

free flight • vol libre

3/86
May-Jun



Musings

Mea Culpa! I made a major error at the AGM in Vancouver. My mental processes were more muddled than normal. I erred saying that the insurance downpayment was 15%. It is not. It never was. It is 50%. So all the sharp-eared treasurers got a bargain. But remember, the balance is due 30 April just like your income tax. The insurance company doesn't like slow payers, and neither do we. Slow payment isn't fair. It raises the cost for all, as someone has to put up the money. You should remember that coverage can be shortened. It has happened.

You will have heard, long before you read this, that Jean Matheson has tendered her resignation, effective 1 July 1986. Jean has found an opportunity to exploit, and will begin work as a self-employed/directed consultant. While it has not necessarily been as apparent or appreciated as it should have been, Jean has done a lot for SAC. Her successor will have a much easier time as a consequence. Good luck, Jean.

The principle message I presented to the SAC AGM and to the OSA annual meeting was simple but direct. WE MUST STOP KILLING OUR PILOTS. If you are not shocked and dismayed (to use that hackneyed phrase from the doyen of Canadian newspapers, the *Globe and Mail*), you should be. For roughly the last 15 years, an average of 1.25 Canadian glider pilots have died each year in the pursuit of their sport and passion. Our performance is unacceptable on the basis of any rational philosophy. To compare, average rates in Holland and Denmark are 0.25 pilots per year. I'll bet they find this to be unacceptable too. There are no neat tidy solutions except those we have known all along, and the maturity to admit that we are mortal and can benefit from periodic evaluations and, if necessary, retraining from our peers.

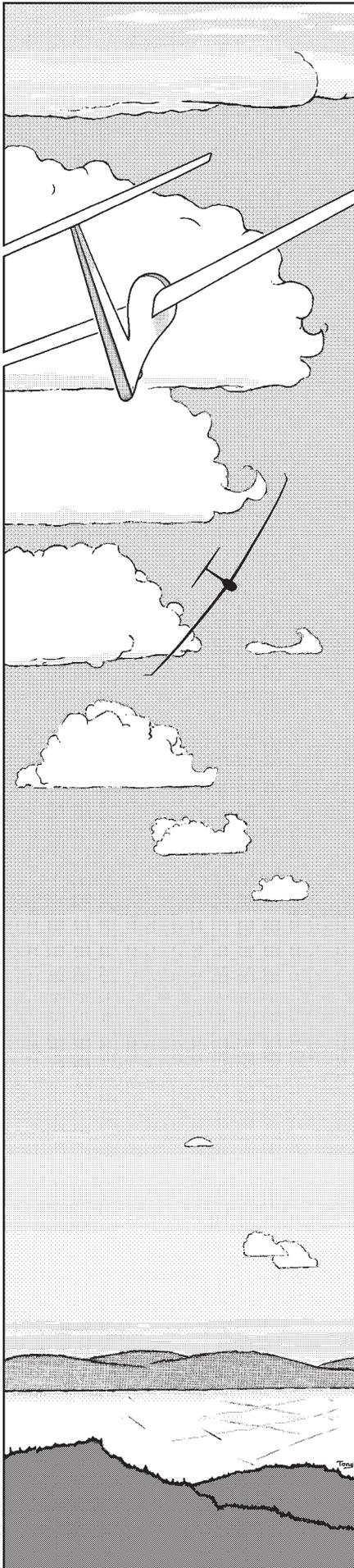
In this context the rejection of the 1986 fee structure, and the consequent reduction of funds destined for the Flight Training and Safety committee, is most unfortunate. The essentials will be fulfilled as long as they can: consultative evaluations and possibly meetings may be limited.

As you know, I felt that the rejection of the fee structure was a vote of non-confidence and was prepared to withdraw my commitment to stand again as Director-at-Large. I was persuaded otherwise which is why I am writing this essay. I thank you for your trust by re-electing me as Director-at-Large for the next two years. However, it is not my intention to stand again when my current term expires in 1988. Additionally, it is my hope that your Board will appoint a new president in March 1987. I am honoured that they felt I should continue this year. It looks as if it will be interesting.

Many clubs, including my own, were able to get off to an early start as a consequence of a mild spring. I hope that for each of you it will be a rewarding year and that you achieve all of your club and personal goals. Remember too, that we are now part of the Barron Hilton Cup Competition. *The rules for this competition relate to distance flights made in your own area. National winners are treated to a soaring holiday in Nevada, sailplanes and everything supplied.* It sure would be nice if a Canadian were at the FLYING M ranch in 1987 to enjoy all the Canadian bacon I have asked them to order. Details are available from the National Office.

Fly safely well and often,
starve the crocodiles and, above all,
enjoy the journey.

A handwritten signature in black ink that reads "Bob". The letters are cursive and fluid, with a large, prominent 'B' and a trailing flourish at the end.



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Trademark pending Marque de commerce en instance

3/86 May-June

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

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Cover

Looking north up the Livingstone Range. This view was taken from an altitude of about 10,000 feet and shows the profile of the range and its eastern flank which produces the Cowley wave. The highest point of the range is Centre Peak (the barest rocks, centre-left in the photo) at 8364 feet. Photo by Andrew Jackson.

LET'S SEE MORE X-C

Robert Di Pietro
MSC

Many clubs, with their full range of flying equipment, have the capability to mold great pilots. So what are we doing with this great array of potential? In my club, the Montreal Soaring Council, the training scheme is well established and everyone has a better than average opportunity to become totally familiar and highly qualified on each glider in the fleet. So where do we, and you, go from here?

Cross-country, that's where.

Cross-country is one of the most satisfying aspects of soaring, but let's not kid ourselves — to cut the cord and go is much easier said than done. Once in the air and fully prepared, the decision is comparable to that of being on a 10 metre diving platform for the first time — no-yes-maybe-no-yes-etc. I need more altitude, maybe another thousand feet. Everyone goes through this, especially a beginner, and certainly I was no different. The first flight usually consists of clinging to every possible thermal enroute, good or bad. Below 3000 feet most of the concentration is spent on studying and choosing landable fields. While doing so, we blunder into lift and the concentration returns to the cross-country mode. We are not used to "distance" and are forever looking for the turnpoint, our mind insisting on visual contact, although only 10 kilometres out on course.

So it was on that glorious day as I returned to mother airfield after completing an 80 kilometre out-and-return. It was difficult not to act like an overstuffed rooster upon return to earth after the "great" run. It does take a while to eradicate the joy and pride of success embedded within the soul of the soaring pilot. But kid yourselves not, a proud achievement, at any level of accomplishment, only belongs to you. While your friends may feel happiness for you, they cannot feel your jubilation, they were not there.

Can we get them out there extending their skills and joys? There are some real-world facts that bear on the possibility:

- There seems to be a good theoretical interest in cross-country soaring but it often lacks a practical commitment by clubs to develop it.
- Provincial contests encourage the prospect, but the number of entrants in the lasts five meets in my area was extremely poor. If this is the result of a planned event, the participation on regular club weekends must be dismal.
- To date, I have not known a pilot that wasn't thrilled at attempting or completing a cross-country flight.
- Pilot preference is never debatable. Soaring pilot categories range from the "weekend local fun soaring" to "all-out competitor or record-breaker". It's the personal satisfaction that counts.
- Fellow pilot involvement can be encouraged and assisted, but not commanded.
- To progress in soaring, everyone involved still has to carry their own weight. No one will hold your hand forever.
- Those of us "committed" to the sport cannot allow ourselves to stagnate, so we should get a little more serious about our sport in order to have more fun.

Assessing the above, it would seem that the goals of each pilot, and of clubs especially, would be first to aid and encourage those new to cross-country flying, and second to improve the level of present cross-country pilots. If this seems only self-evident to a lot of you, why are we not doing more? □



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 Royal Canadian Flying Clubs Association (RCFCA), the Canadian national aero club which represents Canada in the Fédération Aéronautique Internationale (FAI, the world sport aviation governing body composed of national aero clubs). The RCFCA 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 Association's official journal.

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

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. Directors' names and addresses are given elsewhere in the magazine.

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President R.I. Carlson
Vice President H. Tilgner
Executive Director &
Corporate Secretary Jean Matheson
Corporate Treasurer Jim McCollum
SAC Office Secretary Rosanne Paquin
SAC National Office
485 Bank Street, 2nd Floor
Ottawa, ON K2P 1Z2
(613) 232-1243

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

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Chacun est invité à participer à la réalisation de la revue, soit par reportages, échanges d'opinions, activités dans le club, etc. Un "courrier des lecteurs" sera publié selon l'espace disponible. Les épreuves de photos en noir et blanc sont préférables à celles en couleur ou diapositives. Les négatifs sont utilisables si accompagnés d'épreuves.

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EDITOR

Tony Burton (403) 625-4563
Box 1916
Claresholm, Alberta T0L 0T0
Address for courier service:
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USING THE ANGLE OF ATTACK GAUGE

What do you mean, "I don't have one?"



Ray St. Laurent RVSS

Few people realize that all aircraft have an angle-of-attack gauge. Using the one in your glider can lead to safer flying and more effective thermalling.

The gauge I'm referring to is the fore/aft position of the control stick. Most pilots realize the real function of the elevator is to control the angle of attack of the wings. Stick position directly controls elevator position. In fact, for **steady** flight, there is a direct relationship between stick position and wing angle of attack.

Take a glider up to a suitable height. One of the signs of an impending stall is a backward stick position. From steady, straight flight gradually ease the stick back until you stall. Note the stick position. If desired, mark your leg at this point. Repeat the procedure and you will see that stick position is virtually the same (for completeness of instructions, remember to recover from the stall each time).

What about stalling from a turn? Everyone knows the stall speed increases in a turn. However the stall angle remains the same; when the wing reaches the stall angle, it will stall. Since the aircraft is in curving flight, the outboard wing will be moving faster than the inside. The angle of attack will be different for each wing. However, these factors have very little overall effect. Take up the glider again and enter a stable gentle turn. Gradually ease the stick back until you stall. Repeat for medium and steep turns. Iterate until you are convinced that the stick position is virtually unchanged from the wings level experiment.

Again, remember to recover from the ensuing spin each time.

All powered and unpowered aircraft that I have flown have exhibited this behaviour. For powered aircraft the stick position can change a bit if power is applied, due to the propeller's effect on airflow. There was one glider exception: when we got the RHJ-8, it exhibited the alarming capability of stalling with the stick in a variety of positions. It also had generally poor elevator response. Suspecting airflow separation, turbulators were installed on the elevator to prevent this. Bingo. Elevator response improved and a unique stall stick position could be found.

How do flaps affect the stall stick position? The pitch attitude obviously changes. But, for cruise/thermal flap settings, the stall stick position remains constant. With landing settings the stick is further forward. For spoilers, any change is usually slight.

Spin Prevention

Stall-spin prevention now becomes easy: do not get into a flight condition where the stick approaches its stall position. The fact that stall speed increases with bank becomes academic. Be sensitive to stick position! If it starts creeping back close to the danger point, tweak it forward a bit.

Thermalling Speed: the hard way

Let us define the optimum thermalling speed as that corresponding to the minimum sink. This will result in the maximum climb rate. Assuming the manufacturers' claims are valid, we can use the published minimum sink speed at the applicable weight as a baseline. This number is only valid for straight flight.

continued on page 11

EXPERIENCES OF AUSTRAGLIDE

On the first day of 1986, two Canadians left Toronto to participate in “Australglide '86”, the warm-up for the organizers of the 1987 world championships and for 72 pilots from 17 countries. Wilf Krueger and Ed Hollestelle were to do some serious world class contest flying at a time when most Canadians are in the deep freeze.

Ed Hollestelle SOSA

After a short stopover in Hawaii and a three day stay in Fiji, we arrived in Melbourne on the 7th of January where we were met by John Anselmi of the Stawell club who drove 150 miles just to welcome us at the airport and drive us to Benalla, the site of Australglide '86. John was our liaison officer and, as it later turned out, crew for the both of us. We checked into the “Haven Motel” and then we found our way to the clubhouse. Who did we run into but Dave Hennigar from Winnipeg!

The next day, we met several very nice people involved in the organizing of the contest and the full-time staff of the Gliding Club of Victoria. We also spend time looking over some of the local equipment, the airfield, and of course finding out which is to be our Mosquito for the contest. It was rented from the Gliding Club of Victoria which operates out of Benalla, and they would also have a crew with a vehicle to look after us. The other glider for us was a privately owned LS-4 based at Euroa, 50 km west of Benalla.

It is now time to decide on who is going to fly what glider — we flip a coin — I lose.

Jan 10 We both have a short local familiarization flight. My first impression of the Mosquito is not bad, it handles quite nicely and is very comfortable. The only thing I have to get used to is the parallelogram stick movement.

The next day Wilf goes to Euroa to get the LS-4 and we decide to do some flying since the weather looks promising. He flies the LS-4 back and does some 400 km more, landing at Benalla. I have a good flight of over 300 km including a trip to Tocumwal. Thermals are choppy but they are fairly strong (6-8 knots) and go as high as 8000 feet. If this is an indication of the conditions for the contest we have reason to get excited.

Jan 12 The good weather has left us, and besides that, there is work to be done. Camera mounts (*left and right*) are installed and since I now have the Mosquito to myself, they allow me to install my flight director. We also check water ballast systems, batteries, etc.

Late the following day we have a chance to do some comparison flying between the LS-4, the Discus, and my Mosquito. The Discus is the better runner at all speeds, the

LS-4 a close second; and even at speeds over 115 knots with full negative flaps, the Mosquito keeps losing.

The next two days are not too good, so it's a chance to get all the maps ready, the turnpoints marked, and mail some postcards. So far I am a little disappointed. A whole week in Australia and only a few good flights. Finally we get Aussi thermals on the 16th. At some points during our task we see 1000 ft/min and we cover almost 300 km.

By the 17th, there are enough pilots to make it interesting, although it is not official practice yet. Today we learn strange place names like Burrumbuttock and Jerilderie, which make a 350 km triangle. A hole just north of Berrigan almost gets me down but I complete the task while some others cut short to avoid off-field landings. This is also the first time for me to have hang gliders show me the thermals! At 5000 feet close to Peechelba I run into the first one and after seeing his rate of climb I decide to join him. As I later learned, they are also practising for their worlds to be held at Mt. Buffalo in 1987.

Jan 18 Official practice day. To get us going they set a 388 km task with the first turnpoint in the mountains. Many of us arrive at the turnpoint at 4500 feet not being able to take the turnpoint picture, a chalet at a

height of 5050 feet at the top of Mt. Buffalo. After spending 45 minutes at the mountain I manage to get my picture and leave with Bruno Gantenbrink and Reinhart Schramme of Germany, and I complete the task at a respectable speed.

Jan 19 Official opening day with the speeches. Later in the afternoon we set out on the practice task: a 322 km triangle, Baldale — Jerilderie — Benalla.

Conditions are as forecast ... blue thermals 3–6 knots to 5000 feet. On the first leg I have a chance to fly with Ingo Renner (Australia) and his Nimbus 3. He never seems to stop and quite often pushes on until very low, and somehow always finds that better-than-average thermal! We all make it back except one.

Jan 20 Day 1. The pilots meeting is very punctual and to the point. Marshalling is smooth as they line us up twelve abreast. Take-off is very efficient. The lift is slightly less than predicted so most pilots wait around in the hope it will improve. However, with a 373 km task and week lift (3-4 knots) to 4000 feet, most of us leave the start gaggle shortly after 1300, and on course lift does not improve at all. The contest is on. I get very low without finding that first thermal and start dumping water. No sooner have I touched the valve, I hit some lift. However, after topping the thermal I find myself flying



Ed and his borrowed Mosquito in the hot January sunshine.

straight with left aileron — it does not take long to realize that my left wing tank has emptied even after closing the dump valve and I now have no choice but to dump my right tank also. It takes a couple thermals to find out that there is no hope now to keep with the gaggles without water. Slowly I lose out to them and end up by my lonesome to finish one of the last.

Jan 21 The weather looks like a carbon copy of yesterday. The met man predicts 1–5 knots, so I am convinced it will be much the same. The task: a 370 km triangle Rennie—The Rock—Benalla for all classes. At times I find myself in gaggles of over 20 gliders but today I have water and what a difference it makes! The last turnpoint is in the mountains, so I decide to go slightly south of course to stay close to the mountains and hopefully the better lift. I lose sight of all other gliders and begin wondering about my decision to go off course. It seems like forever before I hit the next thermal, but when I do it's a good 8 knots. After the first turn Al Leffler (USA) joins me in his Discus, so I know the decision was not so bad. Al and I leave the thermal and again seem to find only smooth air until we hit the best one of the day, 10 knots on the averager which punches through the inversion to 7000 feet. Halfway up the leg Ingo joins us, and I **know** this was the right decision. Two more 5 knot thermals and I am on final glide to beat most of them home. Kees Musters (Holland) wins the day with 116.4 km/h. My speed is 106.1 km/h, and comparing myself to the winning speed of 104.6 km/h in the Standard class (who flew the same task) I feel much better.

Jan 22 Disaster hits. While I'm attending the pilots meeting the local club member who is helping me splits the wing skin of the Mosquito while filling the water ballast. It looked like the end of the contest for me, but within an hour I am sitting in a Pik-20B being briefed by the owner who generously offers me to fly his sailplane on alternate days. Much better than not flying at all. This day is cancelled though, and I do not have a chance to try his re-profiled Pik.

In the afternoon I get offered yet another sailplane — fantastic people this whole lot! A group of glider pilots from Germany is willing to let me fly the Mosquito they have rented for badge flying. So I am back in the contest and spend my rest day preparing yet another sailplane.

Jan 23 The met man is optimistic and predicts 4–8 knots up to 6000 feet so they set the tasks accordingly. For the Open class it is 586 km, 494 km for the 15m, and 423 km for the Standard class. The weatherman was right on. The lift north of the Murray River is sometimes as strong as 8 knots and goes as high as 8000 feet later in the day. We also run into the heavy sink out over Lake Mokdan exactly as in the previous two days. It gets eight pilots of our class down 8–10 miles short of the finish line. Kees wins the day again with 113 km/h, while most contestants hit just over 100 km/h. I come in at 98.7 km/h. Wilf has a bad day, and after talking to some LS-4 pilots finds out he carried too much water for the conditions.

Jan 24 The weather is the same again and the tasks are set more or less in the same area. At one point, I spend 40 minutes at 600 feet before I finally start climbing and my 80 km/h is only good for 278 distance points. Wilf comes in at 90.2 km/h and is pleased with the way the sailplane handles with the correct amount of water ballast.

Jan 25 Again the forecast calls for broken weak thermals up to 5000 feet. As it turns out we have a tough time just staying airborne. The wind is much stronger than predicted and a strong inversion cuts off most thermals at 2400 feet. We are blown to the north of our first leg and after struggling for an hour I have not made much progress. Many pilots have landed out already and I find myself low over unlandable terrain. After crossing the same airfield three times I finally give up and land hoping it is not a contest day. Two more land at the same airfield and three are just short of the runway in a field. Five others land five miles to the north of us. Eric Mozer (USA) circles the airfield, heads on course ... and is back after 20 minutes, lower than before. He also gives up.

Late that night, after we arrive back at the airfield, we find out that it is a contest day. Kees manages 342 km; the hedgehopping lowland pilot in true world champion style! Wilf flies a great 224 km and lands very late. He arrives back at the motel at three in the morning.

Jan 26 A much shorter task is set for today: 248 km for the 15m, Standard and Open have a 206 km course. The usual blue day gaggles form and we find conditions somewhat better than predicted. Wilf shows how it is done by winning the day in the Standard class with a fantastic performance. He comes in with 103.7 km/h. In the 15m it is George Galetto (Italy) with 105.6 km/h, and I manage a respectable score also with 96.6 km/h.

Jan 27 Same weather exactly—southerly winds with broken blue thermals up to 5000 feet. They set a longer task however; 552 km for the big ships to be first off, 430 km for the Standard class, and 442 km for the 15m. Take-off is delayed and even then the first pilots have problems climbing. Conditions slowly improve as we make progress on course. But, it is a long task and the 15m class runs out of time. When the lift quits at around 7 pm, the entire class lands out one or two thermals short of the airfield while most of the Standard class just make it in with some good speeds. Another late retrieve. Poor Wilf who made it home had to come and get me.

Jan 28 Finally a change in weather. According to the met man we might even see some cumulus today, but due to the predicted late start of the thermals only moderate tasks are set. It proves to be the best soaring day of the contest. At first it is hard to find organized lift. Even a small cu over the Wabbies (a mountain range NE of Benalla) does not produce the expected strong lift. So on the first leg I did a lot of straight flying until I connected. Passing up the first few cu, I get lower until finally I find a strong core that slowly improves to

910 knots as I climb to cloudbase now at 8000 feet.

A few more like that bring me halfway down the second leg where I catch up to some early starters. I am now pushing the Mosquito at 110–120 knots and only stop to circle in 10 knots. Staying close to cloudbase and following the clouds I manage to reach the last turnpoint at 6500 feet without hardly turning, and from there I run the 60 km home mostly at red line to finish for a speed of 131.9, while the winner is Gerbaud of France with 142.8 km/h. Today is one of the few days that Ingo does not win the Open class.

Jan 29 The weather man is predicting even better conditions for today Thermal strength 8–12 knots to 10,000 feet. Tasks are set accordingly: 544 km for Open, 561 for the 15m, and Standard 537 km. The first turnpoints are in the mountains. After yesterday it seems only right to set a task like this. I am one of the first off tow and although I climb very well, life is not as predicted. Cloudbase is also much lower, and I now realize that rounding the turnpoint in the mountains is going to be a challenge.

After starting below 5000 feet we head for the hills where thermals are very disorganized and climbs over 4000 feet are difficult. Close to the turnpoint (Mt. Beauty) some pilots get into trouble and Marko Kuittinen (Finland), the previous world champion, has to land out in almost impossible terrain. There are some comments from pilots over the radio that mountain flying in Rieti was a piece of cake compared to this. Most land out after 6 or 7 hours of flying, but again Kees makes it back, together with four other pilots.

Wilf scrapes home after hours of fighting at low altitudes and lands a very tired man. The next day is finally declared a rest day. Since most pilots had landed out the day before and the forecast does not look promising, it seems very appropriate.

Jan 31 The last day of the contest is typical as far as the weather is concerned and a short task does not change the standings very much. Kees Musters wins the 15m class, and I am 17th of 31. Ingo Renner wins the Open class, and in Standard class it is Bruce Brockhoff (Australia), with Wilf in 14th place of 34.

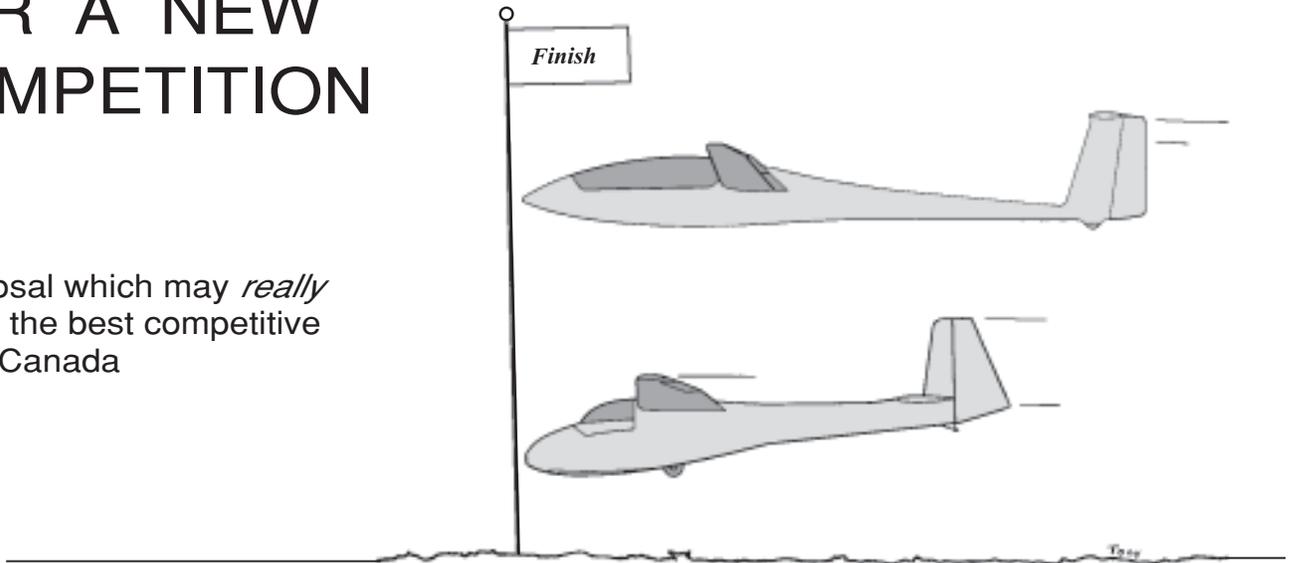
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It was a very interesting experience for me and I am sure that, with the right equipment and the proper training, Canadian pilots can show very respectable results next year in Australia. The secret seems to be lots of flying hours and flying good sailplanes. Each of the contest winners fly year round. If we want to place well, we need competitive equipment and we have to be prepared to pay a little extra.

If we place well we will have better support the next time. It is a Catch-22 situation, but this time at least, we have a chance to go, so we should all work on making it happen. It would give our competition scene a much needed boost. □

THE CASE FOR A NEW COMPETITION

A proposal which may *really* choose the best competitive pilot in Canada



Peter Masak
SAGA

Soaring has just been named an Olympic sport! Hurray! In one fell swoop, this has completely changed the outlook for SAC. At last our sport should gain some credibility with both our countrymen and our government. This far-reaching decision should also serve as an inspiration for SAC to make some long needed changes in the way in which we conduct soaring competitions. Why? Because one would suspect that the media and public are going to be paying a lot more attention to soaring — and we in SAC need to get our house in order. We need to shed our image of a sport practised by the wealthy and the few — and give the sport the image it deserves. Soaring is the sport of kings, but you shouldn't have to be a king to do it.

For our own good, we need more participation. We need more clubs, more members, more publicity. Everyone has their own reasons for participating, whether it be for the thrill of flying, the camaraderie, or simply a weekend respite from the pressures of the urban rat race. For a few of us it's also the competition. Let's take a look at this aspect of the sport.

Having flown competitively off and on for the last five years, this issue strikes close to my heart. I've seen and admired the bright side of competition which is particularly strong in the USA, the pursuit of excellence, the camaraderie, the team spirit. There is a real sense of chivalry — the kind wherein one gentleman having beaten another in a fair contest tips his hat to the other and says, "touché".

Gliding competition is strong and healthy in the USA. The 15m, Standard, and Sports class competitions are normally oversubscribed. The new rules in place there just produced a new world champion, and a

very strong showing from the rest of the American team.

The facts are there; for the good of the sport we need a change in the Canadian soaring competition scene. We need fresh ideas, more people, more enthusiasm. Canada can produce a world champion, but not with our current system.

What's needed is simple. An honest, fair system that puts everyone on an equal basis at the start, promotes good-natured, friendly competition. Any other system destroys one's spirit. If you played basketball at school and everyone had an unfair advantage by being taller than you, you'd probably lose interest. However, if you played in a class with your peers where everyone had an equal chance then you'd probably look forward to every game. The same simple philosophy should apply to soaring competition but it doesn't. The results of the Canadian Nationals are mostly predetermined by the quality of the ship flown by the competitor. In the 15m class, there is really only competition amongst those pilots that have an ASW-20 or a Ventus (usually numbering 5 to 8), whereas the Standard class is even more stratified into those pilots that own an LS-4 and a DG-300 (2-3), and everyone else. The performance of the other aircraft in these classes is far enough behind the new generation sailplanes that the pilots in the second tier can't overcome the performance gap.

So effectively, we are selecting a national champion and a world contest team from a roster of only 7-11 pilots, who may or may not be the best qualified. Little wonder then that the Canadian soaring team has not done that well in past world contests.

The answer is handicapping. The British have used this system for years in their Nationals — and have the results to prove it works. George Lee of Great Britain has in past years won three world champion-

ships! This system has recently been further refined in the USA and I can bear personal testimonial to its fairness; having participated last year in the first Sports Class Nationals in which one could earn seeding points and hence attracted "serious" top competitors. I left that competition with a conviction that I had stumbled into a new exciting type of competitive soaring. Let me explain why.

The new Sports class scoring system bears little resemblance to the old. Pilots under the new rules launch in their ships and fly their own self-selected tasks. Since a 1-26 can't cover nearly as much ground as a Nimbus III, the minimum task distance for each ship varies in order to keep all pilots in the air about the same amount of time. A scratch distance is assigned by the task committee for the scratch sailplane — the Standard Cirrus (whose handicap is 1.0). Depending of your handicapping factor relative to the Standard Cirrus, the minimum distance you can fly is calculated by simply dividing the scratch distance by your handicap.

Secondly, your score is obtained by taking your average speed over your course and multiplying it by the handicapping factor. The resultant handicapped speed is then scored as in a normal contest.

To show you how a typical flight might go, allow me to describe one of my favourite flights from the '85 Minden Nationals.

• • • • •

John Sinclair announced at the pilots meeting the morning of Day 5 that the scratch distance was 260 miles. In my Nimbus III, that meant that I would be flying at least 260/0.82 or 317 miles — Diamond distance. No sweat in Minden, Nevada — or so I thought. I checked my turnpoint list for possible courses and selected three likely candidates, all triangles flat as possi-

ble and taking as much possible advantage of the prevailing north-south mountain ranges. I estimated my flight time at 4-5 hours and therefore picked a start time of 12:30 when my name was called. The process of launch order selection was amusing. The first pilot on the roster would be called; he would give his start time, and then each subsequent pilot would choose their start time as close as possible to the "pack", which normally grew around the first pilot's selection. The herd instinct was very, very prominent in this daily ritual. If you were one of the last pilots on the roster, you were generally put in the unenviable position of having to start a lot sooner or later than you wanted. A good start time selection was seen to be crucial to a good flight.

I launched as planned and noted my launch time on my kneeboard pad. I released from tow and quickly searched for a strong thermal. The rules required that you go through the start within 20 minutes of launch, otherwise a penalty would be assessed. *(In weaker conditions, a longer time would logically be allowed.)* This had the distinct advantage of preventing gaggles from forming since you normally had barely enough time to climb to start gate altitude and go through the gate before your time was up. Those pilots that were used to chasing each other around a course line were suddenly left without the benefit of the Mother Goose gaggle! This is an important contribution to flight safety at the start.

By 1:00, clouds had already developed into the towering cumulus stage, and conditions appeared to be moving rapidly towards overdevelopment. I pushed the unballasted Nimbus III north as fast as possible (we weren't allowed to carry water ballast), while continually reminding myself that I had probably taken off too late. My goal was to try and make it as far north as possible, take a turnpoint picture and then head southeast into a sky that already looked to be raining. I crossed Reno International barely above the control zone and watched intently as a Boeing 757 airliner flew a circuit around me. The Nimbus and I poked forward just under the wisp of a building cu-nim with the Air Sailing turnpoint just barely visible through some light rain. I elected to try to push farther ahead to another turnpoint out about 20 miles ahead in a clear blue sky. It was very apparent that conditions were so bad to the south that any distance I could add to my triangle to the north was going to pay off in a big way by cutting down on the distance required to fly in the southerly sector of the course area. I therefore innocently drove ahead into the blue and was promptly rewarded with a phenomenal 1000 plus fpm sink rate. The steady sink continued unabated and I quickly changed my mind and headed back for the same cu-nim that I had left minutes before. Fortunately there was still lift and I climbed back up despite circling

in rain. I dashed back south through a light looking spot under the cloud and snapped a turnpoint shot of Air Sailing, 20 minutes after having passed the same point previously. My conscience chided me for having been so foolish. The logical way out of this mess seemed to be a route back towards Reno International so I pressed on to the south with good visibility, but moderate rain. All of a sudden, the rain turned to light hail and my yawstring was ripped off the canopy in short order. Only a couple of minutes of this and my wings started to collect rime ice (about 1/8 inch on the leading edge). The sailplane began to tremble from the turbulence on the wings but fortunately all of this was short-lived and we broke out into sunshine a few minutes later.

Where to next? I headed back towards Minden with no real plan in mind, although it was obvious that I wouldn't be able to land there either, since a massive cu-nim was coming down out of the Sierras right over the airport. I therefore elected to make a left turn and head generally southeast into the desert which should normally be less prone to overdevelopment because of the dryness. However, there appeared to be a lot of very high altitude cirrus blow-off obscuring the ground. I bounced haphazardly from one towering cu to another, occasionally through severe turbulence, and hoped that luck was on my side this day. All of a sudden, I found myself again in trouble, but this time sinking towards the desert floor with no cumulus in sight. Looking down was very depressing — the ground was very rough with nothing but sagebrush to land on.

This type of flying takes no back seat to any of the "lap-race" contests ... This is soaring at its best — individual, self-reliant, and demanding of the skills sailplane pilots need ...

George Thelen, SOARING

Again, fate prevailed and I spotted a powerful-looking dust devil scouring the desert floor under completely overcast skies. The dust devil provided a timely save from a sure outlanding, and again I was afforded the opportunity to survey the conditions ahead. It was a tough decision — there didn't appear to be any part of the hemisphere that wasn't overdeveloped. Gabbs was only 50 miles away but looked unattainable, and so again I shifted course 90 degrees to the right and headed towards Mammoth Lakes, California. The toughest part was trying to guess what weather conditions lay ahead. You couldn't possibly see far enough to judge whether your turnpoint was reachable or not.

Miraculously I reached the turnpoint at the edge of the Sierras, again being forced to dart out into the dead air around the turnpoint from the edge of a cu-nim. Having reached the second corner of my triangle allowed me the opportunity to think about some way of getting home through what again seemed like an impassable sky. The direct route back looked like a sure land-out and I opted to fly northeast around the storms. This plan worked, and I was finally

thankful for the added range that the Nimbus III offered. For the most part, it was a disadvantage to fly this unballasted ship at such a low wing loading, at least when compared to the heavier 15m ships which suffered less in the normally strong Minden conditions.

My Nimbus III's long range probably contributed to me making it around the course this day. Most of the field landed out, and my third placing for the day moved me well up in the rankings. I reflected on the fact, however, that I had flown 450 miles and under the rules only received credit for a measly 320 given my photographed turnpoints.

The up-side of flying a high performance ship in this kind of contest is the fact that on very weak days you may have an advantage. The extended range pays off in getting you out of problem spots. On the other hand, the fact that you have to fly so much farther than everyone else limits your turnpoint options, and also makes it more difficult to pick a good course since you can't possibly see enough of the sky ahead to decide where the best conditions will be.

Carl Herold, who generates the US handicap values, has said that in his estimation, a 1-26 should win at Minden, whereas a Nimbus III should win in Elmira. Whatever way the handicapping factors are skewed, the results indicated that the system works. On the beginning of the final day, less than 200 points separated 1st and 8th places in this contest, with 50 participating pilots. This is equal or better than the kind of point spread normally seen in the 15m and Standard class nationals under the "usual" rules — so it works!

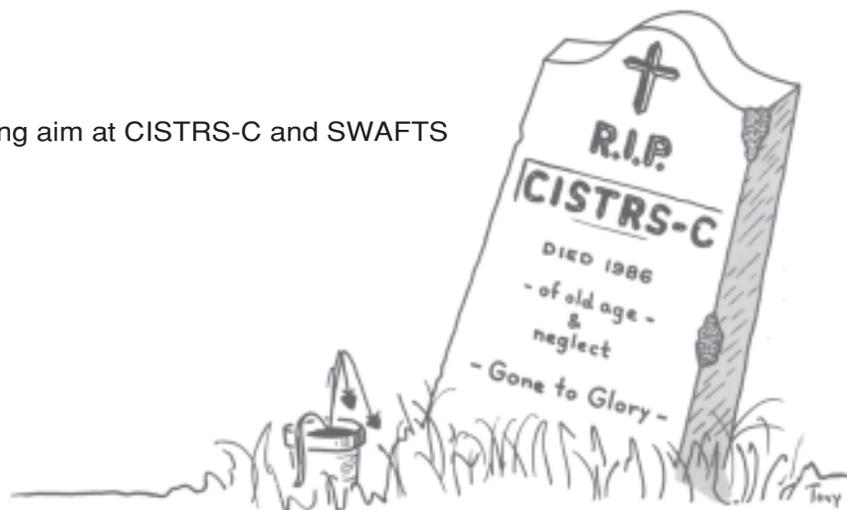
How did we feel after the contest? We felt like we had recaptured the true spirit of soaring in a competition setting. The sense of exploring as idealized by Phillip Wills in his book "Free as a Bird" was there — we weren't lap racers hell-bent on jockeying for position in a gaggle. We had rediscovered the spirit of competition soaring and had truly selected the finest soaring pilot.

Given the current recognized weaknesses and problems in the Canadian competition scene, I believe that running our contest under this system would result in better contests, fairer contests, and bigger contests, with enthusiastic participation by beginners and by top pilots flying not-so-top sailplanes who see their skills being properly reflected in the scores. We have absolutely nothing to lose and much to possibly gain by giving the system a shot at our Nationals, soon. □

The Sporting committee is studying this handicapped system seriously and would like to hear comment from competitors, both actual and potential. Write to the committee and to free flight to air your views. Obviously, flying in such a competition would require some "housekeeping" work in updating the Canadian handicap list for sailplanes and generating a wider range of allowed turnpoints. What do you see as any philosophical merits or problems in going this direction? Tony

MNEMONICS

Taking aim at CISTRS-C and SWAFTS



Peter Savage MSC

As a glider pilot of only three years and 300 hours experience, I feel a little diffident about writing this article. However, I have been a pilot for over 50 years and what I have to say deals as much with general flying experience as it does with the speciality of gliding. It covers two things which have been worrying me ever since I started to glide.

I would like to take aim at two sacred cows, CISTRS-C and SWAFTS, the first of which is, I believe, due for slaughter and the second for radical surgery.

Back in 1933 when I first learned to fly, we had a mnemonic for cockpit checks. This had been handed down to us from the veterans of World War I, through the RAF Central Flying School, the Omnipotent Arbiter of all such matters. It worked, as well it should, for we were flying the AVRO 504, a World War I, two-seat bomber, converted to a dual-control trainer.

When we graduated to our service-type aircraft in 1934 it still worked, but only just, and even then only with a certain amount of mental gymnastics. By 1938, we were dealing with retractable undercarriages, lockable tail wheels, flaps, dive brakes, trim tabs for rudder, elevators and ailerons, differential wheel brakes, rudder bar and seat adjustments, oxygen, radio, artificial horizons, directional gyros, and remote sensing compasses — to say nothing of constant speed variable pitch air screws, superchargers, mixture controls and an array of switches, levers and buttons for armament control and release. The original mnemonic was quite useless. Moreover, aircraft types varied considerably in the number and kind of new features to be found in them.

Cockpits still had not become so complex that they needed the printed check-off lists, essential to a modern jet, yet a fool-proof system was absolutely necessary.

The RAF Central Flying School gave this some massive thought and came up with the “rotary” approach. One started with the centre of the cockpit — controls, straps, rudder bar and seat adjustments — and worked one’s way round the cockpit in a clockwise direction, testing and adjusting each switch, lever and control, as one came to it. It was fast, systematic, and worked for any aircraft. It also avoided jumping from side to side in the cockpit, which can result in something being missed, particularly when the mnemonic letter stands for more than one object.

It is my belief that the modern sailplane has already reached the stage in its development where CISTRS-C should give way to a more rational and universal system.

Let us take as an example the Blanik, by no means the most modern type of two-seat trainer. One starts in the centre, adjusts the rudder bar and tests the rudder for movement, then tests the control column for aileron and elevator movement and tightens the straps. Next we move clockwise round the cockpit, starting with the wheel brake lever, testing for free movement and the feel that the brake is working. Now up the left side of the cockpit to the elevator trim lever, test for free movement, set for take-off and move on to the spoilers, test and lock them in. Move up again to the flaps test and leave out for take-off. Now we go from left to right across the instrument panel, inspecting and adjusting as we go. At the oxygen blinker we turn on the oxygen, test the blinker and mask and turn it off again. At the radio we set the frequency and initiate a test transmission with the flightline trailer. On arrival at the right hand cockpit wall we check the canopy emergency release lever and then check that the undercarriage is down and locked. In both the Blanik and LS-1, the undercarriage lock is not very positive and the lever can be displaced to such an extent that a sudden jolt, or an inadvertent movement by the pilot, can cause the wheel to retract. This check is

thus essential. It remains now only to close and lock the canopy, hook up, set your watch and you are away. In fibreglass aircraft it is also necessary to check the water ballast cock as you come to it, and inquire if the tail dolly is off before giving the signal to hook up.

With the “rotary” system, it is almost impossible to forget anything. CISTRS-C fails to cover many essentials and I think it is time that we gave thanks for its long and useful life and interred it with grace and dignity. Even with an extremely simple cockpit like the 1-26, the rotary system is superior.

How about SWAFTS? I have noticed that there is scarcely an experienced pilot in the club who has not landed with his wheel up and many have done so after hundreds of hours of glider flying. When this sort of thing happens, it has been my experience that it is not human frailty which is at fault, but the system intended to overcome it.

SWAFTS gives the impression that it was designed from the standard circuit procedures of power pilots, which work well. The characteristics of gliders, however, are entirely different from power planes, and the failure to recognize this is where the system is faulty. All cases where experienced glider pilots land with their wheels up seem to have one thing in common — the pilot was subject to intense concentration and pressure at the time.

When the glider pilot joins the circuit, he is committed to a landing — he cannot close the spoilers and go around again. His capacity to wait until congestion in the circuit clears is also strictly limited.

Glider airfields can get quite crowded and sometimes it is necessary to join the circuit on the downwind, or even the final crosswind leg, at a rather lower height than one would like. There may be three or four aircraft on the ground in various stages of retrieval and as many more in the final stages of approach. It may take all of a pilot’s skill and concentration to insert himself into the traffic pattern safely and without disturbing student pilots in 2-33s and 1-26s, or endangering them by reckless behaviour. This is the kind of situation in which wheels are forgotten.

Under similar circumstances, the power pilot has no such problems. He can hold off until the traffic clears, or go around again if his approach is balked. In any case, lowering the undercarriage produces a marked change of trim, and where fitted the necessity of going into fine pitch and of perhaps putting the flaps down. The power aircraft can always make a full circuit and the feel on the down and crosswind legs is quite different when flaps and undercarriages are down, and for this reason alone they are unlikely to be forgotten. There is no such change in the flying characteristics of a glider.

I suggest that the way to overcome this problem is to gear the decision to lower the undercarriage, open the water cock and

continued on page 15

1986 ANNUAL GENERAL MEETING & 1985 REPORTS

Note: The Directors discussed comments received from the membership regarding the distribution of last year's SAC Annual Report. It was agreed that a condensed version would appear this year immediately in **free flight**, three complete copies of the report would be sent to each club, and a copy for each Director and Committee chairman. Additional copies will be available to be supplied to members upon request. *(By using the small type you see, the report is essentially complete. At the time of printing, the following Minutes were not yet approved so minor differences may appear between these and the copies delivered later. The cost of getting this report to you this way is about \$900 compared to the near \$2000 in 1985. Editor)*

MINUTES OF THE 41st SAC AGM 8-9 MARCH 1986 VANCOUVER, BC

The business meeting was called to order by the President who established that a quorum was present. The President called for a motion to adopt the minutes of the 1985 Annual General Meeting.

Motion #1 Moved by: Lloyd Bungey
Seconded by: Gary Burniston
That: "The minutes of the 1985 AGM be adopted." Carried by show of hands.

Annual reports of Directors and Committee chairmen were presented to the membership. After discussion and clarification of some points, the following motion was presented.

Motion #2 Moved by: Tony Burton
Seconded by: Lloyd Bungey
That "The Director and Committee reports be accepted as presented."
Carried.

Motion #3 That: "The 1986 fee schedule presented by the Board of Directors in Notice of Motion #1 be accepted."

Amendment Moved by Walter Chmela
Seconded by: Peter Masak
That: "The motion be amended to read that the Club Affiliated membership be \$50, and that all others be reduced proportionately."

Discussion ensued regarding the requirements to maintain standards of service to the membership.

Vote on amendment:
3 in favour. Defeated.
Vote on Motion #3, by ballot:
For 829, Against - 667. As vote required a 2/3 majority, it was defeated.

As the 1986 budget presented to the membership had been predicated on the defeated fee structure, the budget was referred back to the Board to be re-structured. There was an extended and vigorous discussion on the operation of the National Office.

A motion that a new budget, based on an unchanged fee schedule, be accepted in principle with adjustments to be made by the Board, was suggested by L. Bungey. However as there was no seconder, the motion was lost.

The Treasurer informed the members that in order to be consistent with Financial Statements which were based on the calendar year, the Board had agreed to also base the budget on the calendar year.

Motion #4 Moved by: Rick Matthews
Seconded by: Mike Apps
That: "Ron Quesnel, C.A., be appointed auditor for the year 1986."
Carried.

Distribution of annual reports It was recalled that the 1984 AGM had requested that an Annual Report be sent to each member on record. As this had been very costly, and the distribution was incomplete, the members present agreed that the Board should examine the possibility of printing the report in **free flight** for the general membership with limited distribution to clubs, and others on demand.

Pioneer Trust Fund The members were informed that the loan from the Pioneer Trust fund by the National Office had now been paid for from the General Fund.

Life Membership Members were informed that the Board had reviewed the Life Membership fee and had agreed that the fee remain in 1986 at the 1985 level (\$1000).

Elections Only one position, Director-at-Large, was open. Two written nominations from clubs were received: Jim Henry of MSC and Bob Carlson of SOSA. Jim Henry was not present at the meeting, and Bob Carlson withdrew for the vote.

Vote by ballot — Bob Carlson elected.

Motion #6 Moved by: Walter Chmela
Seconded by: Christine Timm
That: "All acts, contracts, bylaws, proceedings, payments and appointments enacted, made, done and taken by the Board of Directors of the corporation since the date of the last annual general meeting of the members as set out or referred to in the minutes of the Board of Directors' meetings or in the financial statements submitted to this meeting be and same are hereby approved, ratified and confirmed." Carried.

Motion #7 Moved by: Lloyd Bungey
That: "A vote of thanks be extended to the members of the Board for their effort in the past year." Carried

There being no further business, the meeting terminated at 1735 hours.

INFORMAL NOTE ON PROCEEDINGS

Al Sunley,
Alberta Zone Director

Bob Carlson chaired the meeting and in his opening address stressed the poor safety record we had in 1985 and how very necessary it is to overhaul our operation and develop a greater awareness of safety procedures.

Financial Statement. Presented by Jim McCollum, Treasurer. He noted the change of the financial year to coincide with the calendar year in 1985 to correspond to the audited year. The increase in members' equity showed a healthier situation than what existed in 1984. The budget for 1986 was based on funds at December 1985, later funds received should show a small surplus in 1986 (about \$3000). Very little change in revenue situation. On the expense side, the greatest increase due to additional funds required for travel costs for the Flight Training and Safety committee, which is no longer funded by Sport Canada. All indications are that we will receive the regular Sport Canada contribution as indicated in the budget.

Flight Training and Safety Committee Chairman Ian Oldaker indicated a review of currency requirements for instructors is required and which would be introduced this year. The new revised "Student Manual" is being printed. The "Soaring Instructor's Guide" is being revised but requires more changes due to Transport Canada's requests. "New Club" guidelines and requirements are being developed. Meetings with Transport Canada have been taking

place since January to develop definitions of motor-glider categories and procedures for soaring pilot licenses to cover authorization to fly these machines.

Sporting Committee Jim Oke, Chairman, reported on his attendance at the CIVV meeting, and their discussion on new glider categories. He thanked the Quebec members for the many extra things they did to provide a very successful "85 Nationals". Peter Masak reported on the handicap system used in the US Sports Class National Contest last year.

Insurance Reviewed by Tony Wooller. Expectations are that we will suffer from substantial increases in hull insurance rates if the damage incidents do not decrease. Costs of repairs are very high. Minimum insurable value per type of glider is being introduced. Any complaints on the basic valuation are to be addressed in writing to the Insurance committee, stating the exceptions in placing a hull value on a specific glider. Al Schreiter has retired as Chairman, and the position is being filled by Bryce Stout.

Fees Motion of the Board to establish a new schedule of fees which included an inflation factor and funds for additional Flight Training and Safety committee meetings. Walter Chmela placed an amendment that SAC reduce its fees this year to a total of \$50. A very spirited discussion occurred on this amendment. The amendment was decisively defeated by a show of hands. Discussion on the Board's motion revealed strong feelings that efficiency must be increased in our operation and that costs must be brought down. The motion was defeated. It received a 55% majority and a 67% majority was required to pass.

Budget On the question of the budget after the defeat of the fee increases, the floor attacked the issue of where the budget could be modified in order to achieve balance with the reduced income. Alex Krieger stated that if the funds for the Training committee are not forthcoming, Transport Canada will have to be advised that SAC cannot handle the work. The floor indicated that the voting down of the motion did not mean it was against necessary travel funds for the committee, but in dissatisfaction with the appearance of lack of efficiency within SAC and questioned how this could be rectified. Money could be saved by reducing costs in travel by Directors, and there were suggestions of National Office restructuring that could achieve better output. Other methods were discussed. The Directors had a quick meeting and decided that there were areas that could be adjusted.

A motion by Lloyd Bungey, that a new budget, based on an unchanged fee schedule, be accepted in principle, was voted on and passed.

Election of Director at Large The nominees were: Bob Carlson by SOSA, Jim Henry by MSC, and Mike Apps from the floor. Mike declined. Motion to close nominations. The vote was taken and Bob Carlson was re-elected.

New Business Ian Oldaker submitted a motion to obtain approval for Flight Training and Safety committee to have authority on behalf of the Association to make agreements with Transport Canada regarding licensing of motorglider pilots and equipment. Ian was concerned that the committee could not effectively negotiate faced with the present by-law requiring SAC membership approval of important policy changes affecting the membership at large. Discussion showed the members were very concerned with the implications of this motion, when in previous years a by-law had been instituted to specifically guard against "unfavourable" policy changes. After exploring the specific problem the Chairman was up against, it was decided that his motion was not required at this time. Motion withdrawn.

SAC FINANCIAL STATEMENT FOR 1985

STATEMENT OF FINANCIAL ACTIVITIES — GENERAL FUND

For the year ended December 31, 1985

	1985		1984	
	Unrestricted	Restricted	Total	Total
REVENUE				
Administrative fees	\$ 8,600	-	\$ 8,600	\$ 7,512
Advertising	4,059	-	4,059	3,877
Annual general meeting	3,804	-	3,804	2,206
Competitions	-	-	-	573
Donations	2,908	4,500	7,408	10,157
FAI fees	2,589	-	2,589	1,915
Government grants	-	15,330	15,330	13,265
Training programs	3,531	-	3,531	2,304
Interest	4,818	909	5,727	4,546
Membership fees	78,981	-	78,981	75,488
Merchandise sales	12,285	-	12,285	6,272
Other	-	-	-	250
Members insurance	-	278,002	278,002	279,655
Total	<u>121,575</u>	<u>298,741</u>	<u>420,316</u>	<u>408,020</u>
EXPENSE				
Affiliated membership	1,639	-	1,639	2,715
Balint fund award	-	-	-	100
Bank charges	858	-	858	77
Depreciation	3,416	-	3,416	1,278
Free Flight	20,715	-	20,715	23,199
Glynn fund award	-	80	80	-
Insurance	1,617	-	1,617	1,597
Merchandise	6,053	-	6,053	5,184
Office	5,206	-	5,206	2,817
Postage	3,596	-	3,596	3,471
Printing	1,055	2,000	3,055	5,451
Professional fees	3,250	-	3,250	3,225
Publicity	548	-	548	232
Rent	3,225	2,760	5,985	4,118
Salaries	45,798	-	45,798	40,869
Telephone	2,425	2,000	4,425	3,037
Training programs	3,198	-	3,198	1,662
Meetings	6,246	-	6,246	4,893
Member insurance	-	278,002	278,002	279,655
Travel	5,910	8,570	14,480	20,866
Total	<u>114,755</u>	<u>293,412</u>	<u>408,167</u>	<u>404,446</u>
EXCESS OF REVENUE OVER EXPENSE				
	\$ 6,820	\$ 5,329	\$ 12,149	\$ 3,574
Adjustment	655	(655)	-	-
Members' equity, 1 Jan 85	38,345	12,145	50,490	46,916
Members' equity, 31 Dec 85	<u>\$ 45,820</u>	<u>\$ 16,819</u>	<u>\$ 62,639</u>	<u>\$ 50,490</u>

BALANCE SHEET — GENERAL FUND

As at December 31, 1985

	1985	1984
ASSETS		
CURRENT ASSETS		
Cash	\$ 47,611	\$ 30,040
Accounts receivable	5,558	12,752
Prepaid expense	-	234
Inventory	15,709	7,968
Sub-total	<u>68,878</u>	<u>50,994</u>
FIXED ASSETS, at cost less total depreciation (note 2)		
Sub-total	<u>13,662</u>	<u>10,588</u>
Sub-total	<u>82,540</u>	<u>61,582</u>
RESTRICTED ASSETS (note 3)		
Cash	7,908	1,088
Term deposits	3,000	2,000
Due from general fund	5,911	9,057
Sub-total	<u>16,819</u>	<u>12,145</u>
	\$ 99,359	\$ 73,727
LIABILITIES		
CURRENT LIABILITIES		
Accounts payable	13,533	4,424
Deferred government grants	13,965	7,685
Due to World Contest Fund	3,311	2,071
Due to Pioneer trust Fund	5,911	9,057
Sub-total	<u>36,720</u>	<u>23,237</u>
MEMBERS' EQUITY		
UNRESTRICTED	45,820	38,345
RESTRICTED (note 4)	16,819	12,145
Sub-total	<u>62,639</u>	<u>50,490</u>
	\$ 99,359	\$ 73,727
WORLD CONTEST FUND		
CURRENT ASSETS		
Cash	\$ 395	\$ 266
Term deposit	1,000	1,000
Due from general fund	3,311	2,071
Total	<u>\$ 4,706</u>	<u>\$ 3,337</u>
MEMBERS' EQUITY (note 7)		
	\$ 4,706	\$ 3,337

AUDITOR'S REPORT

To the Members of the Soaring Association of Canada:

I have examined the statements of financial activities of the General and World Contest funds of the Soaring Association of Canada for the year ending December 31, 1986 and the balance sheets as at that date. My examination was made in accordance with generally accepted auditing standards and included such tests and other procedures as I considered necessary in the circumstances, except as explained in the following paragraph.

As is common in organizations of this type, donations revenue, by its nature, is not susceptible to a complete verification by audit procedures. Accordingly, my examination of such revenue was confined to tests of deposits of recorded receipts in authorized depositories.

In my opinion, except for the effect of adjustments, if any, which I might have determined to be necessary had I been able to verify all revenues as described in the preceding paragraph, these financial statements present fairly the results of the financial activities of the Association for the year ended December 31, 1985

and its financial position as at that date in accordance with generally accepted accounting principles applied on a basis consistent with that of the preceding year.

The comparative figures were reported on by the previous auditor of the Association.

Ron Quesnel, Chartered Accountant
Ottawa, Ontario
February 26, 1986

NOTES TO FINANCIAL STATEMENT

Note 1 Depreciation Depreciation of fixed assets is calculated at the following rates:
Office equipment - 20% of reduced balance;
Computer equipment - 20% straight line.

Note 2 Fixed Assets Fixed assets are office and computer equipment. There was an addition of \$602 in office equipment to bring year end balance to \$11,392 and an addition of \$5,888 in computer equipment to bring total to \$11,363. Accumulated depreciation to year end was \$9,093, bringing the total value of fixed assets to \$13,662.

Note 3 Restricted Assets Restricted assets are the current values of the various funds. At year end, these were:
Balint fund - \$1,951 Develmt' fund - \$500
Glynn fund - 2,360 Pioneer fund - 12,008

Note 4 Restricted equity Restricted equity is equal to the value of the restricted funds above.

Note 5 Comparative figures Some of the 1984 figures have been reclassified to conform with the current classification.

Note 6 Contingent Liability The Association is one of several co-defendants in an outstanding litigation for \$400,000 resulting from an accident of a member. The association is disclaiming any liability.

Note 7 Equity in the World Contest fund rose as a result of a surplus of revenue over expenses from supporting two pilots to attend Austraglide '86

Note 8 Certain details of the complete financial report have been omitted here for the sake of brevity. Members may have a complete copy of the report by contacting the National Office.

PRESIDENT AND EXECUTIVE DIRECTOR ANNUAL REPORTS

PRESIDENT & DIRECTOR-AT-LARGE

Your Association experienced progress, frustration and disappointment in 1985.

PROGRESS was made in the National Office's operation. To those of you who had mailing, listing, and correspondence problems, this may not have seemed to be so. We did improve nevertheless; a computer went on stream and, surprise, we had teething problems. Improvements are being made and, I expect, by the end of 1986 we will be in good shape.

PROGRESS was made in our office accommodation. Not without some cost, however. Our old lease ran out, and because we had some real housekeeping problems, we joined the RCFCA in new quarters. A cost increase was inevitable; Jean kept it down by negotiating this partnership. We now have a little more space and much tidier office.

PROGRESS was made in the operation of our committees, especially the Flight Training and Safety group and, for sheer hard work and lots of frustration, the Publicity committee in the person of Joe Somfay. You were served well by your committees this year. I commend their reports to you for detailed consideration.

PROGRESS was made in the definition of an expanded Technical committee. For some years many have toiled at Type Approvals for existing and new aircraft. George Adams works ably at this task. However, there are many other technical aspects of our sport that have not received support. It is the intention of your board that a committee be defined and manned that will improve and provide these services to the membership.

PROGRESS was made in insurance. Our rates were essentially stable in 1985, with some improvements in deductibles, and a break in the coupling of Liability and Hull insurance.

Our SAFETY performance was a DISAPPOINTMENT. The death of two of your colleagues during the year saddened all. We must strive to ensure that such events never recur, and that new ones fail to take their place. Injury was also part of our accident picture. The pilot of the Blanik in the accident at the Quebec club suffered significant injury. As well, we collectively damaged or destroyed 14 aircraft. That's 4% of the fleet. It's an awfully expensive way to modernize. Once again, the majority of the aircraft damaged/destroyed were from the older part of the fleet.

FRUSTRATION continues with mistakes in the office and, of equal importance, mistakes and omissions in the data sent to us. Your office staff is trying awfully hard to be perfect. They need equal dedication from every club Secretary, Treasurer, and CFI.

FRUSTRATION continues with the attitude of FITNESS AND AMATEUR SPORT. There are two areas of concern. The first is the perennial problem of third country competition with South Africa. We were unable to send a sanctioned team to Rieti. The new policy of External Affairs appears to give us sufficient flexibility to plan. One of the key elements still is the attitude of the FAI. They still have to work harder on your behalf to ensure that South Africa is not represented as a nation at the World Contest. The attitude of the Australians towards South Africa has allowed your colleagues Wilfried Krueger and Ed Hollestelle to compete in Austraglide '86, and I expect they or other pilots will be able to represent you at the Worlds in Benalla in 1987.

The second area of concern at FITNESS AND AMATEUR SPORT is their attitude to any funding beyond the current levels. I hope that there will be

some improvements this year, but I'm not holding my breath — or yours for that matter. We still work for "Resident" status. Our low membership makes that doubtful. Competition assistance is nonexistent in sharp contrast to the provinces. Alberta, Manitoba, Ontario, and Quebec all seem to be willing to help, and do. THANKS PROVINCES.

PROGRESS was made in our continuing discussions with TRANSPORT CANADA. The "Commercial" label has been dropped from the new instructor descriptions. We were able to persuade them to leave ELTs out of sailplanes once more. At year end, we were opposing the installation of first aid kits, and supporting the raising of the floor of controlled airspace to 2200 feet above ground. We opposed, without success, the new medical procedures.

Your Association is also commenting, I think to your advantage, on the proposed changes of Airworthiness revalidation. Several of your colleagues have contributed to this study. Additionally, your Association, with the help of RCFCA, is participating in studies on the future of airspace allocation and stands ready to help clubs with their current problems. Of real concern is the trend and attitude in Transport Canada hearings, that only those who provide representatives to state their case will be considered. The cost of supporting a delegate for up to two weeks in each of three months was impractical. This is one of the realities that your National Office function must face. THANKS to RCFCA for their help representing your case.

PROGRESS was made in membership. There are more of us this year than last. This is despite the loss of clubs at Cold Lake and Saskatoon. I am pleased to note that the Saskatoon club hopes to be back in 1986 and we have a new Ontario club at Beaver Valley. I hope that the increase this year is the beginning of a roll. Aviation worldwide has been having a bad time since 1980; soaring is just one segment of many, all of whom have suffered. Continued enthusiasm to recruit and sustain new members and the dedication to increase the value of soaring can only lead to prosperity for all.

PROGRESS was made in the sale of calendars. We imported and sold 350, and we made a profit. The increase in the value of the Deutsch Mark makes a repeat of this year's bargain price unlikely.

It is with regret that I must note the passing of one of our pioneers, A. N. "Chem" Le Cheminant. We all owe him a debt of thanks for his early pioneering work and instructional activities.

The enthusiasm of our competition fraternity is notable. Unfortunately too few compete at the National and Provincial levels. The presentation and execution of the 1985 Nationals by the CVVQ was just outstanding. Plan to participate, if at all possible, in your Provincials, and 1986 Nationals at York Soaring, Arthur, Ontario and in Alberta in 1987.

A final DISAPPOINTMENT was the minimal participation and contribution to our TRUST FUNDS. I think the Life Membership is especially attractive.

Your Association has had a stable financial year. The value that you receive for your membership dollar is being sustained and enhanced.

You have dedicated personnel working very hard on your behalf in our Ottawa office. They have my respect, thanks, and support for their contribution and loyalty.

Regrettably, just after the New Year, Joanne was offered a job with benefits that we just could not match. Our loss is her new employer's gain. Good luck Joanne, and thanks from all of us. Thanks too, to Jean, and welcome ROSANNE.

Your board has worked hard and, as you know, argued vigorously on subjects of merit and interest to your sport. I respect their opinions. They represented your opinions well. Please thank them for their help, participation and dedication.

Finally, I must note with pride and respect, the continuing excellence of the editor of **free flight***. The growth of paid subscribers and the frequent reprinting of **free flight** articles in journals such as "Gliding Kiwi" and "Australian Gliding" is, in my view, the best testimony to the quality of your national magazine. Even though the subjects may be galling at times, the healthy debate within the magazine is also testimony to the interest that you have in your sport and its administration.

FLY SAFELY, WELL, AND OFTEN AND STARVE THE CROCODILES

* Trademark pending

EXECUTIVE DIRECTOR

1985 was a year of some changes and, I like to think, of improvement in the administration of SAC nationally. In March we gained the office assistance of Mark Robb who was with us for work experience on a special government grant. During his time with us (Mark was successful in obtaining employment in December), he was responsible for entering all information in the computer which we had acquired late in 1984.

Susan Gély left SAC in April, after being with SAC for one year, to accept a position with greater remuneration, and Joanne Hagar joined us as secretary shortly after Susan left.

July, we moved the office across the hall, at the same address, and were joined at that time by the RCFCA who share the accommodation. Having the two organizations together has proven beneficial. We have gained in exchange of information and some services as well as having the advantage of slightly more space.

National Office staff continued to serve committee chairmen in communication with SAC members and outside agencies.

As your Executive Director I have maintained contact with Federal Government departments, other national and international associations, National Sport and Recreation Centre, Coaching Association of Canada, provincial organizations, SAC clubs and SAC members. I continue to seek residency at the National Sport and Recreation Centre, on your behalf, and to gain greater recognition by Sport Canada.

The Sport Canada contribution for 1985 remained the same as that for 1984 and was explicit in its use — that was for some administrative expense and meetings travel.

Problems continue to exist in membership lists and in the insurance program. With perseverance we hope to resolve these in 1986. It does, however, require assistance of all involved to achieve this. Membership lists require continued communication with club membership chairmen. Insurance requires accurate information on glider values and appropriate payments as well as better communication between the Insurance Company and National Office. This latter matter was taken up with your Board of Directors at this time last year, and is the subject of a report to them again at this time.

Efforts to obtain excise tax relief on aviation gasoline came to a halt when we lost the coordination with the Sports Federation of Canada during the Federation's reorganization period. A recent discussion with the Acting Executive Director of the Federation has hopefully brought our desire to continue to seek relief from this tax back on their agenda.

Upon approval of your Board a special Development Fund has been set up. It is anticipated that this fund, through contributions, will assist clubs in acquiring equipment necessary for the national development of the sport. Zone Directors can provide information to clubs in their area or specifics can be obtained from the National Office upon request.

Membership continues on a low plateau with only a marginal increase in 1985 over that of 1984. In order to meet residency requirements we must achieve a membership of 2000 with a potential for 3000 in the next three years.

In 1982 your Executive Director produced a membership schedule for 1978-81. If you refer to the 1982 table you will note that the total national membership that year was 1884 and since that time there has been a steady decline in membership. The 1985 total shows an upward trend.

I am not convinced that 2000 members is unattainable. Even now, we may be past that membership if everyone who participates in soaring at some level were to be counted. These numbers are needed to achieve the 2000 and upwards goal. As the National Office registers and services only those members who pay national fees in order to participate in the insurance program, that is the only number we have for Sport Canada. If the National Office were provided with numbers of potential and developing members at the club/provincial level, surely this would place SAC above the 2000 membership in 1986. Can the challenge be met?

Currently, SAC office is assisting the Publicity chairman in obtaining corporate sponsorship for some SAC programmes. In 1986, you will be asked to participate in a demographic survey. Only through the cooperation of the entire membership will it be possible to provide prospective sponsors with a demographic profile of the sport. Data acquired by this method will also be of assistance in identifying appropriate corporations to be approached.

At year end your Board of Directors is preparing for a planning meeting in conjunction with the January Board meeting. It is anticipated that this planning session will identify problems/opportunities for the future of SAC. Sport Canada has also been requested for a contribution to hold a full planning session later in 1986.

The National Office continues to be the core communications and support system for SAC. I am personally most appreciative to the members of SAC, the members of the Board of Directors, and Committee chairmen for their assistance and support during the year.

J.M. Matheson, Executive Director

ZONE DIRECTOR ANNUAL REPORTS

Reports of the Pacific, Prairie, and Quebec Zone Directors not received.

ALBERTA ZONE

1985 was not a good year for the Alberta soaring community. The loss of Jack Davies, a highly respected member of the Cu Nim club and well-known by other members of the Alberta soaring group, on the final day of the Cowley Fall Camp, heavily underlined the season of many mishaps. Fortunately, there were no more injuries, although several gliders required repairs.

The Cold Lake Soaring Club went on the inactive list due to the lack of available facilities at the Canadian Forces Base. Some of its members joined other clubs, but the rest were lost to the soaring community for this year at least. There are hopes that it might be reactivated.

Cu Nim was the shining club of this year with a membership increase to 75 from 53 last year. The Medicine Hat Blue Thermal Club had a significant increase in membership also, which is very important to a small club. Other clubs had small gains so perhaps we have turned the corner.

The Innisfail May Meet was successful with cooperative weather, particularly on the last day.

The Grande Prairie club went on a safari to Fairview to introduce soaring to that community and flew 81 familiarization flights on the May long weekend, and then hosted a cross-country weekend on the July long weekend with pilots from Edmonton attending. They also have been checking out the wave possibilities at Nose Mountain.

The Summer Cowley Camp was well attended with 105 pilots from the USA, Manitoba, British Columbia, and Saskatchewan, and the weather cooperated. The grasshoppers must have also wanted to join in the festivities because they were there in large numbers.

On the Labour Day weekend, some Alberta pilots made the trip to Invermere, BC, to sample some of the mountain soaring there. The soaring conditions were not good but did improve on the Monday.

The Fall Cowley Wave Camp started out slowly in midweek with snow and excessive winds, but on Saturday the wave started to work, Sunday was terrific and so was Monday. I believe there were eight Diamond climbs on Sunday alone.

From most reports I have seen, it appears that the majority of clubs obtained good utilization of their equipment this year and I hope they were also financially successful and that improvements are forthcoming in 1986.

Allan Sunley, Alberta Zone Director

ONTARIO ZONE

Hello there. My name is Dixon More. You probably have never heard of me. There are a couple of reasons for that. For one thing, I'm new. This is my first year on the SAC Board. While I "learned the ropes," so to speak, I thought it would be best to maintain a suitably low profile and to defer respectfully to my more experienced colleagues on the Board. So I have.

Secondly, and probably more important, is the fact that I am shy. This will be my first AGM as a Director so I suppose I will have to sit up at the front with all those dignified looking people but I sure hope nobody will ask me any questions.

Not being quite sure what a Zone Director was expected to do, I thought it would be a good idea to visit some of the SAC clubs in the Ontario Zone. So during 1985 I managed to visit fifteen of the eighteen Ontario clubs and a couple in the Quebec Zone. I would like to take this opportunity to thank all those good folk who went out of their way to make me feel welcome. The Huronia club was not flying due to a sick towplane when I went through Barrie but I will make it a point to get up there another time. I did run into some of the Huronia people getting some flights in with the Beaver Valley Soaring Club. Beaver Valley is the newest member of the family of SAC clubs.

At each of the clubs I visited, it quickly became clear that the club existed because a small nucleus of members was willing to contribute tremendous amounts of time and energy to keep it operating. This phenomenon was evident at every club but it was most striking at the Bonnechere club. Whenever you get to thinking that your club has some really big problems, you just drop in and pay those folks a visit. When you see what they have accomplished and the obstacles that they have had to overcome, you will be able to look at your problems from a whole new point of view.

The club I fly with has three towplanes. So when one of them is sick we have to struggle along with only two. A real hardship. In these big clubs it somehow seems harder to keep the spirit of volunteerism alive. Oh, there are lots of volunteers willing to do the work. That's not the problem. No, the problem is much more subtle. In a large established club, with the continued existence of the club assured, these volunteers are viewed with a certain amount of suspi-

cion. Their motives are questioned. If they are allowed to do all the work, surely it will be only a matter of time until they start asking questions, or worse, making suggestions. No, no, surely it would be better to hire "professionals" to do the work. Surely that will be more democratic, more fair, and safer. Besides, it gives us a better "image". So we insist on paying to have jobs done when we could be getting them done for free. Silly? Of course it's silly. I don't understand this attitude; but I do understand that it exists. When you too, understand that it exists, you will be in a better position to understand some of the mail you've been getting lately. I look forward to meeting you at the AGM.

Dixon More, Ontario Zone Director

MARITIME ZONE

Both clubs in the Maritime Zone had a relatively successful year in 1985. Bluenose had its usual 2000 flights and, in addition, trained six new students to the solo level during and just after the end-of-May flying week. Badge activity was down compared to 1984, with only one Silver C being won, but this may well be due to the poor soaring weather that plagued the Maritimes during most of 1985.

The New Brunswick Soaring Association was quite active during the year and made the best possible use of the Sussex, NB local airstrip where they are currently based. One difficulty at that location is that although a glider may be hooked-up to the winch and all ready for launch, if a power aircraft appears in the vicinity and even looks as if it might want to land they have to unhook the glider, push it off to one side and wait while the power pilot makes up his mind and, if landing, does a full circuit and finally sets her down! I observed this happening three times in a row one hot summer day last June, causing near total frustration on the part of the glider pilot!

Both clubs sent one candidate to the Eastern Instructors School last year and Ian gave a good report on each one. The New Brunswick club now has two fully qualified instructors and Bluenose are in the fortunate position of having ten.

Dick Vine, the CFI at Bluenose, organized and ran a very successful training operation at Stanley in 1985. In addition to the club's 2-22 and K7 we had New Brunswick's 2-33 for the nine days of the training period and, with adequate instructional staff on hand, full advantage was taken of a period of reasonably good training weather. It is planned to repeat the operation in 1986 with the same equipment but with a few more students and instructors.

We had a couple of gliding "firsts" in Nova Scotia during the year in early October. Byron Bolt located and flew briefly in wave over the North Mountain of the Annapolis Valley after an hour-long aerotow from Stanley. He got into the unmistakable smooth lift of the wave at 6800 feet and rode it to well above 7000 feet before losing it. This points the way for Gold badge altitude attempts in the near future. Now that we know it's there you can be sure that there will be more airborne visits to the "Valley" in search of the elusive wave.

In September, Gordon Waugh and Jamie Moreira flew down and back, respectively, to CFB Shearwater in one of the club K8s. The glider was part of the static display at the Shearwater International Air Show and, though it had been there before, this was its first airborne arrival and departure. Incidentally, all three of these flights were made (very carefully!) behind a J3 Cub boasting a mere 65 HP engine!

Membership in the Bluenose club has remained at 30 to 32 for the past few years and, if anything, is expected to grow a bit in 1986. The New Brunswick club now has eight active members and shows every sign of growing also. Both groups are looking forward with renewed enthusiasm to a successful season in the coming year.

Gordon Waugh, Maritime Zone Director

COMMITTEE CHAIRMAN REPORTS

FLIGHT TRAINING & SAFETY

This year has been no less busy than previous years even though the committee could not meet due to shortage of funds. Several visits were made to clubs in connection with their operations, and meetings were held with Transport Canada.

Highlights of the year included:

- A slide set called 'Collision Avoidance in Gliders' was well received at the 1985 AGM, as a result of which a small number of clubs asked for copies. The set includes a cassette tape which will advance the slides automatically while providing the commentary which is also given in a small booklet. At the end of the year Dave Puckrin of Edmonton very kindly offered to make some copies so that the costs of reproducing the over 40 slides and tape could be kept reasonable.
- There was a good enrolment of pilots at both the 1985 basic instructor courses. These were run at York Soaring near Toronto and at the Vancouver Soaring Association field at Hope, BC. At both courses the pilots generally did well, though it was apparent who had not prepared before the course. This was particularly so for the cassette tape practice of the first four lessons. Early registration is essential to derive maximum benefit on these courses.
- Exams were written by all the pilots who attended the above courses, and all but one passed. Other pilots wrote the Association's instructor exam during the year at various clubs, and generally these people did well. It is noticeable that they are poor on instrumentation which suggests that pilots go soaring hoping that the system works somehow, rather than understanding how to optimize their flying with the aid of good instrumentation. In all cases an attempt is made to send a letter to the pilot with suggestions for areas for improvement.
- At the eastern course, a new course director was trained to run courses in French in future years. We are fortunate to have a very enthusiastic person in Denis Gauvin of CVVQ in Quebec, who will be running the first instructors' course to be offered in French by the Association. We welcome him and look forward to having a good attendance at the CVVQ field in 1986.
- John Firth, our competition course director, ran a successful course at the Edmonton Soaring Club during the summer at the invitation of the Alberta Soaring Council. The course went well in spite of what some pilots thought marginal weather (see ff 1/86).
- A number of problems continue to haunt the National Office in the area of instructor records. Unfortunately several years worth of records went missing about three years ago and the problems are now with us. Clubs are asked to help by providing what data they have as and when requests are made for either upgradings or for renewals of current gradings. It should be noted that it is an Association requirement that all instructors have their ratings renewed every three seasons. This is quite separate from the Transport Canada requirement to maintain the licence endorsement.
- During the year, the following numbers of pilots had their Association classification upgraded:

From Class 3 to 2: 6
From Class 2 to 1: 2

There were 26 new Class 3 instructors registered.

- The rewritten instructor's manual, now called the **Soaring Instructor's Guide**, was used for both the above courses; it was amended after the first course and again after the course at Hope. The amended text was to be the basis for the reprinting

of this manual in early 1986. Copies were sent to Transport Canada for their comment and approval in late 1985 and comments were received by the Chairman in January. Because a number of recommendations for changes were made, the printing of this new guide has been delayed; however, it will again be used for the 1986 courses in its latest form. The changes that have taken place would not have been possible without the computer in the National Office; in fact, the turnaround times for the word processing were very short and helped to produce the manual neatly first time around.

- Visits were made by the Chairman to a number of Ontario clubs during the season in connection with their operations. These visits were prompted by accidents that occurred at these clubs, and were made on behalf of the Association in an attempt to shed some light on the situation. One new club was also visited at the request of the Board of Directors. These visits were useful in that problems with either procedures and/or training techniques were discussed and suggestions offered. Positive actions are now being taken in each club to "improve" even though this was not always seen by clubs as being needed. Some club members do not always view this type of visit to a club as an attempt by the Association to offer assistance or to lend an outsider's view. The Chairman's view on the other hand is, that a fresh look at a club can often pinpoint problem areas: it is then up to the club to take action it thinks appropriate.
- The Chairman held a meeting with Transport Canada in early January, 1986 in Ottawa to discuss licencing of glider pilots to fly motorgliders. As a result of this meeting, Transport Canada agreed that the Association should prepare a proposal for the licencing of pilots and instructors. A position paper was to be prepared for discussion at the 1986 AGM, prior to sending to TC for their consideration.
- During the year the aerobatics program was finalized with the completion of the detailed courses leading from the initial training of a pilot through to the training of an aerobatics instructor. The whole system is based on a stepped approach, with each level being thoroughly covered and the pilot experienced at that level before advancing to the next level. Manfred Radius was approved as an Association aerobatics course director during the year, and a number of pilots started a course under his coaching.

Respectfully submitted,
Ian Oldaker, Chairman

Annex to Report of Chairman Flight Training and Safety Committee

Notes on 1985 Accidents

Reporting of accident losses and incidents has improved; this has helped our efforts to identify weak areas in training and operations. In 1985 I could not discern any pattern to the accident types, though one or two clubs had a disproportionately high number. One can only say that many could be attributed to poor procedures, and also that more instructor attention to developing pilot judgement is needed.

Blaniks again featured markedly in the statistics: the old problem of confusion between flap and brake (spoiler) handles still gets pilots into trouble. There is one item reported in a number of incidents and one accident, which gives cause for special concern;

dive brakes opening during tow unnoticed are likely to cause a serious accident. It is essential that pilots trained on Schweizer machines, where the spoilers tend to stay closed even if unlocked, are made acutely aware of the suck-open tendency on most European machines which have very effective dive brakes. Most of these types (such as the popular Grob Twin Astir), use an 'over centre' linkage for locking. Both failure to force the lever past the over-centre pressure, and brakes unlocking unnoticed in turbulence are common problems with inexperienced pilots. Pilots should be taught to fly the early part of the tow with the left hand on or close to the brake handle. Instructors can test the awareness by stealthily unlocking the brakes during the initial phase.

Towpilots experiencing poor climb performance should add to their check one for brakes open, alert the glider with a vigorous rudder wagggle. This will become a standard SAC signal.

Respectfully submitted,
John Firth, Safety Commentator

Committee Members:

John Firth, Safety	Ontario, Rideau Valley Soaring School
Christopher Purcell	Nova Scotia, Bluenose Soaring Club
Alex Krieger	Quebec, Club de Vol-à-Voile de Québec
Denis Gauvin	Quebec, Club de Vol-à-Voile de Québec
Manfred Radius	Ontario, York Soaring Association
Al Sunley	Alberta, Edmonton Soaring Club
George Eckschmiedt	British Columbia, Vancouver Soaring Association

FAI AWARDS

This past 1985 soaring season saw a general decline in all activities, and the trend which started in 1981 is alarming. The overall results are shown on the following table. As can be seen, there was a 50 percent increase in Diamond badges and our sincere congratulations are extended to the three pilots. Gold and Silver badges were down by 58 and 41 percent, respectively. There was also a substantial decrease in the number of completed badge legs, and Gliding Certificates were down by 24 percent. Please refer to **free flight** for names of pilots earning badges or legs.

Once again the main problem encountered during the processing of claims, although much less pronounced than in the previous years, was the lack of supervision by some of the Official Observers when submitting claims. I received claims containing obvious errors and omissions, and very often incorrect amounts regarding the processing fees. This created extra correspondence and, of course, delays. Once again, I urge all Official Observers to ensure that all claims and, especially those of new pilots, are complete in every aspect.

My sincere thanks to all the people, directors and the National Office in Ottawa for the help they have given. I look forward to continuing my chairmanship in 1986. To all glider pilots my best wishes for a safe and successful 1986 soaring season.

Respectfully submitted,
Boris S. Karpoff

SAC BADGES AND BADGE LEG STATISTICS, 1979 -1985

	1979	1980	1981	1982	1983	1984	6 yr avg.	1985	+/- % fm.84
Diamond	6	1	5	9	3	2	4	3	+ 50
Gold	13	9	14	8	11	12	11	5	- 58
Silver	44	18	42	28	29	34	33	20	- 41
Badge legs	191	106	216	180	172	166	172	126	- 24
C Badges	98	39	83	78	65	67	72	51	- 24

SUMMARY FINANCIAL REPORT

From a financial perspective, the past year was a successful one for the Soaring Association of Canada. Revenues outpaced expenditures by a comfortable margin and members' equity in the Association rose by some \$12,000. Much (62 percent) of the increase was due to the regular business of the SAC, rather than the special funds (such as the Pioneer Trust fund), ending a string of three years of deficits on regular activities. Hopefully last year's results mark the beginning of a trend.

Looking ahead, with no change in membership fees from 1985, the Association should have an interesting year financially in 1986. An increase in membership of 150 members or so would go a considerable distance in improving things. Nevertheless, with care, the Association should be able to make it through the year, while eschewing a rundown in members' (unrestricted) equity.

James F. McCollum,
Treasurer

MEDICAL

It has been a pleasure to serve as Chairman of the Medical committee during the past year.

As in the previous years I have been able to advise pilots who have lost their pilot's licence for medical reasons. As was expected, some of my efforts were successful and others were not.

I would be pleased to continue serving this committee in the future.

Dr. Wolf-D. Leers
Chairman, Medical Committee
DoT, Medical Examiner

FREE FLIGHT

The 1985 annual report on **free flight** appears in the 2/85 issue, page 17.

Tony Burton, editor

INSURANCE

It would have been a pleasure to be able to report three good years in a row, but it was not to be: 1985 brought us a total of 20 reported incidents, of which 16 resulted in claims. The total Hull claims came to \$145,600 and another \$25,000 had to be reserved for possible liability claims. Unfortunately, two of the accidents proved to be fatal.

Ten of the accidents occurred on landing, three on tow. Only one was attributable to cross-country flying, none to competitions. Because the landing accidents are so numerous, the reasons a litany of "Overshot Runway", "Hard Landing", Hit Trees on

Approach", and practically all of them happened on the pilot's home field, this committee recommends that they be reviewed by the Instructors committee with a view to improving training in this phase of flight.

Your committee checked rates with several insurers, but this was not the year to go shopping. Most insurers would not even attempt to quote. Public liability in the aviation field generally was a disaster for worldwide insurers, and since reinsurance eventually connects us to the worldwide pool, insurance could have become a real problem. Only our relatively good record on liability claims saved us from more substantial rate increases.

The committee investigated the possibility of self-insurance and recommended against it in a separate report submitted to the Board.

Your committee chairman will turn the chairmanship over to Bryce Stout of SOSA after the AGM, who has kindly consented to take on this task. After many years pouring over insurance statistics, I can only state that the real cure for high rates lies not with the insurance companies, but with the individual pilots and clubs. Safe flying is the responsibility of all of us, and the only cure for the problem of high insurance costs.

A. O. Schreiter, Chairman

TROPHIES AND AWARDS

The number of trophy claims this year was disappointingly low. This was probably due to the generally lacklustre soaring conditions during much of the year. However, a few persistent pilots made some good flights, which earned them the following awards:

BAIC Trophy (best flight) — Ulli Werneburg, for his 503 km flight, starting from Pendleton airport, and going around a triangle (with three turnpoints) of Cobden and Lyn, Ontario, and St. Clef, PQ.

Canadair Trophy (best five flights) — Bruce Friesen, of the Edmonton Soaring Club, for four cross-country flights totalling 1,390 km plus a Diamond climb of 6130 m, for 2383 points total.

"200" Trophy (best five flights for a pilot with less than 200 hours) — Also to Bruce Friesen, for the flights described above. Bruce had only 53 hours at the beginning of the year.

Stachow Trophy (greatest altitude) — Mike Apps. His climb was to a high point of 9450m, or 31,000 feet.

During the National Championships, the following trophies were awarded:

Mix Memorial Trophy - Dave Webb

(Std class Champion)

MSC Trophy - Ulli Werneburg

(15m class Champion)

Dow Trophy - Jörg Stieber

(Std class, best triangle)

Dow Trophy - Mike Apps

(15m class, best triangle)

Dow Trophy - John Firth

(Open class, best triangle)

SOSA Trophy - Walter Pille

(best performance by a novice)

A **Significant Flight Certificate** is being awarded to Joe Gegenbauer of the Vancouver Soaring Association for his flight across the Continental Divide from west to east, from Invermere, BC to Banff, Alberta.

Trophies awarded by the Flight Training and Safety committee chairman or by the president were:

Roden Trophy (best use of club equipment) — Vancouver Soaring Association.

Instructor of the Year — Walter Schulz, Montreal Soaring Council

Ball and Chain Trophy (outstanding gliding accomplishment by a married pilot) — Tony Burton.

George Dunbar
Chairman

FAI RECORDS

1985 was a disappointing year compared to the last two. Six new records were approved, only one of which was flown in Canada, a 100 kilometre speed-to-goal flight by Kevin Bennett in Alberta from Cowley to Black Diamond at the close of the Cowley summer soaring camp. The other five records were set by Peter Masak in the United States, four originating from Ridge Soaring in Pennsylvania. These four flights were made in a period of four days with two of them (a 100 km and 300 km triangle) being made on the same day. Peter's final record flight of the year (500 km triangle speed) replaced one of his own marks set earlier in the year.

Details of the records, in chronological order, are as follows. The figure in parentheses is the previous record in that category or the current territorial record.

- Speed over Goal and Return course
500 km, Citizen (4.3.2.8b) **144.3** km/h (115.4T)
Peter Masak, 19 Apr 85
Nimbus 3, N4562N
Ridge Soaring, Pa. to Seneca Rock, Va. and return
- Speed over Triangular course
500 km, Citizen (4.3.2.5c) **122.6** km/h (101.8T)
Peter Masak, 20 Apr 85
Nimbus 3, N4562N
Ridge Soaring, Pa. to Clearview A/P, Md to Cumberland, Md. and return.
- Speed over Triangular course
100 km, Citizen (4.3.2.5a) **141.4** km/h (113.4C)
Peter Masak, 22 Apr 85
Nimbus 3, N4562N
Ridge Soaring, Pa. to Spring Mills, Pa. to Mill Hall, Pa. and return.
- Speed over Triangular course
300 km, Citizen (4.3.2.5b) **148.9** km/h (110.1T)
Peter Masak, 22 Apr 85
Nimbus 3, N4562N
Kettle Dam, Pa. to Ickesburg, Pa. to Nisbet, Pa and return.
- Speed to Goal
100 km, Territorial (not FAI) **118.7** km/h (59.4)
Kevin Bennett, 5 Aug 85
DG-200, C-GVLB
Cowley, AB to Black Diamond, AB.
- Speed over Triangular course
500 km, Citizen (4.3.2.5c) **151.2** km/h (122.6C)
Peter Masak, 25 Aug 85
Nimbus 3, N4562N
Douglas Co A/P, Nev. to Bishop A/P, Nev. to Gabbs, Nev. and return.

Russ Flint, Chairman

SAC HULL INSURANCE HISTORY, 1973 -1987

	73/78	1979	1980	1981	1982	1983	1984	1985	avg
Insured Clubs (#)	29	40	39	42	40	41	40	38	39
Club Aircraft (#)	132	174	175	162	160	152	146	151	157
Private Aircraft (#)	132	167	178	210	209	164	161	146	171
Insured Value (\$M)	2.42	4.17	4.57	5.20	4.80	5.53	5.37	4.85	4.61
Hull Premium (\$K)	58	122	143	185	217	212	210	185	166
Hull Losses (\$K)	62	134	136	91	206	81	66	146	115
Loss Ratio (%)	107	110	94	49	95	38	31	79	75
Premium/Hull Value (%)	2.38	2.92	3.14	3.55	4.28	3.83	3.92	3.81	3.48
Loss/Hull Value (%)	2.55	3.21	2.97	1.74	4.28	1.46	1.22	3.00	2.55
Average Claim (\$K)	5.68	11.14	4.84	6.04	9.79	8.99	6.57	9.10	7.77
Average Hull Value (\$K)	9.17	12.23	12.94	13.98	13.01	17.50	17.48	16.33	14.08
Average Premium (\$)	218	357	406	497	557	670	685	622	490

SAC AGM DIRECTORS' MEETING

Al Sunley
Alberta Zone Director

FRIDAY, MARCH 7

Attending: Bob Carlson, Harald Tilgner, Gordon Waugh, Gordon Bruce, Alex Krieger, Dixon More, Dave Hennigar, Al Sunley, incoming Prairie Zone director Gerald Dixon, Jean Matheson and Jim McCollum.

Flight Training and Safety Committee

The chairman Ian Oldaker was asked to report on safety problems and progress of meetings with Transport Canada.

The majority of accidents appeared to be from low time pilots and Ian is reviewing training procedures in attempt to eliminate this problem. A meeting by the Flight Training and Safety committee is being held this afternoon to continue discussion on this topic.

There was extensive discussion about motorgliders relating to the licensing of aircraft and pilots. Transport Canada has requested proposals and they are concerned with the time taken to receive a response. Question of definitions of the category will be discussed. Bill Teag from Transport Canada, Pacific Region, answered questions as to what might be included in this category.

Dave Hennigar requested that the Flight Training and Safety committee set up a plan for inspection of club sites and operation.

Meteorology Committee Alex Krieger reported that he still has not received enough applications and resumés to fill this position.

Technical Committee Alex Krieger reported on work to date. Question of chairman's responsibility in actually doing the Type Approval or doing administrative work. Which route will give the best time frame for response to Transport Canada? Modification to Procedures Manual being carried out.

Discussion is being carried on with Transport Canada regarding reciprocity being given to other countries for recognition of type approval, as well as for the United States.

New SAC Clubs Alex Krieger presented present position of Procedures Manual. Further changes required for criteria for winch launch airports and statements regarding temporary and permanent requirements

Pioneer Trust Fund The loan was paid back and the funds invested at 10-1/2%.

Sporting Committee Jim Oke, Chairman, gave report on the make-up of contests. Bob Carlson gave information of what John Brennan has been doing re commercial

sponsorship of Nationals (Labatts and Bacardi rum) and a glider simulator from a tobacco company.

A motion was passed to confirm committee's decision regarding combined and split nationals, and a motion was passed that Edmonton Soaring Club host the combined Nationals for 1987.

Nomination of Zone Directors Single nominations were received from BC, Alberta and the Prairies. Harald Tilgner, Alan Sunley, and Gerald Dixon (from Regina) declared elected.

Hosting for Instructor Course. Gordon Bruce indicated that clubs need more information on requirements; either a follow-up from Ian Oldaker or the Board as to finances, equipment required, etc.

SUNDAY, MARCH 9

Election of Officers

Bob Carlson, re-elected President
Harald Tilgner, re-elected Vice-President
Jim McCollum, appointed Treasurer
Jean Matheson, appointed Secretary

Committee Chairmen — Affirmed present committee chairmen as listed.

Soaring Sites/Records — Tom Blacklock of Calgary was accepted as a volunteer to maintain data for the SAC "Soaring Sites/Records" Directory for a future edition.

SAC Statistics — Dennis Miller of Cu Nim will take over from the National Office.

Other Business Motion by Gordon Bruce for more detailed information to be shown in the budget "Income and Expenses" — Carried.

Motion by Harald Tilgner that secretarial services for meetings away from the National Office locale be requested from host club volunteers when cost effective — Carried.

Calendars — An order for 400 of the 1987 Segelflug Bildkalender has been placed.

Jonathan Livingston Seagull Trophy Request article to be published in **free flight** asking for ideas on re-activating this trophy on a national basis (*see page 11*).

Group Membership Rate Base Borden (or any other military club) will be allowed to negotiate annually a group rate with SAC because of their highly mobile personnel.

Budget Discussion Budget committee was asked to review and make amendments in an attempt to pare the expenses to meet the restricted schedule and still proceed with the Training committee's extended activities as requested by the members at the AGM. □

SAC DIRECTORS & OFFICERS

PRESIDENT & DIRECTOR-AT-LARGE

Bob Carlson (1986)
57 Anglesey Boulevard
Islington, ON M9A 3B6
(416) 239-4735 (H)
(416) 365-3558 (B)

VICE-PRESIDENT & PACIFIC ZONE

Harald Tilgner (1986)
90 Warrick Street
Coquitlam, BC V3K 5L4
(604) 521-4321 (H)
(604) 263-3630 (VSA)

ALBERTA ZONE

Al Sunley (1986)
1003 Keith Road
Sherwood Pk, AB T8A 1G2
(403) 464-7948 (H)
(403) 453-8330 (B)

PRAIRIE ZONE

Jerry Dixon (1986)
Box 124
Sintaluta, SK S0G 4N0
(306) 727-4917 (H)

EXEC SECRETARY

Jean Matheson
485 Bank St.
Ottawa, ON K2P 1Z2
(613) 232-1243

ONTARIO ZONE

Dixon More (1985)
27 Roslin Ave South
Waterloo, ON N2L 2G7
(519) 886-2424 (H)
(519) 824-4120 ext 3296 (B)

QUEBEC ZONE

Alex Krieger (1985)
1450 Oak Avenue
Quebec, PQ G1T 1Z9
(418) 681-3638 (H)
(418) 656-2207 (B)

MARITIME ZONE

Gordon Waugh (1985)
5546 Sentinel Square
Halifax, NS B3K 4A9
(902) 455-4045 (B)

DIRECTOR-AT-LARGE

Gordon Bruce (1985)
154 Shannon Park
Beaconsfield, PQ H9W 2B8
(514) 697-1442 (H) (H)

TREASURER

Jim McCollum
Box 259, R.R. #3
Manotick, ON K0A 2N0
(613) 692-2227

COMMITTEES

AIRSPACE

Dave Tustin
581 Lodge Avenue
Winnipeg, MB R3J 0S7

FLIGHT TRAINING & SAFETY

Ian Oldaker
135 Mountainview Road N
Georgetown, ON L7G 3P8
Mbrs: G. Eckschmied
John Firth
Denis Gauvin
Alex Krieger
Chris Purcell
Manfred Radius
Ed Sliwinski
Al Sunley

FREE FLIGHT

Tony Burton
Box 1916
Claresholm, AB T0L 0T0

FINANCIAL

Gordon Bruce
Bob Carlson
Jean Matheson
Jim McCollum

HISTORICAL

Christine Firth
542 Coronation Avenue
Ottawa, ON K1G 0M4

INSURANCE

Bryce Stout
2244 Belfast Crescent
Mississauga, ON L5K 1N9
Mbr: Al Schreiter

MEDICAL

Dr. Wolf Leers
#201, 3271 Bloor St. W.
Etobicoke, ON M8X 1E2

METEOROLOGY

position
currently
vacant

PUBLICITY

Joe Somfay
442 Union Street
Salem, Ont. N0B 1S0

SPORTING

Jim Oke
551 Bruce Avenue
Winnipeg, MB R3J 0W3
Mbrs: Robert DiPietro
Wilf Krueger
Al Sunley
Hal Werneburg
Ulli Werneburg

FAI AWARDS

Boris Karpoff
14 Elmwood Avenue
Sennerville, PQ H9X 1T4

FAI RECORDS

Russ Flint
96 Harvard Avenue
Winnipeg, MB R3M 0K4

STATISTICIAN

Dennis Miller
108 Midcrest Cres. SE
Calgary, AB T2X 1B5

TECHNICAL

George Adams
12 Hiawatha Parkway
Mississauga, ON L5G 3R8

TROPHIES & CLAIMS

George Dunbar
1419 Chardie Place SW
Calgary, AB T2V 2T7

WORLD CONTEST

Al Schreiter
3298 Lone Feather Cres.
Mississauga, ON L4Y3G5

SAFETY

PRE-SEASON CHECK RIDES

Some thoughts on potential problems.

John Firth
Safety commentator

In reviewing the 1985 safety record, some incidents suggested weaknesses in training, and these are backed up by my own recent experience. They relate to inadequate cockpit checks:

- Brakes improperly locked coming open unnoticed on tow.
- Canopy unlatched and opening on tow.
- Controls jammed by loose objects.

All of these are killers, given a little help.

Blaniks again featured noticeably in the statistics; the old problem of confusion between flap and brake (spoiler) handles still gets pilots into trouble. It is essential that pilots trained on Schweizer machines, on which the spoilers tend to stay closed even if unlocked, are made acutely aware of the "suck-open" tendency with most European machines which have very effective dive brakes. Most of these types (such as the popular Grob Twin Astir), use an over-centre linkage for locking. Both failure to force the lever past the over-centre pressure, and brakes unlocking unnoticed in turbulence, are common problems with inexperienced pilots. Pilots should be taught to fly the early part of the tow with the left hand on or close to the brake handle. Instructors can test student awareness by stealthily unlocking the brakes during the initial phase.

Towpilots experiencing poor climb performance should add to their check one for brakes open; **alert the glider with a vigorous rudder waggle**. This will become a standard SAC signal.

The canopy should be given a positive check by pushing upwards to check the latch operation. The handle does not give an adequate indication on some types.

During the control check, check for loose objects which could jam either stick or pedals, especially in a two seater. An aircraft with a torn or baggy stick boot is a potential victim.

A MODEST PROPOSAL

Transport Canada's most recent summary of licences indicates that the number of active glider pilot ratings is up marginally from last year and stands at 4730 as of 1 January 1986.

If our organization, which now stands at 1346, wants to get to 2000 in two years, I have a modest proposal — get TC's mailing list, sort out where the 3384 non-SAC

Concern was expressed during the recent Safety and Training meeting that largely irrelevant checks of external control position (brakes open above and below?) are becoming a ritual; this is taking time away from other absolutely vital checks. External checks should be done on the DI, and possibly again before the first flight, but emphasis must be on the essential pre-takeoff checks, with explanations of the reasons for doing them.

Soar through the
Grand Canyon video
ad

THE GLIDER'S BEEN DI'd, BUT HOW ABOUT THE PILOT?

The glider has been checked over and is serviceable, but how's your soft and tender body. Are you safe today?

- I** Illness? Any cold symptoms are a good excuse to ground yourself.
- M** Medication? There are few drugs which have no affect on flying skills.
- S** Stress? Physical and psychological. Worried about your bills this morning?
- A** Alcohol? Also known as "liquid hypoxia". When was your last drink?
- F** Fatigue? Had a late night — been in the back seat all day?
- E** Eating? Was your breakfast a quick coffee and donut? Hypoglycemia's on the way. And are you a quart low on H₂O?

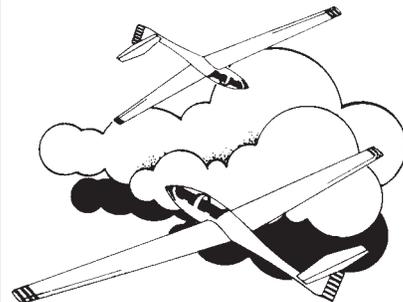
Now, would you rather be on the ground wishing you were in the air, or in the air wishing you were on the ground?

glider pilots reside, and make it attractive for 19% of them (654) to join the nearest club within the next two years. Each club could be given a "hit-list" of the wayward pilots in their area, for example.

*I know, I'm being facetious, but surely there is **some** gold to be panned from a "lost" population of people who have already been partially sold on the joys of the sport.*

Tony Burton

AN INVITATION



Arizona Soaring Inc.

ad

aerobatics courses

at Estrella

Choosing a safe thermalling speed in something like a 1-26 is seldom a problem. A 1-26 gives about a three month notice before it stalls. Keep away from buffeting and you are relatively safe.

For laminar wing gliders there is usually less warning. Stall speeds are often much higher. The minimum sink speed is typically about 10 mph faster than the stall speed, compared to a difference of 2 or 3 mph for a non-laminar wing.

Occasionally I run into someone, figuratively so far, who routinely tries to thermal in medium banks, say 30 to 45 degrees, at the published minimum sink speed. Thermalling at an inadequately incremented speed results in flying below minimum sink speed closer to stall. The polar displays a significant increase in sink here, and control usually deteriorates markedly. Poor aircraft performance reported by a newly transitioned pilot can often be traced to inadequate thermalling speed.

After correctly determining bank, the appropriate thermalling speed can be obtained by multiplying the straight flight minimum sink by the square root of the reciprocal of the cosine of that angle. I actually used to try to fly this way. The hardest part was accurately figuring out the angle of bank. By the time I obtained a result, I had usually lost the thermal.

Thermalling Speed: the easy way

Although the speed should change with bank, the angle of attack for minimum sink, hence stick position, remains constant. A standard test to perform on any new glider is to fly it straight and steady at the minimum sink speed. Note the stick position. This is the nominal stick position to use when thermalling. For a specific bank, select the speed, hence horizon location, that yields this.

Since this stick position is forward of that for stalling, you do not have to worry about the constant threat of a stall/spin; you have removed the conditions for its occurrence. After adopting this technique I found steep thermalling or low thermalling more relaxing. My climb rates improved because my technique was better and also because I was able to be more aware of other factors.

The thermalling speeds obtained with this method yield the maximum climb rate; however, there are times when it is prudent to fly faster. If you are in a gaggle it is advisable to add extra speed to improve maneuverability. If it is gusty, extra speed will improve controllability and prevent a gust from suddenly stalling the aircraft.

On aircraft that do not stall cleanly from steady flight, it is harder to find a unique stick position. Unfortunately this is the normal case for a 2-33. Usually it mushes if speed is reduced gradually.

The stick position technique works well but requires smooth handling. If you follow the Mixmaster school of stick control, it will not work for you. Change schools first. □

HANGAR FLYING

Compiled by Tony Burton

BIKLE'S RECORD FINALLY BROKEN

A new absolute altitude record is being claimed by Bob Harris of Riverside, California as a result of a flight to 14,634 metre (48,000 feet) in his Astir CS on 17 February of this year.

Harris had been waiting for the perfect wave for many years to break the oldest Open world record still on the books (14,102 m) set by Paul Bikle in a 1-23 in the Sierra Wave on 25 Feb 1961. The prognosis for 17 February appeared to meet the conditions; the tropopause (which acts as a sort of lid on the lower atmosphere) was at 15,000 metre and a strong jet stream flow crossed the Sierras at 260°.

Harris launched at 1250 from California City near Edwards Air Force Base with a great number of good looking lenticulars in evidence at the northern end of the Owens Valley. He took a 70 km tow north to Inyokern in rough conditions and released at 12,500 feet, but did not get established in the wave until he had dropped to 8000. At 34,000 he was finding 3-8 knots which diminished near 40,000 feet. By exploring further north, he found another area of strong lift at 42,000 and peaked over Little Lake with his altimeter reading 47,000.

Contrary to the normally dry Sierra Wave, this one was relatively wet and Harris' canopy was frosted up, and one of his two oxygen systems failed. The strong winds did not allow him to get back to his home field and he landed at Inyokern at 1730 hours.

Many well-wishers were on hand to congratulate him on the flight, including Paul Bikle himself.

from Aerokurier

SIGNIFICANT FLIGHTS

It's time again to remind pilots, OOs, and CFIs that a lot of great flights never get to the attention of the membership or **free flight**. I hope that advertising the good flights that pilots make during the season will encourage more cross-country and badge flying in general. Tell me about it: it may be a failed badge flight that was a great effort anyway given the countryside crossed or the weather encountered. Send me a short note.

SAC likes to recognize the great flight even if it doesn't qualify as a badge leg or record. That's why the "Significant Flight" certificate was developed in 1983. Last year our Trophy and Awards chairman, George Dunbar, had a pretty slack time of it, knowing of only one person who deserved recognition, but there must have been more of you out there somewhere.

JONATHAN LIVINGSTON SEAGULL TROPHY RETURNS TO SAC

Back in 1972, SAC gave the Jonathan Livingston Seagull Trophy to the Air Cadet League of Canada. They have now given it back. It seems all their trophies have a finite life span and Jonathan has outlived his as far as they are concerned. The Board plans to add Jonathan to the list of trophies awarded annually at the AGM. We would like to retain the youth connotation, and suggest that this trophy be awarded to a candidate who is either a Junior or a Cadet member of SAC.

In 1985 we had 112 such members. So how do we choose the winner? The Board would like to hear your suggestions. Please avoid criteria that rely on someone's opinion. We would like to end up with a list of easily verifiable flying achievements as the criteria. I will be submitting my list. I hope we will get lots of suggestions from you.

If you haven't read the thoroughly delightful little book by Richard Bach from which this trophy derives its name, I highly recommend it. But I have to warn you that it is strictly for the young and the young at heart.

Dixon More, Ontario Zone Director

SHADDUP !!

A short note in Australian Gliding by their Radio chairman draws attention to a little-known hazard of too much idle chatter on glider radios. He points out that chronic radio talkers not only distract other pilots but also cause the unnecessary and premature flattening of the batteries of every glider within radio range. This is because the current draw on most radios increases by 200-600% while receiving a transmission compared to its squelched state.

Gren Seibels in SOARING magazine suggests observing a few simple disciplines to turn the noise pollution on 123.3 into golden silence:

- If the message isn't important, don't broadcast it.
- Work out what you are going to say *before* keying the mike.
- Speak distinctly to avoid interminable "say again" responses.
- Teach crew proper radio usage, and instruct them never to initiate transmissions unless they are overturned and the flames are spreading.
- Do not squelch your receiver so hard that you can't hear other transmissions that you may unwittingly interrupt when you key your own mike.
- During contests and on those booming weekends, pretend we're Trappist monks with glider ratings.

As Andy Capp would put it, "Shaddup!"

A QUESTION OF PACKAGING

PART 7 OF LOW LOSS INSTRUCTING

This final part of the series looks at the background of Low Loss Instructing, and what part this background may play within the context of the present gliding movement.

Tony Hayes

Adapted from
Australian Gliding

BEHIND LOW LOSS INSTRUCTING

The series has been spread over a year, but what came to be written as Low Loss Instructing in fact goes back over fifteen years. It originated in a personal study on whether the techniques and abilities of experienced instructors might be expressed as a simple and effective system which new instructors could use whilst gaining their own teaching experience — pupils would thus obtain a better overall deal.

Around ten years ago, the majority of what you have read, if you have been following the series, was nearly produced in an instructor training format, but at the time I was involved in other development work and shortly afterwards left full-time gliding.

For a couple of years I earned my living in instructor training outside gliding, the different perspective allowing some simplifications and refinements to be made. Today, a number of productive avenues appear worth exploring and this may be done elsewhere under a more apt title of Conceptual Instruction. It finds no place in this series however as it would make for rather dry reading.

A while ago I once more became involved in gliding instructor training and so brought the material out again to a gliding world with less growth, more economic pressures and different priorities than it had in the early 1970s. So what was intended primarily for instructor training appeared to have another application — that of assisting in retaining as many new members as possible of those the sport's modern image attracted, and to suggest a platform on which gliding could be more practically competitive in an increasingly competitive leisure industry.

BEHIND TODAY

Only once before in the history of gliding have we seen such an across-the-board explosion of performance as we have in the last ten years. The initial wave hinged around the discovery of how to use ther-

mals, freeing the sport from total dependence on ridges and setting it on a road dictated by inter-thermal efficiency.

In those days gliders such as the Moazagotl and Austria were the performance trailblazers, with limited production gliders such as the beautiful gull-winged Weihe and Minimoa being state-of-the-art hot ships if you could afford them.

Those days were gone before I was born and I wonder how many present pilots contemplate the sophistication those far-off days reached before a World War intervened.

In the interests of performance, some gliders flew with flaps, retracting undercarriages were being mooted, wing section experimentation began, water ballast was tried, the Fafnir flew with a double curvature *wooden* canopy with portholes for vision, a self-launching version of the Minimoa was flown, the Austria peaked out with a massive 30 metres of span and it is only recently that gliding has again seen anything so large.

With the spiralling costs of performance also came controls. Jacobs designed the Olympic Meise and set a blueprint for cost-controlled development which the majority of people would be able to afford.

Postwar, it was known as the Standard class, leaving the Open class to pathfind performance development into the future, but this original structure did not anticipate a totally new kind of glider.

The appearance of the fibreglass glider in series production set off the next development wave — almost immediately the long established Standard class was changed to allow retracting undercarriages. The rules were again changed to permit water ballast. The performance gap to Open class still widened though, thus allowing room for the 15 metre, flapped, racing class to be introduced.

Today the gap is still widening, with Open gliders going way over 20 metres and into the 50s on glide angle, and so a 17/18 metre class is being considered.

In Australia at least, there has not been too much success in achieving an acceptable handicapping system in National competition, thus we lose another facility for applying the cost control brakes, resulting in a Sports class struggling into existence to allow pilots who otherwise could not afford to be competitive to still have a meaningful go.

Despite handicapping, the increasing abundance of redundant competition gliders will apply pressure on the Sports class; the Libelle has already made it down there for example.

Whilst the spirit of the Sports class pilot is high, the hawks who must win for the sake of winning will soon gather and we may yet see a further division in classes to preserve the particular kind of sporting pleasure various groups require.

Gliding has changed quite rapidly in a short time but we must also appreciate that it has not finished changing. We are still in a state of flux which will continue for a while.

A CHANGING SPORT

The introduction of the glass glider destabilized a reasonably established structure. The cost control function of the Standard class went a long way past just competition, for whilst it preserved a basic level of meaningful competition participation, clubs also structured their fleets downwards from this level. In turn, this controlled expectations and attitudes in a membership who had clear options of being satisfied with working up the fleet to the Standard class flagship or buying their own aircraft if this was not enough.

Gliding has now made an abrupt jump forward by transforming what was the "flagship" into a club's first single seater.

This is a new base leading on to open-ended options for specific and increased performance. In itself this has released controls on attitudes and expectations in the movement, encouraging a less considered purchase on appeal rather than on practical need.

The control base (if you can call it that) being so low, it was inevitable that the two-seat trainers would have to follow. This happened and we saw an abrupt and almost total generation change in training equipment, forever closing the door on cost-choice gliding within the structure of

the present movement The length of time remaining to us is dictated by how long previous generation trainers will last in sufficient numbers to satisfy demand.

It is not the machines that are under question, it is our attitudes to them. Five years ago I watched six pilots queuing up for a short flight on a lovely soaring day. Left in the hangar was a less-than-two-year-old glass glider of around 38:1 performance. These pilots preferred to have a shorter flight in the other glass glider they had out rather than fly what was not the latest thing.

An understandable attitude in some circumstances, but what is difficult to absorb is that I am not discussing club hot-ships or experienced pilots. Both gliders were club first single-seaters, the pilots were inexperienced, some only having left the two-seater a couple of months before.

When pilots of that level decline to fly a glider which has a performance they do not have the experience to fully utilize, then one has to wonder what purpose we are achieving and how valid current attitudes are that increase the sport's cost.

ANOTHER STABILITY LEVEL?

A new level still seems a long way off and frankly I am not game to speculate on what form it will take. The situation is still open-ended as we have settled down to expect a steady increase in performance, if only a few percent — a difference which most of us would not have a prayer of being able to use by intent. It appears more likely that a new level will be forced upon us by economic pressure rather than choice.

There are already indications — competition pilots are moving towards rationalizing their area. In UK there is research going on into their own membership/cost problems, early comments are that in a club-based system private owners may have to bear an increasing financial burden to offset dwindling training and membership revenue which is a club's lifeblood in maintaining launching systems, checking facilities, and in some cases, airfield tenure itself.

Back home, the Gliding Federation of Australia is not standing still. Airworthiness is being given a positive development boost to deal with the flow of new types and technology, a National Coach has been appointed, which is a tremendous step forward for basic training. All of these are essential steps towards a new balance, but short term they themselves are destabilizing because they increase costs. We still have some way to go yet.

The most apt words to use at present could be those of Roger Woods as past GFA President. Roger stated that no individual part of gliding is more important than another, which is very true. Equally, no individual part of gliding is independent of another. What happens at high level competition reverberates down the movement in changing attitudes, changing fleet structures, changing costs — at club level,

early solo pilot, instructor and pupil levels. It changes the thrust of our budgeting promotion and eventually the very form of training itself.

It is evolution of the sport but it is not necessarily growth, for one would expect that by being able to offer more freedom of the skies than ever before, gliding should be growing rapidly, and it is not.

Is it that gliding is becoming more attractive as a dynamic holiday experience to sample, obscuring a reduction in general appeal of gliding as a worthwhile on-going leisure activity in comparison with what else is available? If so, we are in trouble, as reducing membership will also raise costs.

We require another policy blueprint which will realistically balance needs and wants, setting another base from which clubs may predict and budget. I am not wise enough to forecast what this may be, I am dealing only in basics which appear to be that if you develop one area of the sport you must keep the other areas in balance by developing them also.

We may find that to restabilize, levies will be required for airworthiness development and training development as well as competition. If the membership rejects this then it would be a clear indication that the sport has gone too far and a lower but still equitable balance is required.

There is no way we can go back to the way we were. The situation has been created and must be dealt with as it stands. These then are the background reasons for Low Loss Instructing in the form of this series.

INSTRUCTING, OR SELLING?

Plainly, we need more members to alleviate the financial load. We have really got to begin selling gliding as a pleasurable and worthwhile activity. Promotion of the sport alone will not achieve this, we require a package deal of promotion and training, for we have not sold gliding to anyone until we have transformed a new member into a solo pilot who wishes to continue with the sport.

Training is therefore going to take an increasingly important role in the movement's future prospects.

Instructing then, or selling? In this context they are one and the same, for effective selling is only relating a product to a person's need without compromising the seller. Instructing is relating the process of becoming a solo pilot to a new member's needs without compromising standards.

This series has suggested one method by which this may be more effectively achieved — creating more efficiency and therefore appeal in what we are already prepared to do without also significantly changing our established training structure. It has, if you like, suggested a controlled form of "selling" to retain more members that we presently lose, whilst also offering a considered alternative to the uncontrolled low level experimentation in training appeal

which must surely happen as clubs struggle with rising costs.

While the individual or club could obtain positive gains immediately from what I have termed Low Loss Instruction, the long-term benefit to the movement will ultimately lie in instructor training.

Increasing reliance may have to be placed on the skills of CFIs to ensure course candidates meet a high personal flying standard.

The instruction course system may have to be lengthened and more formalized, enabling pre-course study material to be sent out, thus raising the awareness of the course applicant at the beginning of the course proper. More time would then be available to further establish and practise teaching techniques and pupil management.

Concepts such as simplified working methods, in conjunction with Talking Books as outlined in this series, would support the new instructor through a phase of growing experience, maintaining the broader concept of the meaning of today's encapsulated exercise, and enabling work to be harmonized with what other club instructors are doing.

Low Loss Instruction is no magic wand. We will not retain every member the movement attracts, but the final question we should ask ourselves is what percentage of those we presently lose could we have retained?

In the answer to that question may lie the difference between decline and growth. This series has been a vote for growth.

CONCLUSION

That winds up the series but before closing, I must acknowledge that the idea for the title and approach came from a paper presented by George Moffat to a Soaring Symposium in the USA entitled, "Low Loss Flying". George's main theme was that if you produced less waste in work you were required to do anyway, then you would go further and faster in the same time period.

He obviously knew what he was talking about as he took Double X-Ray, the prototype Nimbus, to a World championship win at Marfa. His techniques are now part of standard skills in efficient performance flying today.

The time has come when our low loss techniques in our low loss gliders must be balanced by low loss instruction. If the techniques of our most experienced soaring pilots are so eagerly incorporated into simple expressions for the use of the most novice soaring pilot, then does it not also follow that we may apply the same philosophy to instructing? The techniques of our most experienced instructors should be expressed in a manner that will benefit every instructor.

We may thus keep more people in gliding who will compete, fly long distances or simply enjoy the skies in the quite magnificent machines we have available today. □

RECREATING “QUETZALCOATLUS NORTHROPI”



Merging paleontology and aerodynamics
give re-birth to earth's largest-ever flying creature

A reptile with the wingspan of a Monera! Drawing by Gregory Paul from research by Dr. Wann Langston Jr., Director of the Vertebrate Paleontology Laboratory, U of Texas and Dr. Paul MacCready of soaring and human-powered flight fame.

wings spanning 5.5 metres and is controlled by a complex autopilot system under the command of a ground-based operator.

On the basis of the few fossilized remains and from extrapolations from the *Pteranodon*, a somewhat differently shaped pterodactyl, early estimates of the span of *Quetzalcoatlus northropi* wings ranged up to 21 metres! But on-going reviews with inputs on the engineering limits to delicate hollow bones, muscle, and tendon lowered the estimate towards eleven.

Before the discovery, the size limits for biological flight were assumed to be much less since the mass of a bird goes up twice as fast as its wing area and, in large birds, muscle power per kilogram for propulsion actually decreases with increasing weight.

To arrive at a consensus about the physical characteristics of this creature, as well as to assess the overall feasibility of building and flying the replica, called QN, a workshop was convened in July, 1984 at Cal-Tech. The workshop brought together experts in paleontology/paleobiology, aerodynamics, and other disciplines. A design consensus was reached (but without great confidence

Tony Burton

information from the
Smithsonian Institution and
“Engineering & Science”

About 65 million years ago, a gigantic flying reptile having a wingspan of 11 metres lived in the region now known as West Texas, where some of its bones were discovered in 1972. It was given the name *Quetzalcoatlus northropi*, after Quetzalcoatl, the Aztec feathered serpent god and Northrop Corporation which had designed and built some very large flying wings. A lifelike radio-controlled flying replica of the giant prehistoric ptero-

dactyl has now been flown, and will be given its first public demonstration this summer by the Smithsonian Institution.

The fully articulated flapping wing replica is the largest ornithopter to ever fly successfully and was created by AeroVironment Inc. under the direction of Dr. Paul MacCready. Developed with a \$500,000 grant, it has carbon fibre, foam, and latex

since the fossil record was so sparse) having the following general specifications:

Span	11 m (36 ft.)
Area	8 m (86 sq.ft.)
Weight	64 kg (140 lbs.)

The original plan was to build a full-sized replica, however the 5.5 metre version achieved all of the goals outlined in the original project report written in December, 1984 and is much cheaper to build. Those goals included the following:

- That the replica fly realistically, propelling itself by wing flapping;
- That it be fully controllable in normal flying conditions;
- That it would use an electrical power system that would allow a few minutes of powered flight.

The greatest problem MacCready's team faced was to develop the means to provide stability and control. "Very little is known about how natural fliers such as birds combine their sensing devices, brains, and muscles to fly effectively," MacCready said. "The challenge is especially difficult with this pterodactyl replica — the original did not even have a tail to help with pitch stability and control." Moreover, the wing appeared to be unstable in pitch due to its undercamber and little sweep, and the large head and long neck also made it unstable in yaw.

Adding propulsion via wing flapping presented many mechanical and structural challenges. A big question was the interaction between flapping and pitch stability and controllability.

The team had some confidence in its ability to achieve a satisfactory result since nature provided so many successful examples. The albatross, with essentially no tail, is

certainly stable in pitch during its efficient cruising flight. Active control presumably permits stable flight; small fore-and-aft movements of the wing continually adjust the position of the centre of lift relative to the centre of gravity. A bicycle rider is unstable but remains upright because of continual steering corrections which quickly become automatic.

To overcome the problems, the team developed and programmed a special on-board autopilot system. In response to the computer and sensors, the QN maintains stable flight by moving its head side-to-side, selectively extending its vestigial fingers midway out on the wing (to act as spoilers), twisting its wings, and varying the sweep. All this occurs while the Ni-Cad batteries power the compact motors which flap the wings.

The QN replica gradually evolved from many models, at first small gliders which tested configurations analogous to *Quetzalcoatlus northropi* that gave initial clues to reasonable sweep, twist, and airfoil compromises. Then flapping models were flown, followed by a rugged 3.7 metre glider that was finally equipped with radio control and launched by tow line. It was this model which proved that wing sweep movement was the only effective solution to pitch control. Subsequent models brought the development of all functions together, and the final wing flapping version weighing more than 15 kilograms has currently finished the test program.

QN will be one of the stars of a new IMAX film "On the Wing", which explores the dynamic relationship between natural and mechanical flight, contrasting the biological evolution of winged animals with the technological innovation of man. "On the Wing" will premier at the Smithsonian Air and Space Museum in Washington, DC on 20 June, and open subsequently in IMAX / OMNIMAX theatres worldwide. □

continued from page 8

tighten the straps, to the initial decision to land. That is to say, **before** the aircraft ever joins the circuit. There is then also ample time to look down and check the position of the undercarriage lever. This prevents the situation where the pilot who forgot to retract the wheel on take-off, remembers to move the lever in the landing circuit, thus retracting the undercarriage, which was already down. This is quite easy to do when one's full attention is taken up with watching other aircraft since in some gliders the wheel is down when the lever is forward and in others when it is back.

When landing out, the decision to tie the undercarriage, ballast cock, and straps to the decision to land may be even more important. Once the landing circuit has begun, the pilot's attention is rivetted on the landing area looking for hitherto unseen obstacles, or landing conditions which require a change of plan, or special care and attention.

If it is felt necessary to check the operation of the spoilers, this should also be done at the time of lowering the wheel and before entering the circuit. If a mnemonic is required, D.U.B.S.S. (dubs) is suggested:

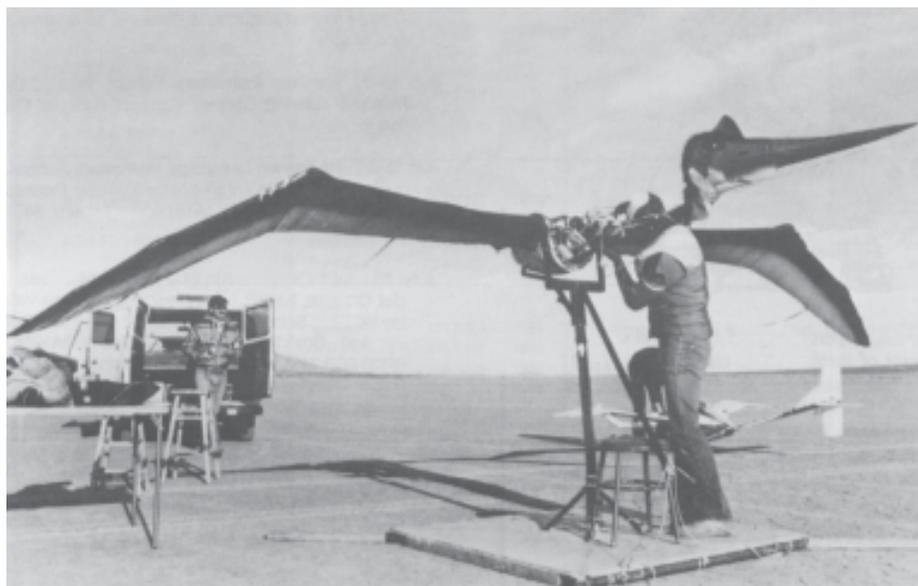
- D — decision to return and land
- U — undercarriage to be lowered
- B — ballast to be jettisoned
- S — straps to be tightened
- S — spoilers to be tested

The remaining things, attention to traffic in the circuit and on the ground, flaps, elevator trim and spoilers, are so much part of normal aircraft handling that it is not thought that any mnemonic is required. However, if one is needed, A.F.T.S. could be used:

- A — aircraft in circuit
- F — flaps
- T — trim
- S — spoilers

Two final points: one is sometimes decanted off tow into a well-populated thermal. Entering this safely takes a good deal of concentration, particularly if there are aircraft just below you which are well centered and climbing fast. This is the kind of situation in which one can forget to retract the wheel, leading to the wheel-up landing already referred to. To avoid the possibility, I normally retract the wheel on tow, on reaching 1000 feet.

At Hawkesbury, we have a number of areas, just outside the circuit, where one can pick up a thermal at 800 or 900 feet when coming back to land, having already lowered the wheel. Under these circumstances, I make a point of not retracting the wheel again until reaching 1000 feet, possibly more if one is being drifted downwind of the airfield. The same thing goes for outlandings. There may be some serious disadvantages to these practices, but so far, I have not encountered them. At the same time, they confer the advantage of allowing one's full attention to be concentrated on circuit traffic and flying the aircraft. □



Engineering staff members of AeroVironment assemble and prepare to launch QN in Death Valley, where the flying sequences were shot for the IMAX film, "On the Wing". Note that with a 5.5m span, this is only a half-size replica of the giant pterodactyl.

CLUB NEWS

BEAVER VALLEY SOARING DATA ON A NEW CLUB

Some information for visiting pilots to our new club:

Location: 3 km east of Meaford, Ontario
between Georgian Bay and Hwy 26.
Elevation: 750 feet
Runway: 3200 feet, 28-10, trees at W end
Frequency: 121.9 MHz
Telephone: (519) 371-1440, 538-4262

The airstrip is located midway between 150 foot high clay banks on the north and a 500 foot ridge on the south, both of which are oriented east-west. The south ridge causes surface winds to blow along the strip unless there is a strong northerly or southerly component. A strong northerly wind provides ridge lift on the south side of the field. Winds with a strong southerly component can produce turbulent towing conditions. It also results in strong sink on the downwind leg of a circuit flown between the ridge and the airstrip. Under these conditions pilots are advised to make the downwind leg over Georgian Bay or to make a high downwind leg on the south side of the strip and south of the ridge crest. Local pilots use right or left hand circuits.

Pilots visiting the field with gliders are welcome and will be offered tows at the club rate of \$4 per 1000 feet. Mid-week flying on good days, plus weekends.

Ruth Thumm

AN EARLY START WITH EAGLES

The dry and warm late winter in southern Alberta quickly dried out the Cu Nim airfield at Black Diamond, and the season opened very early with spring checkouts beginning only two days after the official first day of spring on 20 March. The 22nd was a good soaring day too, with flights to 12,000 feet. The following weekend was also good (although Easter Sunday featured a frontal passage which gave winds around the clock, blowing dust, and snow showers).

An addition to the local scenery is a pair of bald eagles which seem to be nesting near the field as they have been marking house thermals regularly.

Cu Nim has bought a Std. Jantar for club use, replacing the B4 and a little-used 1-26, which begins a serious up-grading of the fleet. It is hoped that the Jantar will encourage more cross-country work by "new" pilots, reduce the second year blahs, and help keep members.

The club has also instituted a new membership fee schedule which takes some of the sting out of the "up-front" cost of flying. In the past, the total club aircraft insurance bill has been pro-rated among the expected number of members for the year, and in 1985 the cost was \$115 per member. This year, the club decided, instead, to spread the insurance cost across the season by adding a surcharge of \$2 to the tow.

An additional change to attract potential members was instituting a "trial" instructional period consisting of ten flights and a student kit for \$250. Normally a joining student faces a full \$450 charge plus SAC fees to begin a sport they might not like or be good enough to pursue. This all-or-nothing charge was seen to be a possible disincentive to joining. If the student does continue training, an additional \$300 buys full membership and unlimited glider use. New students, who are sure of their commitment, pay the \$450 and save a hundred.

Creative options such as this may be of advantage to other clubs.

Tony Burton

ONTARIO SOARING SOCIETY

The Ontario Soaring Society held a weekend gathering beginning 15 February at Base Borden. All 14 clubs in Ontario were represented, with 90 in attendance.

Speakers included: Al Schreiter on insurance, Art Schubert on the upcoming Nationals at York, Bryce Gormley on the Provincial contest at Kars, Ian Oldaker on stress management in the cockpit, Walter Weir on his 32,400 wave flight at Mt. Washington, and Ed Hollestelle and Wilf Krueger who gave a slide presentation and talk on their experiences at Austraglide '86.

COMING EVENTS

Jun 8-15, **Chipman XC Clinic**, 2nd annual week long cross-country course for beginners (see 1/86, page 11). Course conductor, John Firth Contact: Mike Apps (403) 436-9003 (H), 435-7305 (W). Course limited to about 18 persons, so reserve a space soon.

Jun 15-21, **Eastern Instructors School**, hosted by Montreal Soaring Council. Contact National Office for details.

Jun 15-21, **1st French Language Instructors School**, hosted by Club de Vol à Voile de Québec. Course director, Denis Gauvin, (418) 842-6456 (H), 647-6750(W).

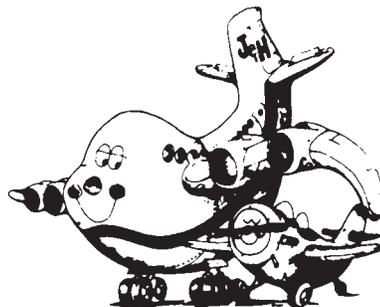
June 28-Jul 1 (practice Jun 21-27), **Ontario Provincial Contest**, handicapped scoring. Rideau Valley Soaring School, Kars, Ont. (20 miles south of Ottawa). Box 1164, Manotick, Ont. K0A 2N0 (613) 692-3622. Celebrating 10th anniversary of RVSS. Glenn Lockhard.

Jul 12-18, **Western Instructors School**, hosted by Edmonton Soaring Club. Contact: Al Sunley (403) 464-7948 (H), 463-2619 (W). Details to follow.

Jul 22-31, **Canadian National Gliding Championship**, York Soaring, Arthur, Ont. Details to follow.

Jul 26-Aug 4, **Cowley Summer Camp**, sponsored by Alberta Soaring Council. Contact: Kevin Bennett (403) 256-3665 (H), 263-0143 (W). Canada's biggest and best soaring gathering for fun and badges, campground facilities. XC clinic also.

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The following badges and badge legs were recorded in the Canadian Soaring register during the period February 1, 1986 and March 31, 1986.

GOLD BADGE

222 Peter Sully Gatineau

GOLD ALTITUDE

Peter Sully Gatineau 3916 m Skylark 3B Sugarbush, VT

SILVER ALTITUDE

Kenneth Deeth Erin 1300 m IS29D2 Grand Valley, ON
David Lewtas Montreal 1460 m Skylark 4B Hawkesbury, ON

SILVER DURATION

Kenneth Deeth Erin 5:14 IS29D2 Grand Valley, ON

SILVER DISTANCE

David Lewtas Montreal 65.0 km Skylark 4B Hawkesbury, ON

C BADGES

David Taylor Erin 1:05 2-33 Grand Valley, ON
Harold Kroeker Winnipeg 1:00 IS28B2 Starbuck, MB

Campbell

Printer ad,
Ottawa

CANADIAN RECORDS

RECORD TYPE	OPEN	FEMININE	MULTIPLACE (OPEN)	MULTIPLACE (FEM)
DISTANCE (km)				
4.3.2.1 Straight distance	Marsden / Apps 1093 1984	A Williams 305 (C) 1975 A Williams 209 (T) 1973	Zwarych/McColeman 406 1984	not claimed
4.3.2.2 Distance to goal	Marsden / Apps 707 1984	A Williams 305 (C) 1975	Zwarych/McColeman 310 (T) 1984 Proudfoot/Fitzhugh 304 (C) 1981	Williams/Bell 76.0 1979
4.3.2.3 O & R distance	Apps / Marsden 615 (T) 1983 B Milner 1001 (C) 1983	U Wiese 328 1984	Marsden/Dumas 422 1979	not claimed
4.3.2.4 Triangle distance	H Werneburg 804 1982	U Wiese 307 1983	not claimed	not claimed
SPEED, Δ (km/h)				
4.3.2.5a 100 km	P Masak 141.4 (C) 1985 D Marsden 111.3 (T) 1982	A Williams 54.5 1976	Marsden/M Jones 98.1 1975	Williams/Stone 31.0 (C) 1970
4.3.2.5b 200 km (not FAI)	J Firth 110.6 1984	M Barritt 68.7 (C) 1970	Bungey/Burton 76.0 1983	not claimed
4.3.2.5b 300 km	P Masak 148.9 (C) 1985 R Mamini 110.1 (T) 1973	U Wiese 55.6 (T) 1983	Marsden/Dumas 69.9 1975	not claimed
4.3.2.5c 400 km (not FAI)	J Firth 77.9 1974	not claimed	not claimed	not claimed
4.3.2.5c 500 km	P Masak 151.2 (C) 1985 R Mamini 101.8 (T) 1973	not claimed	not claimed	not claimed
4.3.2.5d 750 km	W Krug 108.8 1982	not claimed	not claimed	not claimed
4.3.2.5e 1000 km	not claimed	not claimed	not claimed	not claimed
ALTITUDE (m)				
4.3.2.6 Gain of Altitude	W Chmela 8321 (C) 1974 J Beattie 8153 (T) 1983	A Williams 5898 (C) 1969 U Wiese 5720 (T) 1982	Shirley/Campbell 7100 1961	Williams/Kossuth 2987 (C) 1970
4.3.2.7 Absolute Altitude	W Chmela 12449 (C) 1974 B Hea 10485 (T) 1981	A Williams 9772 (C) 1969 U Wiese 8035 (T) 1982	Chmela/VanMaurik 10390 (C) 1975 Shirley/Campbell 9085 (T) 1961	Williams/Kossuth 4206 (C) 1970
SPEED, O & R (km/h)				
4.3.2.8a 300 km	P Masak 171.6 (C) 1983 H Werneburg 115.2 (T) 1983	U Wiese 59.6 1984	Chmela (Rominger) 65.0 (C) 1976	not claimed
4.3.2.8b 500 km	P Masak 144.3 (C) 1985 H Werneburg 115.4 (T) 1984	not claimed	not claimed	not claimed
4.3.2.8c 750 km	not claimed	not claimed	not claimed	not claimed
4.3.2.8d 1000 km	B Milner 94.7 (C) 1983	not claimed	not claimed	not claimed
SPEED, GOAL (km/h)				
100 km (not FAI)	K Bennett 117.9 1985	not claimed	Chmela/Zimm 47.0 1971	not claimed
200 km (not FAI)	J Firth 70.0 1970	not claimed	not claimed	not claimed
300 km (not FAI)	W Mix 108.6 1966	not claimed	Proudfoot/Fitzhugh 70.2 (C) 1981	not claimed
400 km (not FAI)	not claimed	not claimed	not claimed	not claimed
500 km (not FAI)	D Marsden 97.1 1970	not claimed	not claimed	not claimed

C indicates a record by a Canadian outside the country.

T indicates the corresponding record set within Canada. These are noted only when there is a greater "C" record.