

# free flight • vol libre

4/91  
Aug/Sep

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# POTPOURRI

It is with the utmost regret that I report that there has been another fatal accident in our organization. I wish to extend my deepest sympathies to the family of Gaston Boulet. Gaston was killed in a glider accident on June 23, 1991 when the glider failed to recover from a spin at the site of the Association de Vol à Voile Champlain.

We have received a copy of the Coroner's report of the fatal accident at Kawartha last September. Some of you COPA members may have read it in the COPA Aviation News. The jury concluded that they could not really ascertain the cause of the accident and though they did not see a cardiovascular cause for the accident, they made the following recommendations:

- 1 That category 3 validation certificate holders undergo ECG'S every two years after age 40.
- 2 That the Department of National Health & Welfare, Civil Aviation Medicine, Health Advisory Services, Medical Services Branch, re-examine their existing guidelines and produce a specific age guideline for the implementation of stress ECG testing and follow-up related to category 3 Validation Certificates.

I find these recommendations a disturbing indication of how the public views the aviation world. Here we have a group of people saying that a person must have a stress electrocardiogram every two years so that he or she may have permission to take a visitor for an aeroplane ride. Would that same group of people recommend to their provincial government that every car driver over the age of 40 require the same ECG before they could carry a passenger in an automobile? Does a taxi driver or a bus driver require one? The parameters are the same.

As of July 1 the membership total is less than at the same time last year. Most of this is due to some clubs not sending in their membership lists and fees as of that time. The members of these tardy clubs should be aware that their executives are putting their insurance coverage in jeopardy, and any of their badge claims, as well as non-delivery of *free flight*.

I am still yelling — pleading or whatever for input to the insurance dropout problem. I have received very few recommendations, perhaps we should pass on the headache to the clubs and have them take action on the dropouts who will be the cause of increased insurance rates. This is partly in jest, but please — the directors do need response from the members.

We all hope our Worlds team have done well at Uvalde and I hope we have all supported them spiritually and financially by purchasing T-shirts or donating to the contest fund (remember it is tax deductible for those at arm's length).

Please fly safely and cultivate the "what if" attitude.

Al Sunley

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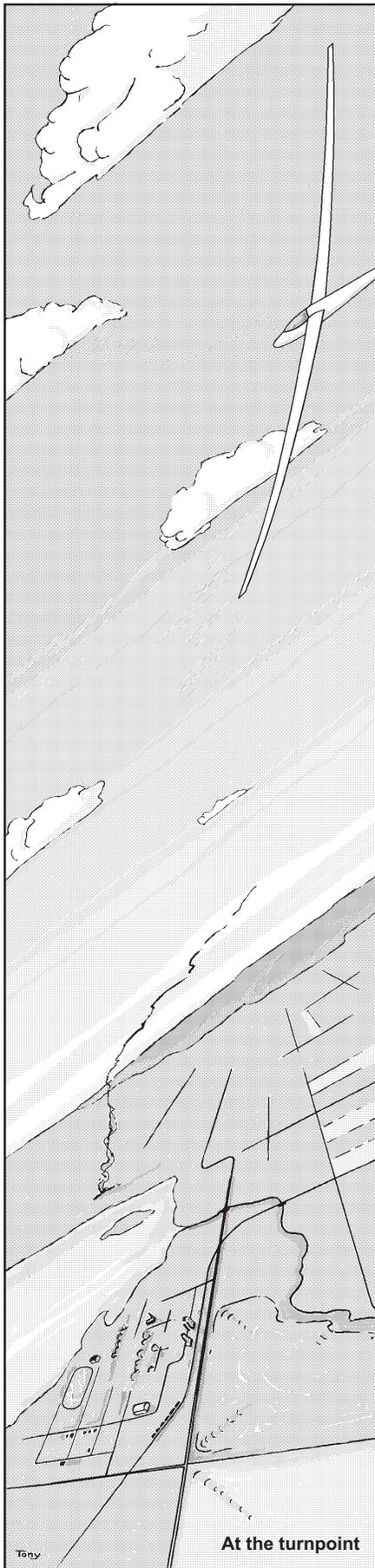
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A ranching atmosphere attends the sailplane queue at Cu Nim during the Provincial contest. Fred Guest is ready to go in the Jantar while Jay Poscente and Steve Weinhold (on right) wait their turn.  
photo by Gerald Ince



An open letter to the new club executive  
from the past-President

## **SIMPLE SUGGESTIONS –**

### **8 RULES TO HAPPY SOARING**

#### Rule #1

Remember, we are all here to fly gliders and have fun.

#### Rule #2

When things get tough, and the whiners and the complainers start to get to you, remember Rule #1.

#### Rule #3

When the persons mentioned in Rule #2 really start to get to you, ignore them and refer to Rule #1.

#### Rule #4

Consider the source. If someone whose views you respect tells you that there is something wrong, maybe there is. But, then again, maybe there isn't. In case of confusion, refer to Rule #1.

#### Rule #5

There is nothing so important that it cannot be postponed to a non-soaring day. (This is really Rule #1 stated differently).

#### Rule #6

Insist that all your directions be obeyed promptly and to the letter — particularly "Take up the slack" and "All out".

#### Rule #7

Delegate authority. Nobody will listen to you anyway, so they might as well not listen to somebody else while you go follow Rule #1.

#### Rule #8

Keep your sense of humour. People will try to take it away from you, but it's hard to follow Rule #1 without one.

If I can be of some help this year, please don't hesitate to call. You'll have some trouble catching up with me though. I will be at Hope, or Ephrata, or on the safari, or anywhere glider pilots gather to follow Rule #1.

**Dave Baker**

Vancouver Soaring Association



#### **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 which represents 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 a Canadian team for the biennial World soaring championships.

**free flight** is the official journal of SAC.

Material published in **free flight** is contributed by individuals or clubs for the enjoyment of Canadian soaring enthusiasts. The accuracy of the material is the responsibility of the contributor. No payment is offered for submitted material. All individuals and clubs are invited to contribute articles, reports, club activities, and photos of soaring interest. Prints (B&W) are preferred, colour prints are acceptable. No slides please. Negatives can be used if accompanied by a print. All material is subject to editing to the space requirements and the editorial standards of the magazine.

**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 SAC Zone Director whose name and address is given in the magazine.

The contents of **free flight** may be reprinted; however, SAC requests that both **free flight** and the author be given acknowledgement.

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November

# Letters & Opinions

## L'ASSOCIATION CANADIENNE DE VOL À VOILE

est une organisation à but non lucratif formée de personnes enthousiastes cherchant à développer et à promouvoir le vol à voile sous toutes ses formes sur une base nationale et internationale.

L'association est membre de l'Aéro Club du Canada (ACC) représentant le Canada au sein de la Fédération Aéronautique Internationale (FAI), administration formée des aéro clubs nationaux responsables des sports aériens à l'échelle mondiale. Selon les normes de la FAI, l'ACC a délégué à l'Association Canadienne de Vol à Voile la supervision des activités de vol à voile telles que tentatives de records, sanctions des compétitions, délivrance des brevets de la FAI etc. ainsi que la sélection d'une équipe nationale pour les championnats mondiaux biennaux de vol à voile.

**vol libre** est le journal officiel de l'ACVV.

Les articles publiés dans **vol libre** sont des contributions dues à la gracieuseté d'individus ou de groupes enthousiastes du vol à voile. Chacun est invité à participer à la réalisation de la revue, soit par reportages, échanges d'opinions, activités dans le club, etc. Un "courrier des lecteurs" sera publié selon l'espace disponible. Les textes et les photos seront soumis à la rédaction et, dépendant de leur intérêt, seront insérés dans la revue.

Les épreuves de photos en noir et blanc ou couleur sont acceptables. Les négatifs sont utilisables si accompagnés d'épreuves.

L'exactitude des articles publiés est la responsabilité des auteurs et ne saurait en aucun cas engager celle de la revue **vol libre**, ni celle de l'ACVV ni refléter leurs idées. Toute correspondance faisant l'objet d'un sujet personnel devra être adressé au directeur régional de l'ACVV dont le nom apparaît dans la revue.

Les articles de **vol libre** peuvent être reproduits librement, mais la mention du nom de la revue et de l'auteur serait grandement appréciée.

Pour changements d'adresse et abonnements aux non membres de l'ACVV (\$20 par an, EU\$22 dans les Etats Unis, et EU\$28 outre-mer) veuillez contacter le bureau national.

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## SAC PLAN OK

As the insurance broker and program administrator for the Soaring Association of Canada's group insurance program, I feel compelled to respond to the article under POTPOURRI in the June/July issue of *free flight*. I have not had the pleasure of meeting the new SAC president as yet, but look forward to discussing the following with him in the future.

My concern is that a degree of confusion may be caused by the references made to the current SAC insurance program. Mr. Sunley has asked the membership for feedback to solving "our problem of insurance drop outs". He asks for input on what incentives should be introduced to keep the private pilots in the SAC group program. Mr. Sunley asks how to combat the following responses from members, "Why should I support SAC for an extra \$400 a year, that's more than all my tows will cost me!" He then goes on to say that this is not an uncommon response from many pilots.

I think that the information being provided to Mr. Sunley may be one-sided. Firstly, the "drop out" situation is a minor problem confined to a limited number of individuals, in a given geographic area, who have chosen to purchase a more restrictive insurance policy containing more exclusions and conditions, thus affording far less insurance coverage. As for a difference of \$400, yes I have heard this as well. Unfortunately I have as yet not had anyone show me a policy of any kind with a \$400 premium difference. On several occasions we have attempted to obtain a copy of this "\$400 difference" policy. But it never appears. I have been sent policies to review that on a net basis save less than \$75, while providing far less coverage. This difference is only reflective on a limited number of higher valued gliders with named pilots. You can bet that if one of these pilots has a major loss they will be scrambling to get back in the SAC program. On the whole the SAC program offers the best pricing while affording superior coverage. The dropout problem has not occurred to any great extent this year. In fact we have added 22 new gliders this year. So with these additions and the inevitable deletions we have maintained our level of membership as compared to last year. I think that the proposal to limit people who "drop out" from running back to the SAC program when their rates sky-

rocket is a good one. How this is to be done is a much more complicated task.

Mr. Sunley has offered several solutions, one being to "reintroduce a system where the insurance premiums for all ships are divided equally between all members and everyone pays a fixed amount in addition to the membership fee." Currently all SAC aircraft owning members pay a fixed set amount for liability coverage based on the amount and number of aircraft seats. In regard to the physical damage coverage it is based on a percentage of the insured value of the glider. Therefore a \$10,000 glider owner pays \$390, while a \$60,000 glider owner pays \$1560. The charge is based on the value of the aircraft insured. If we were to divide the premiums equally the lower valued aircraft owners would end up paying far more, while higher valued glider owners would pay less. I do not think this is a fair situation.

I think that the solution is simple. Keep the current SAC program competitive. Do this by continuing to provide the best insurance coverage for the lowest premium dollar. There will always be someone who thinks they can get a better deal from another source. The truth is you get what you pay for. SAC should not let these people take advantage of the vast majority of members. I can state categorically that for the average private owner there is no better deal than the current SAC program.

**Grant S. Robinson**, Vice-President  
Manager Aviation & Aerospace Dept.  
Sedgwick James, Inc.

## A SUGGESTED CHANGE

In response to Al Sunley's request for comment or suggestions vis-à-vis the SAC insurance plan may I suggest a simple incentive for encouraging all private owners and clubs. It should be made on condition of use of any club facility, such as runways, towplanes, winch launch, etc. to that the owner of a glider using these facilities:

- belong to a SAC affiliated club
- produce proof of his aircraft insurance under the SAC insurance scheme.

For visiting pilots from other countries the usual proofs of insurance should apply prior to allowing them to launch their aircraft from any club facility.

Sincerely, **Doug Bremner**

# THE BC SOARING

# SAFARI

## Steve Johnson

Vancouver Soaring Association

Planning for the 1991 safari began last summer with the thought of giving some of the newer members a chance at seeing another part of their country while enjoying the rigours and challenge of flying cross-country in the mountains. The event began with the highly successful BC Soaring Safari of 1987 (see the Jul–Sept 87 free flight) in which five VSA members and two visiting pilots participated. The experience gained left a desire to do it again sometime on a grander scale.

The rule of the safari was safety first. A daily briefing was held with all participants on weather, the route, and all potential landout spots along the way. Joe Gegenbauer, who had flown most of the routes before, gave his advice and impressions of what could be expected along each leg. Crew communication was discussed, and airport frequencies noted. One person each day was assigned to keep track of times and aircraft locations, and pilots were to check in regularly and to inform ground whenever they were high enough to safely commit themselves to proceeding on course to the next safe landing area.

The safari was to fly across southern BC in several stages beginning at Princeton on May 26 to Grand Forks, Creston and Elko and arrive in Invermere on the 29th. Local badge and fun flying at Invermere would go for five days, then a return trip to Cache Creek would begin on June 5 through Golden and Salmon Arm, arriving at Cache Creek on June 7.

After months of preparation and planning, we were on our way. Would the weather be kind to us? The safari was to begin in Princeton which had been the starting point for the 1987 safari. The club had made the annual trip to Princeton this year so the sailplanes and towplane were waiting for us. I was to meet Norm and Paddy MacSween in Princeton at the airfield on the Friday night at 8:00 pm. My wife Judith drove me to Princeton that night and we met the MacSweens as planned. The weather near Vancouver was rather miserable and I began to have premonitions of the wet the folks had last year as they travelled to Invermere. As we neared Princeton, the weather became increasingly better and the sun began to shine around some marvellous looking cumulus.

**May 25, Princeton** Judith left me with a wish for great success and departed just as a stack of people arrived. I was happily surprised to see Don Hill and his flying partner Bob Ayotte joining the group. Don had been on the 1987 safari and was one of the chaps who had given me so much help and advice, so it was great to see him again. Not long after Don and Bob's arrival, Joe Gegenbauer and Dave Baker arrived in a large rented motorhome we later called "Megabuck Base". The group grew as Hans and Trudi Baeggli, Horst Loeschmann, Julien Boivin, Mike Thompson and flying partner Angus Livingstone arrived. The motley crew was rounded out nicely with the arrival of Rohan Soulsby (our designated towpilot for the first week), Ray Maxwell, Uwe Kleinhempel and last but not least Heidi Myers. In total, seventeen people were there to get things underway.

The weather in the morning was not terrific (ie. drizzling), but got progressively better in the afternoon and we actually saw some blue sky. Although it was a club flying day, we knew that no one would be interested in rigging and trying the skies for a local flight. Besides, there was work to do. The towplane had experienced brake problems the week previous, so Rohan and I worked on the right brake as Mike, who was the club's maintenance director, worked on the radio and total energy system in VSJ, the club's Grob 102. The group adjourned for the day and went to town for supper at the Apple Tree restaurant.

**May 26, Princeton – Grand Forks** Today, the safari officially began. At the first briefing, Mike and Norm reported that the weather would improve through the day and should be good for the rest of the week, but it didn't look as though cross-country flying would be possible until much later on in the day. We decided to shove on to Grand Forks by road and possibly get there early enough to do some local flying. The day did improve and we were eager to arrive so that flying could begin. We all took note of the fields along the way for future reference. There is a paved airstrip at Oliver (half way to Grand Forks), and it looked as though a new airstrip was being built at Osoyoos. The countryside is beautiful and I was imagining how wonderful it would have been to be able to fly from Princeton to Grand Forks.

The sailplane convoy arrived in Grand Forks mid-afternoon and after taking care of finding accommodation, went to the airport and began to rig in earnest. Happily and to our surprise we were met by Dave Burgess, our VSA member from Kelowna, who decided to join the safari, albeit without a ground crew. Tony Burton and Ursula Wiese also joined the group from Alberta. In my earlier telephone conversation with Tony he had said that he hoped to meet us in Grand Forks, so I was pleased that he was able to do that. The contingent was now nineteen people and seven sailplanes.

Grand Forks airport (elevation 1720 feet) lies in a valley and is only a few hundred metres from the Canada/US border. Rohan arrived with the towplane and the tows began. Don took off in the DG-400 to do some "sniffing" and was quickly followed by Dave Baker in the ASW-20. I launched in the Grob 102, noodled around looking for lift and managed to shoot a few photographs. I didn't want to hog the 102 so I landed after a very satisfying flight. The twin Grob 103 took off with Hans for three flights with Horst, Norm, and Julien for some local flying and cross-country training. All told, we had twelve local flights of half an hour to an hour and a quarter, with launching beginning at 17:13 and the last ship landing at 20:16. We all felt the weather would be good the next day for the Grand Forks to Creston leg of the safari.

## May 27, Grand Forks – Creston

The briefing began at 10:00 am sharp with Norm handing out cookies — I think this became the tradition during last year's very soggy expedition to Invermere. Mike's weather briefing indicated that this should be a cross-country day, and looking at the skies we certainly were convinced that it would (although it turned out that rain showers were the main factor to the success, timing, and course/line of most flights). Joe Gegenbauer explained in detail the route we would fly today. Airstrips along the route included Avey State, Trail, and Salmo. Avey State is a gravel strip 15 kilometres east of Grand Forks which is one-third on the Canadian side of the border and two-thirds on the American side. Trail has a hard surface runway and Salmo is a grass airstrip that's part of a golf course! There are few fields to choose from along the course so this leg was not the easiest to fly.



Flying at 10,000 feet over the Beaverfoot Range north of Invermere

photo: Tony Burton

Launches began just before noon with Don checking out the lift. It was Bob's turn to fly the DG-400, so Don returned about 45 minutes later and reported usable lift in the vicinity. Norm took off with Hans in the twin Grob to try and make Trail for what would have been Norm's first cross-country. Unfortunately they couldn't find the lift they needed so they were forced to land back at Grand Forks. Hans had to head back to Vancouver with Rohan because of prior commitments, so Norm took over the towpliot duties. In the interim Dave Baker, Angus, Bob, Tony, and Dave Burgess had launched and were on their way. Since he had no crew, Dave flew locally.

Angus needed a relight just after I launched and we began looking for lift together on the north side of the valley. Because of our scheduling change, I had to fly the Grob 102 (my day was supposed to have been the day before, but I wasn't about to argue). Angus did better than I and got a little farther ahead as we headed east. This was nice for me because I was able to see where he was getting all the lift. Our flights took us on the direct route from Grand Forks, between Christina Lake to the north and Avey State airstrip to the south and over the mountains to Trail. I finally lost sight of Angus (as well as the lift) after I had made it to Trail. Angus reported later that he managed to make it to Salmo and landed, not wanting to carry on to Creston over the pass.

As I mentioned, a golf course straddles the Salmo airstrip. This can make for a most interesting landing as Angus found out. He managed to put the HP-14 down just over the heads of one set of golfers and stopped just before another group heading across to play another hole! He said the golfers hardly paid

any attention to him at all — as if this were a normal occurrence. At Trail, I began thinking of landing as I was getting low, but managed to get a save and got back to cloudbase at 9500 feet. I had plenty of height to continue but decided to wait out the rain shower that was between me and Salmo. In the meantime, I could hear Ray and Horst in the twin Grob as it neared Trail. They decided to head north towards Castelgar and eventually got around the rain that way and landed at Salmo. I thought of doing that, but because this was only my second cross-country, I didn't want to press my luck. I decided to land at Trail once rain began to hit my canopy and I was happy with my flight.

Ray and Horst approached Salmo somewhat differently than Angus. Ray enjoys aerobatics, so he made a low high speed pass over the airstrip to warn golfers of the imminent landing, pulled up into a "teardrop" and landed. He and Horst found Angus asleep in the HP-14 patiently waiting for his groundcrew. Angus had already had a beer at the clubhouse before anyone else. This must have been a quiet victory celebration for Angus since we found out later that this had been his first cross-country.

Dave Baker, Bob, and Tony separately followed a different route, flying south into the USA with the lift and then working their way northeast towards Trail and eventually east below Salmo and over the pass to Creston. They flew locally at Creston for a bit and landed to wait for the rest of us stragglers.

We all arrived safe and sound into Creston about 10 o'clock that evening. This was much later than the plan had called for and we vowed to keep all on track and time the following days.

**May 28, Creston – Elko** The daily 10 am briefing began as usual with the weather (cbs and rain predicted) and route portions followed by safety issues and lastly with presentations and points of interest. We presented Angus with a bicycle horn so that if he were ever to fly into a place like Salmo again, along with making the normal radio traffic call, he could toot the horn. (He and Mike used it on occasion in the days ahead causing people to look to the skies to see where the sound was coming from.)

The weather was overdeveloping quickly, but everyone with the exception of Tony decided to launch. Tony derigged his ship — smart fellow! By 15:30 everyone was safely on the ground and looking at some very ominous black clouds. Mike was flying his HP-14 and awed the crowd of local pilots by his high approach and judicious use of the big flaps and stopped just about where Ray predicted he would. Derigging by all crews began in earnest and three-quarters of the way through the job we got hit with a heavy rain shower.

Just prior to the storm hitting the field, Norm escaped with the L-19 towplane to Elko. Later, as we approached Elko by road, we found Norm standing at the corner ready to give instructions as to how to proceed into the airport. The grass airstrip at Elko is owned and operated by a local group of pilots, the Crowsnest Pilots Association. They say it's easy to find from the air, but not very easy by road — and that's the way they like it. Norm confirmed that. He gave Horst and Julien good instructions as to which road to take, but they went tearing off past the turnoff and showed up after everyone else. (Horst is German, Julien is French-Canadian, and Norm speaks only English, so we could only imagine how the translation must have gone.)

**May 29, Elko – Invermere** The briefing began promptly with Norm handing out the cookies. Mike reported good weather for the day and as the briefing progressed, I began drooling as I watched the lift developing. Alas, it wasn't my turn to fly as I had agreed earlier to crew for Uwe. As usual we had an excellent route briefing by Joe, Don, and Dave Baker. Launches began with Don taking to the air to do the daily lift search in the DG-400. Don landed and gave control to Bob Ayotte who reached the airport at Fairmont Hot Springs 22 km south of Invermere where further progress up the valley was cut off by rain. Julien flew with Ray in the twin Grob on his first cross-country and they too, after a bit of a struggle, managed to reach Fairmont. Dave Baker also made it, took another launch later, and got to Invermere.

The other chaps were not as fortunate and were all forced to land out due to deteriorating weather on route. Tony made it to Wasa and was joined by Dave Burgess (who had managed to get Norm to crew for him.) The field they had chosen was right by the highway, and Ursula was parked there with the trailer watching both scraping at 1000 feet for a while, so it made retrieving an easy task. Mike and Uwe reported landing further north so we carried on. We found Mike in a nice field by the highway at Skookumchuck, but Uwe was much harder to locate. With the help of the towplane, we found Uwe north of Premier Lake at the north end of the "honey fields". Again, all sailplanes had landed safely. Uwe and I were the last to reach Invermere and found everyone at the traditional first dining location — the Lakeside Inn. After the usual beer and hamburgers, we adjourned for the night.

**May 30, Invermere** Invermere at last! Folks, if you have never been here, you must eventually come for a soaring holiday — any holiday will do. The morning briefing was fairly lengthy as we concentrated on the routing portion to give newcomers to the valley advice on the location of fields between Inver-

mere and Golden to the north and Elko to the south. The weather was going to be good!

Joe took the first launch, quickly followed by others. I seem to recall both Don and Joe flying in the order of 400 km each. Norm declared a remote start at Nicholson bridge (8 km south of Golden) to attempt his Silver C distance. The distance from Invermere to Nicholson bridge and return is 206 km, so this was an interesting way of attempting a first cross-country. Nevertheless, Norm took his turnpoint photographs and returned to Invermere after having gained enough altitude and flight time to capture the other two legs of the Silver C. Knowing what Norm was attempting, those of us on the ground watched with amusement as he worked and sweated trying to get to the top of the peaks across from the airfield before getting away. I know that he will certainly appreciate this flight for some time to come. Well done, Norm. Tony flew a 400 km polygon and the rest of us had terrific "local" flights (between Fairmont to the south and Brisco 60 km to the north).

**Friday, May 31** Today's launches began with Don Hill in the DG-400 doing the sniffing for us. There was good weather forecast.

Mike declared a 500 km Diamond distance, but headed south to begin with and was scuppered in the attempt and was forced to land at Fairmont. He got another launch from there and then had a tremendous flight flying to Skookumchuck, across the valley to Mt. Nelson, over to the forestry bridge near Canal Flats (south of Invermere), and then headed north to Radium Hot Springs before landing back at Invermere at the end of the day.

Ray Maxwell called a 300 km Diamond goal, but was forced to change his plans as he, too, found poor lift to the south to begin with. He landed back at Invermere after almost seven hours to discover that although his pictures were good he had chosen the wrong turnpoint to the north! He missed the 300 km Gold distance by 13 km. All was not lost,

however, as he achieved the last two legs of his Silver C (distance and duration) and had a great flight. Also, despite having flown at Invermere on several occasions, it was the first time he had flown a single seater here.

Bob flew an undeclared 300 as did Joe. After Bob landed, Don took off at 5 pm and flew another 300 km in 3:30 hours! The day before he had mentioned to me that he was curious how the late afternoon thermals would work. Being a novice at this cross-country game, I am left shaking my head in wonder at the flights that are being achieved. I guess it's called experience.

The other notable flight of the day worthy of a few words was Tony's. He flew a mere 723 km in his RS-15! He declared what he thought was a 750 with a quick measure from the map (Invermere – Nicholson bridge – Elko – Golden airport – Invermere), but it turned out to be 723 km. The previous evening, he mentioned to Joe that he was thinking of doing a 500 and Joe said, "Why not go for a 750?" Tony said he wouldn't have considered it without that prompt. The saving factor for long flights in the valley is how late the thermals work on the slopes.

Tony launched at 11:30 and landed after a flight of 8:35 hours. It began with the cloudbase below ridge top for the early part of the flight and on the southern part of the route and required a lot of "rock polishing". Tony found this spectacular, but it was physically demanding and tiring from the extra concentration required, and it is slower than if a more direct course line can be followed above the ridgeline using stronger lift. Tony used all the day had offered, had made his longest flight and learned a lot about thermalling the mountains and where the lift is to be found on the rock faces. He decided that the next day he would change a turnpoint and go for another 750 — if nothing else for the aesthetics of seeing that number in his logbook.

**Saturday, June 1** The weather for the day was drying out and cloudbase was expected to be higher which would allow faster cruising well above the ridgeline. Cu started developing early and it looked possible to stay up at 10:30. This is somewhat unusual since the mountains here don't begin to work well until the sun comes around to the west to heat up the ridgeline. Launching began early today at 10:53 with Tony getting into the air only to recall that he hadn't turned on his barograph. He landed right away and waited anxiously for the towplane to return after launching Dave Baker for his declared 300 Diamond goal, but planned 770. Tony got away again at 11:22, a little sheepish, but determined to make his declared 770 also.

Launches continued with Don followed by Jay Poscente on his 300 km Diamond goal (Jay had arrived yesterday from Calgary with his Mini-Nimbus), Uwe and myself in the Grob 103 for our undeclared 300, Julien attempting a Silver C height gain and perhaps duration, Dave Burgess and finally Angus. I was pleased that Julien was able to make his height gain, as one of the objectives of the safari was to introduce a different type of soaring to some of the newer pilots. After Julien landed, Rohan flew the Grob 102 on a local



rarity, but it didn't spoil his day though. Even though this was an even longer flight of the two marathons, he reported feeling in better physical condition than the previous day. Perhaps this was due to being more familiar with the route, and being higher off the rocks most of the day.

The lift quit earlier and was almost blue by 6 pm — that was the failing of the day. At 6 pm Dave Baker and Tony were northbound on the 8500 foot back ridges abeam Invermere with over 200 km remaining and not much prospect of making it up to Nicholson bridge and back. It almost worked because Tony felt that if he could have remained on or above the ridgeline, the residual heating of the rock faces with assistance from a slight westerly wind would have allowed him to tiptoe along. Tony reports that the lift got weaker and further apart until he finally dropped below the rock faces and then the game ended for him. Perhaps the half hour lost in the morning would have made the difference.

Exactly 18 hours and 1474 km of mountain thermal soaring in two days was an achievement totally unexpected by Tony. He said, "It is always amazing what can be accomplished when you just decide to give it a try, when you prepare for it beforehand, and when there are a bunch of enthusiastic pilots around, all prodding and helping out."

The task Dave had arranged for himself was to fly not only the 300 km Diamond goal, but to then carry on further for a 770. He flew much the same route as Tony, but chose Elko as his southerly turnpoint and Donald Station as his most northerly turnpoint. Dave had an extra 1000 feet at the final turnpoint at Nicholson bridge, and that made the difference for him in getting back to Invermere. Dave's final glide back to Invermere left him with ample height for his circuit. After nine hours in the saddle, he had accomplished what he had set out to do, flown 771 km and completed the third leg of his Diamond badge. I understand this also broke the VSA record for the club's longest flight.

Today's flights were spectacular and over supper we made a quick count of the total distance flown by everyone — it amounted to approximately 3100 kilometres! The previous day's total distance was about 2300 kilometres.

**Sunday, June 2** Today saw the departure of six of our group. However, we were gratified by the arrival of other VSA friends, Ken Buchholz, Jim Watson and Heidi Myers. The weather only allowed three short flights so a number of us went sightseeing. Later, we all met

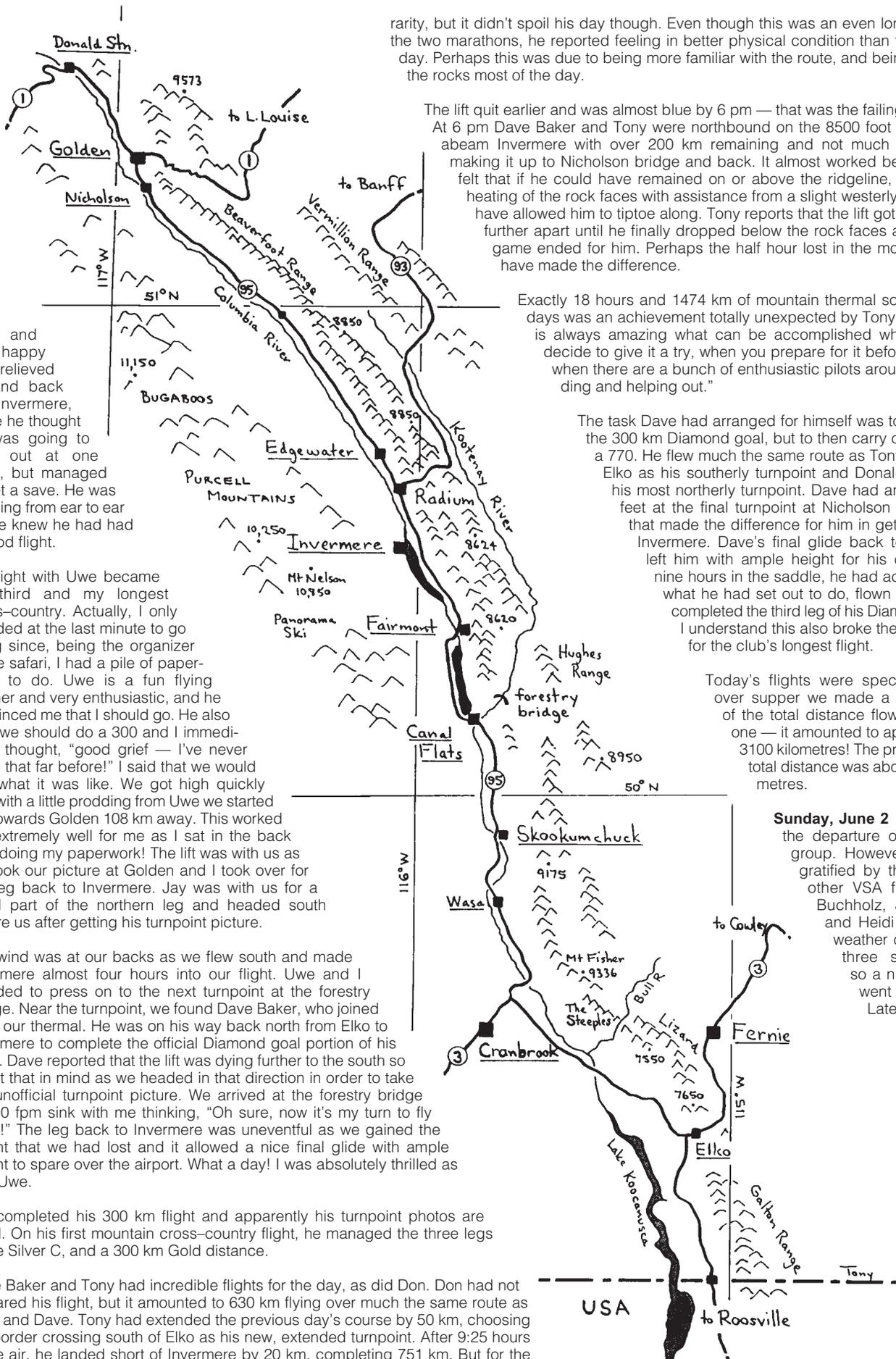
jaunt and was happy and relieved to land back at Invermere, since he thought he was going to land out at one point, but managed to get a save. He was grinning from ear to ear so we knew he had had a good flight.

My flight with Uwe became my third and my longest cross-country. Actually, I only decided at the last minute to go flying since, being the organizer of the safari, I had a pile of paperwork to do. Uwe is a fun flying partner and very enthusiastic, and he convinced me that I should go. He also said we should do a 300 and I immediately thought, "good grief — I've never gone that far before!" I said that we would see what it was like. We got high quickly and with a little prodding from Uwe we started out towards Golden 108 km away. This worked out extremely well for me as I sat in the back seat doing my paperwork! The lift was with us as we took our picture at Golden and I took over for the leg back to Invermere. Jay was with us for a good part of the northern leg and headed south before us after getting his turnpoint picture.

The wind was at our backs as we flew south and made Invermere almost four hours into our flight. Uwe and I decided to press on to the next turnpoint at the forestry bridge. Near the turnpoint, we found Dave Baker, who joined us in our thermal. He was on his way back north from Elko to Invermere to complete the official Diamond goal portion of his flight. Dave reported that the lift was dying further to the south so I kept that in mind as we headed in that direction in order to take our unofficial turnpoint picture. We arrived at the forestry bridge in 800 fpm sink with me thinking, "Oh sure, now it's my turn to fly back!" The leg back to Invermere was uneventful as we gained the height that we had lost and it allowed a nice final glide with ample height to spare over the airport. What a day! I was absolutely thrilled as was Uwe.

Jay completed his 300 km flight and apparently his turnpoint photos are good. On his first mountain cross-country flight, he managed the three legs of the Silver C, and a 300 km Gold distance.

Dave Baker and Tony had incredible flights for the day, as did Don. Don had not declared his flight, but it amounted to 630 km flying over much the same route as Tony and Dave. Tony had extended the previous day's course by 50 km, choosing the border crossing south of Elko as his new, extended turnpoint. After 9:25 hours in the air, he landed short of Invermere by 20 km, completing 751 km. But for the first time in twenty years of cross-country, Tony came across a very irate farmer, a



for a chicken barbecue at Chez MacSween. A wonderful time was had by all and it was certainly nice to take it easy after all the "gruelling" flying that had been accomplished.

**Monday, June 3** Our diminishing group was diminished further with the departure of Tony and Ursula. It was great having them along on the safari, and Tony's flights were marvellous and helped make the safari such a great success.

Norm Babin was given his first flight in a sailplane. Norm is the owner of Horizon Air and is the airport operator. He has always been most helpful and hospitable to all visiting glider pilots, and for that, a flight was the least we could do.

Uwe declared a 500 km Diamond distance, but due to the weather was forced to accept a 300 km distance for the second leg of his Gold C. He fought his way south against a fairly strong headwind and took his turnpoint picture at Elko just as the wind changed direction from the north. Fortunately, the upper winds remained essentially the same and he made it back to Invermere without too much difficulty. However, we could see the weather deteriorate to the north and felt that the 500 was out of Uwe's grasp. We found out more information about the farm field Tony had landed in the day before and, not knowing where Uwe was, cautioned him not to land out in a field, but perhaps at the airport at Radium. Uwe chose Radium. Watching us from the air, he gave the retrieve crew

directions on how to get to the airport. Uwe landed to our cheers and congratulations for flying a 300.

Joe Gegenbauer popped off another 300 km flight but modestly proclaimed it as being 299. Don Hill reckons he made 400 km for the day — just a day of fun flying for these chaps. The few flights of the day totalled 1100 km.

**Tuesday, June 4** The day consisted mainly of local flights, but a few cross-country runs were attempted. Bob launched early at 11:20 and managed to complete a 300. Dave Baker, in preparing for the upcoming contest in Ephrata, wanted to try flying with water in the wings for the first time. I think he chipped off a 300 for the day and learned some valuable information in the bargain. Horst declared a 300 km Gold distance, but with a fairly late start and the weather hampering things, he was short of his goal. He was not unhappy with this effort and reported it was good practice for his next attempt.

**June 5, Invermere – Golden** Today, we broke camp and started home on the northerly trek of the safari. We packed up the sailplanes and headed for Golden. The twin Grob was aerotowed to Golden with Jim Watson and Ken Buchholz aboard. They found a bit of lift at Golden, but, apart from being sunny, the lift was fairly flat.

**June 6-7, Golden – Cache Creek – Hope** The weather remained useless for soaring and cross-country and the forecast showed no

signs of improvement. We decided that the group should carry on to Cache Creek, rather than Salmon Arm as scheduled. I was disappointed that we didn't have the weather with us for these last two legs as they would have been fun and very challenging to fly. We are most fortunate in BC to have such diverse scenery to enjoy and to fly in. We discovered there were drag races on in Cache Creek — no motels free this weekend! The weather wasn't promising for the next day nor for Saturday. As we couldn't find out if anyone would be coming up to Cache Creek from VSA for the weekend as planned, the group felt it would be best to transport the equipment back to Hope. Of a total of some 24 people during various stages of the safari, six original members remained. With Norm and Paddy doing the final fly-by, they flew the towplane into Hope, with the rest of us not far behind towing the club gliders back to home base.

**Epilogue** The 1991 BC Soaring Safari was an unqualified success. I am grateful to all who came on this adventure and helped make it into a soaring holiday to be remembered for a long time. My biggest fear was that the weather would not cooperate and that the safari would be washed out as last year's trip to Cache Creek and Invermere had been. It did cooperate and a fabulous amount of flying was done — the pilots on the safari completed about 11,600 kilometres of flying.

Thanks go to everyone who worked so hard to organize and support this great event. •



Tony Burton

# BACK to BACK 7000s

## **Tony Burton** Cu Nim Gliding Club

On arriving at Invermere with the BC Soaring Safari group Wednesday evening May 29, the prospects for decent soaring weather were getting rosier and rosier. The previous four days on the road with the BC Soaring Safari featured quite unstable air which brought afternoon rain showers, though of diminishing extent and fierceness as the week moved on. On the first soaring day at Invermere a ridge was in over the Interior to dry things out, but there was still a chance of getting wet.

Everyone rigged and launched to see what the day offered. I flew up to the Nicholson bridge turnpoint first (103 km north). The bridge is a very convenient and well marked feature just 8 kilometres south of the Golden airport. It's close to the ridge also, so that little height is lost getting a picture. On the way south it was evident that showers were building on the mountains in the Fairmont area and blocking any soaring further south. Once back at Invermere I decided to do another O&R up the valley and repeated the flight for a total of 412 km. The soaring was all in thermals off the line of the ridges as there was almost no visible movement to the cloud shadows – 5 knots westerly at the most. The cloudbase was around 9500 feet, giving some soaring room above the ridgeline as their average height is around 8500–8800 feet msl.

That evening when everyone was telling gliding lies for the day, I mentioned to Joe Gegenbauer, the safari CFI, that I thought I would declare a 500 for the next day as the forecast had no rain in it. (The "house 500" is Invermere/Nicholson bridge/Elko Hwy 3 RR bridge/Invermere for 503.4 km.) Joe said, "why not go for a 750?" That set me back on my hind legs for a few seconds — then I thought well, why not, all that can happen is I run out of day and land out in the valley somewhere. So I started measuring things on the map and thought Invermere / Nicholson bridge / Elko / Golden airport / Invermere would do the job.

The next morning, 31 May, I was on the line at 1100 waiting for the raggedy little cumulus to look like they were real — it usually doesn't begin to work well on the ridges until the sun comes around and warms up the west slopes a little. But things were developing okay and Don Hill offered to launch in his DG-400 motor-glider and be the sniffer for me. He roared off just before 1130 and reported a steady 2 knots at 6000 feet (3100 agl) on the south face of the hilltop directly opposite the runway. Good — at 1137 I was off.

Cloudbase was below the peaks at 6500 to 7000 for most of the flight north, and initially very messy, but the lift was there even though a lot of ridge running was necessary. It took an hour and a half to make the turn. As I headed south again after 1300, the cloudbase began rising and looking decent as the slopes started warming up properly. It took only an hour to make it abeam Invermere once more at 1407.

The high ground curves a bit westward south of Invermere at Fairmont then the Kootenay River breaks the chain at Canal Flats and there is a ten kilometre eastward shift of the main ridge. On a high day one can glide straight over, but it's all forest and clearcut underneath for the unlucky. Instead, I slowed down and picked my way south over some smaller mid-gap hills closer to safety, and finally got back onto the ridge 15 to 20 kilometres to the southeast about 1000 feet below the top. No worry though, as there was a lot of rock face to work with and every few miles a good thermal would be concentrated at a point that was well oriented to the sun and had an extra long talus slope downhill to soak up the heat. I had to crank around in tight 55 knot figure-eights a few times until there was clearance for full turns.

The main ridge goes straight south about 50 kilometres from Canal Flats before turning southeast again. The view outside was spectacular — still a lot of snow on top. The largest rock faces are Mt Fisher at 9300 opposite Fort Steele and the Steeples at 9000 a bit further south. Cloudbase was a bit below 9000

at this point, and running along a few wing-spans out from the rock and under the cloud was magnificent.

It was around here that a first in my 24 years of gliding occurred, I was able to take a pee in the cockpit! Toilet trained at last — oh, what a relief it is — though halfway through the ritual I thought that perhaps I should be flying a bit further away from the mountainside.

At the south end of the Steeples the ridge again turns a corner eastwards at a small gap carrying the Bull River. I was surprised to see the cloudbase drop abruptly at this point a thousand feet (I have no idea why, though perhaps it's because the ridgeline is 1500 feet lower), and for a while I was gliding beside the cumulus.

Elko was a further 30 km down from Bull River and I topped up just to the north before going in for the picture at 1602 hours. 251 km from Nicholson in 2:56 for 85.6 km/h. Half done in a little under four and a half hours.

Retracing the flight up around the Steeples again, the cloudbase on the ridgetops was still rising and a thousand feet higher at 10,000. This allowed for more direct peak to peak soaring on the high ground and sped things up a little as well as lowering the intense concentration required for rock polishing. It was here also that the faint blue end of the mountain chain south of Golden became visible 190 km away, and I thought, my, my, what a long way I still have to go!

The Canal Flats gap got crossed a little easier and I finally saw some company from the sailplanes flying locally. Abeam Invermere once more at 1811 and 222 km left to go, the cloudbase was now 11,000 feet. Even though the cus were thinning out, they remained well-formed and were giving 5 knots. One of the things I was learning on this trip was that there was no point to going off the ridge for a cu even though the ridge was blue for a space. First because there was weak lift or zero sink along extended patches of the ridgeline, and second because there were stronger thermals at intervals which were blue because the air off the rock faces was so dry.

The last mountain before Golden is called Mount Seven because of the shape of a fea-

ture on it (I never noticed a seven anywhere). Up to the top and a 10 km glide out to the airport for a picture at 1901. 258.4 km in 2:57 hours for 87.6 km/h. Gliding back to Seven, I saw the hang gliding launch point lower down a bit to the north. Seven has a guaranteed thermal — as I curled into its bowl below the top it was there, and a hand of turns had me above it and on my way again.

The final run back was mostly dolphining along the ridge at 55 to 60 knots to maintain height and then a final glide to the airport from north of Edgewater, landing at 2012 after 8:35 hours of soaring. It felt wonderful to climb out of the cockpit after the longest flight of my career over such remarkable countryside. I was beat and noticed for the first time that my jaw muscles were aching and my neck was stiff — I hadn't realized how much I had been tensing up during the trip.

After the handshakes and congratulations were done, Joe told me he didn't think I had gone 750 km. Sure enough, a more careful check of the distances showed I had gone only about 720 (a later great circle calculation made it 722.9)! I was sort of ticked off, as I had wanted to get that nice round 750, even if the task didn't fit any badge or record categories.

Well, the forecast for the next day put the Columbia Valley deeper under the ridge of high pressure with probable higher cloud-bases, so let's do it right this time.

The new task would extend my Elko turnpoint down to the Roosevelt border crossing and use Nicholson bridge twice — guaranteed distance, 771.2 kilometres. Dave Baker, flying an ASW-20CL with tips, coincidentally also chose a 771, but with the Golden turnpoint extended northwards 25 km to Donald Station (civilization and its landout fields disappears for glider pilots north of there. Everyone else with a sailplane also seemed to be planning for badge flights of one sort or another.

I was ready again ASAP the next morning. At 1000 I was chafing at the bit because the cus were getting consistent already — remarkably early for Invermere — and all the tow-pilots were still eating breakfast in town! Arrrrghh. At 1050 I got my tow into the same two knoter as the previous morning, did two turns, and realized the barograph was off. Arrrrghh again! I peeled off and dove for the runway and beat the towplane back. Dave launched, and I got off at 1121. I only saw him once for the rest of the day.

I really had difficulty getting above ridgetop for a while, even though cloudbase was up and I should have had fewer problems than the day before. It took 18 minutes longer to get up to Nicholson today (at 1309), which was a bit depressing, and I thought that I better get me into gear. Back at Invermere again an hour later. A look at a map will show you that the mountain range is well formed going northwards, and becomes a single ridge half way up at Spillimasheen. This is the only way to go in the morning or to finish off in the evening, times when soaring conditions are less certain.

Cloudbases were indeed higher and I was able to spend much more time over the high

ground. The cloud movement indicated that there was about a 10 knot westerly, not half enough for consistent ridge lift, but it was helping out the thermals. A quicker trip across the Canal Flats gap (still taking the "chicken route"), and a no sweat run southwards got me over back Elko at 1546 and to the border Customs buildings at 1613 (282.5 km in 3:04 hours for 92.1 km/h). Halfway done, seven minutes later than yesterday. When I was returning, about 10 km south of Elko, Dave radioed he was making his turn at Elko, and it now became my mission to try and catch up to him.

Another thing I learned today was that the thermals on top were always slightly east of the ridgetop. That seems obvious in a light westerly, but I always tended to turn away to the west to stay away from the lee of the

...It was imperative  
now to stay on the  
high back ridge  
and use everything  
available...

ridge, and then promptly fell out. When I changed my tactics to turn east first, I usually stayed centred — but this is still not good policy, of course, if the wind is strong or if one is close to the ridge top.

By the time I was up to Canal Flats a little after 1700 wisps were still forming at 11,000 but it was clear from the thinning clouds and radio reports that the day was dying early. Abeam Invermere once more at 1811 and 206 km to go it was time to shift into survival mode. Dave had flown off the high ground to take a picture of Invermere airport and nail down his Diamond goal leg and was struggling to regain height. It was imperative now to stay on the high back ridge and use everything available. Dave said he was prepared to land when I reported in that I was at 11,000 and proceeding north, and was then goaded on to see what more could be done.

As long as one could stay above (or at least not much below) ridgetop, it was possible to tiptoe along, dolphining near best L/D, and lose height only slowly. Then every 15 km or so, a little concentrated thermal would give 3 to 4 knots and another 1000 feet could be banked. I don't think I've ever flown as carefully or as miserly. Dave was always a little ahead and the performance of the ASW-20 was really counting now, but the prospects were getting thinner by the minute. We both called our crews to hook up and head north. Dave made the turn at Nicholson bridge and as I was turning the corner around Seven Mountain to get a look at it too, he came in about 800 feet over me and trickled off south. I made the bridge at 1938 and got back onto the rocks with only a little to spare. Then a few more kilometres along I was saved by a hawk — the only one I had seen all day. A couple of knots all the way around above a ledge half way down the mountain was good for 1500 feet which got me up to creeping-along height again.

I couldn't get above the ridge anymore, and was cruising along the rock as close as I dared and milking every last puff coming up. Over on the west side of the valley, a brand new forest fire broke out, with flames and smoke expanding up the slope — why couldn't it be over here about now? Slowly the landmarks went by. We were able to hold the crews closer to Invermere one town by one. Finally Dave announced a final glide and I only wished I could say the same.

About 40 kilometres north of Invermere I dropped down to the treed level of the slopes and the game was up. Now I just cruised south on a final glide looking for landable fields along the way. Where was that late evening valley lift people talk about? Approaching Edgewater from the north, I told Ursula where I was and she said that's where I am too. As soon as I looked down to the highway, there she was going past a few hundred feet below. I told her to look out the pickup's right window and there I was, and she soon found a place to turn around. Just south of the village I saw a relatively flat dirt field and landed — 20 kilometres short. It was 2045 and I had flown 751 kilometres in 9:25 hours.

Now comes the interesting part of the story — like the Chinese curse, "May you live in interesting times". Another first for me — up stormed the angriest and most belligerent farmer I have ever seen! He was in my face; and really irate over trespass, the sanctity of private property, crop damage, the valley going to hell with tourists and all. My "toy" wasn't moving until I paid him \$200 ... It was my bad luck to land on the property of a man who was notorious in the area, who had had incidents with hang glider pilots (he punched out the second one to land there) and whose house had been entered by non-locals (unfortunately for them he was in the basement at the time and chased them off with a hand gun, shooting out their rear tires as they fled). I heard these tales two days later from people in Invermere I was talking to on other matters — but when I mentioned that I had landed south of Edgewater the other day, they said, "you didn't land in Smith's field, did you?"...

All I could do was say sir at least twice in each sentence, point out that I had liability insurance for such an unfortunate incident, and agree wholeheartedly that the RCMP should be called immediately to sort out the details. Meanwhile, Ursula had stopped on the highway about 200 metres away at the top of the field and was lying low after she began to suspect what all the arm-waving was about.

In due course the law arrived and she took down all my particulars and then cooled off farmer Smith a little. I agreed to get rid of my toy by carrying the bits out of the new alfalfa crop, and Ursula headed back to the airfield to recruit a couple more bodies while I stripped tape and moved the small stuff up to the fence. The whole episode didn't depress me a bit — I was just sorry he wasn't in the mood to hear about great achievements in powerless flight and the joy of soaring!

It was an amazing two days and 18 hours of flying for me. We got back to camp at a quarter to midnight and went down to the Lakeside Inn for two of their finest hamburgers. •

# 5 HOURS OVER ARTHUR

## David Ellis

York Soaring Association

IT MAY SEEM STRANGE to paraphrase the title of an old Second World War movie as the title of a story on a Silver C duration flight, but I think it's appropriate. In the movie about the bombing of Tokyo, only a fraction of the mission time was spent over Tokyo, the majority was spent getting there and getting away.

I started gliding in March of 1978 with the Adelaide University Gliding Club in South Australia and went solo soon afterwards. In that first year I did more flights than I have achieved in any year since. Of course, at a winch launching operation, a lot of these flights were of short duration — but at \$1.00 a launch I didn't care as long as I got into the air.

By the end of 1978 I felt that it was time to go after the Silver C badge and on December 31 — remember that is summer down there — I did a 65 km flight in the club's Schneider Arrow. (The Arrow is an Australian design, similar to a Ka6 but with a 13 metre wing. A nice little aircraft to fly but not so nice to trailer with its one piece wing.) This flight qualified for the distance and height gain requirements. The day was great and I remember thinking that I had wasted a lot of the day only going 65 km. I needed only a couple of thermals to reach my goal and arrived there at about 5000 feet. While inspecting below for the best pad-dock to land in I found myself in a thermal that I could not resist taking to 9000 feet. I could have done the five hours (or rather I am sure it would have been possible) on the same flight except someone else wanted the glider and I had to land. What a great first year in gliding!

I kept the barograph trace, thinking that it would only be a short time before I had the duration completed and I could send everything in at once — the tidiest way of doing it. As it turned out, I never did achieve the five hours before I left Australia. One or two attempts were made, none successful.

One attempt stands out. The Adelaide University club's field is located in the South Australian mid-north with a 250 metre high ridge next to the field. The site was chosen specifically by the club's founder to provide soaring during the non-summer months when the club did the bulk of its training. Unfortunately the

ridge is only about 10 km long and five hours of flying requires a lot of laps up and down the ridge and tends to get monotonous, even with the diversion of another glider and the occasional wedge-tailed eagle to watch. I was sitting on the ridge for three hours in winter getting rather cold and flying cross-legged until the pressure was too great and I landed. After this flight I vowed that I wouldn't do my five hours this way. As it turned out the right combination of weather and available time did not coincide before I left Australia in 1981.

I didn't come to Canada for the soaring weather, so I suppose that my wife must take most of the credit for getting me here. The first couple of years here I took a break from gliding. The weather did not impress me and I wanted to see a day in summer that did not look hazy. The soaring bug eventually bit again late in 1982 and I started flying in the next spring. It soon became apparent that the way to make the best use of my available time (more limited now that I was married) was to own a glider.

In the middle of 1985 I bought a partially completed Monerai kit. I had thought about building a glider from about the time that I started gliding in Australia. I did some design work on a glider as part of my engineering degree, and while with the university club we looked at the Monerai as a possible club project. One member purchased a set of plans and I had a good look over them. The small size and light weight appealed to me. (For the first year we rigged and derigged the Arrow and Bocian two-seater daily until we built a large enough hangar). Also the performance of the Monerai seemed reasonable.

Talk to any first-time builder and they will tell you that building a glider takes longer than you expect — I estimated that it would take me one year. Well, two years after purchase, the Monerai was test flown. I must say it is a unique feeling to test fly an aircraft of your own creation — a combination of excitement, concern and concentration, perhaps similar to converting to a new single seater except the feelings are magnified many times.

Next, my thoughts turned to completing my Silver C badge in the Monerai, and that brings

us to the flight when I finally did the five hours, only thirteen years after going solo. It was done on the Saturday following the best week of soaring weather in southwestern Ontario in quite a while — of course I had to work through the best days but the weather hung around just long enough.

The convection did not start as early as it had done and I had to wait until almost one o'clock to get off the ground. That meant staying up until after six which did not seem too promising the way the sky looked. Cu were developing north of the field but were not well formed and most of the sky was blue, quite unlike the previous five days. But, that morning I had told my wife that today was the day so I had to give it a go (this was not the first time I had made such a statement).

The next four and a half hours went by rather slowly, spending most of the time on my own even though I knew that there were plenty of other gliders in the area — it never ceases to amaze me how they can disappear like that. With half an hour to go I was at 2500 feet, the thermal was disintegrating, the sky was looking decidedly blue, and thoughts of missing out by minutes were creeping into my head. To miss out by an hour or so because the conditions died would have been disappointing, but to miss out by minutes would have been intolerable.

I just needed one more thermal.

I hung on as long as possible then reluctantly headed off towards the airfield. What a relief to blunder into an unmarked thermal in the middle of nowhere. A 2-33 joined me and we climbed together in the smooth late afternoon thermal. Twenty minutes later I spotted a 1-23 circling in another straggler of a thermal and joined him to add some "insurance" time. I had it in the bag.

It's a good feeling to have finally achieved this goal after all these years. It is similar to the feeling after my first solo flight and after the first flight of the Monerai. Now all I have to do is to re-do the distance and altitude requirements of the Silver C. And this time I will claim them.

Hope it doesn't take another thirteen years! •

# THERMALING IN THE BLUE

How can thermals be exploited on cloudless days? The subject is tackled to help you capitalize on these elusive conditions.

Tom Bradbury  
from *Sailplane & Gliding*

IN SOME YEARS, especially when spring and early summer have been very dry, there are many days when the skies remain blue. The lack of cumulus clouds often disheartens the early cross-country pilot. Most people like some cloud to show where there may be lift. What follows is an explanation of why some days remain cloudless and where one may find lift out in the blue.

## The evolution of blue days

Figure 1 shows a cross section of weather following the passage of a cold front (shown moving off to the right). There is often a rather narrow clear zone just behind the cold front caused by air subsiding and drying out the cloud. Then the deep cold air moves in and cumuli build up to give showers. If a region of high pressure follows, the air aloft starts subsiding. As it sinks it warms and forms an inversion which limits the top of convection. At the same time the arrival of drier air raises the condensation level so that the base of cumulus becomes higher.

There may be a stage, before the air has dried out sufficiently, when the cu spreads out under the inversion to form an almost total cover of cloud. If the high pressure lasts long enough the subsidence inversion descends below the condensation level. Then thermals are prevented from rising high enough to form cloud and blue days arrive.

If the subsidence continues strongly the inversion may sink so low that the convective layer becomes too shallow for proper thermals to develop... even over strong thermal sources like towns. When the inversion sinks very low the sunshine has only a shallow layer to warm up. One day of strong sunshine almost destroys the inversion so that on the next day very little extra heat is needed to break it. This is shown in the diagram by the top of the convective layer shooting up several thousand feet.

At the extreme left hand of the diagram there is a little intrusion of cold air. An example of this occurred at a contest on August 4, 1990

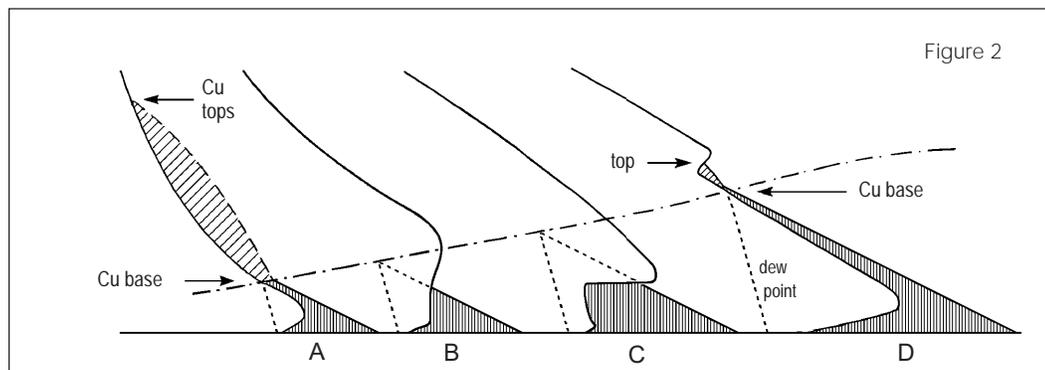
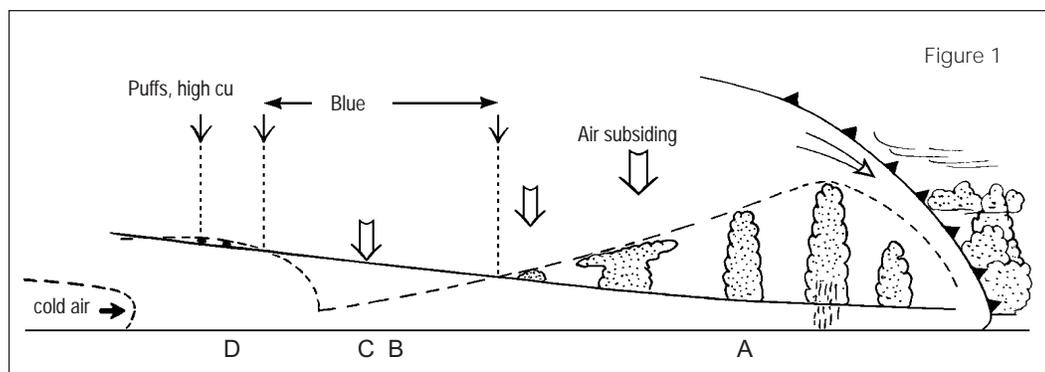
when northwesterly winds brought undercutting cold air. This ruined the day for the Open class competitors; none got through beneath the newly formed very low inversion.

## Changes in the temperatures aloft

Figure 2 shows how the temperature profiles change as a high moves in. The letters along the base of Figure 1 are repeated in Figure 2 to show the approximate positions of the soundings.

"A" shows the traditional cumulus sounding at dawn. The vertical hatching shows how the heating warms up the lower air. The straight line is a dry adiabat (the rate at which a blue thermal cools as it rises). The diagonal hatching represents the energy supplied by the condensation within a cumulus cloud whose base and top are marked. The almost vertical dotted line is the dew point. Where dew point meets dry adiabat is the condensation level.

"B" shows the first blue day when subsidence has warmed up the air so much that thermals no longer rise to the condensation level.



"C" shows a variant where the inversion is particularly strong. This tends to severely inhibit thermals, especially when the lid is only about 2000 feet. Notice that the shaded area representing the heating almost reaches the top of this inversion by late afternoon. Next day far less heating is needed to break the inversion and let thermals rise much higher.

## The sudden breakthrough

"D" shows how the lowest layer is easily warmed up during the following morning so that by about midday the inversion has been broken and thermals can shoot up. Sometimes thermals go so high that puffs of cu appear which are apt to disappear again soon. Such puffs are most deceptive to a ground observer. Even experienced pilots can be fooled into thinking they are only scraps of low cumulus. One day last May several Nympsfield cross-country pilots were sitting about watching these feeble-looking puffs and saying it was too early to launch. Then someone spotted a K13 from Aston Down fly overhead; it was a mere

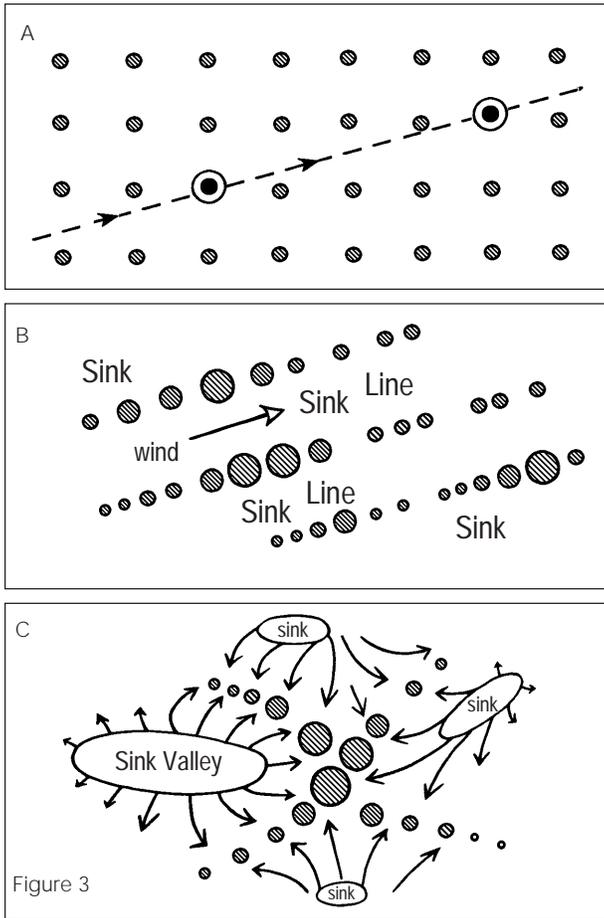


Figure 3

speck in the sky and must have been at great height. After the subsequent scramble for a launch the first off reported the cloudbase was 6400 feet above the site. A similar puff appeared over Lasham in August while the competition director was debating when to launch his huge fleet of sailplanes. At that moment Alfa Lima called "six knots with cloud-base 8000 feet near Hungerford".

The feature of such days is that once the temperatures have passed the critical value the conditions change from totally unsoarable to absolutely booming in a very short time. This is in contrast to most days when lift slowly improves and only becomes good two or three hours after thermals have started.

### Finding lift in the blue

It used to be conventional wisdom that you were bound to find a thermal if you flew straight on track, just as you were sure to bump into a tree walking blind through a wood. Figure 3A illustrates this theory; the "trees" are tidily set out as in an orchard, and clearly there is a good chance of bumping into one or two as you fly along the dotted line. Unfortunately the faith and blind hope principle can let you down on many days.

### Streeting

Figure 3B shows how thermals may be distributed when there is a moderate breeze and the lift has formed into invisible streets. Now if you fly in the same direction as "A" there will either be an almost constant line of thermals, some bigger than others, or a permanent line of sink. If the sink goes on for a long time the track is probably almost parallel to one of the sink lines. Pundits are quick to recognize this

but lesser mortals may press on through the sink believing that they must be nearing a good thermal. One pilot told me he left a thermal at 6000 feet and found sink all the way down until he landed.

It is worth noting that true thermal streets do not originate from specific hot spots like urban areas; they are a feature of the atmosphere that can develop equally well over the oceans. Towns do send off a train of thermals which move away downwind. These behave like a short-lived street but the effect seldom extends very far.

### Thermal clumps

Figure 3C shows another type of distribution which can develop on an almost calm day after thermals have been going for a couple of hours. This is the "thermal clump", an irregular area where many thermals seem to have gathered together. When you reach a thermal clump only a portion of the thermals will be active at any one time. Approaching it one finds the air getting more lively with the vario giving encouraging squeaks well before one reaches the

strong thermals. Leaving such a clump one keeps on running through quite acceptable thermals. Bouncing through these, one can maintain height for some distance before the air goes dead.

### Sink valleys

Thermal clumps seem to occur not far from valleys of sink. Unlike the better known streets of sink, these sink valleys are not aligned along any particular direction. They seem to be part of a larger circulation with outflows from areas of sink converging to boost thermals where they meet. On the ground one experiences light variable winds which unexpectedly start to blow briskly from the sink valley towards the unseen clump of thermals. Bonfires and chimney smoke occasionally reveal this low level convergence but in hot summers bonfires are rare and all the factory boilers seem to be out. It is extremely distressing to fly through a sink valley on a blue day. There is often nothing to show where it is or how it is aligned. Sink valleys seem to extend for several miles. Variometers indicate long periods of 6 to 8 knots of down, and flight directors scream, "Faster ... Faster ...!" as you approach VNE.

### Variations of surface

Thermals seem to be more

common where there is a strong contrast in the surface so that one area quickly becomes hot while an adjacent region is slow to warm up. For example during the heat of the day wide areas of ripe grain with cooler woods nearby seem to be a fruitful source of thermals. Although woods are slower to warm up they do retain their warmth at the end of the day. Then, towards evening, one may find weak lift coming up from wooded areas. This lift may in part be due to the extra moisture. Trees transpire a surprising amount of water vapour during a sunny day, and the addition of water vapour to air slightly reduces its density, making thermals possible when temperatures are a little lower.

### Lift over towns and airfields

Towns and large concrete covered airfields are the most obvious places to look for lift. They become hotter than the surrounding countryside and so provide a steady source of thermals. However, they are not 100% reliable. One might suppose that the larger the town, the better the chance of finding a thermal; oddly enough this doesn't seem to be true. Some small to middling towns appear to work better than the really big ones. One can waste a long time searching over a big town. Although they rarely fail completely, the best thermals are sometimes right at the edge, or in one distant corner.

Figure 4A shows the text book example of a nice thermal right over the middle of the town. Figure 4B shows a more common variation. One first flies through heavy sink, then the expected thermal is encountered and all seems well. After heading off on track a better thermal comes up from the high ground.

Figure 4C is the nightmare situation. The usual sink starts as you approach the town but you are just too late. The only thermal left a couple of minutes earlier and the next one is not due for ten minutes. All that remains is the wake turbulence. Spending too long in this leaves insufficient height to reach the hills beyond which still have good lift.

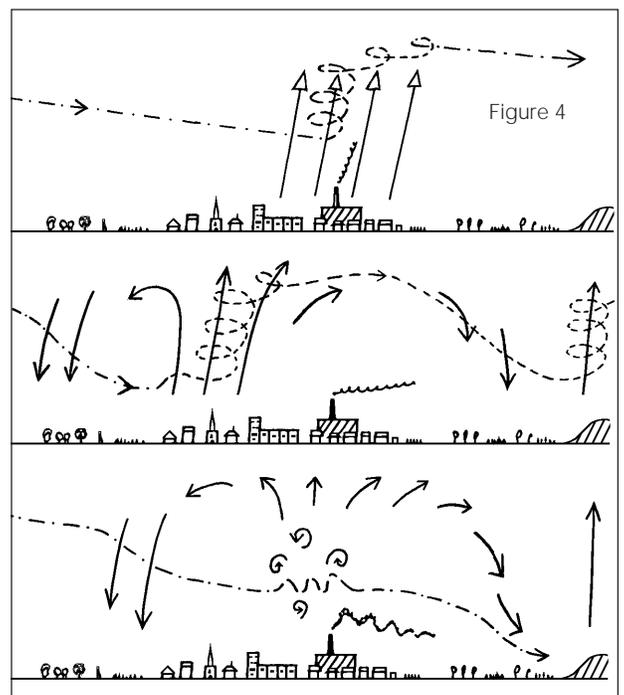
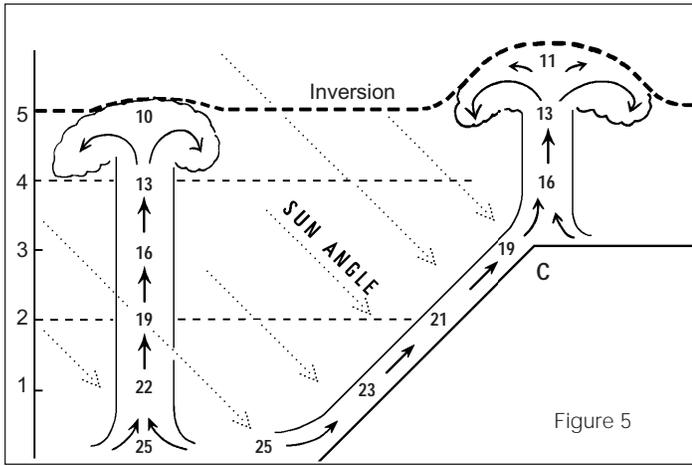


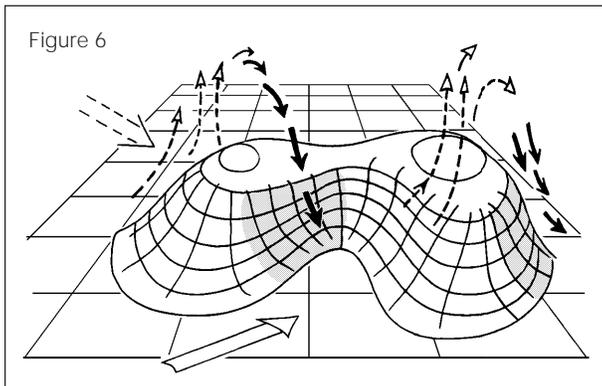
Figure 4



**“I will lift up mine eyes unto the hills from whence cometh my help”**

The author of Psalm 121 spoke these words centuries ago, but they certainly seem true for soaring pilots today. Hills are usually good thermal sources for two reasons. First they are usually drier than the valleys so less of the sun’s heat is wasted evaporating moisture; secondly those parts which slope towards the sun get more intense heating. In middle and high latitudes a sunny slope may get at least 30% more energy from the sun than level ground. Figure 5 shows some of the advantages of a hill. The left hand thermal rises from the plains, cooling at 3°C/1000 feet and coming to a halt at 5000 feet where it meets an inversion. The air on the right rises up a sunny slope and gathers extra heat from the hill side as it goes. It doesn’t start cooling at the 3° rate till it breaks away at the hill top. Over a modest hill this only adds a little extra power to the thermal but among mountains it can be a significant extra boost. Among high mountains such as the Alps thermals are almost entirely controlled by the alignment of slopes and ridges.

A thermal off a flat plain takes a limited amount of heat up and then activity ceases until that patch of ground warms up again. Over a

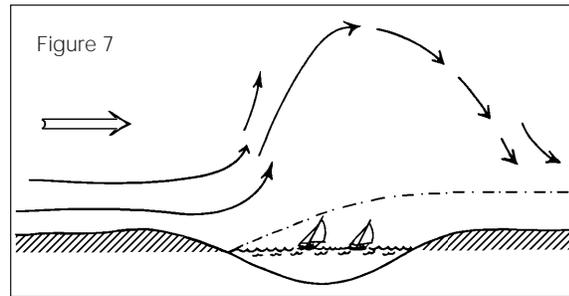


sunny slope the thermal draws in air from several sides to produce much longer lasting lift. Even when there is a really solid inversion thermals over the hills tend to push up through to give extra height. If the inversion is weak the hills may send thermals thousands of feet higher than over the plains. In really bad years, when excessive rain has turned the low ground into a chain of water meadows, thermals are largely confined to the hills; soggy valleys are just traps for small span gliders.

Even small, isolated hills which barely reach 800 feet above the plain seem to attract warm air from the surroundings and channel it upwards as frequent surges of lift. Figure 6 shows an attempt at a 3D sketch of a pair of hills with thermals coming off the sunny sides and sink going down over the shaded slopes.

**Avoiding sink**

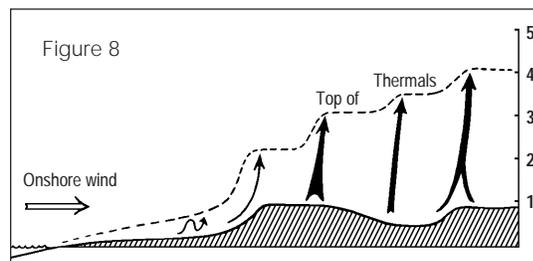
One generally has to accept areas of sink as a normal hazard like bunkers on a golf course but there are some obvious areas to avoid. The shady side of a large hill, especially if this is also the downwind side, is likely to have sink. The region downwind of large lakes is (not surprisingly) a poor area for thermals and may become a zone of steady sink. Figure 7 shows the wind blowing across a



lake with either no thermals or a region of sink for some distance to leeward. Rather surprisingly one may find thermals breaking away very close to the upwind side of a large lake. This is an example of a thermal developing where there is a big contrast of surfaces...

**Wave effects**

There is often a vertical wind shear at and above the inversion. If the winds increase with height above the inversion there may be waves which interfere with thermals below. On one competition day an easterly wind was blowing across the Cotswolds. One non-competing pilot reported wave there to about 6000 feet. Competitors flying near the western slopes of the Cotswolds found that thermals were absent or unworkable just to the lee of the Cotswolds edge but a few miles westward over



the Severn valley was a line of regular thermals more or less parallel to the hills. Similar effects can occur to the lee of any line of hills. This effect can be baffling if one expects lines of sink to be due to streeting along the wind direction. Waves tend to produce lines of thermals and sink across the wind.

**Windward coasts**

It is well known that when there is a steady wind off a cool sea the air has to travel many miles across the hot land before the sun’s heat sets off any thermals. Figure 8 illustrates how the top of thermals rise as the air moves inland. The example is taken from the southern Cotswolds when there is a WSW wind coming in off the Bristol Channel.

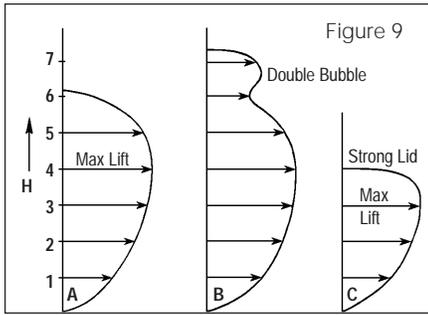
The diagram shows no useable thermals until the air reaches the western edge of the Cotswolds. There the slopes set off quite strong but sadly short-lived thermals which die out, sometimes before reaching 1500 feet asl. A few miles further inland the thermals may extend another thousand feet higher. With such winds there is an enormous difference between Nympsfield and Aston Down. At Nympsfield it may be hard to stay up directly over the airfield but going downwind takes one into far better thermals within 10 km. The barograph trace of a pilot returning to Nympsfield from the east looked rather like a flight of stairs. The top of each successive climb was stepped down several hundred feet and the last was barely high enough for the final glide.

**Lift in blue thermals**

Some thermals, usually those which are set off by the meeting of two opposing outflows, seem to leap off the ground as if a spring had been released. Most thermals start off slowly and gather speed as they rise. This is an excellent reason for keeping high; more time and perspiration can be lost trying to improve on a 1/2 knot thermal at 500 feet than is wasted by topping up with a few turns in mere 3 knots higher up.

On average the higher the thermal goes the stronger is the lift. Figure 9 illustrates the distribution of lift in a blue thermal. (The omission of actual figures for lift is deliberate.) “A” shows a thermal rising into a stable layer with no marked inversion aloft. The lift builds up to a peak which may be about 2/3 the way to the top, and then decreases as the thermal nears the stable layer. There is often a considerable depth of air where the lift does not alter very much. As one nears the top the rate of climb dwindles to an unacceptable value and most pilots set off on track.

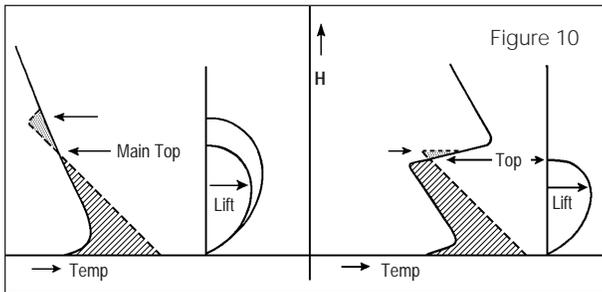
“B” represents what a timid pilot may occasionally encounter. While hanging about wondering if an extra few hundred feet may be squeezed out of the dwindling thermal a second bubble comes shooting up along the path of the original thermal and suddenly there is more height to be gained. Just occasionally such timid behaviour pays off; the double bubble carries one up above the haze layer and gives a few miles of totally smooth glide. Then the aircraft sinks back into



the top of the thermic layer where the remains of many defunct thermals still churn about creating useless turbulence.

"C" shows what happens when there is a really solid inversion. The lift suddenly shuts off dropping from 4 knots to nothing within a single turn. There is no point in hanging about hoping for a second bubble to take one higher. Second and third bubbles come to a halt at the same level.

Figure 10 shows the kind of temperature profiles which produce the difference. In the left hand diagram there is just a slightly stable layer aloft and the thermal slows down gradu-



ally; some stop where the dry adiabat meets the temperature profile while others, especially the "double bubble" type, can push some way into the stable layer before dying out. A rough indication of the lift is shown alongside. The right hand diagram shows a very strong inversion with the temperature rising several degrees over 100 feet. Thermals may bump

into such an inversion with lots of momentum but they come to a halt very quickly. All thermals, weak or strong, tend to stop at much the same level.

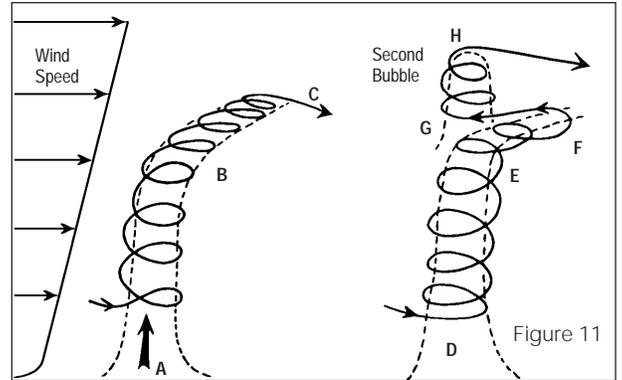
### Working the double-bubble thermals

Figure 11 shows what one may find when there is a slight wind. The thermal starting from "A" rises almost vertically (in spite of the wind) until it loses lift. Then it begins to tilt over with the wind. One doesn't always notice this since it is not necessary to shift circles to keep in the lift. However, at level "B" the lift is clearly fading away and starts to tilt and by "F" practically all pilots would have left. However, the ultra-timid widens the circles more in hope than expectation and runs into the second bubble (G-H). This has come up along the path of the original but is still strong enough to resist wind tilt. Very cautious pilots usually make snail like progress, or so I always thought. However, there seem to be some pundits with the ability to feel that the old thermal is not quite done for. They are much quicker to spot the effect of windshear, know where to find the next bubble and use the extra height to whizz round triangles without losing any time.

The thermal starting at "D" behaves like its predecessor. At "E" it weakens and starts to tilt and by "F" practically all pilots would have left. However, the ultra-timid widens the circles more in hope than expectation and runs into the second bubble (G-H). This has come up along the path of the original but is still strong enough to resist wind tilt. Very cautious pilots usually make snail like progress, or so I always thought. However, there seem to be some pundits with the ability to feel that the old thermal is not quite done for. They are much quicker to spot the effect of windshear, know where to find the next bubble and use the extra height to whizz round triangles without losing any time.

from the ground — the sky becomes faintly mottled where thermals have concentrated pollution under the inversion.

Seen from the air the tops of thermals often produce haze caps; these are valuable guides to lift, especially when the thermals are part of a clump. If the lift under one cap has ended there is still a good chance of finding a new



thermal nearby. These little domes of haze show up best when flying into sun. Particularly strong thermals such as the "double bubble" can put a haze cap several hundred feet above the normal haze top; from alongside you can see blue sky between this high cap and the main haze layer.

Very strong inversions are often marked by a sharply defined haze top. Stable layers without marked inversions also have haze tops but the boundary between clear air aloft and haze below is not so well defined. If you use a powered aircraft to make a morning temperature sounding you may find the haze thins out gradually and appears to consist of several layers. Occasionally yesterday's hot hazy air is undercut by today's much cooler air. This not only produces a new and much lower inversion but also raises the old haze layer well above the ground. Then the low level visibility becomes good but the blue sky still looks hazy. The soaring is apt to be poor as there is not enough room for decent thermals under the new inversion.

### Reading the haze

Although one sometimes finds exceptional visibility, the majority of blue days are also hazy. Flying from hazy into very clear visibility may also mean flying from strong thermals into weak ones. A little haze can be useful. If you use Polaroid or a similar type of sunglasses, the beginning of blue thermals may be seen

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# DOING THE FINAL GLIDE

## Flying techniques and using the calculator

**Tony Burton**

Cu Nim Gliding Club

GETTING HOME ON A CROSS-COUNTRY can present a world of uncertainty — I know — my very first 300 km attempt failed because I didn't believe I could glide straight home to an airport I couldn't see yet, and I landed out 15 km short after going off track for a last evening thermal that wasn't there.

... All for the want of a final glide calculator.

In the last issue I presented the means to construct a calculator, so now that you have it assembled I can give you some tips on the information it can give you. The calculator should be thought of as a part of your cockpit instrumentation as much as your vario and ASI, and in fact requires information from them to be used properly on the final glide. In particular, you require a speed-to-fly ring on the vario.

The calculator provides information which is true regardless of the glider you are flying, such as the glide slope to a given point from your location and height, and it can tell you things which are specific to your glider such as the speed you can maintain on that glide slope. First of course, to get an answer to a problem you have to plug in the information you have. It will be of two types, that which you know for sure such as your location and height, and that which you are guessing, like the wind speed and direction.

### THE GLIDE SLOPE EQUATION

The essence of the calculator is to relate the three variables of the glide slope equation, altitude, distance, and glide slope — knowing two, it will tell you the third:

$$\begin{aligned} \text{Glide slope} &= \text{distance} / \text{height} \\ \text{Distance} &= \text{glide slope} \times \text{height} \\ \text{Height} &= \text{distance} / \text{glide slope} \end{aligned}$$

The glide slope equation describes the present actual geometric relationship between you in the glider and some point on the ground (or above it) — it says nothing about the possibility of being able to reach that point. The glide slope equation is built in to both sides of the calculator. The side with all the scales allow glide slope solutions for distances to 120 km and available heights up to 9000 feet. The map side is very useful since the glide slope data is linked to your actual position relative to the finish point, but is limited to distances to 44 km and available heights up to 8000 feet.

So if, for example, you are 35 km from the finish and want to have at least a 25:1 glide slope in hand for a nice conservative final

glide, you will need to have at least 4600 feet of altitude in the bank to do it. Or, if you are 35 km out and have 5100 feet in hand, either side of the calculator will tell you that the corresponding glide slope is about 23:1. The question which remains here is, at what speed can I fly the sailplane given the wind conditions to have it actually follow that glide slope?

### THE SPEED TO FLY EQUATION

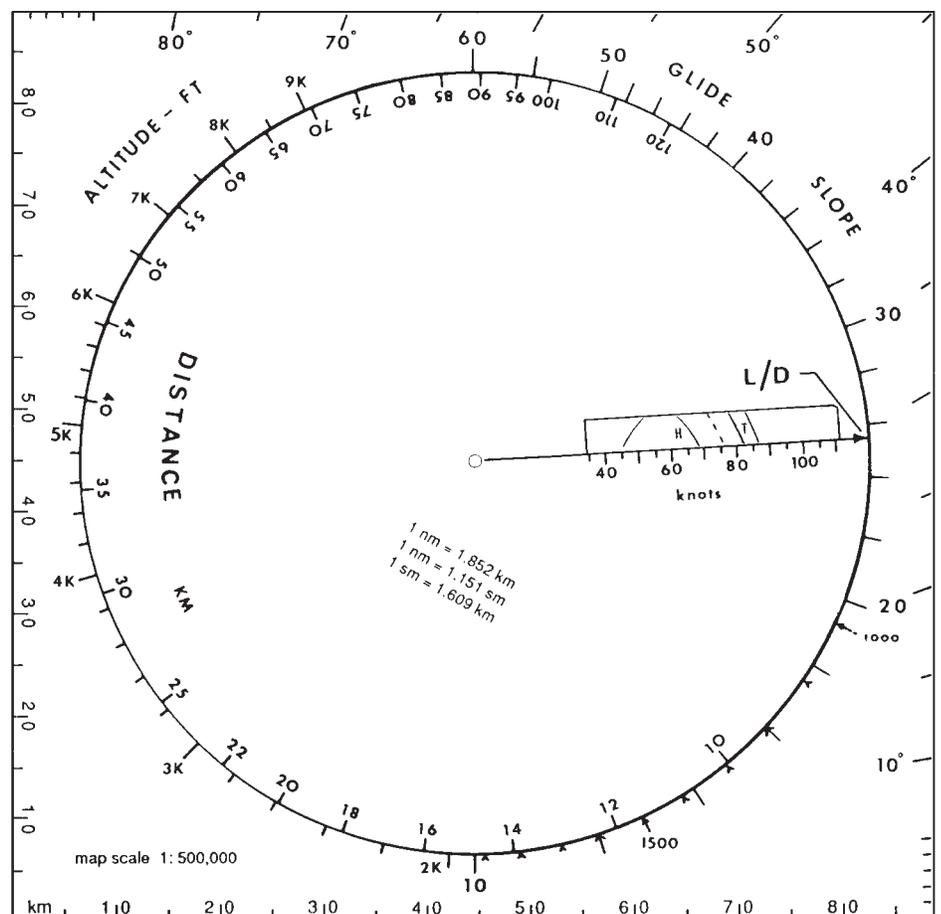
The polar curves on the calculator provide you with a second set of information specific to your glider which relates airspeed and windspeed to the glide slope. The main point of this information is twofold:

- it tells you if the geometric relationship between you and the finish is in fact achievable given the wind and your sailplane's performance, and
- if it is achievable, it tells you how to optimize the glide (minimize the time it will take).

The polar curves on the calculator Base are for an RS-15 so if, after several final glides based on the use of the calculator, you see that your sailplane's performance is "better" (you find that you are consistently gaining altitude over the glide slope), you can correct for this by reducing the assumed headwind component or increasing the tailwind component a few knots. This will result in the calculator telling you to leave for home at a lower altitude or to fly somewhat faster. The converse argument is true if your sailplane performance is lower than the RS-15. If the difference is significant though, you should make a set of curves based on your own sailplane polar rather than "adjust" the wind as a fudge factor.

### THE FINAL GLIDE – WHEN TO START

On your cross-country you are at the point of knowing that you can make it home from here if you can climb high enough in this thermal,



but how high is that? The major decision to be made at the beginning of a final glide is to determine what your optimum glide slope should be along the courseline to minimize the time and, knowing that glide slope, to determine the height required given your distance from the goal. Let's do a specific example with the visual assistance of the calculator below:

- Knowing your present average rate of climb in the thermal, read off the corresponding speed from the speed-to-fly ring on the vario — assume it's 68 knots. (This is the only time on the whole flight you'll know for sure what the ring setting should be!)
- Rotate the Slider to match the speed-to-fly with the assumed headwind/tailwind component (say a 10 knot headwind) along the final glide courseline.
- Opposite your distance from the goal (say 40 km) on the distance scale read off the height you will lose getting there (5200 feet).
- The altitude to leave the thermal is this height plus the goal elevation (say 1000 feet) plus the height agl at which you wish to arrive (say 500 feet) giving an altitude of 6700 feet asl. All subsequent calculated height values will require this addition of 1500 feet to determine altimeter values or vice versa.

Two things are worth commenting on here. First, what is a realistic speed ring setting to use during the flight? Set it to about half to two-thirds of your next average climb rate. Yes — you have to guess. This is because your actual true time to climb has to include all the transition time you may lose slowing down and centering and the time lost losing and regaining the core a couple of times. The best speed to fly is very tolerant of error and a setting higher or lower than optimum doesn't affect the average achieved cross-country speed severely (flying a bit too slow is largely offset by arriving at the next thermal higher, for example). It is for this reason that the best means of increasing cross-country speed is to improve one's thermalling performance — inter-thermal speeds are only secondary to this. However, never use a setting of less than 1 though, unless you are survival flying (Reichmann's Cross-country Soaring, p60). It's wise to be a tad conservative with the ring setting since it will result in reduced altitude loss to the next thermal.

Second, how does one estimate the wind direction, as it won't be what you launched in? In the absence of information, use the Cyclist's Law — no matter what direction you pedal, it's always into a headwind. The two best aids are the reported actual winds aloft from the aviation weather, or the information you can gain from the movement of cloud shadows on the ground (if the day isn't blue).

- If the cloudbase is less than the altitude calculated above (say it's 6000 feet), determine the height loss that is available (4500 feet) and read off the corresponding distance (about 35 km). So you must get another 5 km closer to the goal before beginning the final glide from cloudbase.

#### THE FINAL GLIDE – HOWGOZIT?

Once on the final glide, you can monitor your progress to see if the planned glide slope is being maintained. (The knowledge that the

final glide is possible from where you are and if it's going to be straightforward or marginal is the great benefit — and comfort — of a calculator!)

- As you reach an identifiable landmark, match its distance (say 25 km) with the height (say you're now at 5100 feet asl – that's 3600 feet available). You will see that the glide slope has steepened a bit to about 23:1 which means that you are getting above the planned glide slope. If the 10 knot headwind hasn't

Pilots doing their first high performance finishes may be in much the same state of mind as the rank beginner...

changed, the polar curve says you can increase your average speed to 73 knots to arrive at the goal at 500 feet agl.

- If the opposite occurs because you flew through a bad patch of sink, the calculator will tell you to slow down. If the glide slope begins moving consistently towards the max L/D of your sailplane, it's time to stop in the next thermal to top up enough height to get you back on the original glide slope. I should caution that there is a terrible urge not to slow down in the above circumstance because in the headwind you will appear to make even less progress towards the goal. However, you must believe the calculator or you will drop below the glide slope even faster.

#### HOWGOZIT USING THE MAP AND SPIRAL

Once you are within 44 km of the goal, tracking the progress of the final glide is more easily accomplished using the map side of the calculator. Note that you are flying at an average airspeed dictated by the speed ring which corresponds to a specific L/D value. On the map side, intersect the Cursor and the spiral curve of the current available height over the sailplane's position — the L/D should be about the same.

Now from time to time as you pass identifiable landmarks, adjust the current available height curves over your position on the map as you fly down the courseline and note if the achieved L/D is changing. If it increases, you are dropping below the established glide slope and you should slow down; if it decreases, you can speed up. The speed change is again found by setting the Slider to the L/D and reading the new speed opposite the headwind/tailwind curve which is being used.

#### FINAL GLIDE FLYING TECHNIQUES

- The major point of flight technique is that you must still fly as directed by the vario and its speed-to-fly ring setting as you move through the variable lift and sink conditions along the courseline — the 72 knots dictated by the climb rate you achieved in the last thermal assumes calm air.

- Don't get tunnel vision or "get-home-itis" — stop and top up some altitude in good time if necessary, or divert to avoid sink (maintain the flight philosophy of following the best energy path through the sky). There is a temptation — and I have succumbed — to press on straight ahead, passing up lift, until so low that you have to take anything to survive. That really spoils your day.

- If, along the final glide (say at 20 km out) you fly through a thermal significantly stronger than the one you used to establish the final glide, it may pay to circle and move the speed-to-fly ring up to the new average climb rate. If it now directs you to leave the thermal at 80 knots, rotate the Slider until 80 intersects the 10 knot headwind curve, and you will see that the 20 km point has moved from 2800 to 3300 feet. Your overall time on the final glide will decrease if you stay in this thermal for a 500 foot gain. A caution here is that if it takes you an extra turn just to get centred, you will have lost whatever benefit this thermal could have provided. So, unless you got into the core right on the pull-up, you are probably better off just to dolphin through the lift and press on.

#### THE FINAL GLIDE – FINISHING

The last kilometre of the final glide is potentially the most dangerous to you. You may be approaching the airport from an unusual direction and height. You may be flying much faster than in the past and the sailplane's handling is different and the cockpit environment is unusually noisy and rough. At the same time you are trying to radio people on the ground as to your position and intentions. You may have other traffic to watch for and the active runway has probably changed. You may be lower than you intended and are dithering about a decision to do a normal circuit or land straight ahead...

Pilots doing their first high performance finishes may be in much the same state of mind as the rank beginner — suffering from the necessity to make fast decisions while being swamped in an information and sensory overload, but without the student's luxury of having an instructor in the back seat to keep them from doing something very stupid! Gear-up landings are a common event at this point, or worse, a stall/spin from some crazy circuit.

Here are some things to do to keep out of early trouble:

- give yourself a decent finishing height on the early attempts, say 1000 feet.
- if you are above glide slope, don't push the speed and adrenalin level up just to make your planned finish height.
- think about your finish actions before you get near the field.
- as much as possible, reduce the unknowns such as traffic, winds, active runway, landing checks, etc. well before crossing the field.

#### SUMMARY

Proper use of a final glide calculator will always increase the precision of your cross-country flying and could even be the difference between landing out and getting home. Finally, believe the calculator, and practise, practise, practise. ●

# Accident & Incident Analysis for 1990

## George Eckschmiedt

member, Flight Training & Safety Committee

The 1990 soaring season once again had its share of unpleasant events. As we have said it before, the Flight Training & Safety Committee is very concerned, and are trying to do anything possible to improve the picture.

The picture last year was particularly bleak, because of the four terrible fatalities. All of those accidents, judging from the data we have available, were preventable. If we did not have those fatalities, although the insurance claims appear to be much higher than in 1989, the accident pattern remained the same in 1990.

With the greatest respect and sympathy to the survivors of the four pilots, we must not let our vision be clouded by tears for our departed friends. Having lost my own 18 year old son to a car accident gives me the insight and the permission to say this. Each of those three accidents could have ended just as easily without the fatality. We do not need to have the knee-jerk type reaction of looking for immediate solutions.

Opposite is a table of the known events in 1990 in Canada, as gathered from reports to SAC, to the insurer, and obtained by any other means. The reports were sketchy at best. Many pilots did not consider their fellow glider pilots worthy of helping to prevent them from doing the same stupid thing they did. Frankly, in my opinion the pilots who made an insurance claim and did not send a full report to SAC should be regarded the same way as they regard their colleagues.

This report has no intention of being related to the SAC insurance scheme. It just happened that the data for almost half of the events reported on here were obtained from one-line notes from the insurer.

**Analysis** It can be seen that the events were grouped to highlight certain common characteristics. We had 20 aviation type accidents and 10 in which no flying activity was involved. These non-flying accidents with insurance claims could have been caused by anyone, yet they blacken the soaring community. Admittedly, the "act-of-God" type accidents, such as properly tied down planes being blown away, are easier to accept; but "trailer top smashed canopy" with no report to SAC can be considered only as carelessness. So are many others. Actually, 4 of the 10 can be considered an act of God, the others are carelessness. Pick your own.

Towplane accidents are definitely on the increase. Two landing gear failures, two running out of fuel (and getting away with it once) and a ground loop is much more than we had in the previous years.

age	Event description	hrs
—	Aviation accidents not reported to SAC	—
—	Trainer, downdraft on final, stretching glide, hit embankment	—
—	Landing gear broke on almost stopped towplane	—
—	Towplane brake line broke, collided with truck	—
—	Glider collided with power lines, result of near hit on tow	—
—	Glider lost altitude and made forced landing	—
—	Aborted takeoff, wing struck ground, glider crashed, fatal	—
—	Hard landing damaged glider	—
—	Aviation accidents reported to SAC	—
57	PIO, hard second bounce, hit ground near vertical, fatal	—
—	First solo, misused spoilers, undershot runway, hit trees	14
18	First ever fam ride, disoriented, crashed on alternate airport	25
—	On landing wheel passed through a hole, gear damaged	70
32	Forgot correct spoiler use, overshot runway, gear damaged	75
35	Crosswind on tow, wing contacted crop, glider groundlooped	112
67	Glider wing contacted tree on final	244
—	Glider in rapid sink on downwind, landed short of runway	285
36	After a safe landing the wind flipped the glider over	581
—	Towplane (without glider on tow) groundlooped on takeoff	1400
63	Steep turns turned into spin to ground, two fatalities	7860
65+	Crosswind on tow, wing contacted gravel, glider groundlooped	400
—	Non-flying accidents not reported to SAC	—
—	Cracked canopy on glider	—
—	Glider canopy damaged in wind storm	—
—	Trailer top smashed canopy	—
—	Nav computer electrical damage	—
—	Glider rudder and tailwheel damaged while trailering	—
—	Hail damaged three gliders	—
—	Aircraft broke free from mooring and collided with other tied down aircraft	—
—	Non-flying accidents reported to SAC	—
—	Removing glider from mall display, broke a plate glass door	—
—	Cattle broke through gate/fence and severely damaged glider	—
—	Towplane blown away while tied to 800 pound concrete blocks	—
—	Aviation incidents reported to SAC	—
—	Launch crew did not observe landing traffic	—
—	Glider pushed in front of landing glider, which diverted to alternate runway	—
48	False vario indication, drifted downwind, unplanned outlanding	48
23	On 5 hour attempt drifted downwind, unplanned outlanding	60
26	On 5 hour attempt, lost altitude, unplanned outlanding	75
24	CSTRSC with open canopy, closed canopy restricted stick motion	140
—	Towplane lost power on takeoff, selector on wrong tank, pilot error	190
40	Desire to give a good flight resulted in an unplanned outlanding	500
35	Intro flight, unplanned outlanding	550
35	Misjudged conditions, unplanned cross-country and outlanding	550
37	Glider took off with spoilers open, closed at airport boundary	700

The two reported ASW-20 ground loops on takeoff, and the one witnessed to get away with it because both wings could alternately slide on the grass (not reported, but seen by me), tend to indicate that the owners of these gliders should consider installing nose hooks, or limit their activity in crosswinds. We have had at least two accidents in which the lack of experience and its recognition by the pilot's instructor could be a factor. The "just plain" flying accidents/events can be grouped into three categories, takeoff, landing, or complacency events:

- **Take-off** The above ASW-20 events, open dive brakes, wings striking wires or the ground (including one of the fatalities).

- **Landing** Inexperience on two of them. Far too many hard landings. Trees, wires, and embankments tend to pop up in the middle of our chosen runways. All tend to indicate human error in judgement. We still mix up handles, and we still do not know how to do a flared landing. Perhaps the only truly unavoidable accident was the landing glider passing over a hole in the grass area.

• Complacency Bless those who report incidents, for those are the events we can really learn from. It is all very true that gliders inherently land off-field, but these should happen on intentional cross-country flights, not by getting lost on local flights. One of these resulted in an insurance claim. It is interesting to contemplate what would happen if these pilots who get lost decided to fly from airports without alternate landing fields for 20 miles.

**Coding sheets**

The completion of the coding sheet was very poor, however, this is no surprise. Nobody knew how it should be completed. This problem is now rectified, as a new coding sheet with instructions for completion should be available soon from SAC on disk and paper, and hopefully will be mailed out to those requesting them. The object is to identify the relevant factors in the events. Items that could have caused the event, the reason, the result, the damaged component, or anything that was directly involved. Simply, only the factors.

The coding sheets are processed by first examining the reported factors. If they make sense, an X is placed at the corresponding place in this analysis. Then every report, even if it is only a one-liner from the insurer, is mentally re-created and examined for possible causes — a painful process. Some reports, like the two ASW ground loops, were excellently described, leaving little need for assumptions. On others, some assumptions had to be made, or simply were offer-ing themselves to be made. Regardless of the assumptions, the results are consistent, especially when compared with previous years.

<b>1. Type of event</b>	<b>90 89 88</b>
1.1 Heavy landing .....	xxxxx 5 5 6
1.2 Undershoot .....	xxxxxx 6 18 5
1.3 Overshoot .....	x 1 1 1
1.4 Groundloop .....	xxxx 4 4 3
1.5 Collision (ground) .....	0 4 2
1.6 Collision (air) .....	0 0 0
1.7 Stall .....	xx 2 0 0
1.8 Spin .....	xx 2 0 0
1.9 Structural fail .....	xx 2 1 1
1.10 Blown over .....	xxx 3 2 0
1.11 Gear-up landing .....	0 2 0
1.12 Gear collapse .....	x 1 1 1
1.13 Takeoff .....	xxxx 4 2 0
1.14 Other .....	xxxxxxxxxxxxxxxx 15 14 8

<b>2. Aircraft damage</b>	
2.1 None .....	xxxxxxxxxxxxx 13 17 13
2.2 Minor .....	xxxxxxxxxx 10 13 2
2.3 Substantial .....	xxxxxxxxx 9 11 9
2.4 Destroyed .....	xxxxx 5 4 2

<b>3. Personnel injury</b>	
3.1 None .....	xxxxxxxxxxxxxxxxxxxxxxxxx 24 43 22
3.2 Minor .....	xxxx 4 1 2
3.3 Serious .....	0 3 2
3.4 Fatality .....	xxxx 4 0 1

<b>4. Airframe failure or damage</b>	
4.1 Flight controls .....	xxx 3 2 1
4.2 Elevator .....	xxxxx 5 3 3
4.3 Rudder .....	xxxxxx 6 2 2
4.4 Ailerons .....	xxxxx 5 1 0
4.5 Flaps .....	xx 2 1 0
4.6 Wings .....	xxxxxxxxxx 10 6 4
4.7 Spoilers / divebrakes .....	x 1 2 0
4.8 Wheel / mount .....	xxxxxx 6 1 4
4.9 Canopy .....	xxxxxx 6 7 5
4.10 Fuselage .....	xxxxx 5 13 8

4.11 Release .....	- - -
4.12 Instrumentation .....	- - -

<b>5. Towing</b>	
5.1 Premature release .....	0 0 0
5.2 Rope / cable break .....	0 0 1
5.3 Winch / tug failed .....	0 2 0
5.4 Cable snagged .....	0 2 1
5.5 Divebrake opened .....	x 1 4 2
5.6 Towplane upset .....	0 0 1
5.7 Ran out of fuel .....	xx 2 - -
5.8 Taxiing (gear failure) .....	xx 2 - -

<b>6. Pilot factors</b>	
6.1 Misused controls .....	xxx 3 9 2
6.2 Misused spoilers .....	xx 2 1 1
6.3 Misused flaps .....	x 1 2 0
6.4 Misjudged distance .....	xxxx 4 8 2
6.5 Misjudged speed .....	xx 2 1 2
6.6 Misjudged altitude .....	xxxxxxxxxx 10 13 4
6.7 Misjudged conditions .....	xxxxxxxx 8 10 4
6.8 No wind compensation .....	xxx 3 8 3
6.9 Did not see object .....	xx 2 4 5
6.10 Did not maintain speed .....	xx 2 1 0
6.11 Overstressed aircraft .....	x 1 0 0
6.12 Exceeded experience .....	xxx 3 4 1
6.13 Reckless flying .....	xxxx 4 1 0
6.14 Insufficient training .....	xx 2 5 2
6.15 Physical impairment .....	0 0 1
6.16 Wrong decision .....	xxxxxxxxxxx 11 16 11
6.17 Instructor failed .....	0 0 3
6.18 Other (complacency) .....	xxxxxxxx 9 4 2

<b>7. Weather</b>	
7.1 Low ceiling .....	0 0 1
7.2 Rain .....	0 0 1
7.3 Hail .....	xxx 3 0 0
7.4 Crosswind .....	xxx 3 1 1
7.5 Severe turbulence .....	0 0 3
7.6 Wind shear .....	0 1 1
7.7 Wind shift .....	0 0 0
7.8 Thunderstorm .....	x 1 0 0
7.9 Severe sink .....	x 1 0 2
7.10 Line squall .....	xxx 3 0 0
7.11 Lightning .....	0 0 0
7.12 Poor visibility .....	x 1 0 1
7.13 Clear (if factor) .....	0 - -
7.14 Not a factor .....	- - -

**Reported flying hours distribution:**

0 – 100 hrs	7 10 1	only 20 of the 31
101 – 300 hrs	5 11 4	events had flying
301 – 800 hrs	5 7 6	hours reported
801 – above	3 2 5	

**Reported pilot age distribution:**

16 – 25	3 7 1	only 16 of the 31
26 – 49	9 7 0	events reported
50 – 59	1 6 8	the pilot's age
60 – up	3 9 1	

For the first time, the three previous years of data is shown together. Comparisons should be made by the readers (if any). The inconsistencies between the number of Xs and the number of events may be the result of assumptions made, and the fact that some events may have had more than one factor. The first striking thing is the relative consistency of the factors, even when considering the variation in the yearly event quantities.

Undershoots improved from last year, but stays up on average. Flip-overs are increasing. The "other" category, which includes most non-aviation type events, indicates the increase in our carelessness in general; an

indication of our reliance to let the insurance take care of things (Canada is the most insured nation on earth).

"No injury" seems to have declined, but this is a reporting change, as in non flying-related events no injuries were reported and there is not much sense reporting any. Fatalities, unfortunately, are up.

In pilot factors, misjudgement of altitude and conditions predominate throughout the years.

**Conclusion** The three years of data tend to show that we have reached a plateau of accidents and incidents. The presented data seems to be a standard, a normal distribution. To improve our record, the norm has to be changed. To change the norm, a system of small but continuous improvements has to be implemented. To do that will require a cultural change. Your Flight Training & Safety Committee is intending to be part of this, to provide leadership and training, but it cannot be done without commitment from the gliding community. Do we really want to improve the record or are we satisfied with the norm? What are you going to do about it? •

**Changes to reporting form**

The current form was quite acceptable and useful for many years. However, the person analyzing the data had to use some assumptions in creating a picture of the Canadian accident scene from it. Secondly, with the information revolution upon us, the form should be available on floppy disk and printable by the simplest printers, so the report file is now both in ASCII form and in Wordperfect 5.1.

Subsection 1, Type of Accident  
Gear collapse and takeoff events were added. Wingtip touching ground on takeoff resulting in glider in cabbage patch is a takeoff event.

Subsection 4, Airframe  
In-flight failure, damage at accident, and handling damage added as general categories.

Subsection 5, Towing  
Dive brake opened, towplane upset, ran out of fuel, taxiing mishap added. We have had too many of these events to ignore.

Subsection 6, Pilot factors  
Misused spoilers and poor circuit planning added (it's amazing the latter was not included much earlier). The user guide will specify that spoiler misuse be identified once only, either during takeoff (use section 5) or at other times (use section 6).

Subsection 7, Weather  
Weather not a factor added. It is nice to know that the weather was clear, but the analyzer should not have to assume from this that weather was not a factor.

A few lines were also made available for any other relevant item not identified on the form. The cost of the repair should be entered here.

The years of analysis has also proven that properly filling in the accident reporting form is not self-evident, so a separate and detailed "Instructions for completing the form" is needed and is forthcoming.

# Hangar flying

## WORLD CLASS GLIDER SHORT LIST SELECTED

The international competition for selecting the glider of the future one-design FAI class has made further progress. The 42 preliminary designs submitted by individual designers, groups and firms from all over the world, have been carefully examined by the judging panel appointed by the FAI International Gliding Commission (IGC).

The panel (Oran W. Nicks, USA, chairman; Leonardo Briigliadori, Italy; Jean Cayla, France; Petr Kousal, Czechoslovakia; Benno Schmaljohann, Germany) started its work September 17, 1990 in Paris, worked intensively by correspondence; met again in Zlin, Czechoslovakia, on December 13-15, 1990; and concluded its evaluation work at Guildford, England, on February 1-2, 1991. A joint meeting with the "World Class Management Group" (Piero Morelli, Italy, chairman; Alvaro de Orleans-Borbon, Spain; Tor Johannessen, Norway; Hal Lattimore, USA; Cedric Vernon, UK) acting on behalf of the FAI-IGC, was then held at Guildford on February 3, 1991.

Upon recommendation by the panel, 11 designs, fully complying with the World Class glider technical specifications, were selected for admission to "Phase 2" of the design competition and approved by the FAI-IGC meeting in New Zealand in March. The 11 entrants on the short list are (in alphabetical order):

Aero Club d'Italia	Italy
Imre Bano	Hungary
Cristiano Borrelli	Italy
Christian Brondel	France
Vladimir Fedorov	USSR
Zdravko Gabrijel	Yugoslavia
Ulrich Horn	Germany
Donald Roberts	USA
Günther Rochelt	Germany
Roman Switkiewicz	Poland
Vaclav Zajic and Marian Meciar	Czechoslovakia

Phase 1 of the competition — the design competition — is therefore concluded. "Phase 2" — the prototype competition — now begins.

The 11 selected proposers have been requested to notify their intention to build the prototype to the IGC Management Group not later than June 30, 1991. By the same date, other entrants to Phase 1 may request the IGC Management Group to be allowed to present their prototypes to the final evaluation. By the same date of June 30, 1991, European national aero clubs may request to host and to organize the final evaluation tests in their country.

According to the rules, the final tests, consisting of ground inspections and flight tests, will take place not earlier than August 1992. They will presumably require 3 or 4 weeks, during which a second Judging Panel designated by IGC, will compare the prototypes and

through the Management Group, will propose to IGC the final winner. The winner is given one year for the glider's type certification. Then the drawings must be made available to any manufacturer in the world willing to produce one or more units of the World Class glider.

Continental and world championships will be held for the new one-design World Class when sufficient numbers of the glider are flying in a sufficient number of countries. Then, for the first time, all pilots in championships at the highest level will be flying the same glider type, to make pilot skill the only determining factor. The World Class glider, being suitable for all types of flying — from early solo flights to high level competitions — is also intended to be cheaper to buy, easier to operate and simpler to maintain than existing gliders. Consequently, it is expected to bring more people, especially young people, into gliding and thereby contribute to the expansion of gliding worldwide.

FAI press release.

## 1991 NATIONALS BRIEF

The full story of the 1991 Canadian Nationals held at the Gatineau Gliding Club at Pendleton will be told in the next issue as the authors didn't have time to make the cut for the 4/91 free flight. Ken Brewin was able to fax a bare bones report though.

Day 1 June 26th, was the last day of a retreating high that up to the first day of the contest had provided eastern Ontario with three weeks of the best soaring weather that had been seen in many years. A triangle of 183.9 km was set that only three pilots of both classes completed with rolling finishes from what they said was the last thermal to be found. Everyone else was strewn about the contest area.

Day 2 Three days later, it was a 3 hour POST task. The best results were obtained by contestants who followed the early morning cu south to the St. Lawrence River area.

Day 3 A polygon speed task of 279.6 km. The weather was improving although the air mass was quite dry, and 12 pilots completed the course. Top speed was 93.2 km/h.

Day 4 An uncertain weather forecast led the task committee to keep everyone close to home going twice around an 89 km triangle. It was a fun day and everyone got back.

Day 5 The crème de la crème, a 3 1/2 hour POST day with good cu over the Gatineau Hills from Wakefield to Lachute, Quebec. The top distance was 379.5 km flown by Dave Frank at 106.3 km/h.

The 15m Class was won by Ulli Werneburg, followed by Walter Weir and Robert DiPietro. Standard Class was won very convincingly

by Andy Gough (taking four of the days), followed by Ian Grant and Paul Thompson.

The scores of both classes were combined with the sailplane handicaps included for the determination of the Air Canada prize, and the two tickets to anywhere in North America go to Ulli Werneburg.

## 1991 CANADIAN NATIONALS FINAL PLACING

### Standard Class

1	LS-4	Andy Gough	4389
2	LS-4	Ian Grant	3981
3	LS-4	Paul Thompson	3555
4	Cirrus	Stewart Baillie	3349
5	Hornet	Ed Hollestelle Jr	3104
6	ASW-19	Vicki Stamison	2729
7	Jantar	Longhurst/Kirby	2596
8	Ka6	Kirby/Longhurst	2570
9	Jantar	Jim Feyerer	1913
10	Cirrus	Dugald Stewart	1756

### 15 Metre Class

1	ASW-20B	Ulli Werneburg	4231
2	ASW-20B	Walter Weir	4131
3	ASW-20B	Robert DiPietro	4037
4	ASW-20	Nick Bonnière	3948
5	ASW-20	David Hogg	3641
6	ASW-20	Dave Frank	3619
7	DG-600	André Pepin	3123
8	Ventus	Ed Hollestelle Sr	2956
9	ASW-20FP	Buzz Burwash	2197
10	Mosquito	Wilson/Coulson	2194
11	ASW-20	Karl Doetsch	2186
12	ASW-20	Bob Gairns	1872

## LIGHTWEIGHT AIRCRAFT FABRIC

Superflite Co. has announced the development of the industry's lightest fabric, SF-95X. This is a polyester cloth testing at over 90 lbs tensile strength yet weighing only 1.6 oz per square yard, making it particularly useful in applications where light weight is of paramount importance. It is supplied in 71 inch width which minimizes seams.

from Canadian Aviation News

## HOW STRONG IS OLD WOOD?

In a study by Professor Dr. Karl Borgin, an examination was made of 1000 year old stave churches, Viking ships, houses, and other wooden structures in the harsh climate of Norway, Sweden and Denmark. Some date back to before the Viking era, and are up to 2000 years old! It was often found that there was almost no difference between the old and some recently installed woodwork, and there were many examples of pine and spruce that have lasted over 1000 years. Dr. Borgin measured the strength of wood from the Roman times in the Mediterranean area — three from Phoenician ships, and furniture from the Tetis pyramid that was 4300 years old. In some cases the wood was good as new.

Micro-climatic conditions determine the life of wood. Old structures in certain mountain

regions were unchanged in their chemical composition and molecular structure because the micro-climate allowed the wood to dry sufficiently to retain too little moisture for fungi and bacteria to exist. This micro-climate is found on hilltops or slopes with good convective airflow.

Wood consists of complicated molecular structures of cellulose and lignin which gives it a surprising strength, sometimes exceeding steel at the same weight.

Nature intended living trees to have maximum strength when the load carrying elements, the wood fibres, are permanently surrounded by water. As long as the tree remains alive, it can retain its strength for centuries, but when it dies or is cut down, immediate changes occur which affect its strength and durability. How quickly dead wood in the form of processed lumber breaks down depends on such factors as temperature, moisture, radiation, and micro-organisms. Wood rots when enzymes produced by fungi and bacteria breaks down the wood structure and the wood is then consumed. As these micro-organisms require a high degree of moisture, the first rule in the preservation of wood is to keep excessive moisture out.

from London Lift  
newsletter of the London Soaring Society

**— HOT SHIPS —  
DG-600/18 EVOLUTION**

The 18m version of the DG-600 sailplane got its maiden flight on May 21. The DG-600 now has been flown with four wingtip designs as the photo shows: 15m, 15m with winglets, 17m, and 18m. The 18m extension features a swept back trailing edge at the tip for further reduction of induced drag.

Comparison flights indicated that the low speed performance was similar with the 17m and 18m extensions, but that the 18m tips began showing an edge after 54 kts (100 km/h). The gain at high speeds seemed to exceed predictions by a significant margin.

The DG-600 is also available in a motorized version, powered by a 25 HP Rotax which received certification on 10 June 1991.

**Technical Details**

Aspect ratio	27.4
Empty weight	590 lbs (268 kg)
Max wing loading	8.3 lbs/ft <sup>2</sup>
Water capacity	300 lbs (140 l)
VNE	146 kts (270 km/h)
Stall speed	35 kts (64 km/h)
L/D max (@ 59 kts)	50
Min sink	96 ft/min (0.49 m/sec)

**ALBERTA PROVINCIALS NOT  
RAINED OUT ON SECOND TRY**

The Alberta contest was originally scheduled for the Victoria Day weekend at Innisfail but was cancelled two days prior due to a rotten weather forecast which turned out to be not so rotten after all. Rescheduled for Cu Nim on 29 June, all three days were flown by a total of 23 pilots, but it wasn't easy at first.

A very successful aspect of this handicapped POST contest was that two Cu Nim Blaniks and the Alberta Soaring Council G-103 were flown each day with inexperienced pilots in the front seat getting a first taste of cross-country soaring (the score sheet listed them as "Student Driver", "Team Fledgling", and "Buzzard Team").

The weather featured very low cloudbases for the west on the first two days, at 2000-2500 agl, and on the second day an enormous rain storm developing just to the east of the field which cut most pilots off from getting back home for any speed points.

Day 1 Kevin Bennett won with 133.5 km at 70.8 km/h in a Ventus followed by Dick Mamini with 902 points flying 149.8 km at 55.2 km/h in his ASW-12. Cloudbase began at 2200 agl so the soaring was of the tip-toe variety.

Day 2 Everyone struggled off in survival mode again and only two made it back to Cu Nim due to the rain storm. Four sailplanes landed at the closest turnpoint, Okotoks airport, which is only 17.8 km to the east. Kevin was also airborne over Okotoks and decided that speed may win the day regardless of the distance achieved, and he made it back to Cu Nim. He won the day again at 40.4 km/h and a total distance of 35.6 km! That has got to be the shortest completed contest task since primaries got flung off hillsides. Al Stirling was the other pilot to get back at 33.6 km/h in a Mini-Nimbus for 922 points. Dick Mamini, on hearing about conditions near the field, flew east to Strathmore 97 km for the longest distance of the day.

Day 3 An honest-to-God soaring day and only one pilot landed out this time. Kevin won for the third time with 301 km at 73.8 km/h. Second at 859 points was Dick Mamini again with 240.8 km at 73.2 km/h.

Congratulations to Kevin on winning in straight sets. He didn't exactly have Uvalde conditions to use, but competition is useful no matter what conditions one is presented with.

**Tony Burton**, Cu Nim

**PARAGLIDING WORLD RECORD  
FLOWN FROM GOLDEN BC**

Chris Müller and Sean Dougherty are jointly claiming a world distance to a goal record of 101 kilometres flying out of Golden on 7 July. Apco Aviation, the manufacturers of one of the paragliders, is sending a check for 5000 DM which was the standing prize for exceeding 100 km. They are now establishing a \$10,000 prize for the first flight over 200 km.

**Stewart Midwinter**



photo unavailable

# Club news

## NEW FIELD — OLD CLUB

Guelph Gliding & Soaring Association has metamorphosed once again. The club was formerly called Caledon Gliding Club. After being based in the Guelph area for seven years, our ever efficient executive finally updated the name to more accurately reflect the club's location. Unfortunately, increasing development around the old field has resulted in a new location with most of us just having mastered the new name.

Our new field is located on highway 86, about one mile West of Elmira for any wayward cross-country pilots searching for safe haven in a storm. It may be of comfort to itinerant pilots to know that the new field is considerably more commodious than its predecessor. In the past there was one occasion where a local glider pilot from another club thought that he would land at our field rather than risking continued flight with deteriorating conditions. Unfortunately, the intrepid pilot discovered the mere fact that he had a map indicating our club was in his vicinity did not guarantee that the uninitiated eye could discern our strip with its most modest proportions from the much more spacious adjoining ploughed farmers' fields. As a result, it was only after landing did our visitor find that he had missed the club by 150 yards. I can promise that our new location is much more identifiable from the air and an unfamiliar pilot will not be swayed by the siren of a simple adjoining cow pasture when he could have a genuine runway without the risk of rocks or low fences.

In fact our new site is quite appropriately located, from the standpoint of many of the local folk. We are in the heart of Old Order Amish Mennonite country. As we fly on weekends, we are observed by the local population as they navigate the adjoining highway 86 in their horse drawn vehicles, as well as tilling the abutting fields with horse drawn ploughs. As our sport centres around the joys of motorless locomotion I had speculated that it indeed might be something that would be of interest to our traditional neighbours — alas, no takers to date.

We have found that having a highly visible field from a major highway has done a great deal to spark interest from many who are passing by in more conventional transportation. Our sport as a whole seems to have difficulty attracting new members to replace normal attrition. For a very small club such as ours, maintaining membership is even more important. If our initial experience is any indicator, I am forming the opinion that the best promotion is simply to let the public observe what you are doing while you are doing it. A genuine interest and friendliness to visitors has seemed to generate surprising interest with a number of new members already.

The season is all too short but if you are venturing afield from your home club and need a relight or a simple visit, drop in before the

icky white blots the landscape. Before you land, it will not be necessary to check our sign mounted on the hangar front door. There are currently no plans to rename the club.

## Paul J. Nelson

Guelph Gliding & Soaring Association

## HIGH—SPRINGING SPRING

Bluenose members, new and old, were treated to some of the best soaring conditions seen in Nova Scotia since the beginning of the club back in 1976. The thermals were 9500 feet tall (the tales were taller), wide and handsome. Many were the BSC pilots that reported looking down on hapless 727's inhabiting the lower stratosphere. A few airline types even had the affrontery to complain; or at least so we gathered from ATIS. The latter showed a renewed interest in our activities, and a decided interest in our whereabouts.

At times the skies seemed downright crowded. Three times this modest scribe tried to cross highway 101 to test the big clouds whispering siren promises from the south side. Three times I got turned back by acres of Boeing sheet metal plowing across my path with nary an excuse, a thank you, or a fare—thee—well.

Bluenose's coureur du bois of the skies, Tom Foote, adventured into new soaring territory, taking in Kedgie from on high on one day and Amherst the next. Even my timid self managed to get close to Greenwood before a time constraint sent me back. Showing off, the Austria made it in one long glide. I did stop to circle once, but that was just to check out the action in Wolfville, courtesy of the South Mountain glider—guider freeway.

But the real story of the Spring of '91 (our grand—children will listen to our tales with awe-struck eyes) are the students. With CFI Dick Vine gently haranguing from the back seat, and the instructors hanging on to their hats (some hanging onto the stick), the students went out there and showed everyone how to guide a glider.

Six students appeared on one hot day all ready to shoot circuits. Hot—shots they soon became, despite the instructors best efforts (heavily bribed by treasurer Jerry) to keep them flying dual.

This year's students did the club proud. Not many clubs can boast as many solo pilots, as well trained, in such a short time (5 weeks). The only problem is that they all want to soar. The nerve! How can we oldsters — getting to the field after lunch as is our lazy wont — ever expect to jump directly into a glider again. We'll get there to find the skies full of Ka's of various numbers all trucking about Hants Co. with new students aboard. Paeans of praise go out to David Sinclair, Chris Weatherhead, Sean Whitehead, Greg Girard, Denise Dogan. With a speed that left some of the old guard breathless, they were off flying on their own.

## SAC Directors & Officers

### PRESIDENT & ALBERTA ZONE

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Sherwood Pk. AB T8A 1G2  
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### VP & PACIFIC Zone

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### QUEBEC Zone

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Ken Brewin  
Geo. Eckschmiedt  
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### Medical

Dr. Peter Perry  
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### Publicity

Chris Eaves  
see Director—at-Large

### PRAIRIE Zone

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### Director—at-Large

George Dunbar (1991)  
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### Director—at-Large

Chris Eaves (1990)  
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### Executive Secretary

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### Treasurer

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### Radio & Comm

Oscar Estebany  
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### Sporting

Charles Yeates  
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Mbrs: George Dunbar  
Robert DiPietro

### Contest Letters

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### FAI Awards

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### FAI Records

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### Statistics

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Mbr: Herb Lach

### Trophy Claims

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(306) 584-5712 (H)

The sky is lifting!... Chicken Little has got it wrong as far as we're concerned. Smooth, upwardly mobile moves are just awaiting final approval from Lands and Forests to move the clubhouse. No doubt there will be a few snags — Murphy being the crafty critter that he is. But in time we will have power, water, and 20th century washrooms. Reserve your bunk early at the Stanley Hilton once this happens.

Just think, water ballast at the twist of a knob, 110V power to run strobe lights instead of flags for the winch, and a cool place to eat dinner just steps away. How will we ever manage it?

**George Graham**, Bluenose Soaring Club

## WINNIPEG CLUB NEWS

By now our season is almost half over and we have been quite active in several areas. Our student flying which looked very promising during the early spring tapered off somewhat as it always seems to do every year. Why this happens is anyone's guess. Could it be a lack of funds or does a bit of hard work and long, hot days at the flight line scare the students away? Whatever the reason, we slowly lose about one half of the student load. Hopefully those that do stay on will go on to licence stage and continue their flying and learn the joys of soaring and all the rest that goes along with this great sport. One of our students has returned to the club after an 18 year absence. Back in 1973/74, Dave Brooks was taking his flight training and was almost to solo stage when he left for Montreal. Now he has returned and a look through his logbook reveals a who's who of our club. Many of our past presidents and other notables appear as instructors and there are even some instructors then who are still doing duty in the backseat today. Talk about dedication to the sport!

Our fleet of gliders has also increased over the summer. Our club's ASW-15 is now flying and being enjoyed by all. We had several new privately owned aircraft brought in, one being an Astir CS bought in New Mexico. The aircraft is in great shape and the proud new owner has had several soaring flights in it. Another new ship is a Standard Jantar 2, C-GORR from the COSA club in Peterborough. It is owned by a syndicate of four and the aircraft is in excellent condition. A Libelle 301 has joined our ranks from Cold Lake. The owner, Rob Minchin, has also started instructing for us and brings with him several years of experience.

One of the goals of our executive this year is to try and promote the sport of soaring. On May 25 we were invited to be the opening act for the Manitoba Ultralight Association recreational aircraft display held at a small airport near Winnipeg. The event caused quite a stir amongst the aviation community. Jim Oke and his ASW-20 were towed over from our gliderport for the eleven o'clock opening. Jim awed the crowd with several wingovers and stalls followed by a "contest finish". From this event we managed to entice several people down for an introductory ride and may have signed up one or two new members. What made this event most enjoyable was that someone else did all the organizing — all

we had to do was show up and enjoy the rewards of free publicity. With further refining this will likely become an annual event.

As was done last year, a gliding expedition is planned for the Brandon area. This event proved very successful last year and several people have formed an interest group with the thought of starting a club in the area. The group has a commitment from a local operator 20 km south of Brandon at the town of Souris to provide aerotows with a Pawnee, and a two-seat Bergfalke III has been found locally at CFB Shilo. So all the pieces are there, it is just a matter of fitting them all in.

One final note. Our field at Starbuck is now in its eighth year of operation and our facilities have come a long way since those early days when we would wallow around in the muck and mud which Manitoba is famous for. Our large runways are quite good; however, they are getting a bit rough with the continued use. We are currently looking for a way to improve the condition of the surface without losing the use of any runway. If there is anyone with knowledge of preparing and repairing runways we would like to hear from you. Our address is located on the backcover of free flight.

**Mike Maskell**, Winnipeg Gliding Club

## MANITOBA PROVINCIALS RAINED OUT

The Manitoba Provincials scheduled for the 1 July long weekend at Swan Valley, 500 km northwest of Winnipeg, suffered from poor weather. Fortunately, the location is a large and well supplied farm so there was lots to do and we all had a great time. One of the owner's sons is a glider pilot and they have one of the smoothest grass strips I have ever flown from. We have a rain date for the coming weekend (6-7 July) though at the moment the field is a quagmire (shades of Nationals '90!).

**Russ Flint**, Winnipeg Gliding Club

## WINNIPEG FIBREGLASS REPAIRS

As a result of the Winnipeg Gliding Club's purchase of an ASW-15, and the subsequent search for a competent repair facility, a local company in Winnipeg has been found to do most any kind of repair to fibreglass components. Advanced Composite Structures, under the direction of Bruce Anning, is a recognized leader in the aerospace field worldwide.

Because of the condition of the fuselage on the "15" it was decided that before it was suitable for flying by our club members it would have to be totally refinished to a like-new condition. Several inquiries led us to ACS and a meeting with Bruce. His initial reaction was one of considerable interest in our project, and a tour of his plant a few days later clinched the deal. The only stipulation was that all the old gelcoat would be taken off by our members. This proved to be a relatively easy task as most of the surface was peeling badly and a sharp-edged razor knife was able to "catch" an edge and the gelcoat flaked off easily. Once finished the whole aircraft was filled using a surface coating that filled all the cavi-

ties and prepared the surface for the primer and final cover paint coat. The final product was a fuselage that looked like new and made everyone happy with the final outcome. Now if we could just do something with the wings! Oh well, there is always next year.

If anyone would like further information on fibreglass repairs, you may contact Bruce Anning of Advanced Composite Structures at 204-694-1942. Tell him Mike Maskell sent you.

## ASC CLINIC WEATHERED OUT

The Alberta Soaring Council cross-country clinic brought ten pilots together at Chipman from 8-15 June to learn a little from coaches Hal Werneburg and Tony Burton. However, a low pressure area anchored up in northern Alberta for over a week ruined the event. Only the Monday saw flights attempted.

The last six years haven't been that good in the Edmonton area ever since the same course featured 600 km flights by Kerry Bissell and Ursula Wiese, and a 500 km triangle two place record by John Firth and Danny Webber. Perhaps it's time to consider moving the event off the annual precipitation maximum for Edmonton!

On the last evening, at least the participants got a great barbeque, and an OO seminar was also given, so something useful was learned. (Did you know that it is possible for a pilot to fly a 300 km triangle and not earn the Silver distance? — it happened in Invermere.)

from ASCent

## CU NIM NEWS

The airfield and campground at Black Diamond are now surrounded by an electric fence, which has been great for keeping the cows off the runway but hasn't kept an infestation of gophers from digging it up!

The club is becoming serious about selecting and buying property of its own, with various quarter sections being inspected in the High River area. This is one of the major decisions in the history of many clubs, so you can imagine that discussion on the subject is extensive and varied.

With the decision to equip club ships with radios, success depended on solving the problem of keeping batteries healthy and charged when everyone always expects someone else to do it. Now, pilots flying club ships buy and look after their own personal battery and install it before flight.

Brand new private Jantar owner, Fred Guest, had the misfortune of a premature release in the ship under conditions everyone dreads at Cu Nim — just off the end of the runway heading west — there isn't much field available that way and there are trees, a gravel pit and a creek to contend with. He got down safely straight ahead from 250 feet with all his training working perfectly. Fred's flight was his first as a private owner, his first cross-country, his first outlanding, and his shortest.

from ASCent and Barograph Traces

# FAI badges

**Larry Springford, 45 Goderich Street  
Kincardine, ON N2Z 2L2 (519) 396-8059**

The following Badges and Badge legs were recorded in the Canadian Soaring Register during the period 1 March to 30 June 1991.

## GOLD BADGE

251 Christel Juergensen Air Sailing

## SILVER BADGE

815 Michel Perrault AC Outardes  
816 Richard Willems Montreal Soaring Council

## DIAMOND GOAL

Christel Juergensen	Air Sailing	305.5 km	ASW 20B	Fergus, ON
Claude Gosselin	Champlain	306.0 km	Jantar Std	Julian, PA
Tillman Steckner	London	306.0 km	ASW 15	Julian, PA

## GOLD DISTANCE

Christel Juergensen	Air Sailing	305.5 km	ASW 20B	Fergus, ON
Claude Gosselin	Champlain	306.0 km	Jantar Std	Julian, PA
Tillman Steckner	London	306.0 km	ASW 15	Julian, PA

## GOLD ALTITUDE

Jack Humphreys	York	4080 m	Grob G102	Minden, NV
Claude Bisson	Quebec	3300 m	Pilatus B4	Baie St-Paul, PQ

## SILVER ALTITUDE

Michel Perrault	Outardes	1790 m	M100S	St-Esprit, PQ
Richard Willems	MSC	1190 m	Astir CS	Hawkesbury, ON
Ted Schmidt	Bulkley	2830 m	Pilatus B4	Smithers, BC

## SILVER DISTANCE

Michel Perrault	Outardes	53.2 km	M100S	St-Esprit, PQ
Richard Willems	MSC	82.0 km	1-26	Hawkesbury, ON

## SILVER DURATION

Deirdre Duffy	Edmonton	5:29 h	ASW 15	Chipman, AB
David Ellis	York	5:11 h	Monerai S	Arthur, ON
Daniel Julien	Quebec	5:07 h	Grob G102	St-Raymond, PQ
Ted Schmidt	Bulkley	5:21 h	Pilatus B4	Smithers, BC

## C BADGE

2280 Kurt Edwards	Cu Nim	1:41 h	Blanik L13	Black Diamond, AB
2281 Ronald McCullough	Rideau	1:05 h	2-33	Gananoque, ON
2282 Werner Stadler	York	1:13 h	1-26	Arthur, ON
2283 David Ellis	York	5:11 h	Monerai S	Arthur, ON
2284 Terry Hooper	Regina	1:06 h	1-26	Strawberry Lk, SK

## Soaring Supplies – Consumer Alert

Each time a "Soaring Stuff" flyer appears in *free flight*, there has been some change in supplies or pricing. Please, only use the information on the most recent flyer when ordering to avoid delays due to ordering errors. Joan at the National Office thanks you in advance for your consideration.

# FAI Records

**Russ Flint, 96 Harvard Avenue,  
Winnipeg, MB R3M 0K4 (204) 453-6642**

## RECORD CLAIM

500 km  $\Delta$  speed – Open, territorial, 105.7 km/h, 24 June 91, Walter Weir, ASW-20B, C-GGWW. Flown from Pendleton airport to Gananoque to Pound Lake Centre, ON and return (on a practice day for the Canadian Nationals). Exceeds previous territorial record of 101.8 km/h set by Dick Mamini in 1973.

## SIGNIFICANT FLIGHTS

**Tony Burton**, 31 May, RS-15, C-GPUB. 723 km polygon course from Invermere BC, with turnpoints at Nicholson bridge (7 km south of Golden), Elko, and Golden A/P – duration 8:35 h.

**Dave Baker**, 1 June, ASW-20CL/16.6, C-GYYY. 771 km polygon course from Invermere BC, with turnpoints at Donald Station, Elko, and Nicholson bridge. This is the longest declared flight in the Columbia valley to date.

**Tony Burton**, 1 June, RS-15, C-GPUB. 751 km of a 771 km polygon course from Invermere BC, with turnpoints at Nicholson bridge, Roosville border crossing, and Nicholson bridge. Outlanded south of Edgewater at 8:45 pm – duration 9:25 h.

*These flights took place in moderate mountain thermal conditions with no significant ridge lift, which is why they took so long.*

**Dave Hennigar**, 28 November 1990, from Benalla, Australia. A polygon flight of 756 km in a Nimbus 2.

## SAC paperwork

SAC holds various forms available for the use of its members at no cost. They can be ordered individually from the National Office, but it is often more efficient (and cheaper) if clubs order in bulk for their own members. Some forms in stock are:

SAC Trophies	OO application
FAI Record application *	OO self exam
FAI badge application	Accident insurance claim
	Accident/Incident Report

George Dunbar, the Team Manager to the pilots at the Worlds, reminds SAC members that they can help support the team by purchasing a Team Canada golf shirt. They are \$25, and a limited supply remains. Call George at (403) 255-7586 in Calgary. His address is in the Directors listing on page 24 of this issue.

\* Pilots considering attempting Canadian record flights should be aware that different forms are used for FAI record flight documentation than are used for badge flights.

## SAC flight trophies reminder

Now is the time for your best efforts for one of the SAC Trophies:

BAIC	Best single flight of the year
Canadair	5 best flights of the year
"200"	5 best flights of the year by a pilot with less than 200 hours at the start of the season
Stachow	Highest flight of the year in Canada

The scoring and other information is shown on the SAC flight trophies form available from the National Office, or from your club Senior Official Observer or CFI (or should be).

A reminder also to our budding young pilots who might qualify for the Jonathan Livingston Seagull trophy. If you are in the running as the youngest pilot to achieve a Silver C this year, please let me know. Send all applications to Harold Eley, Trophy Claims, 4136 Argyle Street, Regina SK S4S 3L7

Trading  
Post

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SINGLE SEAT

Trading Post text deleted

## PROVINCIAL ASSOCIATIONS

**NOVA SCOTIA SOARING ASSOCIATION**  
5546 Sentinel Square  
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President: Gordon Waugh

**FEDERATION DE VOL A VOILE DU QUEBEC**  
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President: Robert Binette

**ONTARIO SOARING ASSOCIATION**  
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President: Sue Eaves

**MANITOBA SOARING COUNCIL**  
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President: Dick Metcalfe

**SOARING ASSOCIATION OF SASKATCHEWAN**  
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President: Harry Hoiland

**ALBERTA SOARING COUNCIL**  
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President: Garnet Thomas

**BC SOARING SOCIETY**  
9280 - 168 Street, RR 10  
Surrey, BC V3S 5X7  
Secretary: Christine Timm

## MARITIME ZONE

BLUENOSE SOARING CLUB  
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## QUEBEC ZONE

AERO CLUB DES OUTARDES  
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AERO CLUB SPORTAIR  
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St-Bruno-de-Montarville, PQ  
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CLUB DE VOL A VOILE  
APPALACHIAN  
Box 271  
Sherbrooke, PQ J1H 5J1

ARIADNE SOARING INC.  
735 Rivière aux Pins  
Boucherville, PQ J4B 3A8

ASSOCIATION DE VOL A  
VOILE CHAMPLAIN  
30 des Orties  
La Prairie, PQ J5R 5J3

CLUB DE VOL A VOILE  
DE QUEBEC  
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Ste Foy, PQ G1V 4B1

MONTREAL SOARING  
COUNCIL  
Box 1082  
St. Laurent, PQ H4L 4W6

CLUB DE VOL A VOILE  
MONT VALIN  
3434 Ch. Ste Famille  
Chicoutimi, PQ G7H 5B1

## ONTARIO ZONE

AIR SAILING CLUB  
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Don Mills, ON M3B 3N6

ARTHUR GLIDING CLUB  
10 Courtwood Place  
North York, ON M2K 1Z9

BASE BORDEN SOARING  
c/o OC Rec. Platoon, CFSPER  
CFB Borden, ON L0M 1C0

BEAVER VALLEY  
SOARING CLUB  
Box 394  
Thornbury, ON N0H 2P0

BONNECHERE SOARING  
Box 1081  
Deep River, ON K0J 1P0

CENTRAL ONTARIO  
SOARING ASSOCIATION  
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Peterborough, ON K9J 7A2

ERIN SOARING SOCIETY  
Box 2284  
Bramalea, ON L6T 3S4

GATINEAU GLIDING CLUB  
Box 883,  
Station B  
Ottawa, ON K1P 5P9

GUELPH GLIDING &  
SOARING ASSOCIATION  
183 Norfolk Street  
Guelph, ON N1H 4K1

KAWARTHA SOARING  
CLUB  
Box 168  
Omemee, ON K0L 2W0

LONDON SOARING CLUB  
Box 773, Station B  
London, ON N6A 4Y8

RIDEAU GLIDING CLUB  
Box 307  
Kingston, ON K7L 4W2

RIDEAU VALLEY  
SOARING SCHOOL  
Box 1164  
Manotick, ON K0A 2N0

SOSA GLIDING CLUB  
Box 654, Station Q  
Toronto, ON M4T 2N5

TORONTO SOARING CLUB  
c/o S. Foster  
10 Blythe St  
Richmond Hill, ON L4E 2X7

WINDSOR GLIDING CLUB  
Box 2172  
Walkerville, ON N8Y 4R8

YORK SOARING ASSOC.  
10 Courtwood Place  
North York, ON M2K 1Z9

## PRAIRIE ZONE

PRINCE ALBERT GLIDING  
& SOARING CLUB  
219 Scissons Court  
Prince Albert, SK S7S 1B7

REGINA GLIDING &  
SOARING CLUB  
Box 4093  
Regina, SK S4P 3W5

SASKATOON SOARING  
CLUB  
1415 Main Street  
Saskatoon, SK S7H 0L5

SWAN VALLEY SOARING  
ASSOCIATION  
Box 850  
Swan River, MB R0L 1Z0

WINNIPEG GLIDING CLUB  
Box 1255  
Winnipeg, MB R3C 2Y4

## ALBERTA ZONE

BLUE THERMAL  
SOARING ASSOCIATION  
73 Cypress Way SE  
Medicine Hat, AB T1B 1H1

COLD LAKE SOARING CLUB  
Box 2108  
Medley, AB T0A 2M0

CENTRAL ALBERTA GLIDING  
CLUB  
4309 Grandview Blvd  
Red Deer, AB T4N 3E7

CU NIM GLIDING CLUB  
Box 2275, Station M  
Calgary, AB T2P 2M6

EDMONTON SOARING CLUB  
Box 472  
Edmonton, AB T5J 2K1

GRANDE PRAIRIE  
SOARING SOCIETY  
Box 446  
Grande Prairie, AB T8V 3A7

## PACIFIC ZONE

ALBERNI VALLEY  
SOARING ASSOCIATION  
Box 201  
Port Alberni, BC V9Y 7M7

ASTRA  
c/o Christine Timm  
9280 - 168 Street, RR 10  
Surrey, BC V3S 5X7

BULKLEY VALLEY  
SOARING CLUB  
Box 474  
Smithers, BC V0J 2N0

MILE ZERO CADET SOARING  
ASSOCIATION  
Box 603  
Dawson Creek, BC V1G 4H4

VANCOUVER SOARING  
ASSOCIATION  
Box 3251  
Vancouver, BC V6B 3X9

## FAI SUPPLIES FOR CERTIFICATES AND BADGES

1	FAI 'A' badge, silver plate pin	\$ 5.00
2	FAI 'B' badge, silver plate pin	\$ 5.00
3	SAC BRONZE badge pin ( <i>available from your club</i> )	\$ 5.00
4	FAI 'C' badge, cloth, 3" dia.	\$ 4.50
5	FAI SILVER badge, cloth 3" dia.	\$ 4.50
6	FAI GOLD badge, cloth 3" dia.	\$ 4.50
<i>Items 7-12 ordered through chairman FAI awards</i>		
7	FAI 'C' badge, silver plate pin	\$ 5.00
8	FAI SILVER badge, pin	\$39.00
9	FAI GOLD badge, gold plate pin	\$35.00
<i>Items 10, 11 not stocked, external purchase approval given</i>		
10	FAI GOLD badge 10k or 14k pin	
11	FAI DIAMOND badge, 10k or 14k pin and diamonds	
12	FAI Gliding Certificate (record of badge achievements)	\$10.00
<b>Processing fee</b> for each FAI application form submitted		\$10.00
13	FAI badge application form, rev. 6 ( <i>stocked by club</i> )	n/c
14	Official Observer application ( <i>stocked by club</i> )	n/c
15	FAI Sporting Code, Gliders, 1990 ( <i>payable to ACC</i> )	\$ 5.00
16	FAI Sporting Code, General, 1989 ( <i>payable to ACC</i> )	\$ 5.00
17	SAC guide "Badge and Records Procedures" ed. 5	\$ 5.00

Please enclose payment with order; price includes postage. GST not required. Ontario residents, add 8% sales tax (items 15-17 tax exempt). Items 1-6 and 13-17 available from SAC National Office.

## ARTICLES FAI POUR CERTIFICATS ET INSIGNES

Insigne FAI 'A', plaqué argent	
Insigne FAI 'B', plaqué argent	
Insigne ACVV BRONZE ( <i>disponible au club</i> )	
Insigne FAI 'C', écusson de tissu	
Insigne FAI ARGENT, écusson de tissu	
Insigne FAI OR, écusson de tissu	
<i>Les articles 7-12 sont disponibles au président des prix de la FAI</i>	
Insigne FAI 'C', plaqué argent	
Insigne FAI ARGENT	
Insigne FAI OR, plaqué or	
<i>Les articles 10, 11 ne sont pas en stock, permis d'achat externe</i>	
Insigne FAI OR, 10k ou 14k	
Insigne FAI DIAMOND, 10k ou 14k et diamants	
Certificat FAI de vol à voile (recueil des insignes)	
<b>Frais de services</b> pour chaque formulaire de demande soumis	
Formulaire de demande pour insignes ( <i>disponible au club</i> )	
Formulaire de demande pour observateur officiel ( <i>disponible au club</i> )	
FAI Code Sportif, Planeurs, 1988 ( <i>cheque payable à l'ACC</i> )	
FAI Code Sportif, Général, 1986 ( <i>cheque payable à l'ACC</i> )	
ACVV guide des procédures pour FAI certificats et insignes (éd.5)	

Votre paiement devrait accompagner la commande. La livraison est incluse dans le prix. TPS n'est pas requise. Les résidents de l'Ontario sont priés d'ajouter la taxe de 8% (les articles 15-17 exempts de taxe). Les articles 1-6 et 13-17 sont disponibles au bureau national de l'ACVV.