free flight • vol libre

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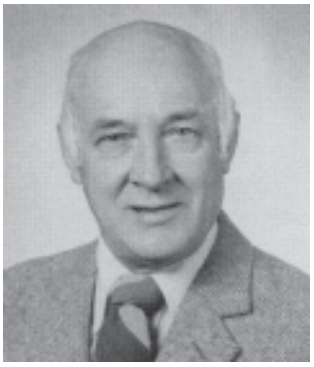
Jul/Sep

POTPOURRI



We were all saddened and shocked by the death of Kurt Kovacs shortly after a glider accident in June. He was an inveterate glider pilot who was as professional in his approach to flying and safety as anyone could be. For over thirty years, he was amongst the very best as attested to by the numerous entries of his name in past record lists. In Hawkesbury, we will probably remember him best by his early start as soon as the thermals pulled, and by his high speed return at near dusk, the last aircraft down for the day.

Equally shocking is the death of Jeff Tinkler on 29 June in another accident at the Winnipeg Gliding Club, when Jeff was involved in a midair collision. Jeff had been both the CFI and President of WGC at various times and contributed many articles to various publications concerning glider training and safety. A fine and gracious gentleman.

Both of these pilots would expect that all concerned in the glider world would learn something from these tragic events and review their personal attitudes and skills with a view to seeking weak points or sloppy habits and improving wherever necessary. The one obvious lesson is that the very best can forget, or be distracted, or change a well-established sequence, or take a shortcut, etc. No one is exempt from the necessity to constantly tighten up their self-discipline and review their flying skills. Keep reading and discussing and never let the simple skills and drills become second hand. It is surely wise to react to others' mistakes by learning from them and improving and not being superior or convinced that you are not susceptible to error. Gliders are extremely safe machines if flown by pilots ever aware of the parameters within which they must be operated.

One of the SAC objectives for the year is to improve administration and service to the members which requires the active cooperation of members, clubs, and committees. Fortunately we have had this in large measure, resulting in very few problems so far in membership and insurance returns.

The insurance cards for clubs and private owners were mailed mid-May. If yours hasn't arrived, let us know. The submission of premiums worked well with a minimum of errors in calculating the amounts. A promise was made by our insurance brokers, Johnson & Higgins Willis Faber, at the AGM, to provide copies of the insurance policy to clubs. So far, they have not appeared even after repeated attempts by Bryce Stout to prod them into action. On 2 July, the brokers in a letter promised them shortly.

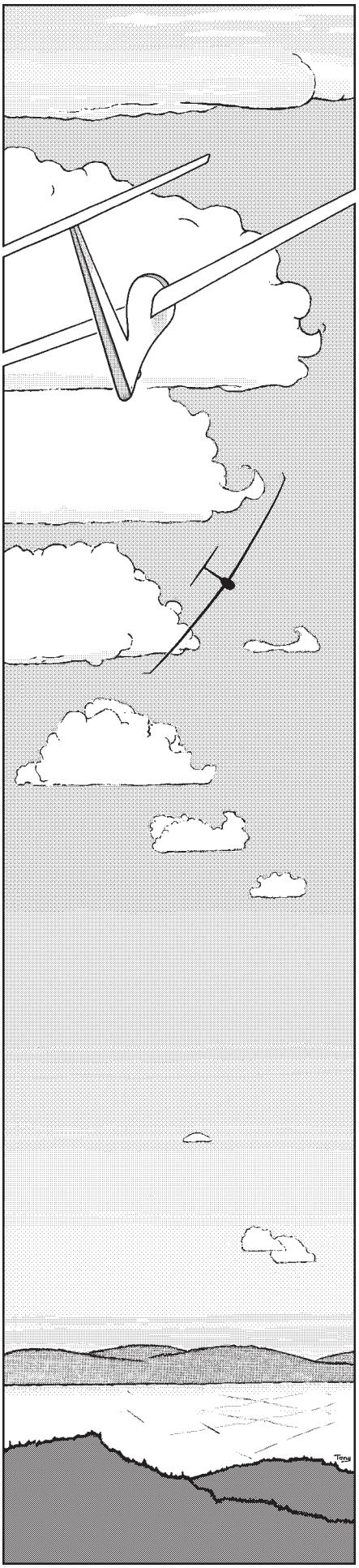
Membership cards will be mailed 25 July along with duplicate copies of club membership lists to clubs. Nancy Nault is asking the clubs to return the duplicate copies of the lists with all the necessary corrections entered. Please take the time to go over these with a fine-tooth comb so we can have our lists accurate and current. Nancy has worked hard at this project and knows she will get your support to provide professional copy.

Instructor lists and official observer lists are being reworked and will be re-issued shortly.

We have had excellent response to our efforts to fill the vacancies in various committees. These have been announced previously but the quick response was most gratifying and will ensure that problems in all our areas of responsibility will be well covered.

Fly safely and make safety a way of life.

Gordon Bruce



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The journal of the Soaring Association of Canada
Le journal de l'Association Canadienne de Vol à Voile ISSN 0827 – 2557

Cover

Kevin Bennett and a group of other cross-country pilots line up on the grid at Black Diamond for the afternoon task. If there's a cu anywhere, someone at the Cu Nim club will be attempting a cross-country flight. Photo by Rainer Zimm

WHAT COMES AFTER THE DIAMOND AND 1000 km?

A history of the FAI badges and the need for changes.

Bertha Ryan, Bernald Smith, & Carl Herold

Otto Lilienthal, the Wright Brothers and others pioneered the very beginnings of the sport we all love so much. For a while, the basic effort of creating a craft that could even briefly maintain itself in the air, was enough. But then, pilots needed goals to measure their personal accomplishments and the original A, B, and C badges were established for one minute duration with an "S" turn, 360 degree turns, and a five minute duration (the latter being 38% of the existing world record of 13 minutes at the time).

In the years that followed, pilots left the ridges to try thermal soaring for distance. The A, B, and C badges were no longer sufficient to measure accomplishment So, in 1932, the Silver badge was established. The five-hour duration (24% of the existing 21-hour duration record) was selected to prove the soaring pilot really could stay up for an extended period. The 50 km distance requirement (23% of the existing 137 mile distance record) made it necessary for the pilot to break away from his takeoff site and go cross-country. The 1000 metre altitude gain (38% of the existing altitude record) required thermal soaring rather than slope soaring.

But accomplishments came fast and the Gold badge was introduced in 1935, requiring achievements of an even higher percentage of the existing records. In addition to the Silver duration requirement, the pilot now had to gain 3000 metres altitude (70% of the world record at the time). This meant cloud flying was necessary (at least in the European environment). The distance leg of 300 km (60% of the world record) showed that the pilot had mastered himself and his craft.

All of these achievement measures came prior to World War II. Soaring had advanced from the mere, but significant, accomplishment of flight itself to a remarkable distance record of 465 miles and altitudes over 22,000 feet. Post-World War II soaring was, at first, merely a continuation of the pre-war accomplishments. The pre-war sailplane glide ratios ranged from 16 to 26. The 1939 distance record of 465 miles was finally broken in 1951 with a flight of 535 miles made in a sailplane of approximately 40:1 L/D.

But the records measure the possibilities: the badges test the skills and achievements of the individual pilot. It was time for another soaring badge. The Diamond badge came in 1949 and required an altitude gain of 5000 metres (normally attainable through wave flying, usually requiring oxygen usage), a goal flight of 300 km (requiring advanced planning and knowledge of meteorological conditions) and a distance flight of 500 km (possibly requiring the pilot to fly in different air masses during the one flight). The altitude was 73%, the distance 67%, and the goal 50% of the world records at the time.

At last, interest in soaring was changing from merely staying up to going someplace. Then, as glass ships came on the scene, it became important to get there fast — not just for speed, but for more distance in the available soaring day. Duration records were dropped in 1955 and the 200 and 300 km speed records added as record categories.

The speed and distance world records from 1945 are shown (*on page 22)* in Figures 1 and 2. There were 500 Diamond pilots worldwide in 1966, the distance record was over 647 miles, the speed record 78 mph, and the absolute altitude record over 46,000 feet. By 1986, there were 4000 Diamond pilots worldwide, the longest distance flown was 1023 miles, the fastest speed 121 mph, and the highest altitude achieved 49,009 feet.

The sailplane distance record increased 39% in the first 20 years following World War II and 58% in the next 20 years. Speed records did not even exist until the early 50s and more than doubled between 1952 and 1982. What accounts for these large increases? Composite materials: first glass, then carbon, allowed smaller airfoil thicknesses, increased maximum lift coefficients, reduced profile drag, higher strength to weight ratios. The increasing trends of performance parameters such as aspect ratio, wing loading, and max L/D show no sign of levelling off.

continued on page 22

The SOARING ASSOCIATION OF CANADA

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

free flight is the 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.

All material is subject to editing to the space requirements and the quality standards of the magazine.

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5 Deadline for contributions
5th day of each ODD month

L'ASSOCIATION CANADIENNE DE VOL À VOILE

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.

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

vol libre est le journal officiel de l'ASSOCIATION.

Les articles publiés dans **vol libre** sont des contributions dues à la gracieuseté d'individus ou de groupes enthousiastes du vol à voile.

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

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

Les textes et les photos seront soumis à la rédaction et, dépendant de leur intérêt, seront insérés dans la revue.

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

Pour changements d'adresse et abonnements aux non membres de l'ACVV ($18.00 par an/$24.00 à l'extérieur) veuillez contacter le bureau national.

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5

OPINIONS

A RESPONSE TO COMMENTS ON, "BERNOULLI, BAH!"

Dear Sir,

A recent letter by Mr. Malebranche has questioned several points in my article, "Bernoulli, Bah!" I would like to remind him that Newton's second and third principles are always correct, while Bernoulli's Theorem is an approximation. It is, in fact, just the 'Law' of Conservation of Energy applied to fluid flow and, as such, is only true if all the forces acting are conservative; this is not the case for real fluids. What I'm saying is that, in a case where the velocity and potential are completely known in the vicinity of an airfoil, application of Newton's principles will allow a precise definition of the total force on the airfoil, while application of Bernoulli's Theorem will only allow an approximate calculation! In that sense Mr. Malebranche is wrong in stating that the Newton theory is a 'failure'. The law of conservation of momentum is a truly fundamental physical law—the 'law' of conservation of mechanical energy is not.

However, this is all really beside the point. I only wanted to point out that it is possible to use Newton's third and second principles to derive an approximate theory of flight in a straightforward manner. The approximations were not in the use of Newton's principles (they are absolutely correct), but in the assumptions of flow round an over-simplified airfoil. It was these latter assumptions which resulted in the $\sin^2\theta$ dependence instead of the simple $\sin\theta$. I thought I had adequately emphasized my approximations in the text.

I, personally, would be delighted to see a straightforward derivation of lift using Bernoulli's Theorem which truly was suitable for inclusion in a freshman course in physics or for use in a book for pilots and which was qualitatively correct. Perhaps Mr. Malebranche could provide us with one? Indeed I challenge him to do so!

This leads to the main point which I wished to bring out in my article; the Bernoulli explanation is always advanced in elementary textbooks in a completely qualitative manner — there is really nothing into which the student can sink his teeth. The explanation, using Newton's principles, is just as 'correct' (actually is more so), and has the virtue that you can use it for something. On this basis alone, you must agree the Bernoulli explanation is the poorer of the two.

Finally, I acknowledge that the explanation I advanced did not originate with me. I first saw it in an article in, I believe, 'The Physics Teacher' a number of years ago. I did not mean to imply that I was the first to think of it — I did however derive the particular relationships I presented.

James Koehler
Saskatoon Soaring

Jim also wrote to me earlier to point out that I had made an error in drawing Figure 4 of his article in ff 2/87: the large arrow indicating the motion of the wing is reversed. editor.

AVIATION SAFETY ADVISORY WEAK LINK FAILURE

On 2 June 1985, LET L-13 Sailplane, C-FFYR was being towed by a Cessna 305 aircraft when the 'weak link' failed at the glider end of the tow rope. The sailplane crashed while attempting to land and was substantially damaged. The broken link was sent to the Canadian Aviation Safety Board Laboratory for failure analysis. Engineering Report LP 271/85 refers.

The link met or exceeded the minimum strength requirements outlined in FAR 91-17 for glider tow operations. The mode of failure was overload. High transient loads due to jerks on the tow line or wind gusts could have been sufficient to fail the link. Although meeting the minimum requirement, the link rope (polypropylene) had lost some tensile strength believed due to weathering (from a nominal 1250 lbs. when new down to approximately 880 lbs, the lower limit). The age of the rope was not determined.

The report notes in para 2.10 that tests made on polypropylene have shown that this material can lose over 50% of its tensile strength in a year due to the effects of weathering under strong sunlight conditions. In an unstabilized grade of this polymer, an outdoor lifetime limit of only 2.5 months has been recommended by some experts. Few sailplane operators are aware of the degradation properties of this material.

As this polypropylene rope is commonly used in glider operations for tow ropes and weak links, the Soaring Association of Canada should consider disseminating information on this material to gliding operators and encourage them to establish calendar life limits for polypropylene tow ropes and weak links.

May I be advised of action taken.

signed, R. W. Slaughter
Director, Aviation Safety Programs

A SUPER SAFARI

An American pilot report on the first cross-BC soaring camp. Eric travels to many gliding events and placed third in the 1983 Nationals in Claresholm in a Libelle.

Eric Greenwell

"Soaring Safari Across Southern BC" read the headline in the Seattle Glider Council bulletin. I couldn't pass up an opportunity like that, so I cancelled my plans for the Minden regional contest and sent my cheque to Charlie Wilson, the organizer in Vancouver.

Because the safari didn't leave from Princeton until Monday, May 18, I flew out of Wenatchee, Washington, on Saturday, hoping to fly to Princeton. This didn't work out so my wife and I drove there on Sunday, May 17.

We arrived in Princeton in time for some excellent local soaring under 12,500 cloud bases. With bases like that, "local" means to Penticton and nearly to Oliver, our next day's goal. The evening barbecue was pleasant company but it was awfully chilly. The week before I'd flown on a 100 degree (F) day . . . silly us, we thought it might be warm in Canada, too.

The attendees were:
- Charlie (Pilatus and towplane) and Trish Wilson . . . Vancouver
- Don Hill, Joe Gegenbauer, Dave Baker (all in the Twin Grob) . . . Vancouver
- Rick Ryll (ASW-19) and Susan Merryweather . . . Calgary
- Stephen Johnson (Pilatus with Charlie . . . Ashcroft, BC
- Eric (ASW-20C) and Jan Greenwell . . . Richland, Washington

Princeton to Oliver

The morning brought clouds and sprinkles, so Jan and I toured the town waiting for the weather to improve. After lunch, Rick and I flew around the area for a while, until it appeared the 8500 foot bases and snow showers were going to deteriorate further instead of improving. Flying on tiptoes towards Penticton finally put us within reach of Oliver. Good lift over the valley let us wander up and down it at will. Charlie took off too late to make the same trip with the Pilatus, so he and the others eventually drove to Oliver.

Oliver to Grand Forks

Heavy skies again dampened out morning enthusiasm. That afternoon Rick, Steve, and I climbed up quickly to the 7500 foot bases (Oliver is 1000 asl). The mountains to the east had snow showers, so we flew down to Oroville on the US side of the border attempting to bypass them. I struck out probing to the southeast and ended up slope soaring a couple miles from the Oroville airport, while the others retreated and eventually landed back at Oliver.

After two hours between 1000 and 2000 agl, the sky finally lightened enough for the sun to kick off a thermal. Cu began to pop in the east. With hope that Grand Forks might still be mine, I carefully worked the narrow two knotter to cloudbase. What a disappointment to find it was now only 5500 feet! I radioed Jan that I was giving it up, then directed her to the airport at Oroville. That saved her backtracking to Oliver from Osoyoos.

While we were de-rigging the glider, a very agitated US Customs official appeared and began to question us. Soon he was very heatedly exclaiming that we'd broken the law by landing there without giving them an hour's notice, that he was going to seize the glider until the morning, that we'd have to appear at Customs at the border where they would "mitigate the fine", which was a maximum of $500; plus there was a $25 yearly landing fee and a $25 overtime charge because it was after normal hours.

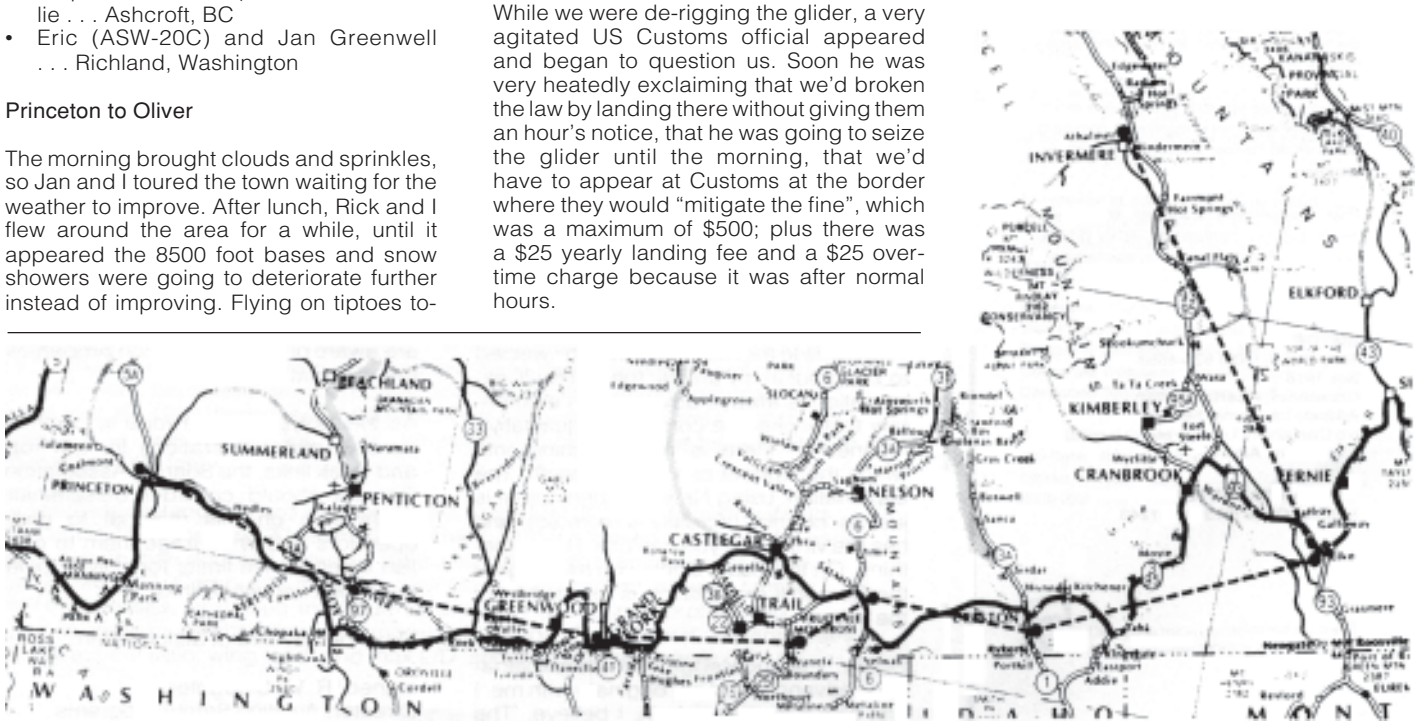
Well, I had thought a US pilot landing a US registered aircraft on a US airport would get a better reception. Kinda made the 20 miles back to Oliver seem like the better choice, overall. Too late for that, so I assumed my best "confused but cooperative" personality, something that I can do very convincingly because I've had so much practice.

Fortunately, when he called the Customs office to talk to his supervisor, he found that Jan had told them what was happening when she crossed the border on her way to the airport. It was a much calmer man that came back, letting us off with only a stern warning not to do it again. We did some dignified grovelling, then left immediately for Grand Forks before he changed his mind.

Grand Forks to Trail

The facilities at the Grand Forks airport were first class. A small building with an electric combination lock (the mandatory frequency digits let you in) contained the lounge, restrooms, FSS phone, and, most amazing of all, instructions for pumping your own gas! Yes, you simply fueled your plane, filled out a credit card slip according to the detailed instructions, imprinted it with your card using the imprinter bolted to the wall, then placed it in the slot provided. Canadian pilots must be a fine lot.

Charlie and I got a pretty good start, but soon had to backtrack to the slopes near Avey when the clouds ahead failed us. Rick got a slow start after us so was forewarned to work the conditions carefully. He slipped over the mountains to Trail fairly easily hours before I finally worked back up to the 9000 foot cloudbase. The increasing amounts of cloud and snow showers made several attempts necessary to clear the mountains east of Avey. Charlie landed at Avey, correctly figuring the Pilatus wouldn't have much of a chance so late in the day.



Lots of crew for Eric's outlanding on the east side of the Creston valley.

Trail to Creston

It was Steve's turn to fly the Pilatus on what he hoped would be his first cross-country. Rick and I flew with him to Salmo, probably distracting him terribly with our radioed advice. From there, the bases were high enough (though a bit on the heavy side) that it appeared the two glass ships could continued safely to Creston, so I left Steve over the Salmo airport (actually a lovely grass strip in the middle of a golf course). Tiptoeing along at cloudbase about halfway between Salmo and Creston, I realized I was heading southeast towards Priest Lake in the States, and not east to Creston. A left turn took me over the mountains to the sun-filled valley. Meanwhile, Steve in the Pilatus had got low on the east side of the pass and found himself committed to Creston, like it or not. I could hear Rick overhead guiding him down valley and to what lift he could spot.

Fortunately, Steve remained cool, followed directions, and the Pilatus eventually reached the valley floor with enough altitude to snag a dust devil. After that, he fell upon the Creston airport with great relief. It was more than I recommend for a first cross-country!

Rick and I joined up under a tremendous cloud street over the mountains just to the east of Kootenay Lake. Soon we were 50 miles up the lake at Kaslo where we turned back. I didn't notice that the lift had moved inland, so half way back I found myself below the ridge tops making an uneasy glide back to the fields near Creston. Rick did notice the difference and moved inland where he was able to stay high. A weak thermal north of town put me under another cloud street. I ran it over the cliffs east of Creston and then over to Bonners Ferry twenty miles into the US. What a day! A 50 mile flight to Creston, then another 180 miles after we got there.

My wife radioed that I should stay over Canada lest history repeat itself. Since it was late anyway, I coasted back to the 5000 foot high cliffs just three miles to the east of the airport. Air streamed up next to the hot, sunny face fast enough to support an 80 knot level cruise. Very soul-stirring, with 2500 feet of vertical mountain above and below.

We fly at Creston

The next day had some erratic weather that made for challenging flying. I got stuck on the wrong side of the mountains, eventually getting high enough to sneak around the south (US) end with enough altitude to make the field. A minute of seven and eight knot sink knocked the socks off that idea. When I announced I was going down about five miles from the field, the first reply was, "Which side of the border?!" Later, I found out that Charlie had rushed to the phone to notify Customs.

I landed in a good field with the hardest dirt clods I've ever seen. Fortunately, no damage. The glider was at greater risk a few minutes later when a pack of 12 to 15 children, ages four to 17, showed up, followed shortly by their parents. All were well-behaved and quite neatly, if quaintly, dressed. A puzzled look met my "What country am I in?" question.

After detaching the little girl that climbed up the tail boom using the TE probe for balance, I assigned an older boy to keep the younger ones back a bit. The eldest boy insisted it would be far easier to drive me the three miles to the airport and lead us back, than to give directions. I think it was mostly an excuse to drive their car. The whole safari followed us back, making easy work of the retrieve.

Creston to Elko

Over-development and snow showers drifted across from clouds on the west side of the valley. We all took at least two tows, but only Rick was able to break out of the valley and work slowly towards Elko. The conditions improved considerably to the east, allowing him some fine soaring for his strenuous efforts near Creston.

Elko to Invermere

Rick, Charlie, plus Joe and Dave in the Grob struggled with spotty lift on their way north. I flew northeast in the better conditions towards Sparwood because I had to start home from Elko that evening anyway. With bases at 10 to 11,000 feet and good lift I went about 30 miles past Sparwood, then was nearly undone coming back as the area over-developed. Meanwhile, the others found slowly improving conditions.

I tried to connect with their area so I could land at Cranbrook but had to retreat to Elko. Driving home late in the day, we could hear snatches of radio talk as they continued to (or at) Invermere. Several weeks later Charlie told me everyone did make it.

We had eight days of good soaring in the mountains and valleys of Canada. Too bad the rest of you missed it and gotta hear a Yank tell about it! Jan and I have our name on the list for next year's trip when we hope to see more of you. We always have a good time in Canada . . . I bet you would too. □

1987 CANADIAN NATIONALS

.. Six tough days ..

Tony Burton (EE)

June is the best month in Edmonton for soaring, however, as you will read in meteorologist Bill Laidlaw's piece below on the climatology of the area, June was skipped this year and the weather patterns moved directly to July.

Now that the contest has ended and all the days have blended into one another, the general impression that remains is one of

- 63% outlandings, the highest of any recent Canadian contest,
- 20 knot headwinds,
- cirrus in the way all the time,
- 3 pm starts to the day.

But despite the apparently disappointing conditions listed above, six days of flying were accomplished. The best pilots went fast when it was possible, but they were best especially because they knew when to be patient and extract the maximum distance from weak lift.

Jörg Stieber was the clear winner in the Standard class, being the only one in the contest to get home every day. Although 15m class winner Jim Oke missed Jörg's feat by only a few kilometres on one day, Jörg also dominated the flapped pilots.

In addition to the soaring highlights, other memories will be held by the competitors:

- eastern pilots bemused by the long twilight evenings — the northern horizon giving enough light to read a wristwatch at midnight.

- the birth and approach of the truly awesome evening squall line on 9 June, with a sound and light show that brought everyone out onto the clubhouse porch from the flying videos where the assembled crowd applauded the better lightning strikes with comments like, "that's a 5.4".

- the very good ground organization, and the many welcome special events organized by Nancy Feyerer, although she refused credit for the storm when the power blackout sent us to bed early.

- being able to get preliminary scores from Canada's oldest continuously active glider pilot and computer programmer, George Dunbar, almost before the pilot finished his rollout.

- excellent task setting under difficult conditions — the distances were not overcalled (despite the outlanding rate) and the most soaring was extracted from the available lift; only the vagaries of cirrus cover was the "gremlin" of most outlanding pilots.

- the last contest day which saw more than the usual waiting around for lift, plus a runway change, and then the "go" for a 131 km task which saw most pilots starting out under an almost total overcast after 4 pm! . . and the banquet was due at seven . . . and almost everyone made it around for a change.

As was done last year, the details of the contest will be described from the viewpoint of several of the participants. For myself, I welcomed the less-than-racing conditions since it sure helped even the odds between all those ASW-20s and my RS-15 homebuilt!

DAY 1 Terry Southwood (PM)

June 3 285 km triangle
Westlock — Vilna

A 25–30 kt northwesterly wind at altitude and a lack of development over the original course area to the southeast caused a change of task on the grid which, together with a lack of one of the towplanes, caused a late (3 pm) start for most of the competitors . . .

A novice at the Nationals — impressions of Day 1:

Panic, after discovering a blown fuse after marshalling onto the line. Why now?

Consternation, after discovering that the audio on the electric vario is out after hunting down a replacement fuse.

Butterflies, as my turn comes to takeoff with full water ballast (for the first time). Standard class ships are landing for relights, which doesn't help.

Joy, after a good takeoff, good tow, and release into lift with the bird climbing away beautifully.

Fun, cruising quickly and quietly (see "consternation" above) out on course to the northwest with streets and gliders marking the lift.

Concern, crossing the blue hole upwind into Westlock.

Relief, finding good lift to get into and out of the turnpoint. More concern and relief simi-

CONTEST CLIMATOLOGY

William J. Laidlaw
Weather Services Specialist

There are places on this earth where the meteorologist can confidently predict dry sunny weather, secure in the knowledge that it never rains there at that time of the year, or at least hasn't in recorded history. Chipman, and in fact the entire province of Alberta, is not one of those blessed spots. And in 1987, the weather gods decided to make life downright frustrating for all concerned.

A little note on the climatology of the region is in order. Early June is usually a favoured time for soaring in this part of the world: the Arctic Jet Stream has finally retreated to its summer home north of the 60th parallel, and the Maritime Jet still lies to the south. The flow is usually fairly zonal aloft, though the persistent trough off the west coast is setting up shop for the summer. As a result short-wave features pass eastward through the region fairly rapidly, and their effect is not very pronounced. Temperatures are comfortable, with the mean high in the low twenties, and the low above freezing. Cloud cover is generally scattered because the airmass is fairly dry, the snowpack having long since evaporated, and Pacific moisture being largely wrung out in the act of crossing the British Columbia mountains. The sun is still putting out nearly its annual maximum radiation, the peak coming in early May. All this suggests that daytime heating thermals should be well developed and have nice fat cumulus signboards. Winds, while westerly, are generally light, so wind shear and low level turbulence don't usually cause much of a problem. Rain does occur, on about two or three days out of every ten, but it is mostly in the form of light showers from towering cumulus, so it doesn't leave great messes in its wake.

This year, things were different. You could say that June was skipped, and we went directly from May to July. Arctic air surged south for a last blast in late May, dumping a whack of snow and damaging gardens, without making a dent in this year's crop of caterpillars. At the same time, the west coast trough set up with a nasty northwest-

lar to above getting to a cloudstreet south of the second leg.

Frustration, as the cloudstreet seems to be counterfeit (a common complaint today).

Mixed feelings as I decide to glide home from the second leg as it's late in the day, and an outlanding is certain.

Fun, doing a finish — even if it isn't legit!

Surprise, to find that no one else is back yet. Subsequently, there are only three finishers in the Standard class and only Jim Oke in the 15m class — each a superb effort made slow and difficult by the long into wind first leg and late start.

Tony Burton

Standard winner — Jörg Stieber

Tony Burton

15 winner — Jim Oke

Happiness, over an excellent barbecue, an ingenious repair by my crew, and an enjoyable flight.

DAY 2 Paul Thompson (T2)

June 4 245 km triangle
Viking — Camrose

A 15 knot southeast wind today in the lower 5000 feet and westerly winds above that. There was also a possibility of late afternoon cb. The original task of 349 km was shortened when convection was slow to start as a result of cirrus moving in from the west . . .

It was another day of into wind on the first leg, although the wind wasn't as strong as yesterday. After the sniffer (JS) topped out at 5800 msl (3600 agl) the field launched. A couple of pilots couldn't get away from the field, but the majority headed out on course. Still expecting the famous Alberta soaring conditions, I headed towards Viking full of water, but soon realized that the climb was more important than the cruise and dumped it halfway down the leg.

I purposely went into the first turn low and planned to climb back up while drifting west to Camrose, but I had troubles and got low three more times on this leg. JS and 77 (Jim Oke) passed me as if I where standing still. I followed Jim for a while down to 1500 feet just before the second turnpoint and he found the best thermal of the day for me. I figured that with his speed, he's only stopping for ones like that.

Somewhere on this leg, a calm voice came on the air and said that now was the forecast time for the towering cu and cb and I chuckled as I looked up at the cirrus shadowing the course. There were a few other comments that also expressed the frustration that was in a lot of the cockpits at the time.

Even though this was not a typical Alberta soaring day, I still managed to find a couple of thermals that registered six knots on the averager, although on the whole, I found the thermals broken and difficult to centre (if there was a centre to them). When the cirrus thinned out, the lift improved so if you were high and happy at the time, you could make good time, if not, you got slowed down.

Fourteen out of 25 contestants finished, and in the Standard class, the three Juliets (JS, JH, and JM) finished one, two, three again as on the first day but in a different order. This Juliet lady was going to be tough to beat. In the 15m class, Jim Oke won again, carrying water all the way.

southeast tilt, its southern end lying in the northwestern States. This brought warmer than usual air north into Alberta, setting up a very sharp ridge by default. The Arctic stream retreated, but only a little to the north and the east, maintaining a southward push over Saskatchewan and Manitoba. What now existed, well-established in time for the Nationals, was a high frequency, high amplitude wave pattern in the atmosphere, as unpleasant as a dentist's drill in high gear. This pattern is more typical of July and August, though the ridge is usually broader than this.

And what did this do for the poor disillusioned contestants and staff? Well, for one thing, it gave tephigrams that were deceptive. Theoretically, there should have been bags of lift from daytime heating most days as the airmass generally had more energy in it. The small scale troughs rotating out of the pacific maintained a lot of available moisture in the 10,000 to 30,000 foot elevation band. The sharp ridge brought a lot of small scale speed maxima roaring through the region at the tropopause so there was dense cirrus to kill a lot of the lift, and the chronic broken altocumulus from the mid-level moisture just ensured the dirty deed. All the while the Arctic jetstream lurked to the northeast, so there was a sharp temperature gradient present, and that drove low level winds to the 20 to 30 knot range on most days. These winds were usually crossed with the mid-level winds, so there was shear to cap any remaining lift and ensure its scratchy nature. There were a few days when it was possible to ride the shear waves, once you got up to them, but it was not an effect you could count on. For the last three days of the contest, a series of sharp small scale features with very cold core temperatures plagued things further, triggering violent high-based cumulonimbus, the first one giving a spectacular lightshow to close a barbecue, before trying to turn the field into a snipe marsh. It was followed by another the next afternoon, threatening the field with hail. All in all, the weather was a challenge.

From my point of view, the biggest problem was pinpointing the timing of these disturbing events. In a lot of cases, the triggering mechanism was a small scale feature that existed in the holes in the observing network, and finding them was a matter of luck rather than good management. I did enjoy the challenge, and found it a real joy to work with a group that was both knowledgeable and optimistic. My thanks to all for two of the most interesting weeks I have ever had. □

DAY 3 Annemarie Mueller (PX crew)

June 6 316 km triangle
Sedgewick — Ferintosh

Winds were 20 knots westerly at altitude and southeasterly on the ground. Cloud bases forecast to 9000 with possible cb in late afternoon. Critical factors in the task today were thick bands of cirrus which moved in from the west and covered the cloud streets on the first leg, and later over-development and showers to the west that shadowed the third leg. It was a good racing day until most pilots screeched to a halt on the way north up the third leg and most landed short. Only Jörg Stieber finished in the Standard class, and only he and Jim Oke have made it home all three days . . .

After several days of so-so weather, Day 3 looks pretty good, but the thought is again there… will it really be a good day with a completed task or a marginal day and outlandings? The task is announced and everyone scrambles to get their ship ready and on the line. A long wait then dampens the enthusiasm as pilots and crews become anxious. Tempers flare one moment and then it's hugs, pats on backs, good luck wishes and thumbs up for take off. They are well organized and as smooth as clockwork.

Before long one can hear the sailplane gaggles circling above, making some high-pitched whistles like some rare breed of bird. Then it's over the start point and they're off!

Now the waiting starts, some in the comfortable new clubhouse, others in trailers, all near a radio. It is a nervous and exciting kind of waiting every day. The closer the finish time approaches, the more anxious the crew becomes, and the thought is: to retrieve or not to retrieve — that is the question. Finally the big white birds and one yellow canary (EE) do triumphantly come home, whizzing through the finish line in a spectacular beat-up!

It's easy to forget that these pilots have probably seen their lives flash before them during the course of the day, but they never let on, climbing out of their ships after a smooth landing trying to look cool, but really looking tired. Pilot and crew relax and have a beer.

For the others not yet back, things don't look good back on course. The phone begins to ring — and that dreadful sound means "Landed out". Every call sees another trailer quickly hooked up and on the road to the stranded pilots.

On this evening, one sees the satisfaction and happiness reflected on the faces of the winners of the day and those who managed to cross the dead air on the last part of the flight. Those who didn't make it may have faces as long as their wings, but regain enthusiasm to post-mortem the day and congratulate those who made it home. Throughout the contest, the look of victory and defeat on the faces of pilots and crew alike reflects the theory of flight, especially the part on lift and sink.

During dinner, wild tales, tricks of the trade, and competition strategies are exchanged — everyone psyching up for the next day, when the incredible scenario starts all over again. Amazing isn't it?

DAY 4 Jim Oke (77)

7 June 151 km quadrilateral
Smoky Lake - Thorhild - Redwater

Winds northwesterly at 25 knots, an upper high due in the afternoon promises warm air aloft to cap convection at 6000 feet. A layer of cool air at the surface is very reluctant to warm to the trigger temperature. Blue thermals predicted.

Sunday dawned clear with a strong west wind and the promise of a good day on the heels of the previous day's ambitious task. Numerous small cumulus developed at low altitude over Chipman and to the north during the morning due to mechanical turbulence according to the meteorologist. It confirmed my suspicion of a good day although the morning training flights were getting no lift from them.

There was some grumbling when only a 151 km task was called to the north, but the cool surface temperature and warm air aloft gave a late start to the day. Larry Hill (JH) was launched as a sniffer at 1330 and reported weak to broken lift to 2000 feet which led to a delay in the launch of the rest of the field until 1415. Spectators were treated to the sight of large gaggles forming up over the field as pilots struggled to climb for the start.

Most pilots were able to reach 3000 feet before setting off with the majority departing Chipman around 1530. The leg to Smoky Lake was covered by small cumulus beginning about 15 km out, and consistent two to three knot lift was available with most pilots (except for the late starters) making good progress.

Heading west from the first turn, however, the cloud thinned out and disappeared and gaggles began to form as the field scraped around in one knot lift to 2500–3000 feet agl; fortunately the winds at all levels were less than forecast. The weak lift was consistent and occasionally marked by wisps as pilots made steady progress with virtually the entire field reaching Thorhild in two big gaggles — all complaints about undertasking were definitely gone by this time.

The short leg south to Redwater was more difficult as the lift seemed to be cycling more slowly. A large gaggle formed south of Thorhild working zero sink while others crept off cautiously on course. Lift was available near Redwater and the Thorhild gaggle moved south to join in after scraping up a few hundred feet.

From Redwater, a final glide of about 40 km was needed, more than most ships could handle from the 3000 feet agl available. Setting out into an apparently dead sky, some pilots found bands of weak lift that gave a fairly easy glide home. Terry Southwood (PM) and Jim Oke (77) led the pack home at around 1810 with others following in quick succession.

Again, the spectators at Chipman could watch as some unlucky pilots who missed those bands of lift stopped five kilometre out at low altitude to struggle up a few more hundred feet to make it home. Kevin Bennett (X1) was one of these and finished at 57.2 km/h to win the 15m class. Bryce Gormley (GO) landed one field short of home after leaving the same thermal as Kevin. Larry Hill got stuck in some extended sink after his last thermal and got home but couldn't reach the finish line. Jos Jonkers (JM) just edged out Jörg Stieber (JS) to win the Standard class for the day (56.5 versus 56.4 km/h).

DAY 5 Harry Pölzl (KC)

8 June 172 km
St. Paul and return

Winds southeast at ten knots at all levels, blue thermals, cirrus moving in in the mid-afternoon giving weak lift. . .

The day starts with a beautiful sunny morning and promise of a good soaring day. At the morning weather briefing, the news is not so good with height of convection only going to 3500 agl at the best. By the time launch starts around 1415, the cirrus casts its shadow over the airport and is rapidly moving towards the task area.

As I am in the last line of the takeoff grid, I only get launched around 1500. By now, the first 15 km out on course is in shadow and the few gliders I can see are low and milling around in weak lift, so I climb to 3000, take my start photo, and head off towards the sunlit ground to the north of courseline.

On reaching the sunshine, the thermals perk up and the race is on. Flying far north of course, I catch up with a gaggle halfway to the turnpoint, which we round by 5 pm. By now the cirrus has moved further north and I feel we are running out of time. I push on alone only to be caught up again by the gaggle after 30 km. 25 km from home I start a marginal final glide accompanied by Peter Masak (PX), who is slightly higher than me, and by 1830 I sneak up on Al Sunley for a rolling finish.

I win the day, Peter is second, and nobody else in the 15m class sees the finish line. A few pilots make it within a few fields of the airport. In the Standard class, Jörg Stieber wins the day ahead of Jos Jonkers, who are also the only finishers there.

DAY 6 Kevin Bennett (X1)

11 June 131 km
Redwater — Smoky Lake

Winds southwest at 15 knots, weak lift, mostly blue thermals, possibility of early convection and of broken cirrus.

With the forecast and the evening banquet in mind, a task of twice around a small triangle was called. The first sniffer, Bryce Gormley (GO), was launched shortly after noon only to return shortly thereafter. A second sniffer went up about 1320, and was able to stay up for a half hour in weak low level lift before he too fell out.

THE WINNERS ARE ...

Bacardi Trophy — Best overall pilot
4350 points of a possible 4579 (handicapped): **Jörg Stieber** (JS)

Mix Memorial Trophy — Standard class
4350 points of a possible 4555:
Jörg Stieber (JS)

MSC Trophy — 15m class
4882 points of a possible 5065:
Jim Oke (77)

SOSA Trophy — Best novice pilot
2172 points of a possible 4579 (handicapped): **Terry Southwood** (PM)

Team Trophy **McVeigh/Zabrodski** (KM)

Dow Trophy — fastest Std class triangle
81.3 km/h (Day 3) **Jörg Stieber** (JS)

Dow Trophy — fastest 15m class triangle
101.2 km/h (Day 3) **Jim Oke** (77)

By this time significant cirrus cloud dominated the area, although cu were visible out on course to the northwest in the sunshine. The task was shortened to once around the triangle, and at 1430 a third sniffer, Peter Masak, was launched. Peter was able to make a good climb in a patch of sunshine so the grid was finally pulled into the air at 1500. During the launch, another patch of thick cirrus moved in and several pilots in both classes had to get relights. The Standard class gate opened around 1530 and the 15m class near 1600. Eventually, the cirrus moved away from the field and a few cu began forming at 7000 agl along the beginning of the first leg. Late starters were able to take good advantage of them and gain significantly on the early pilots. There was still some cirrus to worry about on the first leg to Redwater, but the rest of the course was mainly in the blue with occasional wispy cu and some high cloud over the third leg on the final glide.

Dave Marsden (VR) was able to get a good high start under cu and race to the second turnpoint at Smoky Lake in time to get one last good climb and fly straight home to win the day at 90.2 km/h. Peter Masak was second at 85.6 km/h. Larry Hill, after three launches and a late start, cleaned up in the Standard class with a speed of 79.8 km/h, so there is a message here about never giving up!

So that was it, an interesting time was had by all, and everyone made the Ukrainian dinner at the banquet. There were no accidents, no close calls, no protests and the only incident was a jammed tow rope on JH on Day 1. Thanks to Contest Director Al Sunley for a well-run show, to the many behind-the-scenes volunteers from ESC, to Dave Lacy for the precontest management, and to crewpersons Beth and Vicki for help on the line. □

FIFTEEN METRE

				Bacardi Cup Score		DAY 1			DAY 2			DAY 3			DAY 4			DAY 5			DAY 6			Total Score
				pts	pos	km/h	pts	pos	km/h	pts	pos	km/h	pts	pos	km/h	pts	pos	km/h	pts	pos	km/h	pts	pos	
1	Jim Oke	77	ASW-20	4212	3	73.9	933	1	74.4	1000	1	101.2	1000	1	53.2	866	7	(179.4)	632	5	84.0	451	3	4882
2	Peter Masak	PX	ASW-20	3440	6	(283.1)	879	2	(96.1)	216	12	96.0	979	2	55.2	896	6	58.0	740	2	85.6	460	2	4170
3	Larry Springford	S1	ASW-20	3382	7	(265.6)	820	3	59.4	849	6	(278.0)	697	10	55.8	904	1	(161.9)	563	6	61.1	323	9	4156
4	Walter Weir	2W	ASW-20B	3469	5	(245.8)	754	5	63.9	894	3	79.2	931	4	49.9	818	9	(77.8)	229	10	81.4	436	4	4044
5	Harry Pölzl	KC	ASW-20B	3277	10	(78.0)	194	13	65.3	908	2	(304.4)	768	5	55.7	903	3	59.2	743	1	72.5	386	6	3902
6	Tony Burton	EE	RS-15	3545	8	(218.8)	664	8	61.0	865	4	(292.0)	734	8	52.5	856	8	(95.1)	p261	8	62.6	331	8	3711
7	Bruce Hea	26	Ventus	2713	12	(222.3)	676	7	(132.1)	318	11	89.7	955	3	55.7	903	3	(185.1)	655	4	0.0	0	13	3507
8	Dave Marsden	VR	DG-202	2836	11	(249.8)	767	4	59.8	853	5	(292.0)	734	8	(113.4)	354	12	(34.3)	57	13	90.2	485	1	3250
9	Kevin Bennett	X1	DG-200	2467	13	(66.0)	154	14	(96.1)	216	12	(258.8)	645	13	55.8	904	1	(186.2)	659	3	76.1	406	5	2984
10	Nick Bonnière	ST	Pik-20B	2294	14	(104.1)	281	11	55.7	811	7	(295.3)	743	7	(130.1)	417	10	(153.9)	531	7	(18.7)	0	13	2783
11	Terry Southwood	PM	ASW-20	2172	16	(155.9)	454	9	(159.1)	395	10	(278.0)	697	10	55.3	897	5	0.0	0	15	(91.1)	149	10	2592
12	Rick Matthews	R2	ASW-20	1848	20	(227.2)	692	6	(180.3)	455	8	(299.4)	754	6	(101.8)	p266	13	(84.1)	254	9	dnc	0	13	2421
13	Bob Carlson	T7	Pik-20D	1597	21	(101.5)	272	12	(162.5)	404	9	(229.9)	567	15	(73.3)	202	15	(24.5)	18	14	65.7	348	7	1811
14	McVeigh/Zabrodski	KM	Pik-20B	1390	22	(150.8)	437	10	(38.2)	52	14	(276.9)	694	12	(88.1)	258	14	(77.8)	229	10	(40.7)	43	11	1713
15	Buzz Burwash	AB	ASW-20FP	1162	23	(27.3)	24	15	0.0	0	15	(257.9)	642	14	(127.0)	405	11	(73.8)	213	12	(40.6)	43	11	1327

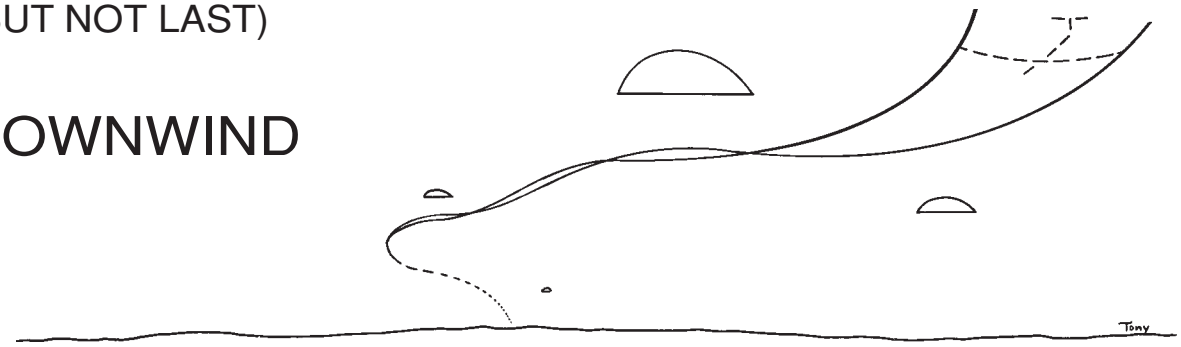
STANDARD

1	Jörg Stieber	JS	LS-4	4350	1	62.3	770	2	74.7	1000	1	81.3	1000	1	56.4	887	2	52.5	267	1	64.0	426	3	4350
2	Jos Jonkers	JM	S. Cirrus	4300	2	60.0	755	3	72.3	963	2	(308.6)	901	2	56.7	890	1	46.5	p244	2	70.5	477	2	4230
3	Larry Hill	JH	ASW-19	3830	4	74.9	850	1	71.7	953	3	(283.6)	823	5	(151.3)	593	5	(157.9)	183	3	79.8	548	1	3950
4	Paul Thompson	T2	LS-4	3287	9	(227.2)	477	4	60.0	770	5	(306.2)	893	3	47.8	797	3	(30.4)	14	6	60.0	395	4	3345
5	Bryce Gormley	GO	LS-4	2075	17	(0.0)	0	9	54.0	677	6	(293.8)	855	4	(151.3)	593	5	(3.3)	0	7	(33.6)	29	8	2154
6	André Pepin	DB	Jantar 1	2174	15	(168.5)	342	5	(176.4)	296	8	(221.1)	628	9	47.5	794	4	(83.8)	85	4	dnc	0	9	2145
7	Bruce Friesen	BO	Jantar 2	2013	18	(68.6)	112	7	64.6	842	4	(273.4)	791	6	(10.9)	0	9	(18.6)	0	7	53.8	347	6	2092
8	Andrew Jackson	AJ	Jantar 1	1857	19	(0.0)	0	9	45.9	550	7	(222.4)	632	8	(45.3)	p69	8	(47.4)	36	5	55.0	357	5	1644
9	Jim Feyerer	MF	Jantar 2	1004	24	(39.1)	44	8	(62.4)	80	9	(239.1)	684	7	(88.1)	p263	7	(14.6)	0	7	(40.6)	44	7	1115
10	Dugald Stewart	HG	S. Cirrus	460	25	(84.6)	149	6	(0.0)	0	10	(123.6)	323	10	(0.0)	0	9	(0.0)	0	7	(0.0)	0	9	472

( ) values in brackets are distances in km
"p" with score indicates a penalty applied

MY FIRST (BUT NOT LAST)

DIRTY DOWNWIND DASH



Rick Zabrodski
Cu Nim

A lot of people thought I wouldn't do it. "What, are you *crazy?"* was a typical comment followed closely by "Say that again?" and "Really?". The idea had started with the late Julien Audette who had promised a steak dinner to any Alberta pilot who flew in their glider to Regina. Ursula Wiese and her June 12, 1986 flight of 607 km in a Ka6CR proved that it was possible in something less than an ASW-20. There was also the romantic notion of a "care free" flight in that the foregone conclusion of landing out was already made. A badge or record flight might even be the result. It was this in mind that I made the challenge to my fellow members at Cu Nim to come with me on the first and hopefully annual "June Dirty Downwind Dash". The tentative date was scheduled for June 27, the Saturday at the end of our flying week this year.

June 27 arrived sunny and warm. The weatherman shattered all my hopes for records with a prediction of upper level winds of five to ten knots at 270 degrees. Showers in the foothills were also predicted. On arrival at the field, I was horrified to see the windsock indicating an east wind. Kevin Bennett asked me if I had maps of Golden, British Columbia (actually, I did!) However, I decided to trust the weather reports and declared Indian Head, Saskatchewan as my goal distance, approximately 680 km away.

As Jay McVeigh, my partner and crew, helped me load the 200 lbs. of water into our PIK-20B, I looked to the west with increasing alarm as the sky got steadily darker. Without further delay, we pushed out to the line and I was airborne at 1215 hours. The tow was bumpy and I got off into a three knot thermal that got better until it died at 4000 agl. The black stuff was fast approaching so I headed east for the sunshine towards Okotoks, still not sure if this was going to work. The eastern sky was blue with no sign of cumulus.

Just past Okotoks at 2000 agl I picked up a good blue thermal that again died 2000 feet later. The black stuff was right behind me and I heard CFI Dave Fowlow on the radio stating they were shutting down at Cu Nim, so my decision to press on was not difficult. I told Jay to head out with the trailer while I headed into the sunny blue sky eastwards. Finally about 50 km out, I connected with a thermal that took me to 5000 agl, the next to 6000 averaging five to six knots. The black stuff was still coming from behind, but was becoming more distant.

Then I saw some beautiful cu forming in the distance! Now it became a thinking man's game! Things really sped up for the next 50 km and I was glad to see the clouds moving with a west wind, albeit only at the five to ten knots predicted. A big blue hole over Brooks slowed progress as I got down to 2000 again over town before connecting with another (weaker) blue thermal. My crew actually got a little ahead of me at this point. Two more blue thermals got me to the cu just west of Suffield and it was gangbusters under cloudbases to Medicine Hat. It was 1530 now and another blue hole to cross. From 8000 agl to 2000, and some 20 minutes later I finally found lift under the first cu over the Cypress Hills. It was a dying thermal, but a hawk helped me centre it, and at 1630 I was near the Alberta-Saskatchewan border with a decision to make.

To the north and directly on the courseline was a 100 km cloudstreet that was growing darker by the minute, though the stuff on the southern edge looked like it might be working for a while yet. The alternative was a less well organized collection of cu some 30 km to the south. I was already 30 km south of the courseline so I headed northeast towards Maple Creek. When I arrived, the lift was there, but only two knots. More of a concern was the development of lightning directly north and to my horror, a solid shower line to the east. I had no option but to head southeast again . . . things got really black fast.

Jay was starting to hit the rain as he drove into the stuff along the Trans-Canada Highway north of me. As I went further on south through still air looking for lift it be came increasingly difficult to navigate due to lack of landmarks (southwestern Saskatchewan doesn't have many towns or roads). What had been puffy cu to the south was now 100% cloud. Circling at 1500 feet and dumping water, I realized I was lost. Less baggage on board helped the climb and as I set out on a compass heading east at 3000, I a hit boomer! A fast climb to cloudbase at 8000 agl — to my amazement as there was no sunshine to be seen. Not being one to argue with uprising currents I head downwind again, noting a distinct difference in groundspeed without water. Then I saw Shaunavon 20 km to southeast. Jay reported 200 foot visibility in thundershowers. With rain to the west, north, and east I told him to turn south on Highway 37 at Gull Lake and follow my last-ditch attempt to reach sunshine about 50 km to the southeast. As anticipated, the lift under the cloud deck was getting increasingly spotty.

I never made it to that last big cu in the blue. Down to 2000 with no lift over the past 15 minutes I had one final strategic decision to make. The cu, still 10 km away, looked great; however, I was already low and the terrain ahead looked grim indeed. There was a distinct absence of cultivated fields or roads for that matter. If a tractor won't plow it then I don't want to land in it! A second factor was the increasingly ugly weather that seemed to almost encircle me. A distant landout would certainly risk hail if no damage occurred on landing. At this point, I must thank Jay who certainly was encouraging me to go for it if I thought there was any reasonable hope of success.

Shortly thereafter, it became apparent I wouldn't find that last weak one to get me there, so I set my thoughts to making an intelligent outlanding. I headed the three kilometre north to the road my crew was on and radioed that I would land beside the highway just east of Cadillac. I arrived there with just enough time to pick a good field with easy access after noting the wind, power lines, and fences. The circuit was straightforward and I landed into a north wind without difficulty or damage to our infamous PIK gear doors. It was 1830 hours and I had been flying for over six hours.

As I opened the canopy I could smell, hear, and see the impending rainstorm to the north and quickly hobbled around on my stiff legs to start disassembling the glider. I think we can almost claim a record for retrieving as Jay arrived a scant seven minutes after landing. He was not a minute too soon. The wind picked up rapidly and almost blew us away as we removed the wings. A torrent of rain hit us as we pulled off the field!

Was it worth it — to fly for six hours plus, only to land 28 km short of a diamond? Without reservations, YES. After flying in the nationals and provincials this year, it was most refreshing to fly cross-country without any other glass thermal markers and to fly alone both physically and spiritually. On a day when everyone else decided to cancel their tasks and fly locally at Cu Nim, Kilo Mike flew 472 km. The day was challenging from the beginning to end with its storm fronts, blue holes, cloud decks, and changing weather. I learned a great deal about in-flight decision making and yes, I learned from a few mistakes as well. The countryside was all new to me and I thoroughly enjoyed it all, including the areas that were unlandable.

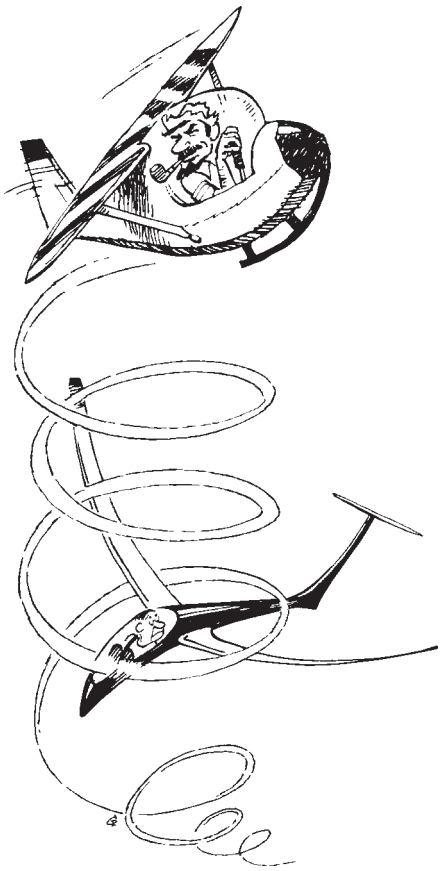
Do it again? You bet! □

THE REAL SOARING PILOT

Origin unknown
from "Vancouver Soaring Scene"

In the book, *Real Men Don't Eat Quiche* author Bruce Fernstein has attempted to define the traits that characterize the "Real Man". Typical Real Men are, among others: Lee Marvin, Clint Eastwood, Sean Connery (but not Roger Moore), Sylvester Stallone, and Margaret Thatcher.

In the same spirit, a definition of a Real Soaring Pilot has emerged, thus providing us with a standard towards which the next generation of soaring pilots can progress, and perhaps bring back the era of heroism and mystique, when one flew solo in a simple primary on the very first flight and the wimps disappeared forever after their first launch.



. . . loves to outclimb a wimp in an LS-4.

HIS FLYING
A Real Soaring Pilot only flies cross-country. Scratching around the home field is not for him. The sweaty hard grip on the stick or brilliant remarks to the lady in the front seat is left to the wimps.

A Real Soaring Pilot flies solo on long cross-country flights, preferably over unlandable terrain, and returns hours after the wimps have tied down their craft and gone home. When he has an evening engagement he will simply fly faster, or settle for 300 kilometres that day. A Real Soaring Pilot rarely flies less than 300 km except during contests, when a wimpy Contest Director has laid out a shorter task. He will not fly in bad weather unless he can fly in clouds. Not just any clouds: Real Clouds with turbulence, thunder, and hail. No wimps to worry about there. The only excess ice he resents is that in his whiskey.

HIS AIRCRAFT
First of all, he never flies a motorglider. He also avoids friendly forgiving types like the Schweizers, and prefers character building designs like the ASW-12, LK-10s, and Standard Cirrus (not just any Standard Cirrus mind you, it has to be one of the early models with pendulum elevator and no feel). Other sailplanes acceptable to a Real Soaring Pilot are the Nimbus 3, ASW-20, LS-3 (but not LS-1 as there is inadequate room for him to flex his muscles), and most vintage types. If he's borrowed the Grunau Baby, he loves to outclimb the wimp flying an LS-4. He is rarely heard on the radio.

A Real Soaring Pilot has short tows, and climbs swiftly in tight turns whether or not the thermals are working. If he misses, he'll be back on the ground before the towplane, and runs to his car to get a second barograph while claiming record setting soaring conditions. When he returns from a task, he never uses spoilers to waste excess altitude.

HIS COCKPIT
Silly computers and Sollfahrtgebers are for wimps. A Real Soaring Pilot will only use them if he has built them himself. Otherwise, all he needs is an old PZL with a homemade MacCready ring. No yaw string; he is always coordinated. Actually, with his sensitive feel and great experience, he does not need any instruments at all. No relief tube needed, he can hold it until he lands.

HIS APPEARANCE
A Real Soaring Pilot smells of sneakers. No cologne. He never wears a jumpsuit with sewn-on club patches all over, he leaves that to the Air Force types or former Air Cadets. He does not change his clothes before he flies, his everyday jeans and T-shirt are quite sufficient for the simple task at hand. He may add a windbreaker if he plans to fly above 25,000 feet. His hat commands special attention and respect. It was white once before at least five years of sweat and grime accumulated on it. A Gold C with three Diamonds is, at times, casually attached at some random spot. A Real Soaring Pilot frequently sports a beard of the stiff and rugged type.

HIS FAVOURITE MOVIES
Airplane, The Thomas Crown Affair, Dawn Flight, and Goofy's Glider.

HIS PROFESSION
He is not likely to be a physician (not enough time), a lawyer (too much risk), an airline pilot (too conservative), or a banker (way too conservative). Most likely, he will be an engineer, as this profession seems to attract the eccentric types with the necessary personality traits of the Real Soaring Pilot.

AT PARTIES
Here we will find the Real Soaring Pilot in a small group where the results from the 1931 Nationals are discussed, along with winch maintenance and Pratt-Read restoration. Each Real Soaring Pilot holds a bottle of Heinecken the way he holds his stick. When the music starts, he'll dance with Real Women and other men's wives. Afterwards, if he can't find his tent or camper, he'll sleep in the cockpit of any available Real Sailplane.

. . . holds a Heinecken like his stick.

IN COMPETITION
You will find the Real Soaring Pilot high up on the score sheet. You can also recognize him by his flying technique. He always takes off with full water tanks, retracts his wheel so the gear doors brush the runway, and flies the course by himself. Leeches are promptly led into strong sink. His finishes are described by the wimps as "worm-burners" and dangerous, but they are actually precisely calculated maneuvers performed with great proficiency. On impossible days, he will finally drift in to finish near 7:30 pm, about the same time the wimps are hosing the mud out of their wheelwells.

Finally, the Real Soaring Pilot can be recognized by the quality of his crew (that is, if he has any at all!). These are Real Men or Real Women who will hold up a wing tip during assembly without complaint, and who will have cold beer ready for our Real Pilot as he rolls the ship to a stop right at his tie-down point. □

APPROACH SPEEDS

James Koehler
Saskatoon Soaring

A number of years ago, the Air Cadet associations in Western Canada used to teach what they called a 'penetration approach'. If a pilot got too low in the circuit, he was taught to dive at the ground and then level out and follow the contours of the ground as closely as possible to get back to the field. It was believed that this would allow you to get back to the field from altitudes too low to make a normal approach.

A recent letter in SOARING describing some of the other pitfalls of this technique (ie. that it is very dangerous) showed me that the technique is still being advocated. I think it is time to lay it to rest properly. Quite apart from being more dangerous than a normal approach, the sad fact is that it also doesn't work!

How do I know? Of course, we can all discount the numerous stories of the "I never would have made it back except for ... " variety. They almost surely **would** have made it back normally. Rather than relying on subjective impressions, it is possible to calculate, fairly precisely, how far a glider will go under a number of circumstances.

Let's start by stating the reasons behind the 'penetration approach'. The arguments are the following: firstly, by diving at the ground, you get into a region of low wind speed (due to the well known wind gradient), and hence can glide further. Secondly, by flying close to the ground, the 'ground effect' increases the performance of the glider — also causing it to go further. These two effects, according to the proponents of the technique, more than make up for the increased drag losses caused by flying the glider faster than normal.

Calculation of Total Ground Distance Travelled into a Headwind

To calculate how far a glider can travel over the ground from a given height, you just need to repetitively go through the following calculation. Assume the glider is at some height. As it slides down its glide path, it gains kinetic energy at the expense of a loss in potential energy. However, there is an additional loss of energy because of the drag force and, if there is a wind gradient, there will be an apparent further kinetic energy loss because the frame of reference for the glider is itself being accelerated. In principle, knowing the drag versus velocity characteristics of a given glider and having a detailed knowledge of the wind versus height profile, one can calculate, to any desired precision, how far the glider will travel horizontally for any given change of height and at any glide path angle.

The simplest way of doing this is to do it iteratively on a computer, recalculating the position and airspeed of the glider at successive brief time intervals. The shorter the time intervals, the more accurate the calculation, but the longer the calculation takes.

I did this a number of years ago using a personal microcomputer and presented the results at an instructors' conference hosted by the SAC in Toronto. The data I used were the result of a pretty coarse calculation because of the limitations of the computer I used. The results I'm going to present here are considerably more precise and, I hope, completely convincing.

The Calculation Technique

This section is for those interested in learning how the results were arrived at. If you're not mathematically adept or not interested, just go on to the next section.

To calculate the distance travelled, you must have three pieces of information. The first of these is the drag versus airspeed relationship. This is, of course, nothing other than the old, familiar polar curve for the particular glider. The problem with it is that it is usually given in the form of a graph or a table of numbers and, for a computer calculation, we have to find some way of interpolating between the given values in order to determine drag force for any required airspeed. I chose to do this by approximating the tabulated numbers by a simple second order quadratic equation. The justification for this is that it is really a pretty good approximation and secondly, published glider polars are (often) not very accurate anyway. Figure 1 shows the polars derived from the approximate quadratic equation compared to the actual curves found in Steven Dupont's little book, "New Soaring by the Numbers" for the two gliders studied in this project: the Blanik and the 2-33. As you can see, the approximation is really quite good.

In addition, to determine distance travelled, it is necessary to know the nature of the wind gradient. Most introductory textbooks on meteorology state that the vertical wind profile (the manner in which the wind speed changes with height) is a very complex phenomenon, and depends critically on the nature of the earth's surface. Most also state that it varies roughly exponentially with height. I've chosen to use the relationship given by Longley in his book, "Elements of Meteorology", (John Wiley and Sons, 1970). He showed that for a fairly smooth surface (probably representative for the average gliding field), the wind speed, v, is related to the height, y, by:

$$v = Ky^n$$

where n was approximately 1/7. This wind profile is shown graphically in Figure 2. As you can see, this shows that the wind speed at 500 feet is almost twice the wind speed five feet above the ground. For the purposes of calculation, I chose to specify the 'surface wind' as being the wind at a height of five feet since the average person tends to judge wind speed by what he feels in his face.

Finally, the last needed element is to somehow quantify the 'ground effect'. This is the decrease in drag for a wing moving close to the ground. There has probably been more nonsense written about this effect than any other topic in aviation (except, perhaps, the downwind turn). To be sure, the effect is real and appears as a decrease in induced drag because of the increased pressure on the bottom side of the wing when near the ground, which allows the same lift to be obtained at a lesser angle of attack than would be required at altitude. Please notice that it can only affect the induced drag and not the profile drag. As such, it doesn't really have much effect unless the airspeed is in the vicinity of the airspeed for minimum sink or less and where the altitude is not greater than the wing chord or so. This means that it is only important at the very end of the long glide after the glider has rounded out and is travelling fairly slowly. It certainly is not important during the high speed portion of the ground hugging flight in a penetration approach. I chose to approximate it, rather arbitrarily, as a decrease of 50% in the drag to lift ratio for times during the glide where the altitude was less than six feet and where the airspeed was less than the speed for minimum sink. This is almost certainly an exaggeration.

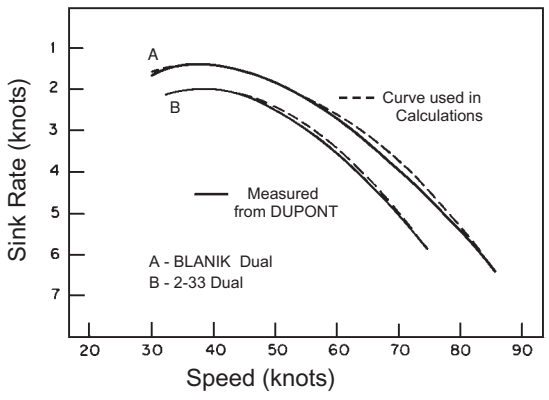


Figure 1

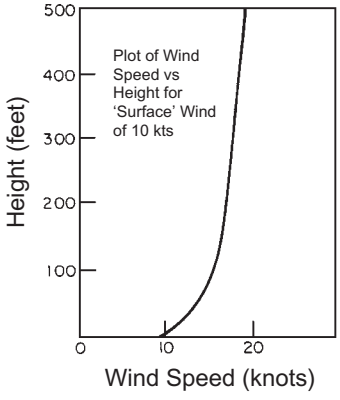


Figure 2

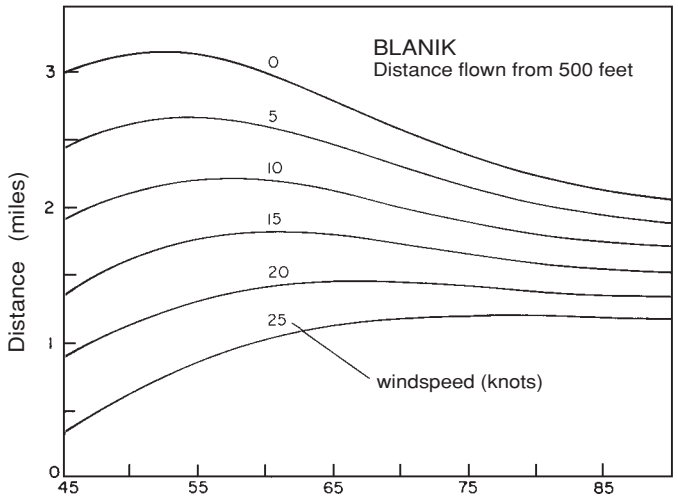


Figure 3

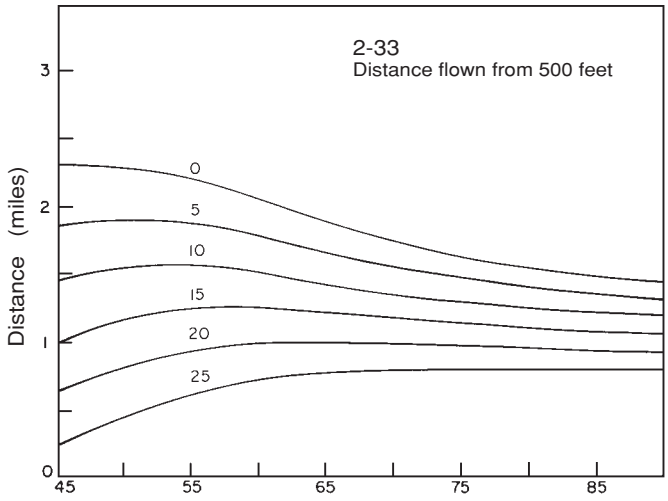


Figure 4

Finally, the flight was simulated in the following way. The glider was assumed to be at an initial altitude of 500 feet and flying at an initial speed of 45 knots. The simulated flight was begun by 'pushing' the nose down until the airspeed reached some desired value. At this point, the pitch attitude was kept at a value which maintained this speed until the glider had descended to a simulated altitude of three feet. At that altitude, the pitch angle was reduced to zero (ie. the glider was rounded out) and the simulated flight followed as the airspeed slowly decreased to the stall speed. At that point, the 'flight' was stopped. The total integrated horizontal distance from start to end was then recorded. The whole simulation was done at an iteration interval of 1/50 of a second, and this entire procedure was repeated for approach velocities from 45 knots to 100 knots at five knot intervals. For comparison, I repeated these calculations for a no-wind gradient condition.

A detailed derivation of the dynamics is available from the author for a stamped and self-addressed envelope. The program used for these calculations is also available from the author in case you wish to redo the calculations for your favourite glider. Only those readers with access to a mainframe computer ought to ask for it — a single run for a single glider takes about 30 minutes on a lightly loaded VAX-750. The same program, compiled in "Turbo PASCAL", running on my home computer, takes several days for one run — I don't know how long, I turned the machine off after two days. The data shown in the next section required two runs under each of the four conditions — a total of eight runs altogether. I think the program could be easily improved to reduce calculation time but I didn't bother.

The Results

Figures 3 and 4 summarize the results for two different gliders: the Blanik and the 2-33. The graphs show the total horizontal distance covered for various approach speeds but always starting at an altitude of 500 feet. In each figure, the solid lines give the total horizontal distance travelled as a function of approach speed for different values of 'surface' wind speed (five feet above ground).

Looking at Figure 3, for example, we see that for zero wind speed (the top solid line), a Blanik initially at 500 feet travelling at 50 knots (somewhat over its best L/D speed) will travel just over three miles. Notice also that the penalties paid for approaching too fast are not very severe. For example, if the approach speed was 70 knots instead of 50, the horizontal distance travelled is reduced to some 2.5 miles or so. For a surface wind speed of ten knots (the second solid line from the top), the approach speed that produces the greatest horizontal distance travelled is about 55 knots. Again, notice that flying too fast produces a rather modest penalty in range. The other solid lines are the same calculations for differing surface wind speeds. In all of them, it's obvious that the approach speed which gives the greatest range is not the 100 or so knots resulting from a 'penetration approach'. Indeed, it appears to be about the best L/D speed plus approximately the wind speed at the surface (about two-thirds of the wind speed over most of the approach).

Figure 4 summarizes an identical set of calculations for the 2-33. Dupont notes that in the polar curve data he gave, and which I used, for the 2-33 may be too optimistic which means that the distances shown for the 2-33 in Figure 4 would also be too optimistic. The most obvious conclusion one comes to in comparing the sets of curves is that the 2-33 is markedly inferior to the Blanik. However, even for the 2-33, the penetration approach is not a winning strategy and the optimum approach speed is something like the best L/D speed plus the surface speed.

Conclusions

There are a number of conclusions resulting from this study. Firstly, the penetration approach is clearly not desirable. Since it is also eminently dangerous, let's all try to stamp out this erroneous practice wherever we encounter it.

Secondly, the penalties for erring on the high side of approach speed (flying too fast) are much smaller than the penalties for flying too slowly. You will notice that this is true for all wind speeds — that is, you start to lose considerable ground if you fly, say, 10% too slow whereas flying 10% too fast has very little effect. The moral of the story is: when in doubt, fly a little faster.

It appears that the optimum approach speed is something like best L/D speed plus the surface wind speed. This is significantly faster than is currently recommended in the SAC training manuals. Even if you don't believe that the wind gradient is as marked as that given by the formula I used, the same calculations done with zero wind gradient (ie. assuming the wind speed doesn't change at all with height), gave an optimum approach speed of something like the best L/D speed plus about half the wind speed. Again, since flying too fast has a smaller effect on the distance travelled than flying too slow, I think we ought to revise the training rules to conform to these results.

The last conclusion bears some further comments. The speeds talked about above were the speeds which give the greatest gliding distance over the ground. Is this the 'optimum'? I believe it is since energy can always be removed by opening the dive brakes. Most modern gliders have very effective brakes and so excess energy can always be dissipated. However, energy thrown away by flying too slowly can never be regained. But what about approaches into a short field, I hear you say? Obviously a short field necessitates landing as slowly as is consistent with safety. However, the total landing distance required is determined by the airspeed over the fence — not the airspeed during the approach. In my opinion, the safest approach and landing is one in which the approach is flown at best L/D plus the windspeed (this gives you the best L/D over the ground and hence the greatest margin for safety) with the dive brakes used in the later stages just prior to round out to control the speed to be consistent with the field you're landing in.

Finally, I should remind everyone that more accidents are caused by flying the circuit and approach too slowly than by flying too fast. It is a truism that it's better to overrun a field and hit an obstacle at the far end at slow speed than to undershoot by flying too slowly and hit an approach-end obstacle at flying speed. □

1987 CIVV MEETING REPORT

Jim Oke
Chairman Sporting Committee

The annual CIVV meeting was held this year in Frankfurt, West Germany on 26 - 27 March at the invitation of the German Aero Club. The meeting began with Bill Ivans of the United States in the chair, assisted by the new FAI Director General (and ex-FAI President) Dr. Cenek Kepak. There were many familiar faces at the meeting along with some newcomers, most notably two representatives of the People's Republic of China. The meeting began on a rather sour note with the Indian delegate lodging a formal complaint over the presence of the South African delegate. This was duly noted by the chair and the meeting carried on with no further comment.

Dr. Kepak reported on the last FAI General Conference held in Madrid last fall. The new FAI President, Mr. Peter Lloyd, apparently sees the need for an increased FAI budget to give the organization the means to make itself more visible in the aviation community. He proposes an increase from 600,000 Swiss francs to 1,000,000 Swiss francs with half to come from the National aero clubs, and half from the various technical committees such as CIVV. Thus CIVV could face the problem of raising a sizeable amount of cash in the coming years. Various devices such as record homologation fees, world contest entry fee surcharges, etc. were suggested as avenues to explore. A final decision will await the acceptance of the proposed budget by the FAI as a whole.

Tor Johannessen reported on behalf of the Rules Subcommittee. The USSR had three proposals tabled. The first was to amend the criteria for a new glider altitude record to be recognized from a percentage of the old record to a fixed amount. It was decided to send this matter to the CASI Subcommittee for study as they deal with record flights in general. Next was a proposal to recognize team entries in world contests; the Russians' idea was to simply add scores of the various competing pilots to come up with an overall aggregate score. This was dismissed as simplistic and various other team competition proposals were suggested for discussion (3 pilots flying the same glider in turn, a team of two flying together and being scored by taking the first start and last finish, etc.). This proposal was held over for one year for study. The last proposal was to limit the number of FAI Diplomas given out in World Championships to fewer than ten for classes with small entries, it being inconsistent for example, to recognize 10 of 21 pilots in the Open class, when the other classes may have over twice as many competitors. The Russian suggestion to award FAI Diplomas to the top 30% of a class to a maximum of ten individuals was adopted.

The Rules Committee has been examining the adequacy of the procedures and required equipment for FAI badge and record recognition (apparently in the light of suspected or actual cases of cheating although this was not stated outright). An OSTIV paper was presented that called for more stringent proof of performance as the significance of the achievement increased. The usual simple barograph and camera would suffice for up to the Gold badge, but data-back cameras linked to more elaborate barographs were suggested for 500 km triangles and beyond. The matter was left with OSTIV for an additional year's study.

The Rules Committee has prepared Sporting Code amendments to cover the badge flight changes announced last year (remote start and finish points, etc.) and these will be published in due course by FAI Headquarters. It was suggested that a fresh printing of Section Three of the Sporting Code (Gliders) would be in order to incorporate the various amendments inserted over the past several years. As CASI is planning a rewrite of the General Section of the Sporting Code (beyond the 1 Jan 86 amendment), it was decided to publish a new Section Three at the same time as the new General Section comes out.

The Swedes asked for a clarification on the deadline for entries and the number of entries allowed per country in World contests. Some countries had apparently shipped gliders to Australia in the hope of getting access to any last minute entry positions that might have become available (in the end, no such entries were accepted). There was a brief discussion of the problems of timing of southern hemisphere contests with no conclusions emerging. More ominously, a motion was passed limiting entries to a maximum of thirty per class in future contests. This was done rather casually with no real discussion of the impact on each country's number of entries; afterwards suggestions were put forward that every country would be guaranteed two entries with the remaining positions to be distributed according to some formula involving placing or participation in the preceding contest. No clear rule was adopted, but the matter should be closely followed to avoid a "can't go unless you've been" situation developing which could adversely affect Canadian entries in future World contests.

Bernald Smith of the USA presented his paper on the use of advanced navaids in gliders which I had contributed to. Unfortunately, the discussion zeroed in on the use of hand-held VOR receivers as a few of these had apparently appeared at Benalla (as an additional function on backup radios which some competitors wanted to carry). In my view, this is overlooking the use of LORAN C equipment which is likely to be far more useful in competition (and was stated to be so in Smith's paper). A decision is supposed to be taken next year on VOR use in competition. A carefully written rule could deal with both VOR and LORAN, but it appears there's some danger of CIVV looking after the trivia while the main issue sails by unnoticed.

The Italian delegate drew attention to the possible advantage a two-place sailplane might have in competition and requested a rule dealing with this be considered. (Two place sailplanes are allowed in the Open class and flew at Benalla, these being two seat versions of the Nimbus 3 and ASW-22.) The extra crew member can help with navigation and communication duties and in-flight decision making leading to a potential advantage over pilots flying solo. He will report again next year with proposed rules dealing with use of multiplace sailplanes in competition (probably allowing solo flight only).

Peter Ryder of West Germany reported on the findings of an ad hoc committee formed to examine a protest over the rejection by the FAI of certain world record claims. Apparently, a Swiss pilot had flown four speed records in South Africa last fall and submitted his evidence to FAI headquarters in Paris where it was rejected. The committee had examined the evidence and determined it to be unsatisfactory due to the omission of many details such as takeoff and landing times, Sporting Licence details, etc. Although most items could be considered trivial or verifiable after the fact, the finding was that the evidence had not been submitted as required by the Sporting Code and so the protest was denied. No suggestion was made that the flights had been faked, only that the evidence was inadequate. It does seem strange that a pilot who would go to the trouble and expense of shipping a sailplane many thousands of miles for the purpose of attempting a series of record flights would not be most careful with his flight documentation. This case may be the reason for the Rules Committee's sudden interest in flight verification methods. The message was clear that future record claims would be expected to adhere closely to the Sporting Code requirements for documentation. The production of a set of standard forms to be used for record submissions to ensure all required information is called out will be investigated to avoid future problems.

Wally Wallington reported briefly on the just completed World contest at Benalla, but left most details to the reports in the various

gliding publications. The organizers were pleased that various records had been set, eg. greatest number of contestants, largest task size (840 km for the Open class one day), and so on. However, he conceded that personnel (lack of numbers) had been a problem. Wallington indicated that a number of papers on various aspects of the contest would be forthcoming to assist future organizers (this gentleman was also responsible for the 1974 contest at Waikerie, so he knows his subject). A paper by Justin Wills of Great Britain was circulated informally by the British delegate which gave some additional background to the contest. Wills noted some definite shortcomings in the organization despite the expenditure of much money and effort by the organizers. He claimed a cost per entry of £13,000 for the British team due to the large number of support personnel present with his team (almost 30). He stated that up to sixteen different sources were feeding weather and tactical information to pilots in flight. Among his recommendations were to reduce future entry totals, restrict the amount of radio communication allowed with pilots in flight, eliminate pre-worlds contests to reduce the advantage to those able to invest the time in such events, and revise scoring to reduce the emphasis on speed points. These views led to much informal discussion which may prompt some future change in world championship organization. *A copy of this paper is available from the Sporting Committee. Editor*

The Australian delegate reported on his country's preparations for the 1989 World contest at Wiener Neustadt. In response to the popular demand at last year's CIVV meeting, a pre-worlds contest will be held in 1988 after all. The dates mentioned were 15–20 May for practice, and 21 May to 1 June for competition. These dates may advance by one week for the actual contest in 1989. Several changes in key contest personnel were announced which caused some grumbling about inexperienced personnel. A request by the organizers to use Hungarian airspace to open up the task area has been denied by the Hungarians! Various innovative rule changes are being considered, however, these will be subject to approval of the CIVV Rules Subcommittee. Entry details for the 1988 contest were promised when available. The delegate from Finland raised the issue of South African participation, and I added a Canadian query to the same effect. The official Austrian position will be that South Africa will be invited to compete as per FAI guidelines; however, I was later advised that a similar situation to Australia will likely arise as the Austrian government is not expected to issue visas for entry to the country to South African competitors.

The American delegate reported that some necessary runway construction was planned for Minden this summer and thus, no major flying activity was planned at the 1991 World contest site this year. They are definitely planning a 1990 pre-worlds contest. Contest sites for 1993 and beyond were not on the agenda and no selection for 1993 is planned until 1989, however, the Indian delegate requested "a vote of confidence" for India for the 1993 contest to use as a bargaining tool when dealing with his government. This request was turned down by the Chairman to the relief of most present.

The Third European Championships were held in Mengen, West Germany last year. A successful contest was reported although entries were said to be down; a total entry of seventy-three is not too bad however. Finland bid for the 1988 contest using the 1976 Worlds site at Rayskala, and this offer was accepted. Poland expressed an interest in the 1990 contest proposing their national gliding centre at Lezno, with England offering to host as a backup.

There was a lengthy discussion of the possibility of holding a European Junior Championships for pilots up to perhaps 25 years of age. France, Germany, Sweden, Poland, and the Netherlands all have junior competition arrangements of varying sorts. The Germans not surprisingly have the best developed program which has been running for many years. It was pointed out that five of six pilots on the German team at Benalla were graduates of the junior program (as was Helmut Reichmann). Each year the winner of the junior championships is allowed to enter the German Nationals and generally does quite well. There will probably be a proposal made next year for European Junior Championships.

> the meeting was characterized by an excess of philosophical discussion and a worrisome tendency to put decisions off to the future.

Bernald Smith of the USA reported on the success of the Hitachi Masters of Soaring contest in 1986, sponsored by the Hitachi Corporation at Minden and involving many well-known soaring pilots. The sponsors were reported to be well pleased with the exposure received in the news media and were interested in a future promotion. Mr. Smith then requested CIVV sanction for the next Hitachi contest as a means of increasing the prestige of the event. This request was denied as CIVV has, so far, had no hand in either approving the rules or the method of selecting entries. The SSA was invited to come back with a clearer proposal for consideration next year if they still desired this however.

Bill Ivans noted that the Barron Hilton Cup was now being run as a two-year event with no prize to be given in 1987. That is, flights during 1987 and 1988 will be considered in determining the winners in 1988.

The topic of revising the existing glider classes does not seem to want to go away and, in fact, seems to be gaining some momentum. This year, three proposals were on the table; the Germans were back with their two-seater class again, Spain was promoting an 18 metre class in place of the present 15 metre class, and Paul Schweizer of 1-26 fame was there to promote a one design class for the Olympics. Mr. Schweizer was there apparently as a friend of the committee as there was no delegate shown as sponsoring this last proposal. The propriety of discussing this submission at length while the German proposal was more or less ignored was questioned at least once with no reply from the chair.

The Spanish proposal was presented by Alvaro De Orleans-Borbon. His main points were that a good proportion of 15 metre sailplanes are already being sold with optional wingtip extensions, indicating that many owners are already voting with their pocketbooks for 17.5/18 metre sailplanes and that an 18 metre sailplane offers a much better platform for the addition of a self-launching power source (anticipating the disappearance of towplanes in the future due to rising costs). Surprisingly, the New Zealand delegate announced his country favoured a larger racing class sailplane and the English also favoured a bit more span to make better use of their weaker conditions. The French delegate questioned some of the claims made that an 18 metre sailplane would cost only slightly more and weigh only slightly more than a 15 metre ship. The USA opposed the change.

Paul Schweizer, in effect, presented an OSTIV paper he had authored on the potential for a small Olympic one-design class. He used the 1-26 as an example of a successful one design and spoke of the success of the 1-26 competitions in the US. His main arguments include reduced cost, better possibility of getting Olympic recognition, fixed gross weight to avoid ballasting problems, and better safety due to less energy in a smaller aircraft. He proposed a competition to settle the aerodynamic design with designers given a free hand with structure and even suggests kits for homebuilding.

The ensuing discussion led to a lot of philosophizing on the purpose of competition, the wisdom of involvement in the Olympics, and along other inconclusive paths. At one point, the Sailplane Development Panel (SDP) of OSTIV was going to be tasked to study the issue, but there was no agreement on what terms of reference should be set and further, the SDP is a technical body ill-suited to essentially philosophical matters. In the end, it was stated that the CIVV Bureau would strike an ad hoc committee to examine the philosophical basis of competition flying and report next year. Thus, most regrettably, another year will pass with no definite plan of action settled for future sailplane development, although more sailplanes will be produced to the present rules making any future change that much more painful. In my view, many more classes could be declared, covering spans from 10 to 25 metres and include two-seaters, while accommodating the present classes. Then the marketplace would sort out what pilots want to buy and constructors will build. The CIVV decisions would then lie with what classes would be flown in national and international competition.

The subject of gliding and the Olympic Games resulted in another long drawn out discussion with no clear cut conclusion. Dr. Kepak described the events of the last few years leading to recognition of gliding as an Olympic sport. As suspected, Barce-

continued page 21

POLAR EXPLORATIONS
OR HOW ABOUT 100 TO 1?

"Platypus"
from SAILPLANE & GLIDING

For nearly 30 seasons, after the low, pale sun passes the winter solstice (December 21 to the unwashed), one of my most consistent pleasures has been to sit back in an armchair with a ream of graph paper, a glass of vintage port by my elbow, converting those lift/drag diagrams into summer daydreams: "Now, assuming the lift distribution is as per Admiral Goodhart's OSTIV (1965) paper, and working on a wing loading of 7.6 lbs/sq.ft, I should climb at 2.6 kt and achieve a ground speed to Sutton Bank of 73 km/h, so I shan't make it home before 1855. Hm, let's try it without water." (I take another swig of port as if to emphasize the point, and start on a virgin sheet of graph paper...).

This used to take days and days. As a way of numbing the brain it beats watching TV, that's for sure.

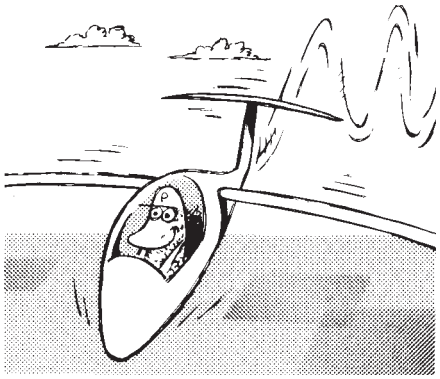
However, carefully tempering theory with practice, I also made a point of analyzing the speeds of the finishers in national championships. Oh dear me: I found in the 1960s that the achieved cross-country speeds bore little relation to the theory. Generally, the pilots were getting round slower than I calculated they should. Why?

Well, there are a mass of possible reasons, one of which is that the manufacturers in those days were lying in their teeth when they published their polar curves. Nowadays, it does not pay to overdo this: the pilot of a spuriously-rated glider will get a pasting in a handicapped contest — ie. any regionals — and will not thank the manufacturers for idle boasts about performance.

However, even after allowing for this, only a few pilots delivered what the theory said they should. Having to take a few weak thermals in order to cross a difficult patch has a devastating effect on groundspeed, especially on a windward leg. Deviations from track to get a useful thermal also erode the achieved speed.

Having to waste time sampling mediocre thermals before finding a good one is another penalty of lower-performance gliders. Finally, there is sink between thermals, which may cover a larger area than lift between thermals, on the assumption that what goes up in the thermals has got to come down somewhere. All this conspires to push your actual achievement below the theoretical level.

Nowadays, it's very different. People are covering the ground at speeds well in excess of theoretical levels, especially in the superships. For example, in theory you need an average rate of climb of at least 6 kt in a Nimbus 3 or ASW-22 to achieve 110 km/h over the ground, but such speeds have been achieved in thermals of about 4 kt or less.



Top up energy by dolphining.

The reason is simple. The theory assumes height is gained solely by circling, and that there is neither lift nor sink between thermals. We have known that not to be so for 50 years or more, but only recently does it begin to make a really big difference. The theory also assumes all thermals are the same, whereas we know there are good, bad, and indifferent thermals, from which the pilot with the flattest polar is able to make the most ruthless choice, discarding all but the best and treating the weaker ones as an opportunity to top up energy by dolphining. However, it is the distribution of lift and sink between climbs that is the key, or so I guess.

With the purpose of seeing how much difference this can make I modelled a very simple dolphin flight. I have decided to update my arm-chairing by computerizing the graph paper — and cutting down on the port, incidentally.

In this little exercise (sums tucked away at the bottom of the page, to spare those readers whose orbs look like sheep's eyeballs in aspic the moment a row of figures appears on the page) I imagined two gliders, a modern supership and a golden oldie, to be traversing first an area of 2 kt sink*, then an area of 2 kt lift, each zone being a kilometre wide. (Sorry about the melange of metric and imperial measures: it isn't my fault that we mix them all up in this country.) The object is to compare the height loss in each case with that achieved in still air, and to compare the gain from dolphining that their respective pilots enjoy. Each glider is assumed to be attempting to maximize its glide angle, and to be capable of dolphining instantaneously from high to low speed — impossible, but never mind.

What emerges is that by accurate dolphining the supership loses only 72 feet, whereas if it had flown at a constant max. glide speed of 100 km/h, or 54 kt, it would have lost 114 feet (exactly the same as it would have lost in still air, since it would have spent the same amount of time in the rising air as it did in the sinking air, the two cancel out).

Obviously, to lose only 72 feet instead of 114 feet over a given distance is the same as increasing your glide angle by 114/72 or a factor of 1:58. You are now getting a respectable 92:1, which is satisfactory to all but the greediest of armchair pundits. All right, if you are really greedy, look at ambient sink and lift of 250 ft/min. The supership's effective glide angle improves to 126, more than double the still air max. glide.

**Remember, this is the speed of ascent/descent of the air, not the glider: your achieved rate of climb if you circled in the lift portions would only be 100 to 150 ft/min. The BST (British Standard Thermal, which is the basis of our handicapping system) is assumed to take you up at around 240 ft/min.*

BENEFITS OF DOLPHIN FLIGHT FOR MODERN GLIDERS
1950s and 1980s Open Class Gliders compared

	Glider A (Supership) Max Glide 58			Glider B (Golden Oldie) Max Glide 32		
	Dolphin flight			Dolphin flight		
	sink	lift	still air	sink	lift	still air
Ambient lift/sink (ft/min)	-200	200	0	-200	200	0
Distance (km)	1.00	1.00	2.00	1.00	1.00	2.00
Speed to fly (km/h)	140	74	100	100	70	74
Duration (min)	0.43	0.81	1.20	0.60	0.86	1.62
Ambient gain/loss (ft)	-86	162	0	-120	171	0
Glider sink/rate (ft/min)	-160	-98	-95	-220	-127	-127
Glider gain/loss (ft)	-69	-79	-114	-132	-109	-206
Total gain/loss (ft)	-154	83	-114	-252	63	-206
	Dolphining net loss ft: 72 Effective L/D 92			Dolphining net loss ft: 189 Effective L/D 35		

Still air advantage Supership vs Golden Oldie — 81 %
Dolphining advantage Supership vs Golden Oldie — 166%

SAFETY

AMATEURISM AND THE ACCIDENT RATE

from "Australian Gliding"

A common factor among gliding organizations world-wide at present is an accident rate which is considered to be worse than it needs to be.

The problem has been discussed at the newly-formed OSTIV Safety and Training Panel and at the well-established Sailplane Development Panel, the latter body also being a long-standing part of OSTIV.

The two bodies have recently started to come together, the first occasion of a joint meeting being at Benalla during the period of the 1987 World comps.

The Safety and Training Panel, as its name implies, tends to concentrate on the operational side of accident prevention, factors such as high quality flying training and adequate safety awareness programmes being given high priority in our discussions.

The Sailplane Development Panel concentrates more on the aircraft themselves, examples of their work being to establish upper limits of force required to pull the release knob under maximum towline tension, and to establish suitable future crash-worthiness standards for glider cockpits.

It needs little imagination to see that the work of the panels overlap quite a lot. Future cooperation between the two groups must, if we all do our work properly, result in a better quality of flying and a better product to do that training in.

However, all the careful work put in by all those involved in organizations such as these two groups is of no avail if any of the gliding organizations do not come to terms with certain facts of life. These facts are as follows —

- There is a problem. The accident rate is not satisfactory.
- The problem can be solved.
- There are people working on the problem almost continuously. Occasionally, they are bound to stumble across an answer. It would be nice if people would take some notice when they did.
- Safety in any form of flying results from a continual effort on the part of everyone involved. No one, regardless of experience or supposed status, can afford to drop his guard.
- Any form of flying ceases to be enjoyable when someone gets hurt or killed.
- There is a danger of becoming inured to a poor accident record. A high number of accidents can easily become regarded as the norm.

That last point is of particular concern, especially in view of a very foolish remark made by a correspondent in a recent issue of this magazine that "glider prangs are considered par for the course".

That remark, among others in that letter, have confirmed beyond doubt that some people are quite unable to face the reality of the situation. The reality is the list (of 37 accidents and incidents reported last season in Australia).

There are a few on this list who suffered a bit of bad luck, and probably could be truly considered as an example of "par for the course". They are very much in the minority. Most of the accidents are the result of poor airmanship, poor judgement, or poor flying discipline, although there may be some airworthiness input to one or two of them.

Unfortunately it has become fashionable in today's society to diminish the need for any form of discipline in human relations. In some areas, this is probably a good thing, but surely not in aviation, at least not in the actual flying part of it.

Whether aviation is conducted on an amateur or a professional basis does not make any difference. Flying discipline is an essential part of a pilot's upbringing and is ignored at the peril of everyone involved. We, therefore, come to the point of this article. What price Amateurism? Does our amateur status mean we must accept a lack of flying discipline?

Obviously my own view is quite clear. I consider my very survival to have depended on my early instructors, who were insistent on a high degree of discipline during my basic instruction.

Not an idiotic, parade ground, "one-pause-two" type of discipline, but a recognition of the need to adhere to known safe procedures and the dictates of good air sense ...

Let the Air Force have the final word. Some 56 years ago, they wrote: "There are two danger peaks in a pilot's life. One is when he has flown 100 hours and believes that he knows everything there is to be known about it. The other is when he has reached the 300 hour mark and knows that he

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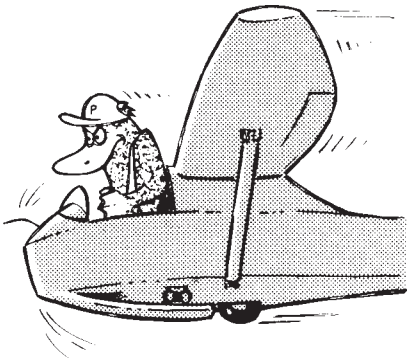


Very limited speed range.

However, even without doing any further calculations you can immediately conclude that a glider with a very limited speed range will not enjoy that increase of its glide ratio: even if it had 58:1 at 100 km/ h, but was stuck at that speed, there would be no increment whatever, since dolphining would not occur.

Glider B (excellent value for money on the second-hand market, I hasten to put in, to avoid a flood of indignant letters) is, say, a Skylark 3, delivering a glide ratio of 32. However, because of its much narrower speed range, its passage through the same sink and lift, dolphining to the best of its pilot's ability, only reduces the height loss from 206 to 189 feet. This represents an improvement in effective glide ratio on only 9% to 35:1. So the supership, which started out with a glide ratio of a mere 81% better, ends up with an advantage of 166%. An unfair advantage in still air becomes positively grotesque if vertical air movements are considered. And it becomes more monstrous if the vertical air movements are increased: if they are 250 ft/min, the supership's advantage becomes 238%. The impossibility of dolphining instantaneously from one speed to another may reduce this gap a bit, but there is no doubt the modern glider benefits to an extent for which handicapping, based on the assumption of still air between thermals, does not compensate.

There ain't no justice.

To him that hath shall be given, but from him that hath not shall be taken away even that which he hath. Which, being translated, means: there ain't no justice. Here endeth the lesson. □

knows all about it. It is only later, when he reaches the 2000 hour mark, that he realizes he will never know all there is to be known. It used to be said that if a very old pilot happened to kill himself it was generally due to carelessness, but it is thought — and indeed one might almost say hoped — that all such careless pilots are by now defunct."

Mike Valentine
Australian delegate
OSTIV Safety and Training Panel

NEW TECHNICAL COMMITTEE CHAIRMAN

George Adams, who has been chairman of the SAC Technical Committee since November, 1981, has handed over his responsibilities to a new man after processing numerous submissions and successfully managed a steady flow of Certificate of Airworthiness applications to Transport Canada.

Herbert Lach has taken over this committee effective 15 May. He is employed with Pratt & Whitney as a supervisor of Turbofan and Turboshaft applications. His address is:

Herbert Lach
330 Banting Street
St. Bruno, PQ J3V 1Y3
(514) 653-0060 (H), 647-3959 (B)

BE AWARE OF YOUR AIRSPACE

Elsewhere in this issue you will read of the death of Jeff Tinkler in a midair collision. The death of a friend, a fellow committee member, and one very concerned about flying safety, leaves me very sad. I have written before of the need to develop good habits for lookout, and as the level of soaring competence rises in all clubs, so the risk level rises too, as more pilots are soaring locally. Flying with your friends is fun, and trying to outclimb another pilot is something we all try to do; only thus can one measure and improve skills. When you do this, be continuously aware of the position of the other gliders and anticipate where they will be next time around. At the same time, it helps if you know who are in the other ships.

Those of us who have survived a few years of contest flying, have had some close calls. One acquires knowledge of the reliability of other competitors over time (the same applies to club pilots); some you trust, some you trust absolutely, and some you watch closely or stay clear of.

The other glider in this collision was on tow, so you must watch for other traffic as well, especially for another glider entering the thermal. Again, I stress that an audio vario is almost a must for doing both tasks well, especially for novices; the less you look at the panel, the better your lookout. It does not matter whose audio vario you use if it works. You can buy or build. There is no mystery about making audio varios, and there must be one electronics buff in every club who could build one for the club glider if cost is the problem. If you are a club officer, seek him out and get audio varios into your soaring gliders, and persuade the CFI to emphasize its use as good training in flying head up. Thermalling ability will improve too, as pilots fly more consistent circles. Those who get used to audio, say how much they miss it when flying a non-equipped glider.

There has been a second accident to a Super Cub on landing, again to a relatively low time pilot, in a crosswind. It may be hard to arrange, but it would seem that chief pilots should look for difficult conditions for a checkout flight, before giving the new pilot carte blanche to operate entirely at his own discretion.

John Firth
Safety and Instructing committee

FLIGHT DISCIPLINE

Discipline is the mark of a professional. Lack of flight discipline (including deliberate violation of Air Regs) is the mark of an amateur. This type of person, by choice, endangers others and himself. If every man does what is right in his own eyes, eventually we have anarchy, chaos, and a complete lack of order... Soaring accidents fueled in many cases by the desire to win or establish a record without due regard for self, machine, or others. On the whole, the soaring community cannot be classified as professional pilots. Sport pilots yes, but not professionals in the sense that airline, military, and flight instructor pilots are. So be it. We soar for the fun of it, the challenge, etc.

With the evolution of the high performance sailplane, we pilot a steed that, under certain conditions, can be a handful to fly. These ships should be approached with due respect and a working knowledge of the flight envelope. Kicking the tires and lighting the fires just won't do it. Sooner or later we find ourselves with all options used up and no place to go except down.

I see no valid reason for the soaring accident rate to decrease until each individual pilot takes responsibility for his own actions and actively seeks excellence in every flight, no matter how mundane or wild the conditions are.... What's your attitude? Is it negative or positive? Do you care, or is all of this concern really just a tempest in a teapot? The answer lies within each and every one of us. The list below can give you an idea of the level of air discipline you must possess.

- Did you personally check all control hookups after rigging?
- Do you always conduct a verbal takeoff check list?
- Is a positive control check made before each takeoff?
- Did you personally look at the tow ring/rope connection?
- Do you know where the CG is located when fully ballasted and dry?
- Are you prepared to pull off tow if a wing drags during the takeoff run?
- Are you prepared for a low level tow line break?
- Do you clear yourself before you turn after tow release?
- Which way will you turn if the line breaks and at what altitude will you not attempt such a turn?
- Do you keep your hat on while thermalling in close quarters with other gliders?
- What indicated airspeeds give you the best climb while thermalling ballasted and unballasted?
- If flapped, what is the minimum speed you can safely fly at the maximum (negative) flap position?
- Have you stalled the craft in a turn in the past three months? (intentionally, that is.)
- Have you ever spun the aircraft?
- Do you conduct an audible landing check list?
- Do you always check wind speed and direction prior to landing?
- Can you touch and identify all control positions and instruments blindfolded?
- Have you practised a complete bailout sequence on the ground?
- If installed, is your 02 system up to date and tested?
- Have you looked in the landing gear well in the past six months?
- Have you inspected all exposed control linkages for security in the past six months?

This list is partial but it can serve as a reminder that all of us are negligent in some areas.

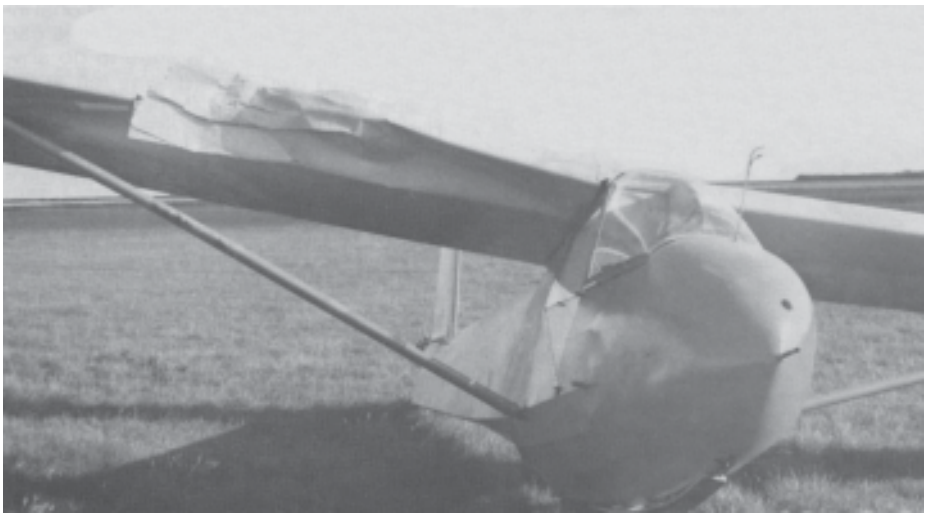
Peter Williams
from SOARING

SO YOU RUN WINGS, DO YOU?

Most of us really don't think a lot about running wings, relegating it to students, friends, and bystanders — it being a minor role in comparison with the star billing of the pilot, right? Wrong. Think about it. At the critical first stage of the takeoff, the wing runner is, for all practical if not legal purposes, the pilot in command. Since neither the towpilot nor the glider can look out for conflicting traffic coming in from behind, the wing runner is the eyes of the operation. If he says no go, you don't go — simple as that. During the critical first stage, it is the wing runner, not the pilot, who is flying the glider. And if he does it wrong, he at best make the pilot look like a klutz, and at worst starts a chain of events leading to a ground loop or other un-fun things.

Most discussions about wing running deal with the horrors of pulling back on the wing, which is a nasty thing to do for sure, but in my experience, thankfully rare.

A much more common mistake is for the wing runner to hold the wings level, no matter what. Wrong again. The pilot, you see, really has no idea just when the wing runner is there and when he's not. In fact, the only thing the pilots does have is feedback from the glider — and if the glider is struggling to drop a wing, which the runner is forcibly preventing, then the pilot will remain blissfully ignorant up to the point where the wing runner lets go. Bang! The resulting and sudden wing drop will usually amount to no more than a simple test of pilot skill, but on occasion, it leads to an aborted takeoff and ground loop.



WINNIPEG MIDAIR FATAL

Jeff Tinkler, an experienced and long-time member of the Winnipeg Gliding Club, was killed on 29 June following a midair collision between his Astir and a 2-33 on tow. The accident occurred when he was circling near the airfield at Starbuck at an altitude of about 1200 feet and reportedly turned into the towplane/glider combination. The accident was still under investigation by MoT at the time of writing this report.

The 2-33 student pilot, Peter Stewart, is fortunate to have landed safely despite the severe elevator and wing damage sustained by the 2-33. Also lucky is the towpilot whose towplane was upset as a result of the attempts of both he and the 2-33 to avoid the collision. After the rope broke, Bill Goertzen, the towpilot, was able to regain control and land safely.

As the photographs show, the right wing and strut of the 2-33 was struck by the wing of the Astir, crushing the wing leading edge back to the spar. Following this contact, the entire right stabilizer and elevator

was sheared away (without damaging the elevator control horn) and a substantial amount of fabric was peeled off the left elevator.

As tragic as this accident was to Jeff and his family, we must be very thankful that two other pilots weren't injured or killed also. The accident points out all too vividly the need to remain alert to what's going on in the airspace around you.

To be a really great wing runner is simple. You run the wing lightly, and if the tip wants to rise or drop, you let it — a bit. This will inform the pilot of his aircraft's intentions, and he will apply corrective action to level the wings. You can even help him to do so, if you are careful, and if there is time, considering that all of this will happen at about the time you reach your personal Vne. But the main point is to give the pilot control feedback, by allowing some movement of the wing which will tell him what it's trying to do.

Getting back to the subject of who is and who is not P1 at what time, do you know what major function the glider pilot does control at the critical first stage of the takeoff? That's right, the RELEASE. I have seen very experienced glider pilots sit, all hooked up and ready to go, watching a veritable horror story develop outside the cockpit — and do nothing. If there is anything going on at the start of your flight that you as the pilot do not like, pull the release, and immediately separate yourself from the whole business. Don't get conditioned into thinking that the release is only pulled 2000 feet up.

One last thing. Wing runners, after checking the circuit and starting the take-up-slack signal, usually seem content to be mesmerized by the rope. Use this time for a final quick look around. Scan the glider: Is the tail dolly on? Is the lifting bar in place? Check for surprises on final, and look down the runway too. You front signallers are in the perfect place to spot any unseen incoming traffic. Look around, and if you don't like what you see, stop the takeoff.

Running wings is no second class job in my books. It has to be done well just the same as anything else in gliding. A good wing runner, after all, is the one who starts your flight off on the right foot!

from "Barograph Traces"
Terry Southwood, Cu Nim

ACCIDENTS

ASTIR, C-GSOD, 19 April, SOSA. Glider hooked to tow rope unattended when towplane taxied off line to refuel unaware glider was attached. Right wing leading edge damage when glider struck car. Liability claim on car.

2-33, C-GMOG, 25 April, Cu Nim. Low circuit, left wing struck ground in flight while instructor attempting to avoid fence. Extensive damage to left wing in subsequent groundloop.

CESSNA 150, 26 April, Saskatoon. Forced landing in field following engine failure. Nosegear, prop, and cowling damage. Pilot OK.

ALCOR, N924LR, 7 May, Claresholm. Gear up landing following a gear down flight. Damage to belly. No claim.

PIK-20, C-GPIK, 8 May, Ridge Soaring. Glider crashed through a house following a take-off with elevators disconnected. Glider was a write-off. Pilot died later in hospital of complications. Liability claim possible.

Ka6, G-FSHG, 14 June, Saskatoon. Glider struck windsock during crosswind landing then crashed through wire fence. Aircraft write-off. Pilot OK.

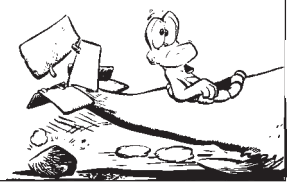
1-26, C-FVOL, 28 June, Erin Soaring. Low circuit, wingtip hit ground and glider crashed while pilot attempting to avoid obstacles. Fuselage damaged.

PA-18, C-FVPS, 14 June, Caledon. Aborted downwind landing, touched down in adjacent field and flipped inverted. Pilot OK.

LIBELLE, C-GQJS, 28 June, Beaver Valley. Pilot struck tied-down aircraft on last part of landing and roll-out. Minor damage to other aircraft and liability claim.

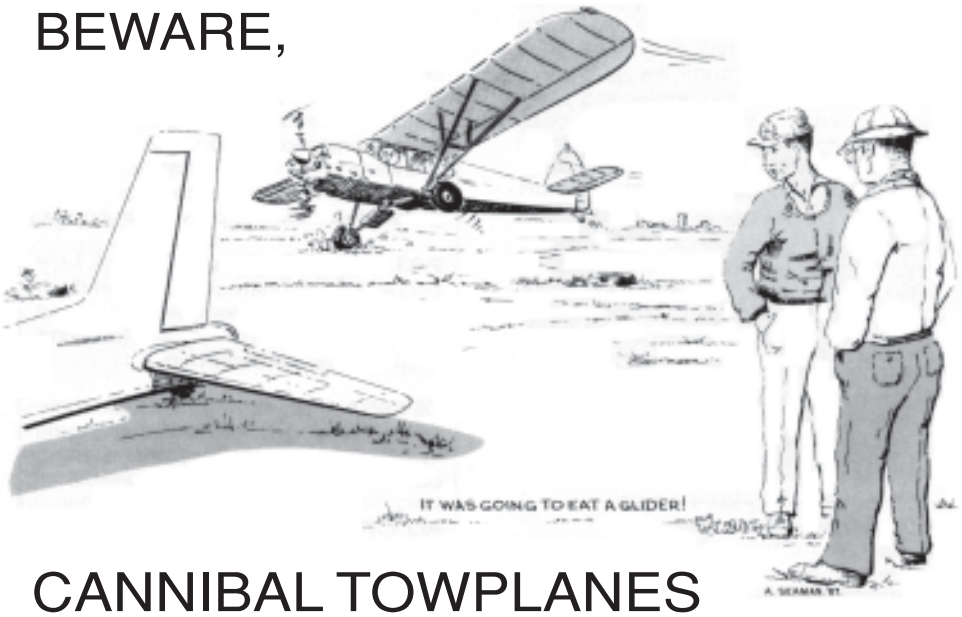
ASTIR CS, C-GRLB, 29 June, Winnipeg. Mid-air collision with a 2-33 on tow. Glider crashed with wing damage, fatal injuries to pilot.

2-33, C-GWCV, 29 June, Winnipeg. Mid-air collision with serious wing leading edge damage and sheared off right stabilizer. Landed safely!



EXPERIENCE IS SOMETHING YOU DON'T GET UNTIL JUST AFTER YOU NEED IT!

BEWARE,



CANNIBAL TOWPLANES

Albert Seaman
York Soaring

They're out there. I know — I've seen them. In fact, with the benefit of 20/20 hindsight, I'd venture to say that I've been too darn close to them at times. Only recently, one of them indulged its uncontrollable passion right in front of me and did so unashamedly, without the slightest regard for the etiquette demanded of the occasion. Even for a Cub that is unforgivable. Particularly on a Sunday.

A small assortment of pilots, all shapes, sizes, and degrees of social disorder, was gathered beside the active runway politely discussing a little of this and some of that, when this towplane came blowing in from a trip 'round the field and headed toward us in a long curving path. There was a strong crosswind at the time and as the roll-out lengthened, the Cub weathercocked more in our direction until its intentions became abundantly clear. It was going to eat a glider! As it came alongside our discussion group, it actually waved at us. Just like that. With total impropriety it raised one wing and one undercarriage leg high in the air and showed us nearly all of its belly. Disgusting exhibitionism. And all to distract us from its real purpose which was to pivot on one wheel and head off into the herd of parked gliders for some quick munching.

Well, it didn't quite work out that way. Its directional aim simply was not good enough. It had to be content with nudging the fin of a 2-32, which then hurried across the grass to get away from its attacker but not before the Cub, in sheer spite, used its port undercarriage leg to kick the glider a painful blow in the left elevator, leaving a very nasty dent.

The Cub's pilot was so dumbstruck by the wayward behaviour of his ward that he just sat there for some time with the engine ticking over. It would have been nice if he had cut the motor right away so that the bystanders could have rushed in to perform heroic rescues had the need arisen, without risk of being sliced up in the process.

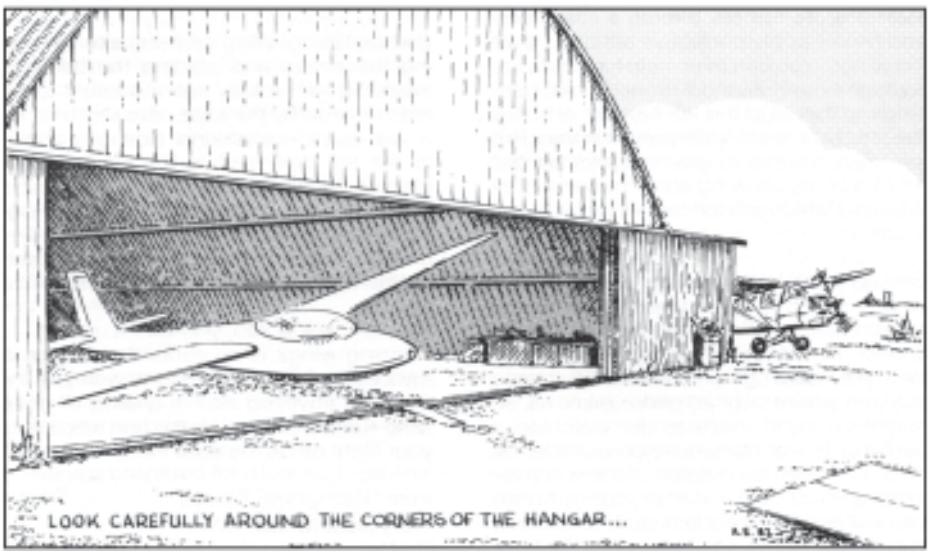
Come to think of it, this towplane delinquency may be something that's going around the hangar. It doesn't seem so long ago that one of the Cub's stablemates went for a trot around the car park in search of a delicacy. It appears that while the pilot's attention was riveted elsewhere, the plane, with engine running, stole quietly across the hangar apron, over the adjacent roadway and actually reached the spot where cars were resting quietly, minding their own businesses and awaiting their owners' return. This particular towplane had, with a vicious lunge, taken three or four slices off a car's front end before it realized it had bitten off more than it could chew, causing it to sustain indigestion of the crankshaft and a highly modified propeller.

The plane was sent off to a correctional institution more or less right away. The car, however, being in no fit state to go anywhere of its own accord, was left at the scene for some while. Its lacerated nose displayed large amounts of interior details through a lattice of louvred metal and shredded fibreglass. Meanwhile, the car's owner was engaged in delicate discussions with the insurance company over the injury to his steed. It may not have been the most luxurious and up-to-date of vehicles he conceded, but it was all he had and what he was being offered as compensation wouldn't even buy him a half-decent bicycle and anyway, it was much too far to pedal out to the airfield. The matter was eventually resolved to everyone's dissatisfaction and life at the club returned to what we fondly call "normal".

Talking of small aeroplanes going "walkies" reminds me of an incident involving a business associate during World War II. If I remember the details correctly as related, a Tiger Moth had taxied up to the hangar apron whereupon the pilot complained of some minor irregularity that required attention. Fred, being a highly-rated irregularity fixer in those days, climbed into the cockpit to attend to the problem, while the engine idled away to give it something to do. Fred's attention was totally contained within the cockpit when he realized a worrisome vibration was developing. Nothing that he tried would remedy it so he eventually shut down the engine and prepared to climb out, whereupon he immediately discovered the cause of the vibration. The nose of the machine was inches away from the hangar door. The vibration had been a product of wheels trundling stealthily across the tarmac as the Moth tried to sneak up on the hangar for a quick chomp.

The dastardly thing about towplanes and their kind is that they are so patient. They will wait for years if necessary to catch someone off guard and then when you least expect it, CRUNCH! Take my advice. Tread warily through tall grass. Look carefully around the corners of the hangar. You never know where they may be lurking. And keep the gliders well away from them. In the next field if possible.

Beware? They're out there. Waiting. □



1987 CIVV Meeting Report

continued from page 15

Iona in 1992 is the first possibility for the appearance of an FAI sport in the Olympics. It was mentioned that twelve sports had applied for demonstration status with two expected to be accepted. One guideline apparently used by the IOC is that a sport must be practised in at least fifty countries to be admitted to the Summer Games. Gliding is doubtful here, although so are quite a few other sports such as eights rowing. The FAI has an Olympic coordinating committee with Bill Ivans as the gliding representative (parachuting and hang gliding are also represented). The clear impression was given that this committee had already decided to push parachuting in 1992 with 1996 still open for another air sport. However, in response to my question, Mr. Ivans indicated that this was only the planned course of action and no such decision had been taken to date. Generally though, the talk was all parachuting in 1992 as it seems to have acquired this status through default. The Spanish delegate indicated that the word in his country was that parachuting was essentially in for the 1992 Games.

The attitude of most countries was fairly positive towards Olympic participation. England was opposed to direct participation in the games fearing political interference, but would otherwise like to wave the Olympic flag for publicity purposes. The South Africans are quite opposed to any Olympic contact as they are shunned by the IOC despite complying with the IOC's declared guidelines regarding racial participation and fear strong FAI/IOC identification would lead to a similar situation in the FAI for them. A German commentary by Fred Weinholtz pointed out the strong influence of television in the conduct and funding of the modern Olympics and concluded that gliding just did not present the right visual image to have a hope of getting in the games. The only definitive action was a motion by New Zealand that "the IOC be requested to fund a one design sailplane design contest" which was passed. The success of this application was thought to be unlikely.

Sailplane safety was an agenda item this year at the initiative of Bill Ivans who I believe was prompted by a number of well publicized fatal accidents in the US. This item took the form of a panel discussion involving senior representatives of the Schleicher, Shempp-Hirth, and Lemke-Schneider factories, and the German Luftfahrt Bundesamt (LBA) which is equivalent to our Transport Canada in function. Piero Morelli spoke on behalf of the OSTIV Sailplane Development Panel while a late arrival was Bill Scull of the OSTIV Flight Training and Safety group. The main part of the discussion dealt with safety related design features of new sailplanes.

A gentleman from the LBA Sport Aviation Safety Branch presented accident stats for German gliding over the past decade or so. The significance of some numbers was debated, but a general thread in most of the reported fatal accidents was loss of control of a serviceable glider followed by ground impact. A high percentage of accidents occurred during cross-country flights. One disputed suggestion was that early generation fibreglass sailplanes were finding their way into the hands of lower time club pilots who perhaps lacked the skill and experience to handle these rather less docile ships.

Prof. Morelli described the work of the SDP in creating the OSTIV Airworthiness Standards for sailplanes which in the latest JAR 21 version form the basis for glider airworthiness certification in many countries. A new edition of JAR 21 was published in October, 1986 and copies are available through OSTIV. A new set of standards (JAR 22?) is currently under discussion by the SDP.

The manufacturers explained some of their design efforts over the years to improve the safety characteristics of their sailplanes. Seating arrangements, seat belt and shoulder harness combinations, easy to jettison canopies, and cockpit integrity were all touched upon. It was clear that considerable thought has been put into the problem by the manufacturers. Solutions are not always simple. For instance, there was a general call for single hand/single motion jettison of canopies. However, Gerhard Waibel pointed out that a significant number of ASW-15 and ASW-17 owners had unintentionally jettisoned their canopies. If these aircraft had used a T-tail configuration, it is likely that several crashes would have resulted from tail damage, thus his later designs all use double-action canopy jettison methods. More disappointing was evidence that some pilots had removed or altered design safety features for the apparent purpose of saving small amounts of weight for a minuscule performance advantage. Also some pilots do not even bother reading the flight manuals for their sailplanes and so cannot use the safety features provided for their protection.

There was some discussion of designing very strong cockpit cages around which a sailplane would more or less break up into small elements. However, extra weight means more energy to absorb in a mishap and bringing an indestructible cage to a sudden stop from perhaps 100 km/h is a difficult feat to accomplish without injury to the occupant of the cage.

Bill Scull spoke to the efforts of the Flight Training & Safety (FTS) Committee to improve stall/spin instruction. Ian Oldaker was present at the last FTS conference last fall and can speak to their efforts in more detail.

Dr. Manfred Rheinhardt, President of OSTIV, described the recent activities of this organization. The OSTIV congress at Benalla was successful, with 24 papers being presented to a larger than normal audience. Future OSTIV papers will be published in the SSA "Technical Soaring" journal, after having appeared in the Swiss "Aero Revue" for many years. The OSTIV design prize for a barograph incorporating a heading recording feature had been won by an American gliding enthusiast. A new OSTIV competition has been initiated for a stall warning system to warn of the onset of low speed loss of control situations, details have already appeared in free flight.

Tom Zeally of England led a discussion of airspace problems again this year. He described the results of a survey which he had conducted of CIVV countries since the last meeting. The French had objected strenuously to the suggestion mentioned last year that gliders be treated the same as power aircraft regarding right-of-way in the air. There was general support for the idea that if this status was to be surrendered it should only be as a concession to achieve some other goal. The FAI is apparently not recognized as an official aviation body by ICAO which complicates CIVV's efforts to influence gliding airspace interests. The story as I understood it was that FAI applied for official status at ICAO in about 1980, but was turned down for some reason. Bob Buck of the USA had personal contacts to gain observer status on a few ICAO subcommittees and had passed this situation on to Bill Paris of Canada. There was a consensus that FAI should reapply for formal membership on the main ICAO committee, the Air Navigation Committee. This was to be actioned by Dr. Kepak.

Bernald Smith described some discussions within the SSA concerning an FAI soaring badge to recognize achievements beyond the Diamond badge level. The Diamond badge was created in 1949 and no changes or additions have been made since then despite a quantum leap in sailplane performance. No proposals were put forth; only a request that delegates return next year with ideas to discuss.

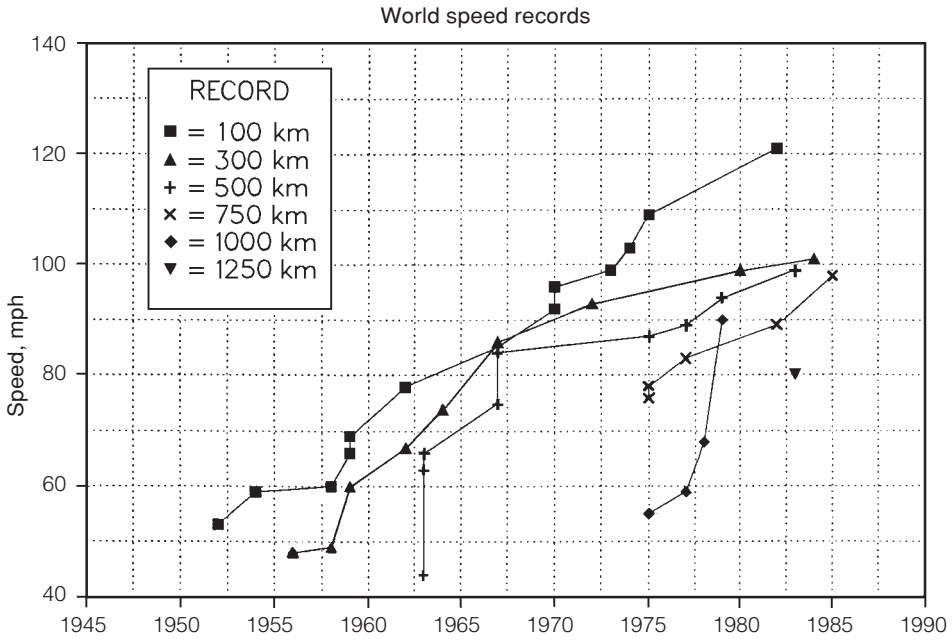
The USSR distributed elaborate diplomas to the delegates explaining that they had been printed to commemorate the fiftieth anniversary of a famous long distance flight in 1937 from Russia to the United States. We were asked to take these home and award them to a deserving pilot making, for instance, the longest distance flight in our country in 1987. I will contact George Dunbar with regard to the disposition of the one I was given.

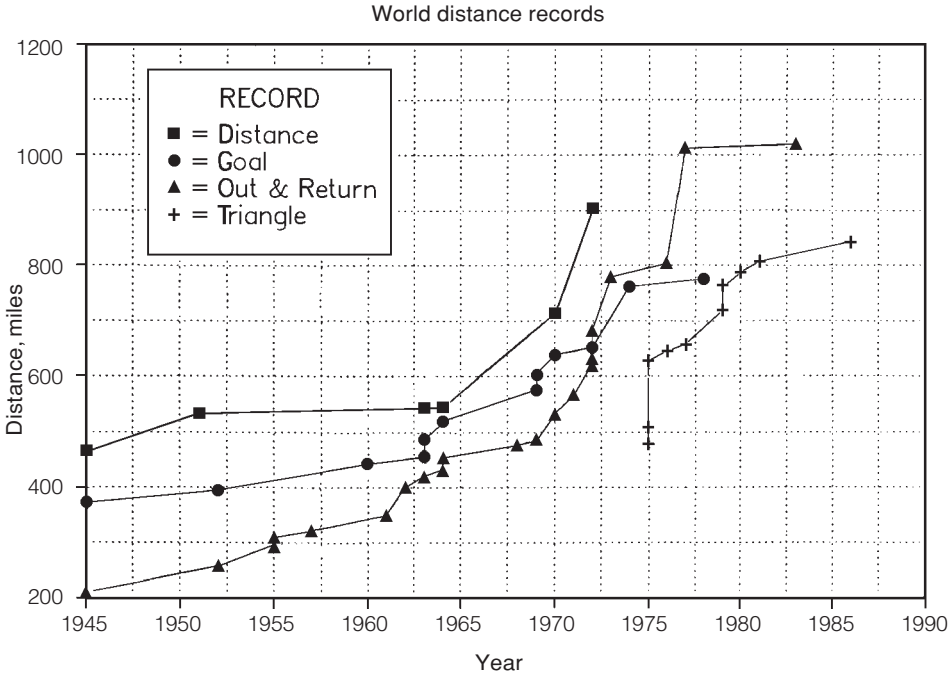
This year's Lilienthal medal was awarded to Dick Johnson of the United States for his many accomplishments in and great service to the sport of gliding. Only four names were available for balloting all being held over from last year.

Overall, the meeting was characterized by an excess of philosophical discussion and a worrisome tendency to put decisions off to the future. Of particular concern was the lack of action or even a firm timetable for action on sailplane class redefinition. The prospects of getting gliding into the Olympic Games aren't very good at the moment due to a lack of leadership and even support within the CIVV countries. There is an undercurrent of opinion that, despite the biggest and best World Gliding Championships ever having just been held, a change of approach to competition may be needed for the sport to progress in the future. Other countries too are worried about the time and money needed to compete at the higher levels of competition. Representation at future CIVV meetings seems well advised to maintain Canada's position on the world contest scene. □

What comes after the Diamond?

continued from page 2





A new generation of high efficiency sailplanes has been produced having disposable ballast systems which are a high percentage of the gross weight.

The 1965 World Championships were won by a Foka-4 and Edelweiss, the last time the World Championships were won by wood structure sailplanes. By 1964, the Wortmann airfoils were being used in new designs. The first Libelle H-301 arrived in the USA in September, 1965. The Phoebus, an outgrowth of the early glass sailplane, the Phoenix, arrived in July 1966. That year, one-third of the sailplanes in the German national competition were glass with Wortmann or Eppler airfoils. By 1967, 23 of the 73 sailplanes in the U.S. Nationals were glass. In 1968, the K8B set the last single place world record made in a wood/fabric sailplane. The era of glass/carbon composites had begun. Soaring had changed.

But what about badges and awards to measure individual pilot performance? Records, by their nature, show the possibilities. The FAI has recognized these advancements by establishing the additional speed and distance record categories. But little attention has been paid to the goals of the individual pilot. The last badge was established in 1949, 38 years ago, when practical composite sailplanes were just a designer's dream. The 1000 km Diplome was instituted in 1973 when there were over 1000 Diamond pilots worldwide. It was 68% of the 908 mile distance record made the previous year. Seventy 1000 km Diplomes had been earned in the United States alone by the end of 1986 (more than the number of U.S. Diamond pilots 20 years earlier).

It has been recognized for many years that some kind of new measure of achievement for the individual pilot is needed. In 1953 the SSA Directors proposed a Plutonium Badge Award, but nothing came of it. The subject came up again in 1970 when the SSA Directors discussed a possible Platinum Badge — one in which the required accomplishments are tied to existing records. No badge resulted from this discussion, but the 1000 km Diplome was initiated in 1973. The whole concept of soaring has changed since the Diamond badge was introduced. It has gone from distance flying to closed course speed flying. There has been recognition of these changes in records, but not in the badges. It appears the few record-seekers have much to challenge them but badge seekers, the majority of pilots, have no new badge to challenge their ability to use current soaring technology and practices to their utmost.

The authors of this article presented, at the recent OSTIV meeting in Australia, a paper in which the history of soaring in relation to the badges, records, and sailplane performance was discussed. We believe this paper established without doubt the need for a new FAI badge/award which could be any one of the following (or something else):

- A redefinition of the existing badges,
- Speed as a 4th Diamond,
- New awards (eg. Diplome for speed, a new badge as an extension of current badges, or a 'living' badge as percentage of recent records),
- Levels of achievement for the Diamond badge in the form of increased distances,
- Annual national awards for speed and out and return,
- Badge or award measuring cumulative accomplishments, etc.

Now we need your ideas and comments. Do you believe the time has come for FAI to establish a new badge/award? If so, what do you think it should be? The SSA has appointed the three authors of this article to look into the matter and report to the SSA Directors. The CIVV has also appointed a similar committee composed of representatives from New Zealand, Sweden, West Germany, the USSR, and the USA. You are the people who will use the new badge. Please send your comments to the authors of this paper, in writing or in person, to our home addresses or via SSA. We need to know if there is enough interest for us to continue with the effort to establish a new soaring badge/award and we need to know your ideas as to what it should be. □

Canadian pilots are invited to respond individually. The SSA (Soaring Society of America) address is: Box E, Hobbs, NM, USA 88241. Please send a copy of your letter to Jim Oke, SAC Sporting Committee Chairman, as I am sure our committee will be preparing a Canadian response on this subject. Tony

COMING EVENTS

Oct 2-4, **SAC Fall Director's Meeting**. Halifax, NS. Contact your Zone Director for details.

Oct 7-12, **Cowley Wave Camp**, camping at airfield or motels at Pincher Creek. Check rides available, visitors welcome. For information, contact Kevin Bennett (403) 256-3665 or Tony Burton (403) 625-4563.

1988 **Combined Nationals**, MSC bid accepted. Details to follow later in the year. George Couser, Box 1082, St. Laurent, PQ H4L 4W6.

AERO CLUB OF CANADA MEETS IN TORONTO

Bob Carlson
President, ACC

On 27 June, the Aero Club of Canada board met in Toronto to conduct its first full meeting. Unfortunately, the atmosphere of our meeting was dampened a bit because the supplementary letters patent have not yet cleared Consumer and Corporate Affairs. It now looks like it will be August before we will come into full legal existence. Not to worry. We proceeded as if the letters had arrived anyway.

I am pleased to advise you that your association has appointed Ed Hollestelle of the SOSA Gliding Club to represent SAC on the Aero Club board. As well, Colin Tootill of SOSA was proposed and confirmed as the secretary of the Aero Club. We still need a treasurer, preferably from the Montreal or Ottawa areas. Any volunteers? We need a strong financial organizer so that our accounts are set up and organized from the beginning.

I presented what I believed would be an adequate budget for the balance of the year. It was approved. I am pleased to say that Transport Canada has provided a $25,000 grant and, as soon as the trust is set up, we expect a grant from the RCFCA. Aero Club fees will pay the balance owing to the RCFCA for the 1987 FAI fees. Subject to confirmation, the FAI fee for 1988 is expected to be about the same as 1987. The value of the Swiss franc is still an area of concern, as is the number of participating associations. It appears that the ultralight folks indulge in so little sporting activity that, at this time, they will not participate.

One of the most interesting aspects of our meeting was the participation, at my invitation, of the president of the EAAC, Jack Greenlaw. These folks are beginning a search for a new, permanent home, somewhere in Ontario. Since we appointed a location search committee (the ACC/SAC lease expires in 1988) at our meeting, there appears to be opportunity for us to get together. There are indications from at least two other groups that, they too, could be looking for a new place to call home.

Your honorary president, André Dumas, reported on the recent council meeting of the FAI in Paris. The major continuing concern relates to making the organization of the FAI more efficient and responsive to your needs. There is also a continuing concern about irregularities associated with records and competitions. Don't be surprised if next year, or soon after, competitors, crew, and staff will be required to have sporting licences for an event to receive sanction from the FAI or its designate, ie. the Aero Club.

Well, that's about it for now. We'll meet again in late October. I'll keep you informed. If you have questions, please write or call. Incidentally, Jim Carpenter of York Soaring has applied his considerable talent to adapt his winged maple leaf logo to the Aero Club. We have a flag, letterheads (bilingual), pins, and a crest in the works. They should be available before Thanksgiving.

If you hear of an Aero Club event in your area, stop by and say hello. I look forward to the realization of the notion that we are all members of the family of aeronauts, regardless of our passion. The folks I have met in the other groups are as interested and interesting as any glider pilot I have met.

NOTE: Some contributors to the World Contest Team fund were inadvertently left off the list in the previous issue of free flight.

They are: Anne-Marie Hollestelle, Beacon International Dispatch, Cu Nim Gliding Club, George Graham, Helga Krueger, Peace Bridge React, SOSA Gliding Club, Al Sunley, and Canada Decal.

ONTARIO PROVINCIAL CONTEST WEATHERED OUT

Adverse weather was the major feature of the nine-day Ontario competition held from 28 June to 6 July. Only three flying days were possible, the tasks being about 200 kilometre in weak conditions and haze. Rain, low ceilings, and poor visibility prevented flying most of the time.

Day 1 (Sunday, 28 June) was won by Ulli Werneburg followed by Colin Bantin, and the remainder of the field of 23 landed out. The next flying day was Saturday and it was won by Dave Frank in his recently acquired ASW-20 while everyone else landed out on the second leg. Colin Bantin was second again. The final day, Sunday, was won by Ed Hollestelle in his new Discus without any help from his handicap. Jörg Stieber was second in his LS-4, and sixteen completed the course.

The competition winner and outstanding novice was Dave Frank, with Werneburg second, Stieber third, and Hollestelle fourth. The contest was ably managed by Wilf Krueger and Ed Hollestelle, and was directed by Al Schreiter. Although short, the contest had enthusiastic help from SOSA members, and provided memorable meals and social activities. Hope to see you at the provincials next year.

Bob Carlson, SOSA

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The following Badges and Badge legs were recorded in the Canadian Soaring register during the period 1 April 1987 to 15 July 1987.

GOLD BADGE

232	David Mercer	Gatineau GC			
233	Robert Mercer	Gatineau GC			

SILVER BADGE

745	Robert Moragne	Vancouver SA			

DIAMOND DISTANCE

	Hillar Kurlents	Montreal SC	506 km	Pik-20	Julian, PA

DIAMOND GOAL

	David Mercer	Gatineau GC	311 km	RS-15	Pendleton, ON
	Robert Mercer	Gatineau GC	311 km	RS-15	Pendleton, ON

GOLD DISTANCE

	David Mercer	Gatineau GC	311 km	RS-15	Pendleton, ON
	Robert Mercer	Gatineau GC	311 km	RS-15	Pendleton, ON

SILVER DISTANCE

	Robert Moragne	Vancouver SA	150 km	Pilatus	Invermere, BC

SILVER ALTITUDE

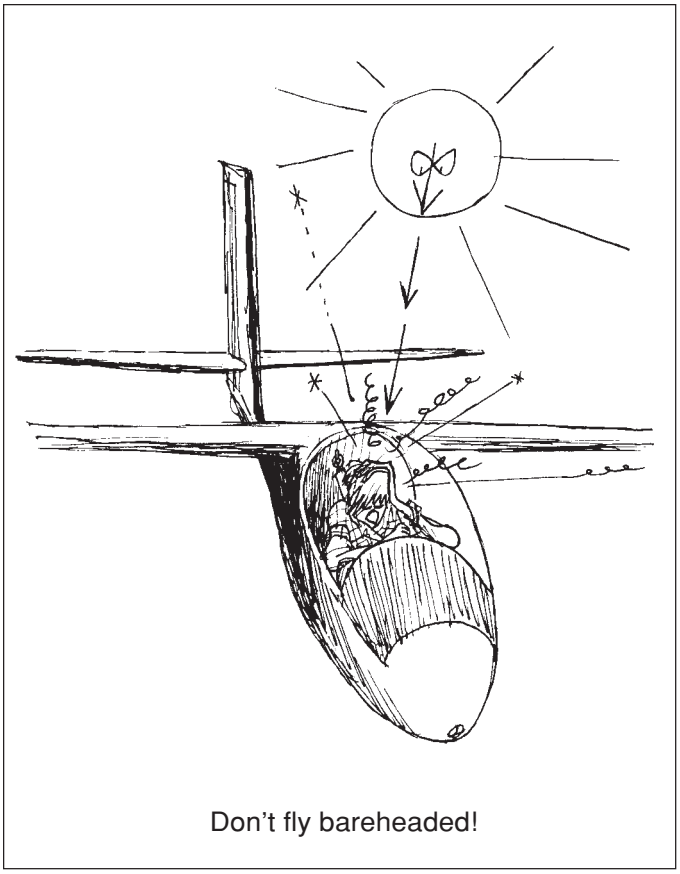
	Robert Moragne	Vancouver SA	1829 m	Pilatus	Invermere, BC

SILVER DURATION

	Robert Moragne	Vancouver SA	5:26	Pilatus	Invermere, BC

C BADGES

2082	Norman Perfect	Base Borden	1:10	2-33	Borden, ON
2083	Cesare Gnecci-Ruscone	Rideau Valley	1:45	1-26	Kars, ON
2085	James Malebranche	Montreal SC	1:10	Blanik	Hawkesbury, ON
2086	Robert Moragne	Vancouver SA	5:26	Pilatus	Invermere, BC



Don't fly bareheaded!

1987 COMPETITION SEEDING LIST

The following list is the latest update to the national ranking of competition pilots following the 1987 Canadian Nationals. The top twelve pilots comprise the Canadian team squad from which the team pilots are selected prior to a world contest. The next selection will follow the Nationals in 1988, which will be held in Hawkesbury, Ontario. The next World Gliding Championships will be held in Austria in 1989.

The score given each pilot is a maximum of 100, 70% of which is contributed from the placing in recent Nationals and 30% of which is contributed from the best placing of the prior two Nationals.

1	Jörg Stieber	90.41	17	Bob Carlson	40.09
2	Jim Oke	90.08	18	Terry Southwood	35.82
3	Larry Hill	82.90	19	Rick Matthews	33.46
4	Larry Springford	79.51	20	Bruce Friesen	32.15
5	Walter Weir	78.66	21	Jim Carpenter	29.00
6	Harry Pölzl	77.18	22	Dave Webb	28.85
7	Tony Burton	69.04	23	Ulli Werneburg	26.43
8	Paul Thompson	66.19	24	Stan Janicek	26.27
9	Jos Jonkers	65.01	25	Mike Apps	26.18
10	Kevin Bennett	64.41	26	Ed Hollestelle	26.12
11	Nick Bonnière	58.86	27	Andrew Jackson	25.26
12	Peter Masak	57.63	28	Wilfried Krueger	25.13
			29	Karl Doetsch	24.69
13	Bryce Gormley	55.51	30	Walter Pille	24.14
14	André Pepin	53.77	31	John Firth	23.20
15	Bruce Hea	48.47	32	Chris Wilson	22.67
16	Dave Marsden	44.92	33	Brian Milner	20.47

FAI RECORDS

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

Speed 400 km triangle, 99.0 km/h, 3 May 1987, John Firth, Kestrel 19, flown from Kars, ON with turnpoints at Killaloe Station, ON and Bouchette, PQ. This record exceeds the previous speed of 77.9 km/h set in 1974 by John Firth.

RECORD CLAIMS

Distance around triangle, 1007 1 km; and Speed 1000 km triangle, 106.5 km/h, Citizen category. 30 April 1987, Peter Masak, ASW-20, flown from Julian, PA with turnpoints at Lindside, WV and Mine Run, VA. This claim is for the first 1000 km triangle by a Canadian citizen and exceeds the previous territorial record of 804 km set by Hal Werneburg in 1982.

SIGNIFICANT FLIGHT

630 km of an almost-completed 640 km out and return flight, John Firth, Kestrel 19, from Kars to North Bay, Ontario, and landing at North Gower just short of home. John reported excellent soaring conditions on the flight with a 150 km segment from North Bay back to Deep River taking only an hour. He was stymied by a late afternoon band of cirrus which cut off his chance to finish the task. This is only the second time a flight has crossed this territory from "southern" Ontario. The first, also by John, was the record-setting 750 km triangle from Kars in 1977.

Trading Post (page 25) and back page omitted