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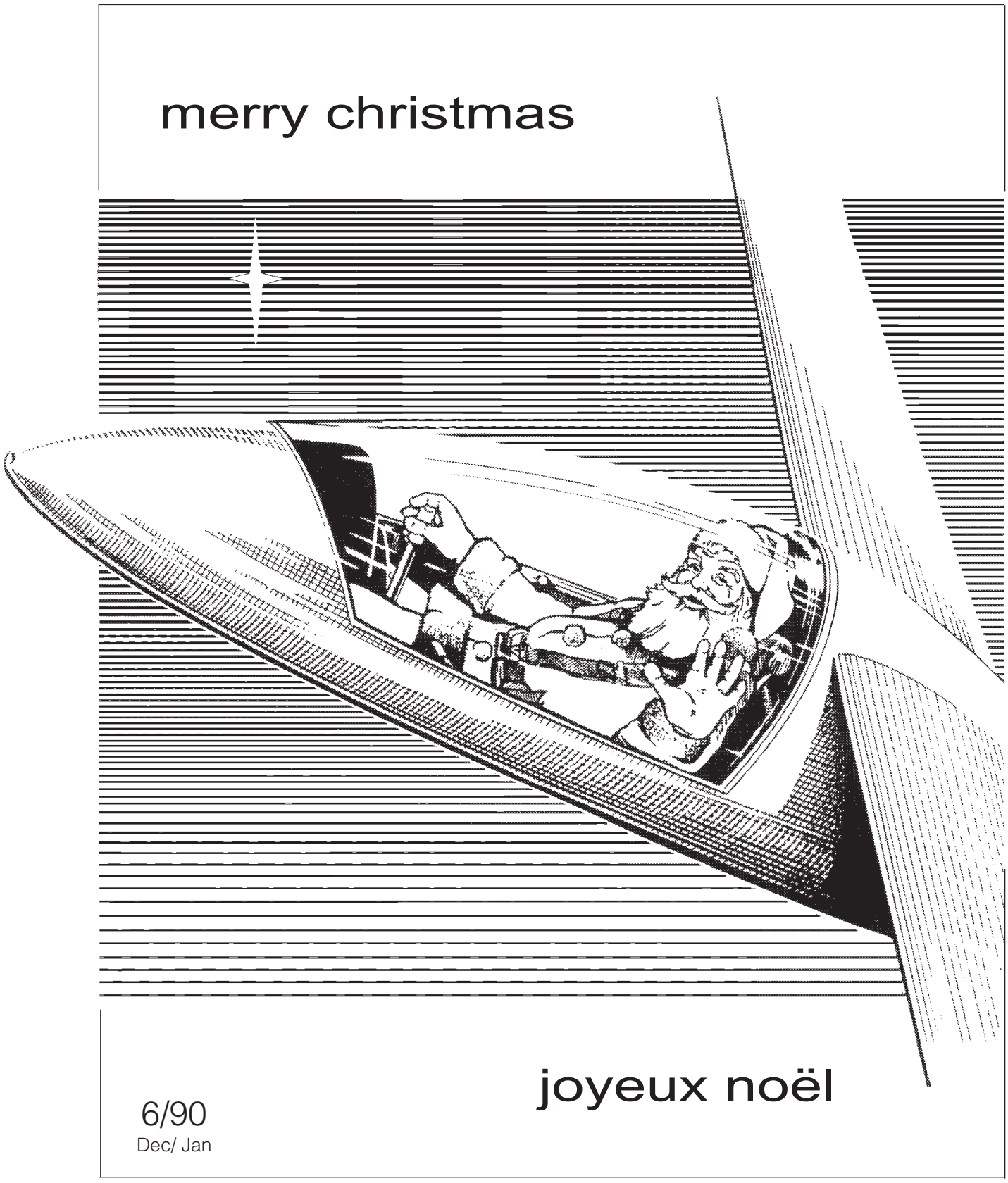

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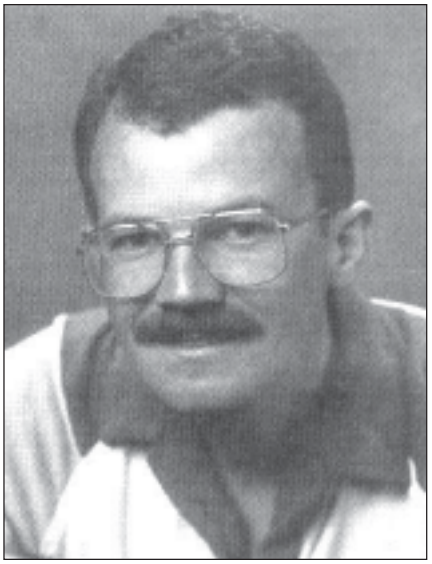
POTPOURRI



Winter is boring! Although I'm sure there are plenty of worthwhile things to do in the winter months they seem pale in comparison to what we do all summer — soar that is.

If you can't find anything worthwhile to do, why not get a group of club friends together and take a trip south and get some winter flying in? Besides being a boost for the spirits it will help you keep current and therefore safer. The way Sue and me plan our winter holidays is by going somewhere where there is a glider operation. Fortunately Sue is a soaring enthusiast as well, so I've got it easy, but would your spouse turn down a vacation in a warmer climate — that just happened to be close to a glider operation?

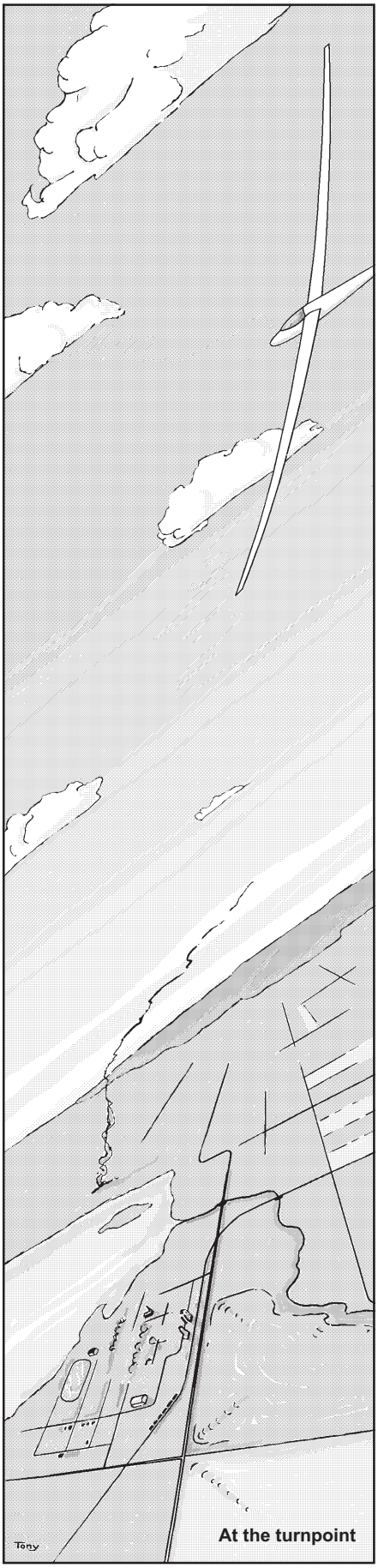
While I'm on the subject of holidays, why not start your plans now to attend the SAC Annual General Meeting and Workshops. The Club de Vol à Voile de Québec is finalizing their plans for a great weekend for us. March 1-3, at the Château Frontenac, Québec City. If you've been to Québec City before you know what a lovely place it is, the local attractions make it a great location for a holiday. Sorry, no winter soaring there, but lots of soaring talk!

Safety is a hot topic this winter. After this year's horrible accident rate, we all need to sit back and reflect on our own personal as well as our club's attitude to safety. Have you got complacent about safety? Each season we all hopefully become more skilled as a glider pilot, instructor, towpilot, wingtip runner, whatever we do we do better and the routine becomes more and more familiar. Don't let that familiarity lead to inattention to the details that can lead to an accident.

As President I'm finding that I'm most busy in the spring and fall, the last few weeks have been the busiest and most difficult yet. Many hours have been spent on the phone, the fax machine has gone through reams of paper, all on a subject that doesn't affect 90% of our members. The way we choose our National Team has to change. The way it has been for years is by secret vote among the top competition pilots as determined by a seeding list. The seeding list is derived using scores from recent Canadian Nationals. As you can imagine it is quite an honour to be selected for the Canadian Team, and this, along with the competitive nature of these pilots has made the past weeks interesting to say the least. If you have any ideas about how we should choose our National Team, please send them to a member of the Sporting Committee.

Let's hope for an early spring!

Chris Eaves



At the turnpoint

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Trademark pending Marque de commerce en instance

6/90 Dec–Jan

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

ISSN 0827 – 2557

Cover

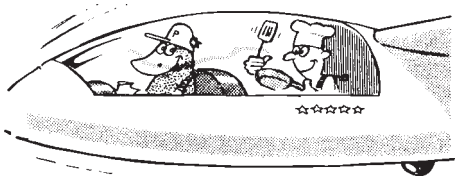
I don't know what's keeping Santa's sailplane up at midnight, but it's our Christmas card to you with best wishes for the next season.

illustration by John Charlton, Gatineau Gliding Club

GLUTTONY The 7 deadly sins of gliding

"Platypus"
from SAILPLANE & GLIDING

For years I never used to eat or drink while flying. On one nine hour flight in 1975 I lost eight pounds without benefit of pee–bags. Then I learnt that getting dehydrated was bad for you, so I started taking pure Dunstable Downs water in a plastic bottle, but no food. Then I was corrupted. It was the two–seatering that started the rot. When you are on your own, the urge to eat or drink is minimal. But company changes everything. One of my passengers insists on taking vacuum flasks ("What d'you want? Hot coffee or hot tea?") and a variety of freshly cut sandwiches. At first I tried to ignore this, believing that a serious pilot had higher things to worry about.



But the aroma of bacon butties[1] — before we go any further I ought to explain the plethora[2] of footnotes in this piece. Our researchers tell me that we have vast numbers of readers from foreign parts who understand only the purest English. Slang, jargon, argot, figures of speech and obscure references to Shakespeare, cricket or television situation comedies cause confusion and doubt. Having lots of footnotes in also puts the printers on their mettle[3] — in a confined space is hard to resist! Has someone been wiring up a waffle iron[4] to those massive batteries behind the back seat? No wonder the artificial horizon[5] has been toppling lately; if we spin in at least the condemned men will have had a hearty breakfast. Others specialize in KitKat[6], Twix bars and other sticky confections. In warm weather chocolate melts horribly and dribbles all over the maps, not to mention the luxurious upholstery. One considerate co–pilot of mine used to wait until we were at 5000 feet, then unwrap the KitKat very carefully in the cool draught from the ventilator; only when it was reasonably solidified was it fit to be passed to the pilot–in–charge. The co–pilot's reward for all this trouble was to get to fly the beast for a while. After a minute or so a loud belch[7] from the front seat would signal that the senior pilot was ready to take over once more.

Hunger isn't the only reason for the compulsion to stuff one's face. A 17 stone[8] Billy Bunter[9]-ish character that I flew down to Cornwall in a K7 ate bulls' eyes[10] constantly, in between observing gloomily that we always seemed to be getting lower. Nonsense, I said, the ground is just getting higher, as we slid over Dartmoor[11] and watched the ground drop away again. I think it was worry that made him eat, and my flying simply accelerated an innate tendency towards pessimism.

Years ago (1963, when the Beatles first came to power and satire became the new craze) I invented for the entertainment pages of S&G a ruthless glider pilot called James Bend, whose adventures were so popular that I was asked to give the readers more in 1964. Sorry, I said, but this whole 007 James Bond nonsense will be played out by them, and satires on yesterday's cult always fall quite flat. How wrong I was! But I remember that our hero Bend celebrated a height record with Bollinger champagne and a Havana while airborne: then I asked the readers to turn to a far distant page, in the infuriating way that American magazine have. The page number in question did not exist, of course. "What happened?", a thousand eager subscribers clamoured to know. (Well, one of them clamoured to know, if we are precise.) The rest just assumed the printer had lost part of the copy as usual. I had no idea what happened to Mr. Bend. But it now occurs to me that at 40,000 feet or so a champagne cork, bottled at 400, would come out with magnum force and destroy the instrument panel, and lighting up a cigar in the presence of pure oxygen would be even more dangerous.

So the story might well have ended with our somewhat scorched adventurer swinging down on his parachute, pondering whether it wasn't better to stick to lust after all ...

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1 Butty — Northern English dialect for a square sandwich of coarse proportions, with any kind of filling. The Queen does not eat butties.

2 Opposite to a dearth.

3 Not sure what one's mettle is, frankly, but if you are put on it you are being tested.

4 Can be used to make hot butties.

5 A gadget frequently in use in British gliders owing to the frequent absence of a real horizon. Banned in most other countries.

6 A delicious chocolate–covered wafer, not to be confused with "Kit–e–Kat", a petfood for felines.

7 A semi–involuntary sound originating from the stomach, indicating appreciation of having dined well: mandatory etiquette amongst royalty in some countries. The Queen, however, does not belch.

8 A quite unmetric 14 pounds (or a baker's dozen plus one).

9 A fat, famous, fictional schoolboy from a public school (ie. a private school) called Greyfriars, who was known as the Owl of the Remove. (what's a remove? well, it's a — Oh, forget it.)

10 Not the actual eyes of bulls (this would now be banned because of Raging Bull disease) but a stripy, round pellet of hard–boiled sugar; revolting to any person of refined tastes. No, the Queen does not eat bulls' eyes either, not in public anyway.

11 Britain's most famous jail, not to be confused with the Tower of London, which is where they send people who make fun of the Queen.

The SOARING ASSOCIATION OF CANADA

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

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

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

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.

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Deadline for contributions:

5 January, March
May, July
September
November

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

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

vol libre est le journal officiel de l'ACVV.

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

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

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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.

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MY 300

Michael Steckner
London Soaring

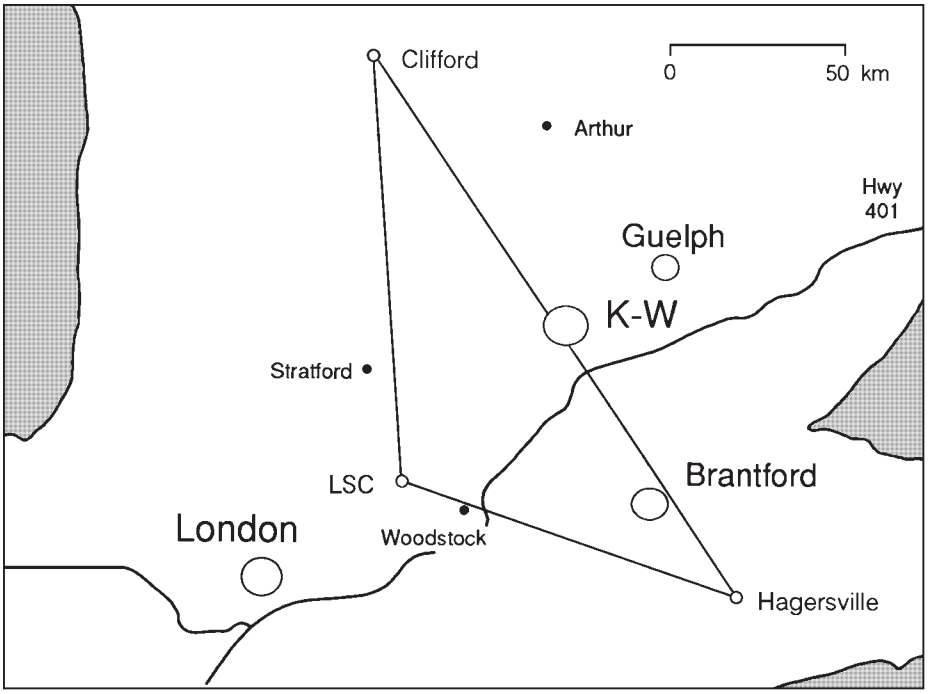
After several years of excuses, failed attempts, and not attempting when I should have been tempted, I finally completed my 300 km flight 7 July, on my second try this year. The day started off looking good; clear sky, a cool evening and a light wind out of the north. Unfortunately, the closer I got to the field, the thicker the cirrus became. To make matters worse, the wind changed direction, coming from the south and bringing in warm, humid air. I was expecting the flight to take about 6 hours in my Ka6CR, but I was worried that the high cirrus would cut the lift off early. I was not pleased by the turn of events, but I decided to declare in hopes that things would magically improve. My flight would take me up to Clifford, a small village south of Hanover, and down to the infamous Hagersville, site of the big tire burn. I declared a triangle flight so that it could be used for both my Gold distance and the Diamond goal flight.

When I took off at 11:30, clouds were already forming at nearly 4000 feet AGL with good lift. Since I did not have any time to waste I set straight off on the task. I almost regretted that decision, but fortunately a few weak thermals saved me near Stratford. After that, the next hour of flying was glorious. My barograph trace shows one thermal that averaged 800 fpm for 3000 feet! With such a confidence booster,I got to my first turnpoint, 90 km away, an hour and a quarter after takeoff. At this rate I was going to do my flight in about 4 hours! At this point cloudbase had risen to 5000 feet AGL and, to my great relief, neither the cirrus nor the light south wind seemed to be causing any problems.

Turning around, I headed off to Kitchener–Waterloo, 70 km away, where the party came to an abrupt end. (For some reason I always have bad luck around the K–W area, and this was no exception.) Scratching at 1000 feet is not my idea of fun. It dawned on me that my last decent thermal was 50 km back. Having done the last 60 km in a little under one hour, it was time to slow down. As I slowly climbed back to 4000 feet, I saw a huge overdeveloped cloud bank around Brantford with only one decent cloud bank between K–W and Brantford. That good cloud was the first in an hour to get me to 5000 feet and was also the last for the next hour to get me that high. I needed every foot of it.

Right in the middle of that overdevelopment was a huge upside down bulb of black cloud, it almost looked like the start of a tornado. My only option was to fly around the cloud bank so I elected to fly east towards Hamilton, staying out of the control zone. To ease cockpit clutter, I had cut out the section of the map I needed, but that made navigation difficult because I was flying at the edge of my map. To compound the problem, the water reservoirs at Hagersville, which I had used on previous flights as a navigation aid, could not be seen because the overdevelopment blocked any sunlight from glinting off the water. Fortunately the overdevelopment slowly drifted north and I got close enough to see Hagersville and just in time to catch the last cloud in the area. That was my first thermal to 5000 in nearly an hour. It had taken me one and a half hours to travel the 70 km from K–W to Hagersville. Not a great accomplishment, but at least I was still in the air.

continued on page 15

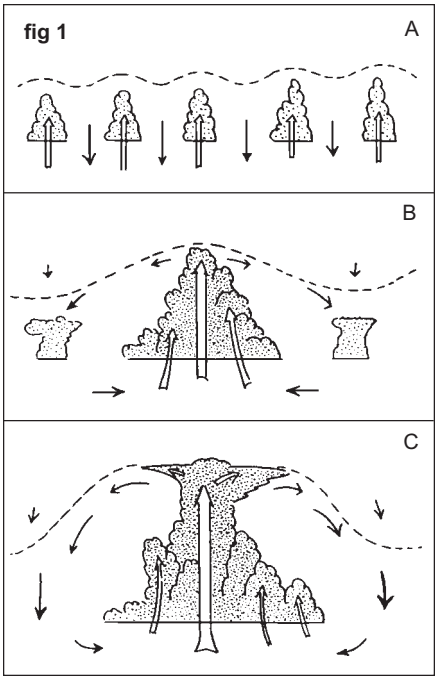


ALL ABOUT
CUMULO–NIMBUS

CUMULO–NIMBUS (Cb) clouds are exciting but potentially the most dangerous features of the atmosphere. They may be associated with thunderstorms, tornados, downbursts and squall lines. They can occur in lines along fronts, in large clusters and also in the circulation of hurricanes. Vertical currents may sometimes exceed speeds of 100 kts, enough to break up strong aeroplanes. They sometimes drop a mass of damaging hailstones whose size and fall speed may occasionally be lethal.

Tom Bradbury
from SAILPLANE & GLIDING

Steps in the life of a Cb
For Cb to grow to full size the air must become unstable to a great height. However, even if the local upper air sounding shows this instability, the first clouds rarely shoot up to become Cb straight away. The process may take several hours.



Early stages
The embryo Cb goes through the following stages:

• When the surface is warm enough thermals rise up and many small clouds start to grow above the condensation level. As these clouds grow the turbulent circulation pulls some of the surrounding air into the clouds.

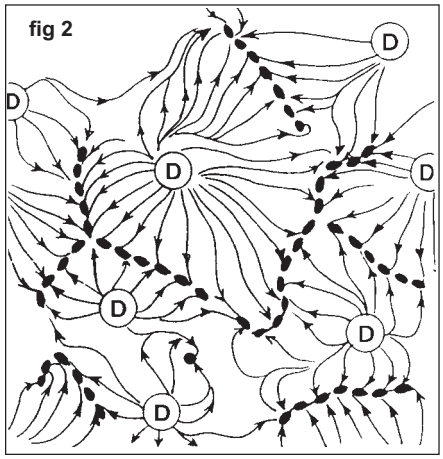
• Since the surrounding air is usually both cooler and drier than the young cumulus the mixing cools the thermals and initiates evaporation. This produces holes which grow as the sink increases, so the first clouds seldom live long enough to grow very large.

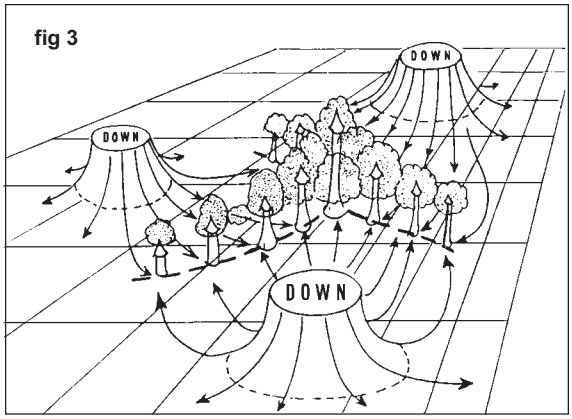
• The problem of evaporative cooling is often solved by a group of cu combining together instead of acting individually. When a cluster of cumulus grow together the inner members of the group are shielded from the cooling and evaporation which erodes solitary clouds. The group then grows larger and taller until one or more cells reach their full height.

• As the group expands it produces a broad region of sink all round. This starts to squash all the little clouds who have so far failed to form their own protective groups. Finally all that is left is a few big clouds spaced far enough apart not to hinder each other.

The process is illustrated in Figure 1. (A) shows the field of little cu, (B) shows how group protection allows a bigger cu to form, (C) shows the final Cb stage when all the little clouds have been suppressed.

Interaction between clouds
A study of the early stages shows that cumulus clouds rarely develop independently; there is usually interaction between neighbouring clouds. This comes about by airflow spreading out from zones of sink. The outflows





meet to form small low level convergence lines. Figure 2 shows streamlines of low level flow in calm weather. Regions of sink are marked (D). From these the air spreads out horizontally. The arrows show how the downdraft air then converges along definite lines (marked by strings of blobs). This convergence triggers off fresh thermals which merge to form the protective clusters needed for greater growth. Figure 3 is a 3–D picture showing how a cluster of cumulus may form where there is a junction of convergence lines.

In the early stages such lines are so weak they are seldom noticed. Later, when the cu grow into Cb, the outflow from downdrafts becomes a major factor in the extension of storm clouds.

Availability of energy
Warming from the surface starts the convection but surface heating alone is seldom enough to form a Cb. Most of the energy within a Cb comes from the release of latent heat when condensation occurs in the rising air. Figure 4 shows the extra energy released when a thermal rises far enough for the moisture to condense into cloud droplets. The straight lines represent how a cloudless thermal cools as it ascends. The slightly curved lines to their right show how air cools when saturated. The shaded area between these lines represents the energy released by condensation.

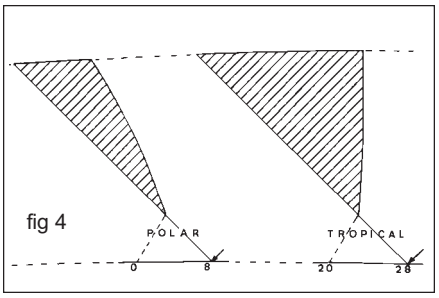


fig 4

The left hand diagram shows a polar air mass where the surface temperature is 8°C and the dew point 0°C. The right hand diagram shows tropical air where the surface temperature is 28°C and the dew point 20°C. Both have condensation levels of about 3200 feet but the tropical air releases more energy. This is because warm air holds more moisture than cold so the energy released by condensation is much greater. As a result, Cb formed in tropical air can become larger and more ferocious than those in cold polar air.

Height of cu–nim

Cumulus growth depends on the depth of the unstable air. The ultimate limit is usually the tropopause, the surface dividing the lower atmosphere (troposphere) from the stratosphere. Temperature falls with height in the troposphere but is almost constant in the lower stratosphere. Any Cb which reaches the stratosphere tends to spread out in an anvil shape. The momentum of the updraft may take the cloud several thousand feet higher, producing a temporary bulge in the tropopause, but most of the anvil has a level top which grows wider as more air is carried up from below. The tropopause is nearly always much lower in polar air than in tropical air, the difference can amount to 20,000 feet or more. Thus Cb in polar air are apt to be smaller and less energetic than tropical Cb. They can still generate hail and thunderstorms, and icing starts much lower down.

Why the dew point is important

The dew point (the temperature at which dew forms on a cooled surface) is also an indicator of how much moisture the air is holding. If, for example, the dew point was reported as 4°C it would indicate 5 grams of water vapour in each kilogram of dry air. If the dew point was 20°C, the moisture content would be 15 g/kg, three times as much.

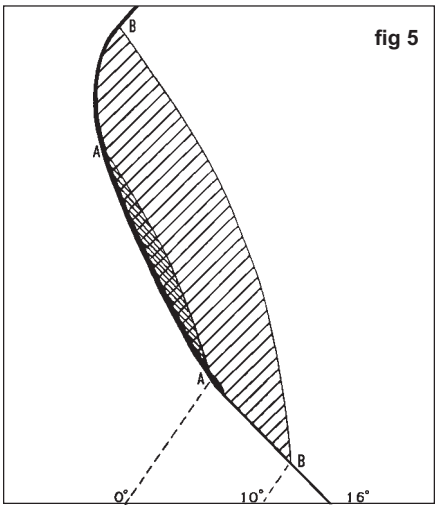


fig 5

Figure 5 shows how a higher dew point can produce much more energy. The broad curving line is the measured temperature, starting with a surface value of 16°C. If the air was dry, with a dew point of 0°C, the cloudbase would be about 6400 feet and only a small amount of energy would be released by condensation. The amount is shown by double shading between the points A–A. However, if the dew point went up to 10°C the cloudbase would lower to 2400 feet and the amount of energy (shown by single shading below the line B–B) would be far greater. In the dry case one would have well scattered big cumulus, but in the moist case the sky would probably fill up with heavy Cb.

Rain, windshear and downdrafts

Once Cb have formed new ones can shoot up very quickly. In as little as twenty minutes a small cumulus can grow into a big Cb with an anvil top spreading out at 30,000 feet and a heavy shower reaching the ground. In the next ten minutes the updraft may be swamped by the descending shower, and the cloud starts to expire. The development depends on whether the wind velocity is fairly constant with height or if there is a windshear through the depth of the cloud.

With little or no windshear the weight of precipitation tends to fall straight back through the column of lift and soon reverses it. As

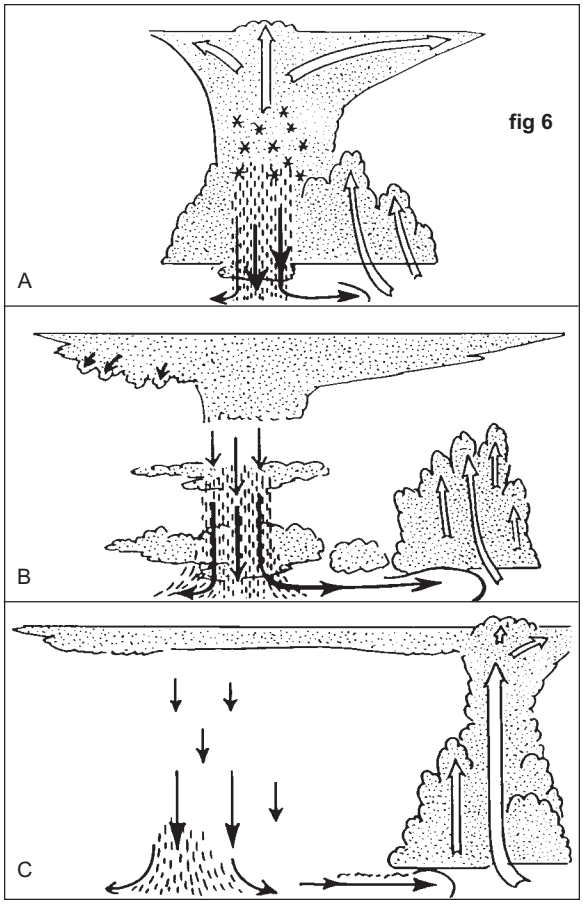


fig 6

lift turns to sink throughout the cloud the Cb falls to bits. The anvil at the top often lasts longest while the middle and lower sections of the cloud disappear. In small Cb the process can be so rapid that the entire cloud vanishes in a few minutes leaving just the bottom half of the shower apparently falling out of a clear sky. This is particularly common when the showers fall as snow which takes a long time to reach the ground. Even when the shower ends the air usually continues sinking for some time; this is a good reason to avoid flying through the region just behind a shower cloud. When strong sink reaches the ground it spreads out to form a gust front which may trigger off new Cb. Three stages of this process are illustrated in Figure 6. (A) shows the shower already well developed with a downdraft outflow pushing off to the right. (B) shows the original cloud collapsing and a new one growing above the nose of the outflow. (C) shows the fully formed new Cb.

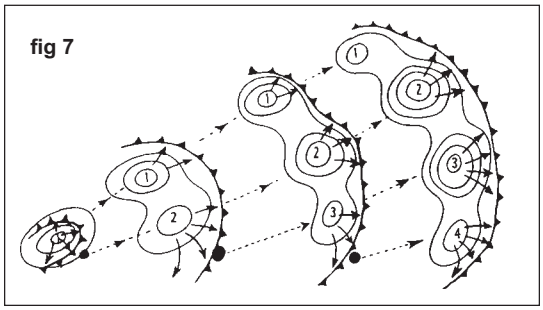


fig 7

Although the original cloud has died, a series of new ones grow up all round and these may combine to form a much bigger multicelled storm. Most Cb over the UK are of this multicell variety.

Development and movement of a multicell storm

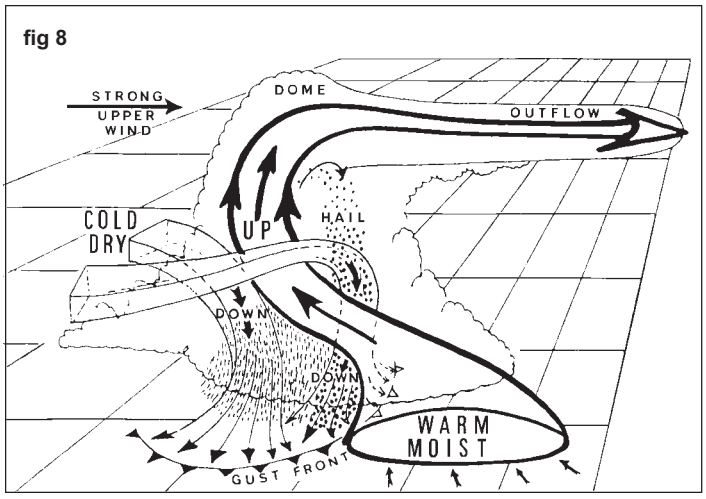
Figure 7 shows a plan view of how a single cell can grow into a multicell storm extending over a wide arc. At the left is the original cell; the curved line with spikes represents the outflow which acts rather like a miniature cold front. The general wind direction is from WSW to ENE. The original cell, marked (1), follows this track. New cells are triggered, often on the SE corner of the outflow. These are marked by black blobs which grow into cells 2, 3, and 4. Thus the storm centre can move across the wind as old cells die out on one side and new cells grow on the other. It is more common for these new cells to form in the right flank of the storm.

Cumulo–nimbus growing in vertical windshear

Many of the biggest and most damaging Cb are those which develop through a vertical windshear. Windshear initially acts to filter out the weaker clouds. Only the strong ones can push their way up through the changing wind structure. The shear then has two main effects:

- It pulls out a long streamer of cirrus cloud from the top of the cu–nim and,

- It twists the updraft so that when the shower begins it does not fall straight back into the column of lift.



With the lift kept separate from the descending shower the Cb can continue to grow into a real monster called a "supercell".

The supercell

Until the development of pulsed Doppler radar it was difficult to study the workings of such clouds, but now researchers have drawn three dimensional cross sections which show the flow is surprisingly complicated. Figure 8 shows one highly simplified version drawn in 3–D. Since the supercell is able to keep the updraft separate from the shower downdraft it can maintain itself for long periods. A fully grown supercell draws in warm moist air from one side; this forms the updraft which starts off with a shallow slope but grows steeper with height. Finally the air is pulled out into a longer anvil by the strong winds aloft. Thus the supercell contains a fairly steady circulation, unlike the multicell storm which pulsates with many surges of lift.

At middle and upper levels the slowly moving supercell deflects the fast moving air around the updraft. The medium level air is usually relatively dry and when it is sucked into the supercell it starts evaporating part of the cloud mass. Evaporation cools this section so much that a powerful downdraft develops. The downdraft can persist very close to the updraft without disturbing it. It usually combines with the falling precipitation to produce a downrush of hail and rain. The descent can be fierce enough to blow down trees and damage structures on the ground. It is then called a "downburst" or, if it only covers a small area, a "microburst".

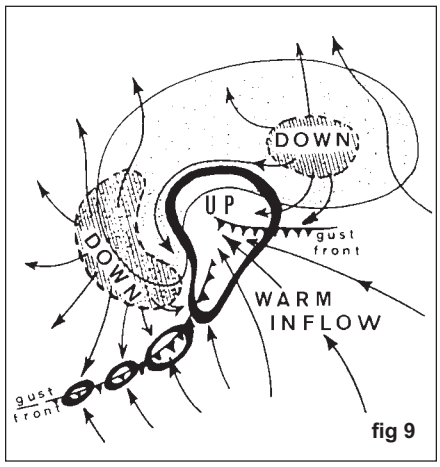


Figure 9 shows a plan view of a typical supercell. The heavy black line outlines the updraft. This is fed by the warm moist inflow that is shown entering from the south-east. The main area of precipitation at the surface is shown stippled. Two downdrafts are shaded in and the outward flow is indicated by curving arrows. The two gust fronts are shown by spiked lines. Notice that in the southwest quadrant there is a line of new and much smaller updrafts. These are feeder cells which move in to join the main updraft later.

Gust fronts

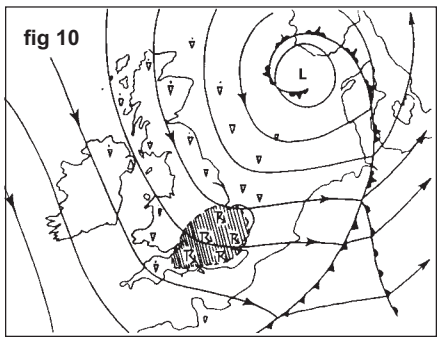
When it hits the ground, the descending air spreads out horizontally to produce a gust front 1–2000 feet deep. This sets off a wide arc of rising air at the gust head. The downburst squall may occasionally reach speeds of 100 knots and the lift at the gust head is correspondingly strong. Occasionally two such squall lines from separate storms collide. One pair produced a fountain of lift at an average of 30 knots up to 10,000 feet or more. The Cb area can extend surprisingly fast when gust fronts collide or meet some obstruction such as a range of hills. Pilots trying to weave their way through gaps between Cb have been shocked to find the rift closing up both in front and behind.

Tornados

The windshear sometimes twists the entire cloud. At low levels there is also a twist to the inflow — this is initially a slow spin imparted to the converging air currents. When the updraft is given a sudden boost, perhaps by the action of a gust front, the convergence concentrates the rotation so much that a cone of air starts spinning fast enough to produce a pressure drop. Cloud forms where the pressure falls and the beginning of a tornado becomes visible. As the tornado cone spins faster it extends down to the ground. Stretching this vortex results in the broad cone becoming long and narrow. Over the sea the same process causes waterspouts.

Met charts on thundery days

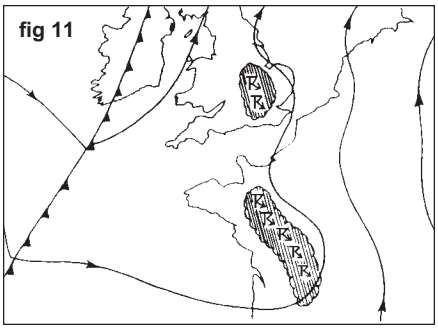
Cold air Cb Figure 10 shows a common situation for thunderstorms. This is a classic example of post–frontal thunderstorms. There



is a cold north or north–westerly flow following the passage of the depression and its cold front. As the front moves away the unstable air grows deep enough for ordinary cu to grow into Cb. In winter and spring the sea is often warm enough to set off Cb over the ocean. As the sun becomes higher the heating overland makes the Cb more active and in summer and autumn these storms are chiefly confined to land areas.

Any minor trough in the isobars helps concentrate these Cb. Showers are more common where the isobars have cyclonic curvature and a definite trough helps the cu to combine into a line of Cb.

Warm air Cb Textbooks warn pilots of Cb and thunderstorms developing along cold fronts, but they do not always describe the storms which can form in the very warm air well ahead of a front. Figure 11 shows one example of thunderstorms in what could be described as the "warm sector". These are some of the stages leading up such storms:



• A southerly flow brings progressively warmer air up from low latitudes. Passage over a warm sea adds more moisture to an originally dry air mass so that it becomes both hot and humid. The observer on the ground finds temperatures rising day by day and the air often becomes hazy. Despite the rise of temperature the thermals remain blue and are severely restricted by a low inversion.

• At middle levels the winds veer bringing cooler and relatively dry air from the SW over the rather shallow layer of hot humid southerly air. This makes the air "potentially unstable" but at first the temperature soundings show that even high surface temperatures cannot break the inversion and release this potential. The inversion is important because it prevents thermals from tapping the energy aloft until a really huge amount has built up.

• The trigger may be a small band of strong upper winds called a "jet streak". The jet streak is a more active section of a long band of strong winds at high levels. It is important because the acceleration of air into the jet streak can produce ascent of air from much lower down. This can be the final straw which breaks the inversion.

• At first the process only shows up on computer charts. The ground observer may not be alerted until little puffs of "altocumulus castellanus" appear. Castellanus means turretted cloud. These clouds often look like small cumulus except that they form at levels of 10–15,000 feet and are not caused by thermals from the ground. Some textbooks also use the term "floccus", likening the collection

of woolly puffs to a flock of sheep. They look innocent too, but such clouds are one of the most reliable signs of thunderstorms to follow, usually within a day. What they show is that the whole mass of air is being lifted slowly upwards and so becoming destabilized.

• Events may develop rapidly after this. The widespread ascent accompanied by very high temperatures near the ground weakens the inversion and when it does break the stored energy is suddenly released. Cb form rapidly and grow into real monsters.

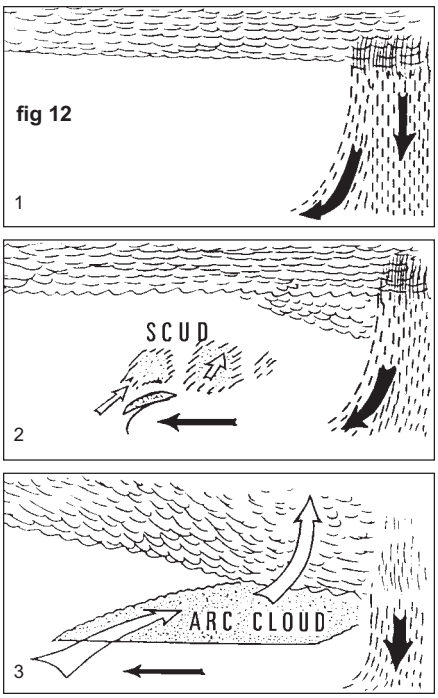
Points to watch for:

- An increase of temperature over several days accompanied by hazy conditions and a low inversion spoiling soaring.
- A slow fall of pressure which often goes on for 2–3 days before the storms develop. Heat lows may appear overland on the surface charts before storms break out.
- A rise in dew points reported in VOLMET broadcasts. The hot spell often starts with dry air and dew points below 10°C. If you hear reports of 16°C or more the Cb risk is becoming significant. By the time dew points are 18–20°C the atmosphere is set to go bang in a big way.
- If it has been a cloudless but very hazy afternoon and the haze begins to look unusually dark up sun, it may be because a distant Cb has cast its shadow over the haze.

When the storm is in sight

Once Cb have formed, the inflow into the storm may be marked by bits of scud or a complete shelf of cloud. Figure 12 shows three stages. First there is the downrush accompanying a heavy shower. If you see the rain shaft curving outwards near the ground it may mean that a horizontal outflow is developing.

The next stage shows little bits of fuzzy cloud, scud, appearing well below the main cloud-



base. There may even be strange bits of lenticular cloud too. If a new updraft is developing you may see the bits of scud being sucked upwards and growing in all directions.

The third stage is rare in the UK but is seen with big storms in the USA. A smooth shelf of cloud develops where the sloping inflow of warm moist air rises into the core of a supercell. The cloud may form an arc and is often called an "arc cloud". The top is similar to the leading edge of a lee wave cloud and marks the upper boundary of the inflow. It usually merges with the main body of the Cb before the arrival of the rain or hail shaft.

The powerful updraft often takes a mass of moist air well above its equilibrium level where it spreads out into an anvil. Then some of it sinks down looking rather like smooth inverted cumulus. These bulges are called "mammatus cloud". Figure 13 shows the development of mammatus below the anvil of a Cb. Mammatus forms quite quickly and its shape changes rapidly. The storm is generally past before this formation appears. It is often an indication of widespread sink which goes on after the main storm has moved away.

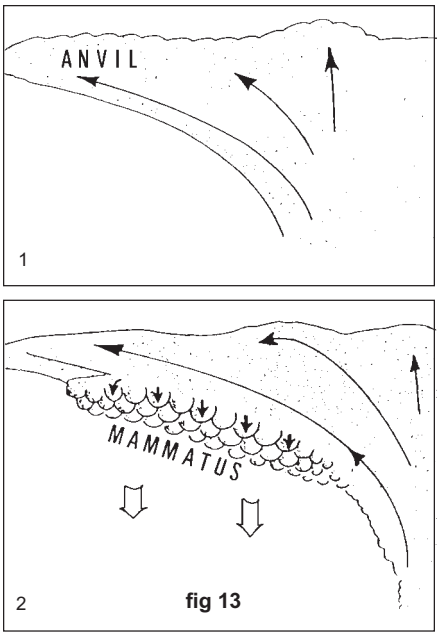


fig 13

Later stages

Warm sector storms sometimes grow into a line several hundred kilometres long and give the impression of a very active cold front.

And what happens to the original cold front far to the west? Quite literally its thunder has been stolen by the warm sector storms and it often arrives next day with little or no rain and just a change of fresher air and better visibility.

Going inside Cb

Flying inside a Cb can range from very stimulating to totally terrifying depending on one's good luck and skill. Going in should be a deliberate choice, not a spur of the moment inspiration. (Note: British airspace regulations allow flight within cloud by sailplanes. editor) Big storms develop very powerful inflows. Modern sailplanes can fly fast enough to avoid being sucked into a Cb. Unfortunately slower craft such as hang gliders cannot always fly away if they come too close to a growing Cb. This has already led to fatalities in Europe.

Here are some of the problems that may be encountered inside:

Icing Practically all Cb extend far above the freezing level. During a fast climb there may not be a big build up of icing but during the exit one can easily collect a lot of ice. This is apt to reduce the performance of a modern GRP sailplane to worse than a Dagling. Pilots have opened their airbrakes and found it impossible to close them again until the ice melted. Apart from ruining the glide angle, the ice may solidly freeze up control surfaces. This is interesting if it happens when you have emerged into smooth clear air; it is highly unpleasant if you are still in cloud.

Anoxia One is quite busy enough keeping in the core of lift without the extra fuss of putting on an oxygen mask at the same time. The rate of climb can increase as you pass through 10,000 feet, and 15,000 may appear on the altimeter less than two minutes afterwards. If you are not already on oxygen it is high time to be heading out for clear air. Even in a small Cb you may still gain another thousand or two before coming out.

Turbulence The lift can be almost as smooth as a strong lee wave until you near the top of the lift, or slip out of the core. Then it becomes extremely rough. Nearly all big cu are rough near the top but Cb, which contain powerful downdrafts close to the lift, are far worse.

Lightning A metal aircraft usually gives good protection to its occupants but one may become distinctly unhappy in fibreglass. The main buildup of electrical charge seem to occur between –10°C and –20°C. Even without an actual lightning flash one may fly through a very highly charged region. Vertical fields of 50–100 kV/m have been measured in Cb. About 30 kV/cm is needed to produce a spark in clean air at sea level. But in the central regions of a Cb an electric field only one tenth of this (3–4 kV/cm) is enough to start a positive corona streamer which triggers the onset of lightning.

Before any flash of lightning occurs, flying may become painful because of frequent shocks from metal objects in the cockpit.

Hail Flying through rain is noisy enough. Hail, even the tiny variety, makes even more racket. When there is hail there is liable to be lightning too. Quite often the size of hail encountered in the UK is small enough not to cause severe damage, but there are photographs of airliners whose metal nose cones have been battered in by hail. Just occasionally a Cb will drop really big hail which does serious damage. Hailstones with a diameter of 7–8 cm have fallen over southeast England. Larger ones have been found over Europe where hail storms are more frequent.

If you still feel inclined to go in, pick the upwind end of a feeder line of lesser cumulus and remember which was the quickest way out. This is entry by the side door. The front door is best avoided; it is the quickest way into a combination of a very high voltage generator and an ice factory. •

FLYIN' THE Cowley Wave

Anon.

adapted from a tale
in "Evergreen Soaring"

ME AND MY GOOD FRIEND Glider Bill decided to go to Cowley to fly the wave last year. I am pretty new at flyin' gliders but Glider Bill is an expert. Glider Bill isn't an instructor — he says that he knows too much about glidin' to be a good instructor. He says that by the time he learnt a student all he knows that the student would be too old to fly. I'm sure lucky to have Glider Bill for my friend.

I asked Glider Bill about flyin' the wave. He told me that only a few of the pilots who goes to Cowley gets to fly the wave. I wanted to learn all that I could about the wave so I asked a lot of questions. He said that flyin' the wave was like a religious experience. The wave has mystical qualities. I wanted to know how I would find the wave. He said that only pilots of pure hearts would find the wave and that only I would know how. This didn't make much sence to me. I have heard tell of pilots getting tremendous lift from the Cowley wave and I sure wanted to be worthy enough to fly it. I tried to get him to tell me more but he only said that I would have to experience the wave myself to really appreciate it.

Well I sure was confused. Now I am new at flyin' gliders. Glider Bill has been flyin' them things for years. I knew that Glider Bill was just about the best glider driver around. But he wouldn't hardly talk to me any more about the wave all the rest of the way to Cowley. He said that he had to meditate and cleanse his heart so that he would be able to fly the wave.

Well we arrived at Cowley and took our gliders out of their boxes. There was lots of other pilots there and everyone sure seemed real serious. Glider Bill launched ahead of me. I didn't see him the rest of the day. I took four flights that first weekend and tried to find that damn wave but I guess my heart wasn't pure enough.

I asked Glider Bill if he flew the wave. He looked like I'd slapped him in the face. He said that real glider pilots don't ask other glider pilots that question nor does real glider pilots talk a whole lot about the wave. He said to be one with the wave was better than sex and you don't talk about that either. Well, I apologized. I told him that I was still learnin' the finer points about being a glider pilot. I sure didn't mean to talk out of turn and I would be more careful like about talkin' of such things.

I felt real down in the dumps all that next week. We went back to Cowley the next weekend. A lot of those same guys was there again. I was real careful not to mention the wave to anyone lest they be offended. There is lots of edequit about glider drivin' that I have to learn. Well we launched a whole bunch of them gliders and I set off to find the wave. I flew all day Saturday, but I didn't find no wave. I was real discouraged. I didn't talk to a soul about it tho'. I may be from Saskatchewan but you don't have to hit me in the head with a 2 by 4 morin once for me to learn something.

Sunday was a bright and beautiful day. I don't know why but I felt different that morning. I somehow knew that I would find the wave that day. We launched them gliders again. I was one of the last ones off. I flew my little heart out but I couldn't find the wave. I was feelin' like I would never be a real glider pilot just because I learnt flyin' in an airplane with an engine. I was trying real hard not to let that interfere much. I was about to give up when I got into one hell of a thermal. I figured that if I couldn't find wave that I might just as well fly thermals. Well out of no where another glider appeard. It was a beautiful little white glider probably one of them glass ones. I could see this big guy all cramped uplike in the cockpit. We circled together in this big thermal for a long time. After a while he decided to leave the thermal. As he swooshed by I saw this big fellow grin at me. He extended his arm and tipped his hand to and fro at me. My heart soared! I finally knew what Glider Bill had been talkin' about.

That night I proudly put into my log book, "Sited the Cowley Wave, flew same". I knew enough not to talk to the other pilots about me havin' found the wave. But I couldn't resist writin' down this story for others to read. I sure hope that I haven't broken some other glidin edequit by doin' so. I have heard tell of pilots getting tremendous lift from the Cowley wave. But I also have figured out that them real glider pilots are horrible liars. Do you believe them other storys about finding good lift low over smoke stacks?

I do know that the "wave" from the big friendly glider feller sure made me feel good. Maybe next year I'll be able to help some other newcomer fly the "wave". •

THE BEST FLYING TALES OFTEN START WITH THE LANDING ...

Hugh McColeman
Edmonton Soaring Club

THE COWLEY FALL CAMP can usually be relied upon to provide plenty of surprises to even the most alert and competent of pilots. For some of us this year the uncertainty began on Saturday, 6 October when we had planned to aerotow the ESC Blanik from Chipman to Cowley with a stop at Drumheller. The weather at Chipman was not great, and forecasts for points south were most pessimistic. However, at about 13:30 the sky suddenly cleared, a decision was made to go for it, and me and a companion were airborne in the Blanik at 1400 hours. Reaching the Cowley area at 1830, we were surprised to see the Livingstone Range covered with snow and, more to the point, the airstrip was also very white and, in the evening dusk, a little hard to discern clearly. Uneventful landings were made by both glider and towplane.

Sunday didn't appear to be a great wave day so I helped take the Grob trailer to Pincher Creek airport with five empty avgas drums. While these were being filled we were pleased to see Deirdre Duffy taxiing to the pump in a Cessna 172 after flying from her home in Edson, Alberta. She is one of a group of fine young ESC students who have obtained their Glider Pilot Licences this year, and she was anxious to try her hand at wave flying.

Tuesday morning the indications for wave were much better and the flight line became very active as the day developed. Finally, at about 1400 Deirdre and I were launched in XVB, the ESC Blanik, for what was supposed to be her “site check” flight. Most of my previous flights at Cowley as P1 have consisted of a 4000 foot tow to the Livingstones, a rapid but brief climb, followed by an even more rapid descent to head–for–home altitude. This time things were to be quite different.

We arranged with the towpilot to stay on tow until he waved us off. Deirdre did most of the flying, seeming not to mind the rather severe hammering we were given by the rotor. Suddenly we were in smooth clear air and climbing rapidly while enjoying the magnificent view. In fact we were enjoying it so much that we let the airspeed drop and instantly the view became a rather ominous shroud of cloud. I immediately took control and speeded up to some ninety knots for one or two minutes which brought us into the clear again.

Steady cruising between Centre Peak and the Gap for a little over an hour had hoisted us to 22,000 feet and it was time to return.

The precise sequence of events during the next few minutes is a little obscure, but at the outset I was concerned about our location relative to Centre Peak and the possibility of violating the block altitudes. I headed east at quite a high speed over the top of the rotor cloud. With a tailwind of some 50 kts and a cruising speed of about 50 kts we were moving over the ground at a good 100 kts, and in a matter of about five minutes we were some ten miles east of the field and totally lost.

It was evident that we were still over the Porcupine Hills just to the east of Cowley, and flying over some rather rough ground. When we spotted some cultivated fields within range we lost no time in heading for them, selecting what appeared to be a large stubble field having some possibility of being suitable for an aerotow retrieve. However, after an uneventful landing, it was immediately obvious that the steep slope precluded any hope of escaping by air.

After expressing sincere thanks for our safe landing to appropriate higher authority, we then began an analysis of our situation. The principal difficulty was the fact that there was no Blanik trailer left at Cowley since the Calgary group went home yesterday. A half mile walk to the farm buildings found no one home except the farm dog, who was cooperative but not very communicative. Returning to the glider I noted that the wind was increasing and also that it was getting late in the day. We had landed at about 1545. We rotated the glider into a more secure position and loaded the wing with field stones until a miniature cairn had been built on it.

About a quarter mile east of our location we noted that there was a good north-south road. Fortunately a truck had spotted the glider, and when I waved to the driver he waited for me. He was an Alberta Government Telephones supervisor with a cellular phone in his truck. After several fruitless attempts to obtain the Cowley airfield number, we settled for a call to a garage in Cowley village, with a request that they send someone to the field to report our location and status.

In a remarkably short time we were pleased to see our faithful Pawnee appear overhead briefly before it headed for home. A little over an hour later a cavalcade of cars carrying Edmonton members arrived at the site and in just a few minutes the ship was securely tied to the farm fence. This was the end of Day 1, and we returned to Pincher for dinner and contemplation of our task for the next day.

Wednesday's dull dawn soon gave way to a real snowstorm which complicated our procedures considerably. The first step was to go to the airfield, remove the remaining full avgas drums from the Grob trailer, then hook up for the trip to the landing site. With two other vehicles and seven bodies, the extraction process was under way.

At this stage the glider was still tied to the fence at the north end of the stubble field and the Grob trailer was located about a half mile south and on the far side of a rather steep coulee. Our towcar did a fine job of dragging the glider across the field to the crest of the coulee at which point the derigging operation got started. All this was done under the watchful eyes of some 30 head of assorted cattle who would have liked nothing better than to listen to the crunch of deforming aluminum under their hooves. This was not permitted. A further distraction was the presence of a beautiful big brown stallion whose snort of derision left no doubt as to our status in his book. However he turned out to be a bit of a paper tiger and trotted off with only a little persuasion.

Moving the fuselage through the coulee went quite well and with little difficulty. The wings were more of a problem which was solved by placing the heavy ends in the box of Rick Dawe's pickup. The “light” ends had to be man- (and woman-) handled for several hundred metres — quite a difficult task.

Although not designed to hold a Blanik, the Grob trailer proved to be effective and, with only a few pieces of foam and rope, the glider was safely and securely loaded. As we had to aerotow back to Chipman the next day, and the Cowley airstrip was getting progressively whiter, we decided to haul the Blanik to Pincher Creek airport which is paved. The trip went without incident and the glider was rigged there and prepared for tomorrow’s trip.

During all of these proceedings the snow continued to fall but the temperature remained mild and no one suffered unduly. By midday some eight inches covered the field at Cowley, effectively terminating the 1990 camp.

I am most grateful to all the members of the ESC team who cheerfully pitched in during the retrieve operation. However I am sure they will find a way of extracting their pound of flesh, likely at our ESC year–end bash. •

Foot–launched soaring news

Stewart Midwinter

It was –25° Celsius, with a 40 km/h wind, and we were going flying — paragliders. Could this be real, or the fevered dream of a sick man? Why on earth had I come here?...

IN LATE NOVEMBER LAST YEAR, I had been told I would be sent to Turkey for a three month consulting job. In that work environment, taking my hang glider was out of the question. Besides, who knows whether I would have any time to fly, or be able to fly at all in that unknown land?

Maybe paragliding would give me a gliding option not otherwise available... on December 21, I was knocking on the door of Heinz Hefti, a paragliding instructor who lives in Iberville, Québec. In spite of the blown–out conditions, he assured me his training hill was flyable that frozen day. Sure enough, in the shelter of the wooded hills at the Mount Sutton ski area, his 32 metre high hill was graced by just a light breeze. After a few flights on several different models, I was on my way home with a Trekking Silver Ghost paraglider in the trunk of my car. Specs: aspect ratio - 3.1, span - 10 m, area - 24.8 m^2, sink rate - 2 m/s, L/D –4.5:1, weight - 5 kg.

April 25th, my birthday. I was standing at the top of a 1000 metre mountain overlooking the azure Mediterranean Sea above the town of Kash, along the coast of the "Turkish Riviera". It was 10:30, and the sea was a mirror reflecting the light overcast. The gentlest of breezes touched my face. With a mighty tug on the straps leading upward from my seated harness to the sail laid flat on the slope above me, the wing leapt into the air and inflated. With five quick strides down the hill, I was lifted into the air and was off! Yelps of joy couldn't be contained as I glided out in glass–smooth air over the arid slopes below. Ten minutes later I was making an approach to my landing area, a small beach beside the coastal highway. What a birthday present!

So began the Turkish flying adventure. In the months that followed, I flew from ten different locations, from Kash on the south coast (site of a Roman–era amphitheatre), to Sinop on the north coast (birthplace of Diogenes, the Greek speaking philosopher), and many points in between.

Near Ankara, I flew twice from a 500 metre high hill that was crowned by an ancient tomb and mosque; Husein Gazi was buried there in 822 AD. When I landed in the valley below beside a large Turkish family, they insisted I hike back up with them and join them in a mid–day meal.

South of Ankara, I twice flew from a 150 metre conical volcano. On my second outing, I was able to ridge soar a few minutes in a 20 km/h wind. A farmer plowing his field below with a horse was so startled he scurried under a tree for safety.

Near Kirshehir, a short hike up a 150 metre rocky slope took me to a nice place to launch from. A flock of birds joined me in a few turns in a weak thermal before a crash of thunder announced the presence of an approaching storm cell. Time to land!

In June, there was a flight off a 400 metre slope at Develi, under the watchful eye of a 12th century church. Later, an eight hour climb took a friend and me to the summit of Mount Argeus, 3952 metres (13,000 feet) ASL, near the provincial capital of Kayseri (ancient Caesaria). Unfortunately, clouds prevented me flying, but we enjoyed glissading down a 1000 metre snowy slope on plastic bags.

The following week, the same friend and I hiked five hours to the top of Mount Hasan, 3250 metres (10,660 feet) ASL. Unsure of the penetration ability of my wing, I waited for evening to calm the strong northerly wind. Then I glided out over a high alpine tent village of nomadic shepherds, all of whom it seemed were shouting at the strange sight above their heads, then landed on the lower slopes near a family about to roast a hawk they'd just shot for dinner. They insisted I take their picture, and send them a copy. Then I had an hour's hike to return to my car.

In Turkey I might have had an opportunity to fly a sailplane, as the Turk Hava Kurumu (Turkish Air Association) maintains a hang gliding and gliding training centre near Eskishehir, three hours west of Ankara. Unfortunately, because of all the red tape I had to go through (they even asked for a notarized letter absolving them of any liability and waiving my right to sue them), I never bothered to visit the site. However, if any SAC members plan to visit Turkey, I would be pleased to provide information.

Without the paraglider, I might never have flown at all in Turkey. With it, I rarely soared, and then only for a few minutes at a time, but I enjoyed priceless aerial moments in many locations, saw many corners of the country I would not otherwise have visited, and met many generous people. I drove by literally hundreds of places where I could have flown had I had more time.

Next winter I'll be visiting Chile for a month. With the benefit of another season's experience, and a new paraglider (all of 1.6 m/s sink rate and 5.4:1 glide ratio) I'll be looking for great cross–country flying in the Andes surrounding Santiago!

Postscript:
How can you possibly call a device with a 5:1 glide ratio a soaring craft? In fact, a paraglider can offer performance advantages over both hang gliders and sailplanes in certain respects, namely maneuvrability and slow speed. These qualities enable the paraglider pilot to work smaller bubbles of lift than any other aircraft. Paragliders can sometimes outclimb hang gliders, just as the latter can sometimes outclimb sailplanes. A paraglider is actually great fun to thermal with — you just seem to hover in the air and rise upwards vertically. Furthermore, a paraglider pilot can scratch very close to a mountain or hillside for lift. And if he gets too close, especially on an open slope, he just puts his feet down and lands.

Of course, when it comes time to gliding to the next thermal, a paraglider's performance is abysmal. The pilot's technique must be to stay with a thermal as long as possible and then use wind drift to help him on his way.

The downside (so to speak) of paragliders is that their airfoils are defined solely by air pressure. Sudden changes in pressure, such as those in lee side turbulence, can collapse the airfoil, with a drop of 10–50 metres or more required to re–inflate the wing. Paraglider pilots must be very astute students of micro–meteorology, and decline to fly when weather conditions look as though they might exceed the very narrow windspeed envelope the paraglider can operate within. Top speed is only 35–40 km/h, and it can take a 25 km/h wind against a slope to allow a paraglider to ridge soar; so if the speed picks up only another 10–15 km/h, the pilot will be looking behind himself for a landing spot!

Are paragliders soaring craft? Here are some of the flights recently recorded in "Drachenflieger" magazine, and flown in the Alps this past summer: a pilot flew 85.5 km from Innsbruck to Kitzbuehel in 5.5 hours; a pilot flew 95 km from the Nebelhorn to St. Leonard; a pilot flew 67 km of a 79 km out–and–return task from Wildkogel in 5 hours; a pilot flew more than two sides of a 52 km triangle at Badgastein; two pilots set a world record by flying a narrow 104 km triangle in 5.5 hours over the Furka Pass in Switzerland, reaching 4030 metres ASL.

Of course, the paraglider cannot replace the sailplane at what the latter does best. Rather, it allows the exploration of a different end of the soaring spectrum. Chiefly, it is unbeatable for portability and autonomy, the ideal aircraft with which to travel to distant lands. More news for you on this after Chile! •

GLIDER PILOT ETIQUETTE

Good Manners for the Compleat Pilot

George Eckschmiedt
Vancouver Soaring Association

INSTRUCTORS ARE TEACHING prospective pilots many things throughout the years, but I have seldom seen or heard anyone explain to the new student or a converting pilot the various actions and behaviour expected of them in a club. Small wonder then, that they don't know what to do. The following should provide some guide to what is expected of gliding club members. Unless otherwise stated, these are expectations, not rules.

• Read all you possibly can about gliding. Go to your public library and ask them to get the books out of the stacks if they have to. There is no such a thing as a bad book about gliding. Books written 50 years ago are as valid as those written today. The new books have more in them, but the information is not necessarily better. Come prepared for your lessons.In the USA the instructors get $35/hr, while in Canada you get your training time free. So do yourself and your instructor a favour and learn what you need to know, at least from the training manual provided. Do not expect the instructor to use a funnel to fill your head with knowledge. Study the theory yourself as much as possible.

• Instructor appreciation: a touchy subject, but it has to be addressed. Most people involved in soaring invest an enormous amount of work into the sport; the directors, treasurer, maintenance chairman, etc. but take away the instructors and what have you got? Maybe a boat building, hangar building club as in British Columbia in the late fifties (the Glider Council of British Columbia); a glider building social club in Kamloops in the early sixties; a 2–22 building club in Melville, Saskatchewan in the late sixties, (had a glider, but nobody qualified to fly it) — but you will NOT have a flying gliding club.

Instructors do burn out, some have to be cajoled out to do some work, the result of which is not always fortunate. It is only a matter of time before the enthusiasm of any group of instructors will recede and you will have the same old problem of motivating them. Therefore, do not hassle your instructors. It would be nice, if after putting in their shift, they are allowed a solo flight without hassling them with the current flying list.

The directors and all the supporting personnel put their effort forward to run an organization; the instructors put their and your life on the line when they teach you to fly.

• Arrive at the airport in time to participate in the inspection and flight preparation of all gliders, certainly the one you're intending to fly. Place your name on the flight list when you arrive at the field, and then participate in the activities — putting your name on the list, then buzzing off for breakfast just will not do.

• The take–off list. Place your name on the list and note the glider you want to fly. If you identify more than one ship, it means that you are willing to fly the first of those gliders that becomes available. It does not mean that you can now dilly–dally about your choice later. If you're a private owner and you identify a club glider you want to fly, but then you decide to fly your own plane, it should mean that you have forfeited your position on the list if there is another club member wanting to fly the glider. During busy times, the list applies to launch position also. You have to make up your mind what you want; you should not expect to "play" the list to suit your personal convenience. (When training is in progress, that is, there are two or more students waiting for training, a line should be drawn under the last name that was entered just before flying began. Those present before the line was drawn should have the opportunity to have more flights.)

• Do not assume that the timekeeper knows who you are. You may be the world champion expecting the adoration of us mortals whose feet still touch the ground while walking, but the timekeeper (very often just a lowly, ignorant, but heroic, willing volunteer) simply does not recognize your greatness. I hate to use the word "report" to the timekeeper before you climb into your mount, but that's the perfect word. Regardless of the word used, let the timekeeper know who is flying and who is to be charged for the flight.

• Learn the club flying operation, and don't try to short–circuit it for your personal convenience or benefit. We are not a flea market, do not try to strike bargains on the flightline. Even if that's not your intention, it places additional burden on all involved. It doesn't put you in a very favourable light either. If you want changes to the club system, ask a director in writing or present your case at a club meeting.You may have a good idea, but let's hear it at the appropriate time and circumstance.

• Take part in the operations at the takeoff area. Many people are observed laying around until their time comes for flying, then when finished flying they are observed disappearing down the road at 3 o'clock. Yes, these people are being observed, and you should hear the things being said about them. (On the other hand, not caring about other people's opinions of you has advantages. It helps in developing thick skin.)

Funny thing about these elephants — they don't soar well and their gliding career doesn't last very long.

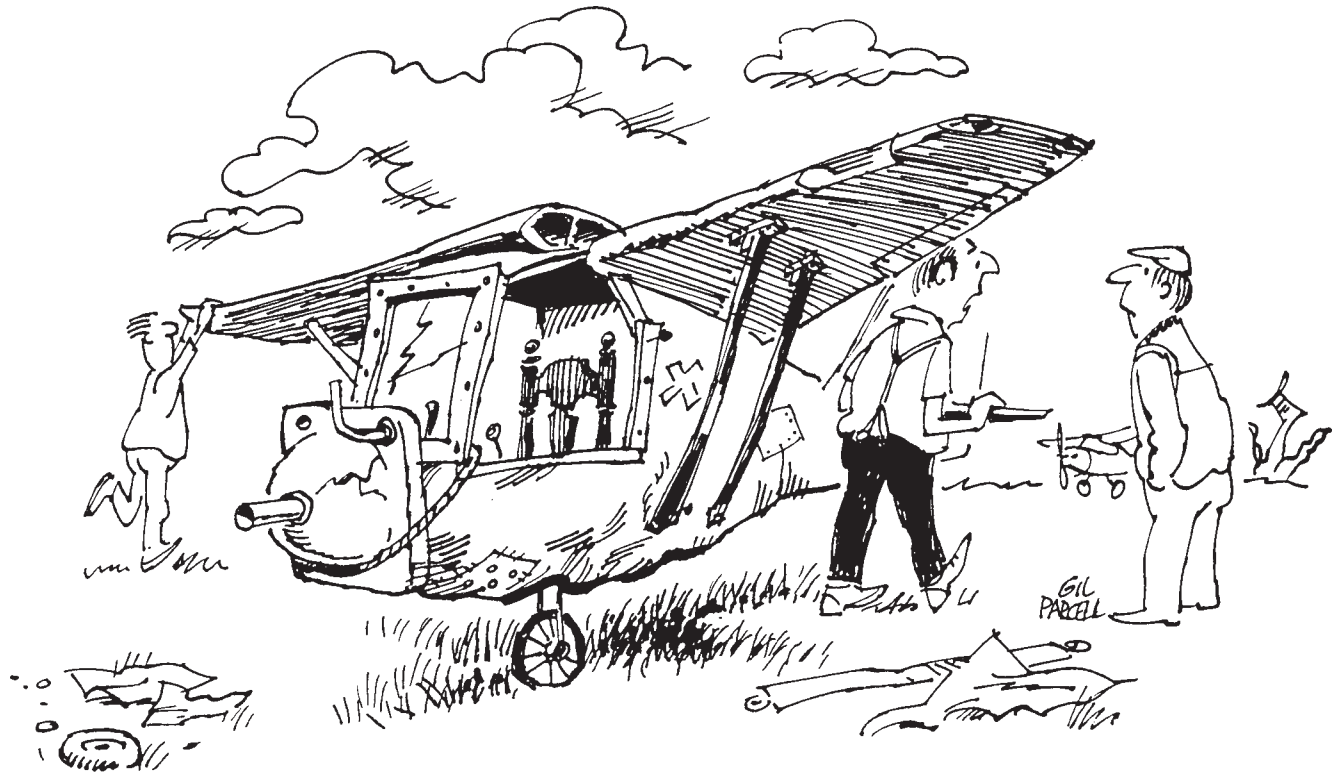
• Be completely ready to go when the towplane arrives. It is a serious breach of ettiquette to hold up launching because you haven't bothered to get your act together. Not only are you stealing everyone's personal soaring time, but total flights are reduced, expensive towplane engine time is being burned up, and the burned up patience of pilots behind you and the launch crew can contribute to unsafe incidents occurring. Pulling malefactors out of the line occasion-ally (even if it's the club CFI), will get this message across.

• Responsibility for the ship doesn't end with the landing. When a private owner lands his sailplane, he either puts it away or places it in the line–up for a relight, but he stays with it. Of course he does, it's his own investment. What do club members do? After they land they may pull the glider to the takeoff line, but then walk away. Often they think that if they open the dive brakes and put a weight on the wing tip, they have done a really good job. On one occasion in 1990, I counted nine gliders on the takeoff line, four club gliders and five private ones. Guess who were those moving the gliders ahead one at a time to the takeoff point? Five private owner club members and one new non–owner member. This condition demands not only a recommended behaviour, but a firm rule; the pilot–in–command of a plane retains that responsibility until such time as another pilot assumes it, and this applies on the ground also.

If you are next to fly a club glider, it is expected of you to help the previous pilot to takeoff, and during this flight prepare yourself for your own flight. Then when the glider lands, you help get it back to the line and prepare to assume responsibility for the glider and your own flight.

After landing, you are to remain with the machine until another pilot takes over, or you secure the glider at its permanent tiedown. The intent is to assure that there are always enough club members available to handle the club gliders without abusing everyone's willingness to help. If you don't want to stay with the glider, tie it down.It takes a few minutes only to push a glider from its tiedown to the takeoff line, but a long, long time (if at all) to replace it if it's blown over.

• When a large number of sailplanes are awaiting tow, it is not disallowed to ask for a higher than normal tow just so that you have a better chance to stay up.However, it is tactless and inconsiderate of you to make the rest of the pilots wait for you.



"... crummy season for accidents — we've had to improvise a little."

• Towards the end of the day, especially on Sundays, the manpower situation often becomes very scarce. Everyone, except those in the air, wants to go home. The end result is that it is often the person DI–ing the glider is the one to tie it down also, while the smart alecs are having their third beer at the barbecue, or are already at home having dinner. The rule should be: those who aren't present during the beginning of the operation should commit themselves to being present at the end. Good etiquette then requires the last pilots airborne in club ships not delay the packing up process indefinitely (or else not expect help if they are hanging to the last evening lift).

• In Canada all effort expended on behalf of soaring is done by volunteer labour (except for one overworked SAC secretary and one bookkeeper). Keep this in mind when you consider demanding that "they should do this" or "they should do that". Before you utter those words, before you consider asking for something to be done, ask yourself, would you be willing to do your request yourself? Yes, there are some people who think that others are just waiting to hear their words from the mountain and then swing into action to relieve themselves from their otherwise trifling existence.

I do not know of any idle millionaires involved in soaring, which means that all of the people around you are engrossed in first making a living, then perhaps soaring. That means we are giving up our precious and ever decreasing leisure time for your benefit. We do this without remuneration or other worldly benefits except that gained from the joy of flying. So when you start thinking of demands, think first of the resources, part of which is yourself. •

Incident report

George Eckschmiedt, member FT&S

Most of us tend to relax a bit towards the end of the season, allowing things to happen that otherwise would not. That can, and does result in accidents. This one we got away with. What about the next?

Time and Weather September 23, mid-afternoon. Warm, winds 270° at 15-20 kts, mediocre soaring conditions, strong windshear during landing.

Participants

• A Blanik on downwind, piloted by a new club member, reputed to be a former member of the national soaring team of an eastern European country.

• A Grob–102 ready for takeoff; wingman is a Gold C pilot, the point man a Silver C.

The event The standard conditions for downwind at the club is not less than 600 feet above ground when in line with the intended touchdown point. The Blanik was observed flying slowly, at a much lower than normal altitude even upwind of the 600 foot mark. The Safety Officer (SO) was watching. The height of the Blanik was such that an abbreviated circuit would be required, but the Blanik did not turn. The SO requested a pilot in line to take off to radio the Blanik to turn immediately. By the time the microphone was activated the Blanik continued downwind and at the same time the tow started.The Blanik completed the stretched circuit, making the final turn at very low altitude, escaped the hazards of the windshear, and coasted to the standard landing spot. The tow proceeded uneventfully.

Lessons learned

• The soaring skills of the Blanik pilot were verified and confirmed by several instructors; however, the impressive credentials overshadowed the need for thorough explanation of the local conditions and regulations. The circuit flown by the pilot would not have been bad for an off–field landing in flat land conditions, but it would not have been exemplary. On questioning him, he considered that he had sufficient speed (40-45 knots) and that he was high enough. In the opinion of the SO this pilot was allowed to use the club's equipment much too soon, before all the local flying requirements were explained to him. Perhaps he was just flying the way he has been flying in Europe all the time, certainly more briefing was needed.

• Both the wingman and the point man should have been observing the questionable circuit and certainly one of them should have stopped the launch. If the Blanik pilot had decided to make the abbreviated circuit, probably nothing would have happened as the runway is more than wide enough to accommodate parallel movements. But it is poor and unsafe practise to let that happen. Either both were inattentant or neither realized the potential for an accident at the time.

• A relaxing and a pleasant environment is no reason to allow the relaxation of tried and true procedures.

FLIGHT TRAINING AND SAFETY NOTES

SKILL IS NOT ENOUGH

Paul Moggach
member FT&S Committee

As most of you are aware we had a very poor accident record this season, with an unprecedented four fatalities. While not necessarily the root of all our accidents and incidents, the emphasis on piloting skills over good judgement is a continuing problem. Age, stress, health, and other factors can considerably alter our ability to exercise even normal piloting skills. Why do we push ourselves into situations which require superior skills to get us out of trouble?

Our training is partly to blame. While we have generally done a good job in the past of encouraging good flying techniques, we have been deficient in pointing out that too much reliance on technique over judgement will eventually catch up with you. I am not advocating that you should not practise and exercise your flying skills. I just think that there should be more emphasis placed on "situational" or judgement training. As licensed pilots, we can keep playing the "what if" game during our flights to sharpen these skills. The instructors in the crowd might consider attending a seminar on the SOAR technique of judgement training developed by Mike Apps (and described in ff 4/90). Copies of his presentation are available from the SAC office, and your local member of the FT&S committee would no doubt be glad to give the talk. This is a good starting point to orient your thoughts and actions in this direction.

As a result of discussions held at the most recent meeting of the Flight Training and Safety committee, a number of guidelines concerning various aspects of club operations are being produced. The first three that will be published next season in free flight are concerned with:

1 Duties of the CFI and Safety Officer
2 Club disciplinary procedures
3 Passenger carrying check–outs and requirements

While these guidelines will be most applicable to new clubs, they are part of a general effort by the committee to share information and experience across the country in areas that are applicable to all of the clubs in the association.

Since the introduction of the 15 hour ground school requirement there has been considerable interest in developing a standard ground school curriculum and other materials. To this end I will be making available such materials to interested clubs sometime in the spring. If you have any notes, student materials, audio–visual materials, overhead slides etc. that you think might be useful to me I would very much like to hear from you. It is anticipated that a ground school instructor's man-ual will be produced first, followed possibly by a student workbook. Another project on the burner is a compilation of safety articles in a book form. In this regard I would be interested in hearing from anyone who may have collections of any soaring magazines other than free flight. Material back into the 60's would probably be the most useful, however I am not ruling out using older material. I expect that we would only want to loan such materials to copy the appropriate articles.

I obtained two new videos lately; "Soaring the High Sierra", and "The Mountain Wave". The first has little to recommend it from an instructional point of view. While the Sierra mountains provide a spectacular backdrop, this video was targeted at selling glider rides rather than the sport of soaring. Pretty scenery and loops are its main features. On the opposite end of the spectrum, the wave video shows time lapse photography of the various visible aspects of mountain wave in the Colorado area. While it has a slow pace, most glider pilots will find this one very interesting. This video would also be useful in teaching a ground school with some judicious use of the fast forward on your VCR. The CBC production of the Cowley wave camp, "Riding the Mountain Wave" is still the best choice in this regard. •

**Learning how to fly a glider can take 20 hours.
Learning when *not* to fly it can take a lifetime.**

A 4th CANADIAN FATALITY AT WINNIPEG

The gliding community in Canada has suffered a forth fatality this year, an unprecedented number, when Arch Gittel died as a result of injuries sustained in an accident 13 October at the Winnipeg Gliding Club. Gittel, aged 57 and a retired Air Canada captain, was launching in the WGC Jantar. The wing dropped, slewing the glider out of position during takeoff and the initial portion of the climbout, and the towpilot made an emergency release. The pilot was attempting a low turn back when the right wing contacted the ground and the glider cartwheeled. There was ample room for a straight ahead off–field landing. The pilot was conscious when taken to hospital, but died of complications arising from his injuries three hours later. Details from Mike Maskell

NEW HIGH ALTITUDE CHAMBER OPENS

The University of North Dakota has recently opened up its new high altitude chamber at their campus in Grand Forks, three hours south of Winnipeg. Available to the public and to professional pilots, the center offers a variety of training courses, from a two day group session to a more personal one day lesson. They will also tailor courses to fit specific needs. For those contemplating wave flying in the future or who just want to refresh their memories on the effects of (and perhaps their own personal reactions to) hypoxia, this course could be right up their alley. The Winnipeg Gliding Club is contemplating a group trip this winter season, providing the cost comes down to a reasonable level. Glider pilots from further afield who are interested should contact Mike Maskell at (204) 831-8746. Further info and a detailed brochure is available directly from the university. Tel. (701) 777-4740, or write:

UND Aerospace Foundation, Box 8009,
University Stn, Grand Forks, ND 58202

MY 300 concluded from page 5

At this point I had been up for over 3:30 hours and I had only 75 km left to go. I was not prepared to blow it now! It was shortly after 3 pm and I figured I had about two hours of usable lift left. The flight was fine, assuming I did not do anything stupid, and the weather cooperated. Navigation at this point was quite simple because there is a road which points straight back towards Stratford. All I had to do was stay south of the road until I could see Woodstock. The last 75 km home were uneventful, much to my relief, and I arrived over the field after 4:45 hours for an average speed of nearly 65 km/h — pretty good for wood! I still had one enjoyable decision left; a Gold badge requires a five hour duration flight. Do I stay up long enough to get it on the same flight, or do I land and call it a day? I really didn't need the duration because I already had the Silver badge duration flight. I stayed up just to make it a five hour flight anyway.

Unbeknown to me at the time, the story was not over yet. When I got home and put my logbook away, I noticed a new box of film in the drawer. I suddenly realized that the film I had used for my 300 km flight was at least three years old, if not older! Who knows how many times it was out in the sun. It had always been in the foil package, but what does age and heat do to film? First thing Monday morning, I dashed into a camera store to find out. The owner predicted I might lose the colours, but the detail would still be there. Unfortunately, he would not have my film developed for another two days at the earliest! I could not wait, so I brought it to one of the sixty minute photo shops and stood guard until they were done. The pictures were fine and taken well within the prescribed sector. I was one very happy camper! I haven't heard from the SAC badge chairman yet, but I still think the flight was great. •

SAC affairs

AIRSPACE COMMITTEE

It has been a quiet summer on the airspace front. With one exception, I am not aware of any problems or conflicts across the country. Transport Canada, despite fears of imminent changes to the TCA structure, does not appear to be moving very fast in this area. In fact just the opposite could be true. Because of budget constraints, TC is having problems keeping on schedule with a lot of the recommendations of their Canadian Airspace Review program. Just where the TCA design and implementation plans fit into their priorities as far as funding goes I do not know. We (your SAC airspace committee) hope to have another meeting in Ottawa in January with TC officials to see how they are doing and perhaps head off any potential conflicts for the 1991 season.

While we in the gliding movement certainly do not like having our airspace restricted more than absolutely necessary, it is not in our interest to see TC hamstrung in their efforts to update a hopelessly outdated and inadequate system. Their reaction to ever increasing traffic in a poor control environment will be to try to isolate ever increasing areas of airspace and reserve it for IFR. The quicker they get the equipment and controllers they need to do a good job, the more our argument that they don't need all that area will hold water.

Earlier this year I sent a letter to all clubs asking for the Lat and Long of your fields. The list goes to TC, so when they start designing new TCAs they, hopefully, will take these into account. So far I have only had three replies. Ursula Wiese tried to update SAC's directory of soaring sites in 1988 and she kindly passed along what she had, but some of her data goes back to 1983, so once again I urge all clubs to please send me updated details of your club location and features, particularly if you have changed location since 1983 or if you are located near a major airport.

The only airspace conflict I am aware of in 1990 was in Alberta and concerned the Cowley wave block. This was resolved by direct negotiations between the Alberta Soaring Council and Transport Canada. The only other major development I know of is that you can now communicate with Ottawa ATC in either French or English. I will leave it up to you to decide whether that's good or bad.

If there are any problems in your area, or if your club is having any correspondence with TC would you please send me copies so I be kept in the picture.

I hope to see many of you again at the AGM next year, by which time we should have met with TC again. I wish you all the best for the coming Christmas season and may you all find your favourite new glider under your Christmas tree.Hopefully that's as close to a tree as it will ever come.

Yours truly,
Dave Baker, chairman

RADIO & COMMUNICATIONS

If you plan to purchase a new or used radio and wish to know whether that set is certified in Canada and/or will the certification be valid some years down the road, this one–man committee is here to help you. I may also be able to offer advice on antenna and general radio problems, such as inconsistent transmission. I don't intend to write exciting sagas about "antenna radiation patterns" or "why your radio crackles" but if you come up with a specific problem, I will try to solve it.

For assistance, contact me by phone at (514) 332-5907 or by mail at 921 St-Aubin, St-Laurent, Québec H4M 2K2.

Oscar Estebany, chairman

L'ASSOCIATION CANADIENNE DE VOL A VOILE ROLE ET IMPORTANCE

C'est presqu'une habitude entre vélivoles de poser la question, "Qu'est–ce que l'Association Canadienne de Vol à Voile (ACVV – *SAC)* fait pour nous, les vélivoles?" La réponse, on — nous, les directeurs — la répète, lors des assemblées, des rencontres — mais la question persiste. Il y a plusieurs raisons pour ça, bien concrètes, mais la principale est, comme ça arrive dans la vie: autant que tout va bien, on l'accepte comme normal. Si, par contre, ça irait mal — l'espace aérien du club serait douloureusement restreint, nos licences exigeraient des formalités plus sévères, l'assurance deviendrait plus chère ou serait terminée, la vie de service des planeurs deviendrait limitée — là on découvrirait que l'existance même de nos clubs et la poursuite de notre activité vélivole dépend de l'ACVV que les mesures de prévention à qui s'adonnent les nombreux travailleurs bénévoles de l'ACVV, administrateurs et comités, sont indispensables pour assurer l'existance de notre sport.

La législation qui nous affecte, qui nous affectera, est préparée long d'avance. Presque chaque loi en matière aérienne peut nous affecter et parfois il faut lire les projects de loi attentivement pour y déceler les menaces possibles pour l'exercice de notre sport. A l'espace aérien, aux licences et annotations, aux assurances obligatoires de responsabilité s'ajoute la certification et conditions de navigabilité des aéronefs, aux limites de l'espace aérien s'ajoute le contrôle, soit exigences de radio et de transpondeur avec mode C, la certification de nos aérodrômes, la sécurité de nos opérations et les rapports et statistiques de nos vols, incidents et accidents — et je n'ai qu'à renvoyer le lecteur à la liste des comités qui parait dans ce numéro.

On n'est pas nombreux au Canada — à peine 1300 pilotes sont membres de l'ACVV. Notre poids auprès des gouvernements est très petit mais il est compensé par la valeur professionnelle de nos responsables, surtout en matière d'instruction et de maintien des qualifications, et ce niveau bien reconnu doit absolument être conservé en exerçant un sens de responsabilité exemplaire.

Cette responsabilité est inséparable des privilèges et des droits que Transport Canada nous a donné tout en conservant l'autorité finale sur la certification des aéronefs, l'émission des licences des pilotes ainsi que des annotations d'instructeur. En conservant cette autorité Transport Canada allège considérablement la situation de l'ACVV en question de responsabilité civile.

Cependant le privilège de l'ACVV d'effectuer l'entraînement selon notre propre programme et par des instructeurs classifiés par notre propre organisation n'a été obtenu qu'après beaucoup d'heures de négociation. Au début Transport Canada voulait effectuer lui–même la classification des instructeurs de planeur et ceci en quatre classes. Comme résultats des pourparlers le ministère a consenti de conserver l'autorité d'annotation sous condition que l'ACVV classifie ses instructeurs en trois classes, selon les normes approuvées par le ministère et après que les candidats aient suivi des cours ou programmes de qualification semblables à ceux établis pour les instructeurs d'avion. Cet arrangement permet à l'ACVV d'exercer la flexibilité qui rencontre les nombreuses difficultés aux-quelles font face les clubs, les pilotes et les élèves–pilotes, surtout au point de vue de leur temps de disponibilité.

Mais en demandant et acceptant le privilège d'entraîner et classifier ses instructeurs l'ACVV et les clubs–membres ont accepté de suivre les normes établies en vue de conserver le niveau d'instruction et la compétence des instructeurs — le but principal étant toujours d'assurer la sécurité maximale de l'exercice et des opérations au sol et en vol. Les discussions sur la sécurité aux réunions du bureau des directeurs et du comité d'entraînement et de sécurité sont toujours en première priorité. Voici en sommaire les conclusions:

Le niveau de sécurité atteint est démontré par une absence des accidents et incidents. Une absence totale est difficile à atteindre. La fréquence des accidents aux divers pays est connue et nous n'avons qu'à faire une comparaison avec la nôtre. Celle–ci nous dit: il y a du chemin à faire! C'est rare que l'on commet des erreurs consciemment. Ce sont plutôt des imprudences, c'est que l'on omet d'exercer une attention intense, systématique, on se laisse entraîner par la routine. On oublie que l'air — la troisième dimension — ne pardonne pas l'erreur — une seule erreur. Sur la surface terrestre, en deux dimensions, on vise souvent une sécurité "en moyen", on est prudent "en général", mais on se permet des imprudences occasionnelles. Une pareille attitude peut être fatale en aviation.

Une étude des accidents démontre: dans les airs il faut viser le but: AUCUNE ERREUR. Ça veut dire: toute vérification doit être systématique et complète; une check–liste interrompue est à recommencer; une évaluation "brutale" de ses propres moyens et compétences en tant que pilote s'impose; compétence vis–à–vis le type de planeur à voler; vis–à–vis les conditions de météo, la force et direction des vents au décollage et

atterrissage; expérience personnelle en fréquence des vols; vols depuis 30 jours; vols depuis 90 jours; vols durant la saison précédente; préparation à un atterrissage à l'extérieur; nombre d'atterrissage d'entraînement, de précision, etc, etc, etc.

Il ne faut pas négliger la lecture de la littérature en matière du vol à voile: périodiques, textes de base, manuels du vol à voile ACVV, "Livre bleu", etc. et ne pas se limiter à une lecture ultra–rapide — faire une lecture "d'étude".

Ces quelques conseils proviennennt de l'expérience de l'auteur en tant que pilote et instructeur, mais surtout comme suite de son travail et de ses multiples présences aux réunions au sein de l'ACVV. Deux activités de l'Association ont été décrites ici, l'entraînement et la sécurité. Le code sportif n'a pas été touché et est réservé à une prochaine occasion. Mais il faut admettre que l'entraînement précède à l'activité sportive du vol à voile et que la sécurité en est inséparable.

Ce bref exposé devrait non seulement faire reconnaître l'importance et le rôle de l'Association Canadienne de Vol à Voile mais aussi provoquer une participation plus active des membres dans cette organisation dont le but principal est d'assurer l'exercice futur de notre sport préféré.

Alex Krieger, Québec Zone Director

MINUTES OF FALL DIRECTORS MEETING

On Thursday evening, 11 October, the Directors were welcomed to Quebec City by Alex Krieger and members of the Quebec Soaring Club at Alex's home. A most enjoyable evening was spent with them. The next day, a trip was arranged to the Baie St–Paul wave flying site, but due to the rain and low ceiling, no flying was scheduled. Club members took the Directors and company on tour of old Quebec City and its restaurants in the evening.

On Saturday morning at 0900 hrs with a quorum present, Chris Eaves opened the meeting.

Business arising from minutes.
Gordon Waugh and Harald Tilgner reported on their search for a Meteorology Chairman — further contacts are required. A discussion took place regarding the poor briefings from Environment Canada and the necessity for a chairman to oversee contacts with this department. Chris Eaves reported on the Publicity Chairman vacancy, and queries were raised as to changing the title to Communications Chairman. Alex reported on the progress in organizing the 1991 AGM and the contacts being made with the Aero Club of Canada on the Awards Banquet.

Financial statement
Jim McCollum gave a report on the year's finances to the present, and it appears that SAC is on budget. Concern was expressed on the drop in membership compared to the same time last year, a loss of about 80. With the downturn in the economy, we could be faced with a further loss in 1991, and our financial health is quite sensitive to membership fluctuations. With the possible decrease in interest rates our investment income would be reduced. Jim McCollum stated that SAC is too dependent on membership fees now and that we must diversify our sources of income and continue an emphasis on increasing our equity. The Board discussed the implications for budgeting for 1991.

GST From queries to government departments, Jim did not believe SAC would be required to register for the GST, as our taxable income is below the $30,000 per annum cutoff. However, all clubs were in a different position, as practically all their operations are taxable, and due to the size of their revenues most clubs would probably have to register. A clearer picture of the effects of the GST on clubs will be known once correspondence is received from Revenue Canada. The Board thanked Jim for the considerable time and effort required to chase down the information applicable to SAC.

Pioneer trust fund
Gordon Bruce reported that over $10,000 had been donated to the Pioneer Trust Fund as of August 30 following the request for donations in December 1989, bringing the total to about $105,000. On reviewing the income generated since last fall, it was agreed that the donation requests should be sent out again as soon as possible.

Insurance Bryce Stout gave a summary of the current state of our losses and its effect on our rates. At the present time (as of October 1st) the loss ratio was approximately 70%, which gives only a $15,000 profit to the insurer after an estimated 25% operating overhead.

At the beginning of the year the committee requests quotes from insurance companies. Companies won't quote until 30 days before expiration of the existing policy (several companies declined to quote). The committee then evaluates the few quotes that come in to determine the best coverage for the rates and negotiate with the companies. It is also required to follow up on the pink cards, monitor claims, negotiate requests for additional types of coverage, review the minimum hull values, and make recommendations.

Considerable discussion was involved on the effect of private owners insuring outside the SAC policy and its detrimental effect on the rates that will be quoted to SAC. A comparison of policies and the rates offered to private pilots did not show nearly the coverage offered by the SAC policy, and if they had, the premiums would have been comparable. Bryce emphasized that we were not the type of operation that insurance companies clamour to get business from, which is why many don't bother to quote.

"Teach Joey How to Fly" fund
Due to the present circumstances related to Joe Philion, who has moved to BC, Harald Tilgner moved that a check for the value of the fund, about $345, be presented with best wishes from the glider pilots in the Soaring Association of Canada, and that the fund then be closed out. Carried

SAC procedures manual
Each committee liaison Director is to communicate with their respective committees regarding interpretation of the manual and/or possible amendments.

Competition rules and the seeding list
Ulli Werneburg gave a report on possible amendments to the national competition rules, and brought to the Board's attention the Sporting Committee's interpretation of the rule regarding the most recent Nationals scoring criteria (Section 3.21.1, paras 1 & 6). Considerable discussion revolved around this point and its effect on the standing of the pilots on the seeding list. The Board voted that errors existed in the calculation for the latest seeding list, and that it would have to be re-done. Ulli appealed to the Board to have his name added to the International Team selection list due to his having been a member of the 1989 team. After a review and a discussion involving Section 3.21.2 paras 4 and 9, and when a candidate actually becomes a member of the team, the Board voted that Ulli was entitled to be placed on the selection list. The meeting then adjourned until Sunday morning at 0900.

Accidents and incidents
Alex Krieger stated that a new form was being developed for reporting accidents or incidents. He requested Zone Directors to follow up on any information heard regarding accidents or incidents and to encourage clubs and pilots to report on these. The system must be improved and there was discussion on if or how reports could be made mandatory. Dave Hennigar's letter regarding currency, check flights, and interclub cross–training of instructors was reviewed and recommendations made.

Routine glider maintenance by members
Chris Eaves gave a review on the proposal that SAC members be able to perform routine maintenance on sailplanes, paralleling the Recreational Aircraft Association's DABI program. Their success will determine if SAC goes to Transport Canada with a similar idea.

Membership categories
A proposal was made to redefine Family Membership, with the fee for each person separated when one is a life member.

Al Sunley, Alberta Zone Director

Coming Events

Jan 12–13, **SAC Directors winter meeting,** Ottawa.

Jan 16, **Toronto Glider Pilot Ground School**, a 10 week comprehensive course to meet the DoT licensing requirements, at Bathurst Heights Secondary School, 7-10 pm each Wednesday. For registration info call (416) 789-0551. Instructor, Paul Moggach (416) 656-4282.

Mar 1–3, **SAC AGM**, Le Château Frontenac, Québec. $90/night sgl or dbl. Contact: Alex Krieger, (418) 681-3638 (H), 656-2207 (B). See ad on page 22.

Eastern Instructors School, York (to be confirmed)

Western Instructors School, Starbuck (to be confirmed)

Jul 22–Aug 2, **Canadian Nationals,** Pendleton, ON Contact: Bob Mercer (514) 458-4627.

Club news

COWLEY FALL CAMP

It's well that the Fall Wave Camp extended past the Thanksgiving weekend again this year. In a season when the weather can be anything from skin to snowmobile suits, this time the first two snowfalls of the upcoming winter paid an early visit to Cowley. One excellent wave soaring day on Tuesday paid for the trip for many pilots. Forty-one pilots registered with 15 gliders. Edmonton had planned to get on the road and in the air on Friday to move down to Cowley. It wasn't to be as it was also the first snowstorm of the season in most of Alberta. The next day, the ESC Blanik was aerotowed in with the Pawnee but were a tad off dead reckoning the direction on the last leg from Claresholm and were at Brocket before turning right. (Dave Puckrin was alongside in his Skybolt and dropped down to elevator height to confirm their location.) From Cu Nim, the Grob and a Blanik were ferried in, and a large crew from Cold Lake arrived. The airfield was snow–covered and equipment was tied down.

On Sunday 17 flights were made, mostly site checks for pilots new to Cowley. As many were heading home tomorrow, tonight was the night for the traditional Alberta Soaring Council hot wine and munchies party around the cookshack stove. A most excellent concoction was brewed up by Al Sunley and Ursula Wiese. As Monday morning warmed, the remaining snow melted and the surface began drying out. There was some concern that the field was too soft to use and for two and a half hours towing was stopped. Even though there were some high thin lennies to entice pilots aloft, there seemed to be nothing below a 4000 foot tow but a lot of rotor–like turbulence and no one connected, but they were introduced to rough air and the circuit conditions that normally prevail. The ESC Blanik found heavy sink and landed out two miles north. As ESC didn't have a trailer for it, XVB was maneuvered out of the field and slowly towed all the way home down the roads — it was quite a convoy!

Tuesday, 9th — "All things come to he who waits." The morning light showed the flag shredding in a stiff west wind and a sky full of lennies. After three launches, the line was shut down when the winds got up to 30-40 mph and gusting. Then a half hour later it went slack and we got a light tailwind! Clearly, the rotor of the secondary had dropped to field level. As the afternoon progressed, the wavelength slowly increased until the primary was over the centre of the valley where the secondary normally is, a very strikingly sculptured lennie directly behind the field over the Porcupine Hills was providing 4–500 ft/min lift through 20,000 feet. There was also a wave piled up between 20 and 30,000 feet west of Claresholm which is uncommon. Everyone present got a good wave flight. Buzz Burwash (ESC) climbed to 25,000, Bingo Larue (Cold Lake) got to 30,500 in his Dart on his first ever wave flight, and Vaughan Allan (Cu Nim) got to 25,500 – all are claiming Diamonds. George Szukala, the Cold Lake CFI, got two climbs in their 1–26 "Spam Can" to 25,400 and 26,800 feet (the second time with a barograph, but unfortunately there was no low point on the trace to allow a Diamond claim).

XVB landed out – again, this time after carrying Hugh McColeman and Deirdre Duffy to 22,000 feet (Hugh's retrieve story is elsewhere in this issue). They took off at two, and three hours later we were getting a little concerned about them and sent out a towplane to do a quick search up the valley. About the same time a message arrived that all was well. They had landed southeast of Cowley in a field that Hugh thought he could be aerotowed from when observed from the air, but it proved to be too rolling for that. As it was getting dark soon, the ship was tied down in the field for a retrieve using the Grob trailer the next day.

The snow started in earnest next morning, great flakes of it. I drove home to spend the day in comfort, passing the Edmonton group coming from motels in Pincher Creek to pick up the Grob trailer for the great retrieve. By the time the storm quit about 8 inches had fallen. The Blanik got extracted from its field and taken to the Pincher Creek airport instead of Cowley and aerotowed home with the Pawnee Thursday morning. That left only Buzz Burwash, Bingo Larue and George Szukala camped out for the remainder of the week, along with PCK and four rigged gliders waiting for better days. On Saturday the field dried out enough to use and there was a beautiful Chinook Arch evident at sunup. Iain Colquhoun arrived to ferry PCK back to Claresholm, and George wedged himself into Spam Can for a last shot at a Diamond climb. Off into weaker looking wave conditions he was back soon, reporting only turbulence. So all that was left to do was derig the lonely ships and lock the door behind us.

Tony Burton, Cu Nim Gliding Club

THE TEN COMMANDMENTS OF GLIDING

I Put not thy trust in weather prophets, for when the truth not be told, they shall not accompany thee among thine ancestors.

II Ignore not thy checklists, for many are the handles, gauges, and other demons awaiting to wreake cruel vengence upon thee.

III Thou shalt abstain from getting far out of tow position, lest thine eyes lose sight of thy towpilot, as he will surely depart.

IV Thou shalt cast thine eyes to thy right and also to thy left as thou passeth through the heavens lest fellow pilots bring flowers to thy widow(er) and comfort them in other ways.

V Circle not against thy neighbor, for their righteous fury shall surely be called upon thy head.

VI Be thou ever mindful of thy lift lest there be nothing to sustain thee upon the air and thy day be made short.

VII Trust not thine eyes to lead thee through cloud lest the archangel Gabriel await thee therein.

VIII Thou shalt not trespass into the thunderstorm lest the tempest rend thy chariot and cast thee naked into the firmament.

IX Often shalt thou confirm thine airspeed on final lest the earth rise up and smite thee.

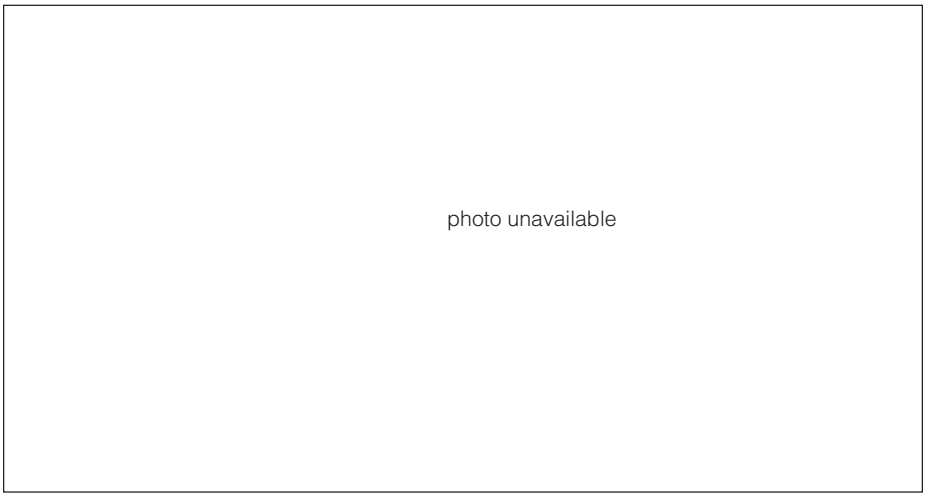
X Linger not upon the active runway lest thou become as ground sirloin.

from Vancouver Soaring Scene

WHAT ARE YOUR INSTRUCTORS WORTH?

The Bluenose Soaring Club sent four young pilots to the SAC Eastern Instructors School this year. They all passed — hooray! More cannon fodder for the battle lines.

We have been trying to increase our membership for the past few years and it hasn't been easy. We have a winter ground school advertised by the Dartmouth Continuing Education system and by BSC. It is a great recruiting medium, but who is going to teach all those fine new people to fly? The club hadn't sent anyone to Ian Oldaker's pride and joy for several years and the effects were beginning



to show. We've had to borrow teachers for our flying week from the air cadets or we would have had to turn people away. They have done a great job for us, and we're most grateful for their help, but we should be self–sufficient, shouldn't we? One can sum up the situation quite briefly; the students pay the money, the instructors do the work, and the rest of us get a cheap easy ride, comparatively. Candidate instructors are sold a bill of goods by the oldtimers about the glory and prestige of the job — well, you can forget glory — there is hard, demanding work, some risk, and the satisfaction that comes with a job well done. Our club feels that to acquire these willing workers, we have to pay, for we realize that we will see our money back in no time from the work they do helping those bright new students spend their pennies on launches and glider time. So if you want to see your club grow, pass out the bucks for instructor course fees, tows and travel costs.

This year's crop of students have all gone solo now and many have their B badges. We then concentrated on early cross–country skills after the hay has left the fields in the fall, and it became time to see if all the circuit practise could produce safe landings in strange places. The several landouts we had this year show that the basic knowledge is in place, at least with last year's crop of new members, as some of them got the farming community all excited.

Dick Vine, Bluenose Soaring

DOES THIS SOUND FAMILIAR?

It rained last week, yesterday, today, and it'll probably rain tomorrow ... but clear up midweek. In short this was a typical weather forecast down around London this year. In fact our club's opening day was delayed while we waited for the field to dry out. As a result of the weather, it has been rather quiet this year, for we have had only five solos, three Silver badge legs, one Gold badge leg and one Diamond badge leg completed.

Since the number of good flying days during the weekends was low, several of our members started flying fairly regularly on Wednesdays. Even though several people flew during the week, our flying time is down significantly this year as a result of the poor weather.

But this is not to say we didn't accomplish several important tasks! Over the last couple of years we have been working on a runway extension to our grass strip. By next season it should be ready, thanks to the hard work of some of our members.

The bad weather also reduced the number of new people who joined this year, but we are about our average size at 42 members, down from a high of 49 in 1989. But next year will be definitely better, right? Right!

Michael Steckner
president, London Soaring

TORONTO SOARING CLUB

In September 1983, we reported the first solo of Stephen Foster, then eighteen years old, who had been a regular visitor to the club since early childhood. Stephen has progressed well. He is now doing a great job as club Treasurer, and even stood in as acting CFI during the absence of our regular CFI.

The good news is that Stephen took off in the club's Ka6CR and completed a diamond goal flight this year. There have been many seasoned and experienced pilots in this club over the years, but this is the first time that there has been such an achievement from this field. Well done, Steve! In other club news, work is going ahead at an accelerated pace on our new club room, and we look forward to the day very soon when non–flying family members will be able to relax in clean, comfortable surroundings.

Ken Ferguson, past president

WINNIPEG UPDATE

The past months have been a quiet time at the field in Starbuck. Part of the reason has been a lack of participation by our members. To counteract this, the executive planned a spaghetti dinner for 22 September with the thought that more people would come out to fly and then stay around for the evening feast. The turnout was better than expected with over 50 members and their families present, however the weather did not cooperate as it

continued on page 22

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Wilf Krueger
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Hal Werneburg
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Mbrs: Hal Werneburg
Bruce Finlay

Hangar flying

SIXTEEN COMPLETE 1009 km CONTEST TASK

On Sept 17, Day 2 of the Region 4 South contest held at New Castle, Virginia, a world record contest task of 626.8 mile (1009 km) task was set for both the Standard and 15m classes. Of the 24 competitors who attempted the course, 16 finished, showing that the task was well–called. Of the eight remaining pilots; three elected not to fly it, four returned to New Castle on the second leg, and one out–landed. The course was a folded quadrilateral — New Castle, SW to Big Walker Mtn. highway tunnel on I–77, NE up over Covington to the Bedford, Virginia fire tower on the "main ridge", back past New Castle to Big Walker quarry (near the first TP) and then home. The courselines allowed the competitors to cross homebase twice. This was a magnificent achievement for the New Castle pilots.

John Seymour won the 15m class in an ASW–20B with a speed of 86.14 mph (138.7 km/h), and Karl Striedieck won Standard in an ASW–24 at 79.68 mph (128.3 km/h). All 12 of the 15m finishers completed the task at speeds over 70 mph (112 km/h), and Dave Welles was 4th at 76 mph flying a Schweizer 1–35.

Robert Penn
Blue Ridge Soaring Society

WORLD CLASS UPDATE

The first important step in the selection of the "World Class" glider was made when sealed parcels containing the technical documentation and scale models, sent in by the entrants, were officially opened at the FAI on 17 September. The main emphasis of this design competition is to choose for manufacture a glider class in which the emphasis is placed on low cost, safety, and ease of handling over the achievement of high performance, and for adding a new inexpensive one–design glider class into international soaring competition.

The 42 entries in the design competition have come from 20 countries. (USA with 8, and Germany with 7, have the most entrants – Canada has 2 – Peder Mortensen and Christopher Hepburn.) The data provided by the entrants will now be studied by a judging panel to select designs correctly interpreting and complying with the "Technical Specifications" drawn up for the World Class glider. The selected designs, approved by the IGC in March 1991, will then continue further to the prototype stage.

The five judges on this screening panel are: Oran Nicks (USA, Chairman), Jean Cayla (France), Petr Kousal (Czechoslovakia), Leonardo Brigliadori (Italy), and Benno Schmaljohann (Germany).

At a date no earlier than August 1992 at a given European site the prototypes will be tested and a winner chosen. Thereafter, the drawings and documentation of the winning design will be made available to anyone interested in producing the glider, with the designer being guaranteed licence fees and royalties.

As soon as enough gliders have been built and flown in enough countries, the IGC will announce a world championships for the class, an important move which should stimulate the production and use of the new glider, as past experience with other glider classes has clearly shown.

THE THERMAL SNIFFER

The early post–W2 years were celebrated by soaring pilots in Ireland with a great surge of activity. One group had enlisted a new recruit, a well–known Spitfire ace to whom flying was a great passion. Sailplanes appealed to him as a proper unwarlike vehicle in which to express his love of flight.

He was, however, constantly piqued by the fact that pilots with much less airtime than he made considerable cross–country distance flights, while he always landed near the launch site. After several disappointing days he decided to join the more successful pilots at dinner. Perhaps he could pick up some pointers.

One neophyte who had got Silver distance off their winch launch described a save at low altitude about halfway out on his course. He had been on final approach into a meadow where sheep were grazing, and when he smelled them, he rolled into a turn (for he rightly assumed that the smell was borne upwards by a thermal) and off he went! Another pilot told of a similar situation when, as he crossed over a cottage on his base leg, he smelled peat smoke. A smart 360 centred the thermal and he too climbed out and soared away.

This, obviously, was what the ace needed to know: one smelled thermals! Accordingly, the next day, immediately off the winch, he began to sniff away. Suddenly, there it was — the smell of sheep, and below him in the field where he had pitched his tent, the woollies were grazing away.

Round and round he went, only to land amongst the ewes and rams. Puzzled, he got out of the glider ... and discovered he'd stepped in the stuff before take–off!

Vic Saudek
from "Bungee Cord"

photo unavailable

A group photograph of "World Class" sailplane models received to date at the FAI headquarters in Paris.

FAI badges

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

The following Badges and Badge legs were recorded in the Canadian Soaring Register during the period 1 Sep to 31 Oct 1990.

DIAMOND BADGE

77	Dominique Bonnière	Gatineau	World number 4997

GOLD BADGE

249	Michael Thompson	Vancouver

SILVER BADGE

804	Richard Longhurst	Air Sailing
805	Paul Nelson	Guelph
806	Michael Thompson	Vancouver
807	Jason Beattie	Kawartha
808	Joe Somfay	York

DIAMOND DISTANCE

Dominique Bonnière	Gatineau	526.0 km	PIK 20B	Pendleton, ON

DIAMOND GOAL

Stewart Baillie	Gatineau	311.0 km	Std Cirrus	Pendleton, ON
Stephen Foster	Toronto	322.0 km	Ka6CR	Conn, ON
Michael Thompson	Vancouver	305.0 km	Std Libelle	Ephrata, WA

GOLD DISTANCE

Stephen Foster	Toronto	322.0 km	Ka6CR	Conn, ON
Michael Thompson	Vancouver	305.0 km	Std Libelle	Ephrata, WA

SILVER DISTANCE

Michael Thompson	Vancouver	139.0 km	Std Libelle	Ephrata, WA
Paul Nelson	Guelph	55.5 km	1–34	Ariss, ON
Jason Beattie	Kawartha	62.0 km	Cherokee II	Omemee, ON
Joe Somfay	York	61.0 km	Libelle 301	Arthur, ON

SILVER ALTITUDE

Paul Nelson	Guelph	1430 m	1–34	Ariss, ON
Richard Poissant	Champlain	1940 m	Std Jantar	Julian, PA
Stephen Burany Jr	SOSA	1585 m	2–33	Rockton, ON
Andrew Gibson	SOSA	1430 m	1–26	Rockton, ON
Douglas Eaton	Base Borden	1340 m	2–33	CFB Borden, ON
John Van De Broek	COSA	1370 m	Astir	Chemong, ON

SILVER DURATION

Richard Longhurst	Air Sailing	5:23	Ka6E	Belwood, ON
Paul Nelson	Guelph	5:09	1–34	Ariss, ON
Richard Poissant	Champlain	7:56	Std Jantar	Julian, PA
Stephen Burany Jr	SOSA	5:29	2–33	Rockton, ON
Richard Stehlik	York	5:33	1–23	Arthur, ON
Claude Tanguay	Champlain	5:15	Pirat	St–Dominique, PQ
Harry Peters	Vancouver	5:53	ASW–19B	Ephrata, WA
John Van De Broek	COSA	5:17	Astir	Chemong, ON

C BADGE

2247	Paul Nelson	Guelph	2250	Andrew Gibson	SOSA
2248	Stephen Burany Jr	SOSA	2251	Rupert Coffen	York
2249	Richard Stehlik	York	2252	Harry Peters	Vancouver

NOTE TO SILVER BADGE APPLICANTS:

Due to price increases in the manufacture of the Silver Badge, the price has now risen to **$39** from the previous $32. (Always refer to the back page of free flight for the current price of SAC Supplies.)

USE OF ELECTRONIC BAROGRAPHS IN CANADA

A couple of SAC members have expressed interest in using the new E–W AVIONICS electronic barograph. The International Gliding Commission has authorized national aeroclubs to use this type of barograph for all flights up to 500 km and 5000 m, but not for records. They are authorized for use in Canada on a trial basis until 31 December 1991. The procedure for their use is as follows:

- only Official Observers who, in the opinion of their Senior OO, are knowledgeable in the operation of these barographs may validate their use,
- prior to a flight, the OO must check the date and time registered by the barograph to ensure they are correct, enter a secret OO code into the barograph (not something obvious like ones OO number), set the data sampling rate between 1 and 5 seconds, and stow the barograph in a place inaccessible to the pilot in flight.
- after the flight the OO must take and retain possession of the barograph until the flight trace is printed out. (If motor operation evidence was required on the trace, the OO must ensure that the relevant connections to the barograph are properly connected immediately after landing.)

During the trace printout process the OO must observe the following:

- that no other computer software is in line between the barograph and the printer,
- that the data printed out,
- that the time and date information is accurate and consistent with other information about the flight,
- that the OO code listed is the same as the one the OO stored prior to the flight,
- that the barograph identification number listed is the same as the one on the barograph which was stored in the glider,
- that no warning labels or tags about time or date changes have been printed out.

The OO must sign the barograph trace and ensure that the other normal information required per the "SAC Guide to FAI Badge and Record Procedures", paragraph 10.5b, is entered on the trace.

Larry Springford, FAI Badge chairman

RECORD APPROVED

400 km triangle speed – Open, citizens, 111.8 km/h, 27 Apr 90, Walter Weir, ASW–20, C–GGWW. Flown from Bedford to Keating VOR to Williamsport (departing from Ridge Soaring). Exceeds previous territorial record of 99 km/h set by John Firth in 1988.

DO THOSE TROPHY CLAIMS NOW!

Harold Eley, SAC Trophies Chairman, reminds everyone to send in their claims promptly for this year's BAIC, Canadair, 200, and Stachow SAC flight trophies. The deadline is 31 December 1990.

Or, did you have an exceptional flight that didn't quite make it to the record book or was otherwise remarkable in some way. Let him know about it – it might qualify for a very nice SAC "Significant Flight" certificate to put on the "Damn, I'm Good!" trophy shelf in your rec room.

ACCIDENTS

ASW–20, C–GGTI, 28 Jul, Air Sailing. On takeoff, glider wing caught crop. $4,000

Cobra, C–GOUY, ?? Aug, Kawartha. Cracked canopy. $2,500

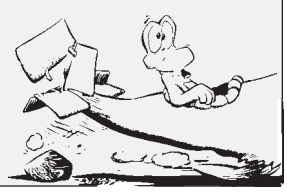
Jantar Std, C–GCGJ, 13 Oct, Winnipeg. Glider cartwheeled when wing contacted ground during low turn. Glider destroyed and pilot fatally injured. Other details on page 15. $22,000

Lark, C–GAUX, 27 Oct, Windsor. Farm animal damage. $4,500

2–33, C–GGXJ and **1–26**, C–FQVU, 10 to 12 Nov, Guelph. Weekend windstorm, one glider broke free of tiedowns and struck second.

Total claims 1990 ≈ $275,000

Total claims 1989 $135,000



Mike Maskell

The Winnipeg Gliding club Lark soars with a Bergfalke II near Starbuck, Manitoba.

Club News continued from page 19

was windy and cool. The only flying would be a radio control model later in the evening when the wind died down. A great time was had and the social committee managed to put some money in the bank for later events.

As a spinoff of the 50 glider rides given with two of our gliders one weekend in Brandon (200 km west of Winnipeg) and reported in the last issue, a committee has been struck to investigate using one of the local surrounding airports as a possible operating site for a new Brandon gliding club. Ken Schykulski, a WGC member living in Brandon, is optimistic that there is sufficient interest in the community to get one started.

A committee has been organized within our club to research the possible replacement of our towplanes and/or the acquisition of a winch for the launch operation. Both our Citabrias are starting to show their age, and while they continue to perform admirably, they are eating into our profits. If anyone would like to contribute their viewpoint, we would like to hear from them. Letters can be sent to the address given in our winch ad at the back in "Trading Post".

By the time this report is in free flight, our season will have long been over. Overall activity was comparable to previous years with around 1300 flights taking place. We managed to licence four new pilots, and several others reached solo stage. Membership remained nearly the same also, although we did not reach our peak until mid–season.

Mike Maskell, Winnipeg Gliding Club

HOW DO YOU CHECK THE AILERONS?

As an owner of a PIK–20B, I am faced with the annual necessity of having the aileron balance weights inspected as required by Finnish AD M1479/87. If any other PIK owners have found a permanent solution to this problem I would be interested in hearing from them.My address is:

19 Hime Crescent
Ottawa, ON K1G 4S1 (613) 739-9484

Gary Paradis
Gatineau Gliding Club

Trading Post

SINGLE SEAT

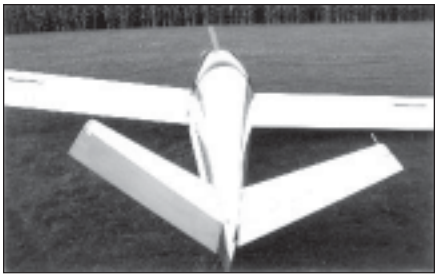
VENTUS b TURBO, 16.6m tips, competition instrumentation, Westerboer computer, Dittel 720 radio, O2, light tinted canopy, wing covers, wing wheel, tail towbar, Komet trailer. Ed Hollestelle (519) 455-3316 (B), 461-1464 (H).

DG-300, C–FEQH, 1985, no damage, fully instrumented, Cambridge MNav computer, Dittel 720 radio, O2, Cobra trailer – complete racing package. Ed Hollestelle (519) 455-3316 (B), 461-1464 (H).

TERN, excellent condition, standard instruments plus electric TE vario with audio, calibrated speed ring, solar battery charger, Gelcel, Radair 10s radio, chute. $4500. Ron Lien, Regina (306) 789-6366 (H).

GROB G102, C–GMBS, 544 hrs, std instruments, electric vario, Genave Alpha 100 radio. CVVQ St–Raymond. (418) 651-2939 or 654-1776.

HP-18, C–FETQ, under 200h, many improvements incl enlarged ailerons, mylar seals, gear horn, nose & cg hooks. Tail towbar & wing wheel. Ball TE with cruise & netto, Radair 10s, chute, camera, trailer. Good finish and package for $15,000. Stationed at COSA. Udo Rumpf (613) 475-4009.



MONI, powered sailplane, assembled from kit, 90% assembled and inspected, complete with engine (KMF 30HP) and instrumentation, easily disassembled. $10,000. For more info, call Mike Reeve (519) 652-5833 days, London, ON.

TWO SEAT

Blanik, 1970, 2800 hours, good condition, covered trailer. Must sell, $9,500 or best offer. Steve Paton (604) 876-5986.

IS-28B2, C–GXML, 733 h, new Endura paint and completely refurbished interior, O2, radio, G-meter, elec vario. Jerry Vesely (403) 625-3155(B) - 3871(H).

MISCELLANEOUS

Wanted, Winch. The Winnipeg Gliding Club requires information on any available winch, either active or out of service. Also welcome are comments on home–built versions: plans, blueprints, problems associated, etc. Phone Mike Maskell (204) 831-8746 or write 489 Lodge Avenue, Winnipeg MB R3J 0S5.

Sierra O2 mask, with mike and extension tube for diluter demand system. Almost new, used few times only. Gilles Boilly (418) 843-8596.

K7, out of service because of old glue. Canopy and instruments not included. Elevators serviced in 1990. Wings and trailer need repair. Good for restoration project or parts, $2000 or offer. Cold Lake Soaring Club, c/o Marek (403) 594-7862 (B), 594-5525 (H).

Vario equipment, 2 new PZLs, 1 Cambridge with audio speed director, Irving TE probe, 1 pint Cambridge capacity. Gilles Séguin (514) 373-8174 (H) 373-0281 (B).

K7 Canopy, brand new, still in the box. Will sell at cost. Call Marek at (403) 594-5525 evenings.

Parachute, 24 ft Phantom canopy in "Slimline" container (see "Flying High" ad in 2/90). Very thin, light, flexible. Leftover from the Alcor project. Tested acid-free and repacked. $900 (that's 33% off new price). Tony Burton (403) 625-4563.

Trading Post ADVERTISING

- Personal sailplane and sailplane equipment ads are free for SAC members, $10 per insertion for non–members.
- Ad will run twice. If ad is to continue, notify editor for each additional two issues. Please notify editor if item is sold.
- Normal maximum length is 6 lines. Ads are subject to editing if space is limited.
- Send ad to editor, NOT National Office.

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	B&W	Colour
Full page (7-3/8 x 10)	$275	$750
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Back cover inside	325	1,000
1/2 page	160	475
1/4 page	95	
1/9 page	55	

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until further notice.

SUPPLIERS

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Sunaero Aviation. Glider repairs in fibreglass, wood, & metal. Jerry Vesely, Box 1928, Claresholm, AB T0L 0T0 (403) 625-3155 (B), 625-3871 (H).

Vankleek Sailplanes Ltd. Specializing in sailplane repairs in wood, metal, or composites. Call Günther Geyer-Doersch (613) 678-2694.

XU Aviation Ltd. Repairs in wood, metal and composites. C. Eaves (519) 452-1240 (B), 268-8973 (H).

INSTRUMENTS & OTHER STUFF

Barograph Calibrations, most makes and models. Walter Chmela, (416) 221-3888 (B), 223-6487 (H), #203, 4750 Yonge Street, Willowdale ON M2N 5M6

Bug Wipers. Mechanical device for in-flight wing LE cleaning, newly developed in Europe after ten years of R&D. Widely used at World contest. Cdn$690. **Mylar seals**, Cdn$190. Peter Masak (Performance Enhancement Inc.) (713) 579-2254.

Variometer / Calculator. Versatile pressure transducer and microprocessor based vario and final glide calculator. Canadian designed and produced. Skytronics, 45 Carmichael Court, Kanata ON K2K 1K1. (613) 820-3751 or 592-0657.

Firmal Electronics. Cambridge vario systems and flight computers, TE probes, gust filters, and nettos. Barograph calib. Warranty service and repairs. 542 Coronation Ave, Ottawa K1G 0M4 (613) 731-6997.

SAILPLANE DEALERS

Blanik L-23. Blanik L-13 parts. Mark Petru, Zlin of Canada, 11 Plaisance Road #17, Richmond Hill, ON L4C 5H1 (416) 884-4686 Fax 884-3595.

Glaser-Dirks. Vankleek Sailplanes Ltd, since 1978. 332 Pleasant Corner Road, Vankleek Hill, ON K0B 1R0. Günther Geyer-Doersch (613) 678-2694.

Jantar, Puchacz, Puchatek. For Polish gliders, contact Josef Repsch, (403) 451-2020, fax 452-3669.

Schempp-Hirth. Nimbus, Janus, Ventus, Discus. Al Schreiter, 3298 Lonefeather Cres, Mississauga, ON L4Y 3G5 (416) 625-0400 (H), 597-1999 (B).

Schleicher. ASK-21, 23B, ASW-20B, 22B, 24. Ulli Werneburg, 1450 Goth Avenue, Gloucester, ON K1T 1E4 (613) 523-2581.

Schweizer parts. Walter Chmela, (416) 221-3888 (B), 223-6487 (H), #203, 4750 Yonge Street, Willowdale ON M2N 5M6.

MAGAZINES

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

AUSTRALIAN GLIDING — the journal of the Gliding Federation of Australia. Published monthly. $A38.50 surface mail, $A52 airmail per annum. Payable by international money order, Visa, Mastercard. Box 1650, GPO, Adelaide, South Australia 5001.

NEW ZEALAND GLIDING KIWI — the official journal of the N.Z. Gliding Association. Published bi-monthly with international and southern hemisphere soaring news. Editor John Roake. $US24/year. N.Z. Gliding Kiwi, Private Bag, Tauranga, New Zealand.

SAILPLANE & GLIDING — the only authoritative British magazine devoted entirely to gliding. 52 pp, bi-monthly, and plenty of colour. Cdn. agent: T.R. Beasley, Box 169, L'Orignal, ON K0B 1K0 or to BGA, Kimberly House, Vaughan Way, Leicester, LE1 4SG, England. £12.40 per annum (US$20) or US$30 air.

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Insigne FAI, tissus, brevet argent, diamètre 3"	
Insigne FAI, tissus, brevet or, diamètre 3"	
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FAI code sportif, planeurs, édition 1988
FAI code sportif, section général, édition 1986
FAI insigne et records – guide des procédures, édition 5
Vérifications (auto collants), CISTRSC (vert) et SWAFT (rouge)
Carnet de Vol pour pilote de planeur (boîte de 60 – $360)
Carnet de progression de l'élève, rev. 1985
Instructions en vol – Notes, rev. mai 1988 (français)
Vol à Voile – Manuel d'instruction, rev. janvier 1980 (français)
Informations météo, imprimés N-052
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