



# free flight • vol libre

3/95  
Jun/Jul



# Liaison



The '95 season is on and all our efforts should focus on safety and recruiting. As I mentioned in the previous *free flight*, this year is a crucial one relative to these very serious issues. Enough said — let's do it!

The next AGM, to be held in Regina, will take place on the second weekend of March '96, one week later than usual. The board approved this change to allow more time to close the previous year, get the auditors in and finally finalize the financial reports and the year's budget. In the last few years, we have been competing with the preparation of the federal budget for our treasurer's time. This change will make life easier for Jim.

Joan McCagg left for personal reasons on April 28 after over 4 years with our organization. We all wish her well with whatever she might undertake in the future. The new voice of SAC is Debbie O'Hara. Debbie is returning to the work market after studying the system side of business administration at Algonquin College. I am sure you will enjoy dealing with her. Should you need to phone Debbie, please take note that the office is open for the time being on Mondays, Tuesdays and Thursdays.

By the time you read this, the '95 Nationals may be underway. I am particularly happy about the emphasis that is being given to the Sport class at this event. The winner will get a ticket for two anywhere Air Canada flies! In my mind this class represents the future of soaring because it gives an incentive to do cross-country flying to those who practise the sport for recreation only.

Happy and safe landings!



Il appert qu'il ne soit pas possible cette année de faire une session de formation pour instructeur en français par manque de personne qualifiée. En effet, le chargé de cours des années dernières, Serge Morin, n'est plus disponible. De plus nous ne sommes au fait d'aucun individu disponible, ayant cette formation. Si tel n'est pas le cas, m'en avertir dans les plus brefs délais. Toutefois, Ian Oldaker s'est engagé à former cette année quelqu'un qui pourra assumer cette tâche en '96.

Pour conclure, j'aimerais vous rappeler de porter la plus grande attention à la qualité de la formation des nouveaux membres. Ce travail de base est essentiel pour pouvoir améliorer notre fiche au niveau sécurité, fiche qui a été médiocre au cours des dernières années.

Bons vols et soyez très prudents.

*Pierre Pepin* president

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Le journal de l'Association Canadienne de Vol à Voile

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**Cover**

Real le Goueff again gives us an excellent cover photo. A tight turn over Hawkesbury, Ontario, home of the Montreal Soaring Council.

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# International Gliding Commission 1995 Report



## The SOARING ASSOCIATION of CANADA

is a non-profit organization of enthusiasts who seek to foster and promote all phases of gliding and soaring on a national and international basis. The association is a member of the Aero Club of Canada (ACC), the Canadian national aero club representing Canada in the Fédération Aéronautique Internationale (FAI), the world sport aviation governing body composed of national aero clubs. The ACC delegates to SAC the supervision of FAI-related soaring activities such as competition sanctions, issuing FAI badges, record attempts, and the selection of 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. A 3.5" disk copy of text in any common word processing format is welcome (Macintosh preferred, DOS is ok in ASCII text). All material is subject to editing to the space requirements and the quality standards of the magazine.

Prints in B&W or colour are required. No slides or negatives please.

*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 the magazine and the author be given acknowledgement.

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**5** January, March  
May, July  
September, November

## Tony Burton

This year's meeting of the IGC was held in Paris on 17–18 March. No Canadian delegates attended. The following is an extract of some items of interest from the minutes.

**Doping in gliding** This subject gave rise to a lively debate. Some countries already prescribe doping tests for gliding contests, and some other air sports have asked the FAI for guidance. The delegates agreed on the necessity for a regulation but there was no agreement on how to proceed. The topic will be pursued.

**Responsibility for solar powered aircraft** The IGC is prepared to accept the responsibility for solar driven aircraft as long as they meet the requirements for motor gliders.

**Sporting Code** There has been an extensive write up for the use and control of electronic instruments in gliders which will likely appear in the next revision of the Sporting Code due out this October. A proposal was accepted for the use of cameras in open cockpit gliders. The distance penalty ratio for altitude differences in excess of 1000 m is going to increase to 100:1 for badge flights as well as records. There was further positive discussion on the idea of having record categories in which the turnpoints achieved are declared *after* the flight is concluded. At this time, a new record category of "free out and return" will be instituted. There was a proposal to change the definition of an ultralight glider from an empty weight of 100 kg to an *all-up* weight of 200 kg. The proposal will be passed to OSTIV for technical comment.

**Motor gliders** They are popular in Europe. Motor gliders delivered in 1994 as a percentage of total gliders produced: Glaser Dirks – about 70%, Schleicher – about 90% (of 18m ships), Schempp-Hirth – about 80%.

**Global navigation systems** Bernald Smith was thanked for the great work his subcommittee did on drawing the technical regulations for the use of global navigation systems (the active participation of the manufacturers was particularly valuable). There was a lot of discussion on the ownership rights of GPS data once recorded. It was suggested that it would be dangerous if government authorities had access to data from competitions (presumably pilots would risk charges if airspace was violated, for example). It was generally agreed that the legal aspects should be investigated.

**Organization of championships** This has been a large item recently, with many saying that the present size, conduct, and expense of world competitions are detrimental to the sport. There were many ideas:

- proposals of limiting competitors to two per class per country, or splitting the world championships into class championships were not accepted as suitable measures for reducing organizational costs.
- the World Gliding Championships planning committee should vet bids before the IGC votes on them (this committee will now become permanent).
- organizers should try to assist pilots from countries with a poor economy to participate.
- an attempt should be made to "import" a competition organization into areas in the world with excellent soaring conditions but only a small or weak soaring movement (South Africa is one example).
- a list of preferred championship sites should be established (this would presumably reduce the organization and infrastructure costs).
- a guidebook of hints, advice, and assistance for organizers should be prepared.

The working group on world competition presented two broad resolutions to the IGC regarding the future basic class structure of world competitions. It was decided to delay decision until the 1996 meeting after consultation with the delegates' home gliding organizations. It was agreed that a permanent "Competition Philosophy" subcommittee is to be established immediately, chaired by Bruno Gantenbrink of Germany.

The 25th WGC will be held in St Auban, France in 1997, and the 1999 contest will be Bavarian, held in Bayreuth, Germany.

## L'ASSOCIATION CANADIENNE DE VOL A 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. Le contenu des articles soumis est la responsabilité exclusive de leurs auteurs. Aucune compensation financière n'est offerte pour la fourniture d'un article. Chacun est invité à participer à la réalisation de la revue, soit par reportages, échanges d'opinions, activités dans le club, etc. Le texte peut être soumis sur disquette de format 3.5" sous n'importe quel format de traitement de texte bien que l'éditeur préfère le format Macintosh (DOS est acceptable). Les articles seront publiés 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 photo en noir et blanc ou couleur sont requises; pas de diapositives ni de négatifs s'il vous plaît.

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 personne désirant faire des représentations sur un sujet précis auprès de l'ACVV devra s'adresser 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\$20 dans les Etats Unis, et EU\$26 outre-mer) veuillez contacter le bureau national à l'adresse qui apparaît au bas de la page à gauche.

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# letters & opinions

## LETTER FROM PAUL

Ginny and I had hoped to be present to help celebrate your 50th Anniversary, but unfortunately this coincided with the SSA Convention in Reno. I had been close to the Canadian soaring movement for many years having attended all of the AGMs from 1948 until 1981 when I retired. This enabled me to get to know such famous names as Shenstone, LeCheminant, Boudreault, Ames, Agnew, Brother Hormisdas, Pow, Beasley, Piercy, Yates, Lockhard and so many others.

One of my fondest memories of Canadian soaring occurred on 4 August 1957, when six Canadians made golden "C" soaring flights to Elmira on the same day from Brantford during your 1957 National Soaring Meet. It was a big step ahead for Canadian soaring. Those making the flight were Jack Ames, Charlie Bonds, Frank Brame, Wolf Mix, Gordie Oates, and Elvie Smith, who with their crews joined me at a barbeque and were my overnight guests.

The Vintage Soaring Association, the National Soaring Museum, and the Harris Hill Soaring Corp. are happy to sponsor the International Vintage Sailplane Meet (IVSM) at Harris Hill, July 16-25. They are pleased to have two Canadians, Leo Schober and Herrie ten Cate enter vintage sailplanes, and we hope that many SAC members will attend this event. We also have 12 vintage sailplanes entered from Europe and 36 from the USA. It will be a meet out of the past! How about another fly-in to Elmira? I can promise another barbeque for those that make it!

Congratulations to SAC on your 50 years and may you have many more successful years of soaring.

**Paul A. Schweizer**

and your many other friends around Elmira

## SPORTING LICENCE FEE DOUBLES!

The Aero Club of Canada had its AGM March 5th. I'm writing to you to officially inform your organization of one of the matters which has come out of the meeting.

Effective 5 March, the Aero Club of Canada will be charging \$30 for FAI Sporting Licences and \$50 plus expenses for any application requiring less than two weeks processing time.... Please inform your members of the new fee as soon as possible.

Sincerely,

**Linda Patrick**

ACC executive secretary

*Bob Carlson, the president of the Aero Club of Canada, explains the finances of the ACC*

When the power flying clubs and flight training centres in the Royal Canadian Flying Clubs Association split off, it left the sport/recreational aviation associations as the nucleus of what is now the ACC, Canada's "national aero club" and FAI representative. This took away the primary revenue source that had paid the FAI membership save for the roughly \$2000 paid by SAC and the other associations, and caused the initial jump in the FAI levy. The sporting licence fee, the other ACC income source, was also increased then.

For years, Transport Canada had also provided a \$25,000 grant to help defray the administrative costs of our participation in the FAI. This never paid all the costs — the vice president of the FAI for Canada still pays about 50% of his travel costs to FAI meetings from his own resources. Three years ago, TC cut the FAI grant in half, has been further decreasing it in increments, and it will end 31 April 1996.

Furthermore, the FAI levy is paid in Swiss Francs which, since the ACC began, has risen from 82¢ to \$1.40! SAC and other member associations have refused to pay the current increase in the FAI fee arising from our currency devaluation. ACC reserves are almost totally depleted paying currency-caused fee deficiencies, and faced bankruptcy in one year.

In response to this situation, we moved our office and have reduced expenses by using the services of the Model Aircraft Association of Canada. We also have downgraded our class of membership in the FAI from a Class 4 country to Class 10 (the annual levy of which is the most we can afford) — we lose votes thereby, maybe some stature, and the right to issue three Tissandier Diplomas and two group awards each year. We also intend to reduce our funding needs from the associations.

However, given the need to share the load it seemed reasonable that sporting licence users should bear a larger share of the cost as much of our involvement in the FAI is for their benefit, hence the increase.

## WORLD TEAM FUNDING

For the last two world contests there has been no representation by a Canadian team. We did have pilots competing this year in New Zealand but none of these pilots were selected to participate as members of the Canadian team. They represented Canada because none of the seeded team squad members could afford to go to the ⇒ p18

# Omarama retrospective



Larry Springford

**N**ONE OF THE CANADIAN WORLD team squad pilots were able to attend the competition in Omarama, New Zealand. However, three pilots who had flown in world contests in the past, Brian Milner, Heri Pözl, and Wilf Krueger, did go and represented Canada. Brian flew in the Open Class in his Nimbus 3, and Heri and Wilf flew in the 15m Class with LS6b's. There were 91 pilots competing in total: 15 in Open, 32 in 15m, and 44 in the Standard class.

## Opening day — 8 January 1995

The opening day ceremonies were full and well done. Probably the most notable events in a full day of parade of teams, opening speeches and airshow were the Maori welcome and some of the airshow events. The Maori troupe who did the welcoming dance were in full regalia and definitely lived up to their warlike reputation.

The highlights of the airshow were some of the glider aerobatics and an aerotow of a glider by helicopter followed by a vertical release. On the radio, the pilot's voice rose several octaves as he reported his speed — 50...40...STALL.

**Day 1** Open 345 km folded quad — 4 TPs  
15m 317 km folded quad — 4 TPs  
Std 300 km folded quad — 4 TPs

Monday — 9 January The weather was slightly better than forecast, with thermals to 10,000 feet, before overdevelopment and showers dropped the cloudbase. Thermal strength to 8 knots with light east winds on the ground increasing by the end of the day to 20–25 knots. Winners on the day were:

Open Schroeder, Germany, ASW22B  
Milner (8th)  
15m Grund, Germany, Ventus 2B  
Krueger (6th), Pözl (15th)  
Std Wells, Great Britain, LS8

It was a tough first day with thirteen landouts. The Canadian team was encouraged by their results. The country flown over was rugged. Wilf reported thermalling at 800 feet over some mountainous country. Heri described how he lost a half hour when the Open ships made it over a mountain that he was five metres too low to cross.

**Day 2** Open 395 km folded quad — 4 TPs  
15m 371 km folded quad — 4 TPs  
Std 331 km folded quad — 4 TPs

Weather was as forecast except for over-

development and showers which shot down all but two competitors — both New Zealanders. Cloudbase was up to 8000 feet before showers reduced it. Thermal strength was up to 6 knots. The day winners were:

Open Lynskey, New Zealand, Nimbus 4  
Milner (15th)  
15m Delore, New Zealand, LS6a  
Pözl (22nd), Krueger (31st)  
Std Van Dyke, New Zealand, LS8

In retrospect, it was an overcalled day. A Swiss pilot landed by Lake Ohau where the need for a helicopter retrieve was seriously considered (they were used more than once). Heri and Brian landed in the same field after doing a "GPS landout" — identifying on the magic new system the furthest point achieved on course and then returning to a safe airstrip from which an aeroretrieve was possible. Wilf had a bad day, leaving too late and getting shot down in showers.

**Day 3** Open 438 km folded quad — 4 TPs  
15m 368 km triangle  
Std 355 km triangle

Weather was as forecast with 8 knot lift and cloudbase of 8000 feet. The winners were:

Open Gantenbrink, Germany, Nimbus 4  
Milner (15th)  
15m Napoleon, France, Ventus 2  
Krueger (11th), Heri Pözl (25th)  
Std Striedieck, USA, ASW24

Wilf had a fast flight. His comments after the flight noted the extensive training of the German team. As he followed them into a valley, he heard one of the pilots describing where an airstrip was in that valley — which was otherwise unlandable. Heri lost 20 minutes with a climb that later proved unnecessary but was in keeping with his philosophy to fly conservatively and avoid landouts. Brian got low after an initial start and restarted. This put him far enough back on the pack that he outlanded in a paddock which didn't permit an aero retrieve. His crew reported a difficult drive into and out of the field which prompted the replacement of the crew car with a four wheel drive the next day. Today it was a New Zealand pilot who required a helicopter retrieve from an inaccessible valley.

**Day 4** Open 452 km folded quad — 5 TPs  
15m 427 km folded quad — 4 TPs  
Std 393 km folded quad — 4 TPs

Weather was slightly better than forecast.

Thermal lift of up to 8 knots and a cloudbase of 8000 feet was again achieved.

Winners on the day were:

Open Gantenbrink, Germany, Nimbus 4  
Milner (15th)  
15m Ghiorzo, Italy, Ventus  
Pözl (29th), Krueger (31st)  
Std Striedieck, USA, ASW24

Heri found himself in a hole and lost time getting out of it. In retrospect, he felt his decision making probably deteriorated from dehydration. Brian came home at 103.8 km/h but that still left him at the bottom of the pack. Wilf was flying conservatively and was shot down on the second leg. The first places in Open and Standard classes were back to back repeats for Bruno Gantenbrink and Karl Striedieck. Gantenbrink was flying as an invited pilot rather than as a member of the German team. He missed qualification on the team due to photo problems in the German Nationals.

**Day 5** Open 612 km triangle  
15m 557 km triangle  
Std 300 km triangle

Weather was forecast as weaker than the previous day and deteriorated to the north with moist air flowing in and lowering cloudbase down to the mountain tops from the 9000 feet and 8 knot lift seen earlier. Winners on the day were:

Open Gantenbrink, Germany, Nimbus 4  
Milner (15th)  
15m Wills, Great Britain, LS6  
Pözl (14th), Krueger (31st)  
Std Davis, Great Britain, Discus

After criticism about too short a task call the previous day, the task committee overcalled the task for this day. Only 21 of 90 starters made it back to the field. One of the Polish pilots, Tomasz Rubaj crashed on a mountain, writing off his SZD-55 but walking away from the site. He was quickly rescued by Search and Rescue after information was passed by Brian on a relay through an Air New Zealand flight to ATC. The pilots who got home or close to home had to fly through a gap which was described as two wingspans wide (at the top!) and about 50 feet from the cloudbase to the top of the saddle. It was a classical Friday the 13th.

For Brian and his crew, it was the retrieve from hell, which is worth a story by itself.

For Wilf, it was another tough day. To add to his frustration, he reported seeing a cu form on the ridge he had been soaring ten minutes after he landed. Heri had a good flight, noting that an extra 200 metres, which he didn't take on the last thermal 90 kilometres out, would have brought him home.

#### Rest day – Saturday 14 January

Because of the extraordinary long retrieve distances yesterday, Saturday was declared a rest day. Many of the aero retrieves had been either partial retrieves to an airport closer to Omarama or, in some cases, resulted in a second landout. The intent was to get gliders back over a mountain range to eliminate an additional three hour drive for retrieve crews. The problem was impending dusk. As was announced at the next briefing, a number of towplanes and gliders landed back at the Omarama airport at "civil twilight" with the runway lit by car headlamps.

Those crews and pilots fortunate enough to have avoided long retrieves were able to do some local touring of Mount Cook or Queenstown and other tourist areas. The rest day coincided with the planned Bavarian Night. It was a good party, even if Brian only arrived back from his retrieve at 2200 hours half way through it.

**Day 6** Open 439 km triangle  
15m 342 km triangle  
Std 319 km triangle

Weather deteriorated during the day due to sea breezes coming in from the east to a greater extent than forecast, trapping a lot of pilots near the second turnpoint. One opinion of the weather was that the weak wave and moderate thermals which were forecast, cycled against one another throughout the day. Winners on the day were:

Open Harrison, New Zealand, ASH 25  
Milner (15th)  
15m McPhee, New Zealand, Ventus A  
Pözl (29th), Krueger (31st)  
Std Karow, Germany, Discus B

This was another bad day for the Canadians — they comprised half the landouts in their classes. Brian and Heri had trouble climbing up for a start and consequently left well behind the pack. They both were washed out of the sky by sea breeze easterlies. Heri reported how he ridge soared the mountain to the second turnpoint, climbing in a steady 2 knots, but when he returned to the mountain after flying 5 km out and back to the turnpoint, the ridge lift had turned into 3–4 knots down and he lost 4500 feet in 15 km, landing in a rough field in the middle of nowhere. Heri also provided the story of the day, describing how he hitchhiked into the nearest town. The car that stopped for him (on a little used road) was full — but it was towing a rubber dinghy on a trailer behind it. So he rode into town in the dinghy.

Wilf said he had a good climb at the start gate and then hit no thermals until he landed 90 km south. Wilf made a hard decision to withdraw from the contest as he was un-

comfortable with the topography of the contest area. (*Organizer John Roake noted in his contest report to the IGC that he respected the difficulty of Wilf's choice. ed*)

**Day 7** Open 674 km quad – 4 TPs  
15m 625 km quad – 4 TPs  
Std 523 km quad – 4 TPs

Weather for the day was close to the forecast with strong wave to the maximum altitude permitted of 23,000 feet. Winners on the day were:

Open Lynskey, New Zealand, Nimbus 4  
Milner (15th)  
15m Delore, New Zealand, LS6a  
Heri Pözl (22nd)  
Std Wells, Great Britain, LS8

Heri came home at 105.7 km/h but that still left him a long way down the list with the winner coming home at 148 km/h. It was a day that the New Zealanders were expected to win — and they did. Heri described how the day swung between elation at 23,000 feet and dismay at 2000 within half an hour.

Brian landed out after finding himself 2000 feet too low to go over Mount Cook. He reckoned that if he had the local knowledge to have selected the ideal course around the mountain, he could have gotten home. Many of the competitors described 190 km final glides!

**Day 8** Open 429 km folded quad – 5 TPs  
15m 389 km folded quad – 5 TPs  
Std 350 km folded quad – 5 TPs

Weather was much better than forecast with thermals to 8000 feet and great cloud streets. Thermal strength of 10 to 15 knots were reported. Winners on the day were:

Open Schwenk, Germany, ASW22L  
Milner (15th)  
15m Gimme, USA, LS6b  
Pözl (18th)  
Std Spreckley, Great Britain, LS8

Even the task setters said that the day had been undercalled since both the 15m class and the Standard class scores were devalued. Once again the speeds turned in were very impressive. The 15m winning speed was 137.1 km/h, so the good speeds turned in by Canadian pilots still left a lot of pilots ahead of them.

**Day 9** Open 507 km quad – 4 TPs  
15m 454 km quad – 4 TPs  
Std 411 km quad – 4 TPs

Weather was quite different than forecast. The pilots ran into a sea breeze front at the first turnpoint where seven of them were shot down. The next 200 kilometres were flown strictly in ridge lift since there were no thermals; and finally, a weak wave at the last turnpoint permitted the finishers to get home. Winners on the day were:

Open Lynskey, New Zealand, Nimbus 4  
Milner (15th)  
15m Delore, New Zealand, LS6a  
Pözl (11th)  
Std Van Dyke, New Zealand, LS8

It was a challenging day, but a great day with a great task which gave some advantage to the Canadians since there was a sea breeze front to contend with. Our pilots recognized it and after getting high before entering it managed to get in and out at maximum L/D. Heri moved up two spots on the overall standing because of the landouts. Lynskey, who had had a poor first day, had been flying consistently well and was now just ten points shy of the lead in the Open class.

#### 19 January, no task

The task committee decided not to call a task since a combination of low cloudbase, high mountains and incoming sea breeze would have made the day in their opinion "a lottery". It looked like good south western Ontario weather to the Canadians!

#### 20 January, day scrubbed

The classes marshalled and the Standard class was launched. As on some previous days, they milled around below 1000 feet attempting to get high enough to start. However on this day a large number fell out of the sky prompting the task committee to cancel the task after the start gate was opened. In fact, no one could get high enough to go through the start gate above release altitude (a start requirement).

The tasks were shortened for the 15m and Open classes but eventually they too were scrubbed since the start height attainable was still too low.

**Day 10** Open 522 km  
15m 477 km  
Std 439 km

It was clear as a bell with a light northerly wind. Winds increased during the day with cu and lenuies over the mountains. There was considerable local celebration when after hours of silence on the field, Ray Lynskey called "10 km out". Then came the wait to see if Schwenk would arrive soon enough to retain his small lead, but he didn't. Gradually the other pilots came home to finish the day and what was regarded as a tough but very well organized competition. Winners on the day were:

Open Lynskey, New Zealand, Nimbus 4  
Milner (15th)  
15m Delore, New Zealand, LS6a  
Pözl (27th)  
Std Sorri, Finland, Discus

#### Final Results:

Open 1. Ray Lynskey, New Zealand  
2. Uli Schwenk, Germany  
3. Robert Schroeder, Germany  
15m 1. Eric Napoleon, France  
2. Justin Wills, Great Britain  
3. Gilles Navas, France  
Std 1. Markku Kuittinen, Finland  
2. Brian Spreckley, Great Britain  
3. Jacques Aboulin, France

The *World Soaring Cup* team prize, a new — and contested — trophy, went to France, with three of their pilots in the top standings. •

# The evolution of cumulus clouds

To get the best out of a promising sky it is vital to understand just how clouds are formed.

**Tom Bradbury**  
from *Sailplane & Gliding*

**C**UMULI EVOLVE into many different shapes depending on the stability of the atmosphere, the distribution of moisture, the variation of wind velocity at different levels and how the air is heated. This article describes some of the patterns which appear.

**Basic thermals** Figure 1 illustrates five stages in an idealized thermal. The initial stage (A) consists of a shallow layer of air resting on a flat area about the size of an airfield which has been warmed by sunshine. The air in contact with the ground takes up heat and becomes less dense. At first the heat is distributed upwards by small scale turbulence. This process can sometimes be seen as a shimmer in the air which makes distant objects blurred, especially when viewed through binoculars. The shimmer is due to variations in refraction of light where different densities of air lie along the line of sight. The effect is common over tropical deserts but may also be seen over England on hot days.

Small scale turbulence is inadequate to distribute the heat fast enough so eventually a

large mass of air breaks away from the surface. The whole mass of air cannot rise simultaneously; the drag would be enormous. Instead a part rises into a dome (B). As the heated dome rises the air above it is pushed aside while near the surface a horizontal inflow starts. On a calm day this inflow may be shown by windsocks or smoke trails. A broad dome of rising air still produces too much drag, so the lift becomes concentrated in a relatively narrow column (C) and (D) which soon develops its own circulation (E). This circulation is often called a thermal bubble.

**Circulation in a thermal bubble** As the thermal rises, the top and sides are slowed down by the drag from its passage through the environment. The central core is protected and usually rises at twice the speed of the summit. The difference in ascent speeds sets up a circulation rather like a vortex ring. Figure 2 illustrates the direction of flow round the side of the rising bubble. Underneath the bubble there is an inflow with some of the air from outside dragged into the circulation.

**Size of thermal bubbles** In recent years people have noticed that clouds have no natural scale length. Clouds and their constituent parts come in many sizes; clouds (like coastlines and mountains) can be represented by fractals whose outline looks the same at many different scales.

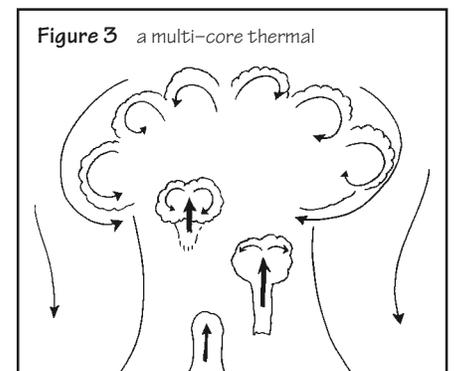
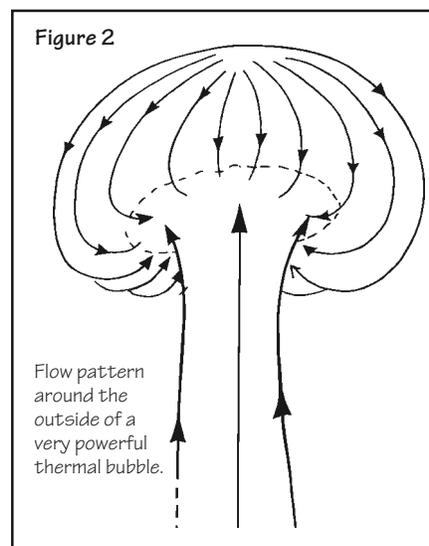
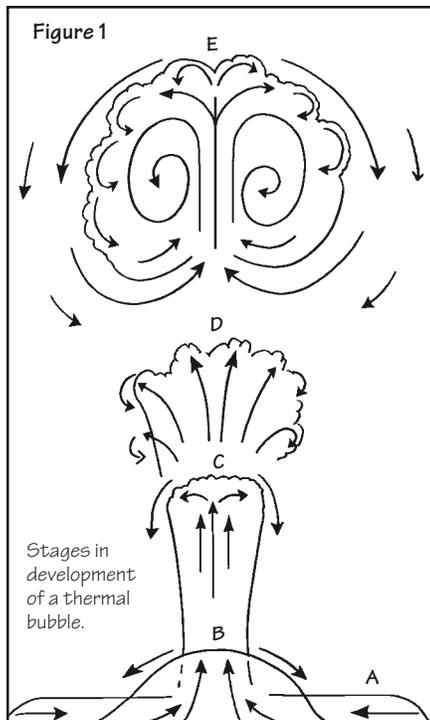
When satellite pictures became available it was found that the cloud patterns had the same fractal dimensions over seven orders of magnitude. The swirls and eddies associated with thermals range in size from centimetres, when modelled in a water tank, to kilometres in a cumim.

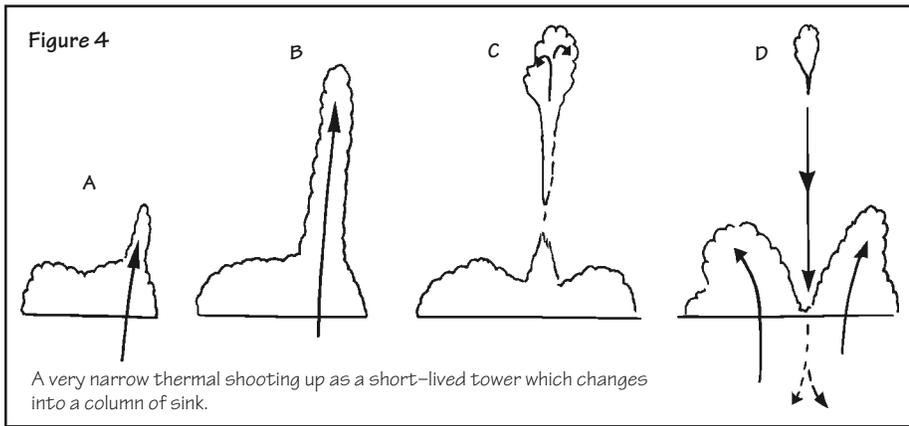
Thermals do not invariably form bubbles. Weak or sluggish thermals never seem to develop the full circulation. A well formed thermal bubble usually needs vigorous ascent with a big initial difference of density between the bubble and the outside air. Winter thermals are often too weak to develop a proper bubble; their feebleness is revealed by a lack of proper domes on the cu tops and a general tendency for fuzzy edges to the clouds.

Great contrasts of temperature seem to produce the best shaped bubbles. Some of the finest examples can be seen in early atomic bomb photos (Figure 2 was based on such a photo). Bangs caused by smaller ground explosions, for example a petrol tank blowing up, sometimes produce a perfect vortex ring with a clear centre in the rising cloud of smoke.

The smoke and ash from a volcanic eruption generally circulates like thermal bubbles. Eruptions often produce a mass of clouds consisting of numerous overlapping bubbles churning over and over. The motion looks very similar to a time lapse film of a big bank of cumulus.

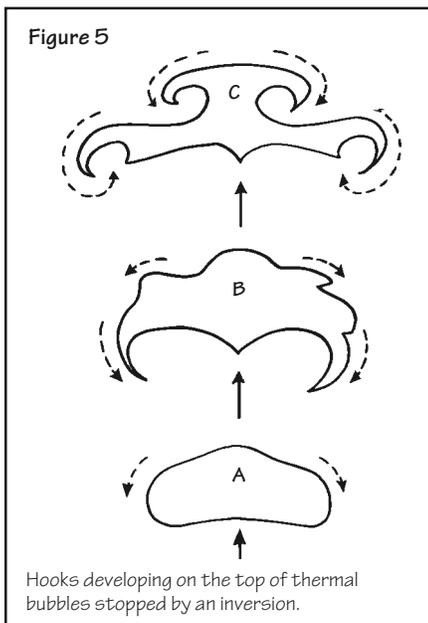
**Entrainment** Thermals normally expand as they rise. This is partly due to the reduced pressure aloft but mostly due to outside air becoming mixed with the thermal.





The mixing, called entrainment, occurs chiefly near the top of the thermal but also round the sides and sometimes near the base. The originally smooth shape of the dome changes into a mass of smaller domes where the outside air is engulfed by the rising thermal. Drawing colder air into the thermal dilutes it and reduces the difference in density and hence the lift. The mixing spreads in from the edge, so the larger the bubble the longer it takes for entrainment to make the thermal too dilute to continue rising.

Entrainment not only cools the thermal but adds to its mass. This additional mass has to be accelerated to the speed of the thermal. Thus entrainment has a double effect; it dilutes the warm air inside a thermal reducing its buoyancy and increases the weight to be lifted. As a result many thermals fail to reach the top of the unstable layer. However a big thermal has considerable momentum so that it can continue to rise for some time after it has lost its buoyancy. How far it overshoots its level of equilibrium depends on whether there is an inversion above it. The top of an overshooting thermal is colder than its environment and very ready to sink when the momentum has been expended.



**Multi-cored thermals** In the early morning, when there is only just enough heat to set off a thermal, there is usually only a single core of lift and this is drawn up into the bubble as soon as the limited amount of warm air near the surface is exhausted. Such thermals are generally short lived. Unless the air is very unstable and moist, any cu dissolves rapidly. Later in the day, especially in hot dry regions, thermals can draw on a large supply of hot surface air. Then they become big and broad and long lasting. These thermals may have several cores. Figure 3 illustrates a broad thermal with several much smaller bubbles rising inside. The pattern in Figure 3 is based in part on the behaviour of smoky bonfires. These often produce surges of activity with beautifully formed thermal bubbles shooting up inside the main smoke column. The bonfire bubbles are of course tiny compared to real thermals and being so small are rapidly eroded. Their whole life time is over in a matter of seconds but their circulation looks identical to that of full sized thermals.

**Cloud profile and rates of ascent** The rate of rise of thermal depends on the difference in density between it and the environment and the drag due to its passage through the surroundings. A wide blunt dome of cu has to push more environmental air out of its way than a thin narrow thermal. Figure 4 shows a very thin thermal rising out of a clump of cu. It quickly grows into a tall column (B) which ascends much faster than the fatter clouds. Unfortunately this process has its own defects. A tall thin column of cloud suffers from severe erosion at the edges, especially if the cloud shoots up into much drier air. Erosion is often so rapid that several thousand feet of cloud evaporate in five minutes or so (C). The bubble at the top, often the widest bit, lasts longest but the stalk quickly vanishes.

Now the brief surge of lift changes to sink (D). Formation of cloud released latent heat which added to the energy. Evaporation takes back this latent heat leaving the air colder and

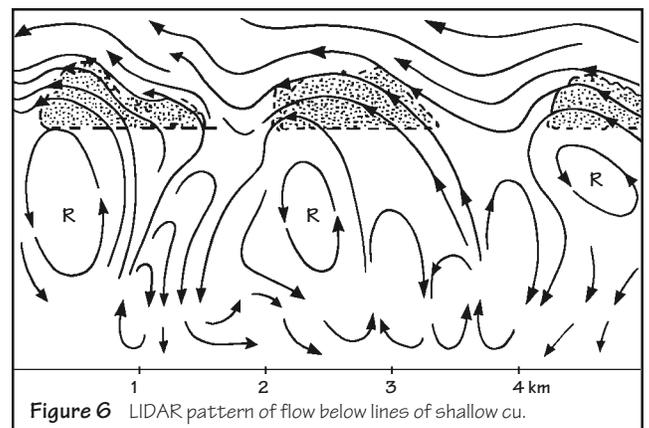
denser than its environment. A column of sink soon develops below the broken pillar and on some occasions the sink goes on down into the original clump of cloud and eventually out below the base.

Even wide domes of cumulus lose lift and start to subside, but not as rapidly as the narrow towers. Descent results in evaporative holes developing which increase the sink. Unless further bubbles rise up to maintain the cloud it starts to degenerate. One cannot always see this when looking at a clump of cumuli but the cloud shadow often reveals these holes before they show in the profile of the cloud.

**Inversions and bubbles** On many good soaring days cumulus tops are limited by an inversion. When the thermal bumps into the warmer air, it quickly stops rising and the upward flow in the core is deflected sideways. This sideways deflection may produce a temporary wind shear at cloud top. The effect of such a shear has been modelled mathematically; one result is shown in Figure 5. A is the original bubble, B shows how the outward shear starts to distort the bubble and C shows how continued shear produces hooks. The model traces the moisture in the bubble but does not allow for evaporation in regions of descent. In real life one may see such small hooks on the cloud top but they usually dissolve in strong sink at the edges. If there is already a wind shear above the inversion the hook pattern loses symmetry and only one side shows the curl over.

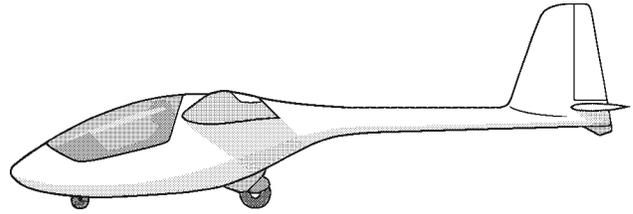
**LIDAR flow patterns** LIDAR works on the same principle as radar except that it uses a laser beam. It can detect motions along the line of sight by the Doppler principle and can often follow minute particles in cloud-free air. Figure 6 shows the flow under lines of cu at an inversion. It is much less detailed than the mathematical model in Figure 5 but gives a more comprehensive picture. Above the cloud tops there was a wind shear from right to left, so the flow did not form thermal bubbles. Instead a kind of wave motion occurred above the cloud tops while below the up and down flow was separated by regions of rotation marked R.

**Influence of moisture** The water vapour in the atmosphere can provide ⇨ p14



# What's happening with the World Class?

Quite a lot worldwide. An update from the new World Class Soaring Association in the USA



## David Habercom

from the Seattle Glider Council *Towline*

**A** LOT has happened recently. Oran Nicks travelled to Poland in November 1994 with other International Gliding Commission (IGC) officials to visit the Swidnik factory and the PW-5 design team at Warsaw University of Technology. He also visited New Zealand in early January. Much of the information below comes from his reports. I express my opinion here about the proper role of the newly formed World Class Soaring Association (WCSA).

### The Polish World Class glider

If PZL Swidnik has kept to its schedule, it has begun PW-5 production at a rate of four or five a month. In spring 1995, they expect to begin using a second set of molds and increase production to 9-10 per month. Swidnik has fixed the price by agreement with FAI at 19,210 Swiss Francs for the first two years for a ready-to-fly ship with basic instruments. Exchange rates on January 6 made the US price about \$14,750.

Communication with Swidnik remains sporadic, but we know PW-5 #005 went to The Netherlands and that three gliders have left for New Zealand. We understand that Swidnik will have a PW-5 ready to ship to the USA. We do not have a US delivery schedule from Swidnik, but we remain in close contact with Solaire.

The rumours of quality problems with the first PW-5s appear to have substance. We understand that buyers of the first Swidnik PW-5s in France and The Netherlands rejected the ships. I have corresponded with the Dutch PW-5 owner, who reports that "the overall quality of the glider is insufficient." Oran recently talked to the New Zealanders, who ordered six PW-5s and whose agent in Poland rejected the shipment because three of the six suffered serious flaws. I understand that the gliders tended to turn in flight, suggesting a fundamental manufacturing error. After Swidnik had worked on the problem for two months, the New Zealanders pressed for shipment of the three which did pass testing. When Oran visited Swidnik in late November, company executives frankly admitted their errors. They assured him and other IGC officials that they would never again ship an imperfect glider. We will see.

World Class supporters need to note that the IGC and FAI will not let the class fail at this stage due to Polish errors. Too much high quality thinking and planning has gone into this class for the IGC to turn its back now. IGC officials have said so. Furthermore, I cannot stress too much the importance of pilot determination to support the IGC. Our reassurance to PW-5 manufacturers now means more than ever. They need to know that, if they take the risk, we will line up with our checkbooks. On the positive side, key FAA officials have told Oran that they intend to expedite US certification of the PW-5 as soon as they can fly one, and the Warsaw University of Technology has initiated the US certification process.

### Other World Class manufacturers

We will certainly see PW-5s produced in other countries than Poland. The Warsaw University of Technology reports getting about 35 licence inquiries from 11 countries. While some undoubtedly came from individuals thinking of building their own machines, the university confirms that other manufacturers have studied the project. The university assured the International Gliding Commission (IGC) that it would translate drawings, plans, and specs into English by December 31, and we understand it has now done so. The university charges about US\$1500 for a PW-5 licence and about \$750 royalty for each glider after the first.

We can verify inquiries from Russian, Italian, and American manufacturers with varying experience in composites and aircraft. (Lest you imagine an American company could not compete, consider only the implications of NAFTA.) One American company will soon close a deal with an Asian aircraft manufacturer. The management team includes an executive who already has established several manufacturing alliances in the country and knows both the culture and business ropes. At this writing the Americans have reached agreement with Warsaw and expect to do so with the manufacturer by spring. They probably will bring a PW-5 to the US market in 1996, expect to beat the Polish price, and hope to ship the glider in a custom trailer.

**The WCSA and Solaire** Solaire invested heavily in the World Class early and con-

tinues to support the class in the face of uncertainty and a low profit. Their experience with importing gliders from Poland and handling the logistics and paperwork on both sides makes them the natural importer for the Polish PW-5. Solaire will charge \$2500 for getting the PW-5 from the Swidnik loading dock to its own depot and preparing the glider for delivery. That makes the Solaire price for a PW-5 about \$17,250 ready to fly.

The WCSA may help Solaire with distribution of its PW-5s in an effort to make the low profit less a burden to the company. To make soaring affordable on a large scale, we will need increasing collaboration between profit-making and volunteer organizations. I advocate that WCSA offer similar support to any importer or manufacturer of the PW-5, including kit manufacturers. Solaire currently holds more than 20 orders for PW-5s. Some customers have reclaimed their deposits because of delays and poor communication with Poland, but others have placed orders despite the problems.

I have discussed with Michael Slingluff, Solaire's president, the possibility of the WCSA becoming an importer in its own right in order to reduce shipping costs. While it appears that by working with our own volunteers we could beat Solaire's shipping and service fee by about 50%, those savings seem less important in light of Swidnik's uneven attention to customers. If Swidnik had embraced its customers more enthusiastically, I might feel differently about working with them. PZL-Swidnik has said it will accept orders directly from individuals, but I would advise against going that route until the delivery of Polish PW-5s seems more routine.

**PW-5 kits and homebuilts** Alliance Airworks, which provides assembly services for the Spirit and Falcon, has committed to the manufacture of a PW-5 kit, and you will see an ad in SOARING soon. President Lloyd Thivierge will cut the wing plugs with a computer-driven forming machine to guarantee a precise airfoil. He also will use USA resins and manufacturing methods which he believes will result in a stronger and better finished glider than the Poles likely can build. Alliance also has devised a technique which Lloyd says will create a nearly

18925, (215) 345-1554. The WCSA annual dues are \$15 which include a bimonthly newsletter. Send a check to Al McCarty made out to WCSA.

Paul Schweizer prepared an interesting paper for the New Zealand OSTIV conference in which he looks beyond the PW-5 and proposes an even smaller and lighter ship which would lend itself to kit construction and would serve specifically as an entry-level sailplane. Considered part of the World Class, it would compete in tandem with the PW-5 (or against the PW-5 with a handicap) and might supplant the PW-5 as the ship of choice. If you want to know more about his paper, which includes other important ideas, contact Paul at 1081 Co Route 64, RD 1, Elmira, NY 14903.

A US company, Alliance Airworks, is going to manufacture PW-5's, and is planning to produce a kit by early 1996.

I have written and talked to a number of 1-26 Association members, whom I see as the spiritual forebears of American one-design flying. Several 1-26ers have joined, and I hope we will benefit from their thirty years' experience competing, flying together, and generally having fun in soaring.

**World Class contests** I can't imagine we will see anything like a World Class contest at any level in the US in 1995. Still, we need to look ahead to the opportunities and special responsibilities inherent in our class. Paul Schweizer and others argue persuasively for competitions to include more than conventional races. I fully support that notion, since soaring requires more than completing a course quickly. I will refrain from proposing particular competition elements, since many of you bring much more experience to such questions than I, but I do want to encourage WCSA members to think creatively about ways for pilots to demonstrate their prowess. We don't just want to fly well but to have a lot of fun — partly for its own sake, but also because obvious fun attracts newcomers.

The strict conformity to common specs implied throughout the World Class design competition imposes a special burden on contest managers to verify the gliders claiming World Class status really pass muster. The WCSA will need to take some responsibility in this matter, probably by purchasing and maintaining a set of templates and a list of explicitly stated prohibitions and requirements regarding instruments, wing loading, and subtle design changes.

The Rules Committee of the SSA Contest Board took the initiative and began in late 1994 to consider what special rules the World Class might require. At this writing, the committee has not drafted rules but will

propose to the SSA board that we take a particularly conservative stance. I endorse this approach.

A few pilots, understandably frustrated with delays in PW-5 production and lusting after the attractive and available Blanik L33 and Russia II, have urged that we admit those World Class runners-up to competitions. They make the undeniable argument that such openness would bring more US pilots up to competition level in less time. While sharing their yearning to get on with this class, I oppose treating any glider other than the PW-5 as the World Class ship.

I can think of several reasons to resist this temptation, but one especially demands firmness: the WCSA must protect the financial interests of the Warsaw University of Technology. If we undermine the contract between FAI and the university, we not only reduce the university's income from selling PW-5 licences, we discourage future designers from entering future World Class design competitions for fear the Americans would compromise their victory. We would insult their design team, the IGC and the FAI, and we would jeopardize the long-term welfare of the class. While I will delight in flying with L33 and Russia II pilots, I think the WCSA must regard the PW-5 as the only World Class glider.

You may hear more about an organization called the *Soaring Support Foundation* in coming months. Based in Arnhem, The Netherlands, and headed by Ron de Haan, the organization aims to establish a Formula One type racing series using the World Class glider. As I understand it, they hope to establish an elite class of professional sailplane pilots, replete with public recognition and corporate sponsorships. De Haan's ambition seems more realistic than others I've seen because the organization evidently has technology which will broadcast television images from a sailplane cockpit. This key ingredient to securing TV coverage and, thus public interest, may make a significant difference. If he succeeds, the World Class will benefit.

**The trailer issue** I continue to believe we need a factory-built trailer for the PW-5 priced at around \$3000. At this time, such trailers come to market at \$5000 and above — and precious few at \$5000. It seems wrong to me that a trailer should cost one third as much as the glider it holds.

I would like to see somebody rethink sailplane trailers and our assumptions about materials, construction, accessories and fittings. If we begin with the functions of the trailer (moving the glider safely and protecting it from the elements) rather than its features, we might reach the same ends by more appropriate means. Have we, for example, really found the best possible strength-to-cost ratio in the undercarriage? I doubt it. We need to push trailer design much like we have for the World Class glider itself. I have talked to several people about this, including Ralph Luebke of ⇒ p15

perfect leading edge, a major challenge in both kit and factory-built planes.

Lloyd has set the price for the first twenty ships at \$14,500 each. While Alliance's price may seem too close to Swidnik's, the glider's quality and availability — and Alliance's customer orientation — may draw not just the traditional kit builder but the impatient pilot who wonders when we will see reliable delivery. Call Alliance at (415) 299-9207 to capture one of the twenty slots.

The Sailplane Homebuilders Association (SHA) has long debated the best characteristics of an entry level sailplane. Though the PW-5 does not satisfy all their criteria, it comes close enough that such supporters as Paul Schweizer and Oran Nicks have urged SHA members to regard the PW-5 as a suitable entry glider and to focus their considerable know-how on alternate materials, which the IGC does permit. Otto Zauner, an SHA and WCSA member, has written Warsaw University of Technology for information. He has expressed interest in exploring alternative materials for the PW-5 and, given his experience in metal fabrication, he may produce a surprising variation on the World Class glider — fully within specs. I advocate that, to every extent practical, the WCSA offer to solicit volunteer labour to support any member building a PW-5 from scratch or a kit. While that may not significantly reduce a builder's hours, it gives other World Class pilots a shared interest in someone else's success. We need more of that spirit in soaring.

**WCSA activity and status** We have generally attracted positive responses, and I think that most pilots interested in the World Class recognize the value of such an organization at this juncture. Our membership roster now stands at more than 40 — not too bad for an organization still waiting to see its first glider, and it is a measure of interest in this class. Oran Nicks opened the SSA Convention in Reno as the keynote speaker. While he did not speak as a WCSA representative exclusively, he represented World Class interests, among others, and gave a relevant presentation.

Solaire has given us its mailing list, and we will solicit for members from that motivated group. The list contains about 170 names, of whom several already have joined WCSA. Founding member Al McCarty manages our membership list and checking account. He lives at 545 McCarty Drive, Furlong, PA

# the Kiting in the Troposphere Experiment (KITE)

Going for a kite altitude record at Cowley

## Richard Synergy

**T**HE PROJECT is concerned with the science of high altitude kite flying. This activity is the means by which the Wright Brothers developed wings for their airplane, by which Benjamin Franklin investigated the nature of electricity, and by which meteorologists discovered much of what we know about the weather.

The proposed project will involve designing high altitude kites to:

- demonstrate that high altitude kiting is possible and controllable and can be used as tools in the process of scientific advancements.
- develop and test modern electronic equipment that can be used as tools for gathering accurate, repeatable and precise scientific information.
- establish that High Altitude Kites provide a cost effective means of gathering scientific information.

Amazing but true, the record height for flying a single kite was set in the *last century* in 1896 by the US Meteorological Office at Blue Hill, Massachusetts, flying a weather data kite to 12,471 feet. (The ultimate kite altitude record using ganged kites is 31,955 feet, set in 1919.) Our research, computer models, and collective experience suggest that with space age materials, a single kite should reach 17,000 feet, and multiple kites flown on a single main line may fly as high as 45,000 feet.

The site for testing kites and making record ascents is near Pincher Creek, Alberta. The airspace above Pincher Creek is under the stewardship of the Alberta Soaring Council and is cleared by Transport Canada for high altitude flights. The Canadian altitude record for sailplanes was set at this location. Annual weather records for the Pincher Creek area indicate that during the month of October, mountain waves can be expected twenty days out of thirty. Therefore, there should be ample opportunity for several ascents. A ground crew composed of several individuals will remain on standby all month to manage kites, winches, line and such. Ham radio operators in the Calgary area are already laying out the communications network that will be needed to track the kite/kites and receive the data that will be radioed and videoed down to the ground.

In the larger picture, this undertaking will have genuine scientific value. It will show that well-designed kites can lift a sizable payload of instruments, remain aloft and on target longer than balloons and airplanes, and safely return the instruments to earth at the end of the mission.

Kites are environmentally friendly (reusable, and burn no fuel), and far more cost effective than airplanes or balloons as instrument platforms for meteorological research. These platforms would enable prolonged sampling of air pollution and ozone concentrations, truthing the data collected by satellites, and measuring middle atmospheric variables such as pressure, temperature, relative humidity, and windspeed, and parameters such as UV and IR radiation, the earth's electric field, air turbulence, and cloud cover. It could also observe crop growth, insect infestation, the migration of land and sea creatures, and monitor water pollution. Using steel line, it would also provide a long antenna for temporary or emergency radio communications. When multiple kites, each carrying instrumentation, are spaced along a line, useful two dimensional data can be gathered.

### **More facts and notes – Tony Burton**

Richard Synergy is a scientist, business consultant and writer, but foremost an enthusiastic kiter. He has written a book on the subject of high altitude kite flight\* and set the Canadian altitude record (4370 feet on 15,000 feet of line) over Lake Huron at Kincardine, Ontario in 1993. He has done extensive work on kite design theory.

The project team is leader Synergy, Environment Canada cloud physics researcher David Hudak, and electronics engineer Mubarak Baksh.

Kites were the original "weapon of choice" for meteorologists to carry instruments for upper air sounding, but they were superseded by balloons and aircraft. Though "old and low tech", they are still superior in terms of cost, environmental friendliness, and ability to stay on station for long durations and return instruments safely (and reusably) to the ground.

The critical factor in an altitude attempt is the drag of perhaps ten kilometres of kite line, and there is a fine trade-off of line tensile strength, weight, diameter, roughness, roundness, windspeed, and air density. Piano wire will be used (though heavy, it is thin and less draggy, hence will be less limiting on the height). But, being a conductor, this introduces problems of safety if it breaks and drops across power lines. This restricts record flight locations to open relatively uninhabited countryside.

The kite platform is similar to the Wright Brothers' biplane, but with a twin boom to the rear supporting a controllable horizontal stabilizer. The structure will be similar to that used by the "Gossamer Condor", with thin fibreglass, balsa and Styrofoam ribs and spars which will result in a Cessna-sized kite weighing about 20 kilograms and carrying a four kilogram instrument and control package while lifting up to a couple of hundred kilograms of wire.

The kite instrumentation will include a transmitter for radiolocation, air and flight data sensors and telemetry (temperature, pressure, line tension, vertical and horizontal airspeed), a miniature video camera, and a computer and servomotor to automatically sense the strain on the line and optimize the wing angle of attack by controlling the elevator. Since a line break is a disaster, this controller is able to quickly 'unload' the strain on the line due to wind gusts.

On multiple-kite altitude attempts, three kites would be used with a spacing of about 20,000 feet on the line. The piano wire for the top kite is .041" (like a paper clip), for the middle kite is .072" (pencil lead), and for the bottom kite is .091" (coat hanger).

Assembling and launching the kite, especially in the windy conditions required, will be a tricky operation involving several ground handlers. The kite line will be payed out from a winch on the back of a pickup.

The group is hoping to use the secondary or tertiary wave in the Cowley valley to greatly assist the ability of the kite to climb with a higher line angle (therefore a lighter line load with the shorter length). An operational complication to using wave is that the winch will have to be moved upwind as the line is payed out in order for the kite to stay in the up part of the wave, and truck movement is limited by surface restrictions such as north/south power lines. The team has been consulting with me on the physical structure of the wave, typical airflow and wind strength in the wave and local topography. •

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\* "Kiting to Record Altitudes", by Richard P Synergy, 1994, Fly Write Publications (416-923-7800). Available from What's Up Kite Co in Ohio (fax 216-247-4444), from Bud & Scott Taylor's kite store in Cochrane, AB (403-932-6542).

# hangar flying

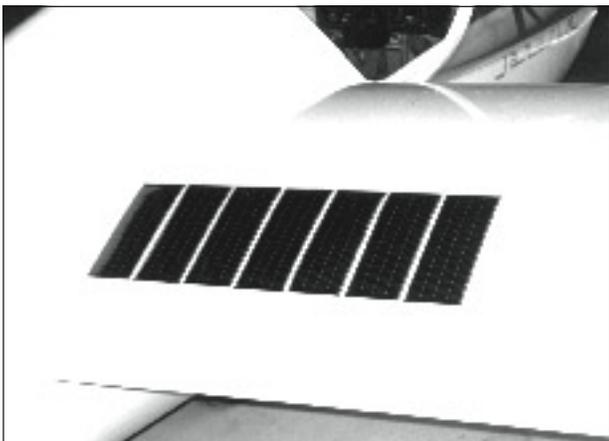
## TWO PRODUCT REVIEWS

### Flexible solar panel

Nothing is more useless than thousands of dollars worth of flight computers, radio, and GPS when the battery goes dead on a long flight. A solution is to have a second battery with the attendant switches, fuses, more to go wrong, and more weight — or go solar. That hasn't been easy up to now because the panels were inflexible and bulky and not easy to install and therefore rarely used.

Now a Japanese produced solar panel has been developed which is flexible and only 0.2mm thick and can therefore fit in a greater variety of locations (see photos below). The panels are UV and weatherproof and are mounted with double-sided tape and sealed around the edges with clear tape. Each panel is 9x23cm, weighs 5 grams and delivers 3.5V and 350mA. A six panel assembly with a 13.75V regulator will power a significant portion of your instrumentation and keep the battery charged.

The price? A\$55 per panel and A\$60 for the regulator. For more details, contact Gary Lohner, Box 176, Lyndoch 5351, Australia.



### the Vertech "Pilot"

Towards the end of the flying season last year, I stopped by a local flying club and discovered a new product that I am sure glider pilots will take an immediate liking to: the Vertech Pilot wrist instrument. This is not some cheap digital watch, but a sophisticated pressure sensing device that can provide altitude and vertical speed readouts.

The first time I went flying with the Vertech Pilot, I was immediately impressed with its accuracy. Like any altimeter, I adjusted it to read zero at field elevation. While towing, it read out the exact same altitude as the altimeter on my panel. It gives altitude to the nearest 10 feet and updates itself every second (it goes into sleep mode and records altitude every 8 seconds when no vertical activity is taking place).

At the end of my day of towing, the Vertech also gave me the highest altitude I had gone to and the number of flights I had done. The max. altitude feature is great (the Vertech can go up to 60,000 feet). Although the Vertech cannot be used for competition flights (it has no continuous recording element), it's an excellent tool for recording personal bests. It also has a "runs" counter. When going up 150 feet or more, a counter is tripped.

Every time I did a tow, this counter increased by one so that by the end of the day, I knew exactly how many tows I had done. Glider pilots will find this useful to record the number of thermals they get into. It even records the number of feet you have climbed (or dropped) during a flight.

The Vertech displays vertical speed although it is nowhere near as quick as a glider instrument. In the towplane, I found it responded nearly as quickly as my VSI and was just as accurate. A very interesting feature is that it can measure an average vertical speed. By starting a separate stopwatch, the Vertech records the starting altitude and when stopped records the end altitude, notes the difference and divides by the time. It will give an average climb rate to 10 fpm increments. This could be very useful for checking the performance of a glider. I even found it useful over the winter to see what chair lift was the fastest to get me to the top of the ski hill!

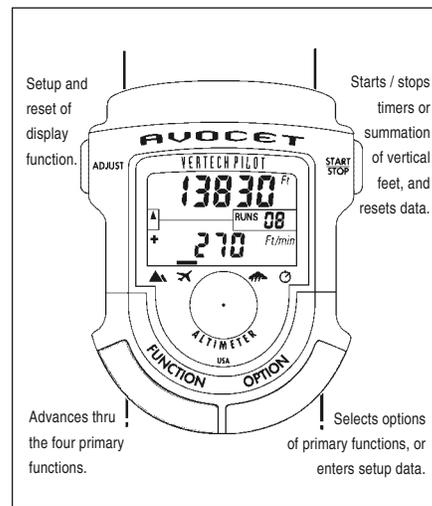
Another feature that I have found interesting is that the Vertech gives you the pressure setting of a known altitude, or you can put in the pressure setting from the cable weather channel and get your sea level altitude. It also has a pressure trend device that shows whether the pressure is rising or dropping. This can be set to zero at night before going to sleep. When you get up in the morning, you will see if the pressure has gone up or down and you can have a better guess at the day's flying conditions.

After rambling on about all its flying features, you probably wonder if it can tell the time. You will be pleased to know that it has all of the usual watch features such as alarm, countdown, stopwatch and date. The time can be displayed in either 12 or 24 hour format. The stopwatch can record up to 20 times in its memory and this can be used to record the lengths of your flights. The Vertech even shows temperature in degrees Celsius or Fahrenheit, though this feature was not always accurate (varying by up to five degrees).

The Vertech is a little bigger than most watches, and I would imagine this is because it has three computer chips to do all the functions. I found the instrument a little uncomfortable for the first few days but now barely feel it. The buttons are large and I found this practical when skiing; I could actually use them while wearing gloves.

All round evaluation: GET IT! This is really the most amazing product I have ever purchased for my bag of pilot accessories. You will find it to be a practical addition to your flying wardrobe and will even help you with bragging rights at the club after a really good flight. I have seen the Vertech at many flying clubs and it is probably available somewhere in your area or at the local airport. I got mine in Canada for only \$175 which is less than the American mail order price. If you can't find it locally, the Canadian distributor can be reached at 1-800-204-6359.

**Dennis Pharoah**  
Rideau Valley Soaring School





The Ventus-2cT debuts. This latest member of the family, optimized as an 18m ship, was first flown 30 March. Company and visiting pilots remarked particularly on its very fine control harmony, docile behaviour, and crisp maneuverability. Besides the new wing, the fuselage also has a larger and more comfortable cockpit, improved wing fillets, redesigned tail feathers and a 5" wheel located further forward to be of particular use to the up-coming self-launch Ventus-2cM model. There are optional 15m tip panels.

### COMPARISON FLIGHTS SHOW EXCELLENT HIGH SPEED RESULTS FOR GENESIS

The *Genesis* was designed in a computer to beat a computerized *Discus*. Now, early performance flight tests demonstrate it can out-glide the real thing — and has done it to a *Ventus*, too!

In March and April, the *Genesis* glider was flown against a *Discus* and a *Ventus* during side by side five mile runs at various speeds and equal wing loadings. The gliders were towed to 7–10,000 feet and then flew line abreast two wing spans apart. The only flight variable was relative altitude difference over time. At the end of each 5 mile flight segment, altitude differences were observed, agreed upon by both pilots, and recorded. The pilots rotated aircraft to help eliminate bias resulting from any piloting differences. Four *Discus/Genesis* flights were conducted at a wing loading of 9.0 lb/ft<sup>2</sup>, and the single *Ventus/Genesis* flight flown at 9.5 lb/ft<sup>2</sup>. The results over a five mile run are given in the table below (the *Ventus* flew with flap settings appropriate to its airspeed).

Genesis relative position (ft) compared to			
Discus		Ventus	
kts	Δ ht	kts	Δ ht
55	-20	60	0
65	0	70	+40
75	+20	80	+70
85	+60	90	+100
95	+150	105	+50

These early results bode well for the *Genesis* — equivalent performance at lower wing loadings and a good climb (to be tested) will earn trophies. One of the results of noting the excellent handling of the *Discus* while it was being flown is that the *Genesis*

designers are working on further refining the control forces and reducing adverse yaw.

The extensive series of tufting and oil-flow experiments indicated turbulent airflow at the wing root aft of the spar, so the wing-fuselage fillet diameter has been increased to improve the flow and separation pattern. An additional benefit is that the enlarged fillets also reduce the surface area.

For those of you on the Internet, there has been extensive discussion of *Genesis vis à vis* the competition.

extracted from *Genesis* newsletter, *Wingtips*

*In a telephone conversation I had in early May with designer Jim Marske, he made the following comments about further fine-tuning of the ship:*

- a small 'flap' has been added to the ailerons at the hinge line which deploys into the airstream on the down-going wing. The small increase in drag counteracts the adverse yaw, making the turn 'stick centred' and it improved the 45° to 45° roll rate to 3 seconds! The *Discus* roll rate is about 4 seconds by comparison.
- the climb is comparable to the *Discus* and the measured L/D max is not less than 44:1 at this time.
- a new airfoil has been used on the elevator which cuts its drag in half (this improvement has the greatest benefit at the high speed end).
- the wing airfoil has been modified in the root area to remove a leading edge cusp. This cusp had been in place to reduce separation at high angle of attack and so improve the climb, but it was too detrimental to the high speed performance.

much extra energy once the thermal has cooled enough to start condensation. Condensation releases latent heat which makes the thermal warmer. The added energy allows cloudy thermals to rise further and faster. Too much moisture makes thermals harder to use, partly because the cloudbase lowers if the air becomes more moist. An approximate rule is that the base of cumulus (in feet) is 400 times the difference between dew point and surface temperature in Celsius. This with a dew point of 10°C and an air temperature of 20°C one should find the cloudbase at about 4000 feet. The cloudbase usually rises during the day reaching its maximum in mid afternoon when the surface temperature is highest.

Entrainment of outside air into a cloud dilutes the thermal. If the environment is very dry, the edges of the cloud start to evaporate while it is still building. This is usually a good thing for soaring pilots because evaporation produces gaps for the sun to come through and keep thermals going. When the air aloft is very moist the cloud from old thermals persists and the sky becomes full of decayed cumuli which provide no lift but restrict the sunshine.

**Spread out** On most fine days there is a temperature inversion with its base several thousand feet above the surface. The warm air aloft acts as a lid preventing thermals rising much beyond the base of the inversion. The rising cu spreads out into a layer when it bumps into the inversion. Provided that the air is fairly dry, the sky becomes dotted with well spaced flat cumuli. Each little cu evaporates in the dry air before it can spread far. Unfortunately air which has had a long sea crossing tends to become progressively moister. The British Isles and parts of NW Europe are often covered by such moist air.

Each thermal carries extra moisture from the surface up to the inversion. There it merges with the moist air already aloft. The flattened cumuli spread out to form an almost continuous sheet of cloud which eventually cuts off the sun and halts the production of thermals. Sometimes the cloud develops gaps through which the sun penetrates to start up more thermals, but on a bad day the gaps quickly fill in again by new thermals. Ireland is even more troubled by spread out than England. Not only is it nearer the Atlantic but the land is greener and moister, so that thermals carry extra moisture to thicken the cloud layer. •

## Safety Tip

Think about this:

If you are unwilling to admit  
you have made a mistake,  
you can't correct it.

Memphis. Ralph, who has manufacturing experience, has built trailers for the LAK-12 and Genesis, among others. He also sells plans. While Ralph remains sceptical that we can hit a \$3000 target, he has agreed to look seriously at the question. I hope WCSA members will give him support and ideas. You can reach him at (901) 767-0495.

**Update** Another US manufacturer with European training, manufacturing experience, and the wherewithal to manufacture offshore has shown very strong interest in the PW-5 and the trailer. This company strikes me as a very serious player. He could not reach the market much before 1996. Another party has approached me with the possibility of assembling and re-selling the Alliance Airworks kit as a completed glider. I do not know that this will materialize. I also know of a Canadian manufacturer who has approached Warsaw University of Technology, but I have the impression he would not significantly affect the market. At this point, I count one certain kit manufacturer and two likely manufacturers of finished machines.

In organizing before we have PW-5s, the WCSA has aimed to help motivated manufacturers to enter the PW-5 market. I can say with confidence that our presence has significantly affected level of commitment in the three companies which seem most ambitious about the World Class. I take some satisfaction in thinking that, despite all the delays, we have played an important part in keeping this class under way. •

*Note: This letter was written before the SSA Convention. Since then David Habercorn has been elected president of the World Class Soaring Association. For more info he can be reached through e-mail at "pa117518@utkvm1.utk.edu", or phone at (615) 974-5045, fax (615) 974-0810.*

Further information from the March IGC meeting in Paris:

*Swidnik delivered twelve units in 1994 and 52 units are to be delivered in 1995; twenty manufacturing licence inquiries have been received from potential companies, and licence contracts have been signed with two companies in the USA, one in The Netherlands and one is ready for signature in Canada. It is estimated that there should be about 140 PZL Swidnick PW-5s flying worldwide by the end of 1996 plus a number from newer companies.*

*The Sporting Code requires at least ten competing pilots from at least five countries for a World Championships to be held, but there should be more competitors and they should be top pilots of the participating countries. It is expected then, that there will be a World Class World Championship within the next five years which will be held separately from the current FAI class competitions. Poland and France have both offered to host the first championships, perhaps in 1997 when*



## Coming Events

18-24 June **SAC Western Instructor School**, Hope, BC. \$150 course fee. Director: Terry Southwood, (403) 255-4667. Sign up asap.

26 June - 5 July **1995 Nationals**, Pendleton, ON. 24-25 June practise days. Call contest director Bob Mercer (514) 458-4627.

2-7 July **SAC Eastern Instructor School**, York Soaring. \$150 course fee. Director: Paul Moggach (905) 826-9357.

16-25 July **International Vintage Sailplane Meet**, Elmira, NY. For info contact National Soaring Museum, Elmira, (607) 734-3128.

24-28 July **MSC Soaring Contest**, Hawkesbury, ON. A beginner's event for sport, club, two-seater and 1-2 sailplanes. Contact Gilles Séguin (514) 377-5737 or Jim Malebranche (514) 695-1959.

24-28 July **Advanced XC Clinic**, SOSA. Rain date 21-25 August. Contact Ed Hollestelle (519) 455-3316 or Paul Thompson (905) 776-1903.

29 Jul - 7 Aug **Cowley Summer Camp**, the only place to be in Canada for the very best soaring vacation. Call Tony Burton at (403) 625-4563.

5-7 August **Ontario Provincial Contest**, Hawkesbury or Guelph - more info later.

21-25 August **Beginners XC Clinic**, SOSA. Bronze badge required for entry. Contacts as above.

5-9 October **Cowley Wave Camp**, Call Tony Burton at (403) 625-4563 for details.

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*it is expected that there will be about 40 PW-5s in Europe.*

*A new World Class subcommittee of the IGC has been established, chaired by Piero Morelli of Italy. The poor communication with Swidnick is expected to be solved soon with the hire of English-speaking staff.*

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### PRESIDENT & QUEBEC Zone

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### Airspace

position to be filled

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### Technical

Chris Eaves  
see Director at Large  
Mbr: Herb Lach

### Trophy Claims

to be filled

# SAC affairs

## THESE CLUBS HAVE NO OOs!

As of April 30, the following clubs have not sent the SAC Badge chairman a list of current OOs. They therefore have no valid OOs and no club pilot can get a badge flight certified. This requirement and this result has been in *free flight* for months now. If you are an officer or concerned member of one of these clubs, please remind your senior OO to submit a list to Walter Weir.

ASTRA	Gatineau	Rideau GC
Base Borden	Gravelbourg	Saskatoon
Beaver Valley	Grande Prairie	SOSA
Bonnechere	London	Swan Valley
Bulkley Valley	Mont Valin	Toronto
Central Alberta	Montreal	Westman
ChAMPLAIN	Prince Albert	Windsor
Cold Lake	Quebec	

## ON BECOMING MASTERS OF OUR OWN HOUSES

On the evening of 16 March, the Aero Club of Canada met in Kingston to consider how we, the recreational and sport aviation community, might come together to develop a vision, a structure, a means of working together that would lead to a proposal to Transport Canada to devolve all appropriate functions and operating authority to the recreational and sport aviation community for the purposes of self administration.

Simply because the ultimate authority for the rule of law in Canada still rests with the Crown and Transport Canada, through the Commons, as an Agent of the Crown, we cannot have ultimate authority to administer ourselves, absolutely. We can however, with the devolution of authority from Transport Canada, administer ourselves to the highest level of practicality. If we can achieve that, there will very few, if any, who will wish to go farther.

Our meeting was well attended by the sporting and recreational community, directly or through surrogates. Lindsay Cadenhead was a welcome guest and participant from TC.

It was also valuable to have representatives attending from those communities who have high or almost total independence from close administration by Transport Canada. Specifically, parachuting has a very high level of independence, and it must be noted, member enthusiasm. Similarly most, if not all, were familiar with the development and independence enjoyed in most areas of the hang gliding/parapente communities.

The first item of the meeting was a review of the background of this concept as seen by members who have published views on this subject. Specifically, position papers

produced by the Aero Club of Canada and by COPA/EAA Canada/RAAC (the latter paper known as "Aviation Canada") were briefly reviewed. It was agreed that everyone wanted to devolve administrative functions from Transport Canada. Initially there seemed to be no clear place to start. The agreed principle was that devolution should start with one clearly defined activity. Once success was demonstrated, others could be added. Most importantly, it was also recognized that the structure to which functions would be devolved has not been defined, nor has the method of costs and cost recovery been addressed in detail. Three areas of interest were discussed.

1 While there was agreement and enthusiasm for the notion of issuing permits and licences by computer terminal from training/club sites, it was recognized that implementation could be difficult for Transport Canada to digest. Technology was not the factor. The means for implementation were direct and established provided that Transport Canada was prepared to divulge their computer entry protocols. It was recognized that security of entry and entry of data would need to be carefully addressed. The talent to address and solve these challenges is nevertheless readily available within the recreation and sporting aviation community.

2 The function that seemed to hold the greatest opportunity for progress and "easy" transfer from Transport Canada was airworthiness. The recreational aircraft (RAAC) and soaring (SAC) communities have a long history of involvement in this activity at varying levels (soaring), and growing independence through RAAC's "designated amateur-built inspector" function. The aerobatics community has developed what soon should be an acceptable process for certifying fully aerobatic aircraft. The Advanced Ultralight program was also recognized as being a prime candidate for industry based assessment and establishment of airworthiness.

There was recognition of the international sources of experience and established standards such as JAR 22 for gliders, the activities of the OSTIV committee of the FAI (gliders and towplanes), as well as the standards established for aeronautical activity for sporting and recreational aviation by the sporting commissions of the FAI (gliding, hang gliding and parapente, ballooning, parachuting, microlights, general aviation and aerobatics). The FAI has active committees on restored and homebuilt aircraft and aeromedical needs. They also have direct contact with the International Civil Aviation Organization (ICAO).

3 The third function that seemed to hold promise for easy and early devolution from

Transport Canada to the sport and recreational aviation community was training syllabi and the management and execution of the training/licensing process. Again, the gliding, hang glider and parapente, ballooning and parachuting communities were judged to be in many respects essentially self-administered in these functions. Early devolution would seem to be possible, with the ultralight and recreational flight permit communities additional prospects.

At this point it was agreed that there was sufficient opportunity defined to inaugurate the devolution process. Other areas of activity were discussed, such as maintenance needs, the definition of sport and recreational aviation aerodromes, and flight safety, then set aside for future consideration.

The process now is for the groups specifically identified in the two principle issues — airworthiness and training syllabi/training management and execution — to consult with their management and agree that these are activities to which they wish to devote resources and accept responsibility. If there is agreement to proceed on one or more of these subjects, then delegates should be prepared to set up committees and devote resources to begin the definition and proposal preparation process. We should be prepared to make a definitive proposal to Transport Canada management before the summer holiday season begins.

A second meeting of recreational aviation groups took place in Toronto at the end of April, though participation was limited because of the aviation show at Pearson Airport over the same weekend. However, it was clear that both soaring and RAAC had a common interest and motive to develop the devolution of the airworthiness function — I expect that hang gliding and the ultralight communities will participate as well.

Lindsay Cadenhead advised that the report of the consultants (who had been retained by TC to look at alternatives to the present recreational aviation structure and were looking particularly at what is done outside North America) has caused a stir at TC. He suggested that waiting a bit while TC digests the report might help develop our focus of activities.

We spent the remaining time discussing what had happened at a recent TC meeting with respect to the attitude of the aeromedical group towards the Class IV medical. Dr Peter Perry, the SAC Medical committee chairman, joined the meeting and we also received useful information, with more to come, from FAI and OSTIV on the value and role of aeromedicals in recreational/sport aviation. The next meeting is in mid-June in Kingston.

It must be recognized that the commercial aeroplane training community, as represented by ATAC, has substantial interests, if not needs, in many of these areas. At the very least they must be informed; in many cases there will be a need to recognize their

concerns. A collary is that it is unlikely that any community will be able to work in any of these responsibility areas alone. In my view, to succeed joint efforts and administration will be needed. Please send advice of errors/omissions to me, through my fax 905-335-6462, or by letter. As soon as I am e-mail capable I will advise. Criticism and debate is invited. The role of the Aero Club as an entity is to facilitate and lead where our members and colleagues wish to go. (ACC address is at bottom of Supplies list on page 20.)

A final note. The model aviation community, while not directly involved in many of the activities being discussed at these meetings, are nevertheless active users of the common resource of air-space. They are highly organized and have well established methods and management of training and supervision of their members and flight activities. They are members of the Aero Club of Canada and recognized by the FAI. They are interested observers. Fly safely, well and often.

**Bob Carlson**, president, Aero Club of Canada

#### **Further notes from IAN OLDAKER**

Meetings have continued in the series to review the TC Air Regulations and to discuss requirements for the Operator's Certificate, previously discussed in *free flight*. Paul Fortier has been carrying the main burden as he lives in Ottawa; however, Peter Perry and I have also attended the Recreational Aviation Working Group meetings in Kingston and Toronto and are involved with on-going meetings on specific areas of the regulations.

The Air Reg changes are proceeding very well, and agreements are being reached in many areas. The result for the soaring community will be simpler operations. Of interest are tow-pilot requirements, now removed from the regulations, and motor glider requirements for pilots. In both these areas we will control our own operations, and where required SAC will have recommended practises based on current club operations. The proposals that we have made for the revised air regulations have been largely accepted, and will allow glider pilots to fly all motor gliders except 'touring motor gliders' like the Dimona, on a glider pilot licence. Touring motor glider requirements are being worked on, and it seems likely that



91 year old Don MacClement, one of the founding members of SAC, is presented with an honorary life membership at the SAC Annual General Meeting by past-president Karl Doetsch. Don entertained the gathering with tales of ridge soaring off his barn roof as a boy with a home-built primary (more a kite) in 1915! It was quite a contrast to guest speaker and astronaut Steve MacLean's description of space flight in the Shuttle.

glider pilots will require a 'type rating' on the glider pilot licence. More on all this later.

Medicals are being discussed. There is a suggestion that the Class IV declaration be upgraded to a Class III aviation medical for ultralight aircraft pilots and the new "recreational" pilot (who will fly with a permit rather than a licence — this is being introduced in August). We fly with a Class IV declaration (except for instructors which require a Class III). This is a bit of an anomaly as glider pilots are permitted to carry passengers with a Class IV, and logic would therefore also suggest that instructors should also be allowed to fly on a Class IV. We are working with TC to give them support for the Class IV for these other pilot categories.

The proposed Operator's Certificate is being actively discussed. Problems are seen by both SAC and TC personnel from head office in Ottawa, with differences developing between one region of the country and another. We believe that some clubs may have unique local problems. Trying to resolve these problems between TC regional offices and these clubs may occupy TC Ottawa too much. Therefore we are discussing the possibility of obtaining an Association certificate, which has precedent with large operators. Based on the fact that SAC has historically been in charge of our own training (except for the pilot exam and issuing licences), and that TC have not taken over because of no perceived needs, TC are open to the idea of a single certificate. We believe this is the best route to take, ensuring consistency in standards (yet to be worked out) across the country. Individual clubs might wish to opt for their own certificates, but they would be auditable by their regional offices, which would require much effort to define/negotiate standards to be followed, with the underlying problems that this might entail.

**Ian Oldaker**, chairman, FT&S committee

#### **REGINA ON THE ROAD TO GRAVELBOURG**

The Gravelbourg Gliding and Soaring Club invited Jim Thompson and Harold Eley of Regina to present a glider ground school in early April at the Community Centre in Gravelbourg. Seven Gravelbourg members attended the course. The majority of attendees were power pilots who were interested in gliding and required the five hours of ground school for a glider endorsement. Thanks to Wes Neubecker for organizing the event, and thanks to all the people who attended the marathon ground school from 0930 to 2145!

from the Regina GC *Thermal Paper*

*This sort of support is something which a larger gliding club can always do for those that are smaller and struggling to build membership and interest, in fact it's probably a good idea for each club pair to actively seek out such opportunities for mutual aid. And it IS mutual, since the smaller club clearly gains a great benefit of expertise and breadth of soaring experience not available "in-house", while the larger club can expand its off-season activity and member interest — and it's fun! In Calgary this spring, Hal Werneburg was happy to give a talk on cross-country soaring to the Central Alberta Gliding Club in Red Deer, a new SAC club which has no experience yet in this aspect of their future. In this case, Red Deer has the capability of reciprocating, as it could demonstrate winch launching to curious pilots from the larger club. Tony*

## **FAI records**

**Dave Hennigar** 404 Moray Street  
Winnipeg, MB R3J 3A5 (204) 837-1585 H

The following record flight has been claimed:

**200 km speed to goal**, Open (not FAI), citizens, 143 km/h, 6 May 95, Walter Weir, ASW-20B, C-GGWW. Flown from Julian, PA to the goal at Seneca Rock, VA.

## Letters & Opinions from page 5

contest. All this being said, it is obvious that something has to be done to assist our team in competing in future world contests.

Teams from other countries invariably have corporate or government funding. There is no Canadian government support for our National Team. This leaves corporate sponsorship and support from Canadian glider pilots as the only viable sources to fund future Canadian teams at world contests. I will now throw out a few ideas and thoughts that I have on the subject.

In SAC we have the Wolf Mix Fund which was put in place to support our National Team. The capital built up in the fund can not be used directly; rather, 50% of the interest accrued each year may be used for support. Unfortunately, this only amounted to a couple of hundred dollars this year. The question arises, why isn't more money being generated by this fund? The simple answer is because the fund has not been promoted, and over the years has had very little build up in capital. How many of you knew that this fund existed, and what its purpose is? I didn't until recently. Perhaps SAC should promote this fund at the same time as they promote the Pioneer Fund. Have you ever been asked to make a donation to support the National Team? No one has asked me.

Not everyone in SAC is willing to support the National Team. The questions, "why should I give some hot shot money to go fly?" and, "why do competition pilots not support themselves?" are often asked.

### "SOAR AND LEARN TO FLY GLIDERS"

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Dave Puckrin  
(403) 459-8535 home, 451-3660 work

To answer the first question my first thought is 'National Pride'. Don't you want to see Canada represented by our best pilots at world contests? Without competition at the highest level a sport will stagnate. To answer the second question, competition pilots support the National Team through organizations such as the Canadian Advanced Soaring Association. CASA continually supports competition and cross country soaring in Canada. They provide grants to clubs hosting national contests, they have also made substantial donations to the World Team Fund over the last few years. CASA also sponsors and provides instructors for cross country clinics. It's in forums like this that the Team pilots pass on their knowledge to the rest of us.

Now back to the Wolf Mix Fund. This fund can only be built up through donations by us, the members of SAC. Here is a novel idea to consider. Why not donate 10–50% of your club beer fund profits to the Fund. After all, most beer is consumed at the end of the day while talking about your latest or greatest flight. As Chuck Yeager said, "talking about flying is the next best thing to flying itself". So while you're relaxing at the end of the day, having as much fun as you can with your feet on the ground, you can also be supporting our National Team.

The next area to tackle is corporate sponsorship. Perhaps, we have not had success in attracting sponsors in the past because they do not see any support coming from within the organization. (I noticed that the organizers of the 1995 Nationals have managed to secure some corporate sponsorship for the contest — good work guys.) We can try and use this as a foot in the door for future funding of the National Team. Air Canada is providing two tickets to anywhere they fly in the world to the winner of the Sport class. Maybe, we can interest Air Canada in providing tickets to the National team members to fly to future World Contests. This will provide the team members with a reduction in out-of-pocket expenses, at little cost to the sponsor. Other logical corporations to contact for sponsorship are Canadian aerospace companies such as Bombardier (Canadair and de Havilland), Pratt & Whitney, Spar Aerospace, and CAE. Other corporations that should be considered are companies that can assist in shipping gliders to world contest locales.

I hope that I have managed to stir up some thoughts on the funding of future National teams. It would be a shame if we were unable to afford to participate in future world contests. I've just scratched the surface with this letter. If anyone has ideas on how to increase support to the National Team, please put pen to paper or fingers to keyboard and write them down. I would appreciate any comments.

I can be reached by snail mail at 669 Milford Dr, Kingston, ON K7M 6J1, or by e-mail on the Internet at (springford-d@rmc.ca).

**Dave Springford, SOSA**

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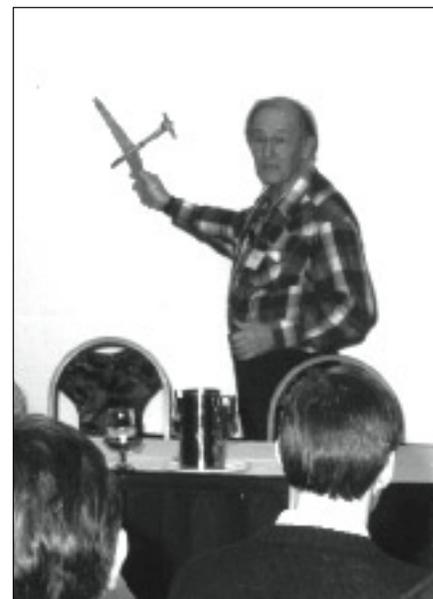
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### "THROUGH THICK AND THIN"

In this article by Terry Southwood in the last issue, the suggestion is made that there is some change in circuit flight angles which is dependent on air density. Before this becomes handed down as gliding lore I should like to protest that this is not so.

Flight mechanics suggests the following: assuming that a minimum approach speed is selected for maneuvering margin, flare, etc. of say  $1.3V_{stall}$  indicated, this will apply for all values of air density. It follows from this that in the approach configuration the glider's L/D will be independent of density, hence steepness of approach angle will not depend on density. True airspeed varies inversely as the square root of air density, consequently the energy state will be significantly higher for an approach in low density conditions. For similar approach techniques the approach will commence at a higher altitude and be flown at a higher true airspeed for lower density conditions, but will proceed down the same glide path which is determined by the aircraft L/D.

**Bernie Palfreeman, MSC**



At the best-attended seminar at the SAC AGM, Derek Piggott, one of the world's leading flying instructors, talks about new improved ways to teach the circuit. One suggestion was to vary the circuit entry in many ways once the student has the "standard" circuit sorted out ...

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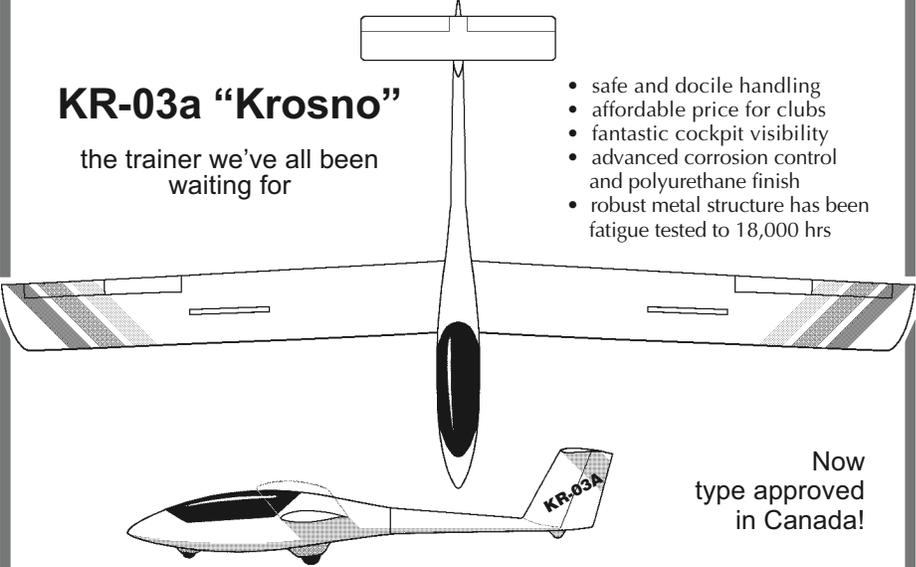
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*Czechlist von Oberleutnant Pfelz,  
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1. *Ist die Wingen solidisch ongetaped?*
2. *Auf both Sides?*
3. *Ist der Tail still in der trailer?*
4. *Goes die Floppydingenaufdenwingen ruder up and down?*
5. *Und die oder Tailfloppies alzo gewerken?*
6. *Ist der Parachute nicely gestarched?  
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# FAI badges

## Walter Weir

3 Sumac Court, RR2, Burketon, ON L0B 1B0 (905) 263-4374

The following Badge legs were recorded in the Canadian Soaring Register during the period 1 January to 30 April 1995.

### GOLD BADGE

270 Willi Terpin Vancouver

### SILVER BADGE

858 Peter Vados SOSA

### GOLD ALTITUDE (3000 metre gain of height)

Willi Terpin Vancouver 3275 m Phoebus B Golden, BC

### SILVER DISTANCE (50 km flight)

Peter Vados SOSA 82.8 km 1-26 Rockton, ON  
Peter Kom Montreal ? km 1-26 Hawkesbury, ON

### SILVER ALTITUDE (1000 metre gain of height)

John de Jong York 1158 m 1-26 Arthur East, ON  
Peter Kom Montreal 1030 m 1-26 Hawkesbury, ON

### SILVER DURATION (5 hour flight)

John de Jong York 5:15 h 1-26 Arthur East, ON  
Paul Frigault Cold Lake 5:09 h 1-26 Cold Lake, ON  
Al Hearn Base Borden 5:04 h 1-26 Arthur East, ON  
Chris Brownhill York 5:14 h Ka6CR Arthur East, ON

### C BADGE (1 hour flight)

2467 Sebastien Cote Quebec 1:26 h Blanik L13 St Raymond, PQ  
2468 John de Jong York 5:15 h 1-26 Arthur East, ON  
2469 Luc Boileau Outardes 1:45 h K8 St Esprit, PQ  
2470 Thierry Daudin Outardes 2:20 h K8 St Esprit, PQ  
2471 Paul Frigault Cold Lake 5:09 h 1-26 Cold Lake, ON  
2472 Chris Brownhill York 5:14 h Ka6CR Arthur East, ON

Congratulations to Peter Vados, age 16, who completed his Silver badge with an 82.8 km, 4:10 hour flight in a 1-26 from SOSA to Toronto Soaring on 10 Sept 94.

## LANDING OUT TIPS – Walter Weir

One of the most exciting parts of gliding is “landing out”. I’ve been doing it for years and have never broken a glider. That involves some luck because it’s impossible to tell if the chosen field hides a rock or a hole, so rolling along to get closer to the farm house or road increases the risk of damage to your glider. Use the full ability of the wheel brake to minimize the ground roll.

Not hurting yourself involves common sense, skill and prudence. Once you have learned to control your approach speed and therefore your touch down point, good choice of field is most important.

You should choose your field for your own safety first and the glider second — a high crop could break your glider but will probably not break you (it may be safer to land in tree tops than in a too-small field with hard obstacles). Don’t try to land downhill — you’ll always hit what’s at the other end. Choose downwind over downhill if necessary. It is very difficult to judge slopes from the air and concern for a downslope often leads to landing on a too-steep upslope. A smooth landing on an upslope requires a lot of extra speed for the roundout. If the field slopes crosswise to your path you are in danger of snagging a wingtip before the wheel touches down — consider landing in a turn to prevent this.

Wires are the number one physical hazard. Avoid narrow fields which can hide wire supporting poles in trees alongside. On final, say “Wires” out loud. A single strand of barbed wire fence or electrical wire can be fatal. Never roll into a fence — deliberately groundloop first. Push the stick fully forward to lift the tail and fully to one side to put the wing tip on the ground and apply full rudder to the same side. The resulting groundloop may damage your glider but save your life.

High tension wires on steel towers have huge visible conductors, which sag a lot in the middle of the span, and an almost invisible ground wire which runs from the top of one tower to the top of the next and sags very little. Approach over or near a tower so that you can judge your height. Stay above the towers — forget looking for the wires.

## SAC 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 (available from your club)	\$ 6.00
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
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
	Items 7-12 ordered through FAI awards chairman	
	Items 10, 11 not stocked – external purchase approval given	
10	FAI GOLD badge 10k or 14k pin	
11	FAI DIAMOND badge, 10k or 14k pin and diamonds	
12	FAI Gliding Certificate (personal record of badge achievements)	\$10.00
	Processing fee for each FAI application form submitted	\$10.00
13	FAI badge application form (also stocked by club)	n/c
14	Official Observer application form (also stocked by club)	n/c
15	SAC Flight Trophies application form (also stocked by club)	n/c
16	FAI Records application form	n/c
17	Flight Declaration form (also stocked by club) per sheet	\$ 0.15
18	SAC guide “Badge and Records Procedures”, ed. 6	\$ 5.00
19	FAI Sporting Code, Section 3, Gliders, 1992	\$ 7.00
	available from and payable to the Aero Club of Canada (address below)	

Please enclose payment with order; price includes postage. GST not required. Ontario residents, add 8% sales tax. Items 1-6 and 13-18 available from SAC National Office. Check with your club first if you are looking for forms.

## ARTICLES ACVV POUR CERTIFICATS ET INSIGNES

Insigne FAI 'A', plaqué argent	
Insigne FAI 'B', plaqué argent	
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Insigne FAI 'C', plaqué argent	
Insigne FAI ARGENT	
Insigne FAI OR, plaqué or	
Les articles 7-12 sont disponibles au président des prix de la FAI	
Les articles 10, 11 ne sont pas en stock – permis d'achat externe	
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Formulaire de déclaration de vol par feuille (aussi disponible au club)	
ACVV guide des procédures pour FAI certificats et insignes (éd.6) anglais	
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# SAC SOARING STUFF / ARTICLES DE L'AIR

June 1995

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2	SAC student T-shirt • various colours specify size – S, M, L, XL	15.00			✓	ACVV T-shirt de l'élève • couleurs diverses précisez la taille – P, M, G, XG
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8	Decal "I'D RATHER BEE SOARING"	0.75			✓	Auto collant "I'D RATHER BEE SOARING"
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☼ 10	Bumper sticker "I'D RATHER BE SOARING"	2.00			✓	
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continued on other side — voir au verso

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55	SAC guide "Badge and Records Procedures" • edition 6 (10 for \$40)	5.00			✓
56	CISTRSC (green) / SWAFT (red) cockpit checklist (12 for \$12)	1.50	set		✓
57	<b>AWARE</b> • Gagnon et al (weather manual)	25.00			
58	Medical Facts for Pilots cockpit checklist (10 for \$59)	6.25			

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(complete list on page 20 of 3/95 free flight)

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(voir aussi page 20 de la revue vol libre 3/95)

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## two place

**2-33A**, #170, 1970, 4900h, basic instruments and Radair 10s radio. Sturdy open trailer. Avail immediately. \$US11,700 obo. Contact Winnipeg Gliding Club. e-mail: <wgc-info@lark.magic.mb.ca> or leave message at (204) 837-8128 (24 hrs).

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**Murphy Rebel Kits – only \$19,500.** Rugged roomy metal 3-seat STOL could be your next towplane! Install a Lycoming O-320 or Subaru 180 hp engine and you can have better performance than factory-built, a strong alum airframe, and the economy of auto fuel. This flying camper is also a great personal sportplane, especially on Murphy 1800 amphibious floats. The Rebel can be a thrifty flight trainer – with the 80 hp Rotax 912, you can get 1100 fpm and 97 mph cruise on 3 gal/h. For info or demo, call Bob Patterson, IFA rep, (905) 457-5238, 9 am–10 pm.

**Cessna 172L** \$33,000, **K7 bubble canopy** (never used) \$1500. Randy Blackwell, Box 2108, Medley AB, T0A 2M0 (403) 840-7857 W, (403) 594-2171 H.

**Clearance of Cambridge and other items** CVS-50 vario, 5/10 kts or 10/20 kts, 1 yr guarantee – \$250. Cambridge integrator prototype (true average rate of climb) – \$50. Fuselage mount TE probes – \$20. JMF MkII 30,000 ft barograph, large 14 hour drum, smoked foil calibration incl – \$350. Pneumatic switches for netto on/off etc. – \$15. John Firth, 542 Coronation Ave, Ottawa, ON K1G 0M4 (613) 731-6997.

**Wanted – Peravia barograph paper.** Call Eugene or Chris at (905) 452-0580.

**Wanted – horizontal stab and elevator for K7.** Call Doug Girard, Bluenose Soaring (902) 462-0600.

**For sale – established commercial soaring operation** in the Canadian Rockies. Call 1-800-268-SOAR, fax (604) 344-7933, (604) 344-6665.

**Rocky Mountain Soaring Centre**, at Golden BC Unlimited mountain soaring, 500 km O&R or more. Full operation Apr to Sept with two L13 Blaniks, B-4, Phoebus B, Ka6E. *Towpilot/glider instructor wanted for the 1995 season.* Call 1-800-268-SOAR, fax (604) 344-7933.

**Headset**, TELEX 5X5 Mark II with carrying pouch, barely used (stored in my closet since the Alcor program). \$115. Tony Burton (403) 625-4563.

## magazines

**SOARING** — the journal of the Soaring Society of America. International subscriptions \$US35 second class. Box E, Hobbs, NM 88241 (505) 392-1177.

**NEW ZEALAND GLIDING KIWI** — the bi-monthly journal of the New Zealand Gliding Association. Editor, John Roake. \$US25/year. NZ Gliding Kiwi, Private Bag, Tauranga, NZ.

**SAILPLANE & GLIDING** — the only authoritative British magazine devoted entirely to gliding. 52 pp, bi-monthly. Canadian agent Terry Beasley, Box 169, L'Original, ON K0B 1K0 or to BGA, Kimberley House, Vaughan Way, Leicester, LE1 4SG, England. £15.50 per annum (\$US30) or \$US40 air.

**AUSTRALIAN GLIDING** — the journal of the Gliding Federation of Australia. Published monthly. \$A40.50 surface mail, \$A55 airmail per annum. Payable on an Australian bank, international money order, Visa, Mastercard. (No US\$ personal checks.) Box 1650, GPO, Adelaide, South Australia 5001.

## suppliers

### REPAIRS & MAINT.

**Sunaero Aviation** Glider repairs in fibreglass, wood, & metal. Jerry Vesely, Box 1928, Claresholm, AB T0L 0T0 (403) 625-3155 (B), 625-2281 (Fax).

**Comtek** Composite repairs. Hamilton, ON (905) 689-7444.

### INSTRUMENTS & OTHER STUFF

**Instruments for sale** — best prices anywhere. Call for list and prices for vario, altimeter, airspeed, T&B, G-meter, compass, radio, etc. Lee (905) 840-2932 H, evenings only.

**Barograph calibration**, most makes and models. Walter Chmela (416) 223-6487 (H).

**Variometer / Calculator.** Versatile pressure transducer and microprocessor based vario and final glide calculator. Canadian designed and produced. Skytronics, 24 Robina Ave, Nepean ON K2H 9P9. (613) 820-3751 or (613) 596-1024.

**Firmal Electronics.** Cambridge variometers, L Nav and S Nav now both available with Global Positioning System (GPS) option. You need never be lost again! Write for list or phone John Firth, 542 Coronation Avenue, Ottawa K1G 0M4 (613) 731-6997.

**MZ Supplies.** CONFOR foam, Becker radios, most German soaring instruments. 1450 Goth Ave, Gloucester, ON K1T 1E4 tel/fax (613) 523-2581.

**Variometers**, winglets, mylar seals — all products designed and built this side of the Atlantic! Peter Masak, High Performance Engineering Inc. (713) 499-9518 (W), (713) 499-9620 (fax).

## non-commercial ads in Trading Post

- Personal sailplane and sailplane equipment ads are free for SAC members (name your club), \$10 per insertion for non-members.
- **Ad will run three times.** If ad is to continue, notify editor for each additional three issues. Please **notify editor** when item is sold.
- Normal maximum length is 5 lines. Ads are subject to editing if space is limited.
- **Send ad to editor, not to SAC office.**

# SAC Member Clubs

## MARITIME ZONE

BLUENOSE SOARING CLUB  
Ron Van Houten  
17 John Brenton Drive  
Dartmouth, NS B2X 2V5  
(902) 434-1032

## QUEBEC ZONE

AERO CLUB DES OUTARDES  
Luc Boileau, 876 Bergeron  
Ste-Thérèse, PQ J7E 4W8  
(514) 430-0367

ASSOCIATION DE VOL A  
VOILE CHAMPLAIN  
Claude Gosselin  
30 des Orties  
Laprairie, PQ J5R 5J3  
(514) 444-3450

CLUB DE VOL A VOILE  
DE QUEBEC  
Jean-Guy Helie  
85 Route de la Jacques-Cartier  
Ste-Catherine, PQ G0A 3M0  
(418) 875-2005

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  
Richard Longhurst  
100, 1446 Don Mills Road  
Don Mills, ON M3B 3N6  
(416) 391-3100 ext 250 (W)

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

BASE BORDEN SOARING  
Box 286  
Borden, ON L0M 1C0

BEAVER VALLEY SOARING  
Doug Munro  
187 Chatham Avenue  
Toronto, ON M4J 1K8  
(416) 466-1046

BONNECHERE SOARING  
Box 1081  
Deep River, ON K0J 1P0

CENTRAL ONTARIO  
SOARING ASSOCIATION  
Bob Legler  
866 Hyland Street  
Whitby, ON L1N 6S1  
(905) 668-5111

ERIN SOARING SOCIETY  
Box 36060, 9025 Torbram Rd  
Bramalea, ON L6S 6A3

GATINEAU GLIDING CLUB  
Rick Officer  
1085 St. Jovite Ridge  
Orleans, ON K1C 1Y6  
(613) 824-1174

GUELPH GLIDING &  
SOARING ASSOCIATION  
G. Ritchie (519) 763-7150  
259 Cole Road  
Guelph, ON N1G 3K1

LONDON SOARING SOCIETY  
Brian Keron  
RR 2,  
Thamesford, ON N0M 2M0  
(519) 285-2379

RIDEAU GLIDING CLUB  
Box 307  
Kingston, ON K7L 4W2

RIDEAU VALLEY  
SOARING SCHOOL  
Box 1164  
Manotick, ON K4M 1A9  
(613) 489-2691

SOSA GLIDING CLUB  
Pat O'Donnell  
74 Lincoln Avenue  
Brantford, ON N3T 4S9  
(519) 753-9136

TORONTO SOARING CLUB  
Stephen Foster  
10 Blyth Street  
Richmond Hill, ON L4E 2X7  
(905) 773-4147

WINDSOR GLIDING CLUB  
Eric Durance  
785 Bartlett Drive  
Windsor, ON N9G 1V3

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

## PRAIRIE ZONE

GRAVELBOURG GLIDING  
& SOARING CLUB  
Mark Jalbert  
Box 213  
Lafleche, SK S0H 2K0  
(306) 472-5668

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

REGINA GLIDING &  
SOARING CLUB  
James Thompson  
Box 4093  
Regina, SK S4P 3W5  
(306) 536-4119 or 536-5759

SASKATOON SOARING CLUB  
Box 7943  
Saskatoon, SK S7K 4R6

WINNIPEG GLIDING CLUB  
Susan or Mike Maskell  
489 Lodge Avenue  
Winnipeg, MB R3J 0S5  
(204) 837-8128

SWAN VALLEY SOARING ASSN  
Sam Namaka  
Box 1827  
Swan River, MB R0L 1Z0  
(204) 734-4677

WESTMAN SOARING CLUB  
2615 Rosser Avenue  
Brandon, MB R7B 0G1

## ALBERTA ZONE

CENTRAL ALBERTA GLIDING CLUB  
Jerry Mulder  
4309 Grandview Boulevard  
Red Deer, AB T4N 3E7  
(403) 343-6924

COLD LAKE SOARING CLUB  
Randy Blackwell  
Box 2108  
Medley, AB T0A 2M0  
(403) 594-2171

CU NIM GLIDING CLUB  
Keith Hay  
7 Scenic Glen Gate NW  
Calgary, AB T3L 1K5  
(403) 239-5179

EDMONTON SOARING CLUB  
Dave Puckrin  
Box 472  
Edmonton, AB T5J 2K1  
(403) 459-8535

GRANDE PRAIRIE  
SOARING SOCIETY  
Walter Mueller  
10317 - 82 Avenue  
Grande Prairie, AB T8W 2A6  
(403) 539-6991

## PACIFIC ZONE

ALBERNI VALLEY  
SOARING ASSN  
Doug Moore,  
Site 310, C6, RR3  
Port Alberni, BC V9Y 7L7  
(604) 723-9385

ASTRA  
9280 - 168 Street  
Surrey, BC V4N 3G3  
(604) 589-0653

BULKLEY VALLEY SOARING  
Ted Schmidt  
Box 474  
Smithers, BC V0J 2N0  
(604) 847-3585

VANCOUVER SOARING ASSN  
Membership Secretary  
Box 3251  
Vancouver, BC V6B 3X9  
(604) 521-5501

return address:

Soaring Association of Canada  
Suite 111 – 1090 Ambleside Drive  
Ottawa, Ontario K2B 8G7

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