2/87
Mar/Apr

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Musings

Nancy Nault has joined us as our Executive Secretary. Nancy comes to us from the Figure Skating Association where she had a similar, but less challenging, role. Our history says that she will seldom have to worry about being bored. Welcome Nancy, we look to a long and happy relationship.

At my recommendation, the board agreed, in early December, that we should have an Executive Secretary now as the formation of the Aero Club of/du Canada was stalling (see Path Forward — Step 3). We need the day-to-day attention that was lost when Jean and Rosanne left. We've survived, as I've noticed, but we had gone as far as we could go. You will have heard more by, and at, the AGM.

One of my personal philosophies is that each of us has a natural tenure in his/her job. I believe that the time has arrived for me, as a member of the SAC board; and, coincidentally, your President. I have, therefore, expressed a preference to your board that I not be considered as a candidate for President of SAC for the next term. I will finish my term on the board as Past President and Director at Large. I'll work for the ACC as long as it is necessary to help get it started, then retire to slothfulness. All going as planned, this will be my last full essay as your President.

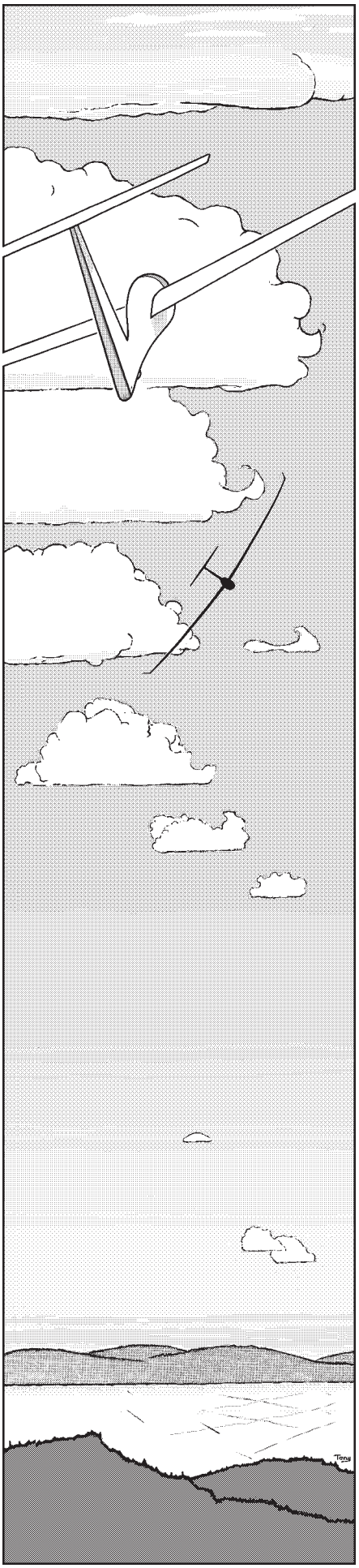
During the winter, or in the early spring, I try to give my glider a careful, inch-by-inch inspection, repair the gel coat dings and scratches, check out my instruments, then wax it well. Waxing helps to keep the aircraft clean and reduces or stops moisture absorption. One thing I'll be doing this year is installing toe holds on my rudder pedals and ensuring that my seat back adjustments and attachments are in tip top shape. Why? Well, there have been recent references in "Sailplane and Gliding" to the problem of flying a glider when the seat back moves in an unplanned, irreversible manner. It is not pleasant. The toe straps provide a point of leverage. I practise sit-ups a lot. May I suggest that you take a similar critical look at your cockpit. And don't forget the towplanes. They need critical attention too.

Even though, except for Wolf's death, the year has not been a bad year for accidents, it has not been a really good year either. We have no room for complacency. We must improve. You will know the price of our mistakes by the time you read this.

I notice that Tony has published, in 1/87, a Dixon More letter from a recent issue of SOSA NEWS. I hope he also publishes the several rebuttals which were written to give balance. It wouldn't hurt to have the current report of the SOSA Planning Committee published either. It is an excellent example of the process, and demonstrates how one club is tackling its perceptions of future needs.

Come to Edmonton for the Nationals and try Invermere too! See you there?

GOOD SOARING
ENJOY THE JOURNEY
ABOVE ALL, WATCH OUT FOR CROCODILES.



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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

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Cover

Lee Coates in TC, UrsulaWiese in URK, and Kerry Bissel in TQL, begin derigging after dropping into a pretty little ranch airstrip in the Alberta Foothills south of Longview. Photo by Jack Towers.

WINTER DIRECTORS' MEETING

Al Sunley
Alberta Zone Director

The winter meeting of the SAC Board of Directors was held in Ottawa on 17-18 January and came to order at 0830 on the 17th. Nancy Nault was welcomed to our organization as Executive Secretary.

Membership Review Total membership in 1986 was 1341 – comprising 1165 full members, 70 married, 76 junior, eight associate, five individual, and eight life.

Insurance Johnson & Higgins have contacted six underwriters. Three said no bid, no answer from two yet, and one has tentatively quoted a 15% increase. Expect we will see at least a 7% increase in liability insurance.

Flight Training and Safety Ian Oldaker reported a successful meeting in Europe. Emphasis was on stall/spin accidents on approach. The International Civil Aviation Organization (ICAO) has proposed new requirements for the glider pilot licence, and this was discussed in detail. MoT was present at the ICAO meetings. Nancy to write to Bill Parrish (Canadian FAI rep) for information on the ICAO requirements. A meeting of the committee is scheduled during the AGM in March.

1986 Financial Review There was a small decrease in membership. Expenses for office, telephone, postage/courier, and printing all increased above budget due to office situation. Meeting and travel expenses were 20% above budget due to not enough use of low fares. Calendars have all been sold, but revenue did not cover costs due to increase in value of Deutschmark. Expect that calendars may have to go up in '87 to give a modest profit. Due to decreases in salary and free flight expenses, and the Training Manual not being printed, it is estimated that revenues will exceed expenses by a small margin.

1987 Budget It will be assumed that Sport Canada will give SAC only one-half of last year's grant. The only big change in revenue would be a total loss of Sport Canada grants in '87/'88, which would drop revenues about $5,000. Salaries will be much lower, even including extra help. Motion: Alex Krieger, seconded Harald Tilgner — that this Board recognizes the importance of yearly post-season meetings of the Flight Training and Safety committee and the corresponding inclusion of the required meeting costs in the SAC budget. Recorded vote. Passed - one against. Motion: Harald Tilgner, seconded Alex Krieger — that in view of the need of the Flight Training and Safety committee to meet annually in the late fall, a membership fee increase of $5 be levied to this end. Recorded vote. Passed - one against.

Second Class Mail By using an independent company in Toronto to do sorting and mailing, it is possible to reduce mailing costs by 50%, mainly for free flight. It is being investigated and could be in effect in March.

Life Membership Motion: Harald Tilgner, seconded Alex Krieger — that inasmuch a life membership is offered as a result of a donation to the Pioneer Trust fund, any membership fees paid to remain a SAC member in good standing remain in SAC for that purpose. Passed. *(Translation: you don't get your annual membership refunded in the year you buy a life membership)* Life membership remains at $1,000.

World Contest Fund Donations are at $72,000 and still coming in. Pilots are donating to fund. Donations are to be made to SAC, World Contest fund.

Calendars In 1986, the USA distributor was charging $29 Cdn, and the British distributor was charging $20 Cdn. In 1987, assuming the Deutschmark does not change, the calendar will cost $25. There was discussion on the advisability of continuing the distribution of calendars, what publicity value accrues from the sales? Guidance will be requested at the AGM.

Julien Audette SAC is forwarding Julien's name as our nomination for membership in the Canadian Sports Hall of Fame. Jerry Dixon has made the application. The Board also recommends that his name be put forward to the Canadian Aviation Hall of Fame.

Competition Club There is a need to begin preparation for Austria. There was discussion on the possibility of a new club, part of SAC, in which shares would be issued to contest pilots and others for purchase of gliders for competition.

Type Approvals
DG-400 - approved with required changes
Pegasus - not approved in France yet
Discus - approvable
Salto - stalled due to age of design (20 years)
ASK-21 - type approved

continued on page 17

The SOARING ASSOCIATION OF CANADA

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

free flight is the Association's official journal.

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

free flight also serves as a forum for opinion on soaring matters and will publish letters-to-the-editor as space permits. Publication of ideas and opinion in **free flight** does not imply endorsement by SAC. Correspondents who wish formal action on their concerns should contact their SAC Zone Director. Directors' names and addresses are given elsewhere in the magazine.

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

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

For change of address and subscriptions to non-SAC members ($18.00 per year/$24 outside Canada) please contact the National Office, address below.

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Vice President Harald Tilgner
Executive Secretary Nancy Nault
Corporate Treasurer Jim McCollum
Corporate Secretary position vacant

SAC National Office
485 Bank Street, 2nd Floor
Ottawa, ON K2P 1Z2
(613) 232-1243

5 Deadline for contributions
5th day of each EVEN month

L'ASSOCIATION CANADIENNE DE VOL A 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'Association Royale Canadienne des Aéro Clubs (RCFCA – Aéro Club National Canadien), 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, le RCFCA 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.

EDITOR
Tony Burton (403) 625-4563
Box 1916
Claresholm, Alberta T0L 0T0
Address for courier service:
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OPINIONS

LIMITING MEMBERSHIP TO INCREASE MEMBERSHIP

Membership has been discussed at length lately in the sport. Very little is mentioned about manpower — all the schemes to boost membership don't properly address it. Growth in all clubs is limited by the number of active instructors or towpilots they have. But in most, anyone with the faintest notion of learning to glide is welcomed without reservation. We are preoccupied with gaining new members while casting adrift that two or three year member so much time and effort has been invested in.

This member is *much* more valuable than the beginner, but will drift away because of no further opportunity for growth, be thrust into instructing to burn out on the next batch, or go to a private ship and minimize his club involvement (fortunately not every time).

It takes years to develop a skilled glider pilot, and this cannot be done in clubs that have no other training policy than a knee jerk reaction to each spring's joiners. The movement lacks a sense of purpose and direction at the club level. We do not quantify what we need — other than merely a new batch of students — and no commitment is required of them. Money isn't a factor other than our tendency to undervalue soaring's bang for the buck.

Unless we define the goal and involvement required beyond solo — which is only a single season effort — we shall continue with a high student turnover, and more critical, further the erosion of skilled pilots tired of working in instructor "factories" where their own flying is sidelined. Real club growth will only begin when, strange as it may seem, clubs limit membership, but at the same time provide access to advanced soaring within the club environment. The club that takes on all comers without a progressing training plan or consideration for its instructors has probably been a liability to the long-term growth of the sport. Most clubs have no objective process to wash out incapable pilots at any level.

I am at a personal crossroads. Instructing cuts into my own flying time. Rather than give it up entirely, I instruct only those students who are committed long-term so that my effort is worth the return. Most of my students are still active in the system.

I am one of the six students selected for flight training at the Wigram Gliding Club, class of '69. Five remain very active. Perhaps there's a lesson here.

Stephen Newfield
Air Sailing

SUMMER XMAS STORY

I really enjoyed the Christmas story in the 6/86 issue — you know — the one in the Club News section entitled "Brothers do well". Although the events occurred during the summer months, it can only be described as a Christmas story, and since it appeared in the Nov/Dec issue I can only say — great timing! It's nice to know that these things can, and even more importantly, DO happen.

So hats off to Chris, Terry, and the rest of Richie's friends at SOSA, and congratulations to Richie himself for soloing.

Seth Schlifer

RESPONSES TO "COULD YOU AFFORD IT?"

Several people responded to Dixon More's letter in the SOSA News, which appeared in the free flight *Club News last issue:*

Bob Carlson
... We have danced to the cheap piper's tune too long and in 1987, it looks as if we will start to pay the price. Equipment runs on inertia only so long. Aircraft finish withstands the abuse of being uncleansed and uncared for only so long .... Club attitudes stay healthy only so long as there is pride in participation and achievement. If you sleep while the grass grows, fly airplanes without preventative maintenance, treat your flight standards and discipline with contempt; then there will be soon a lament for members who go away and never come back ....

I once owned a Rambler. It taught me two valuable lessons. Care and maintenance are essential. Abuse of the car by being ignorant and cheap led to the unneeded sale of a ruined car and engine to a wrecker in Tennessee.

I have long argued that the essential need for all gliding clubs, especially a club such as SOSA, is a statement of purpose, a plan to achieve that purpose, and the income to effect the plan. The principle point is to give the members value .... All good clubs, be they golf, yachting, flying, or social, justify and receive their fees on the basis of value and the pride they provide to their members. I speak from the experience of doing graduate study on golf club management and operation. I have also been a member of "Royal" level flying and yacht clubs and of a gliding club in New Zealand. Their fees were reasonable — not cheap, but reasonable — giving value through excellent facilities, well maintained equipment, and active sporting/training/social

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BERNOULLI . . . BAH!

A practical explanation of why wings work

Jim Koehler
Saskatoon Soaring

This article presents a 'theory of flight' which is fundamentally sound and which ignores Bernoulli's equation and invokes, instead, Newton's Third Law. The result is a derivation of most of the important features of flight suitable for use at the ground school level.

As everyone knows, aircraft fly because airfoils have a longer upper surface than a lower one so the air has farther to go along the top compared to the bottom and hence, goes faster as shown in Figure 1. Bernoulli's Theorem states that higher speeds correspond to lower pressures so the pressure on the upper surface of the wing is lower than on the lower surface and this pressure difference produces a net upward force called lift. Right?

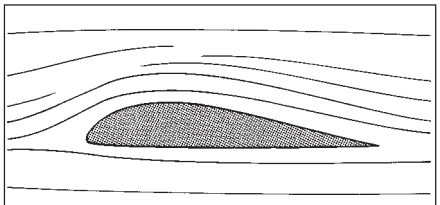


Figure 1
Conventional airfoil

The trouble with this explanation is manyfold. Firstly, it implies that aircraft with symmetrical airfoils could not fly at all. There are, indeed, many examples of real aircraft which have essentially symmetrical airfoils the most famous example of this is the P51 'Mustang'. Secondly, this statement implies that airfoil characteristics ought to be extremely sensitive to the exact shape of the airfoil and that small changes in shape should cause large changes in lift. In reality, as any pilot knows, aircraft performance is not very sensitive to airfoil shape — it is important, but it is a second order effect, not a first order one. And finally, invoking Bernoulli's Theorem implies that an airfoil which is a thin rectangle in cross-section (like that of simple balsa wood glider which you can buy in any hobby store) could not produce lift. An investment of about one dollar will readily show that these small models do indeed fly.

As a physicist, I've disliked the Bernoulli explanation because there are no quantitative ways of *using* it. It might be possible to take a photograph of the streamlines around an airfoil in a wind tunnel and then, applying some conditions of continuity perpendicular to the streamlines, calculate the net force on the airfoil. However, the process is complicated by the fact that the shear in the vicinity of the boundary layer is very large and the process would be terribly complex and not likely to be very accurate.

Since you can't do anything with it, then why introduce the notion at all? The answer to this question, presumably, is that it is the 'correct' explanation of how lift is generated and that people like freshman university students, pilots, and the populace as a whole ought to know the basic principles underlying such a common phenomenon as the flight of aircraft.

The problem is that Bernoulli's Theorem and fluid dynamics is *not* the best way to explain lift. There is a much simpler way. It is that an aircraft wing, in flight, displaces some of the air downward as it moves through the air and that this results in a net upward force called lift. This explanation uses Newton's Third Law: for every action there is an opposite and equal reaction.

This explanation is just as 'correct' as the Bernoulli one, is intuitively easier to understand and, most important of all, can be used quantitatively. Described below is a self-contained 'theory of flight' which produces intermediate results which can be compared to measured values. It explains the 'stalling speed' of aircraft in a way which is much more satisfactory than that usually found.

Theory of Lift for Simple Airfoils

As the simplest possible airfoil, consider a thin, flat plate moving through the air as shown in Figure 2. In this figure, some streamlines are shown which probably are representative of the actual airflow which would be observed. The motion of the plate, inclined at some angle of attack, θ, causes the air to be deflected downward. Using the observed streamlines from wind tunnel photographs, we could estimate the total rate of change of momentum of the air and hence calculate the force required to produce it. Then the force of the air on the airfoil would be just equal and opposite to that.

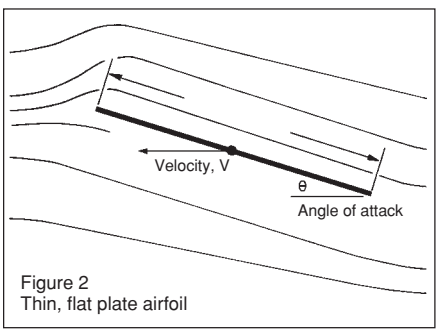


Figure 2
Thin, flat plate airfoil

Not having a real wind tunnel to measure streamlines, let's just make an approximate estimate of what the force would be. Figure 3 shows the plate stationary and with the air moving past it. If the velocity of the air is v m/s horizontally before it strikes the airfoil, let's estimate that, as it slides along the airfoil, it is deflected to be parallel with the lower surface of it. That is, its velocity is changed from horizontal before it gets to the airfoil to being tangential to it after it passes by the airfoil. The velocity diagram is shown in the corner of Figure 3 with **dv** being the change in velocity.

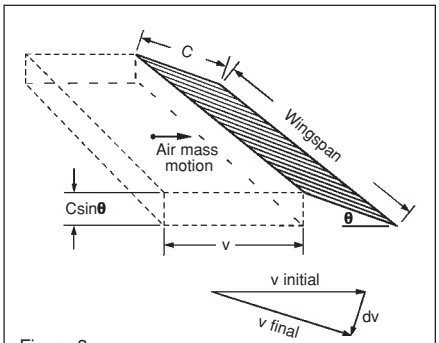


Figure 3
Airmass deflected at wing

Now, rate of change of momentum will be the product of the change of velocity and the mass of the air per unit time being affected. This latter quantity is harder to estimate but will be about equal to the mass of air in a volume which is shown as the dotted box in front of the airfoil. The 'height' of the box will be the projected height of the inclined airfoil ($C \cdot \sin\theta$), the length will be the distance the air travels in one second; v metres, and the width of the box will be the wingspan. The total rate of change of momentum or the force will therefore be:

$$d\rho/dt = 2\rho A v^2 \sin(\theta) \sin(\theta/2)$$

where **A** is wing area and ρ is the air density. The direction of the force on the air will be in the same direction as the change of velocity, inclined downward $\theta/2$ from the vertical. The force of the air on the wing then will be of the same magnitude but the opposite direction as is shown in Figure 4.

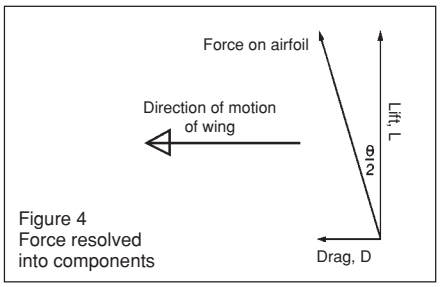


Figure 4
Force resolved into components

There, this force has been resolved into two components: the lift, L, which is the vertical component and the 'induced drag', D, which is horizontally backward.

Using this diagram, it is easy to show that:

$$L = \rho A v^2 \sin^2(\theta)$$

and $D = 2\rho Av^2 \sin\theta \sin^2(\theta/2)$

Now, before going on, let's just look at the basic assumptions. Firstly, it was assumed that the magnitude of the air velocity did not change, just the direction. This is obviously only a fair assumption if ($\sin\theta$) is not too large. Indeed, for large values of θ, the whole approximation becomes very poor, so we have to be careful not to press too far. It is an approximation and it is only valid for small values of $\sin\theta$ — say up to 0.1 or so. Having made this caveat, let's look at the theory of flight using such an airfoil.

Theory of Flight

Consider a wing of the type described above mounted on an aircraft of mass m in *level, unaccelerated* flight. From this description, the aircraft must be in equilibrium with no net force on it. That implies that there be some horizontal force equal to but opposite in direction to the induced drag — this would be supplied by the motor. Similarly, the lift, L must be equal in magnitude to the weight of the aircraft, mg.

From:

$$mg = \rho Av^2 \sin^2\theta$$

we can rearrange to give:

$$v\sin\theta = (w/\rho)^{1/2}$$

where w is the weight of the aircraft divided by the wing area — a quantity called the 'wing loading'. Putting the value for the density of air into this equation and changing the units of wing loading to pounds per square foot and speed to mph, we get:

$$v\sin\theta = 13.6\, w^{1/2}$$

Let's consider what this equation means. In equilibrium, the sine of the angle of attack multiplied by the velocity is constant for any aircraft. That is, if the airspeed is reduced, θ must be increased in order to maintain equilibrium. As any pilot knows, that is what is observed. Flight at low airspeed requires a greater angle of attack than at high speed.

Secondly, this equation implies that there is some *minimum* velocity necessary to maintain equilibrium. Indeed, stretching the relationship a bit (about which we have previously stated reservations), we see that ($\sin\theta$) cannot ever be greater than unity so that there is an absolute 'minimum airspeed' necessary for equilibrium of:

$$V_{min} = 13.6\, w^{1/2}$$

At airspeeds lower than this, there is just not enough lift to maintain equilibrium. This minimum airspeed is the stall speed. Notice that it was not necessary to evoke the 'separation' of the airflow from the airfoil to explain the stall speed. Indeed, for real aircraft at low airspeeds (but somewhat greater than the stalling speed), flow is already well separated from the airfoil over most of the wing surface.

Anyway, just to get some feeling for the validity of the derivation, v_{min} versus wing loading as given by the above equation is plotted in Figure 5. Bear in mind that it is

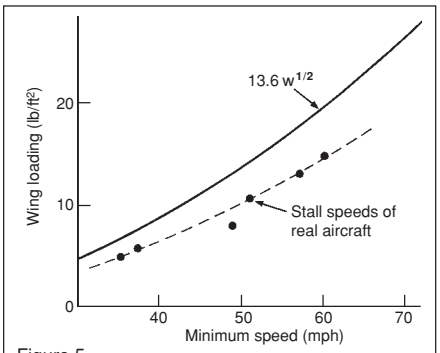


Figure 5
Plot of wing loading vs airspeed

bound to give too low a value for v_{min} since the stall angle of attack will never be 90°.

Also plotted in Figure 5 are some stall speed values of actual light aircraft as taken from measured flight characteristics. As you can see, the actual stalling speeds are about 20% higher than the 'theoretical' minimum derived above but the shape of the plot agrees rather well with the observed points.

To summarize, the very simple theory of momentum transfer explains the observed lift of airfoils very well! There is certainly no need to invoke Bernoulli's Theorem to derive it and I doubt if you could anyway. This simple theory also explains, quantitatively, the concept of a minimum speed necessary for flight — the stalling speed.

Now, let's carry on with this by looking at the induced drag component, D. Again, for an aircraft in equilibrium, we see that the magnitude of the drag depends on θ also. Since:

$$v = \frac{(w/\rho)^{1/2}}{\sin\theta} \simeq \frac{(w/\rho)^{1/2}}{\theta}$$

and since

$$D = 2\rho Av^2 \sin\theta \sin^2(\theta/2) \simeq (\rho Av^2\theta^3)/2$$

then:

$$D \simeq \frac{\rho A}{2v}(w/\rho)^{1/3}$$

for all θ small enough so that $\sin\theta \simeq \theta$. A graph of D versus v is shown in Figure 6. For an aircraft in equilibrium, as the speed is reduced, the induced drag increases because the angle of attack must be increased to maintain the necessary lift.

Finally, to complete the 'theory of flight' we need to consider one more first order effect — profile drag.

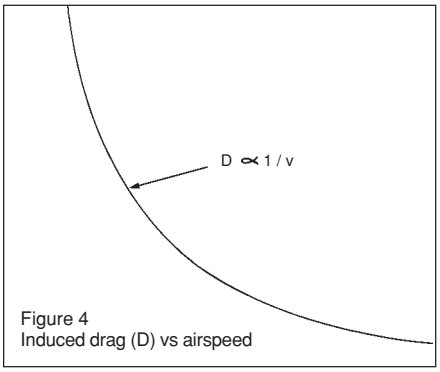


Figure 4
Induced drag (D) vs airspeed

Profile Drag

Consider a flat plate with cross-sectional area, A, moving through air with a velocity, v. The air in front of it is initially at rest and, after the passage, will have been disturbed by the passage of the area. Its final velocity will depend a bit on the shape of the area and its size, but will be some fraction of the plate velocity, v.

Again using the relationship that force is equal to rate of change of momentum, in one second, the plate will have disturbed a mass of air equal to ρvA and will have given it a velocity of $C\rho V$ where C_D is the coefficient of drag.

The total force of the plate on the air is:

$$F = \rho C_D A v^2$$

in the direction of motion and hence the net backward force on the moving plate, due to the air in front of, it will be the same quantity but backward. This force is called profile drag.

The magnitude of C_D depends on the shape of the front face of the area. If it is a flat plate, C_D will be close to unity, whereas if the area has a long, thin pointed front face, C_D will be small. However, whatever its absolute magnitude, this drag force will depend on the square of v.

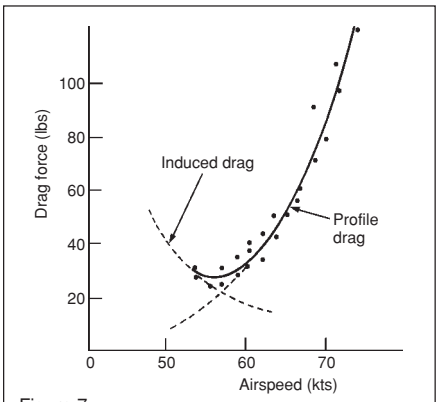


Figure 7
Drag vs airspeed for ASW-17

A real aircraft has some frontal area which will cause profile drag. The wing also requires some internal structure to make it strong enough to carry the flight loads so it will have some thickness also. An ideal airfoil is a plate thick enough to sustain the bending loads on it and then streamlined to reduce the drag coefficient. Such a wing will have an induced drag component which varies as $1/v$ and a profile drag which varies as v^2. We might, therefore, expect the total drag force on an aircraft to be something like that shown in Figure 7. Figure 7 data was taken from the flight tests of a real aircraft.

Summary

The main features of lift and drag can be derived in an approximate method which relies on the application of Newton's Third Law rather than Bernoulli's equation. It gives results which are quantitative, which are easy for students to understand and which are useful. □

IMPRESSIONS OF BENALLA

Mike Apps
Team pilot

Most of the Canadians arrived in Sydney at eight in the morning after a 36-hour flight. We spent the day wandering around the town. My first impression of Australia was that I could easily live there; Sydney is a beautiful city.

I caught a flight late that night to Melbourne, arriving absolutely exhausted, then travelled by train to Benalla the next morning to get settled down. I took the train to get some idea of what the countryside looked like, but the route went along the hills that overlook Benalla and the flying area. I didn't realize this at first, and thought that flying over this territory is going to be really scary. When I stepped out of the air conditioned train at 1430 it was right into a blast furnace of 40°C heat.

The first thing I expected to see were lots of kangaroos, and Sheilas and Bruces — but during the whole trip, I saw few 'roos, not a single Sheila, and the only Bruce I met was a member of the Canadian crew! The most striking thing to see was all the parrots — we keep them in cages here, and there, a thousand dollar white cockatoo would go flapping by. The most interesting bird — billions of them — the national bird of Australia, was the fly. Every time the wind stopped blowing you got covered with them, but fortunately, they didn't get in the glider very often.

The terrain

When I'm flying over the prairies, I place a pretty low priority on landing in grassy pastures — there is just too much of a possibility of damage from rocks and especially gopher holes which can wreck your undercarriage. There, nearly all the fields are grass and used for livestock, and my first impression was that I dare not land out. But there are no gophers or large burrowing animals to speak of, and field surfaces are perfectly landable.

What was a hazard if there was a farm nearby, were "SWER" (single wire earth return) lines, which were strung across fields from any direction to a point requiring power, and as the poles could be very widely spaced, such wires are impossible to see and have caused glider accidents in the past.

On the Canadian prairies, a clump of trees almost always is a windbreak for a farm. There, eucalyptus trees were dotted all over the landscape, and clumps would look like a town from a distance, so that took some getting used to. To the south of Benalla were the forested hills which rose 2-3000 feet above the plain (which was at 500 feet asl). The roads were not much help in navigating, as they were not oriented in any particular direction and it was difficult to see from the air if a road was well-used or just a track. I did a lot of compass navigating until I got used to the landmarks in the task area. We flew using one million scale maps, which is unusual for us, but once the landmarks were known, it was no problem.

Thermals

The thermals were not at all the same as here — they were much rougher and mostly "square". After a few days of flying, one got used to not seeing steady lift and accepted the average rate of climb and much steeper bank angles (50 degrees became normal for me) to take advantage of the little surges and bubbles of stronger lift within a thermal. Although on a few days the lift was far better than I have ever seen before (on one practice day, I averaged 1400 fpm from 3 to 8000 feet, and there were three 1000 km flights from Tocumwal), most of the time the convection allowed speeds comparable to what we get on the prairies here. The ground was very uniform in texture, hence in heating. Areas of bare red dirt or cut hay fields seemed to be thermal sources, as well as discontinuities such as the edge of a treed area. At the end of a day, damp areas would release heat and provide lift.

The depth of the convection was very different — we rarely went above 6000 feet, and reliable thermals could be found at much lower altitudes. Very often I was down below 2000 feet with other gliders and not being extraordinarily worried about finding lift. On several days we flew in an operating band of 1-3000 feet, even though the lift did go higher.

The days started early, usually around 1030 to 1100, but the good lift didn't get going until 1400. On many days the depth of the convection just kept on going up and up due to the very large daily temperature changes. In the morning, it might be 15, and by mid-afternoon 40 — moving the convective layer from 2000 to 8000 feet or more. On several days, there was thermal wave at Benalla, which made for some interesting flying prior to starting the task.

Frequently we would get launched around 1030 but not start until 1300, so most days saw five to seven hours of flying. Winds were not a significant factor, except on the first day when everyone set off into a 30–40 knot headwind on the first leg and 104 pilots landed out.

The Gaggles

There weren't many days when there were clouds — it was mostly blue — but if you were behind and low you could find thermals by heading for the fibreglass clouds. The worst group for this was definitely the Standard class. Can you imagine virtually the entire class of 44 gliders, in the same thermal out on course, all within 2000 feet of each other vertically? We were flying together the whole time.

continued on page 8

FUTURE CONSIDERATIONS

Wilf Krueger
SOSA

To fly with the best pilots in the world again was an exciting experience for the Canadian team.

Remembering my own experience, there were two extremes — placing well and landing out. My downfall happened on the 6th day of the contest when most of the pilots made it home, and so I lost a lot of points. After a turnpoint photo in the mountains, I was not able to find a thermal. The other pilots, being more familiar with mountain terrain, managed to escape the area. In hindsight, I should have gone higher into the mountains.

On the last contest day, we returned into the mountain region on a 566 km flight. This time I was more careful and went higher into the mountains. It paid off. I was able to pass a lot of gliders which were low in mountain terrain and searching for thermals. This day I placed 6th with a speed of 120 km/h. The winner of the day had a speed of 121.5 km/h.

I would like to list some essential points which should be considered if we are to place well overall at a world contest:

• **Equipment** The best available glider and instruments are mandatory to place well.

• **Experience** Recent contest experience with the same equipment flown during the world contest is a must. Most pilots who placed well flew no less than six contests during the last two to three years and owned the glider they flew.

• **Tactics** To start at the right time seems to be decisive to win, particularly on blue days. The top pilots usually left Benalla late (10 to 30 minutes after two-thirds of the class) and caught up with them after two or three hours of flight.

• **Wing Loading** For stronger days with six–eight knot thermals (there were a few days like this), a wing loading of 50 kg/m^2 was a major advantage.

• **Motivation – Teamwork** Teams who practised teamwork and acted like a team seemed to do better than the rest. I propose that pilots of the Canadian team fly US contests together in order to practise teamwork. We should also establish a budget for training of the national team.

• **Altitude during start** The photo start gate allowed start heights up to 9500! Most of the top pilots were able to climb higher (partly wave) than other pilots. With a later start, as mentioned before, thermals were often also higher. A 1000 to 2000 foot advantage at the start often counted as a point advantage of 50–100 points.

Overall, I felt the photo system was a good system and should be introduced in Canada.

• **Preparation** We need to prepare ourselves well in advance of a contest. One person should be assigned to be in charge of the overall preparation.

I am sure we Canadian pilots can do better in the future if we fly a greater number of contests, work hard to improve our skills, and fly state of the art gliders. □

TOP TEN IN EACH CLASS

	OPEN (21 pilots)			1	2	3	4	5	6	7	8	9	10	11	12	**Total**
1	Renner	AUS	ASW22B	999	781	776	705	946	977	934	1000	974	938	1000	989	11019
2	Schroeder	FRA	ASW22B	962	726	901	742	1000	857	995	810	1000	872	994	1000	10859
3	Gantenbrink	FRG	Nimbus 3	724	826	1000	651	946	992	1000	825	969	941	962	934	10770
4	Chenevoy	FRA	ASH25	949	700	894	732	985	827	762	826	923	836	949	949	10332
5	Gavazzi	I	Nimbus 3	737	705	764	585	959	1000	770	861	835	773	941	940	9870
6	Centka	POL	ASH25	748	680	920	713	824	744	831	845	865	775	899	989	9833
7	Lynskey	NZ	Nimbus 3T	983	695	871	747	994	797	725	814	727	824	386	878	9441
8	Peter	FRG	Nimbus 3T	706	722	877	655	931	825	685	827	932	760	937	490	9347
9	Lee	GB	ASW22B	721	827	934	617	799	654	925	772	810	896	910	422	9278
10	Kurstjens	NL	Nimbus 3	786	692	907	660	872	769	475	800	579	798	958	951	9247
			max pts	999	884	1000	747	1000	1000	1000	1000	1000	1000	1000	1000	11630

	15 METRE (43 pilots)															
1	Spreckley	GB	LS-6	966	943	1000	421	811	1000	835	747	979	707	942	990	10341
2	Back	FRG	LS-6A	972	799	721	528	870	904	925	789	797	1000	949	1000	10254
3	Jacobs	USA	LS-6B	1000	854	924	354	842	432	1000	1000	960	891	884	936	10077
4	Musters	NL	Ventus A	964	927	679	460	543	922	900	918	830	923	942	988	9996
5	Navas	FRA	LS-6	975	986	803	449	788	989	972	891	833	468	942	890	9986
6	Watt	GB	ASW20B	960	662	849	345	797	941	913	808	986	869	912	870	9912
7	Meuser	FRG	Ventus B	861	872	855	529	489	930	947	781	735	963	909	980	9851
8	Hagnander	SWE	LS-6	898	882	809	320	757	906	742	891	957	872	949	861	9844
9	Wells	GB	LS-6A	966	851	723	158	822	904	824	799	954	957	982	893	9833
10	Pare	NL	Ventus B	872	987	739	420	442	664	908	824	905	704	1000	981	9446
14	Krueger	CAN	ASW204B	850	896	714	426	674	374	747	767	798	795	893	974	8908
24	Werneburg	CAN	ASW20	872	760	681	376	587	365	741	621	768	694	917	747	8129
35	Webb	CAN	ASW20	898	407	719	298	599	347	595	567	783	723	966	339	7241
			max pts	1000	1000	1000	529	1000	1000	1000	1000	1000	1000	1000	1000	11529

	STANDARD (44 pilots)															
1	Kuittinen	FIN	Discus A	931	947	934	343	881	1000	837	954	827	978	979	925	10536
2	Opitz	USA	Discus B	995	693	977	255	823	944	891	1000	902	972	974	967	10393
3	Aboulin	FRA	Discus	892	819	924	363	898	942	621	927	1000	945	974	976	10281
4	Delylle	FRA	Discus	931	607	888	352	981	928	708	901	997	922	965	983	10163
5	Pybus	AUS	Discus B	992	965	931	335	818	660	951	848	835	973	965	590	9863
6	Ottosson	SWE	Discus B	913	683	921	173	669	845	950	915	854	932	1000	972	9827
7	Selen	NL	DG-300	940	696	924	334	730	616	965	884	832	950	965	904	9740
8	Anderson	DEN	DG-300	959	579	939	290	741	860	863	976	918	914	878	514	9431
9	Wills	GB	Discus	967	944	840	230	746	491	829	948	844	979	987	550	9355
10	Widmer	BRZ	LS-4A	954	703	879	279	865	894	621	957	894	383	994	929	9352
25	Apps	CAN	LS-4	824	531	890	227	861	802	372	796	700	335	976	987	8301
35	Hollestelle	CAN	Discus	743	642	816	172	668	274	631	443	793	285	979	875	7321
			max pts	1000	1000	1000	379	1000	1000	1000	1000	1000	999	1000	1000	11378

You have to picture it. When I was behind the pack, I could see a line of gliders stringing forward — the first would turn left, then the next and the next, and the whole fleet would respond in sychronization like a school of fish. Then someone would turn right and the school would divide for a time, then suddenly coalesce towards the group climbing better.

Early on in the contest, I would leave the gaggle and be barrelling along doing well, thinking that I would be really ahead of those guys, pull up in a thermal, then after a turn look back ... picture a scene out of the Battle of Britain, only paint all the airplanes white — waves of airplanes coming right at you, a swarm heading into your thermal that you have worked so hard to find the centre. You couldn't escape. When you left a gaggle and found a good one, they were right there with you; if you didn't, they would be somewhere else getting ahead and you would risk landing out.

It called for a change in start tactics. We tried to start a task as late as possible after most had left, then use all those thermal markers up ahead to rapidly catch up with the field and gain time. It took me a few days to learn that lesson. Unfortunately, everyone tried to adopt that philosophy; and on Day 11, when the very long tasks were set, the whole of the 15m and Standard class failed to complete their flights because everyone was afraid to leave and accept losing points by being caught. I was flying for three hours locally before starting a 695 km task! The Open class task was so long (840 km) they were forced to get going without delay, and as a result most completed it.

The Midairs

There were two of them, and given the sailplane density in gaggles at the start and near turnpoints, it's a wonder that was all. I saw the first one (involving Maurie Bradney of Australia and Jeremy Bryson of Ireland) just under me about 150 feet. I saw one glider run straight into another, with a shower of fibreglass at the point of impact — it really scared me. I had to keep on turning for fear someone would hit me. It turns out both pilots landed successfully. One of the pilots turned steeply and cut in on the thermal, which didn't show good flying discipline, in my opinion.

For the rest of the contest, I kept on telling myself that these guys flying here are the best in the world — they aren't going to do anything stupid, are they?

The other midair involved Italian Leonardo Brigliadori over the second turnpoint one of the days. Stanislaw Witek of Poland clipped him with the nose of his Discus and knocked half the tailplane off. After Leonardo tried and failed to get the canopy off to jump, he found he was able to control the ship and carefully landed. That was a good thing because had he abandoned the aircraft, it was possible it would have spun down through a number of other aircraft and caused more havoc. He flew the rest of the contest with a Ventus tail borrowed from an owner in Narromine.

DAILY TASKS AND WINNING SPEEDS (OR DISTANCE)

Class	OPEN		15m		STANDARD	
Day	task	km/h	task	km/h	task	km/h
1	556.4	92.98	444.8	(436.6)	437.8	(428.6)
2	259.8	111.72	249.4	96.61	250.2	94.82
3	437.7	122.83	392.3	107.89	314.2	109.50
4	307.1	**144.87**	255.7	**142.65**	227.4	**142.62**
5	457.0	115.20	313.7	114.48	396.0	102.26
6	444.6	106.87	405.1	101.33	344.1	112.34
7	350.7	123.29	385.4	120.17	368.4	118.80
8	430.5	107.60	339.1	104.56	367.2	95.97
9	621.9	112.76	536.1	108.13	501.2	100.03
10	512.1	127.28	508.9	120.62	518.6	107.14
11	**839.8***	116.34	754.8	(726.3)	695.4	(674.0)
12	571.5	117.70	**569.9**	121.10	**537.8**	104.90

* This is the longest contest task ever set and completed in a world competition. (Bold values are longest completed task and fastest task in each class.)

My Day

Now I'll finish by describing the last day in which I came in second. The task was a quadrilateral of 538 km. Everyone thought that they would go easy on us the last day, maybe 300 km, particularly as most people had landed out the previous day as I had mentioned earlier, and we were all tired. No such luck, the last leg was going to be 40–50 miles into the mountains, and the forecast was for a blue day. We all groaned, and I sure didn't want to fly at first.

Once I got going though, I was determined just to go as fast as possible. I decided that I was going to wait until almost everyone had left and play catch-up. Andrew Davis, from Britain, was with me also at this point. He started and I followed about 20 seconds behind. He pulled ahead in his Discus (Discus did that to LS-4), but I watched his track west and about 20 miles on course, we got a good eight knot thermal. By the time we had gone about 60 miles, we flew in underneath 10 to 15 Standard gliders that were marking lift for us. At this point, we were south of a large lake and over a treed area which I was not too happy to fly low over. The gaggle we were climbing under left before the top of the thermal, and I watched them get lower heading out over the forest. I climbed an extra 1000 feet higher, left, then get another good one, and finally headed out with an extra 3000 feet over the gaggle. This allowed me to catch up with them.

The majority of the gliders now headed south of track, while I decided not to, mostly because there were plains to the north and fewer trees. Much to my surprise I found I was flying in a large area of good lift and was able to dolphin into the first turnpoint at Bendigo at 8000 feet, joining the first on-course gaggle with Kuittenen, the eventual

HOW DID THE CANADIANS DO?

	Best Two Placings	Worst Two Placings	Final Placing	% of Winner	% of #3 Scorer	% of #10 Scorer
Krueger	6, 9	37, 32	14/43	86.1%	88.4%	94.3%
Apps	2, 6	40, 38	25/44	78.8%	80.7%	88.8%
Werneburg	16, 18	38, 31	24/43	78.6%	80.7%	86.1%
Hollestelle	7, 18	42, 42	35/44	69.5%	71.2%	78.3%
Webb	8, 11	40, 38	35/43	70.0%	71.9%	76.7%

George Dunbar

Mike protects a cold Fosters beer while his LS4 drains its water ballast at the end of the flight.

class champion. I was a good ten minutes ahead of the majority of the pack now, and pushed on up the second leg to Tocumwal before realizing the lift was now not as good, and got lower into an irrigated area. After struggling across it and getting better lift, the Battle of Britain fleet was upon me again and went by over top. It was maddening to have the whole group that I had passed move by.

Finally, I got to the dryer ground and the lift went from two to three knots to six to seven, from that point on I started to catch up again. I decided that if I was going to land, so be it, but I was just going to take good lift and keep on racing. I met Ed Hollestelle at the second turn.

Heading southeast now towards the third turnpoint in the mountains, Porepunkah, it was starting to get a little late. I caught up with another group of gliders ahead which marked a good thermal and pressed on, rejecting 4 knots or less. Again, I found a good line of lift going towards the mountains along a river bed (now that it was five, I thought that the damper areas would start working, and they did). I was able to fly straight for 20 miles and gained 2000 feet in the process. It was a delight. Reaching the high ground, I flew towards a spine or rocky outcrop, and climbed to 6500, which was enough to get me into the turn and back out to almost the same spot.

I saw other gliders moving towards the middle of the valley and landable areas, but it was too early yet for evening downslope katabatic wind out of the hills to produce mid-valley convergence lift. I stayed near the rough ground alone over the ridges, and climbed in more good lift when I was joined by some Open class ships. By the time I got to 7500 feet, I could almost glide home — my computer said I needed another 500 to do it, but the lift dropped off to three knots, so I decided to get going anyway. I had the pleasure of joining more Open class ships about 100 feet below me, making one turn, then leaving for something better — and they followed a Standard class ship.

I was confident that I would find that 500 ft somewhere, but for 20 miles, there wasn't a ripple. Finally, about half way home well out onto the plains, I got four knots, and took an extra 500, as it felt like the last thermal of the day. I heard Dave Webb making a glide just south of where I was, but he didn't quite make it, landing one field short of the airport. As I called in final glide three miles out, I heard Andrew Davis call too. Determined to beat him, I decided that I would not do a flying finish, but kept up speed to make a rolling finish. Although I started after him and finished ahead, we were credited with a tie for second place.

The next day were the closing ceremonies, and the day prizes were going to be awarded with all the spectators and press and everything. With the Apps' luck, they had the bottles of wine out there, and they forgot to do it. So I got my day prize in the glamour and splendor of a back storage room later. C'est la guerre. So that was my best day, and a great way to finish the contest.

Before closing I must thank all the Canadian and Australian crew, particularly George Dunbar, Al Stirling, and Dave Baker. □

IF HORSES COULD ONLY FLY

Fred Kisil
Winnipeg Gliding Club

Even though it was my first experience at a local horse racing track, I found the sport to have many similarities with gliding. There were some obvious differences too. Let me explain.

Equipment

All units entered in the competitions were single seaters. The equipment is permanently rigged and is trailered from one contest site to another. A stall refers to another type of containment. This terminology needs some standardization between the two sports. Brown was the predominant colour, whereas white was conspicuous by its absence. To facilitate visual identification, the contest numbers were printed on a characteristic background colour. The landing gear makes a four point contact with the ground and assistance from ground personnel is not required for the launch. With an obvious regard for the effect that bugs have on performance, there were two ingenious, automatically controlled debugging devices — sailplane manufacturers take note — one involved shaking the skin surface and a brush-like device was in constant use at the trailing edge and appeared to serve also as yaw strings. Each unit was outfitted with an audio output. There appeared to be no prior requirement to declare a ballasted versus non-ballasted status since competitors could be seen dumping their ballast. Apparently, weak conditions were expected.

J1

Although some glider pilots may be referred to also as Jockeys, I did not hear any Jockeys being disparagingly referred to as Pilots. Since the equipment is open primary style, the Jockeys lean forward in their seats to reduce the parasitic drag. The race is run at a very low altitude, which means that chutes are not used and goggles, helmets, gloves, and boots suffice. Each J1 also employs a short stick which is used to flail the racing equipment in an attempt to extract maximum performance. Jockeys should learn from us glider pilots that much flailing of the stick is counterproductive.

The Declared Task

All races are speed tasks around an oval-shaped course. No turnpoint photos are required, but all finishes across the line are photographed. The start and finish altitudes are identical. Thus, there is no need for additional calculations in scoring. All contestants leave the start gate simultaneously and only left hand turns are permitted. Gaggle formation and leeching were clearly seen.

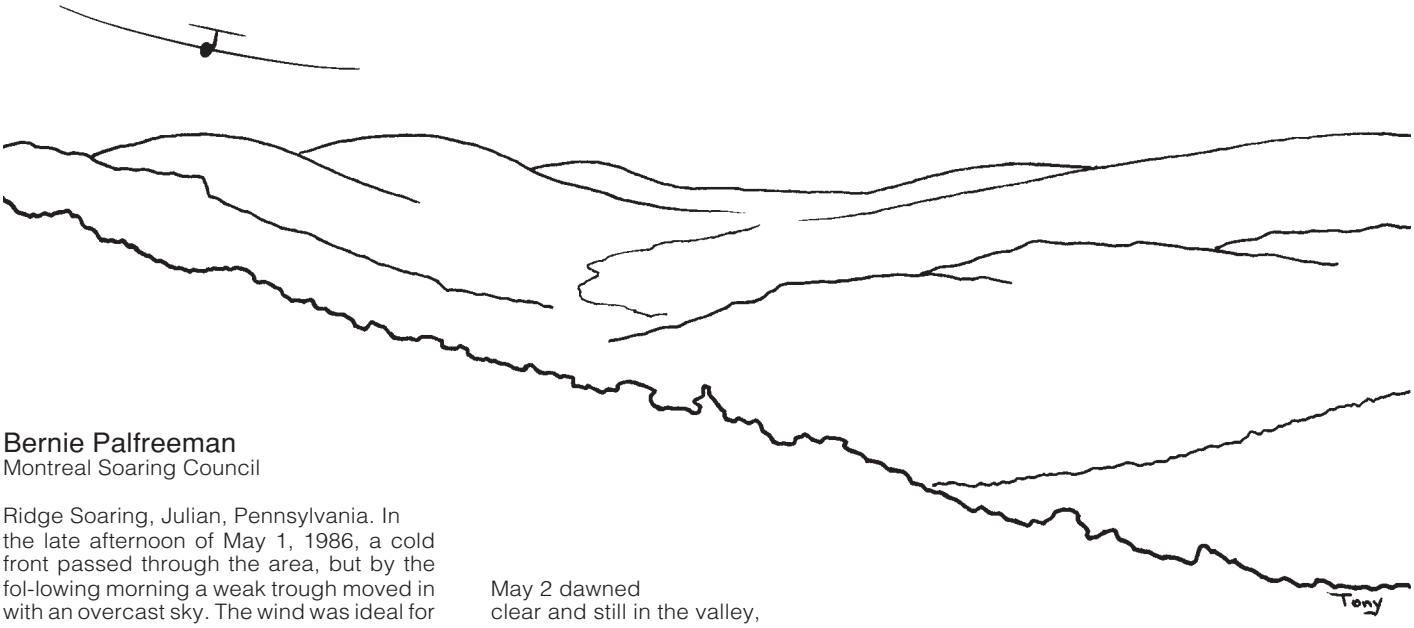
Spectators

They are accommodated in elevated stands and can comfortably look downwards on the events. Programs are available for those bent on details. A comparable gliding program would include information on: type and origins of the fibreglass and resin, their date of mating, the curing process, the track record, and whether the P1 prefers thermalling left or right, or handles Standard or Open class equipment better.

Participation

This is not a passive sport, and those willing to put their money where their mouths are could be readily obliged at any one of the 40 computerized counters. Given the nature of the sport, I instructed my friend Dixie to bet 50 cents on number seven. She replied it took $2 to place a bet. Not wanting to lose my shirt, I said 50 cents or nothing. You guessed it, my selection came in first and would have paid $9.20. No matter, it was obvious that I understood the theory if not the practice. By the time the day's races were over, I had wagered a total of $10 and left with a total of $20. Not bad for a novice, eh? Come to think of it, that's enough profit to pay for a tow. See you upstairs. Oh, by the way, considering the nature of their ballast, be thankful that horses can't fly. □

THE LONG RIDGE



Bernie Palfreeman
Montreal Soaring Council

Ridge Soaring, Julian, Pennsylvania. In the late afternoon of May 1, 1986, a cold front passed through the area, but by the fol-lowing morning a weak trough moved in with an overcast sky. The wind was ideal for the ridge at 20 kts at 310–320°. Tom Knauff, Karl Striedieck, and two others set off shortly after 07:00 on some undisclosed task and the rest of us made assorted declarations, and launched onto the ridge around 10:00. Ridge lift was gusty but reliable, and as this was my first low level run south along the ridge, a conservative height, minimum of 2500 feet msl, was maintained while picking fields in the valley which is approximately 1000 feet msl. As described in the various guides to the ridge, there are landable fields except for relatively short stretches, Tyrone for example, where the ridge is low and no landable fields exist and conservative flying is advised.

Forty minutes of flying results in arrival at Altoona and the big ridge gap (about ten miles). Here a climb in thermals upwind over the city showed cloudbase to be a little below 4000 feet, 3000 feet above the valley, with very restricted visibility. The lack of visibility and minimal height brought progress to a halt for me. A run north along the big bowl to Peterson airport with probes out into the valley looking for signs of wave occupied another half hour, then I returned to Altoona to discover that cloudbase had dropped by 200 feet. I ran north to Karl Striedieck's field and back to Altoona to find cloudbase was now 3600 feet at which point hope of crossing the gap for the 500 km task was abandoned and the rest of the day was spent running the ridge between Altoona and Jersey Shore in steadily improving conditions. Altogether, this day was a good introduction to the joys and sorrows of ridge running and indicated the large distances which can be covered. The accumulated distance flown was 440 km in six hours of rather tentative flying.

Tom Knauff and friends returned late having flown a triangle of 1356 km. They clearly were not deterred by conditions at Altoona, and the Nimbus 3 filled to the brim with water streaking along at ridge top height is an awesome sight!

May 2 dawned
clear and still in the valley,
however, the upper wind was still between 300 and 310 and after making all the many preparations, a launch was made just after 10:00 through extremely turbulent conditions. The west side of the valley at Ridge Soaring is filled with a jumble of low hills which produce wild low level turbulence in a westerly wind. A run north to Milesbury gap established that the ridge was working well and a sample of thermals showed cloudbase to be over 6000 feet. Heading south using thermals, Ridge Soaring was passed at 10:30 at 5000 feet and it became obvious that the dolphin mode was in order as thermal strength at this time was consistently over five knots. The Altoona gap came up and was crossed by 11:30, however, south toward Bedford the sky was blue, but this is ridge country and the thermals continued to come up in a regular way into the Bedford gap where the first turnpoint (Rts. 56 and 220 intersection) was photographed. The return north to Altoona was uneventful with cumulus now starting to form. Following the recommended procedure for crossing the Altoona gap northbound, I pushed out westward in thermals and angled across the city to arrive comfortably at the other side at 6000 feet.

North from Altoona to Pine Creek and Susquehanna was now familiar territory, having flown up and down it all day yesterday. It was apparent that even with very good thermal conditions in which little turning was required, the people flying down on the ridge were making significantly better speed, in part because they never turned and also because the stronger, upper winds required a significantly larger crab angle to maintain a track along the ridge line. The Pine Creek turnpoint came up at about 13:15, by which time the thermals were stronger than I have ever experienced (even in New Mexico). Typically, the variometer would go to maximum scale of ten knots but the audio would continue on up, the cores were smooth and in the area of Lockhaven (Piper's old plant) cloudbase was up to 9000 feet. With the speed director
turned up to maximum, it was
possible to dolphin through half a dozen thermals before stopping for a couple of minutes to top up with two or three thousand feet of altitude. These climbs were routinely stopped when the variometer reading dropped off to seven knots. The run south past Altoona to Bedford was an unforgetable experience for one used to Hawkesbury-type thermal conditions. By 14:30 the last turnpoint (Rt. 869 and the ridgetop) had been photographed and it was back again to the Altoona gap. At this point, there was a delay as a series of upwind clouds produced only broken lift. At a low point west of Altoona, a few anxious glances were made at the bolthole to go for if the crossing looked like it was failing. Luckily, a good thermal loosed off and a quick climb changed the situation in short order. Arriving at the north side of the gap, I saw a glider very low over the Kettle Reservoir, creeping around the corner on to the ridge, but once there he took off like a scalded cat.

The final run back to Ridge Soaring's field was delightfully uneventful, resulting in finishing a task of 505 km in two minutes under five hours. This flight was all done in thermals with approximately 30 knot crosswind at cruising altitude, so it can be imagined how strong the thermal conditions were.

Hans Berg of the Windsor club, who had made his 500 km earlier in the week, spent the day cruising to Bedford and back in wave at 13,000 feet. Thus, it was a day when the pilot could choose to do 500 km in ridge, thermal, or wave lift. Ridge was fastest, say four hours, thermals five, and wave was six hours plus. All the glass ships were ballasted, however, a 1-26 pounded along the ridge all day long and made 500 in eight-and-a-half hours. A very special day of soaring. I shall be back and recommend the area to all who are looking for excellent soaring in beautiful surroundings. □

SAFETY

A LOOK AT OUR 1986 ACCIDENTS

John Firth
SAC Safety Commentator

For a second year, I have to say that there are no meaningful statistics from the year's accidents — tragic though two of them were. There was again an accident to a towplane on take off, as yet (as far as I know) unexplained, although the glider pilot was blameless.

However, when a fine ASW-20 is written off in a spin-related accident by a keen and experienced pilot, I am prompted to mention a disturbing trend in the USA which has inspired many letters in SOARING from distressed families and crews. They are all saying that something has to be done to stop both the horrendous loss of life and such avoidable accidents.

Most of these mishaps occur as the result of an abrupt maneuver, usually a low level turn onto final for an off-field landing. It seems to me that these pilots, though competent, experienced, and in good practice, have been lulled into a false sense of security (often called complacency) by the easy handling of such modern ships in normal flight. However, given a crisis situation — a field selection left too late, insufficient planning of the approach and/or some rough handling in turbulence — and the compliant pussy cat quickly becomes a tiger and does a flick roll or spin at a height from which recovery is absolutely impossible.

The recent death toll has made me uneasy enough to explore further my Kestrel's emergency handling, in various flap configurations, especially landing, and I have given it and myself a good workout at altitude. Happily, there were no unpleasant surprises, but that does not mean I ever plan to do final turns below 100 feet with 60 degrees of bank.

If you have a modern glass ship, with or without flaps, take an hour above 3000 feet to throw it around a bit, pulling steep turns with various amounts of flap, and induce it to stall. You may be in for a surprise which will save your ship, your life, and our insurance rates.

One last thought: before you are off on a cross-country in the new season, practise a couple of simulated field landings to sharpen up your judgement and ship handling skills *and above all,* beware of complacency.

ALL IN A FLUTTER

Martin Aubury
from Australian "Aviation Safety Digest"

Aero-elasticity, and in particular flutter, is so significant that it has influenced the evolution of aircraft and gliders. Flutter is a complex phenomenon that is eliminated by careful structural design or by limiting the flight envelope, particularly the maximum speed — Vne.

Because the airframe is light, it deforms under load — sometimes, in the case of gliders, appreciably. Restoring forces due to structural stiffness and aerodynamic loads then come into play. An interaction between these elastic effects, as well as aerodynamic damping and inertia forces, may develop into an oscillation which is self-starting, and may be undamped (self-sustaining) or even divergent. This oscillation, where energy is absorbed from the airstream, is called flutter. It can be so severe as to cause catastrophic structural failure of the airframe.

There have been many instances in Australia and overseas of flutter-related accidents and incidents to gliders. Considerable effort is therefore expended in the design and certification phase of a glider, to see if it will be vulnerable to flutter and at what speed. Tests include ground vibration testing. Flutter may result from the control surfaces themselves or from the primary structure. Mass balancing of the control surfaces may be required.

It is essential that production, home-built, and repaired gliders be built and maintained strictly in accordance with the manufacturer's data, as there have been many instances of incorrect or unauthorized modifications and repairs causing flutter. The following items should be considered in the maintenance and inspection program:

- the presence and security of mass balance weights
- mass balance can be affected by painting or by ice or water accumulation in control surfaces
- the condition and free-play in all control surface hinges, control system joints and pivots
- the security of attachment of control horns
- the correct rigging tension in control cables.

In-flight monitoring is also important. Know your glider's Vne and be aware that it may reduce significantly at higher altitudes. Flutter can develop quickly and unexpectedly and recovery is sometimes impossible. Should you suspect flutter has begun, reduce airspeed immediately and try to hold the controls firmly, then land and inspect for damage.

I asked Maurie Bradney to recount his experience with flutter, to give you a pilot's eye view:

"I fell easily into a flutter trap. With 40 km to go, on what had been a long task, I climbed to the calculated height for a final glide. I was monitoring height and distance on the way in, and at 20 km to go I decided I had

too much height. The obvious thing to do was to swap it for more speed. I was already at 90 knots.

As the last climb was relatively smooth and the air had been quiet on the way in, I allowed the speed to go beyond the rough air limit of 97 to 115 kt. The smooth air limit was 135 knots.

Things were going well until I felt a small tremble pass through the airframe. Thinking I may be running into another thermal, which at this speed could easily take me over the limits, I eased back slightly. I had barely done this when the whole aircraft shook violently. It sounded like a stick being dragged across a picket fence — except very loud and very rapid.

The control stick shook from side to side. I managed to hold it and to continue bringing it back gently. The shaking and noise stopped as suddenly as it started.

I very gingerly tested for control response. Everything worked as advertised. Nothing obvious had fallen off. I can assure you that the remaining 10 km of the flight was done in a very sedate fashion!

After landing I was still shaking. I sat in the cockpit for quite some time regaining my composure and re-living the incident. My crew noticed I was more than a little pale.

Later that day, I carefully examined the aircraft with the maintenance man. Nothing, not even the sealing tapes, had broken. It astonished me that I could be so lucky. We also went right through the control system and removed even the tiniest areas of free play. Even so, I'm a very cautious pilot when it comes to staying inside placard limits. Good engineering has a better record than good luck.

Maurie's flutter incident highlights two vital points:

- To control the aircraft after flutter commences, you must fly gently— no sudden movements. Rest your wrist on your thigh to help minimize control inputs.
- You must gently reduce speed.

Flutter can be a fatal consequence of exceeding Vne, and some gliders have been lost due to this phenomenon. □

AILERON HOOKUP ON JANTARS

If things are moving they must be hooked up, right? Well, sort of, to rephrase Lloyd Bungey's valuable safety comments on Jantars in the Nov/Dec issue.

Jantar ailerons have a "double hook" linkup. It is possible to clip on only one of the hooks, slide the safety — and presto — your life hangs on to 50% of the intended design. Don't be lazy, don't just go by feel and a positive control check. Pull the tape off the luggage compartment back wall, and have a real good look in the guts of the glider. Yes, it's awkward.

Stephen Newfield, Air Sailing

THE CANADIAN COMPETITION SCENE

Jim Oke
Chairman Sporting committee

Wrapping up the 1986 Nationals

After a mail ballot of the contest jury, the results of the 1986 Nationals have, at last, been finalized and reported to the competitors. Only minor changes in overall scores have resulted. The Sporting committee is very aware of the controversy over the scoring of the final day of competition and is considering how to clarify a few key points of the rules concerning the interpretation of scoring distances. However, the procedure for the assessment of marking distance on an incomplete task has been in effect for many years and there is no thought of changing it. Pilots should be aware that a landing any distance from the "next" turnpoint of a task will result in a reduction of the distance the pilot receives credit for. The act of taking a turnpoint photo earns no points in itself, but only serves to certify completion of a leg of the course, "locks in" that distance for the pilot, and allows him to begin accumulating distance on the next leg of the task. Pilots should also be familiar with the subtle difference in the method of assessing marking distance on a distance task and on a speed task.

The 1987 Competition Rules

Other changes in the 1987 competition rules will see the introduction of photographically timed starts using data back cameras. This will reduce the number of ground personnel required for past start gate arrangements, conform generally to international competition practice, and offer some safety advantages. Data back cameras, displaying time to the minute, are now readily available and the use of 35 mm film should ease the film supply situation encountered in past years. The rules will allow use of cameras timing to the minute with no special disadvantage, although the use of more expensive cameras recording time to the second would be a bit simpler. A ground clock will be provided to cater for the occasional timer failure and allow those without data back cameras to participate although with some operational disadvantage. The only other major change will remove the possibility of Open class sailplanes to participate on a handicapped basis in the 15 metre class in the event insufficient entries appear to conduct a viable Open class competition. In such a case, Open class competitors will certainly be allowed to compete on an "hors concours" basis and will receive seeding list consideration on the basis of their handicapped performance, but will not appear on the official 15 metre class score sheet. A handicapping system used by the Australians relating the handicap factor to wingspan and maximum takeoff weight will also be introduced to avoid subjective assessment of aircraft performance.

1987 Nationals

Planning is well in hand for the 1987 Nationals which will be hosted by the Edmonton Soaring Club at Chipman, Alberta. Prospective competitors will have received contest information by now, and are encouraged to submit their entry forms as early as possible, as entry is limited.

1988 Nationals

The SAC Directors have accepted a bid from the Montreal Soaring Council to host the 1988 Canadian Nationals. The site will presumably be Hawkesbury, Ontario with competition dates still to be determined. This will be an important contest in the selection of the Canadian Team for the 1989 Worlds.

Future World Championships

Although the Canadian team's results from the past World Championships held in Benalla, Australia are just now appearing elsewhere in this issue of **free flight**, planning ought to begin soon for the 1989 contest to be held near Vienna, Austria in two year's time. A western European location will hopefully make entry of a Canadian team somewhat simpler to organize and reduce the expense of fielding a team. Local area experience is vital to success at this level of competition, so it would be highly desirable for some Canadian pilots to fly in Austria this summer or the next. The time to think of fund-raising and organization is now, anyone with ideas or ambitions in this area is encouraged to contact a member of the Sporting committee. The 1991 Worlds will be even closer to home at Minden, Nevada, which should also be an incentive to get ourselves organized for the future.

Canadian Advanced Soaring Group

A welcome addition to the Canadian soaring scene is the Canadian Advanced Soaring Group (CASG) formed this past summer under the leadership of Ulli Werneburg. Although an intentionally separate entity from the SAC Sporting committee, the goals of each organization are complementary, if not identical, and CASG is worthy of the support of anyone interested in competition or cross-country soaring in Canada. Membership details appeared in the last issue, and Nick Bonnière is ready to add your name to their mailing list.

FAI Awards

Recent changes in the FAI Sporting Code and some questions on how SAC interprets the Sporting Code and oversees the awarding of FAI badges in Canada will require the issue of a new edition of the SAC FAI Awards Procedures handbook in the near future.

1986 Competition Seeding List

The Competition Seeding List, incorporating the final scores from the 1986 Nationals, appears on page 18. □

CLUB NEWS

REMEMBRANCES OF BOGDAN

Bogdan (Danny) Wolski died in January in Columbia during a flight demonstration of an aircraft his company, Airtech, was showing to the military.

Danny was an early and enthusiastic member of the Edmonton Soaring Club. Garnet Thomas, a past CFI of ESC, remembers his contributions to the soaring scene there at the time:

I first met him on a sunny Saturday in 1968 at our Cooking Lake field east of Edmonton — a small, dapper young fellow with tight curly hair, a neat moustache, and a soft, deepish voice that he projected from somewhere down in his boots. He ushered me so interestingly through my fam flight that I became hooked.

A year later, he was our CFI and a leader in the club. Those were the days when we were a gang of adventurous characters of disparate ages and backgrounds with a common problem — a lousy lake-and bush-surrounded field, not much money, tired old gliders, old tugs, and an obsession with hanging around those old crates and flying them. It was a rough and ready operation, no amenities, lots of cold and windy days and red noses. I remember it as great fun.

Danny was always involved in organizing little contests out of the most basic flying, organizing trips to the mountains, mid-winter "dig-out-the-glider" parties, and pushing lots of us away from the poor country around Cooking Lake on our first cross-countries.

A superb pilot, originally trained in Poland, Danny could land a glider more smoothly than anyone I've seen (other than perhaps his good friend Joe Gegenbauer). He taught many of us our first basic aerobatics, and persuaded me to instruct in our TG-2 warhorse. His presence in the club was obvious if for nothing else than the big wooden blocks fitted to the rudder pedals of the 1-23, and the raised instructor's seat in the TG-2 which would have put my head well out of the rear seat canopy — if it had had one in those days.

I can't begin to sum up all the fond memories we have of him — a couple of mine can be representative. There was the time Neil Bell's father and I chased our fearless leader downwind in my old Mercury as he headed for Moose Jaw from Innisfail during the 1970 May Meet ... no radio then (for us), just the phone-back system. Moose Jaw is roughly 400 miles southeast of Innisfail. Well, after midnight, when we finally contacted our hero, we had to deviate 80 miles north off track to find him resting comfortably at a farm on the Saskatchewan border. He said he deviated around some bad weather, but anyone who knows the eastern Alberta "pothole" country may be forgiven for momentarily supposing he got lost — we did!

Another memory was an adventure he led us on to Camrose during the spring scratch-the-flying-itch season when our field was still deep in snow (Camrose has a paved strip). After standing like rows of popsicles in the snowbanks beside the runway all day while doing check-outs, etc, Danny treated us to an acrobatic display in the 1-23 in the setting rays of the sun. Perfection it was too, including the feather-smooth toboggan-style landing in the deep snow between the runways where he was planning to stop it near the trailer for derigging. I probably shouldn't mention the amount he underestimated the glider bottom would slide along the surface of the snow. It took us an hour or so of floundering in the drifts to recover the ship and grinning leader....

I did have infrequent contacts with him after he left us for the east where he got Airtech going, as I had acquired a Jantar by then. In '79 he came through Edmonton in the amazing Wilga, and we all had a great time trying it out at the field. I hitched the last seat with him going across the "Rocks" to the Abbotsford Airshow to do demo flights there. It was a glorious trip. His quiet but keen sense of humour percolated through it all, and he made a mini-adventure of every landing and visit to airfields along the way and back.

All the "oldtimers" at ESC credit Danny Wolski with our continued involvement in the sport. He was a superb pilot, excellent instructor, and a good friend whom we will miss very much. Farewell.

ESC has raised a small fund to assist in the publication of the new SAC Instructors Manual in Bogdan's memory.

BONNECHERE STRUGGLING

Our membership has declined to about six enthusiastic members, but we remain optimistic. This year we had a glider (Skylark 4) on display at a local three-day civic fair and put a 1-26 on an open trailer with an attractive "pilot" (my oldest daughter) in the cockpit in a parade. We also had a brochure made up that was given out during that three-day fair. It was estimated that over 10,000 people attended the event. All this was to no avail as it netted us no new members. The brochures were also distributed around the area which did result in a few passenger rides. We shall try again with our brochures in the spring.

Our Blanik was not in operation this last year, as it was up for its ten-year check and club finances did not permit it, however, we have sold our 1-26E, so our Blanik will be back in operation for this year.

Towpilots remain a problem and the need for care in selecting them was brought home by a prospect who did not show good judgement and, in a completely avoidable incident, ground looped the PA18. We were extremely fortunate in that we only lost about one weekend of flying. This was due to the fact that the club was able to *rent a* left wing, aileron, and left elevator for a very nominal sum.

On the bright side, two members, Brent Lance and Ian Notley, obtained their "C" duration flights. Unfortunately, work and studies remove them from our area. Congratulations were also due to Pam Theilmann for her Silver "C" duration flight. Pam also finally got her glider pilot licence while on her third student permit. Children do seem to slow some things down. Hopefully, the 1987 year will see a growth in our membership.

Iver Theilmann

CU NIM PLANS ANNUAL "DDD"

Doctor Rick has convinced our CFI that running a club-organized Dirty Downwind Dash is good for your health. Here are a few reasons for this return to the good old days of gliding:

- Landing back at the same old field every time after a XC flight gets boring after a while — just ask Kevin Bennett.

- With no anxiety about "making it back", a true, special sense of euphoria sets in as the pilot can enjoy the flight from a new and fresh perspective, and there is no waiting for a crew already on the road.

- A guaranteed off-field landing will encourage pilots to carefully plan their strategy for the end of the flight; and a planned, safe off-field landing will give the novice valuable experience and encourage the more routine triangular flights.

- The annual dash is meant to be a group effort, each pilot giving help and moral support along the way. Beginners are welcomed — the flight is intended for them.

Suitable recognition of belonging to this prestigious group is still being planned, a trophy might even be in the works.

Peter Barnett, from "Barograph Traces"

1986 CHAMPLAIN SOARING

1986 a été une bonne année pour l'Association de Vol à Voile Champlain. Pour tant, au départ, la saison s'annonçait plutôt mal; notre effectif était tombé à 20 membres et nous étions à la recherche d'une autre piste, celle de Roxton Falls n'étant plus disponible.

À la suite de plusieurs démarche, le problème du terrain était résolu au printemps;

nous avons loué une grande piste d'herbe située à Saint-Antoine-sur-le-Richelieu, à quelques kilomètres du champ où nous étions de 1978 à 1983. Notre nouvelle base étant à moins de 30 minutes de Montréal, nous avons pu voler les mercredis et les vendredis soirs une bonne partie de l'été. À l'automne, pour permettre à nos membres de goûter au vol en montagne, nous avons passé deux fins de semaine à St-Jovite dans les Laurentides.

Juste avant notre déménagement, nous avons participé à deux expositions dans des centres commerciaux et au Salon National d'Aéronautique de St-Hubert. Pour obtenir le plus possible de ces occasions, nous avions décidé d'y emmener notre plus bel appareil, un Lark, même si chaque montage et démontage nécessitait cinq à sept personnes. Nous avons également encouragé tous nos membres à être présents pour répondre aux questions et distribuer des centaines de feuillets donnant l'emplacement de notre terrain.

L'effort a été payant, puisque à la fin de la saison l'Association comptait vingt-trois membres de plus, dont huit avaient accompli leur solo et nous avions effectué 1370 vols, un record. Il y a eu quatorze vols de certificat dont un 500 km pour André Pepin et un 300 km pour Serge Morin, vols accomplis lors d'un voyage en France.

• • • •

1986 has been a good year for Champlain Soaring Association even if at the end of 1985, our membership was down to twenty and, once again, we had to find another field, Roxton Falls being no more available.

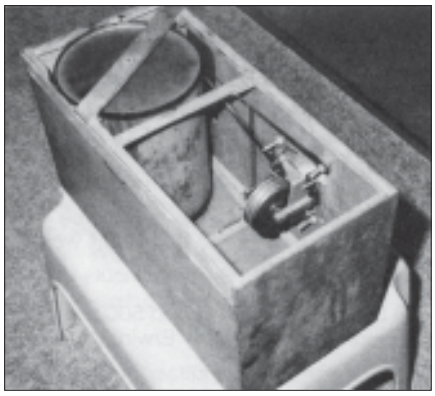
After much searching in the beginning of spring, the airfield problem was solved when we moved to a large grass strip in St. Antoine-sur-le-Richelieu, only a few kilometres away from the field we used from 1978 to 1983. Being close to Montreal (less than thirty minutes), it allowed us to fly on Wednesday and Friday evenings for most of summer. At autumn, we spent two weekends at St. Jovite in the Laurentides, where our members got a first taste of mountain flying.

Just before our move, we participated in the Salon National d'Aéronautique and in two shows in shopping centres. To get good exposure, we decided to bring our Lark on all occasions, even if moving this craft was to be a five to seven person chore. We also ensured that all shows would be attended by members to answer questions and to distribute printed sheets showing our location.

We were rewarded with twenty-three new members, of which eight had performed their solos by the end of the season. We also made 1370 flights, a club record. Fourteen badge flights were performed, including a 300 km for Serge Morin and a 500 km for André Pepin, both of which were done in France.

Paul Dorion

The Syrup Can Barograph



Harold Eley
Regina Gliding Club

In 1955, Bob Cheston needed a barograph. He had bought a Fauvel AV-36 and was looking forward to some good flights. He was not about to fork out another $200 for a store-bought Peravia or Winter. Why not build his own? After long and careful thought he knew it could be done.

Fortunately parts were easy to come by. For three dollars he was able to buy a surplus altimeter from Canadian Junk in Regina. This provided the bellows and rocker arm to which he attached a stylus. A five pound Rogers Syrup can became the drum; five inches in diameter by six inches high. This was driven by the works from an old alarm clock salvaged from the attic. Bob mounted everything in a box made from aircraft plywood, and he was in business.

Household aluminum foil was attached to the drum with ordinary mucilage and a burning candle was used to apply a coating of smoke. Later it was found that burning camphor was a much better smoke source. During the climb the stylus traced a neat line in the smoke, but to make it permanent it had to be "fixed". Bob used a hand-pumped fly sprayer filled with diluted varnish to do the fixing. Today, of course, one would use the handy clear plastic spray bomb.

Bob also set up equipment to provide an unofficial calibration. The heart of the device was a large glass battery jar from an old farm power system. The barograph was placed inside the jar along with a reliable altimeter and the top was sealed with a wood cover. Vacuum was obtained by connecting the jar top to a car manifold. The vacuum was controlled by a bleeder valve. By "stepping" the vacuum, the foil trace could be compared to the altimeter readings.

Although the barograph was a bit unwieldy, it was eminently successful. The J. R. Cheston — Serial #1 really worked well to a maximum height of 25,000 feet at a rotation rate of three hours. Bob used it for all his cross-country flights as well as his record climb at Cowley in 1957 and his diamond flight in 1961. Bob also loaned his barograph to several others who were fortunate enough to record gold and diamond climbs. In every case, the traces were good and, after official calibration, were fully acceptable to the Sporting committee.

Today, this artifact decorates the mantle of Bob's home in Regina. □

Al Sunley (rear) and Dave Luck prepare for a 7 February flight at ESC. The club has been gliding regularly during the unusually mild winter.

HANGAR FLYING

HARRIS MAY LOSE LICENCE RE ALTITUDE RECORD FLIGHT

Bob Harris, the Riverside, California pilot who achieved the absolute altitude record on February 17 with a flight to 49,009 feet in the Sierra Wave, may have his pilot's licence revoked by the FAA as a result.

Although the flight has been certified by the SSA and FAI, Harris failed to get FAA approval to enter the airspace he penetrated, and a proposed revocation of his licence is pending. FAA attorney, Richard Wittry, terms the action against Harris an "exceptional case". The action claims that Harris failed to request permission to fly into controlled airspace, didn't have an IFR rating to do so in any case, and flew into an area used by airliners flying between Fresno, California and Las Vegas, Nevada.

Wittry said Harris' actions violated the regulation against flying "in a careless or reckless manner so as to endanger the life or property of another". Harris claims the revocation of his licence is not justified because the airspace he flew in is far less crowded than that in the Los Angeles Terminal Control Area, where airspace violations are usually punished by licence suspensions ....

newspaper article from
Winnipeg "Sock Talk"

MORE RECORDS OUT OF THE OUTBACK

The now almost annual German record-breaking camp at Alice Springs, Australia was greeted with the best soaring conditions in five years, and a number of new sailplane and motorglider world records are being claimed from flights in January and December. The pilots were Hans Werner Grosse, flying the new ASH-25 super two-seater, and Erwin Mueller, Walter Binder, and Karl Senne, flying the prototype powered ASH-25M.

26 Dec 1986 World 750 km triangle speed — 757.8 km at 142.5 km/h — Grosse and Hans Kohlmeier.

27 Dec 1986 World triangle distance and 1250 triangle speed — 1,260.2 km at 137.5 km/h — Grosse and Kohlmeier.

9 Jan 1987 World 500 km triangle speed — 507.4 km at 155.5 km/h — Grosse and Kohlmeier.

10 Jan 1987 World triangle distance and 1,250 triangle speed improved from the 27 December flight — 1,379 km at 143.5 km/h — Grosse and Kohlmeier. These records are better than the single seat marks, also held by Grosse.

21 Jan 1987 World 300 km triangle speed — 158.7 km/h — Grosse and son.

In the same period, the multiplace motorglider group with the ASH-25M were setting their own records:

26 Dec 1986 World 500 km triangle speed — 135 km/h — Erwin Mueller and Walter Binder.

27 Dec 1986 World 1,000 km triangle speed — 1,082 km at 128 km/h — Mueller and Binder. These two records had not previously been claimed.

2 Jan 1987 World 300 km triangle speed — 154 km/h — Binder and Senne.

9 Jan 1987 World 500 km triangle speed — 141.5 km/h — Mueller and Senne.

10 Jan 1987 World 1,250 km triangle speed — 127 km/h — Binder and Senne.

Allan Ash
editor, Australian Gliding

OSTIV COMPETITION ANNOUNCED FOR STALL WARNING INDICATOR

OSTIV, the international technical and scientific organization for soaring, is opening a new competition for the development of a simple, useful, and relatively inexpensive device to provide stall warning for sailplanes. The competition, which is open from now until 1 December 1988, will offer prizes of DM 2500, 1000, and 500 for the best three entries.

In the competition statement, OSTIV makes the following points as to the reason for setting the challenge as a timely contribution to safety:

• The natural stall warning intensity of sailplanes and powered sailplanes has often decreased to a point where its effectiveness is doubtful.

• Multiple audio signals now exist in the cockpit (such as audio vario, radio, speed-to-fly, motorglider engine noise, and vibration) to mask the aerodynamic noises near stall.

• The highest number of fatal accidents relate to "loss of control" from stalling, wing-dropping, and spinning.

• There is a steady tendency towards lower stick forces in sailplane design, in consequence of which the stall warning is an important safeguard against unintentional speed reduction in the low speed area, particularly when the pilot's attention is directed outside the cockpit — during preparation for landing, or turning in close proximity to slopes, for example

• Operating experience has shown that the airfoil characteristics of many sailplanes are influenced by rain drops, ice, or insect impact which leads to a marked and unnoticed increase in stall speed.

The rules state that the device must be aural, clear, and distinctive with the sailplane in any mode of flight, with control surfaces or gear in any position; the warning must begin between 1.05 and 1.1 of the minimum controllable airspeed and continue to stall speed; the device shall not be impaired by rain or insect impact;

shall have a test for proper functioning and be ground-adjustable. Solutions which do not meet all specifications will be considered.

Further details are available from the National Office or the Technical committee.

THE MoT GETS THEIR MAN (EVENTUALLY)

The story behind the maddeningly succinct data below cries to be told . . . who was that masked man, and how did he get caught....

Central Region. August 5, 1986. No previous record. Violation per ANO IV No. 1(3)(a)(e). $200 administrative fine.

An unlicenced person was found to have been flying for almost forty years and had accumulated about 2000 flying hours. He is now in the process of obtaining a pilot's licence.

from December 1986
MoT Enforcement Action Summary

TWO RETRIEVES

Dave Innes is a long-time competitor from the Isle of Guernsey (area 25 square miles) where fields are too small to land in. In Australia, Dave landed in one it took five hours to walk out of in the dark. The field was over 1500 acres in size.

He saw a light and started heading towards it, before remembering that it was dangerous to do so as it was probably miles away. He waded in grass up to the armpits, and narrowly missed falling down an old mine shaft. He quarrelled with a few kangaroos, but luckily with no snakes, and he couldn't get around the canal that seemed to be on all sides. He eventually found the farm and woke up the friendly inhabitants at 0130 to ask to use the phone.

The crew had a straightforward retrieve even though they had driven through the night, and they got back to Benalla with just enough time for a quick shower and shave before the 1000 briefing ... an experience not to be forgotten — or recommended.

• • • • •

Day 1 was the day 104 pilots landed out, including all four of the Polish team. Unfortunately, they didn't have four retrieve cars. Stanislaw Zientek had landed far away in the wide open spaces near Bendigo and walked for over an hour before waving down a motorist and then reaching a telephone. He spent the night in a country pub before being picked up by his crew at 1100 the next morning.

The crew, which included two volunteers from the German team, quickly derigged, and were making good time back to Benalla when a tire blew out. The car and trailer started fishtailing out of control and then jack-knifed. The trailer separated from the car and ended up in the ditch, and the car rolled three times and finally stopped in the middle of the road on its roof — a write-off. Happily, no one was seriously injured and the glider was undamaged, only the trailer hitch had broken. Zientek suffered abrasions, bruises, and some internal injuries, but after a check-up, was allowed to continue flying with a midriff brace.

from the World contest daily bulletin.

AIRCRAFT TYPES INSURED WITH SAC IN 1986

Alcor	1	Monerai	2
Astir (single)	9	Mosquito	3
Astir (twin)	5	Nimbus 2B	1
ASW15	4	Nimbus 2C	1
ASW19	10	Ogar	1
ASW20	13	Phoebus	1
Austria	4	Phoebus B	1
Bergfalke	3	Phoebus C	1
BG12	2	PIK20	3
Blanik	24	PIK20 B	6
Cherokee	2	PIK20D	1
Cirrus Open	4	Pilatus B4	6
Cirrus Std	11	Pioneer	1
Club Libelle	1	Pirat	1
Cobra	2	Puchacz (twin)	3
Dart 17	1	RS15	5
DG100	1	Salto	1
DG200	2	Schweizer 1-23	5
DG300	1	Schweizer 1-26	18
Discus B	1	Schweizer 1-34	3
Duster	4	Schweizer 1-35	4
Gemini	1	Schweizer 2-22	11
Grob 109	1	Schweizer 2-33	23
Grunau Baby	2	SF27	1
Hornet	1	Skylark 3	1
HP11	2	Skylark 4	4
HP14	2	Tern	3
HP18	1	Tinbus	1
HP2	1	Ventus B	3
Jantar Std	18	Woodstock	1
K13	3		312
Ka6	14		
K7	4		
K8	4	TOWPLANES	
Kestrel 19	2		
L Spatz	1	Bellanca Scout	5
Lark (single)	3	Cessna 150	4
Lark (twin)	7	Cessna 305	2
Libelle 201	12	Cessna L19	3
Libelle 301	1	Challenger	1
LK10	1	Champion	1
LS1	2	Citabria	16
LS4	4	Ector	1
M 100	2	Supercub	8
Mini-Nimbus	2		41

Al Schreiter

OPINIONS .... continued from page 3

programs. Value was an essential feature, pride followed. Member participation and morale was high as a result ....

Aydin Salivar
... "We used to do that ..." is not an answer to today's situation. In twenty years, the lifestyles have changed, attitudes have changed, aircraft have changed .... Many of the founding members have disappeared from the club and you now have 150 members with different interests and positions. We have to make decisions about the club ... remembering the one common thing between us, we all like to fly gliders.

We all have suggestions about how to improve things, depending on our experience and knowledge, and our position in the club. We should make use of any suggestions and ideas, they will show us where we stand as a club, and what the members want.

Regarding the suggestion of some members being willing to pay a couple hundred dollars extra for being excused from club chores, yes, we have members who do not have the time or talents to do some duties. But they are fair about it and they are in a position to compensate with extra payment; however, it is against the principles of a volunteer group to operate with such a rule. We could change our club organization to a cooperative system to accommodate such members and to reward those who do lots of work.

There is no example of a glider club that practises such a (work credit) system, but it should not be too difficult to set up. Basically, each member would pay full price, and then be credited points towards next year's flying account based on the club work performed. For example, instructors would earn x points per flight, a work committee y points, and so on ....

We can solve our problems with communication, understanding others, and working together with a positive attitude to improvement.

Colin Tootill
... I enjoyed your piece in the SOSA News. Your point, whilst overstated, is well taken, but I wish it were as simple as "keep the price to a minimum ..." If being the least expensive brand of laundry detergent on the store shelf was all that was required to run a successful laundry detergent business, then a lot of sales, marketing, quality control, and advertising people would be unemployed.

SOSA has a product — gliding/soaring, we also have a market — people from fifteen up. Now how do we market this product ... ? My first thought is that when I make a purchase in my business, which I do daily, I consider three factors — price, quality, and service. I do not normally consider them in that order; usually quality and service come before price. Does this also apply to gliding? I don't know, so let's ask the membership ...

Can the club service today's marketplace using marketing policies of twenty years ago? Has the market changed? I think the answers are NO and YES respectively. Returning to the policy statement of, "... fly at the lowest possible cost"; cost to the average Rambler driver means one thing — dollars and cents. To your average Jaguar driving yuppie, it means dollars and cents — and time.

Like most things in life, there is little black and white, but lots of grey. The club cannot survive as the exclusive domain of the retired Rambler drivers any more than that of the Jaguar driving yuppies. A combination of both is probably needed, therefore, we need a combination of marketing policies to attract both. Maybe those of us who have the time to work for the club can get reduced prices. Maybe those of us who have less time than money can pay more. Difficult to administer? Yes, probably, but we have to look at new ways of doing business.

HOLES IN THE INSURANCE

Very soon it will be insurance time again. Every year I am amazed at how many glider guiders can't do the simple mathematics involved in the hull premium calculations. Because of the "step-rate" premiums, it should be obvious that it does not pay to buy at hull values between $18,000 and $19,999, 26,000 and 29,999, and between 35,000 and 39,999. It's actually cheaper to buy $20, 30, and 40,000 respectively. Yet in spite of previous warnings, more than five percent of the owners insisted on paying more (or getting less) than they had to last year. So be warned again. Caveat emptor!

Al Schreiter

DIRECTORS MEETING

continued from page 2

Sporting Committee Jim Oke was not able to attend Board meeting. New contest rules are being sent to Edmonton for the Nationals. There are some modifications relating to the selection of the Canadian Team Squad. Jim Oke will be attending the CIVV meeting in Europe in March.

Membership Classes There is a need to increase our membership to 2000 to meet Fitness and Amateur Sport requirements for funding; also, some provincial sport bodies are applying minimum membership requirements. There was considerable discussion on how to increase membership, areas to explore, and what people we should attempt to get.

Miscellaneous Bob Carlson will be going to MoT for clarification on the following facts: hanggliders and gliders not being allowed to use airports in National parks, and balloons not being required to carry log books.

The meeting was adjourned at 1300 on the 18th. *(The foregoing report is an edited version of Al's minutes, ed.)*

FAI BADGES

Boris Karpoff
14 Elmwood Avenue
Senneville, PQ H9X 1T4 (514) 457-9707

The following badges and badge legs were recorded in the Canadian Soaring register during the period December 1, 1986 to January 31, 1987.

GOLD BADGE

231	Wolfgang Weichert	Gatineau			

SILVER BADGE

744	Stephen Benedek	Caledon			

DIAMOND DISTANCE

	Chris Wilson	SOSA	509.8 km	Mosquito B	Rockton, ON

GOLD ALTITUDE

	Robert Mercer	Gatineau	4282 m	RS-15	Warren, VT
	Wolfgang Weichert	Gatineau	3627 m	Tern	Warren, VT

SILVER DISTANCE

	Stephen Benedek	Caledon	53.0 km	1-34	Caledon, ON

SILVER ALTITUDE

	Gordon Reese	Cu Nim	1710 m	1-26	Cowley, AB
	Paul Fortier	Rideau Valley	1554 m	1-26	Kars, ON
	Craig Skinner	Cu Nim	1220 m	2-33	Cowley, AB

SILVER DURATION

	Paul Fortier	Rideau Valley	5:18	Grob 103	Kars, ON
	Jean-Marc Surprenant	Champlain	5:28	1-26	St. Antoine, PQ
	David Maven	York	5:11	1-26	Arthur, ON
	Robert Hausner		5:20	Cirrus	Warren, VT

C BADGES

	Claude Bisson	Quebec	2:12	1-26	St. Raymond, PQ
	Gordon Reese	Cu Nim	4:00	1-26	Cowley, AB
	Louis Thirion	Champlain	1:49	1-26	St. Antoine
	Jean-Marc Surprenant	Champlain	5:28	1-26	St. Antoine
	Richard Poissant	Champlain	1:25	IS28B2	St. Antoine
	Jean-Yves Morin	Champlain	1:11	1-26	St. Antoine
	Roger Laroche	Champlain	1:26	IS28B2	St. Antoine
	Randy Saueracker	Base Borden	2:16	SF-26A	Bordon, ON
	Craig Skinner	Cu Nim	1:09	2-33	Cowley, AB
	Gerhard Novotny	Edmonton	3:00	1-23	Cowley, AB

FAI RECORDS ANNUAL REPORT

1986 produced the lowest number of records since 1980, when none were set. Since then, the annual crop has averaged about eight. In 1986, however, only three records were approved, all originating at the Cross-country Clinic held in Chipman, Alberta, the home of the Edmonton Soaring Club, and all on the same date, June 12. A flight two days later from Chipman by Mike Apps for a 100 km triangle speed record could not be claimed unfortunately, due to technical difficulties.

The records approved in 1986 are as follows, the figures in parenthesis being the previous record:

4.3.2.1 Straight distance feminine, 607 km (305)
Ursula Wiese, Ka6CR (aka Cloverleaf)
Lamont, AB to Dilke, SK

4.3.2.1 Straight distance multiplace, 495 km (406)
Chester Zwarych (Reg Adam), Blanik
Chipman, AB to Loreburn, SK

4.3.2.5c Speed over 500 km triangle multiplace,
88.8 km/h (none), John Firth (D. Webber)
Gemini, Chipman/Marshall/Alliance

Russ Flint
SAC Records Chairman

1986 COMPETITION SEEDING LIST

The final scores from the 1986 Nationals have been incorporated in the 1986 SAC competition seeding list that appears below. One hundred is the maximum. The top 12 pilots were, of course, involved in the team selection procedure that chose the team that went to Australia. No changes in seeding list procedure are planned except for the inclusion of present national champions in the team selection procedure if they have not otherwise appeared in the top 12 positions on the seeding list.

	Name	Pts		Name	Pts
1	Webb,Dave	95.20	24	Herten, Walter	57.68
2	Werneburg,Ulli	89.54	25	Weir, Walter	54.55
3	Apps, Mike	88.72	26	Hill, Larry	51.80
4	Hollestelle, Ed	87.87	27	Thompson, Paul	47.49
5	Janicek, Stan	85.60	28	Carlson, Bob	45.04
6	Krueger, Wilfried	84.79	29	Tootill, Colin	41.14
7	Firth, John	77.49	30	Binnette, Robert	40.71
8	Pölzl, Harry	76.43	31	Grant, Ian	38.91
9	Bennett, Kevin	74.85	32	Newfield, Stephen	37.28
10	Wilson, Chris	74.60	33	Proudfoot, Jock	35.37
11	Milner, Brian	74.01	34	Werneburg, Hal	28.28
12	Pille, Walter	73.46	35	Baillie, Stewart	25.96
			36	Marsden, Dave	24.04
			37	Oke, Jim	23.71
13	Springford, Larry	72.37	38	Wood, Sid	23.35
14	Stieber, Jörg	72.25	39	Flint, Russell	23.30
15	Bonnière, Nick	68.14	40	DiPietro, Robert	20.41
16	Carpenter, Jim	67.68	41	Schlifer, Seth	20.03
17	Spence, Ian	66.72	42	Hea, Bruce	18.50
18	Gormley, Bryce	65.03	43	Matthews, Rick	17.54
19	Bantin, Colin	64.46	44	Reid, George	15.65
20	Pepin, André	64.08	45	Brennan, John	13.59
21	Gairns, Bob	62.83	46	Saucier, Yvon	10.54
22	Burton, Tony	60.92	47	Gauvin, Denis	8.00
23	Doetsch, Karl	59.14	48	Meyer, Kurt	3.61

free flight — 1986 ANNUAL REPORT

Tony Burton
editor

It's time to speak of the progress free flight has enjoyed in 1986. Again, the best way for you to judge last year is to spend a rotten Sunday afternoon spreading all six issues out, and re-reading some of the great articles that you have forgotten about already. I think then that you will agree that the contributors to the magazine have offered you much fine browsing.

Five issues were 24 pages and one, which contained a six page SAC AGM report insert, was 32 pages. The content was divided roughly as follows:

	items	pages
Training/instruction	9	16
Sporting/competition	6	13
Flying stories	8	11
Technical articles	5	8
SAC affairs	6	6
Safety articles	6	5
Humor	3	5
Personality	2	2
Historical	1	1
Opinion/editorial		15
Hangar flying		7
Club/prov assn. news		6
FAI/records reports		4

The training/instruction content was bolstered by the excellent "Low Loss Instructing" series which ended with the 3/86 issue, and every instructor should review this work again early this season. Flying stories dropped from 1st place and 19 pages in 1985 to 3rd and 11 pages in 1986, and that's regrettable. As I mentioned in a "fine print" filler in 6/86, many of you out there were a little lax in writing about your adventures in soaring.

I have no shame 'borrowing' good material from other magazines, but I sure don't want to be in the position of counting on it when deadline passes. So again, I ask for your support in continuing to tell me what you, individually will discover about the sport in 1987 — and includes all you brand new students and cross-country pilots.

In going over last year's stories, I'm once more going to award some informal medals for good writing stuff in several categories:

Technical —
"Using the angle of attack gauge", 3/86, by Ray St. Laurent
An interesting idea on using the control stick as a flight instrument.

Flight story —
"The dream is real", 5/86, Ursula Wiese
I get inspired to go dragon-slaying each time I re-read it.

Safety —
"Mnemonics", 3/86, and "Calculated risk-taking", 4/86, by Peter Savage
Two excellent and original thoughts on the subject.

Editorial —
"A friend of Jack", 2/86, Seth Schlifer
Saying, "For God's sake, be careful out there", about as strong as one can.

I intend to continue an emphasis in the magazine on safety and training, club survival, and lively editorials when I can find them. I would like to see more news coming in from clubs about how they are managing their operations, what their philosophy is, and where their priorities lie. I'm enjoying the work, and look forward to giving you the best that comes to me. □

THE PATH FORWARD — STEP 3

Bob Carlson
SOSA

The events previously listed are happening. The only major glitch is the bylaw forming the Aero Club only went to the members at the beginning of February. I now expect that the Aero Club du/of Canada will not come to legal life until 1 June. Additionally, developments of the necessary financial forecasts and structures started to stall so I stirred the pot a bit. A "pro forma" founding general meeting of the Aero Club will now be held 28 March in Toronto. All of the sport aviation associations will be invited to attend. All going well, we'll have an organization that will have form, direction, and participants awaiting the blessing of Consumer and Corporate Affairs to be born. I hope that by the fall, we'll have an operating organization that will serve all aerosport efficiently and effectively. Along the way, appointments to the FAI and Canadian Olympic Association will be made or confirmed, a President and Vice President elected and the officers (Treasurer and Secretary) and committees appointed. I'll keep you informed. □

COMING EVENTS

June 2-11, **Canadian National Gliding Championships**, all classes, Chipman, Alberta. Hosted by Edmonton Soaring Club, sponsored by the Alberta Soaring Council with a grant from Alberta Recreation and Parks. Details available. Dave Lacy, (403) 471-3722 (H) 471-0586 (B).

Jun 29-Jul 3, **Beginners XC Soaring Course,** Rideau Valley Soaring, Kars, ON. This course is for the 1-26 pilot looking for Silver C and beyond. Bring your 1-26 and have a fun soaring week. Fee discount for registration before 1 June. Glenn Lockhard, R.R. 1, Box 511, Manotick, ON.

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

Juin 13-20, **Cours d'instructeur,** Aeroport de St. Raymond, Cte. Portneuf, inscription: $125. S'adresser au Bureau de l'ACVV. Pour renseignements supplementaires, contacter Denis Gauvin (418) 842-6456.

• *Membership secretaries — have you sent the National Office a complete list of your current members, including address, **especially including the postal code**, and telephone number? Do **not** assume the last year's members are already correctly listed with SAC — it ain't necessarily so! Let's get a "clean" SAC membership list this year — many members missed **free flight** last year because their names and addresses fell through the cracks.*

NEW FACES

Peter Perry

Chairman
Medical
Committee

Peter, an active member of SOSA, is a family physician in Cambridge, ON. Born in New Zealand, he received his medical training there, graduating in 1960. He learned to glide in New Zealand in 1964, was an instructor there for five years, and is 500 km away from his Diamond badge. He has been a Civil Aviation medical examiner since 1964, and is a founding member of the Canadian Society of Aviation Medicine.

Peter's primary duties will be to represent SAC to government on matters of federal aviation medical policy, and to support individual SAC members who may have specific licencing problems arising from their medical status. Welcome to your new job, Peter.

Trading Post (page 20/21), and back page omitted