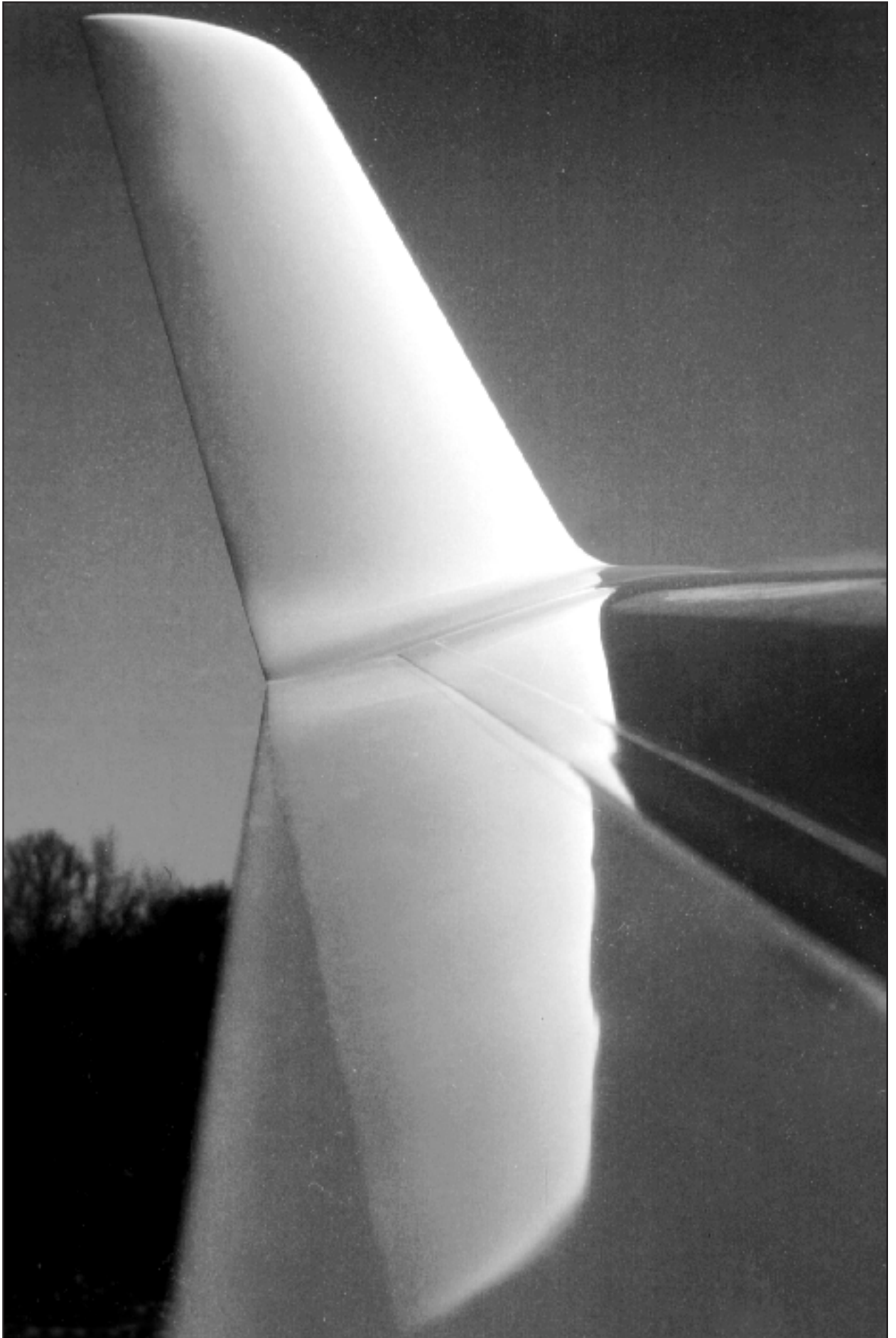


free flight • vol libre

1/2000
Feb/Mar



Liaison

This is my 36th and last "Liaison".



Inevitably, as I prepared to write this, I reflected on the six years I have spent as president. I strongly believe that my staying any longer in this position will not be to anyone's benefit. Change is a very beneficial thing, especially with voluntary organizations.

That period saw very significant changes in the business of running SAC. Some of these changes arose from obvious needs to realign the organization to the economic realities of the nineties. Other changes were brought forth through increased use of technologies, computerization and the Internet. The rest came through changes in the way by which the government of Canada chose to administer aviation. In short, running SAC has never been more complex and more essential.

In that task, it has been my good fortune to have associated with individuals who unselfishly gave their time — lots of it — and their expertise to SAC. Without this, we could have been blown out of the

sky. I will be forever indebted to Jim McCollum. Throughout these six years, I benefited from his in-depth understanding of governmental inner workings and his tremendous knowledge of SAC issues, and from his very special sense of humour.

These six years were a terrific learning experience. But my richest inheritance will come from having met so many wonderful individuals. Their contact has made me a better person.

For all of this, I will be forever grateful to have served SAC.

Fayence, 5 January 2000 ...

My family and I are spending time in southern France, staying with Gérard and Mireille Chiocci who happen to be glider pilots. Gérard is the club treasurer. I was able to understand some of the ramifications of running an all-year club that operates 7 towplanes and 35 club gliders, not to mention the same number of privately owned gliders. On 31 December, we flew 20 minutes in an ASK13 to celebrate the passing of 1999. Unfortunately, 5 January brought no better conditions but we wrung 62 minutes out of the sky in a Janus C.



C'est de Fayence que ce pouds ce trente sixième et dernier Liaison. Après six années passées à la présidence, je suis heureux de passer le relais. Dans des organisations tels les clubs ou l'ACVV, un changement de la garde m'apparaît essentielle. Diriger l'ACVV est devenue beaucoup plus complexe au cours de ces dernières six années, pour toutes les raisons énumérées plus haut. La tâche a été parfois difficile, à l'occasion franchement désagréable, mais elle m'a apportée une expérience humaine extraordinaire et une incroyable leçon de choses.

Je veux remercier tous ceux et celles qui m'ont supporté par leur aide et leurs encouragements. Et j'ose espérer n'avoir pas trop de difficultés en cette dernière année de mon mandat de directeur zone Québec, à recruter des candidat(e)s pour me succéder.

Depuis le 30 décembre, les conditions de vol à voile ne sont pas très bonnes.

Cependant, voir opérer un club comme l'AAPCA est un spectacle intéressant et permet de s'interroger sur notre pratique de ce sport. Comme le souligne souvent Jean Richard, des contacts plus fréquents avec nos cousins d'outre Atlantique pourraient nous ouvrir des horizons que la pratique au Québec ne peut nous apporter. L'utilisation des Super Dimona comme remorqueurs est un exemple intéressant des innovations qu'ils peuvent se permettre d'expérimenter ici.

Comme on dit au cinéma / As they say in the movie business: IT'S A WRAP.

Pierre Pepin president

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1/2000 Feb/Mar

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

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Cover

Winglet sculptural artistry
photo: Peter Selinger

Flash!

AIR CANADA has presented a pair of world-wide system passes to the 2000 Canadian National Gliding Championships. The winner will be by draw by the 1st place pilots in each class. The competition is at Pendleton, 25 June – 6 July

complete contest details are at: www.sac.ca/nationals2000

History **Я** Us

Barrie Jeffery, SAC Historian

Barrie Jeffery recently accepted the job of SAC Historian. Here are a few personal memories of his and an appeal for the gathering of old photos, notes, albums, and stories of members of SAC. The collection would be used as source material for occasional free flight stories.

A SLIGHT DAPPER MAN in the uniform of an RCAF Flight Lieutenant stood before the small gathering of students on a western campus and told about his mission. His manner was enthusiastic and positive as he told of the benefits and early accomplishments of an organization none of us had heard of before. The students were all members of a very young gliding club, and the man with the French name and the English accent was introducing us to the Soaring Association of Canada. We learned later that the man had been bitten by the flight bug as he saw WWI aircraft flying over his Channel Islands home to France; that he had known T.E. Lawrence (of Arabia) in the RAF, and that he had flown in aircraft off carriers in the China Sea, that he had been a founder of the Hong Kong amateur radio club.

We heard about national competition, FAI badges, a winch under development, and great plans for the future: training camps for instructors, work with Air Cadets, central registration of record flights. It was all a bit heady for our embryonic group, but being young and invincible, we knew it was only a matter of time — and probably not much of that — before we would be right into all of it.

This was how we met both the SAC and F/L A.N. "Chem" Lecheminant. The UBC Thunderbird Gliding and Soaring Club (one primary glider under construction) promptly joined in backing the new group. That was in the autumn of 1945. Frank Woodward was club president — he got me involved. Bill Adams, Ray Gould, Betty Booth, Henry Zitko, Peter Chiz, Carson Smith and a dozen or two others were active on the construction project and would have been at the meeting.

Frank Woodward and I worked in two aircraft engineering offices over the summers of 1946 and 1947. We met more aircraft or future gliding and SAC enthusiasts in both Northwest Industries in Edmonton and Avro Canada in Toronto. At NWI, the office was run by chief engineer Kazimierz "Kaz" Korsak, and we shared the small office with John Archibald, who had flown Boeing primary glider(s) before the war, and Frank Brame, in a few years to become a contender for Gold C #1, John Ruptash, and two or three others. Frank and I took flying lessons that summer, about a precious half hour per week, and soloed, he in an Aeronca Champion, and I in a Taylorcraft. Frank earned his power licence in the fall of 1946; he requalified for a licence in 1999 ... in a Champ!

Bud Haight was another engineer in the office; 47 years later Brame, Woodward, Archibald, Haight, and Jeffery all met together in Edmonton again at the induction of Elvie Smith into the Canadian Aviation Hall of Fame. So hang in, everyone, life doesn't end at 65.

In 1947, Frank and I were in an aerodynamics office of some 40 people presided over by the almost inarticulate but brilliant Jim Chamberlin. Frank was able to explain to me what I was doing: working out pressure distributions on the airfoils of the almost-first ever jet transport, the Avro C-102. In the same or nearby offices were several people who figured largely in aircraft design and SAC: Frank Brame and John Archibald, Kaz Korsak (maybe), the precise and patrician Don Pounder, who graced SAC meetings for many years with his impeccable logic, and the ponderous Berkely Roden, donor of the Roden Trophy for club efficiency, and author of the deliberately ponderous rules, only recently simplified.

Waclaw Czerwinski worked quietly by himself at the back of the office. Waclaw designed the *Sparrow*, built at de Havilland Canada and operated by the Toronto Gliding Club that summer (Frank and I were never given permission to fly it), and the U of T *Loudon*, and was co-designer with Bev Shenstone of the two-place sailplane the *Harbinger* — later finished by Chem in 1975 (this story is told in *ff 4/84 – The Harbinger Saga*).

B.S. "Bev" Shenstone inhabited the forbidden places of the senior execs at Avro, and was at that time SAC President. Frank and I joined a meeting at his house one evening for general hangar flying with Bev and Waclaw, and with Jack Ames and Henry Dow. ⇨ p17



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.

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Images may be sent as photo prints or as high-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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President	Pierre Pepin
Vice President	Richard Longhurst
Executive Director	Jim McCollum
Treasurer	Jim McCollum
Legal Counsel	Robert Wappel
Secretary	vacant

SAC office: 101 - 1090 Ambleside Drive
Ottawa, ON K2B 8G7

tel: (613) 829-0536 fax: 829-9497

e-mail: sac@sac.ca

website: www.sac.ca

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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 aéro-clubs 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 insignes, 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.

Les articles de *vol libre* peuvent être reproduits librement, mais le nom du magazine et celui de l'auteur doivent être mentionnés.

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.

EDITOR

Tony Burton
Box 1916 Claresholm, AB T0L 0T0
tel & fax (403) 625-4563
e-mail free-flt@agt.net

Any service of Canada Post to above address. Any commercial courier service to 335 - 50 Ave W

COMMERCIAL ADVERTISING

SAC office (613) 829-0536
e-mail sac@sac.ca

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On control checks

Thank you for making *free flight* available via the web — I enjoyed my first sight of the magazine.

Art Grant's article, *It's Only a Mistake if...*, and the analysis by Larry Morrow prompted me to share my experience of learning to glide in the UK, and the way I was taught to avoid taking off with disconnected controls. In the UK the pre-flight check mnemonic is a little different, but as in Canada it begins with C for controls.

However, in my club this check is performed twice; first as a visual inspection of control movements before the pilot enters the cockpit, and second once strapped in to check that the controls move freely and feel correct. There is also a requirement for a DI before takeoff, and a positive check which has to be performed before the glider is allowed onto the launch point.

The external check becomes automatic because it is introduced from the outset of training and takes only a few seconds. From the article, it appears that this should have identified the problem.

I'm not saying that we in the UK gliding community are perfect (given our weather, who could argue that!), but it might be worth considering whether this aspect of our practice is an improvement.

Chris Reed

Rattlesden Gliding Club, Suffolk, England

On training horses

I just finished reading the *Safety Culture* article by Ian Oldaker and BRAVO!

I would like to share with you an experience I had this summer. It is not a soaring experience, it is one training horses. Dolores, my wife, and I bred and train horses. We met Chris Irwin, a SK based horse trainer, and one of the main things that we got out of our work with him was diligence.

We have always prided ourselves in the work that we do and how conscientious we were with the horses, but Chris opened our eyes. An integral part of his philosophy is that every moment that you are in contact with the horse, you are training him/her. From walking them out of their stalls to turning them out in a paddock. Most people ignore their horse unless they are actually riding. The thing is, the horse does not know the difference, as long as you are interacting with them, you are training them.

I have seen many horses who will walk over their owners, bite or kick, but once mounted, they behave. Why? Because that is the way they were taught.

Okay, how does this relate, well, every moment we are around the gliders, assembling, pushing on to the line, hooking-up, etc. we are in a safety situation the same way we are training our horses. The horses do not take a break, well neither does safety. I have found that from my safety awareness gained from gliding, I am safer working with horses (and just about everything else in my life), and now with the enhanced awareness I have gained this past summer with the horses, I feel a little safer at the airfield. I guess you might say safety is a way of life.

David Donaldson, Great Lakes Gliding Club

Introducing the new historian

I'm Barrie Jeffery, and honoured to be nominated as historian for SAC. SAC and soaring activities are a big factor in my life story. My first inspiration for soaring (in the late 30s): one of the most elegant sailplanes ever, the gull-winged *Minimoa*, photographed passing almost overhead.

At UBC, 1945, a stranger from Victoria asked, "Would you like to join a gliding club?" It was Frank Woodward, a good friend ever since. The Thunderbird Gliding and Soaring Club built a primary glider, flew it at Boundary Bay (see "*SAC Yearbook, 1948-49*"). The club restored one of the three German war prize Grunau Babys over the winter of 1947-48 (*free flight 4/89*) and flew it at Sumas airstrip in the spring of '48, our graduation year.

Frank and I worked in aero-engineering offices together in 1946 and 1947, in Edmonton and Toronto. We flew with the Toronto Gliding Club in the summer of '47, and flew dual at the World Soaring Championships in Spain, 1952.

The Gatineau Gliding Club was my home from 1948 to 1956, made some short-lived record flights and obtained Gold C (*it was Gold #1! ed.*) and a Diamond. Worked at NRC, Flight Research and Aerodynamics sections 1948-56. Owned shares in a Tiger Moth and Taylorcraft at Cold Lake, 1960-61. SAC member 1945-58 and now from 1998, and was SAC Secretary 1947-48. I moved to Quebec and flew with Mario Overhoff and Alec Krieger in an Air 100 sailplane and a Schweizer or L-K, and Tiger Moth towplane. Finally, flew at Cold Lake (Pratt-Read, L-K, Schweizer 1-19). I lost my flying licences about 1961 with eye trouble. Since ➔ p21

GONE FLY-ABOUT

Stephen Liard
SOSA

When you set off to go exploring by foot, the Aussies call it “gone walk-about”. You could say that I set off across southern Ontario by glider and went “fly-about”.

I have always had a hankering with the idea of long distance, one-way flights. There is something magical (some might say crazy) about setting off with a general plan, but no real idea of where your actual landing place might be. And my plan was quite simple — head north from SOSA to Orangeville, then venture east just as far as I could go in one day. My goal was to complete my Gold distance 300 kilometre flight and also to see totally new scenery. According to long-time SOSA member Steve Burany (himself a veteran of one-way long distance flights) nobody had flown this route in over 25 years. My only prior “official” cross-country flight had been my Silver distance in 1995 in a 1-26. This time I would be in the club’s single Astir CS-77. I flew without water ballast as I have never flown with water and wasn’t going to experiment on this flight.

A great adventure, as are all flights with an unknown goal — much glee, some fright.

The big dogleg north to Orangeville was to get me up around the Toronto Pearson control zone. However, I anticipated that the difficult part of the flight would be at the northeastern edge of the control zone which skirts within five clicks of the southern edge of Lake Simcoe. With the breeze from the northwest, that meant that I could expect some thermal-damping lake effect when I passed through this corridor to the southeast of the lake. I hoped to get high enough just before the lake to enable me to glide far enough to find lift again. The breeze was light from the northwest, so I had a quartering headwind on the first 75 kilometre northward leg, then a quartering tailwind for the run eastward.

One cannot plan a flight such as this without also thinking of crew. Just the gas and food bill would add substantially to the costs of the flight (no burgers for this crew!). And how do you go about asking someone to spend an entire day chasing you across the province while you fly and have fun. Thankfully, Ray Wood and his wife Pat were up to the task. I had hoped to fly on a Saturday so as to leave Sunday open, as I expected a late return to the club. Also we would miss the usual Sunday evening cottage traffic. Alas, the weather had other plans on Saturday, so Sunday was the day to go for it. Ray and Pat had arranged to meet me at the club early Sunday morning for final preparations and also to loan me one of their cell phones to call for the retrieve. You know what they say about best-laid plans. They never quite work out the way you expect. They were unavoidably delayed Sunday morning, so in order not to miss the early lift, I launched trusting that they would do as they had said they would, but I had to forgo the cell phone. I also made sure that Tom Coulson knew where my truck keys were should everything totally fall apart.

Finally after all the planning, I’m flying, and what a day! Like cut crystal, the view is tack sharp right to the horizon. No haze or pollution, but a view that goes on and on. You have to be a southern Ontario pilot to really appreciate the novelty of this on a summer day in July. I’m using one of the SOSA’s new Colibri flight recorders for flight verification, so I make sure to cross right over the club to get some data points in the start sector, and also to notch the barograph part of the trace. It’s only just before noon, and I’m getting a steady 4 knots to near cloudbase at 5000 feet msl. There is a forest of cu to the west and southwest, but to the north and north-east where I am heading they are just starting to pop. As I head north, it almost seems that the cu are popping just as I am arriving. I am always just one cu away from total blue, but when I arrive at that cu, lo and behold just like magic, another is starting to form farther ahead on course. And slowly the bases are rising as well.

By 13:00 I am rounding Orangeville and am able to radio back to SOSA that I had made the turnpoint. Welcome news comes my way when I find out that my crew has arrived and know where I am. At least I won’t be hitchhiking this day. I climbed to 6000 in a great thermal near the turnpoint which gave me the best climb rate of the day. With a steady 6 knots on the vario, the recorder trace shows that I climbed 1900 feet in just 3 minutes. I had steadied down to using a working band of 4–6000 feet, giving me good lift and keeping me well clear of the cloudbase which was steadily rising. I didn’t anticipate how this decision would save me later.

The visibility was astounding. From altitude, I could clearly see all of Toronto and Lake Ontario and even the runways at Pearson 26 nautical miles away. I could also look northward and see all of Georgian Bay. Horizon to horizon I clearly saw over 100 miles. Although I was using a handheld Garmin GPS, navigating was so easy with the visibility that it was not necessary. It ended up being nothing more than a glorified odometer, showing me how far I had come. Now, if I can only get the distance to show greater than 300 ...

Over the town of Bradford on the southwest shore of Lake Simcoe I decide that I need every inch of height available before heading out into the lake effect. I hang on into lower rate lift and climb to within 500 feet of cloudbase at an estimated 6800 feet msl and then head out into the big blue hole. It’s as smooth as silk right near the lake, and I cross my fingers and hope I get far enough away from the lake effect to find lift again before the altitude runs out. I can see cu far ahead, and am pretty sure I can make it. Twenty-five kilometres later as I angle southeastward away from Lake Simcoe, the burbles start to reappear and soon I find the first welcome thermal. I had only sunk down to 3500 and soon I was able to climb back up to 6000.

I got a real fright near the town of Uxbridge. Climbing in a tight core and banked way over when approaching the top of my climb at 6200 feet, I suddenly see landing lights turn on right below the cu beside the one I’m in. They are headed right at me and are real close (about a kilometre). It’s a Canadian Airlines 767, and he has seen

me as he is pulling up and veering around me. I shove the stick forward and he passes only 3–400 feet directly over me! From first sighting until he is over me was less than 20 seconds. When my heart stops pounding, I look back in the direction the jet had come from and sure enough, there are a row of commercial aircraft heading into Pearson. They were routing them in from the east, and although I was well outside the zone, I was crossing the approach path they were using from the east. Phew!

So for the rest of the afternoon while heading steadily east, I just kept bumping and running where possible and stopped to thermal when I got down to 4000 feet. Approaching Rice Lake southeast of Peterborough, I was able to get a message relayed to SOSA (thank you to the unknown glider pilot who provided the relay) that I was within sight of Rice Lake and my crew — bless their souls — decided to leave and take up the chase (however I didn't know that just then). At this point they knew to head east on Highway 401 and that they wouldn't have to head north because I couldn't make it around the top of Toronto.

By 15:45 or so, the lift was getting weaker and finally the GPS was showing me a total distance of nearly 330 kilometres. I knew, because my landing field would be at a lower elevation than SOSA, that my distance would be penalized by the 1% rule. However with 10% extra distance, I had enough.

One of the unique aspects of a one-way flight to an unknown landing field is that there is virtually no final glide. I just kept flying and climbing my way along until I had the distance required and decided to end the flight. With the height I had left, I could have done another 30 or 40 kilometres, but the big question would be, where? I had gradually flown down to near the shore of Lake Ontario on my right, and on my left the rocky/forested terrain of the Canadian Shield could be seen angling down towards the lake. At the junction of these two physical features was where the decision to proceed or terminate the flight would have to be made. Ahead, I

could only see trees and rocks and without being able to final glide ahead to a known landing field, I decided to find a good one below. I was just northeast of the town of Napanee and right beside the 401 which I knew would please my crew ... wherever they happened to be.

With 3500 feet in hand, I had lots of time to look over the possibilities. I could see that the general layout of the fields would give me a quartering crosswind landing, and I chose a newly cut field that had a slight rise in it. With the height I had, I flew around all four sides of the field to give it a good look over and set up a circuit. Final approach would be directly across Highway 401 but I figured to cross the highway with ample height. Turning from downwind to base — \$!@#%* — there are high-tension lines across final approach. The towers were nestled right up against the edge of the highway right-of-way in the shadows and therefore were virtually invisible until I made the turn onto base leg. I could now see that the loop of wires between towers was directly across my approach path. For a microsecond I considered changing fields, but at this late point in the circuit it would have been a very poor split second decision.

Remembering what CFI Fred Hunkeler had told me years before while crewing for him, I modified my circuit so as to pass directly over one of the towers rather than between them. Fred had taught me that it is much easier to see the physical towers than the thin lines stretched between them. So I extended my base leg past the "runway heading" and made a dogleg final approach directly over a tower. Because I had to land over an obstacle, I had to stay higher than I had wished, but still had ample room to get into the field. At SOSA, one of our runways has an approach directly over sixty foot trees, so we get lots of practice at approaches over obstacles. Down at last and everything is safe ...

... are those sirens I hear?

Sure enough, some well-meaning soul had phoned the Ontario Provincial Police to report an airplane had crashed into the field. So here comes two cruisers to investigate. Luckily they were able to cancel the full fire/rescue call before everybody arrived. The police wanted to see my driver's licence. But officer, I was flying a plane! However with a licence they can check into the police computer to see that I am a real person. Luckily I had it with me and finally everything is sorted out. I was able to find a nearby house to phone the club who relayed the message to my crew. This was when I found out that they had left while I was back at Rice Lake, so though I was 300 kilometres from home, Ray and Pat arrived in less than an hour. What a crew!

The rest is history as they say. We de-rigged and headed home stopping in Belleville for three well-deserved steak dinners. We finally arrived back at SOSA just after 11:30 pm, which makes me wonder just how on earth you say thank you to a crew who spent 9+ hours on the road throughout the day. Well here it is Ray and Pat — THANK YOU VERY MUCH FOR MAKING THIS FLIGHT POSSIBLE! When you have the urge to go fly-about, you know I'll be there for you. I also have to put in a kind word for Dan Bush who was my OO ... and Walter Weir gave me an official 318.4 kilometres Gold distance after the height penalty was included. Now for my 500 ... any volunteers? ❖



I to r: crew Ray and Pat Wood, and Stephen – stiff from the long flight.

Total elapsed time scoring for sailplane races

William Feldbaumer

Unlike other sports, the soaring community has not yet standardized on one system for scoring its races. Many systems exist world-wide which give different results when applied to the same contest. This indicates a need for a scoring system analysis and design effort to determine the most accurate system for scoring pilot performance. Standardization on one system might result. This article will provide such an analysis. I will show that using the measured performance of each pilot — elapsed time — as his daily score yields the highest accuracy. The system selects as champion the pilot with the lowest total elapsed time for the entire contest. This is the pilot who flies the total contest distance at the highest speed.

Objective Before any system can be evaluated, some criteria must be established to judge it. I propose the following:

A scoring system must produce scores which represent the daily and cumulative measured performances of each competitor with the highest accuracy possible.

With this objective, the preferred system will be the one whose contest scores represent measured performances most accurately.

A soaring contest is a single competition in which a group of competitors race on a different course under different weather each day for several days. This definition places beyond the scope of this article consideration of systems which score competitors who compete in several different contests. Examples are systems which seed team members for the World Soaring Championships and systems which choose a seasonal champion as in Formula 1 racing.

Scoring course completions Let's begin with scoring examples using a 1000-point system and evaluate its accuracy. In these systems, the daily winner is assigned 1000 points and other finishers are assigned points based on the ratio of their speed to the winner's speed. If a winner's speed is 60 mph, for example, and Pilot B's speed is 30 mph, he is assigned 500 points. In the example given here, the same pilot will be the winner on both days. The cumulative measured performances of Pilot A and Pilot B are identical. They both flew the cumulative 200 miles in 5:50 cumulative time. The 1000-point scoring system produces different scores for the identical measured performances. It places Pilot A thirty-four points ahead of Pilot B. This inaccuracy was

introduced by forming a ratio of each pilot's speed to the winner's task speed. Each pilot's score becomes a function of two variables: his speed and the winner's speed. Each pilot's score no longer represents his measured performance alone, but is dependent on another pilot's performance.

Now, using the results of Day 1, let's change Day 2 to a 200 mile race, keeping the pilots' speeds the same. The cumulative measured performance of Pilot B is an elapsed time of 8:20. This performance is clearly better than the performance of Pilot A who took 9:10 to fly the cumulative 300 miles. Pilot B's speed for the cumulative 300 miles is 36 mph compared to 32.7 mph for Pilot A.

Day 2 – 200 miles					
	Daily measured elapsed time (hrs)	Daily calc. speed (mph)	Daily calc. points	Total elapsed time (hrs)	Total points
winner	3:20	60	1000	5:20	2000
pilot A	6:40	30	500	9:10	1300
pilot B	5:00	40	666	8:20	1266

The 1000-point system puts Pilot A thirty-four points ahead of Pilot B. This inaccuracy was caused by assigning 1000 points to each race regardless of the length of the courses. I know of no theory which justifies making unequal quantities equal. The Task Committee may have thought that the 200 mile race would be under "easier" soaring conditions and had to be twice as long. Simply saying, however, that two hundred miles equals one hundred miles does not make it so. "Easy" and "hard" are not definable or measurable quantities — only elapsed times and distances are. Pilot B's superior measured performance on the 200 mile race was negated by the current 1000-point scoring procedure.

The examples above demonstrate clearly that the 1000-point system produces scores which do not order pilots in accordance with their actual measured performances. Other sports score competitors by measured performances and it is not questioned. Discussions at the pub about how "difficult" a race was are fine, but trying to factor difficulty into the scoring can only distort the measured performance a pilot actually achieves.

What conclusions can be drawn? As we know, 1000-point systems were designed over half a century ago when soaring contests included altitude, duration, distance, and racing events. The need for a system which can score unlike events disappeared when soaring matured into a racing-only sport.

	Day 1 – 100 miles			Day 2 – 100 miles			Total elapsed time	Total pts
	Daily measured elapsed time (hrs)	Daily calc. speed (mph)	Daily calc. pts	Daily measured elapsed time (hrs)	Daily calc. speed (mph)	Daily calc. pts		
Winner	2:00	50	1000	1:40	60	1000	3:40	2000
pilot A	2:30	40	800	3:20	30	500	5:50	1300
pilot B	3:20	30	600	2:30	40	666	5:50	1266

Thus, 1000-point systems are now obsolete and their continued use produces the inaccuracies shown above.

I propose an alternative scoring system which uses the performance measures themselves — elapsed times — as the scores. This produces an identity: the scores are identical to the performance measures. No higher accuracy can be attained, making this the preferred system in accordance with the stated objective.

Let's call the system which uses actual performance measures as scores, the Total Elapsed Time (TET) system. TET will select as champion of a contest the pilot who has the lowest total elapsed time for the entire contest. He is also the pilot who flies the total distance of the contest at the highest speed. The scoring formulas are:

1 *Daily Score* = Measured Elapsed Time
but not more than the "Maximum Completion Time" discussed below,

2 *Cumulative Score* = Total Elapsed Time,

and the lowest score wins.

The conclusions above may disturb some, but elapsed time scoring is used in all races outside of soaring with which I am familiar. They all are scored by elapsed times (from which speeds may be calculated). This is true also of races which have the same conditions as soaring contests (same group of competitors, different courses, different weather, etc). Two examples are the Tour de France bicycle race and around-the-world yacht races.

Scoring landouts

The distances achieved by pilots who do not complete the courses must be scored if the stated objective is to be met. It is obvious that completing 90% of a course, for example, is a better performance than completing only 10%. As higher elapsed times give poorer scores than lower elapsed times, achieved distances must receive higher elapsed time scores than the finishers receive.

Scoring achieved distances has inherent problems for all scoring systems. The pilots must be scored in either of two dimensions — elapsed time or distance. These two dimensions meet in a discontinuous fashion at the finish line. As a pilot crosses the finish line he transitions instantly from distance scoring to elapsed time scoring. Some mathematical steps must be taken in any scoring system to bridge this discontinuity and produce acceptable results. This will be explained later.

Achieved distances must be scored proportionally between the score for zero distance and the score of the slowest finisher. Once the score for zero distance is determined, the distance scoring will follow easily. To meet the objective of scoring accurately, the score for zero distance must not be an arbitrary value. A theory must be developed which relates the score to the racing which actually took place.

Let's begin by assuming that all the pilots fly together and all of them have an elapsed time of exactly three hours. Consider the pilot who did not compete that day (a DNC) and achieved zero distance. He missed a three-hour race and his elapsed time score must show that he is three hours behind. The other pilots are scored at their elapsed times of three hours. To put the DNC pilot three hours behind the three-hour finishers, he must be scored at $3 + 3 = 6$ hours. This score is twice the elapsed time of the pilots who completed the course.

In an actual contest the elapsed times of the finishers will vary, so

an average (arithmetic mean) is taken. The DNC or zero distance elapsed time score is, therefore, set equal to twice the *Average Completion Time*.

The score for full distance *without* crossing the finish line could start directly behind the slowest finisher (*Longest Completion Time*). Pilots who have been scored by TET, however, have been vocal about the need for a penalty for not crossing the finish line. A penalty of 10% of the *Average Completion Time* seems reasonable and has worked well. It is important that the penalty not be so large that it creates pressure for day devaluation when many pilots land out as it does in 1000-point systems. More on this later.

The formula for a non-completion, or distance, score is easily derived using similar triangles, from the scoring diagram figure on the opposite page above. The formula contains three terms:

- 1 the score value of distance at the finish line +
- 2 the score value of the full distance alone \times
- 3 the proportion of the full distance which the pilot did not complete.

3 *Non-completion (distance) score* =

$$\frac{(\text{Longest completion time} + \text{penalty time})[1] + (1.9 \text{ Avg Completion Time} - \text{Longest Compl. Time}^*)[2]}{(1 - [\text{distance completed}/\text{course distance}])[3]}$$

*but not to exceed the *Maximum Completion Time*.

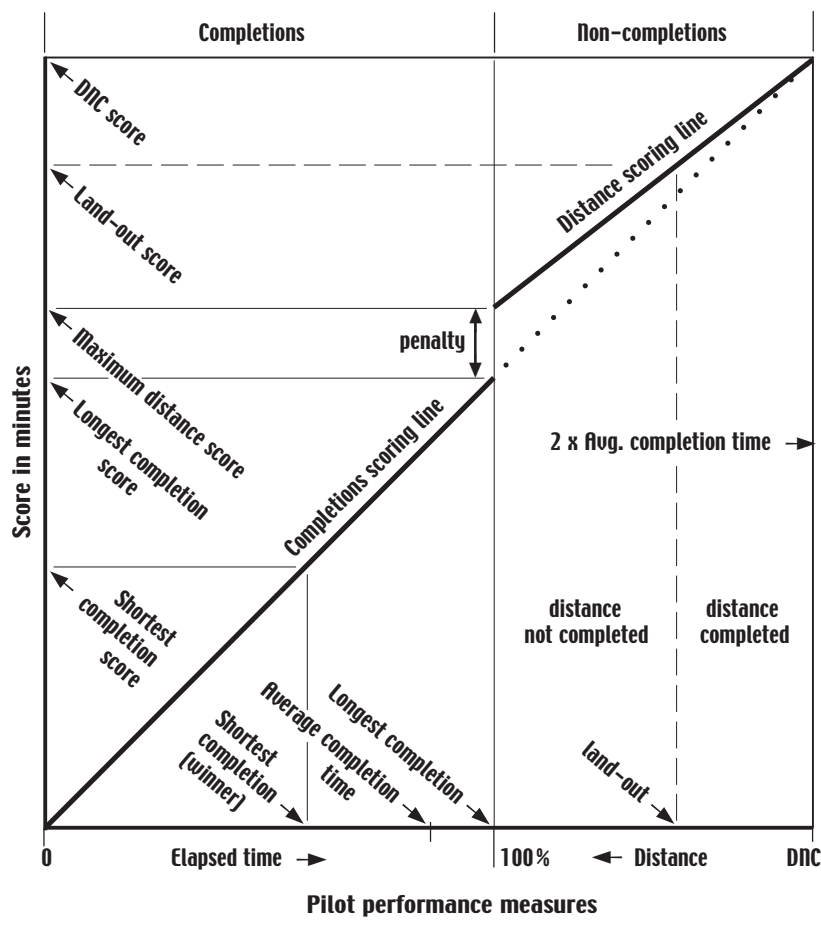
The *Maximum Completion Time* is a value that bridges the discontinuity between the dimensions of elapsed time and distance. It assures that a slow finisher cannot improve his score by intentionally stopping short of the finish line. It also improves the scoring when only two pilots finish. It is similar to the minimum speed points concept used in 1000-point systems. The formulas below were derived empirically by analyzing many contests. I estimate that the *Maximum Completion Time* will affect only one percent of the scores. *Maximum Completion Time* is the smaller of:

- 4 *Second longest completion time* + *penalty time*
- 5 *Average Completion Time* \times 1.5

In the scoring diagram, I like to picture a pilot flying down the scoring line from the upper right DNC starting point which gives the worst score. As he progresses, he continually lowers his elapsed time score until he has lowered it to the maximum distance score. If he crosses the finish line, he lowers his score by the penalty and then enters the elapsed time scoring zone.

The formula would be simple if it were not for the penalty for not crossing the finish line. When I first started with TET, I used the simplest system possible and added additional terms only as they were shown to be necessary. However, pilots were unanimous that a penalty was needed.

Scoring a total land-out day When no pilots complete the course, constants must be substituted in the formula above. They were chosen empirically from many contests to make the score value of the day equal to the score value of an average day with completions.



For a national contest:

$$6 \text{ No Completions Daily Score} = 230 + 230 (1 - [\text{distance completed}/\text{course distance}])$$

For a local (or provincial) contest:

$$7 \text{ No Completions Daily Score} = 150 + 150 (1 - [\text{distance completed}/\text{course distance}])$$

POST tasks All the above scoring considerations are for assigned tasks. For Pilot Selected Tasks, the formulas are different for completions but essentially the same for non-completions:

1 *Course completions*

$$\text{Speed} = \frac{\text{pilot distance}}{\text{pilot elapsed time}} \quad \text{highest speed wins.}$$

$$\text{Score} = \frac{\text{winner's speed}}{\text{pilot's speed}} \times \text{winner's elapsed time}^*$$

* but not more than the *Maximum Completion Time*.

2 *Course non-completions (landouts)*

The formula for assigned tasks is used, but the daily elapsed time scores are entered in all calculations rather than the measured elapsed times. This includes the calculation of both the *Average Completion Time* and the *Maximum Completion Time*, and the selection of the *Longest Completion Time*. A pilot's scoring distance may not be longer than the winner's distance.

Day devaluation? The TET system does not use day devaluation. This needs to be explained. Devaluation is a common practice

in 1000-point systems. When a large number of pilots do not finish, the winner is awarded less than 1000 points. As I understand it, the theory is that chance events, or "luck," influenced the day's outcome disproportionately so some adjustment is needed for the low score of the non-finishers.

Unfortunately, there is no known way of adjusting each individual score for the chance events that produced it. Applying a blanket adjustment to the pilots as a group certainly does not meet the objective of scoring each individual accurately. On a difficult day with many land-outs, the winner may have had a superb performance and receive, for example, 500 points for his effort.

Fortunately, soaring contests do tend to average out chance events by not having one-day contests, but by racing for several days. The criteria which must be met in order to have a contest day deserves very careful consideration. But once the criteria are met, it should be a race, not, for example, 74% or 57% of a race.

Day devaluation factors are more closely related to the performance of the Task Committee than the pilots. The greater the committee's overcall, the more pilots land out, and the greater the devaluation. For example, at a 15m championship at Elmira NY, a 193.7 mile course was chosen. The winner received 875 points. If a 175 mile course had been chosen, ten more pilots would have finished and the winner would have received 1000 points for a less difficult flight. The loss of 125 points clearly was not due to the winner's performance but to the committee's performance.

I believe that the root cause for the desire for day devaluation is the large scoring penalty which 1000-point systems place on non-completions. Day devaluation reduces that large penalty and makes the scores more acceptable. The TET system does not place such a large penalty on landouts in the first place and does not need to be adjusted on days when many pilots land out.

The TET scoring experience The TET system has been used as the official system in six local contests and four SSA Regional contests. Pilots responded very positively at contests where someone was available to answer questions about the new system. They became excited when they realized that their elapsed times were their scores. Crews were also excited when they realized that they could score their pilots instantly as they crossed the finish line, as they can in other forms of racing.

Pilots were also delighted that their scores had a *physical* meaning to them for the first time. A pilot who is five minutes behind another pilot knows that he must gain five minutes to overtake him. In a 1000-point system, a pilot who is 50 points behind is faced with a mathematically indeterminate situation when he attempts to translate the 50 points into the performance he needs. The performance he needs to accomplish will be a function of the winner's performance which is known only after the race is over.

I re-scored many past contests with TET and compared the results with the official 1000-point scoring. Final pilot standings were changed, but not unacceptably so. The system can score the POST task which is used in the USA

and other non-assigned tasks. I believe that pilots will be comfortable with the TET system if they understand the following basics:

- Score for Completions = elapsed time
- Score for Zero Distance = $2 \times \text{Average Completion Time}$
- Score for Distance = between DNC time and the time of the slowest finisher (with a modest penalty for not finishing)
- Lowest score wins

Penalties In the tests we did with TET scoring, we did not attack the issue of penalties. Penalties would add minutes to a pilot's score. The magnitude of specific penalties is a value judgement that the organizers of a race must make. You could start with the penalties in whatever system you are using and convert them into minutes. Points per minute in 1000-point systems are not a fixed number, but generally are in the range of 4–8. It might be a good time to re-evaluate penalties from the standpoint of a physical quantity — minutes. Perhaps they will become standardized some day.

Conclusion It has been shown that the 1000-point competition scoring systems do not accurately score the measured performances of the pilots in sailplane races. The most accurate scores possible are produced by using the measured performances themselves — elapsed times — as the scores. I recommend that competition organizers use Total Elapsed Time scoring if their objective is to score as accurately as possible. I would be happy to receive comments and questions and ease the way for contest organizers by sharing my experience.

Dr. William C. Feldbaumer
70 Militia Hill, Warrington, PA 18976 USA
e-mail: ventusnine@aol.com

Notes:

1. All scores are expressed in decimal minutes, eg. 180.25. Times are measured to the nearest second. [George Dunbar's scores opposite are in decimal hours.]
2. The daily and TET pilot standings start with the lowest score being number one.
3. If only one pilot completes the course, his elapsed time is used as the *Longest Completion Time*. (*Maximum Completion Time* does not apply.)
4. Penalties are applied to pilot scores after all the other calculations are complete.
5. Score sheets should contain the following columns: "Speed / Distance", "Daily Score / Minutes", "TET / Minutes". *Average Completion Time* should be shown in a space above the column headings.

References:

1. Feldbaumer, Wm. C. *Let the Fastest Pilot Win!* SOARING, Dec, 1983, pp 30-34. Erratum. Feb, 1984, p 34.
2. Feldbaumer, Wm. C. *Total Elapsed Time Scoring – The Concluding Analysis*. Sept, 1982. Published by Wm. C. Feldbaumer.
3. Feldbaumer, Wm. C. *Let's Score Again, Naturally*. 1980, revised 1981. Published by Wm. C. Feldbaumer. ❖

Sample comparison scoring of 1996 Canadian Nationals

15 m Class	Day 1 191.5 tri		Day 2 3 hr PST		Day 3 157.1 tri		Day 4 271.9 tri		Day 5 229.6 tri		Final Pos'n	
	km/h	time	km/h	time	km/h	time	km/h	time	km/h	time		
TET scoring	AT	2.36	56.3	3.21	67.1	2.34	3.19	85.3	3.19	84.5	2.72	1
Peter Teunisse	2W	2.28	69.6	2.60	60.2	2.61	3.14	86.6	3.14	69.5	3.30	2
Walter Weir	ST	2.32	67.8	2.67	59.5	2.64	3.06	88.9	3.06	70.2	3.27	3
Nick Bonnière	K2	2.30	57.5	3.14	61.0	2.58	11.22	84.9	3.20	73.3	3.13	4
Wlff Krueger	Y3	2.58	55.0	3.29	60.4	2.60	11.69	84.4	3.22	71.9	3.19	5
Helmut Gebenus	S1	2.99	62.4	2.90	(114.9)	3.99	13.38	77.7	3.50	(215.0)	3.78	6
Dave Springford	LJ	3.51	0.0	4.14	62.2	2.53	10.17	75.5	3.60	(190.9)	4.06	7
Lorrie Charchian	Z1	3.82	0.0	5.42	48.1	3.27	12.51	65.7	4.14	(207.1)	3.87	8
Mike Cook	WT	4.50	0.0	4.92	63.6	2.47	11.90	(233.4)	4.72	(148.4)	4.55	9
Nick Pfeiffer	PM	2.64	53.9	3.35	(119.1)	3.95	9.94	dnc	6.19	dnc	6.25	10
Terry Southwood	AB	3.56	0.0	5.66	(4.0)	5.21	14.43	73.3	3.71	(158.1)	4.44	11
1000 Point scoring	ST	892	189.9	67.8	59.5	815	1000	88.9	1000	70.2	831	1
Nick Bonnière	2W	911	180.7	69.6	60.2	826	967	86.6	967	69.5	822	2
Walter Weir	AT	877	150.3	56.3	67.1	937	3704	85.3	949	84.5	1000	3
Peter Teunisse	K2	900	118.3	57.5	61.0	839	3335	84.9	943	73.3	867	4
Wlff Krueger	Y3	798	90.0	55.0	60.4	829	3107	84.4	936	71.9	851	5
Helmut Gebenus	S1	681	187.3	62.4	(114.9)	291	1873	77.7	841	(215.0)	468	6
Dave Springford	LJ	681	144.3	0.0	62.2	858	2384	75.5	809	(190.9)	416	7
Lorrie Charchian	Z1	283	46.9	0.0	48.1	632	1700	65.7	670	(207.1)	451	8
Mike Cook	WT	112	84.7	0.0	63.6	881	1516	(233.4)	315	(148.4)	323	9
Nick Pfeiffer	PM	778	134.9	53.9	(119.1)	302	1716	dnc	0	dnc	0	10
Terry Southwood	AB	349	29.3	0.0	(4.0)	10	431	73.3	778	(158.1)	344	11

Changing Gears

Dale Kramer, SOSA

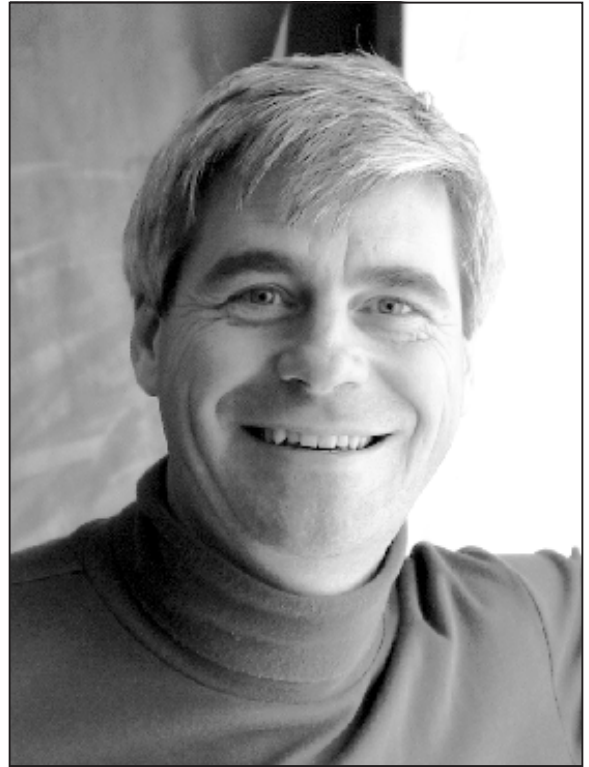
G T'S TIME TO CHANGE GEARS. Those who know me realize how hard that is for me to do. Tony Burton asked me to write about my 1000 km badge flight on the Ridge this past fall. My 20,000 kilometres of cross-country soaring last year seem like one long blurred flight. Okay, here goes nothing, full speed REVERSE!

I think the most appropriate starting point for this particular flight would be in late 1998 when I got invited to SOSA's 50th anniversary. Years had passed since I had last flown a glider. I had lost my logbook but not my memories. I was awarded my power licence on my 17th birthday and started gliding at SOSA the same year. I was the summer towpilot for two summers and soared as much as time and money would allow. After two years of soaring I had accumulated about 80 hours, my Silver badge and my Diamond Goal. Then I designed the *LAZAIR* ultralight aircraft and, like so many before me, kept the pedal to the metal and drove right by the gliding exits for twenty years.

I rejoined SOSA and had a few flights in club gliders late last fall. I renewed friendships, and Andy Gough and I became known as the dynamic duo. Andy was ready for a new ship and I know I wanted one. We each ordered our own LS8-18. On April 27, after a couple of flights in the club Hornet, I phoned Andy and said I NEEDED my own ship right now. I wanted to be free to go where I wanted, when I wanted. I wanted to enter competitions and become a full time soaring pilot. Three days later I had acquired, picked up, and was having my first flight in 'K1', an LS4a. On this flight I followed Andy around a 300 FAI triangle on a blue day. I put 325 hours on K1 before my last flight in it on December 11. This day I flew 1060 km — a 660 km flight in the morning to try to better my recently flown speed record of 168.1 km/h on a 100 km FAI triangle and a 400 km flight in the afternoon in which I flew a declared 300 km FAI triangle without one S turn or 360 degree turn.

I bought a motorhome within a week of acquiring K1 and moved out to SOSA for the summer. I flew as much as I could — no local flying if there was a chance at all to go somewhere. I was hesitant to tell anyone what my declared tasks were, as I always set them high. I would go out on course and stay there until I was sure the task was not possible. I used the whole day. I would launch first and plan my tasks to fly until the lift died. Large tasks from SOSA are very difficult. We have the Great Lakes all around us and all long flights seem to run into dead air near the lakes. Most flights just turned into multi-turnpoint POST tasks.

My first four flights in K1 were over 250 km. I went to the "May Fly" competition on May 21. With my experience handicap I was First Overall and without the handicap I was second by a few points. On May 29 Wilfried Krueger (K2) and I went to Caesar Creek, Ohio for the Wright Memorial Sports Class and Region 6 South competitions. I was third in the Wright, 7 points behind Wilfried and 8 behind the winner. I was second in Standard Class in Region 6 South.



In June at SOSA I had a three day stretch with POST tasks over 500 km and had a four day total of 1920 km. On June 30 the Canadian Nationals started at Champlain. After a landout on Day 2 and a stupid 'I-have-to-catch-up' flight on Day 3, I was able to win the last day and place third overall. Back at SOSA I had another three day total of 1570 km, including my personal longest Canadian flight of 633 km. August 1 weekend I flew in the SOSA Mudbowl and placed second behind Wilfried. The second day I flew 175 km before the day's task started and flew 338 km in the task for 512 km total.

The Ontario Provincials were scheduled for the end of August, but when it was obvious they were going to be rained out I decided to go down to Ridge Soaring for the fall and got there in the first week of September. I had just had an incredible summer of soaring in Ontario and needed to keep flying. I went for my first ridge flight September 17 after a checkflight with Tom Knauff, did a few thermal flights down south to check out the ridge, devoured Tom's book, and flew down the ridge on the computer with Delorme's 3D Explorer software. I was hooked again. I started out on the flight by myself and fumbled my way to Keyser. I was sitting in ridge lift on a little knob waiting for a thermal when Tom caught up to me. He didn't have any plans so we flew together for most of the rest of the flight. I think in reality he was making sure I didn't get myself in trouble. Thank you Tom, for jumpstarting me so fast into high speed ridge flight. We flew to Seneca Rock where the ridge was getting weak and then came back from Bedford on the back ridge. What a learning experience! I flew 807 km on that flight. Later from GPS analysis I could determine that in those conditions (90–100 knots) the Discus 2 could fly 6% faster than my LS4 at the same wing loading.

In the days before my first ridge flight Tom found out I could do computer programming. It turns out that Tom

has been trying to strategically place FAI triangles that use the ridge for a large portion of the flight. Now that GPS points are acceptable, and the points do not have to be a recognizable ground feature, more possibilities exist. Even with a spreadsheet program to help it was a very tedious process to plan just one triangle position. The moment Tom explained the problem to me I knew what I would work on when I was not flying. Little did I know how many hours I would actually put in developing this program, but I do credit it with allowing me to end up with a pending World Speed Record for a 100 km FAI triangle in the 15m Class.

I decided to fly the ridge like I flew back home. Get the most of the day. Although Tom says I have yet to see a GOOD day, I was able to average about 1000 km cross-country per week for the 10 weeks I was down there. Longer flights mean longer retrieves if you land out. On my six unintentional landouts there I had averaged 520 km before I landed out. I even had two landouts on one day.

Tom tells me that most distance flights are done in the spring and that the fall was used for attempting shorter record speed triangles. The day is 3–4 hours shorter in the fall. Never one to follow convention, I just kept trying to do long record flights. My best chance was October 18 when I landed out after 1074 km with four hours of daylight left and great conditions. I just decided to go back on the ridge between Scherr and Keyser to save two or three minutes but it was blanketed by wave and I had to land.

By November 7 there was only a little over eleven hours of available day to work with. Distance record flights were getting tough to justify declaring, so I just declared a 1001.4 km three turnpoint distance flight. It was 20 years since I tried for a badge flight. Anyway, with eleven hours to work with I knew I could extend this flight into a much longer flight. I knew the extension would not be credited but as long as I didn't extend too far early in the day, I would still get credited for my 1000 km badge.

The forecast indicated that the ridge would have the most chance of working on the northerly section. I came up with a three turnpoint flight that had a remote start and finish at Altoona, 50 kilometres from Ridge Soaring Gliderport.

I take off about 6:30 am and release at 3000 agl. I lose a few hundred feet. Now I'm in wave. This is the first really defined wave that I have flown in and the window goes down south as far as I can see. I can't make as fast a ground speed as I am used to on the ridge but it's an easy ride, so I fly over my start point at Altoona at about 8000 msl. I make the decision to extend my flight right now, in the wave.

Extending the flight on the north end past Williamsport is not feasible as it would have to be done by thermals which would be slow. The best place to extend would be in the middle of the flight and go south past Snowy Mountain, but the winds are not forecast to be good that far down. The only problem now is I have to decide how fast I can fly the 1000 km portion of the flight without even having been on the ridge yet. If I extend too far now I will still fly well over 1000 km but not finish the

declared portion and not get my badge. Here's that sword thing again.

I am 100 km south of Altoona and turning around. I hope I have left enough time to finish my flight. I am back at my start point, after having flown 250 km. It is 8:30 am. This is the start of my 1000 km flight. Still plenty of time if things are working down there on the ridge. The wave has quit now at Lock Haven and I am diving down to the ridge — I should have done that at Altoona — the ridge is faster than the wave. I turn around at Williamsport and head south. At Lock Haven I jump to the back ridge, which is working fine to Bedford where I jump upwind to the main ridge without a thermal. By the time I get to Hyndman I can see the morning wave is breaking down and I have to head into the Knobblies with a high likelihood of wave blanketing.

I waste time here trying to get into the dying wave. Now I think I may have extended too far earlier. I push on. The best I can get before going across Keyser is a little over 3000 msl. Things aren't looking good. I push on. I make it across Keyser maintaining about 3000 feet in rotor lift, definitely new to me. I try using rotor lift to cross the low Scherr section of ridge but it dies in the middle. Now I'm sitting on a very low bump dumping my water and resigning myself to another landout. Wait! Without water I can stay on this bump. I now have time to plan my circuit. Twenty minutes later and I feel a thermal. I have enough height to get to the good ridge either north towards home or south on course. I push on. 12:30 pm and 600 km to finish the task and get home. 5:30 pm is the latest I should land. Still possible but I don't have water and will therefore be flying 10 to 15 km/h slower from now on.

As I approach my southerly turnpoint, the ridge seems softer, but I push on. Now I'm going home. It is getting easier. The rotor lift at Scherr is almost like real thermals and I am going across about 1000 feet higher than before. I am even thermalling with a Bald Eagle here. I squeak over Sacred Heart onto the main ridge and breeze toward home on the back ridge at Bedford. Now I know I can make it at least back to Ridge Soaring, but I have a definite daylight problem. Too many hours without water ballast. Jim Price joins me at Lock Haven in his LS4. We fly to my last turnpoint near Williamsport and turn around to be blinded by the sun. I just see a black blob on my left. I have to fly close to keep my speed up. Crossing Milesburg is marginal. The ridge is getting soft. Jim lands at Ridge Soaring. I have 100 km to fly yet in 55 minutes on a weak ridge, into a blinding sun. I push on.

Now I'm glad I went with Eric Gillespie on one of his car excursions scouting landing fields all the way to Bedford a few days before. This is not a place to be unfamiliar with the landout options. I round my turnpoint at Altoona just as the sun goes out like a candle. No sun in my eyes going back, just fighting darkness. I know a lot of people at Ridge Soaring are wondering what is happening but my radio isn't broadcasting that far. Doris Grove has faith. I contemplate landing at Eagle Field to save a few minutes but I push on. Final glide now. Car lights on runway. Black runway is still in contrast to the grass, no problem. I get a radio call at about 50 feet, "Kilo 1, check gear down". Guess where it was! I do a beat up. I roll up to twenty people cheering, ⇨ p21

One year later ... *the beginning of a new club*

Mike Morgulis, Great Lakes Gliding

In the fall of 1998, the nomadic founding members, during a weekly meeting at the "Happy Bottom Riding Club" had decided to start up a new gliding club. Since most clubs named after the towns in which they originated had since moved, eg. Erin, Montreal, Guelph, a name was sought that gave the maximum flexibility for operations. It was eventually refined down to *Great Lakes*, which also provided the opportunity for a very attractive logo. We were reluctant to start marketing the club over the winter as we had not secured a flying field. We made some progress on the equipment side by committing to a Krosno which was completing a tail boom repair, and then in late winter became aware of a 260 hp Pawnee which was being rebuilt after a crop-spraying accident. It was hoped that the latter would be ready for the opening of the season, but realistically we expected there would be delays.

All we could do was have faith that the pieces would fall into place, and we commenced our ground school in February with only three attendees due to our lack of advertising. We realized only one of these three would be a student for us, as one was a member from another club and the third had his wife prohibit him from flying when she found out where he had been going every Thursday evening!

So the 1999 season started with us in Great shape, a name but no operational towplane, no field, and only one confirmed student.

We began our search with the 1996 edition of the 'Flying Farmers' handbook. We had the great potential of locating close to population centres and decided that we wanted to be able to advertise that we were the club that was closest to Toronto. The shortcomings of the out-of-date handbook soon became apparent. The most desirable fields had been ploughed under, and while several of the farmers solicited were quite welcoming, their strips had serious limitations for a glider operation either in length or obstructions. We focused our final search in the area between Hwy 400 and Orangeville, south of 89. Potential fields were in this area, but when contacted, the owners thought their fields unsuitable for our use. Still no field and no aircraft.

One day by chance a friend suggested several fields in the Tottenham/Alliston area. A day trip to check those fields out seemed doomed when they all turned us down until late in the day when we visited the last field owned by Mike Ronan in Tottenham. He was quite welcoming and seemed enthusiastic although knowing little of what a gliding operation involved. The field was not ideal, being 2000 feet by 50 and bordered by an electric fence. However, open approaches at both ends made it workable and Mike's friendliness added to the attraction. During the winter the Krosno was completed and delivered to the hangar at SOSA. We visited it several times, and waited impatiently for the weather to change so we could check

it out. On May 4, we got it out of the hangar and took turns testing it out and taking our checkflights. The following weekend we arranged for Christel Juergensen to tow it up to York Soaring where we would be closer to our new field and could explore its capabilities and start flying our one student.

York was very accommodating, and we stayed and flew there through several weekends while awaiting delivery of our towplane. Finally, on May 21, the Pawnee was ready, and its arrival at York seriously impressed our hosts. The next day we aerotowed the Krosno over to Tottenham and commenced our regular operations from our home field. As we had no gas on the field, we got to know well our flying neighbours and the pump staff at Brampton and Barrie. It took a month to get a gas tank set up and running. Initially our Pawnee was running rough, and not providing the performance we had anticipated. After the engine nearly failed at low altitude (causing our first and only landout of the year), we sought help from various mechanics, and proper running was restored after having the mags rebuilt and retimed.

Flying continued apace over the summer, with most weekends providing the kind of weather that allowed us to get up to twenty flights per day. For the several days when we had a stiff crosswind, we obtained permission to use another private field two concessions away which had a north-south strip. We had a number of students join us, and managed to sell a number of "5-packs" and guest flights, mainly to people in the neighbourhood who had heard of us, or who travelled to Tottenham on the weekends to ride the antique steam train. We distributed our pamphlets to local businesses, and frequently towed over the town to further advertise our presence.

The flying efforts of our students and instructors were vindicated on October 3 when four of our students went solo. Unfortunately, it was a cold and somewhat windy day, so the ritual baptisms the students received after their first solos were even more memorable. Near the end of the season, our thoughts turn to planning for next year. We have already acquired a second Krosno which was picked up in November, and we have arranged for the necessary runway improvements to allow for the handling of multiple aircraft. We are concerned about imposing our noise on the neighbourhood, and although we only received a couple of complaints, we are investigating ways to silence the towplane and adjusting our flight pattern to avoid sensitive areas. As we reflect back on our first season, it was more work than we had anticipated, and next year looks as if it will be no less demanding.

However, I think for all of us it was one of the most rewarding years we have spent gliding, and most importantly it has rekindled our interest and involve- ➔ p21

Things to do on your vacation

Peter Peerboom, SOSA

We were going to explore the west of Canada during our vacation in August of 1999. While planning the trip I noticed Pemberton on the map of British Columbia, just north of Whistler. I could plan to pass by there on our way to Vancouver, I had seen the ads for Pemberton Soaring Centre in *free flight*, why not?

A few days before my planned visit I called them and found out they are open 7 days a week. Unfortunately the L-33 I was looking forward to trying out was bent, so it was going to be a ride in one of their two L-13 Blaniks.

I had planned the whole of a Thursday for soaring but when we arrived in the area Wednesday afternoon I wanted to check out the airport before finding a hotel (all airports are interesting), and arrived there just before four o'clock.

It was a sunny day in the Pemberton valley with only one cu over a small mountain some distance away, so it looked like the day was over for me. Friendly people at the Pemberton Soaring Centre — they had two Blaniks ready to go with one spoken for by someone from Vancouver. When I questioned how the day had been they did not feel it was over yet... "Oh yes, there were still good thermals," they said, "don't you see that cu (that one over the small mountain)?" If I wanted to fly, we should do it now, I was told — who knows what tomorrow brings?

Why not then, tomorrow we could do other things, there is so much to see in BC, so I took off in the Blanik with instructor Tim Hutcheon in the back seat at 16:35. He asked if I knew that the field elevation is 670 feet. Wow!, that's 175 feet below SOSA — you don't realize it in the mountains. Allen Wright towed us up in their 180 horse Citabria from the 4000 foot paved runway 06. At 2000 feet agl (by now Tim had given me the controls) not even a bump yet! Still nothing at 3000 and 4000 feet — were are those thermals? Wait Peter, remember, he is towing us to that *one cu* and yes, under the cu there it was, we released at 4750 agl.

I centered that thermal quickly, then looked down to see where it was coming from.

"See the rocks on the side of Golfcart Mountain with the three little lakes below it, that's what fuels this thermal."

I didn't understand the effect the lakes had but I had no time to question it since we were going up at 6 knots, and this thermal topped out at 7500. Where next? A big cu was forming over Whistler but that was too far away.

"Try the other side of the valley, since we are above the treeline we can soar the rock ridge there," Tim said. Okay, my first experience flying close to a mountain ridge,

soaring the hot air coming from the rock face of Mount Currie.

The lift wasn't strong enough to make a complete thermal, but flying along the ridge got us slowly higher and higher. Then at one end of our course along the rocks, we had lift during the whole turn — let's keep circling — a thermal had formed and we were going up faster, 4–6 knots, climbed above the peak and moved on to Mt. Weart then on to Mt. Wedge with lakes amongst them (Wedge Lake, Lost Lake, Mosquito Lake and many more) and glaciers on top — what a beautiful sight.

By now we topped out at 9200. Not bad for a late afternoon flight.

We switched frequency to monitor Whistler traffic, heard a float plane announce his landing at Green Lake and saw it land. Tim knew the pilot, so they were saying what a gorgeous way to spend the afternoon. Finally we got over Blackcomb Mountain. There were still groomed ski slopes on top of it? That's normal, Tim told me, they ski there until late September or October. By now I started to feel my rear end, realizing I had driven most of the day and, after an hour and a half, the pillow in this Blanik did not feel so comfortable anymore — even with a fantastic view as a distraction.

Tim had reminded me when the first hour had expired and that it was my call when to head down (since I was paying for him and the aircraft). Now I felt it was time to turn back — my better half was still waiting at the airport. Dolphining back, I had to stop twice since the thermals were too strong to just pass through, 6 knots by this time, and it was after 6 o'clock! Tim showed me another hidden lake with a waterfall on the airport side of Mount Currie and he offered to demonstrate spins. After the second one I also noticed that it was a long time since I had eaten, so we circled in the valley where there was no lift and landed at 18:25 back at the airport on runway 24.

One hour and 50 minutes of beautiful memories, but now it was time to pay the bill, yes it was more than flying a club ship and paying for an instructor does not help either. But the scenery and coming at four, flying and leaving before seven, made it all worth it to me. Later during our vacation I compared prices between an advertised glacier flight in a DHC-2 Beaver and the flight I flew in a Blanik, and Pemberton Soaring Centre beats them hands down. This is not a commercial for them, but try it if you are in that area.

For me it shows again that it is always good to take your logbook along while on vacation, even if it is only to dream about good flights you had. I know I will for a long time about this one. ❖

safety & training

VSA incident

First, it was noticed that the Blanik altimeters were set 1000 feet too high. There had been an air pressure change equalling a gain of 800 feet during the week. During the morning DIs, the normal "small adjustment" to reset to field elevation actually set them to 1128 feet (rather than the correct 128 feet).

Recommendation: Remember to check the altimeters to verify the correct setting before each flight.

Now the following was e-mailed to me:

"A pilot was observed to get low in an east wind condition. On the ground we observed that the Blanik was getting low around Jake's mountain. We looked at the pilot's flight path and we all were concerned that he may not be able to get back. The downwind leg [back towards the airfield] was very low and it appeared that the glider would not be able to pass over the pipeline bridge. We saw the glider cut in early (prior to the bridge) to what appeared to be an abbreviated circuit. The glider just cleared the trees and it looked that all would be okay. But to our amazement the pilot turned downwind again right over the runway with hardly any runway in front of him. The pilot now started a rather steep 180 turn, and passing over the towplane sent the observers scattering and, with one other turn to straighten out, pilot, glider and passenger landed safely on the runway."

What an extreme performance of what not to do. Scary, scary, scary ... without an account from the pilot involved I can only conclude from the information from this and other sources that a possible scenario of being

distracted caused this situation to develop in the way it did.

Recommendation: "Always fly the airplane" when unusual situations arise. Simple distractions, when not caught immediately, can lead to a chain of events that could end up causing everyone to have a bad day.

PS. After sending off this report I received the account from the pilot. It was basically worded the same but in discussing it, a few more points came up:

The pilot did not notice in his pre-flight check that the altimeter was mis-set (as referred to above). It was only when he was low over Jake's that he visually recognized his actual altitude. He planned a modified circuit but at the last minute wanted to land back at the flightline instead of landing long.

So the chain of events:

- not setting the altimeter correctly before takeoff.
- not paying enough attention to the visual signs of being too low.
- changing the landing pattern at last minute for convenience and not safety reasons.

Each of these links alone, if noticed and acted upon when they first occurred, could have led to a less drastic outcome.

Recommendations: Be aware. Make sure all aspects of the pre-flight are completed and done correctly. The importance of this step cannot be emphasized strongly enough. Time and again pre-flight checks have been forgotten or not completed. In the latest *free flight*, under Safety & Training, the first

paragraph is so timely (please take the time to read the whole article). I quote:

On a flight early in my training I mis-read the altimeter and pulled off early. My instructor then gave me some advice that has stayed with me, "It's only a mistake if you do it twice," he said, "the first time is a learning opportunity!"

Let's all take this to heart and work to make the flying season of 2000 safer. ❖

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Fred Thomas, translated by Judah Milgram

ISBN 0-9669553-0-7, 286 p, 9"x10-1/2"
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order through <www.cgpp.com>

This book is the single most complete reference on the development of the world's most efficient manned flying device. Thanks to the translation effort of Judah Milgram and a host of top contributors well known by readers of OSTIV and Technical Soaring, this text, available in German since 1979, has been extensively updated in this new English language 3rd edition.

The author was a professor of aerodynamics at the Technical University of Braunschweig from 1966 until 1998 and was Director of the Institute for Design Aerodynamics. He is an enthusiastic sailplane pilot and a long time member of the Akaflieg Braunschweig. Many of the innovative concepts in the famous SB sailplane series originated in student thesis work conducted under his supervision. His introductory course in sailplane aerodynamics remains popular to this day.

The scope of the book is broad, starting with the basic fluid dynamics involved understanding lift and drag. Mathematics is kept to a minimum with an emphasis on physical understanding supported with many illustrations. The characteristics of the boundary layer and separation phenomenon are covered. Airfoil geometry, coefficients, design, and history are followed by discussions of wing planforms, lift and stall characteristics.

From the basics, the book quickly gets into the interesting business of optimizing wing and fuselage shapes to maximize performance. Throughout, there is considerable reference to the characteristics of the whole range of historical sailplanes, supported by a complete bibliography and index. Even if you are not going to build your own glider next year, this is a great book to own. ❖

History Я Us

from page 4

Probably at that time I volunteered my uncle Francis Bartholomew to serve as Western representative to SAC. Bev later wrote to invite him, explaining that he found it was the busy person who would get some work done, and he did.

Frank and I were checked out at Downsview on a Tiger Moth for towing; I did my first cross-country in it and took my private licence test at Toronto Island. We flew the club 2-22; I earned a coveted "C" certificate and did my first soaring cross-country in it, no doubt to the consternation of the rest of the club, landing between rows of cabbages near Oshawa.

At the end of the summer Frank and I made a trailer and towed an NRC Grunau Baby (one of the war prize Grunaus) from Arnprior to UBC behind a clapped-out convertible, with two girl passengers paying the oil bill, but that's a story in itself. The Thunderbird club restored the Grunau over the winter and we flew it at the end of our graduation year at the Sumas airstrip.

I managed to eke out an engineering degree by 1948 and joined the National Research Council's Flight Research Section. It was a job to die for: a posting being to the Namao air base near Edmonton for trials of an experimental tailless glider. Summer over, the detachment at Namao adjourned to its home base at Arnprior airport, Ontario, (towing the glider across the country behind a DC-3) and somehow I found myself acting as the secretary of SAC. (This is a mystery to me now as Chem had been secretary for years; I could be wrong about the position.) Suffice it to say that every Monday evening through a hot eastern summer I found myself 'starkers' but for underpants in my barracks room damply writing SAC letters across the country. This gave me a bit of an ego boost by expanding my acquaintance with so many of the leaders in soaring, and apparently I fooled some of them: when John Agnew first met me he said, "Hmmp. I was expecting an *older* person".

The old adage was apparently true: you get out of a group what you put in. I truly enjoyed working for SAC. More about this below; you are warned!

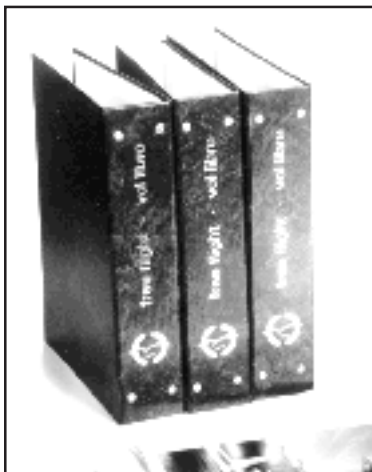
The airport at Carp, half way between Arnprior and Ottawa, was very handy for me, and it was here that the Gatineau Gliding Club was operating the home of the winch development, but soon to be the site of aerotowing with Russ Bradley's Tiger Moth. Chem seemed to be in the centre of everything: the winch work, a towing fixture for the tailpost of the Tiger, the towing hook (improvements for easier release), and liaison with the DuPont company for development of nylon rope suitable for towing (some samples were soft and feathery — little wear resistance). All this thought and energy was expended on behalf of the gliding fraternity, embodied in the Soaring Association. The Carp instructor school had already taken place in 1947; soon a manual would be developed and there would be a move to start this magazine.

I treasure the memory of flying days at Carp, with Shorty Boudreault, Mel, the Colonel, Chem, Brother Hormisdas, Nadine, Jack Fleming, Elvie, Smitty, Herbie, Johnny Dure. Yes, we are history.

But here is where you come in:

You all, if you are over twelve, have a flying story to tell, a history of a club or a glider or an event or a flight or a life. If you have a box of photos or notes or an album in your basement from days past, maybe it — they — can be joined with others in SAC's soaring history archive. Please let me know if you have records that may be of interest, or a story you'd like to tell. Remember that an old photograph loses a lot of its historical value if it has no "provenance", that is, it should have as much info as possible attached to it: date, place, subject matter, etc.

We'll sort out a way to collect and preserve all that is offered, and to dip into it to share with the members. Write to: 2201 Fox Cres, Ottawa, ON K2A 1H7, phone (613) 596-1345, or e-mail me at <ai758@ncf.ca> ❖



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hangar flying

A neat improvement for \$3.50

Peter King, from *Sailplane Builder*

When was the last time you pulled the instrument panel out of your plane? You know, the flat black thing at the front of the cockpit with all the round glass widgets in it. It's not like I'm asking you to perform a prefrontal lobotomy or something. It's designed to be pulled out. There's stuff behind it you should look at once in a while.

We're not really interested in the panel or the glass widgets here. What we're looking at is the tubing that attaches to most of that glass. Have you ever considered what makes instruments work? The combination of the pressure from the pitot tube in the nose, the neutral from the static ports on the sides of the fuselage and the suction from the total energy probe in the tail. That's not exactly a Niagara Falls of airflow to work with, and it doesn't take too many leaks to make hash of whatever sense the glass widgets are trying to make out of that airflow.

Which brings us to the point. Remember how tight all those plastic tubes were when you put them on? They didn't need to be safety wired, did they? Have you looked at them lately? It's amazing what a few seasons of heating and cooling will do to that springy plastic. Those tubes just slip right on and off now, don't they? Do any leak just a little? Do your variors drop when you pull up in a thermal? Are you blaming the increase in your stall speed on the dust on your wings?

Before you reach for the safety wire and the pliers, let's think about this for a minute. The plastic tubing grows less elastic over time and stretches because the brass tubing that it's pressed onto expands and contracts more than the plastic tubing does. Do you want to put the same sort of material on the outside of the tubing as well? Have you ever seen metal wire cut plastic tubing?

There is an alternative to safety wire that is easier to install and isn't as hard on the tubing — wire ties which are available at your local friendly electronics or auto parts houses in packages of 100 for about \$3.50. They come in varying thickness and length, but the 4-inch size is enough to double wrap each fitting and put the plastic buckle on top of the first wrap. You will be amazed at how many connections you will find when you follow all the tubes.

Having combination instruments really pays off when you do something like this. I don't. My old fashioned panel connects one pitot, one total energy probe and two static ports to three bottles, one netto bottle, one air-

speed, one altimeter and three variors: electric, netto, and speed to fly. By the time I was done with the cross-connectors and the panel quick disconnects, I had 52 connections to back up, and none of them were even loose.

Was it worth it? My variors used to drop to negative and take a long second to recover when I pulled up into a thermal. Now they drop 50 ft/min only for a moment. It was worth it. Besides, it was raining when I pulled my panel out. It was a good day.

While you're in the electronic supply catalog, you'll find all sorts of handy gadgets for "neating-up" tubes, cables and wires. There are peel & stick wire markers for identifying wires and tubes, various sizes of adhesive backed cable clips for holding things out of the way, split loom tubing and spiral wrap for gathering wires into neat bundles, and all sizes and shapes of wall feed-through bushings and strain reliefs for protecting fragile stuff as it passes through bulkheads and other sharp things.

If you really get into neatness, there are bunches of plugs, terminal strips and chassis tie points that are handy for bringing some sense of order to your electrical system. But that's another story.

Latest hot news on new manufacturer for PW-5 / PW-6

A new company, "Bielsko 1", has been established by the following persons: Bolek Kawik, Leszek Matuszek, Zbig Weksej (glider pilots) and AVIONIC (the glider trailer producer); Christopher Drabarek, Wojtek Fraczek, and Rafael Mikke as the PW glider creators; DWLKK (the R&D company owned by the Warsaw University of Technology) as technical support provider; and Mr. Stan

Salnik representing financing. All necessary agreements between Bielsko 1, PZL Swidnik, WUT and DWLKK have been prepared.

Bielsko 1 starts with a capital of \$125,000. The capital will be used for marketing to acquire first orders and for the preparation of production and sale of the first PW-5 and PW-6 gliders. There are also negotiations with a financial institution to secure funds necessary to improve production capability and develop PW-5/PW-6 construction.

The company marketing strategy will be focussed on the gliding clubs, offering this glider pair for basic training (*see the ff 5/99 article by Fred Weinholtz on this concept editor*). Promotion of the World Class Contest by a commercial "rent-a-glider" company created by Bielsko 1 is also one of its marketing goals.

The company facility is in Gorki Wielkie near Bielsko Biala. Skilled people from SZD are employed in the workshop. Bielsko 1 will cooperate with PZL Swidnik which will cease production and sale of remaining gliders and become a supplier of rough composite structures. The technical support (maintaining airworthiness and new development) will be done by DWLKK. The tentative delivery program is at least six PW-5 and three PW-6 gliders by the end of June. We expect to get the Polish Type Certificate for PW-6 by this date.

Trailers for all gliders will also be available. The self-launching version of the PW-6 glider will be addressed for individual pilots. The PW-6 and Bielsko 1 reps will attend the SSA National Convention in Albuquerque (15-18 March) to introduce the ship.

Rafael Mikke

Mid-airs exceed stall/spin fatalities

Bill Scull, in an OSTIV paper, provided data from the UK that demonstrated the accelerating trend toward mid-air collisions. In the past year the data indicates that fatalities

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TC Approved Maintenance Organization 24-88



Lana Klassen, a student in the Prince Albert Gliding & Soaring Club, enjoys the day at Birch Hills.

Photo by instructor Don Klassen.

exceeded for the first time those from stall/spin accidents.

To help reduce the problem, it was recommended that pilots:

- be taught how to maintain a lookout with good scanning techniques,
- be made aware of blind spots and the risk of overlapping blind spots,
- learn to join thermals in a proper manner,
- use discipline in entering the circuit,
- learn to use GPS and other electronic aids on the ground rather than in the air.

The greater kinetic energy of modern gliders was also found to increase the damage resulting from a collision more than it had been with older designs.

Where is Σ ?

The Sigma was donated by Dr. Marsden for further development and research. Dave and I have become very good friends, and I respect his perspectives deeply.

I have only performed initial modifications, to be followed by more involved ones that will include an application of winglets, more filleting of the wing/fuselage intersection region, more elaborate sealing, and a provision for minor reflexing of the airfoil (negative flap) at high cruise speeds.

After performing the initial and minor modifications, I was able to fly the glider several times prior to the end of our soaring season. One of the areas I believe the glider to be best suited for is a new application of dynamic soaring principles involving alternating positive and negative g-loadings according to atmospheric variance. I was able to apply some of this theory on the best day I flew it and achieved some good results ...

average speeds exceeding 120 mph in 5 knot thermal conditions which were somewhat organized but certainly not streeting.

Next year should prove to be very interesting, after the additional work and further experimentation.

Gary Osoba

Some background and an update on the Aero Club of Canada

I appreciate the chance to update SAC members on the situation of the Aero Club.

When the new president, Chris Eaves, took over in March 1996 he instituted a strict cost-cutting plan, and that was where my wife Eunice and I took over running the head office of the ACC from our office in our home for \$2500 a year. We reroute all mail, e-mail and faxes, issue FAI Sporting Licences, supply our own computer and related software, office supplies, and in general keep the office going essentially on a 24 hour a day, seven day a week basis. Chris also insisted that the ACC directors pay their own way to meetings, and this policy has been adhered to since that time. The FAI VP for Canada gets paid bare expenses when he travels to the annual FAI General Conference and pays a lot out of his own pocket. One of our members arranges for airline passes for him to travel to and from the meeting site.

At a meeting held in November 1998, a membership fee schedule was agreed to by member association representatives, based on a basic fee of \$1500, and then a fee of so much per member up to a fixed level and then a reduced figure from then on up. As both of us are retired, we are able to keep a close eye on e-mails and faxes and send them on as required as soon as they are

received. Any mail and, in most cases, all FAI Sporting Licences are handled immediately and are generally in the mail on the same day as the request is received. So financially, ACC is on a firm footing and barring any unforeseen event, should stay that way. Incidentally, part of the financial problem was caused by the withdrawal of the Transport Canada annual \$25,000 grant.

Back during WWII, the flying clubs belonging to the Canadian Flying Clubs Association ran up a large profit from pilot training and in a fit of generosity and I guess, patriotism, at that time, turned most of those profits back to the federal government. In turn, the government of the time agreed to pay an annual amount to what had become the Royal Canadian Flying Clubs Association (the "royal" title was given in response for the wartime effort in pilot training) to represent Canada to the FAI.

Political memories are very short when cost cutting is involved, and what was initially a "fee for service" was dubbed a "grant" and when all the government grants were cut back in the mid-70s, the RCFCA "grant" also fell before the knife. Any efforts to renew that fee for service has fallen on deaf ears.

Also, any efforts to get in on the sport money dished out by government has been ignored — I guess that unless you run around a track or leap over hurdles, sport aviation isn't considered a sport. Someday we may be able to get the "grateful" government to once again honour their commitment to back the cost of representing Canada to the FAI.

I trust this will answer some questions your members may have about the running of the Aero Club of Canada.

ACC Executive director, **Bruce Carter**

SAC membership meter – 1999

Club	Membership		% avg
	90-98 avg	1999 total	
ASTRA	10	10	100
Air Sailing	27	16	59
Alberni	13	17	131
Base Borden	14	5	36
Beaver Valley	12	13	108
Bluenose	36	32	89
Bonnechere	10	6	60
Bulkley Valley	10	1	10
Central Alberta	10	10	100
Champlain	59	91	154
Cold Lake	24	12	50
COSA	40	34	85
Cu Nim	61	65	107
East Kootenay	15	17	113
Edmonton	64	55	86
Erin	32	33	103
Gatineau	89	86	97
Grande Prairie	9	12	133
Great Lakes	10	10	100
Guelph	29	23	79
London	41	33	80
Mont Valin	4	3	75
Montréal	101	98	97
Outardes	28	23	82
Pemberton	10	11	110
Prince Albert	10	17	170
Québec	41	49	120
Regina	32	20	63
Rideau Gliding	15	10	67
Rideau Valley	35	39	111
Saskatoon	14	19	136
Silverstar	10	10	100
SOSA	131	170	130
Swan Valley	6	3	50
Toronto	19	24	126
Vancouver	94	81	86
Westman	3	1	33
Wheatbelt	6	1	17
Winnipeg	67	61	91
York	88	86	98
Non-club	14	27	193
totals	1343	1334	99



Coming Events

Canadian Advanced Soaring 2nd Annual Winter Soaring Seminar

25 March – Toronto

Interested in completing your 50 km or 300 km badge legs this summer? Then this is the seminar for you. Topics including flight preparation, thermalling, off-field landings, speed-to-fly, final glides and X/C safety will be discussed. The seminar will be broken into two sessions, one for beginner X/C pilots and one for pilots who want to fly faster. Look for more details on the CAS and SAC webpages.

SAC 2000 AGM

March 3–5, Montréal, Québec

Hôtel Sheraton Laval

2440 Autoroute des Laurentides (Hwy 15 exit 10)

★★★★★

- room reservation: 1-800-667-2440, SAC rate \$109 single or double
- air travel: use Air Canada event code – CV352131 – thru AC or agent
- car rental: AVIS 1-800-331-1600, mention SAC & code AWD C079399

AGM Agenda

Friday — Registration, meet directors ★ 7–9 pm **President's reception**

Saturday **Workshops** **"From the mountains to Bayreuth"** a great line-up!
"Des montagnes vers Bayreuth"

9am	• Soaring into the Millennium flt safety/airspace/transponders/etc. <i>Ian Oldaker/Ian Grant/Dave Mercer</i>	• CAS & intro to X-C (aussi en français) flt prep/effective flight/TPs/and more <i>Dave Springford</i>
10	• Safe Flying Workshop roundtable discussion <i>Ian Oldaker</i>	• Lake Placid Wave & the Ridge terrain/technique/conditions <i>Bernie Palfreeman/André Pepin</i>
11	• SAC Insurance changes/look-back/discussion <i>Richard Longhurst</i>	• Wave & X-C in the Rockies Cowley & the Rocky Mtn Trench <i>Tony Burton</i>
1pm	• Buying & Maintaining a Glider what you always wanted to know <i>Chris Eaves</i>	• Voler au Paradis (en français) flying in the Alps – video shown <i>André Lepage/Louis Cloutier</i>
2-4	• Sporting Committee Forum contest funding/seeding/rules & records changes/discussion <i>Jörg Stieber/Tony Burton</i>	• Club Recruitment & Growth marketing/cadets/retention/and more <i>Sylvain Bourque/Svein Hubinette/ Jim McCollum/Terry McElligott</i>
4	• 1999 at Bayreuth trends/winning strategy/decisions <i>Ulli Werneburg</i>	• Meteo or My X-C Achievements <i>Jean Richard or Dale Kramer</i>

Saturday evening **Banquet** 7–12 pm (cocktails 6–7)

Sunday **AGM** 9 am–12 pm ★ **SAC Directors meeting** 1–5 pm

No charge except for banquet (\$54/person incl wine) and bars. Send money to SAC Office. After Feb 20 cost is \$64. *Space limited, please reserve early!*

Complete details on the agenda, workshops and speakers is available on the SAC "Roundtable"

PETER CORLEY SCHOLARSHIP WINNER

The winner of the 1999 Peter Corley Scholarship is Bruce Walzer, a member of the Winnipeg club. Bruce is an Electrical Engineering student at the University of Manitoba. He will be completing his studies this year and is specializing in microwave/radio/digital communications. Bruce's thesis involves the design of a variometer.

The Peter Corley Scholarship is open to all SAC members who are attending a university

or community college. The amount of the scholarship is \$2300. The selection is based on: type of educational institute and year of study, the number of times the applicant has been awarded the scholarship, and age. Further details of the 2000 scholarship will be published in *free flight*. Pierre Pepin has agreed to take on the administration of the scholarship as of the spring of this year. Applications for the 2000 scholarship are available from Pierre <prpepin@videotron.ca>

SOARING SAFELY INTO THE MILLENNIUM

•• An Interactive Conference ••

To focus thought and generate workable plans to REALLY improve soaring safety.

Concern over the level of insurance premiums have been growing, and continuing high losses have pushed our renewal premiums much higher. High losses continued in 1999. The underwriters and Transport Canada have asked SAC, what are we doing about it?

The situation is that we as a sport, as clubs and individuals, need to take positive action to reverse a poor situation. Although there are some initiatives that SAC can take, all members should take part, and they will have some excellent ideas. The winter season is a perfect time to bring members together to address the issues, and a series of regional conferences are planned to do this.

The main focus of the conferences will be on safety, and at the start of each there will be presentations to highlight the poor safety record of the 1990s and to focus peoples' thoughts towards how we can improve in the new millennium.

What can and should we do so that the whole approach to safety by the individual, by the group, as well as by the Association, is improved?

All pilots are invited, and we sincerely hope that many club leaders as well as a good cross-section of types of member (eg. new student, cross-country pilot, etc.) will attend. Attendees will work both before the conference and during it, to come up with topics and particularly workable plans for follow-up implementation. What is planned is a format to develop and to create a "vision" for the future, a vision for safer flying. This will come about from group discussions of a number of seemingly diverse topics and from answers to a questionnaire that will be distributed ahead of time. This will allow topics to be selected and introduced for working on at the conferences, and these topics are of course interrelated because they are all on gliding. We will concentrate on safety and training but other topics may well come up and these will be discussed as appropriate.

Each conference will last about six hours with a lunch. Conference details will be posted on the SAC Roundtable website as they are organized.

Ian Oldaker

Venues/contacts:

Edmonton, 19 Feb	Tony Burton
Vancouver, 20 Feb	Dave Clair
Hawkesbury, Mar/Apr	Peter Trent
Toronto area, Mar/Apr	Oldaker/Coulson
Regina/Winnipeg, TBA	Ian Oldaker

Changing gears

from page 13

eleven hours after takeoff. This is more rewarding than the flight itself.

After an international debate over the height penalty applicable to my start — a story in itself — I was awarded Canadian 1000 km Badge #9 for this flight*.

One week later I exceeded the world record 100 km speed record by less than 2 km/h and got my Diamond climb in the same flight. I spent the rest of the year trying to break triangular speed records and eventually flew the 168.1 km/h pending record, mentioned earlier, on November 29.

What a year! My 64 flights that I tried to go somewhere averaged 313 km each. My top 31 flights averaged 505 km. Wait until you see my plans for this year.

This just took me eight hours to write but I'm glad I was prompted to do it. Someday the memories won't be as clear as they are now and I'll be able to use this to refresh them. I encourage everyone to write down whatever experiences they have enjoyed recently and save them somewhere as I will save this. But now, full speed AHEAD! ❖

** The problem was that although his release height was low enough, at his declared start point Dale was higher than 1000 m over his finish point. The resulting height penalty dropped his official distance below 1000 km. The fix was to abandon the pre-flight declaration and claim the flight course under the new "free 3-TP" distance in which TPs are chosen following the flight — then the release point could be declared as the start. This flight and another one illuminated a hole in the new FAI Sporting Code text which is being plugged by an amendment this year. Tony*

Investigation report out on UK lightning strike

Many glider pilots will be aware of the K21 based at Dunstable that was destroyed in flight by a lightning strike on 17 April 99. Fortunately, both occupants baled out successfully, suffering only minor injuries. The official report on the accident by the AAIB (Air Accidents Investigation Branch) is available at:

<http://www.open.gov.uk/aaib/dec99htm/bga3705.htm>

The report contains a comprehensive analysis of the accident as well as a detailed discussion of the effect of lightning strikes on composite airframes and metal parts, and photographs and diagrams.

... new historian

from page 5

then occasional flights at GGC, courtesy of Shorty Boudreault and Elvie Smith, and dual power flying with son Roy and the late Graham Crate.

Chequered career included applied super- and hypersonic model tests, flight path computer studies of the Concord and gun-fired rockets, navigation studies, design and manufacture of small hovercraft propellers and airfoil centreboards and rudders for sailing dinghies.

Family: one wife, five children, 15 grandchildren. Medical retirement from Transport Department, 1979.

There are plenty of stories waiting to be told. I hope the Yeates, Lockhards, Woodwards, Wimberleys and dozens of members before and since will come forth with an autobiography, or a tale, whether long or short, of the early days of SAC, or of some aspect of flying that is not too well-known today in Canada — winching, bungee launching, auto-towing, soaring in unusual conditions, etc.

As well, there is a need for an ARCHIVIST (Christine Firth tells me that was her main work as Historian) ... someone in Ottawa, preferably who keeps things neat and well indexed and even cross-referenced (not a description of me). There is already a store of material that Christine will introduce to me — and to any new ARCHIVIST.

Albums, stories, records, photos properly identified can be sent in and filed for reference and for sampling for *free flight*. Please think about it!

Barrie Jeffery

One year later

from page 14

ment in the sport. Of course, this would not have been possible without the assistance of many people, some of whom knew little of the sport at the beginning of the year. These unexpected supporters took great interest in the welfare and development of the club, and ended up being part of our lives. Mike Ronan allowed us permission to use his field and ended up being involved in every facet of our operations, Ben Ciantar took a great interest in our sport and allowed us use of his field, Ed Hollestelle was of invaluable help in obtaining our equipment and took great joy in seeing our return to a grass roots operation, Bob Nelles is a great friend who was always ready to help when we ran into mechanical problems, Sue Davidson, our ever-patient Transport Canada officer, helped our fledgling pilots earn their wings, and Robert Wappel remains a river to his people.

Please visit our website:

<http://www3.sympatico.ca/mike.morgulis/greatlk1.htm> ❖

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 3 November to 8 December 1999.

GOLD BADGE

288 Alan Hoar Cu Nim

SILVER BADGE

925 Jean-Marc Piuze Québec
 926 Francis Ringwald Outardes
 927 Roberto Centazzo York

DIAMOND DISTANCE & GOAL (300 km goal flight)

Alan Hoar Cu Nim 318.9 km Std Cirrus Black Diamond, AB 5 May 99

GOLD/SILVER DURATION (5 hour flight)

Francis Ringwald Outardes 5:13 h C101A St. Auban, France 23 Sept 99
 Gerhard Giehler Toronto 5:07 h PW-5 Conn, ON 22 Aug 99
 André Bilodeau Champlain 5:30 h Lark St. Dominique, QC 22 June 99

SILVER ALTITUDE (1000 m gain)

Jason Bellenger SOSA 1280 m 1-26 Arthur East, ON 20 June 99
 Roberto Centazzo York 1220 m Grob 102 Arthur East, ON 21 June 99

SILVER DISTANCE (50 km flight)

Jean-Marc Piuze Québec 55.2 km Grob 102 St. Raymond, QC 19 June 99
 Jason Bellenger SOSA 62.7 km 1-26 Arthur East, ON 20 June 99
 Francis Ringwald Outardes 52.0 km C101A St. Auban, France 24 Sept 99
 Roberto Centazzo York 62.7 km 1-26 Arthur East, ON 22 Aug 99

C BADGE (1 hour flight)

2637 Luc Bernard Outardes 1:07 h K8b Bromont, QC 19 Sept 99
 2638 Michel Moreau Outardes 1:14 h Blanik L-13 Bromont, QC 19 Sept 99
 2639 Chetan Bagga Vancouver 3:16 h 1-23 Invermere, BC 9 July 99
 2640 Andrew Bilyk York 1:12 h 1-26E Arthur East, ON 23 Aug 99
 2641 Denys Gariépy Québec 1:30 h Blanik L-23 St. Raymond, QC 24 June 99
 2642 Marie-Claire Beaulieu Québec 2:10 h Blanik L-13 St. Raymond, QC 2 Aug 99
 2643 Jason Bellenger SOSA 1:48 h 1-26 Arthur East, ON 20 June 99
 2644 Peter Morrison Pemberton 4:00 h DG-202 Pemberton, BC 21 Aug 99

"I like this job!"

I like this job. I like to talk to the guy who has flown the club 1-26 to an unbelievable number of landouts and watch his face light up as he describes his adventures. Or the guy who leaves the field and keeps on going as far as he can before the lift quits due to darkness! Or the guy who just got down from five hours and fifteen minutes in a Blanik! Gliding provides real adventure — not the kind you get by buying the latest SUV and watching the TV commercials to see how to drive it over mountains, knowing it probably won't even be used on a gravel road! Not the adventure you get by screwing up your courage for ten minutes and doing a bungee jump or buying a Tilley hat and taking a trip to Africa. From your first solo, your first soaring flight, your first landout, first cross-country flight — gliding provides adventures you remember all your life. Gliding takes time to learn, requires determination, concentration and hard work, and it gives back incredible experiences that no one but a fellow glider pilot can understand. In a way it's a good thing there are so few of us.

Get your achievements written into the Canadian Soaring Register by flying for FAI records and badges. Do it! Don't deny yourself the adventure just to avoid some paperwork.

GPS flight recorder use is increasing. In some cases the level of detail in their record causes the rejection of claims which would have been accepted if cameras had been used — simply because that level of detail cannot exist with camera evidence. If you are going to use a logger be aware of what the rules call for and make sure you comply.

Directors & Officers

President, Quebec & Atlantic
 Pierre Pepin (1999)
 590 rue Townshend
 St-Lambert, QC J4R 1M5
 (450) 671-6594 (H)
 (514) 761-7015 (B)
 (514) 768-3637 (F)
prpepin@videotron.ca

VP & Ontario
 Richard Longhurst (1999)
 100 - 1446 Don Mills Road
 Don Mills, ON M3B 3N6
 (416) 391-2900 (H)
 (416) 391-3100 ext 250 (B)
 (416) 391-2748 (F)
richard_longhurst@mintzca.com

Prairie
 Howard Loewen (1998)
 233 Lamont Boulevard
 Winnipeg, MB R3P 0E8
 (204) 489-1148 (H)
 (204) 489-3086 (F)
loewenhw@mbnet.mb.ca

Alberta
 David McAsey (1998)
 47 - 2300 Oakmoor Dr SW
 Calgary, AB T2V 4N7
 (403) 281-7962 (H)
 (403) 281-0589 (B&F)
mprsoar@agt.net

Pacific
 Harald Tilgner (1998)
 50090 Lookout Rd, RR2
 Chilliwack, BC V4Z 1A5
 (604) 858-4312 (H)
 (604) 521-5501 (club)

Exec Dir & Treas
 Jim McCollum
 6507 Bunker Road
 Manotick, ON K4M 1B3
 (613) 692-2227 (H)
 (613) 829-0536 (B)
 (613) 829-9497 (F)
sac@sac.ca

Legal Counsel
 Robert Wappel

Committees

Air Cadets
 Dave Hennigar
 404 Moray Street
 Winnipeg, MB R3J 3A5
dhengr@mb.sympatico.ca

Airspace
 Bill Green
 2181 West 22 Avenue
 Vancouver, BC V6L 1L4
 (604) 737-1136 (H)
 (604) 886-8981 (cottage)
 Mbrs: Ian Grant
grant.i@atomcon.gc.ca
 Roger Harris
rharris@petrillobujold.ca
 Scott McMaster
scott@mcmail.cis.mcmaster.ca

FAI Awards
 Walter Weir
 3 Sumac Court
 Burketon RR 2
 Blackstock, ON L0B 1B0
 (905) 263-4374 (H)
waltweir@inforamp.net

FAI Records
 Frank Cwikla

35 Mapleton Drive
 Winnipeg, MB R2P 0J4
 (204) 632-4773 (H)
fcwikla@lark.gawd.mb.ca

Fit Training & Safety
 Ian Oldaker
 "Willow Spinney", RR1
 Limehouse, ON L0P 1H0
 (905) 873-6081 (H)
 (905) 873-0110 (F)
oldaker@aztec-net.com
 Mbrs: Dan Cook
 Tom Coulson
 Fred Kisil
 Terry Southwood

Free Flight
 Tony Burton, Box 1916
 Claresholm, AB T0L 0T0
 (403) 625-4563 (H&F)
free-flt@agt.net

Historian
 Barrie Jeffery
 2201 Fox Crescent
 Ottawa, ON K2A 1H7
 (613) 596-1345
ai758@freenet.carleton.ca

Insurance
 Richard Longhurst
 100 - 1446 Don Mills Rd
 Don Mills, ON M3B 3N6
 (416) 391-2900 (H)
 (416) 391-3100 ext 250 (B)
richard_longhurst@mintzca.com
 Mbr: Doug Eaton

Internet
 Susan Snell
 1312 Valour Road
 Winnipeg, MB R3E 2W8
 (204) 783-4983
sps@lark.gawd.mb.ca

Medical
 Dr. Peter Perry
 64 Blair Road
 Cambridge, ON N1S 2J1
 (519) 623-1092 (H)
 (519) 740-6547 (B)
 Mbr: Dr. WL Delaney

Sporting
 Jörg Stieber
 Box 25, Plattsville, ON N0J 1S0
 (519) 684-7372 (H)
 (519) 662-2840

joerg@odg.com
 Mbrs: Colin Bantin
ccbantin@sympatico.ca
 Tony Burton
free-flt@agt.net

Technical
 Paul Fortier
 RR2, Mountain, ON K0E 1S0
 (613) 989-1634 (H&F[call 1st])
ae605@freenet.carleton.ca
 Mbrs: Chris Eaves
xu-aviation@sympatico.ca
 Herb Lach
 Glenn Lockhard

Trophy Claims
 David McAsey
 47 - 2300 Oakmoor Dr SW
 Calgary, AB T2V 4N7
 (403) 281-7962 (H)
 (403) 281-0589 (B&F)
mprsoar@agt.net

World Contest & IGC Cdn delegate
 Jörg Stieber (see Sporting)
 Hal Werneburg (alternate)

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 the national office, Box 1916, Claresholm, AB T0L 0T0
tel/fax (403) 625-4563, free-flt@agt.net

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

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

Tern, C-GWKW, 845h, amateur-built in 1978. Always hangared, no accidents, L/D 34:1 @ 54 kts. Basic inst incl Cambridge audio, 720 chan radio, Strong chute. Encl trailer. Several 300 km triangle flights less than 5 hr. More info at <http://www.accolade.ca/glider/>. Owner: Wolfgang Weichert, call: Juergen at juergen@accolade.ca or (613) 746-7685.

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. \$US1000. In Pemberton. Rudy Rozsypalek pemsoar@direct.ca (604) 894-5727.

HP16, C-GAUZ, 534h, basic instruments, Winter audio vario, Tost winch hook, Schreder trailer, self-rigging equip with tow bar & wing wheel, covers, asking \$15,000. Willi Deleurant (416) 755-0359.

PIK20Bc, C-GXWD, carbon fibre, 820h, vg cond, new paint, Ball 400 c/w netto & cruise, Edoaire 720 radio, chute, O2, gear warning. Call Lee Coates at (403) 242-3056 or Denis Bergeron at (403) 526-4560.

Std Jantar 2, C-GFBO, 600TT, Sage mech. vario, Varicalc Vario/FG computer, G-meter, O2 system, Terra 720 radio. Replogle baro. Minden aluminum trailer. Located in Edmonton. \$31,000. John Broomhall, (780) 438-3268 john@cips.ca

Std Jantar 2, approx 950 h, excellent cond, Varicalc 1 computer, ATR 720C 10 chan radio w. boom mike, Illec. clamshell trailer, Chairchute, GPS. \$32,000 (905) 319-2824 eves. rywak@globalserve.net

ASW 20, C-FNVQ, ndh, 1160 h, 372 launches, good cond. Cambridge Nav director/vario/audio. Sage mechanical, back-up audio, radio, Smiley bags, solar panel, O2. Good homebuilt trailer. \$43,000. Peter Foster (905) 584-1920 pede.foster@ibm.net

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@globalserve.net

SZD-55-1, C-GENQ, brand new 1999, factory test flight only, ready to fly, only \$US41,000. Ed Hollestelle (519) 461-1464.

Nimbus 3, 24.5m, 1100h, #65 ('84), Lg tanks, excl cond. New one coming! Borgelt, Winter and Illec varios. Cambridge GPS and FR. Cobra trailer. Completely refinished '94. New elec. system '99. Two big batteries. In-flight solar charging system. Dittel 10 chan radio, O2. At Ridge Soaring PA. \$US65,000. Deliver anywhere N. Amer. Brian Milner, (905) 372-2967 (H), (905) 372-2251 (W) bmilner@chem-ecol.com

misc

Baro, EW-B electronic barograph & data logger, connects to your portable GPS. Steve Burany (SOSA). \$550 (905) 889-5779 or steve.burany@utoronto.ca

Baro, Winter, \$200, and **Vario**, Cambridge with audio, \$200. Larry Springford larry.springford@hotmail.com, (519) 396-8059.

Baro, Replogle, needs stylus point, \$100 obo. Frits Stevens (204) 888-1345, Frits_Stevens@umanitoba.ca

Trailer, alum covered tube construction, now set up for PIK wings. Tows well, sound, some hail dents. At Black Diamond, AB. Self-rigging "Wing Thing" dolly. Make offers. Mike Glatiotis, (403) 282-6121 mglatiot@cadvision.com

Canopy, Open Cirrus, original from factory. Green tint. Roman Levicek (403) 239-8162.

Solaire Canada

Ed Hollestelle (519) 461-1464 ph/fx
solairecanada@sprint.ca

LX-100 Electronic audio vario with averager and 2 response settings \$495

ATR57 A new 2-1/4" panel-mounted 760 channel radio ready to install. \$1395

ATR720A 760 chan VHF with mounting tray and wiring harness. \$1695

ATR720C Same as above with LCD display and 10 channel memory. \$1995

SHM1010 Boom mike and wiring (as installed by most glider manufacturers. \$175

Colibri FAI approved recorder (the size of a small package of cigarettes) with navigation and data screen. \$1395

LX-5000 The ultimate GPS/final glide computer system with large graphic display, FAI flight recorder, and moving map with airspace and task displays. \$5995

DX 50 The newest GPS flight data computer/recorder, only 2 LCDs.

(special purchase) \$2995

FSG71M Dittel radio, fits 2-1/4" hole. \$2795

two seat

L-13 Blanik, 2800 h, excellent condition, new upholstery, overhauled instruments, radio, new tire, factory tail-wheel. \$US15,000. In Pemberton. Rudy Rozsypalek (604) 894-5727, pemsoar@direct.ca

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.gene.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 Federations 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. \$US34 per annum, (505) 392-8154. info@ssa.org

The Book of the Best

by Ursula Wiese

the complete history of soaring achievement in Canada is now freely available on the SAC documents webpage.

If a pilot buries his head in the cockpit then, sooner or later, someone will have to bury the rest of him.

BGA Gliding Safety newsletter

Come and soar with the bald eagles! PEMBERTON SOARING CENTRE

Operating daily April to October in Pemberton, BC

- excellent mountain scenery with thermals to 12,500 ft
- camp at the airport, B&B, or stay in Whistler
- area offers a wide variety of summer activities

Glider rentals: DG-202, L-13 & L-23 Blaniks, L-33 Solo, Vivat motorglider

Instruction: glider pilot courses or book a number of lessons, X-C training/off-field landing practise, checkouts in side-by-side Vivat

ph (604) 894-5727, fax (604) 894-5776

e-mail: pemsoar@direct.ca webpage: www.mountain-inter.net/soaring/

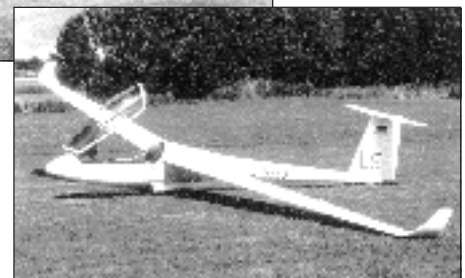
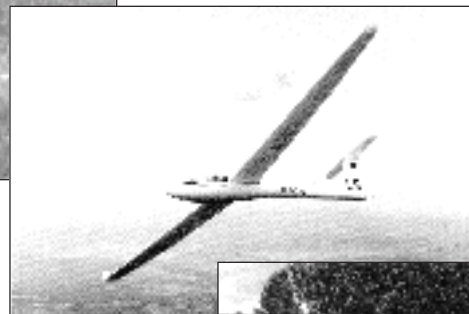


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We are pleased to announce **Solaire Canada** as the Canadian representative for our line of competitive racing and club gliders.



- **LS6** The LS6-c can be ordered with many wing configurations: 15 Metre, and now 18 Metre class with full 1156 lb wingloading, both with or without winglets, etc.
- **LS8** The LS8 is not only a winner in the Standard Class, it can now be ordered with the 18m extension tips with about a 48:1 glide ratio at a very affordable price.
- **LS9** The LS9 self-launching 18m glider has reached production status and will satisfy the self-launch crowd with unequalled performance and flight qualities.
- **LS10** We anticipate the new LS10 as the new 15 Metre racer, also available in 18m wingspan in the spring of 2001, and are confident that it will meet or exceed your expectations.
- **LS4** The well-known LS4 is still in production and more than 1000 are built now. The newest version LS4-b now has automatic control system connectors. This glider with its high performance, beautiful and easy handling qualities, together with a very affordable price, makes it the ideal glider for the private owner or clubs alike.

For more information, prices, options, and delivery positions, please contact Ed Hollestelle at:

Solaire Canada

**4 Monteith Avenue
Thorndale, Ontario N0M 2P0
ph/fax: (519) 461-1464/1132
solairecanada@sprint.ca**