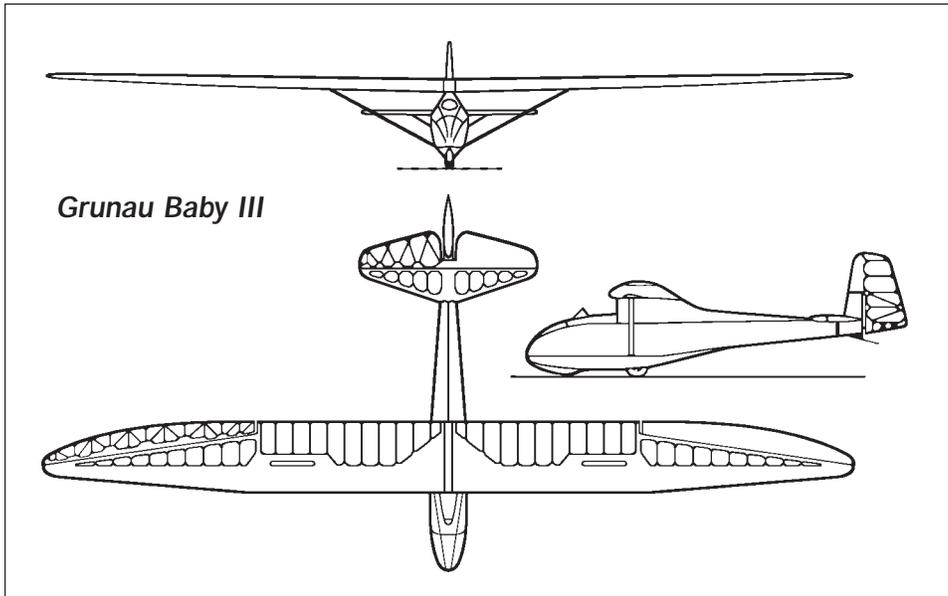
* "Shorty, Pete Shaw, Barney Pepper, Maurice Boudreault, Pete Sneyd, and myself ..." says Eric Wimberley, e-mail, 18 Mar 2000. He records the Grunau as ZBH.

What is a Grunau Baby anyway?

Canadian soaring was significantly enhanced by the presence of seven GB-IIb's over a period of at least two decades from 1946 to 1965 or so. Many pilots had their first solos and first soaring flights in Grunaus. Several of the first Silver badges were earned in Grunaus. The SAC Yearbook 1948-49 lists 58 gliders and sailplanes in Canada, both active and inactive. Almost half of these were primaries or wartime two-place training sailplanes (some quite good soaring machines but some not the best for training), and except for a scattering of better machines like the Mü 13, Olympia and Loudon, the remainder were low-performance machines like the Cadet, 1-19 and primaries. At a period when instruction was under early development and there were few soaring single place gliders, the half dozen Grunau gave soaring experience in a slow and safe glider to a generation of new pilots. In spite of the number of times GBs were seriously damaged over those years, no one had any injury worse than Bill Curran's broken ankles.

A camel is a horse designed by a committee

Although for 1932, it was an advanced design, if you look at the Grunau Baby with fresh eyes you might think it also



Grunau Baby III

The Grunau so many of us have known and loved was the Grunau Baby IIb and the *SAC Yearbook 1948-49* lists six in Canada. The three NRC-distributed wartime reparations Grunaus were at Queen's University, UBC and the Gatin-eau Gliding Club. Admiral deWolf's "Navy" Grunau was then at the Glider Wing, RCN Dartmouth, NS, and two Grunaus are listed on the prairies, one at Calgary, AB and Ralph Wiseman's at Rosetown, SK. (I can't identify the 1948 Calgary Grunau; perhaps someone will have a story for us.)

The Grunau cockpit was small but deep. Your head, just showing above the side, was protected by a small windscreen. A gentle breeze flowed down the back of your neck. A thin backpack could be worn, but a chest pack or a corpulent figure could restrict control motion

was "not of a piece". They gave fuselage design to a promising student maybe, one who was a secret admirer of the stern Bauhaus school of architecture: slab sides, nothing extraneous, stark interior. Important to us was the relative ease of rebuilding after a crunch. The horizontal tail is workmanlike but unimaginative with straight edges and only a rudimentary airfoil. With a strongly tapered planform, it speaks of a stress engineer who wanted the forces to be centred close to the control forces. On the other hand, the vertical tail may have been designed by an aerodynamicist, but one with fine artistic sense as well: just the right slopes to the leading and trailing edges, a satisfying taper ratio, and a tip similar to modern pre-winglet design, ie. the rotated section of the tail's respectable airfoil cross-section. But the wings, they must have been by the master himself, Edmund Schneider.

seriously, as Frank Woodward learned at an awkward moment, and as the late Helen Tulloch learned at the cost of a prang that could have been deadly. While it seemed to be an easy and forgiving glider to fly, several of the GBs suffered one serious prang over the years.

The World's Sailplanes (OSTIV, June 1958) lists several Grunau variants. Designed in 1932, the GB IIb was built by "diverse" manufacturers, apparently in wartime, to 1939 airworthiness requirements. Missing are the date of the Grunau's first flight and the number built. Some were built in Sweden during the war: and Serial No. 012 of these — Canadian registration CF-ZEE — was found this year residing in the Western Canada Aviation Museum, Winnipeg with the help of Christine Firth, Ursula Wiese, and Howard Loewen.

Herr Schneider gave each single-strut wing a straight leading edge to the midpoint, at which point he cranked it back ever so slightly. The trailing edge, from the same point, curves forward in a graceful ellipse to a rounded tip. The airfoil, the Göttingen 535, is a low speed, highly curved, thick section with a distinct undercamber, suitable for hovering on a ridge — John Dure did it for eight hours in 1949 [story in part 2] — or for making a low speed cross-country. I averaged less than 17 mph for 5 hours and a bit, also in 1949. This type of airfoil develops a flying amount of lift at zero angle of attack, which can explain the sad loss of one Grunau in a windstorm.

Besides the GB IIb, two other Grunau designs, the III and the V were produced. Our OSTIV source does not give the number of the III that were produced; it is listed as a post-war development of the IIb. Very similar to the IIb, the III is a little longer, horizontal tail a little smaller, vertical tail a little bigger and higher in aspect ratio, wing almost the same but with increased washout, and a wheel with a shortened skid at the nose. You could buy one for \$1752, fob USA from Wilhelm Eicke of Bremen, according to a note in *free flight*, October 1952. It is interesting to speculate whether increased washout or the reconfigured tail would have prevented some of the more or less annual prangs of our GB IIbs.

Technical specifications	
span	13.57 m (44.52 ft)
wing area	14.2 m ² (152.8 ft ²)
chord	1.18 m (3.87 ft)
aspect ratio	13
length	6.09 m (20.0 ft)
weight empty	170 kg max. (375 lb)
max load	80 kg (175 lb) – <i>I don't think we knew this</i>
load factor	8
min sink	0.85 m/s (2.8 fps) @ 250 kg (551 lb) and 55 km/h
max L/D	17 @ 60 km/h (37 mph)

The Grunau V first flew in 1954 but only three were made, at least until our handy reference was compiled. Very slightly larger than the IIb, the V managed to cram in an extra seat. The wing was a smidgen larger than the IIb or III wings: 14 m (45.9 ft) span, but the tail was identical to that of the III. The main differences were in the fuselage: fuller outline, faired skid, and enclosed cockpit. These changes apparently were enough to give a healthy 18% boost to the glide ratio, now 20:1.

Also worth mentioning is the Reinhard "Cumulus": A single-seater built in about ten copies, it first flew in 1951. It had a GB-IIb wing and horizontal tail, but a larger rudder of a sexy shape. Its main distinguishing feature



The Queen's Grunau, ZAR, flying with the experimental ski in 1947.

was the pod and boom fuselage with fixed wheel and enclosed cockpit. It claimed an L/D of 19. No postwar Ills, Vs, or Cumuli are known to have flown our skies.

Norm Bruce's Zephyr, flown in Alberta and eastern British Columbia for many years, is said to have been a modified Grunau design.

The first Canadian-made Grunau Baby

"Hello, is that Ralph Wiseman?" I ask. "No, you have the Kingdom Hall," says the agreeable man's voice. "Well, I've got a good place, but are you in Rosetown?"

He was, but a digit was wrong. On the next number, a voice answered that I hadn't heard since 1952. "I met you on my honeymoon trip West," I said, but the truth was that not only he, but I had also totally forgotten it in the meanwhile, and only knew it to be true from reading an old *free flight*. In the September 1952 issue I had written: "We had the pleasure of meeting another lone-wolf glider pilot, Ralph Wiseman and of seeing his Grunau ... The Grunau is a beautifully finished job ..."

"Ralph is one of those rare people who, like Norm Bruce and Fred Weber, was bitten by the gliding bug some 20 years ago, and is still going strong." Doug Shenstone wrote that for the January 1951 *free flight*. He was announcing the completion in November 1950 of Ralph's Grunau Baby, built from plans obtained from the SSA in 1944. Ralph put in 5000 hours on building it over five long years.

The Soaring Association of Canada had been in the early formative stage in 1944 when Ralph's request for help to find plans came in, and they were not able to help directly. SAC always regretted it and hoped they would never be caught short again. Ralph stayed with the Soaring Society of America and had to call on the USA again later, in the person of P.H. Katz of Seattle, when the plans were found to be incomplete. When it was finished, the Grunau CF-ZBT became the first home-built licensed glider in Canada. It seems to be one of only two Grunau Baby gliders ever homebuilt here. Ralph stayed bitten by gliding. He flew the Grunau for ten years, sold it to the Regina Flying Club, and followed it up with a Briegleb BG12-A, a Schweizer 1-26, and an HP-11.

From Regina, Ralph's Grunau went to Prince Albert, and then to Art Penz on the West Coast. Ralph heard it was for sale in Victoria a year or so ago; it now belongs to David

Baker, a former CP pilot, once president of the Vancouver Soaring Association, is now flying out of the Seychelles. The GB waits for him since his last flight in it in 1986.

High flight

Ralph Wiseman flew mainly from autotow at first, under Norm Bruce's instructions. In the process, Norm made his Silver C climb from autotow in the Grunau. Ralph had made 75 flights by the fall of 1952 while Norm had done about 20. In contrast to the catalog of woes experienced by other Grunau pilots, particularly in the east, there were no accidents. It speaks well for both the instructor and the student.

One hot day, Ralph was towed in his GB behind an 85 hp Piper Cub from Rosetown to Swift Current. It was mid-summer, about 90 degrees on the ground. Ralph "hit good lift low down, and just stuck with it." He went up, and kept going up. Up past the clouds. "It was a nice day," Ralph said. I took that to mean a day of well-spaced puffy cumulus. "The clouds were down below. I got up to 17,000 feet. In an open cockpit, it was cold. I damn near froze. I wanted to come down, and the lift was petering off anyway."

Ralph appears not to have been FAI-badge minded; it seems he just loved to fly.

"That was not the highest a Grunau Baby ever flew," Ralph said. "One flew in a thundercloud up to 21,000 feet and broke up. It was before the war in Germany. The pilot parachuted and lived."

From phone conversation with Mr. Wiseman, a youthful-sounding 84 year-old, on 22 March 2000. In a follow-up call on 27 April, I learned that Ralph was in hospital recovering from a heart attack. His daughter expected him home the same week, and he has been well enough to send me a note and some clippings since then.

First Canadian Silver C in 1947 by Shorty Boudreault in CF-ZBH

"On May 2, with a climb to 7600 feet above Carp [Shorty] achieved his height leg with lots to spare. On July 2, after one previous attempt at leaving the home field, Shorty set the GB down at Pendleton, 41 miles away, after a flight of 2 hours, 20 minutes, and gained his distance 'leg'. Only the duration remained." Shorty headed for Gatineau Hills lift on August 1; as usual he was plagued with violent airsickness after two or three hours, but ... "Finally, after what must have seemed agonizing years, his watch registered the required five hours. But, not to be cheated after such hours of suffering he held to his course ... Almost another half hour he stayed aloft. Thus was won Canada's first Silver C."

A.N. LeCheminant, SAC Year Book 1948-49. Shorty, now no longer in the best of health, lives in Ottawa and visits GGC with his sisters during the season.

1947: Queen's Gliding Club researches winter flying

As part of the terms of the assignment of a Grunau Baby to Queen's University, a well-organized Queen's Gliding Club made two interesting experiments. They designed

and tested a ski for the GB, and searched the lift and sink pattern of air movement over the frozen lake between the Collins Bay Airport and Amherst Island. They found that the only measurable effect of the ski on performance was to increase stalling speed by a fraction (0.8 mph) – slightly more with spoilers open (1.4 mph).

In test flying the GB on 21 February 1947, there was a light shifty west wind, with cloud forming at 3500 feet. Pilot Gordon Spafford found “a large area of slowly rising air over the lake ice at the east end of Amherst Island. Closest to the island, however were down-currents of 3–6 ft/sec. The up-currents reached a maximum velocity of 10 ft/sec at about 2000 feet” [vertical velocities corrected for glider sinking speed]. Gord stayed airborne for an hour and 13 minutes. *Queen's University Gliding Club Annual Report, November 1948, R.M. Cuddy and Gordon Spafford. See also “Report on Ski Flight Tests” by G. Spafford, SAC Year Book 1948-49. Gord is retired in Winnipeg.*

1947: Gatineau Gliding Club also does research

W.F. (Bill) Campbell carried out research on angle of attack indicators as possible primary flight instruments for gliders. They also might serve as thermal indicators. His report appeared in the *SAC Year Book 1948-49. Bill lives in Ottawa with his wife Betty, one-time co-editor of free flight with her late husband Jack Fleming. Bill was a founder of GGC and is retired from a distinguished career in aerodynamics.*

1947-48: UBC gets a war prize Grunau

ZBD was “completely refurbished prior to the 1948 soaring season,” *not at Boundary Bay, as Lloyd Bungey had it, but in an army shack on the UBC campus. But this was not because of an accident in Canada; it was the original restoration of “the tattiest of the three [wartime] Grunau Babies” ZBD, thanks to higher powers perhaps, survived flying in testing circumstances in 1948 and 1949, whether on autotow, aerotow behind an Aeronca Champ, or across the Strait of Georgia behind a Cessna Crane (from the Woodward article in “Trying their Wings”), or soaring in Frank Woodward's hands on the West Vancouver mountains and across English Bay to land on the UBC campus.*

1949: Nadine Harley flies high

“Nadine modestly deprecates her 6000 [ft] in the GB. Off-hand, we can't think of any other Canadian girl who has reached that height ...” *Doug Shenstone, editor free flight, Gatineau Club News, Sept. 1949.*

1949: Some other fun flights that turned out to be Canadian records

We will save a couple of these for the end, as there are “the Agonies” to record before then.

1950: News from Rosetown, Sask.

“News has come to hand that Ralph Wiseman of Rosetown is ready to cover his GB, so long in the making. The first GB ever built from scratch in Canada, we are looking forward eagerly to flight news ...” *ff July 1950.*

1951: The overnight camping in the sandpits SE of Pendleton

Barney Pepper beating up the field in the Grunau and tipping his old Homburg while greeting us earthlings with a jolly, “What Ho”, all made for additional enjoy-



Still in its Luftwaffe markings, the war prize Grunau Baby loaned to the UBC Gliding Club by NRC in 1947. Barrie Jeffery is seated, Frank Woodward standing.

SAC photo collection

able memories about good old (50 years) Gatineau Gliding Club.” *Peter Sneyd's memories.*

1952: “Three's a crowd”

7 September saw possibly the first and only triple sailplane aerotow in Canada made at an airshow at Carp Airport. “The participating aircraft were the Gatineau Gliding Club's Olympia and Grunau, and the Buckingham Gliding Club's 2-22, with Russ Bradley's Stearman doing the towing. The gliders were in Vee formation with the Grunau in the centre and trailing the other two ... Following release, Bill Curran showed what the Olympia could do in the way of aerobatics, then did a mild beat-up before landing in a shower of paratroopers [they arrived early] ... Chem LeCheminant and Don Melliship flew the Grunau and 2-22 respectively. *ff Sept. 1952*

1953: Spotting it in at Breslau: “The annual spot landing contest using the GGC's Grunau was held [at the National Soaring Meet]. Since the Grunau had a skid and not a wheel the contest called for maximum skill by the pilots. Eric Wimberley, of the Gatineau club, on his second solo flight, walked off with top honours by practically stopping on top of the spot.” *ff 8/53 Eric first met Gatineau in 1944 when a delegation arranged to use a field Eric's father farmed on for the club's first Dagling flights. He was active in soaring for many years and lives in Ottawa.*

Coming in Part 2

Before going any farther, we had better settle the following question: “the Agonies – why so many accidents?” Most of us: John Dure, Elvie Smith, Herb Henshaw, Blodwen Thomas, and Mel Miller had little solo glider experience when we first flew the Grunau Baby. And yet we were all quite comfortable in it. It was slow, but responsive; it had effective controls, not least the spoilers. And yet, nearly every winter between 1947 and 1958 someone, somewhere, was patching up a fuselage or even a wing. This has been on my mind lately as I recall the pleasant summer days and cu-filled skies of my GB flying days. ❖

“VE HAF KAPTURED ZEE PILOT!”

Mike Glatiotis, *Cu Nim*

THE OTHER DAY I was at the dentist's office suffering (in my mind) my first filling in perhaps fifteen years. Sitting in the chair expecting some measure of discomfort, I was pleasantly surprised to not even feel the sting of the needle. As the dentist left to wait for the freeze to take, he informed me that I might experience a little bit of a flushed feeling, perhaps a racing heart, and maybe even a bit of tightness in my chest. The freezing, for some medical reason, was laced with adrenaline. Sure enough, the symptoms were surprisingly familiar ...

When I'm through with flying in the mountains, I'm going back to my dentist, regularly. A safe place to land is peace of mind, regardless of where you fly. In the mountains, it is the peace of mind that can open up spectacular territory rarely visited by a sailplane. One of the safe places to land in my playground of choice is the airstrip at Banff, and I always keep it in the back of my mind for the days offering Rockies exploration. Unfortunately, it has been the centre of some legal controversy wherein certain powers have deemed the airstrip closed to all except the most dire emergency. Recent court rulings have overturned this closure pending environmental impact assessments of the airstrips in question. Of course, this lower court ruling is being appealed.

Launching late in Invermere is no problem. A 4:00 pm start can still leave you with hours of fine soaring, if not a quick cross-country, then at least some good conditions for nosing around the peaks. My best day of this year's May Invermere Soaring Camp saw one launch opportunity quite late in the day, and I was lead not into a cross-country run along the Beaverfoot ridges, but by a fine cloudstreet leading west of Invermere to the massif of Mount Farnham, and then even further west to Jumbo Mountain in the heart of the Selkirks. These glacially-clad peaks, with towering rock faces and snowy cornices lift my soul with their beauty, and dropping below their summits and sweeping along their faces is an experience that defies my words.

Fortified with a GPS glide calculator, and the flatter glide of my 'new' HP-18 "ET", I was ready to expand my explorations, and the clouds were there to lead me on. Heading north up the backbone of the Selkirks, I was enticed to the Bugaboos, a rugged cluster of granite spires and needles surrounded by undulating icecaps that are laced with glaciers tumbling in jagged icefalls to the valleys below. Reassured by the conditions and a comforting cue from my glide computer, I dropped down again to circle the peaks, in awe of the rime covered rocks and precarious cornices. I searched all the peaks for mountaineers, hoping to do a bit of a fly-by, but the late hour of the day, and early time of the season meant no targets to entertain.

The drainages from the divide in the Selkirks generally run out to the east and on to the safety of the Columbia Valley. The distances and long tree-clad ridges appear daunting, but the valleys offer escape, so the soaring was really quite comfortable. Coring out above the Howser Towers, a beauti-

ful street heading northeast presented itself, the tailwind beckoning me onwards with a gently climbing dolphin run out of the Selkirks, back over the Columbia Valley and eastward to the limestone ridges of the Rockies. The Goodsir massif southwest of Lake Louise loomed ahead one range back as the street crossed the Beaverfoot Range and the decision to cross to the first of the Rockies north-south trending ridges presented itself.

Unlike the Selkirks, the ranges of the Rockies parallel the main Columbia Valley, with each consecutive ridge reducing the clear escape possibilities. Altitude and complete confidence in the conditions are the entry tickets to these mountains. The safe haven of the Banff airstrip downwind opens the door.

Welcome to the dentist's chair. The cloud street is consistent for the step-out to the east, and the Vermilion Range offers a fine looking run of cu back to the south. Okay, so Banff is my home town and since I was a kid and saw my first glider there (I always wondered who that might have been, back in the late 60s or early 70s). I always want to go and explore that country from the air. I had made the trip from the prairies once before the closure controversy, but it was early in my flying career, and when the airport came into sight, I was straight on in to it. Full freezing, both sides, up and down, thank you Dr. S.

West of Sunshine Village ski area where the ridges are generally a little bit lower, a quick look at the glide computer tells me I have to climb out to make the glide back upwind across two ranges to Invermere. The Banff airstrip, on the other hand, has become an easy glide downwind. One failing cloud seals my decision, and I let ET drift downwind, across the Great Divide, and into the Bow Valley. The late hour and moderate westerly flow ensure that a return to Invermere is no longer a reasonable option, so the descent to Banff is begun, and savoured. Radioing my intentions to land, I prepare for a short field approach, and with the amazing 90 degree flaps of the HP, make a steep and short landing at the tiedown area. Tourists with telephotos stop by the highway for a snapshot. They've got gophers, sheep, elk, bear, and a strange airplane for the folks back home. It's Quiet. Peaceful. I'm content with the beauty of the flight and the surroundings I'm now in.

As I'm pushing the ship back into the trees, the solution to the ground transportation problem presents itself with the rapid approach of a Park Warden's vehicle tearing down the road towards me. I'm met with a smile, but a rather stern greeting ending with the warning that "Anything I say may be used against me in a Court of Law!"; and that Parks would reserve the right to press charges at a later date! Hmmm, Glider Pilot gone bad! (Seems the speedy contact was due to the fact that the wardens witnessed my approach from the newly clear-cut and greatly improved equestrian facilities across from the airport. In that light, I am slightly boggled by the accusation that pilots are a privileged user group, but I digress.)



Soaring near Mt. Farnham west of Invermere.

Actually, it would appear that the airport closure lobby is somewhat torn by what they see. Nothing is much "greener" than a glider soaring over the mountains, quietly slipping down from the skies and silently coming to rest in a field. Besides, Udo Rumpf (ET's builder) ensured that the ship is very sleek, shiny, beautiful, and intriguing. How could anyone who had witnessed one land not be curious? I understand that the wardens have their job to do, and I am pretty good at convincing them that I didn't really have an option but to use the strip.

On inspection, the absence of propulsion is undeniable, and we have a pretty good (but well-documented) chat. These are friendly guys at that, and appear genuinely interested in what happened. By the end of tying down, it is pretty jovial, and I'm offered a ride into town. I'm happy to accept, considering it's a long walk, and as I get into the truck the wardens break into a big grin. The door closes tight and

they chuckle ... "Town? Forget it! Time to radio the Warden's compound! Vee haf kaptured zee pilot!"

The wardens do drop me off in town, and consistent with their suspicions that I only made the flight so I could visit my folks, I do have a great visit. Better, I figure, to land at a safe place where you know you have dinner and a comfortable bed waiting, than to press on to land in some untended field with strangers! My Mom even crews for me for the first time, driving me back to Invermere through the beauty of the Banff and Kootenay National Parks to retrieve my trailer the next day. There, we take the opportunity to have an early morning high, high tow in the Blanik and sweep close to the snowy peaks in perfectly smooth air. Wheeling around we run back along cliff bands, popping up over small passes, and cruising the treeline looking for sheep or goats. As we settle back to the ground I know that my mother has just had her trip to the dentist's chair. It's a wonderful thing to share. I think that glow lasted for days.

As for the citation 'rights' reserved by Parks Canada, we'll just have to wait and see. I was, however, introduced to the *Restricted Activity Day Use Permit*, retroactively issued to allow a landing the day before, also giving me an hour to pack up my wings and get outta Dodge!

Shortly thereafter, another court ruled that Parks Canada was liable for the court costs of a pilot they charged with illegally landing in Jasper, who was subsequently exonerated in the first court ruling. It doesn't look like charges are pending for me, but in more ways than one, you can't say that Parks Canada aren't appealing! ❖



Mike and ET landed out at the Banff airstrip.

2000 Nationals notes

Bob Mercer & Ken Brewin

Contest Day 1 – 27 June The overnight hours of the 26th and morning of the 27th were under the influence of a distinct cold front, leaving another night of heavy rain over the contest area. Fortunately the airmass behind the cold front was much drier and cooler than the warm airmass that influenced the flying on Monday 26 June (practice day 2), although the winds were strong from the west at all altitudes. Due to the dry airmass, the winds and relatively consistent sunshine, the ground in many areas with reasonable drainage began to dry fairly rapidly. All other areas where drainage was poor were still fully saturated with standing water. The weather call for the day indicated a maximum cloudbase of 5500 feet with 2–5 knot lift. The uncertain part was if the high winds and ground moisture would give reasonable thermals and allow a long task.

The task committee decided on a task of 194 km for Standard and 15 Metre, and a 3 hour PST with some mandatory TPs for Club class at the morning meeting, however by noon the lift had not formed as hoped and a new task for Std and 15m was called, shortened dramatically to 129 km.

Contest Day 2 – 28 June The day dawned bright and clear with the promise of great soaring. The task committee decided on a task of 261 km for Std and 15m (Pendleton/Hawkesbury/Iroquois/Alexandria/Pendleton), and a 194 km task (Pendleton/Hawkesbury/Morrisburg/Alexandria/Pendleton) for Club class at the morning meeting. There were only six landouts for the entire field, so it was a reasonable call from the task committee.

Overview: The relatively dry and cool airmass that influenced the contest area yesterday continued to dominate the region, but with much diminished winds compared to yesterday. The previous day's winds and relatively consistent sunshine, plus no rain, allowed the ground to continue to dry, although there are still some areas where drainage is poor that are saturated with standing water. The weather call for the day indicated an initial cloudbase of 4500 feet with 2.5–3 knots beginning at noon, peaking at 3.2 knots average with spikes to 6 knots later in the afternoon with cloudbases extending to 5500 feet. Late afternoon cirrus was expected to encroach on the area, but not affect the task.

29 June No task today due to weather.

Contest Day 3 – 30 June The day dawned with overcast cloud and a certain amount of skepticism on whether the weather would clear enough for the competitors to fly. It was expected (by the public forecast) that there would be more cloud than sun, and by looking at the moisture and instability of the airmass, it was judged that the likelihood of showers and thunderstorms was high. The weather call for the day indicated an initial cloudbase of just over 3000 feet with 2 knots peaking at 4 knots later in the afternoon with cloudbases extending to possibly 4000 feet. An opti-

mistic weatherman suggested that if the day heated up a degree or two more than expected, we might even see 5500 feet.

Due to the poor morning weather, it was decided to grid and be ready to launch at 12:30, but no task was called until 12:45. The call for all classes was for a 3 hour PST with mandatory first TP of Casselman and mandatory last TP of Curran. As launch progressed after 13:00, a large cloud began to approach from the west with showers just to the north. It seemed like a bit of a dash for the start as most competitors started early, likely to head for the sunshine to the south. As it was, many pilots still were caught in spotty weak conditions, showers and large areas of dead air behind cells with resulting landouts.

We had thirteen ships that landed out, and others didn't get away. Ed Hollestelle won in Standard with 76.3 km/h for 212.5 km. Willem Langelaan won the day in 15m at 68.5 km/h for 208.8 km. Only Heri and Hans got around in the Club class, with Heri winning.

A contest day for the 15m – 1 July Clear skies and a promising forecast met the pilots at the morning meeting. The weatherman mentioned strong westerly flows in the lower levels that would be a challenge to deal with, but generally good soaring conditions were anticipated. A system to the west was not expected to influence soaring for the day.

An ambitious task of over 300 km for Standard and 15m, and over 200 km for the Club class was set. The classes were on the grid at 11:00 for a 12:00 launch, but by noon nothing had developed. The first sniffer landed twenty minutes after taking off, so launch was delayed. By 14:00, a few more sniffers had launched and managed to stay up in very weak conditions thanks to cirrus affecting the entire contest area. It was decided to only launch the 15m class on a 2 hour PST with Hawkesbury as mandatory first TP. The other two classes were scrubbed.

By 17:00 most of the 15m class had either landed out or returned with hardly more than 80 km flown. CBs enveloped the airport shortly before 6 pm.

2-3 July No tasks due to poor weather.

Overview: The front that was supposed to move east of the Ottawa area on 3 July stalled to become more quasi-stationary. The weather was expected to clear by noon, but never did. In fact it appeared that the front may have backed up westward slightly, dumping more rain on the contest area. Flying was cancelled by one o'clock.

4 July It was a transitional day today, since to the south of a line from Winchester to Alexandria the contest area had heavy rain the night before while to the north of the line it had been dry for over 24 hours. Cloudbase was between 4500 to 5000 feet for most of the course, however the further south one flew, the lower the cloudbase likely due to the ground moisture. Again, there were a number of landouts working through the transition areas, but since the Canadian hosts of the contest are, well ... Canadian, they let the red-white-and-blue lead the charge in most classes they were competing in! It was our way of wishing them a Happy July 4th.

5 July The air was crisp and dry this morning. It was a welcome change from the days before where there was either rain or transitional weather. Today looked like it might settle to a bright but cool summer day. The weather call for the day indicated an initial cloudbase of over 4000 feet with 2.5–3 knots peaking at 5 knots later in the afternoon with bases extending to possibly 5000+ feet. It was suspected that if the temperatures reached what the public forecast said (19°C), then indeed it might be blue because the thermals would not reach condensation. Sounding data suggested a higher maximum temperature (21°C) and that is what we achieved, with the resulting cumulus for most of the day after launch time.

The sniffer (YC) launched at 12:30, and all the competitors were airborne by 13:30 (except DM who was still waiting for a part to arrive from Sugarbush for his glide computer). The call for Std/15m classes was a 164 km quad and for Club a task a bit shy of 135 km. As it turned out, it was an undercall since most finished in about two hours. There were still a few landouts, as the soaring was a bit difficult below 3000. A strong directional wind shear was occurring at 2500 feet, causing the thermals to break up around that level before reforming higher up.

6 July This evening the Nationals were over, and from all reports everyone had a great time. We managed to get seven flying days for the 15m class and six for the rest. The last two days were slightly undercalled and the speeds were fast. Those two days were considerably better than forecast and the gliders roared around the course with very few landouts. We had several novices get around the entire track the last day, much to their pleasure.

The eventual winners were Ulli Werneburg in the 15m, Ed Hollestelle in the Standard class and Heri Pölzl in the Club class (see the box below for all the trophy results). The highlight of the evening was the draw amongst the three class winners for the Air Canada tickets. The winner was Heri.

THE TROPHY WINNERS ARE

MSC Trophy – 15m class champion
4801 points of a possible 5273
Ulli Werneburg

Wolf Mix Trophy – Std class champion
4888 points of a possible 4970
Ed Hollestelle

CALPA Trophy – Club class champion
3864 points of a possible 3945
Heri Pölzl

Dow Trophies (best assigned task flown)

- 15m class – 182.8 km @ 101.6 km/h
Ulli Werneburg
- Std. class – 182.8 km @ 102.5 km/h
Ed Hollestelle
- Club class – 193.8 km @ 85.7 km/h
Heri Pölzl

SOSA Trophy – novice **Ron Walker**

O'Keefe Trophy – team **Pierre-André and Laurence Langlois**

The other events were well attended, with the paper airplane contest being fiercely fought and the synchronized swimming teams were something to behold. By the applause it would appear that it was a draw with no clear winner between the three competing teams.

From the Contest Director's point of view there were few problems. Most of the snags were mostly finger trouble with computers.

The contestants and crews were wonderful and enjoyable people which makes the job of CD an easy one and a pleasure to do.

The contest in general
A year of planning, four weeks of anticipation, two weeks of wondering if we

should even think of putting on a National Soaring Championship again! Every committee that plans such an event must go through the same anguish. Yet we all continue to support our association and its aims of promoting our sport. This year was no exception. It took many long hours by Dave Mercer to create that great web page. Bob Mercer spent an awful lot of time acquiring sponsors, and days talking to all of the contestants that eventually showed up. Susan Mercer handled all the paper work and treasurer job. I guess we should call it a family affair because that's just what it was.

One month to go and it's fine-tuning time. Twenty-eight contestants had indicated that they would be there. A couple had aircraft problems and expressed doubts that they could attend. Most important thought on everyone's mind was the weather. It was said that it started raining in January and just forgot to stop.

However the show must go on. Greg Baumeister flew in from Israel to take charge of, along with Denis Scott, our scoring. They did a great job. Bernie Palfreeman looked after our weather needs and did a fine job too. He was ably assisted by Ted Froelich who also spent many hours looking after our landout phones. Thanks Ted. Safety was handled by Ken Brewin, ATC by Ian Grant and Bob Mercer. Bob Macpherson handled the gridding and launch jobs with a long line of volunteers.

Towpilots were under the direction of Marcus Tittiger who managed to get hold of Doug Scott to fly in with SOSA's 180 hp Citabria. Hawkesbury supplied two L-19s and Gatineau rounded out the fleet with their Pawnee which they acquired last year. I wish to thank John Bisscheroux and all the people at MSC for their help.

This year we decided that just having a contest wasn't quit enough. So a long list of social events was planned by Alix Walker and assisted by everyone. Something was planned for every second day. Starting off with a great lobster party on 26 June. I don't believe that I have seen all contestants show up this early for a contest. The contest ended with ribs and stuff — one of Mercer's specials. The GGC club facilities were exceptional, it takes many volunteers to keep a club like ours going.

We must thank our sponsors which continue to support not only our contests but our sport. AIR CANADA has been looking after our interests for many a year and I would like to thank Captain Rob Gigueire, V/P Flight Ops, for the pair of round-the-world tickets as the big prize.

Many thanks to Gatineau Gliding Club, its president Graham Armour, and all its members for putting up with us all not only for the two weeks but for the year of planning and whining by us the contest committee.

Planning and running a contest has been made easier because of technology, yet there are only a few clubs in Canada that go out of their way to run such an event. We need to think about clubs getting together to share the effort of running such events in future.

All-in-all it was a good contest with lots of fun for the contestants and the organizers. I wish to thank all our contestants — without your dedication to the sport we wouldn't be writing this report. ❖

Casey at the Nats

the Bald Eagle,
SOSA Gliding Club

with sincere apologies to
Ernest Thayer, who wrote
"Casey at the Bat" circa 1888



*The outlook wasn't brilliant for the SOSA team that day,
T'was the last task of the contest, just one more chance to play.
Yes, it was the National contest, "The Nats" as it is known,
Where daring sailplane pilots, soar far away from home.
But dawn saw humid, clag-filled air – we cried like soggy cats,
"The game is lost, there is no chance, for SOSA at these Nats."*

*But then the cold front rumbled through, to wonderment of all,
The sky had cleared, the wind was right, the cu was rising tall.
And when the scud had lifted, men saw what now occurred,
There was Jimmy rigging, and Flynn said, "Have you heard?
That, table full of tephigrams and weather charts galore,
Our proud and mighty Casey plans six hundred 'K' and more."*

*When Casey had announced this goal, there was a muffled roar;
The crowd went wild, as they realized, it had ne'er been done before.
Defiance gleamed in Casey's eye, a sneer curled Casey's lip,
As one by one his flying foes said, "Man, that's quite a trip."
Four hundred eyes were on him as his contest launch got started,
Two hundred tongues applauded as the radio said he'd departed.*

*The crews all knew, to make it back, and win his fame eternal,
That he would simply have to find the country's biggest thermals.
For Reichmann says, don't waste your time in thermals that are light,
You really must avoid them, if you want to do it right.
Stop only for the Big Ones, to get on final glide,
But too much speed, too little lift, will quickly end your ride.*

*Yes, flying fast, avoiding sink, is how you win the game ...
Wait! Cooney was reported down, then Barrows was the same.
The SOSA team, the crowd now saw, was down to one alone,
Could valiant Casey save the day, and would he make it home?
With a smile of expectation, great Casey's visage shone,
His nose went down, his speed went up, like Striedieck he pressed on.*

*Cloudstreets came, and turnpoints passed, ignoring his MacCready,
The lust for speed, and fame at last, had made him much too greedy.
Casey had been running fast, his working band now thinning,
But flying like George Moffat, his only thought was "Winning".
The question to be answered now that rose in Casey's thoughts,
Is whether he should stop and use that measly two-plus knots.*

*"No, by Truth, that ain't my style," our scornful Casey said,
While through the gently rising air, his sinking glider sped.
He spied a circling gaggle now, but on and on he flew,
The crowd of faithful held their breath, the late day sky was blue.
The sneer is gone from Casey's lips, his teeth are clenched in hate.
How did he get below glide slope, enroute to the finish gate?*

*Wait – was that a beep he heard from the sullen vario
A little surge, a final chance, "Which way, which way to go."
Quick, which way to centre it, should bank be right or left?
Casey, with a mighty oath, gave the stick a mighty heft.
If choice was true and pull-up deft, he'd soon have height to burn.
And so the air was shattered by the force of Casey's turn ...*

*Oh! somewhere in this favoured land, the sun is shining bright,
The band is playing somewhere, and somewhere hearts are light.
And somewhere teams are laughing, and somewhere crews do shout,
But there is no joy at SOSA – mighty Casey landed out.*

2000 CANADIAN NATIONAL SOARING CHAMPIONSHIPS		27 June		28 June		30 June		1 July		4 July		5 July		6 July		total score	
		pos	km	km/h	pts	pos	km	km/h	pts	pos	km	km/h	pts	pos	km/h		pts
15 METRE CLASS		129.2 km		260.7 km		3 hour PST		2 hour PST		205.8 km		163.9 km		182.8 km			
1	Ulli Werneburg	ASW-27	MZ	2	83.5	432	0	0	0	0	0	0	0	0	0	4801	
2	Nick Bonnière	ASW-20	ST	8	*124.6	0.0	242	4	82.6	906	4	114.2	73.4	799	3	89.1	700
3	Jim Oke	ASW-20	77	10	*71.7	0.0	139	8	80.1	870	2	188.6	62.9	879	7	72.0	519
4	Walter Weir	ASW-20	2W	1	99.7	518	1	4	87.7	p930	8	*115.2	0.0	321	1	91.1	720
5	Dave Springford	LS-6	F1	4	76.1	392	6	6	80.8	880	6	127.1	52.8	574	4	88.1	688
6	Lorry Charchian	ASW-27	LJ	12	0.0	0	0	5	82.2	900	10	*99.7	0.0	278	2	90.7	716
7	Bob Jackson	ASW-27	RJ	11	*60.1	0.0	117	3	84.3	931	5	127.1	57.6	638	6	82.8	632
8	Willem Langelan	DG-800	OX	9	*116.1	0.0	226	10	75.6	805	1	208.8	68.5	1000	4	88.0	688
9	Larry Springford	ASW-20	S1	7	*124.8	0.0	243	7	80.4	874	9	*114.3	0.0	318	8	66.6	462
10	Alain Orfila	Ventus	RS	5	74.8	385	13	*132.6	183	12	dnc	0	0	0	9	61.4	407
11	Wilfried Krueger	ASW-27	K2	3	80.2	414	9	79.8	867	7	*123.9	0.0	345	11	dnc	0	
12	George Vakkur	Ventus	GV	12	0.0	0	0	12	61.4	601	12	0.0	0	0	9	55.6	352
13	Bob Leve	Ventus	OS	6	70.7	363	11	70.5	733	10	*39.6	0.0	68	12	dnc	0	
STANDARD CLASS		129.2 km		260.7 km		3 hour PST		3 hour PST		205.8 km		163.9 km		182.8 km			
1	Ed Hollstelle	LS-8	A1	2	87.8	446	1	93.9	1000	1	212.5	76.3	1000	2	70.5	991	
2	Dave Mercer	Genesis 2	DM	1	99.6	519	4	75.2	757	2	136.1	62.2	636	3	63.5	870	
3	Ron Galloway	LS-8	P1	3	74.2	361	3	81.4	837	4	*122.0	0.0	287	1	71.0	1000	
4	Ian Grant	LS-4	ZT	4	69.3	330	5	73.5	735	6	*71.8	0.0	169	4	59.8	808	
5	Jörg Stieber	LS-4	JS	5	*22.6	0.0	36	2	85.8	894	3	148.8	52.2	534	5	59.8	806
6	Alain Berinstain	Genesis 2	BB	6	dnc	0	0	6	*123.4	184	5	*114.0	0.0	268	6	*86.3	163
CLUB CLASS		3 hour PST		193.8 km		3 hour PST		3 hour PST		162.2 km		134.8 km		144.8 km			
1	Hert Pölzl	LS-6	KC	1	91.5	52.7	200	1	85.7	1000	1	108.6	58.3	200	1	87.9	666
2	Charles Yeates	PW-5	YC	3	*34.6	0.0	54	2	52.1	857	5	*22.9	0.0	26	4	43.2	440
3	Calvin Devries	HP-14	LT	2	91.5	398	172	6	*178.5	413	2	*88.7	0.0	101	2	70.9	569
4	Ed Hollstelle Jr	HP-18	A2	4	*34.4	0.0	33	3	59.4	787	3	*51.9	0.0	59	7	*102.1	362
5	Team Langlois	DG-300	TD	6	*17.2	0.0	22	8	*97.1	218	7	*2.4	0.0	3	2	41.5	662
6	Ron Walker	304CZ	CC	7	*9.8	0.0	12	5	62.4	699	8	dnc	0	0	5	*137.3	440
7	Jeff Waters	ASW-20	WC	8	0.0	0	0	9	*82.0	178	8	dnc	0	0	6	*134.2	425
8	Dan Cook	Std Jantar	BW	8	0.0	0	0	7	*101.1	234	6	*16.2	0.0	18	8	*55.4	187
9	Hans Berg	Std Cirrus	HB	5	*21.7	0.0	28	4	62.1	761	4	48.4	19.4	55	9	dnc	0

* values preceded by an asterisk are distances in kilometres if pilot landed out. "p" denotes the application of a points penalty. distances and speeds in the Club class are true, not handicapped values.

How we breathe above 10,000 feet

Mike Busch

TO MOST OF US WHO FLY, aviation is as important as breathing. We take our flying very seriously, and spend countless hours trying to learn everything we can to make us better, safer aviators. Yet even after 35 years of being a pilot, flight instructor, aircraft owner and aviation information junkie, I never fail to be amazed at how much more there is to learn. I recently stumbled across a subject about which my years of aviation study and experience had left me completely ignorant — breathing.

Changing the rhythm of your breathing can dramatically reduce the onset of hypoxia.

But, so what — breathing is so easy that we don't even have to think about it. It's no different in the cockpit, right? Except that, as all pilots are taught, as our cabin altitude climbs higher, the amount of oxygen available goes down. If we climb high enough in an unpressurized airplane, we have to

use supplemental oxygen to ensure that we aren't impaired by hypoxia. That pretty much covers what pilots need to know about breathing, right? That's what I thought, too — was I ever wrong!

Feeling fine while flying high? As someone who does quite a lot of high-altitude flying in an unpressurized turbo-charged airplane, I've long had more than a passing interest in hypoxia, and I've long had the feeling that there was a lot more to this subject. Although I have always scrupulously followed the guidelines for supplemental oxygen use, I've long been aware that my physical reaction to altitude is extremely variable. Most of the time, I feel just fine at the end of a long high-altitude flight. But sometimes, I develop a headache by the end of the flight, and occasionally, more distressing symptoms ranging from nausea to joint pain. I blamed lack of sleep or something I ate. In retrospect, I'm sure I was experiencing some sort of altitude sickness.

It seemed to me that there had to be a more scientific way to deal with the physiology of high-altitude flight. So when a new, small, and inexpensive pulse oximeter (an instrument that measures blood oxygen saturation level) came on the market*, I immediately started flying with one. At last, I had a precise way of monitoring my hypoxia level, and determining precisely how much supplemental oxygen was needed to avoid impairment. But, the first time I went flying with this new gadget, I discovered something truly strange.

Unexplained O₂ oscillations At sea level, the oximeter showed the oxygen saturation of my arterial blood to be normal (97% to 98%). And just as I expected, I could see my O₂ saturation gradually decline towards 90% (roughly the onset of measurable impairment) as the airplane climbed through 6–8000 feet. But as I continued to climb higher and the oximeter readings decreased into the high 80s, they started to get erratic. As I reached 11,000 feet, it became clear that the oximeter readings were oscillating up and down in a predictable fashion, about three or four times a minute. By 12,000 and then 13,000 feet, the oscillations became even more pronounced, with readings that varied from 90% (barely hypoxic) to 80% (dangerously impaired).

"I don't think this instrument is working properly," I told Dr. Brent Blue, the Senior Aviation Medical Examiner with

whom I had been consulting on evaluating pulse oximeter use in the cockpit. "When I get above 10,000, the O₂ saturation readings are jumping all over the place." We agreed to meet the following week to investigate further.

Dr. Blue arranged to borrow two different clinical pulse oximeters from a local hospital, one a suitcase-sized unit that cost about \$5000, and the other a smaller model that cost around \$2000. We set up the big oximeter in the back seat of my Cessna T310, the smaller one between the pilot and copilot seats, and my new one in my shirt pocket. We also brought a notepad and digital camera to record our findings. Then, we went flying.

I engaged the autopilot, set up a 500 fpm climb, and donated my right hand to science. I clipped my oximeter to my index finger, and Brent clipped the other two pulse oximeter probes to my middle and ring fingers. Within seconds, all three units were displaying my pulse rate and oxygen saturation and all agreed within a percentage point. As we climbed, all three readings gradually declined. As we passed 10,000 feet, all three started to oscillate, remained in almost precise agreement, and the oscillations were perfectly synchronized on all units.

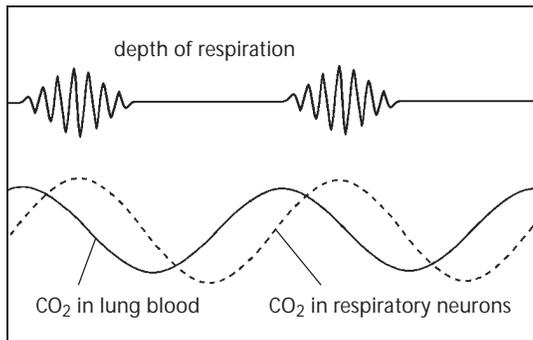
The oscillations in oxygen saturation of my arterial blood were real. Is something wrong with me? We transferred the three pulse oximeter probes from my hand to Brent's and waited a few seconds for the instruments to lock onto his pulse and the readings to stabilize. It was immediately apparent that whatever was going on here wasn't unique to me. I live at about 300 msl, while Brent lives at an elevation of about 6600. I'm 54 years old, overweight, and definitely out of shape. Brent is younger, thinner, and in considerably better cardiovascular condition. If both Brent and I experienced these strange oscillations at altitudes above 10,000 feet, I could only assume that most other pilots react the same way. Why?

Prime suspect: Cheyne-Stokes breathing Back on the ground, Dr. Blue and I puzzled over possible explanations for the oscillating O₂ saturation readings we saw. He was as astonished as I was, and suspected that the most likely cause was a respiratory anomaly called Cheyne-Stokes breathing. This is an involuntary and unconscious waxing and waning of respiration in which a person at first breathes more deeply than usual, then breathing gets progressively more and more shallow (and in some cases stops altogether), after which the cycle repeats itself over and over again.

While Cheyne-Stokes breathing is most often associated with serious medical problems like cardiac failure and brain stem damage, it has also been documented in healthy mountain climbers during sleep periods at high altitude. However, an online search of the medical litera-

* The finger pulse oximeter that the author refers to is the Model 9500 "FlightStat" made by Nonin Medical. Further info is available at <www.aeromedix.com>.

ture failed to find any studies of Cheyne-Stokes breathing in the context of aviation. The underlying mechanism is well-understood. Suppose you breathe more rapidly and/or more deeply than usual. Such hyperventilation flushes



carbon dioxide out of your lungs, and the reduced CO₂ level causes the blood flowing through your lungs to become slightly alkaline (increased pH). Some seconds later, this alkaline blood reaches the brain, where the respiratory centre in the lower brain stem

starts to inhibit respiration. As your breathing becomes more and more shallow, the level of CO₂ in the lungs gradually increases and your pulmonary blood becomes more acid. Some seconds later, this acid blood reaches the brain stem, where the respiratory neurons detect it and stimulate respiration. Your breathing becomes deeper and the cycle repeats over and over again.

In a normal person at low altitude, the feedback of the brain stem's respiratory center mechanism is sufficiently damped to prevent Cheyne-Stokes breathing under ordinary conditions. If you purposely overbreathe for a minute or two and then let your involuntary respiratory control mechanism to take over, you'll generally first go into a brief period of apnea (no breathing) and then go through 1 or 2 highly damped cycles of Cheyne-Stokes breathing before your respiration returns to its normal steady state. However, reduced oxygen at altitude stimulates an oxygen-lack-chemoreceptor in the brain stem's respiratory centre, greatly increasing the system's feedback gain and allowing Cheyne-Stokes oscillation to occur spontaneously. In fact, oxygen therapy is the standard clinical procedure for suppressing Cheyne-Stokes breathing.

Confirming the Cheyne-Stokes theory Dr. Blue's theory that we had been Cheyne-Stokes breathing made a lot of sense but I was skeptical that I could be breathing in such a cyclical and anomalous pattern without being aware of it. It was also hard for me to believe that such an obvious phenomenon could occur at moderate altitudes like 10,000 feet and yet not be discussed in aeromedical texts.

It would be easy to find out. On my next cross-country, I filed for 13,000 feet and clipped the oximeter on my finger. By the time I leveled at 13,000, my O₂ saturation readings were cycling like crazy between 80% and 88%. When I turned on some supplemental oxygen, within seconds, the oximeter reading climbed to the mid 90s and the oscillations stopped. When I shut the oxygen off, the readings dropped into the 80s and the oscillations started again.

Next, I tried to take voluntary control of my breathing rhythm. I started breathing deeply and slowly, about six breaths per minute (10 seconds per breath). Within seconds, the oscillations in the pulse oximeter readings stopped. Even more surprisingly, the O₂ saturation reading climbed steadily to 92% and stayed there. The altimeter showed 13,000 feet, but my blood had the oxygen satura-

tion that I'd have expected to see at 6000 feet. All I was doing was breathing differently.

Interestingly, I found it moderately difficult to breathe deeply and slowly like that. It took all the concentration I could muster, and it definitely felt strange. At one point, my concentration was interrupted by a call from ATC. I keyed the mic, read back the handoff instructions, dialed in the new frequency, and checked in with the next controller. By the time I was finished and returned my attention to the pulse oximeter, my O₂ saturation was back in the low 80s and oscillating. My involuntary breathing reflex had taken control, and I was back in Cheyne-Stokes mode.

On subsequent flights, I tried different breathing patterns at various altitudes, with and without supplemental oxygen. I found that any conscious, rhythmic breathing would suppress the oscillations in pulse oximeter readings. But, I also discovered that slow, deep breathing resulted in substantially higher O₂ saturation readings than rapid, shallow breathing. This turned out to be especially true when using supplemental oxygen. A visit to the physiology textbook helped to explain why.

Respiratory volume and "dead space" The capacity of our lungs varies greatly from one person to another, but an average young male adult has a total lung capacity of about 5.8 litres and females have about 25% less. In addition, maximum lung capacity can only be achieved in the upright position — capacity is substantially reduced when lying down, even more while sitting. Not all of this capacity is useable. After expelling as much air as possible, a substantial residual volume remains — about 1.2 litres for a young male adult. This leaves some 4.6 litres as maximum vital lung capacity that can be inhaled and exhaled during maximum exertion.

However, normal breathing utilizes only a small fraction of this capacity. The average tidal volume of a young male adult while breathing is normally only 1/2 litre (500 millilitres) or so. Even breathing deeply while in a seated position with seatbelts on (as in the cockpit) produces a tidal volume of only 1 litre or so. To breathe much more than that, you need to be standing up. Furthermore, not all of that volume reaches the alveoli of the lungs where it can oxygenate your blood. A good deal of the inhaled air must first fill your nasal passageways, pharynx, trachea and bronchial tubes before any reaches the alveoli. This "dead space" volume amounts to roughly 200 ml. Thus, of a normal 500 ml breath, only about 300 ml makes it to the alveoli where it can do any real good.

This is particularly important when you're using supplemental oxygen. If you "breathe normally" while using a mask or cannula, roughly 40% of the O₂ you consume is wasted as it never gets beyond your dead space!

Now let's consider "total alveolar ventilation," the total volume of new air that reaches the alveoli each minute. Normal breathing averages 12 breaths per minute, and 500 ml of tidal volume per breath, of which only 300 ml actually reaches the alveoli. So total alveolar ventilation averages 12x300 or 3600 ml per minute. On the other hand, suppose you make a conscious effort to breathe slowly and deeply: say 6 breaths per minute and ⇨ p24

Getting to the core of clouds

John Coutts, from *Sailplane & Gliding*

THE ART OF THERMALLING begins well before you even start circling. It can be divided into two phases. First, you must locate the general area within which you think the core could be. Second, you must find – and keep the sailplane in – the strongest part of the thermal column. Many pilots can recognize a good area, but can't locate the strong core quickly enough.

Techniques for searching and centring vary from pilot to pilot. However, the fundamentals of successful thermal centring are the same so, rather than recommending any one method, I have simply detailed some rules that seem to work for me.

When you watch the pundits, you'll clearly see that they have an uncanny knack of locating a good core instantly, requiring minimal amounts of centring. This is not purely luck: they have been carefully studying the indicators which help pinpoint the core. If it is a reasonable day for soaring, there will be cumulus marking the next search area. As you glide towards it, you should be carefully studying all the clues, such as the development of the cumulus ahead or, on blue days, searching for signs of a thermal leaving the ground.

Understanding clouds is perhaps the most important skill in soaring, since the majority of our flying is in conditions where thermals are marked by cumulus. As a general rule, the larger the size and depth of the cu the more studying and searching is required to find a good climb. Two examples: on a day with small cumulus marking the top of the thermals, the area in which the lift should be is relatively small so the lift is found quickly. On the other hand, a cu nim may have an excellent core or even cores – however, there is an extensive cloud shelf to search under.

Techniques for searching under cumulus therefore differ according to the size of the cloud. Consider the four cloud situations below, along with some basic rules that I employ while searching for the best lift.

Shallow cumulus

These conditions are ideal as the cloud distribution is low (probably less than a quarter) and ground heating is not impeded by cloud shadow. Unfortunately, the thermals can cycle quickly, meaning that often the best climbs are found by flying towards developing wisps. Conversely, promising looking clouds can produce little.

- If cloud centres fail to work well look for edges that show the most rotation or movement.

Reading clouds is a skill, taking years to gain a modest understanding. Probably no one has truly mastered it. If you are serious about competition or cross-country flying, try to learn when you are on the ground. From your window study the sky. Watch clouds developing for a few minutes, then tell yourself how each will change. Five minutes later, see if you were right.

- Only search areas of cloud that are clearly growing.
- If a cloud shows signs of decay, look to the sides for signs of new wisps forming, especially upwind or downwind in breezes stronger than 10 knots.

- When low, finding heavy sink can be a good sign: look carefully at the cloud for a building edge and the corresponding lift.
- Allow for wind drift – that is, when low, look slightly upwind.
- Prepare to leave before cloudbase due to small latent heat generation (heat energy released by vapour condensing to cloud forming water droplets).

Moderate cumulus

When the clouds grow higher they tend to occupy a larger proportion of the sky, perhaps a half. If the air-mass is moist enough with a strong inversion, there is a risk of spreadout.

The cloud shadows cover more of the ground; indeed, the clouds now grow big enough to block ground heating and can starve themselves. If this happens, the cloud dissolves and once again the sun can heat the ground to produce another thermal. This is known as cycling. Generally, if you're getting down to below half the height of cloudbase, you need to look for cores under edges of good clouds where the ground is still in sunlight. If there is no sun, you could be in trouble!

- Stay high to use latent heat effects.
- Look for the darkest, most defined base with a concave shape.
- Look for tendrils of cloud and centre directly underneath them.
- When there is a recognized step in cloudbase, always search under the higher side.
- Be very wary when there is no sun on the ground underneath a promising cloud, especially if you are low: watch out for cycling.

Large cumulus

These clouds normally indicate that the air-mass is unstable and by late afternoon areas of over-development can be expected. More than half the sky can be covered by cloud. Now you really need to consider the effects of cloud shadow. However, cloud shadow alone is unlikely to starve the thermal, because large cumulus may begin sucking the air upward: that is, the instability within the cloud promotes and prolongs convective motion. This, combined with plenty of sun on the ground, can give phenomenal climbs that improve near cloudbase. It's crucial to study large clouds carefully before you arrive underneath because, as well as finding the lift, you also need to avoid the sink. Exploding cloud tops should

indicate the general search area, and you should home in on tendrils once underneath. Use the same techniques as for moderate cumulus, plus the following:

- Look for climbs against the downwind edges of rain showers usually marked by a small line of tendrils.
- Fly under cloud domes that seem to be rising fastest (look the freshest).

Blue conditions

Unless you see gliders or birds circling, or a haze dome, you must rely on ground features to indicate where a thermal might be. Following high terrain is also necessary, especially if there are narrow valleys. In the blue, with no obvious signs of lift, all you can do is fly on track, taking in any town or field that looks like it attracts more heat. Once you find rising air, it can be hit-and-miss whether you locate the core. In winds of more than 10 knots you can consider looking upwind or downwind for blue thermal streets. If the thermal is on its own then you should turn into wind, unless there is a clear indication the thermal is downwind. In droughts and dry environments like Australia, dust devils offer the best clue to the thermal's location. Sometimes the best ones are in the middle of two or more dust devils. These develop as individual cores that feed into the main core. Smoke, dust or the waves on a lake can also indicate possible ground winds feeding a thermal core. It's usually quite hard to locate the core on the ground surface alone unless an obvious trigger point can be seen: a high or moving object, or the downwind edge of a likely thermal reservoir.

If you have read the situation correctly to this point in your flight, you should be flying in the most probable area for a respectable thermal. The next task is to centre in it and keep the glider there. Visualize the thermal's distribution, then move the glider's circle, by whichever method you prefer, over the core. There are many techniques for centering in thermals, some of which can seem rather technical, so here I shall suggest what I find works for me.

The strength of thermal decides the action required. Generally, anything less than 3 knots is going to be of limited size and therefore small corrections should be made. Try to fly the glider accurately, using only moderate bank angles (up to 30°) – moving the circle centre by widening out the turn seems to work best.

If the lift is greater than 3 knots, employ more aggressive techniques, especially if the core is really strong. Usually, steeper bank angles are required (45–60°) and even tightening up the turn more in the best bits works well. Occasionally (especially in blue conditions) you will hit an extra surge: by turning really tightly you can stay with the bubble for a few hundred feet. It is common to climb right through a goggle in such a bubble.

It is very rare that you come across the perfect thermal that is round and is going up all at the same rate. Often the thermal is a little broken, elongated and irregular in

shape. When thermals are like this (that is, most of the time) remember it is physically impossible to get the glider completely within the thermal climbing smoothly. The key is to centre on roughly the middle of the thermal and use only minor adjustments to feel the best of the air, slowly working your circle into the best parts and keeping it there all the way up. You may even elongate your circling to mirror the shape of the thermal.

- In strong conditions your priority is to get the glider in the core as quickly as possible!
- The reverse turn centering technique is one of my favourite tools in larger thermals.
- Don't be afraid to crank it over: many pilots don't turn tightly enough when a reasonable core is found.
- If you lose the core, widen out the turn to extend your search area.
- At the beginning of a thermal cycle, the thermal may be wide and smooth but not very strong. However, hang in there if the strength slowly increases with each turn.
- At the end of the thermal cycle, you may get half a turn in good lift but the rest in rubbish. If the next turn is worse you have probably arrived too late.

While circling in a balanced turn (with the yaw string straight), you may notice that you need to hold a slight amount of opposite aileron, that is, out of the turn. This is because the inboard tip is travelling slightly slower than the outboard tip. While circling in this manner a portion of your wing section is not in an efficient form for circling flight. To centralize the ailerons during circling flight use a small amount of top rudder. This will result in the glider slipping around the turn. This increases the angle of attack of the inboard wing and so produces more lift. The amount of slip depends on the angle of dihedral: more dihedral requires less slip.

Don't compromise on instruments. I prefer my mechanical variometer for visual and the electric variometer for audio and average climb. However, variometers tend to respond to horizontal air motion as well as vertical, hence those times when the instruments indicate good lift for momentary periods when the seat of the pants tells you otherwise. Your instincts are a valuable tool that should not be underestimated.

Climbing has to become second nature. You need to be sufficiently current to instinctively centre and re-centre the glider without thinking about it. Time circling should be spent concentrating on your next plan of attack, observing the conditions ahead and looking at secondary options. Last but not least, don't forget your lookout. ❖

New Zealander John Coutts began gliding in 1991 at Auckland GC, aged 15. He won the Standard class in the New Zealand Nationals twice. He arrived in the UK in 1999, and flies LS-8 "KM" from the Booker and Cambridge gliding clubs. The youngest pilot in last year's Worlds, he came second in the Standard class.

1999 Accident Report

I have taken a somewhat different approach to the analysis of recent accidents. I would like you to reflect on quotes from James Reason, a behavioral scientist who has written about the nature of accident analysis:

"Human error is a consequence not a cause. Errors are shaped and provoked by upstream (club environment and organizational) factors. Identifying an error is merely the beginning of the search for causes."

When we look at what has happened in accidents or incidents try not to focus so much on the human error aspect but more on the conditions that allowed the event to take place. It is too often easy to state human error as someone else's mistake. We tend to believe that we would never be in that same situation. We must try not to dismiss these accidents as another club's or pilot's problem:

"Latent accident producing conditions are present now. It is not necessary to wait for a bad event to find out what they are."

When we respond to accident analysis there are two approaches to safety measures that can be implemented, and both are important. The first approach is *reactive* measures. This is the more classic approach, with the analysis following the unhappy events. This can reveal recurrent patterns of cause and effect. It shows how safeguards have failed. Reactive analysis tends to lead to additional defences or safe guards being put into place. Which is a good thing! These defences can help to prevent a re-occurrence provided they do not become too restrictive and are bypassed as a matter of course or convenience. How often have you seen club rules put in place for safety that everyone ignores. Safeguards on their own will not prevent accidents.

The second approach is *proactive* measures. This is identifying the risks (looking for accidents waiting for a place to happen). Not having accidents does not necessarily mean you are safe, you could be just lucky! This leads to steady gains in resistance to accidents. Proactive analysis looks more at the organizational aspects of safety. These are the factors that will create the climate that will allow human nature and fallibility to take their course and permit accidents to occur. Fortunately, these are the factors that we have the most control over. Regular checks reveal where our safety holes exist and where they are most likely to appear next.

Areas that require our attention for organizational analysis include but are not limited to these factors:

- *safety specific – incident/accident reporting, safety policy, etc.*
- *management – leadership, communicating, production/protection conflicts,*
- *technical – maintenance, hardware, design,*
- *procedural – rules, operating procedures, controls,*
- *training – formal/informal, skill or competency requirements.*

1999 glider accident synopsis At a previous SAC conference it was said that if you boiled all the accident data down you find that most accidents occurred in the takeoff or landing phase of flight. The single most significant factor then could be stated as:

"When flying close to the ground you are at the greatest risk."

Unfortunately, when you do this to find a simple solution there is the danger of boiling information down to the point it is meaningless, such as the term "pilot error!" We have had many years of repeating similar accidents and the pointing of the finger at the pilot and it has not changed our track record. SAC's FT&SC does not conduct accident investigations but relies on club and Transport Canada information to try to find the causal factors to improve safety. Some may argue we should do more and we are trying to make changes in this area, but the fact remains that we are resource constrained. The second approach could be to deny there is a problem and there really is nothing that can be done to improve the situation. As you read on, you will agree that we cannot do this, especially since many countries have safer records than we do.

What happened in 99?

We had 25 accidents that resulted in four pilot fatalities (18 aircraft destroyed) and three pilots injured (7 aircraft damaged).

The data in this summary is based on accident claims. Many minor

damages to aircraft are not claimed and therefore not reported. These accidents can be placed into categories to help analysis as follows:

- 4 off-field landing attempts
- 3 take-off phase (two towplanes)
- 5 landing phase (3 hard landings)
- 3 maintenance related (unconfirmed)
- 5 involve breaking canopies
- 7 involve ground handling or storage

If we look at some of the factors from the 1999 accidents we could say that you are at higher risk of serious injury or damage to your aircraft in four major areas (however, knowing what the risks are isn't enough!):

- Aging pilot population
- Flying modified or homebuilt aircraft
- XC flight and deviation from safety rules
- Potential effects of heat stroke or dehydration

How do the accidents this year compare to past years in SAC. The table below shows the information that is available for over the last decade and depicts flying accidents (in motion), total accidents, and fatalities. These

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accidents can be grouped into major categories of takeoff, heavy landings, undershoots, overshoots, and ground loops. Many of the accidents involve off-field landings. Despite the warnings and information available we keep repeating the mistakes.

Year	Flying	Total	Fatalities
89	?	29	0
90	19	29	4
91	15	22	1
92	16	23	2
93	30	34	0
94	31	33	0
95	20	23	0
96	13	18	0
97	10	12	0
98	?	28	0
99	16	25	4

Accident claims past decade

Factors in many of the accidents listed involve an underestimation of the hazards or overconfidence in personal skills. How often is weather underestimated or standard operating procedures (decision heights for cross-country flying) ignored? Other factors have lead us to consider other risk areas:

- policy for homebuilt/modified aircraft
- latching problems in Puchacz/Grobs
- pilot checklist/warnings
- currency/competency checks for cross-country pilots
- flightline management/supervision of flying operations
- safety info on cross-country/effects of heat
- crosswind operation hazards
- safe handling of aircraft on ground/storage guidelines.

There is unfortunately no magic solution or brilliant idea that will make everything safer or make the problems go away. We have to attack the safety issue on many fronts both reactive and proactive. The challenge now is to look at the organizational aspects of these accidents, understanding the nature of human factors and that it is easier to change how we manage versus how people think. To do this we need the desire to improve the situation. Part of this process is to recognize that something needs to be fixed!

Three C's of Safety

The organizational driving force to do this has

been summarized by James Reason as the "Three C's of Safety"

The first is *Commitment*. This is the motivation and resources from the top level firstly and by everyone involved. Club leadership must discuss these accidents at their next meeting. Clearly clubs must look at their own organizations and identify their risk areas. Do not dismiss these accidents as someone else's problem. Many things can be corrected at the club level. Even small efforts such as proper tiedowns.

The second is *Competence*. This includes the safety information system, the accident reporting system and your capability to take action. Use the SAC safety and club safety system. We must communicate the risks to our pilots. Review your operating procedures. For example SAC has guidelines for cross-country off-field landings. How is this implemented in your club or why is it not followed?

The third is *Cognizance*. We must be aware of the dangers, that safety is a constant war and not a checklist item! The weaknesses in the defences are not detected and repaired when we forget to be afraid. "Remember that identifying an error is merely the beginning of the search for causes, not the end." We must set up systematic and regular ways of educating and reminding ourselves of the hazards. Are you doing all that you can? Start by using your analysis of club incidents and report your incident summary and conclusions for action to SAC.

Where do we go from here?

SAC has been conducting regional workshops with clubs with a view of identifying 'latent conditions' in our organization which can affect the safety of soaring. These are conditions existing now that may or could cause an accident in the future. Once these conditions are identified we will look for performance indicators that we can use to measure how effective our barriers are to prevent accidents or the potential for accidents. Once measured, new barriers (or enablers) or changes to the current barriers can be implemented to improve our current safety system. One of these performance indicators is how many clubs have completed the SAC Safety Audit (results to date opposite). Another performance indicator is the number of clubs conducting incident analysis and reporting their findings to SAC. SAC will continue to work on what can be done collectively to improve organizational factors at the national level and additional effective 'safety guards' that will contribute rather than inhibit safety. However, the real key to improving safety lies with the clubs and the willingness to make all components work.

I leave you with a quote from one of our safety workshops from a participant who said, "I am ready to go to battle against acci-

dents as a safety warrior".

Accident synopsis

Rather than graph the data or look at statistics to try to draw conclusions I have presented the information in a synopsis format. Please consider the organizational factors I have discussed that may have led to these situations.

Fatal Motorglider crash in mountains on local flight. Experienced pilot flying modified homebuilt with high wing loading. Pilot was experiencing engine problems before flight and took aerotow.

Fatal Glider enters a stall/spin when pilot pulls up on final approach to avoid a two seat trainer landing ahead of him in circuit. Experienced pilot appeared to be making a hasty return to field after two hour flight.

Fatal Homebuilt glider crashed when aircraft spins in from 1500 feet agl shortly after aerotow. Pilot unfamiliar with type and had not flown recently.

Fatal Glider noses down steeply on final approach at 200 feet, undershoots runway and impacts ground. Pilot was experienced and current. Hot 30+C day with flight duration over two hours.

Write off Glider destroyed in off-field landing attempt. Experienced pilot was unable to land in selected field, after overshoot, caught wing tip on undershoot approach to the next field causing a ground loop on landing. Pilot was current but inexperienced on type with short field landings.

Write off Glider is blown over 100 feet in overnight rainstorm and severely damaged. Aircraft was tied down on airfield to cement anchors. Anchors remained attached to inverted aircraft.

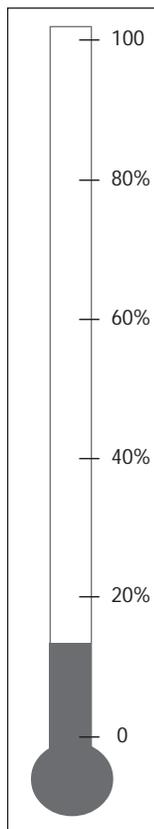
Write off Glider was substantially damaged during off-field landing when experienced pilot undershoots selected field and is forced to land in another field located during final approach. Wing tip catches hedge at 20 feet agl and spins aircraft. The pilot attempted to thermal on downwind (700 feet agl) and lost sufficient altitude to reach selected field.

Write off Towplane groundlooped by glider moving out of position on takeoff.

Write off Glider destroyed when ice storm causes roof of workshop to collapse on aircraft being restored over the winter.

Write off Glider destroyed when ice storm causes roof of workshop to collapse on aircraft being maintained/stored over the winter.

Severe damage Glider damaged in hard landing. ⇒ next page



Substantial damage Glider damaged in ground handling.

Back injury/substantial damage

Glider damaged when experienced pilot stalls on short final during undershoot on off-field landing. Insufficient altitude in circuit to compensate for sink and wind experienced on final.

Hail damage substantial Glider damaged by hail stones after off-field landing during contest.

Damaged canopy Experienced pilot enters full left sideslip with spoilers open on a spring checkout. Canopy opens during buffeting and damages right wing when it blows off glider. Suspect canopy latch screws were loose permitting improper latching of canopy locking mechanism.

Canopy damaged Rear canopy damaged when it opened in flight.

Canopy broken Unlocked canopy blows off parked glider by gust of wind.

Canopy damaged Open canopy is damaged during re-assembly of glider. A wing dolly is tipped over and falls against the canopy beside trailer.

Damaged Canopy blown off tied down glider overnight. Canopy destroyed and causes some wing damage.

Damaged propeller Propeller strikes ground at start of aerotow when wind gust lifts tail. Experienced pilot was taking off into a 15–20 knot quartering crosswind.

Minor damage Horizontal stabilizer was scraped while glider was moved over an obstruction (water tap) during ground handling.

Minor damage Glider damaged during ground roll in off-field landing. Main wheel entered a concealed furrow in the ground.

Damaged Glider damaged by hard landing.

Minor damage Gear collapses after landing during ground roll. Experienced pilot had confirmed gear locked on downwind. Previous repairs suspect.

Towplane upset Towplane damaged.

Dan Daley, FT&SC

Report on fatality at Bluenose

22 May 2000. Standard Austria. During winch launch the glider stalled, flicked partially inverted and impacted runway. Write-off. Fatal.

Very early in the launch at a low height, the left wing stalled, the glider flicked and fell to the runway nose first and partially inverted less than 100 metres from the launch point.

Speed was inadequate, possibly made worse by a tailwind gust as the glider started to climb. Glider type known to have unpredictable stall/spin behaviour; pilot often stated it was tricky when flown slowly, and was aware the club was in the process of changing ends, but elected to take off. No protection afforded by glider structure or design features.

Downwind launches are not safe – increasing tailwind with height makes matters worse. Extra experience and care needed for future pilots converting to older types of glider.

Ian Oldaker

† George Robert Graham

On the last day of our annual Flying Week at Bluenose, a fatal accident occurred to George Graham in his Austria sailplane. George was the primary founding member of our club. He will be greatly missed by us all. His dedication to soaring and the club lasted for more than 25 years. He was instrumental in the purchase of our first club glider CF-OZA.

George taught flying to virtually every pilot who ever flew at BSC. As a close personal friend I observed George's commitment to his wife Hope and to a responsible way of life. Their mutual Christian beliefs were clearly demonstrated in their daily lives and were apparent in George's work for weekly newspapers in the Annapolis Valley where they lived. Our club has suffered a profound loss. We will never be the same.

Richard Vine,
BSC Safety Officer

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SAC news & hangar flying

SAC buys a new office

After an extensive search, SAC has purchased a condominium office. It is located about 150 metres from our present location. The arrangement is very similar to the present office. There's no change in the phone numbers. The new address is:

**Soaring Association of Canada
Suite 107, 1025 Richmond Road,
Ottawa, ON K2B 8G8**

The main reason for the move (towards the end of the summer) is that it is financially attractive. Commercial real estate rental rates have been rising in Ottawa and the vacancy rate is very low. We have been able to hold our accommodation costs more or less level for the past decade or so; however, this is much less likely looking ahead. The move allows SAC to hold its accommodation costs flat, as well as acquire an appreciating asset. SAC is committed to maintaining an office in Ottawa due to the requirement to liaise with Transport Canada.

SAC Board

Don't void your insurance coverage!

A SAC member went for a gliding holiday to a commercial US operation. He rented a glider and unfortunately damaged it in an un-landing. The claim was not covered under the SAC insurance for the following reasons:

1. "Non-owned Aircraft Liability and Non-Owned Aircraft Physical Damage Liability" coverage is *not* a first party hull/liability coverage. It is contingent coverage only. If there is coverage elsewhere, ie. from the aircraft owner, then the endorsement provides excess insurance, meaning that the insurers will pay claims only when all other valid and collectible insurance covering the loss has been exhausted, and the pilot is found legally liable.

2. A section of the rental agreement that was signed was worded as follows:

"I agree to be responsible for any damage and loss of revenue to the aircraft of which I am in command. (Loss of revenue is daily rate of plane times number of days out of service.)

• I opt for a daily surcharge to cover damage and loss of revenue in excess of \$3,500. I will be responsible for the first \$3,500. Fee: \$15/day, \$140/181 days, or \$200/year (Jan 1 – 31 Dec.)

• I opt for my own non-owners insurance (minimum \$25,000 coverage).

In this instance, the member took the second option. By doing so, he voided the coverage from the SAC policy by assuming liability. The Assumed Liability section of page 6 of the SAC Policy reads as follows:

Liability Claims We Won't Cover

"We won't cover any liability you assume under a contract or agreement other than an airport contract you sign with a governmental body."

The only way to go in this case would have been to accept the daily surcharge and the deductible. While clubs should be posting a copy of the policy on their notice boards so members can check for themselves, we are copying it also onto the website.

Richard Longhurst
SAC insurance committee

Revised licence fees, extended medicals

Transport Canada has finally made more concessions to most pilots by introducing a single fee of \$55 for procuring a flight medical, and by extending medical validity for a class 3 from 2 to 5 years for a PPL below age 40, and from 1 to 2 years for a PPL above age 40. Implementation date is 15 July 2000. If your medical is valid on that date, it will automatically be extended to the new validity period, but a new medical certificate will not be issued until your next medical exam. More details are at <www.copanational.org/pilotfees2.htm> and in the *Aviation Information Circular 10/00* of your latest AIP amendment sheets (3/00). This extension will not affect glider pilots, but the unified fee of \$55 will be a saving of \$130 over the 5 year validity period for a glider medical.

English for glider pilots

The two most *mispelled* words in our sport are *MacCready* and *hangar*.

**Use your mind to save
your hind**
Ian Oldaker

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- 30 Sept-29 Oct **MSC Lake Placid Wave Camp**
weekends and 9-13 October. Svein Hubinette <svein@videotron.ca>
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Tony Burton <free-flt@agt.net>

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Anyone picking up the excellent *Sailplane & Gliding* magazine from the UK does one thing first — flips through to the *Tail Feathers* column which has been the private preserve of a witty, sometimes censorious, ascerbic and chubby little mammal of questionable design who has, since 1960, let us know what he thinks of the entire soaring scene.

Platypus has flown most everything, and had shares in many, from the side-by-side open cockpit T-21 to the swan, the ASH-25. He says you need to invest in fine wines, grand pianos, and new gliders to combat inflation but only his piano remains. He approves of span, the more the better, and is the originator of "TINSFOS" (there is no substitute for span) — he *does* allow that talent is a substitute, but you can *buy* span.

Platypus has been everywhere, escaping the grey cloud decks of the UK for the over-the-horizon visibility of New Zealand, escaping the 2 knot Standard British Thermal for the 16 knots-to-18,000 feet variety in Minden, NV. So, his breadth of "been there, done that" soaring experiences, keen observation, and a cheeky turn of phrase have caused several generations of pilots to hang on his every word (and enjoy Peter Fuller's illustrative cartoons, 100+ of which have been included in the book).

The editor, Marion Barritt, has read every word Platypus has written and given us the worst of it all, organized in general topics of discussion over time. Don't read it in bed — you'll lose sleep and your laughter will wake the neighbours.

reviewed by Tony Burton

How we breathe ... from page 17

1000 ml per breath. Allowing for 200 ml of dead space once again, total alveolar ventilation now averages 6x800 or 4800 ml per minute. If you're using supplemental oxygen, only 20% of it now gets wasted in dead space.

A better way to breathe?

You can see why breathing slowly and deeply provides far more efficient respiration at altitude, particularly when supplemental oxygen is being used. The question is, does this have any real practical value? Can a pilot learn to change his or her breathing habits? The jury is still out on this.

To my knowledge, neither the inefficiencies of normal breathing nor the aggravating effects of involuntary Cheyne-Stokes oscillations at altitude have been investigated in an aviation context. I am aware of some documented attempts to teach emphysema patients to breathe more efficiently, and those trials were reportedly not particularly successful. On the other hand, those patients did not have the benefit of the "biofeedback" provided by a pulse oximeter.

In the time that I have been investigating this issue, I've been successful in optimizing my breathing for 10 to 20 minutes at a time, producing very dramatic improvements in my arterial blood oxygenation as measured by a pulse oximeter. I've proven to my own satisfaction that I can lower my physiological altitude by 8-10,000 feet and eliminate oscillations in oximeter readings purely by modifying the rate and depth of my breathing. However, doing so requires considerable conscious effort, and distractions (such as communicating with ATC) disrupts the desired breathing pattern. This limits the practical value of this technique. My hope is that, with the help of the oximeter, I can teach myself to breathe more slowly and deeply while aloft without conscious effort.

It's too soon for me to tell whether or not this can be done. Like learning to drive a stick-shift automobile, practice may make it more automatic. Time will tell. In any case, if you find that you are experiencing unexpected symptoms of the onset of hypoxia and you have confirmed that your O₂ system is working properly, the next thing to do is adopt a deep regular breathing pattern. ❖

Membership decline ... from page 5

down? Look at more data. Numbers still declining? Let's study the methodology. I guess "analysis paralysis" arises from the technical mindset required by the sport. But it doesn't replace taking action to attract and keep people, particularly kids. Go prospecting.

We can prospect for (attract) people by targeting groups. A shopping centre display with a glider is a nice idea, but it plays to a generic, largely disinterested audience. This display at an outdoor activity show is better targeted. Going to an airshow has benefits too — people who are actually interested in flying, although not necessarily in learning to fly, will pass by. The outdoor show will also bring you people interested in related activities. Bringing a glider and info to a high school, community college or university will introduce soaring to young people, and it has similar advantages and disadvantages. You can also bring the kids to the airfield like SOSA did. Visit <www.sosaglidingclub.com> to see what went on that day.

Terry McElligott

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the June 1 record flight from page 26

I launched first at 11:30 and took a high tow (I have found that a high start and a subsequent high finish is the best way to get an early start here) and quickly gained altitude and got on the start of a long cross-country flight. It was slow for the first leg of the flight, however the conditions were improving and so was my average speed. Jason caught up to me part way through the first leg (to Golden), and carried on another 40 kilometres, giving me a chance to get ahead again. We met up again south of Canal Flats where I led the way across the gap to the southern portion of the range. Again he passed me and went a little further to the south. We met again over my old hang glid-

ing stomping grounds where we turned in our last thermal together. He (Jason) final glided home completing a 500 km flight, his first flight at this site, in about four hours.

By the time I got back to the Fairmont area, the conditions had improved substantially, a very solid cloud street presenting itself all the way up the valley to Golden. I was certain I would make my planned northern turnpoint in Golden. I found I could fly very straight lines at well over a 100 km/h average. In fact I flew the leg north to Golden at about 125 km/h, and the last leg south was flown at about 135 km/h (not too bad for a PW-5).

These were special conditions and I was truly

grateful for them. I hadn't realized this flight could be a World record as there were at least two more hours of quite good conditions. I'm certain another 200 km would have been possible — c'est la vie — I had a good flight and still made it back for dinner.

Ian got off a little bit later and flew his ASW-24 around five turnpoints completing about 700 kilometres. Much thanks to Ian for all of the paperwork involved, and thanks to Sebastien, the Invermere Soaring Centre's towpilot for getting me on the way.

This is a great place for cross-country flying; you owe it to yourself to experience the Canadian Rockies. ❖

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The following records have been claimed:

Pilot	Tony Burton
Date of flight	25 May 2000
Record type	Free 3TP distance, Open & Club, territorial
FAI category	DOG 3.1.4c, SAC only for Club
Sailplane type	RS-15, C-GPUB
Distance claimed	607.3 km Open, 643.7 km Club
Task completed	Invermere/Nicholson bridge/Bull River dam/ Parson bridge/Invermere
Previous record	559.7 km, Ulli Werneburg & Nick Bonnière, 1998
Pilot	Trevor Florence
Date of Flight	1 June 2000
Record type	Free 3TP dist, Open & Club, territorial
FAI category	DOG 3.1.4c, SAC only for Club
Sailplane type	PW-5, C-GLDR
Distance claimed	637.8 km Open, 771.7 km Club
Task completed	Swansea HG launch/Moberly pit/Lakit Lookout/ Mt. Seven HG launch and return
Previous claims	607.3 km (643.7 km in Club), Tony Burton (above)
Pilot	Trevor Florence
Date of Flight	1 June 2000
Record type	Free 3TP distance, World
FAI category	DWG 3.1.4c
Sailplane type	PW-5, C-GLDR
Distance claimed	637.8 km
Task completed	Swansea HG launch/Moberly pit/Lakit Lookout/ Mt. Seven HG launch and return
Previous record	Sebastien Kawa (Poland), 591.2 km
Pilot	Trevor Florence (crew Norman Marsh)
Date of Flight	27 June 2000
Record type	100 km speed to goal, Cdn Multiplace territorial
FAI category	SAC only
Sailplane type	Twin Astir, C-GVSX
Speed claimed	105.6 km/h
Task completed	Mt 7 HG launch to N 50° 36.47", W 115° 57.03"
Previous record	65.3 km/h, Trevor Florence (E. Schneider), 1999
Pilot	Trevor Florence
Date of Flight	16 July 2000
Record type	Free 3 TP distance, Open, territorial
FAI category	DOG 3.1.4c
Sailplane type	ASW-20, C-GTRM
Distance claimed	680 km
Task completed	Invermere/Mt. Seven HG launch/Eiko RR xing/ near Harrogate/Fairmont
Previous claim	637.8 km, Trevor Florence, 2000

The 1 June World record flight

Trevor Florence, Canadian Rockies Soaring

It is very hard to write about a good flight without "blowing my own horn" but please bear with me and I'll try to present the facts and keep it interesting at the same time.

3 Sumac Court, Burketon, RR2, Blackstock, ON L0B 1B0
(905) 263-4374, <waltweir@inforamp.net>

The following badge legs were recorded in the Canadian Soaring Register during the period 23 April to 10 July 2000.

DIAMOND BADGE

94 Dale Kramer SOSA World #6435

GOLD BADGE

291 Dale Kramer SOSA

SILVER BADGE

929 Dan Dawson Bluenose

DIAMOND DISTANCE (500 km flight)

Dale Kramer	SOSA	1001.4 km	LS-4	Julian, PA
Pierre Pepin	Champlain	511.4 km	Diamant	Julian, PA

DIAMOND ALTITUDE (5000 m gain)

Dale Kramer	SOSA	5120 m	LS-4	Julian, PA
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GOLD ALTITUDE (3000 m gain)

Anthony Firmin	York	4630 m	Grob 102	Minden, NV
Dale Kramer	SOSA	5120 m	LS-4	Julian, PA

SILVER DISTANCE (50 km flight)

Don Klassen	Prince Albert	108.8 km	K-7	Cudworth, SK
Dan Dawson	Bluenose	63.0 km	PW-5	Stanley, NS

SILVER DURATION (5 hour flight)

Dan Dawson	Bluenose	5:24 h	PW-5	Stanley, NS
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SILVER ALTITUDE (1000 m gain)

Anthony Firmin	York	4630 m	Grob 102	Minden, NV
Orlan Dowdeswell	Regina	1220 m	1-26	Strawberry Lks, SK
Dan Dawson	Bluenose	1746 m	PW-5	Stanley, NS
Heinz Kaun	Beaver Valley	1980 m	Lark IS28	White Sands, NM

C BADGE (1 hour flight)

2645 Anthony Firmin	York	see Gold alt	Grob 102	Minden, NV
2646 Orlan Dowdeswell	Regina	1:10 h	1-26	Strawberry Lks, SK
2647 Dan Dawson	Bluenose	5:24 h	PW-5	Stanley, NS
2648 Yves Bastien	Bluenose	3:15 h	K-8	Stanley, NS

If you have never been to Invermere, or rather the Canadian Rockies, imagine a sea of endless peaks and valleys aligned in such a way to give the soaring pilot limitless streets of thermals, very strong thermals, very high cloudbase, and enough airfields and emergency landout areas to safely accommodate long cross-country flights.

The morning of 1 June looked good, very good in fact, the early cumulus was developing, but not too fast to cause a threat of over-development. I was keen to fly the new PW-5 C-GLDR that I put on line this spring, to check out the new logging device, and to fly with Jason Shields who was up from New Zealand as a guest of Norman Marsh. Jason flew Norm's Discus B which he was very familiar with (Jason is a Schempp-Hirth dealer in NZ). I kidded him about pushing him around with the PW-5.

Ian Spence was there from Ontario with his ASW-24 and kindly volunteered to act as my Official Observer. I told him of my intentions that day, however our lack of familiarity with the Volks-logger flight recorder prevented us from doing a proper declaration (thank goodness for the new "free distance" records which don't require a pre-declaration of the turnpoints). ➔ p24

Trading Post

Personal ads are a free service to SAC members (please give me the name of your club). \$10 per insertion for nonmembers. **Send ad to editor**, not to SAC office. (Address at bottom of page 5 masthead)

Ad will run 3 times unless you renew. Please tell me if your item has been sold sooner. Maximum ad length is 6 lines and subject to some editing as necessary.

single seat

L-Spatz, CF-UJZ, 1966, recent fabric and overhaul, basic instruments, radio, Varicalc, open trailer. \$6000. Winnipeg GC (204) 837-8128 or <info@wgc.mb.ca>

Tern, CF-BWA, 195h, basic instruments, enclosed trailer. \$5000 obo, Walter Mueller (780) 539-6991 or Karl at <ksoellig@agt.net>

1-23H-15. Ser #68, built in 1964. 2,500h, standard panel, open trailer is included. Good shape with a blue & white paint scheme. Asking US\$11,500 Contact: Rob Harling (416) 923-3080 W, (416) 425-6627 or e-mail <harnai@pathcom.com>.

L-33 Solo, like new with 76 h, basic instruments, all ADs, showpiece paint & upholstery, overhauled tow hook, tail dolly, canopy cover. \$US20,500. Trailer avail. US\$1000. In Pemberton. Rudy Rozsypalek <pemsoar@direct.ca> (604) 894-5727.

PW5, Two total energy varios, one SB7 electric with averager, electric T&B, Dittel FSG 71M radio, trailer and ground handling gear. Type Certified and C of A for Export. US\$26,000. PW6 coming. Charles Yeates, <yeatesc@sympatico.ca> or (902) 443-0094.

ASK-14 motorglider, 851h, engine 137h, good cond, 28/1, launch for pennies. Gehrlein metal trailer. \$US15,000 obo. Willi Terpin (250) 365-8378.

RS-15, C-GAYN, '74, 1200 h, Cambridge with audio & Mark 4 director, O2, Radair 10 radio, Schreder trailer. Imron paint fall 1990. Based at York. Asking \$14,500 (about 2.5 L/D points/\$1000!) Alf Waymann (905) 451-2427.

HP16, C-GAUZ, 534h, centre console, basic instruments, Winter audio vario, adjust. back rest, lowered seat floor for tall pilots, white Schreder trailer, self-rigging equip with tow bar & wing wheel, covers.

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LS-4, C-GTGO, best kept LS-4 in country, winner of five Cdn titles, built '84, approx 1200h, all ADs, no damage, never left outside, 4a landing gear mod, Peschges computer, Dittel FSG 50 radio, Komet trailer. US\$34,900. Jörg Stieber, (519) 662-2840 ext 224, fax (519) 662-2840, <joerg@odg.com>

DG-303 Elan, all with winglets, automatic control hook-ups, retractable gear. Club model has turbulator tape; Standard has turbulator blow holes under the wings. Club, 1:41.5, DM67,488; Standard, 1:43, DM72,779 (±C\$49,000; ±C\$52,500). Acro versions available +7g.-5g. Willem Langelaan, (905) 823-4687 <willem@langelaan.com>.

SZD-55, C-FTVS, single owner, new in '96, full instruments (excl. GPS), rugged Trailcraft trailer, always kept in trailer, never damaged. Avail now, complete package \$70,000, Colin Bantin (905) 469-1980 (H), (416) 543-9222 (B) <ccbantin@sympatico.ca>.

misc

Towplane, 1946 Stinson 108-1, 165 hp. 2800ttsn, 700 smoh, fabric & inside is 9/10, 1500 fpm @ 70 mph with climb prop, w/o glider, 500-700 fpm with. Beautiful inside and out. At Invermere, BC. \$42,000. (250) 342-3006, <kaz@rockies.net>

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magazines

SOARING — the monthly journal of the Soaring Society of America. Subscriptions US\$43. Credit cards accepted. Box E, Hobbs, NM 88241-7504. (505) 392-1177, fax 392-8154. <74521.116@compuserve.com>

NEW ZEALAND GLIDING KIWI — the monthly journal of the New Zealand Gliding Association. US\$32/year (seamail). Private Bag, Tauranga, NZ. <john@roake.gen.nz>

SAILPLANE & GLIDING — the only authoritative British magazine devoted entirely to gliding. Bimonthly. BGA, Kimberley House, Vaughan Way, Leicester, LE1 4SG, England. £17.50 per annum. fax 0116 251-5939 <bga@gliding.co.uk>

AUSTRALIAN GLIDING/SKYSAILOR — bimonthly journal of the Gliding and the Hang Gliding Federa-

tions of Australia. \$A40.50 surface mail, air \$A55. Payable by Bankcard, Visa, Mastercard. Box 1650, GPO, Adelaide, South Australia 5001. fax (03) 9379-5519. <AdminOfficer@gfa.org.au>

MOTORGLIDING INTERNATIONAL — bimonthly jointly published by the Soaring Society of America and the British Gliding Association. US\$34 per annum, (505) 392-8154. <info@ssa.org>

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2-22, CF-PLT, 1950h, shown in Dec/Jan 1999 free flight, great trainer. Reconditioned '99, fresh paint. Asking \$10,500. Dawson Campbell, (705) 686-3672.

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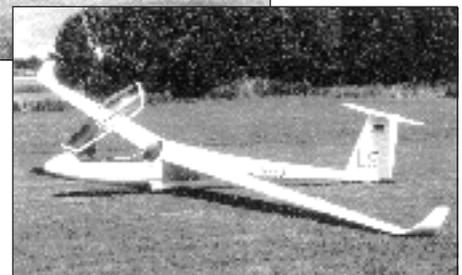
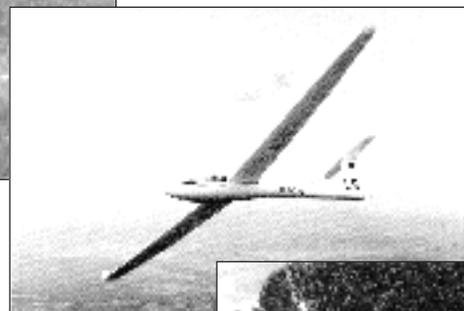
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