



# free flight

Issue 3

July/August 1979



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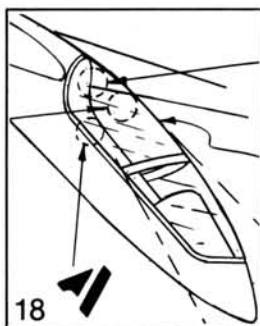
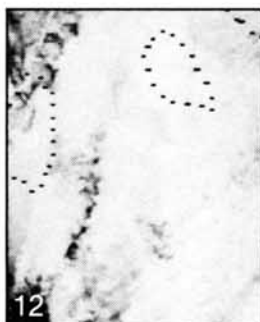
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Willi Krug's KW-45 homebuilt — see story this issue.  
 Photo: John Bachynski



# President's Report

Considerable activity during April and May centred on dealing with federal government agencies.

The SAC has successfully negotiated favourable terms with Transport Canada under which the SAC will continue to administer, with a considerable time and cost benefit to the membership, the type approval process for gliders imported into Canada. After an appeal to the Minister of Transport against his ministry's new requirement to undertake glider type evaluations in the country of manufacture, and after meetings with officials of Transport Canada, the Minister agreed to revert to the previously employed system whereby the type approval evaluations of gliders manufactured in certain countries could take place in Canada. Presently excluded from this arrangement are gliders manufactured in the Eastern European Block, which will be evaluated in the country of manufacture by representatives of Transport Canada. The membership should take note that a flight permit for a glider awaiting Canadian type approval will only be issued for the first glider of that type in Canada and that this permit will be issued only for the purposes of undertaking those flight evaluations required for the purposes of undertaking those

flight evaluations required for the type approval process. The SAC Technical Committee will provide those members wishing to import a glider which does not have Canadian Type Approval with a list of the requirements which need to be fulfilled prior to the issue of such a type approval.

The appeal by the SAC to the Minister of National Revenue for retaining the exemption from federal sales tax on equipment purchases made for educational purposes was turned down because the appropriate tariff regulation was not considered to be applicable to SAC member clubs.

The Ministry of Fitness and Amateur Sport served notice that the SAC will only receive much reduced federal support in 1979 and no further support thereafter. The federal elections resulted in a hiatus in the appeal process that the SAC actively initiated, but it is hoped that by the time of this printing, the issue will be resolved through a reversal in the federal government position. The ramifications of a complete cut in federal government support are serious to an organization such as ours which is attempting to foster growth and excellence in the sport of soaring.

Your support in increasing the visibility of

the sport amongst the general public is solicited. To this end the SAC is producing promotional material through its Publicity Committee chaired by Glenda Stark, which will be made available to member clubs - more on this later.

A successful eastern region instructors' school was hosted by the Gatineau Gliding Club at Pendleton under the course leadership of Tom Bell, with the result that 18 new instructors are available to help train our newcomers. Considerable emphasis was placed on spin training to help reduce the ever recurring spin-related accidents which regrettably often demonstrate that even old hands are not immune to the laws of aerodynamics.

In closing, I wish well to the participants and organizers of the National Soaring Championships being hosted by York Soaring Association this year. If you have never visited such a contest, I recommend taking the time to do so. They are an important and exciting element of our sport.

Good Soaring

K.H. Doetsch

## Member Clubs

### Maritime Zone

Bluenose Soaring Club, c/o 608-105 Dunrack St., Halifax, N.S. B3M 3G7 5  
New Brunswick Soaring Association, 521 Blythwood Ave.,  
Riverview, N.B. E1B 2H3  
Newfoundland Soaring Society, c/o Mr. J. Williams, 57 Boyle St., St. John's,  
Nfld. A1E 2H5

### Quebec Zone

Appalachien Soaring Club, Box 271, Sherbrooke, P.Q. J1H 5J1  
Ariadne Soaring Inc., 735 Riviere aux Pins, Boucherville, P.Q. J4B 3A8  
Association de Vol a Voile Champlain, 192 Highfield,  
Mont St. Hilaire, P.Q. J3H 3W5  
Buckingham Gliding Club, c/o No. 8 - 365 St. Joseph Blvd., Hull, P.Q. H8Y 3Z6  
Club de Vol a Voile Asbestos, 379 Castonguay, Asbestos, P.Q. J1T 2X3  
Missisquoi Soaring Association, Box 189, Mansonville, P.Q. J0E 1X0  
Montreal Soaring Council, Box 1082, Montreal, P.Q. H4L 4W6  
Quebec Soaring Club, Box 9276, Ste. Foy, P.Q. G1V 4B1  
St-Jean Glider Club Inc., 611 - 860 Blackthorne Ave., Ottawa, Ont. K1K 3Y7

### Ontario Zone

Air Cadet League (Ont.), c/o Mr. G. Fraser, 1105 - 2175 Marine Dr.,  
Oakville, Ont. L6L 5L5  
Air Sailing Club, Box 2, Etobicoke, Ont. M9C 4V2  
Base Borden Soaring Group, c/o Mr. Popodyne, CFB Borden, Ont. L0M 1C0  
Bonchere Soaring Inc., Box 1081, Deep River, Ont. K0J 1P0  
Central Ontario Soaring Association, Box 762, Peterborough, Ont. K9J 6Z8  
Chatham Air Cadet Gliding Club, 561 Lacroix St., Chatham, Ont. N7M 2X1  
Erin Soaring Society, Box 523, Erin, Ont. N0B 1T0  
Gatineau Gliding Club, Box 883, Station B, Ottawa, Ont. K1P 5P6  
Huron Soaring Association, c/o Mr. G. Ehmecke, 714 King Street,  
Midland, Ontario L4R 4K3  
Kawartha Soaring Club Inc., P.O. Box 168, Omeme, Ont. K0L 2W0

London Soaring Society, Box 773, Station B, London, Ont. N6A 4Y8  
Rideau Gliding Club, c/o Mr. H. Janzen, 172 College St., Kingston, Ont. K7L 4L8  
Rideau Valley Soaring School, Box 93, R.R. 1, Kars, Ont. K0A 2E0  
SOSA Gliding Club, Box 654, Station Q, Toronto, Ont. M4T 2N5  
Toronto Soaring Club, P.O. Box 856, Station F, Toronto, Ont. M4Y 2N7  
Windsor Gliding Club, 62 Lancefield Pl., Chatham, Ont. M4V 2N5  
York Soaring Association, Box 660, Station Q, Toronto, Ont. M4V 2N5

### Prairie Zone

Air Cadet League (Man.), Box 1011, GPO, Winnipeg, Man. R3C 2W2  
Regina Gliding & Soaring Club, 19 Ritchie Cres., Regina, Sask. S4R 5A5  
Saskatoon Soaring Club, Box 379, SPO 6, Saskatoon, Sask. S7N 0W0  
Winnipeg Gliding Club, Box 1255, Winnipeg, Man. R3C 2Y4

### Alberta Zone

Cold Lake Soaring Club, Box 1714, Medley, Alta. T0A 2M0  
Cu-Nim Gliding Club, Box 2275, MPO, Calgary, Alta. T2P 2M6  
Edmonton Soaring Club, Box 472, Edmonton, Alta. T5J 2T6  
Grande Prairie Soaring Club, Box 550, Grande Prairie, Alta. T8V 3A7  
Namaso Soaring Club, c/o Capt. K. Peters, CFB Edmonton, Lancaster Park,  
Alta. T0A 2H0  
Southern Alberta Gliding Assoc., c/o D. Clark, 514 Sunderland Ave. S.W.,  
Calgary, Alta. T3C 2K4

### Pacific Zone

Advanced Soaring Training & Research Association, c/o Mr. L.M. Bungey,  
General Delivery, Port Mellon, B.C. V0N 2S0  
Alberni Valley Soaring Association, Box 201, Port Alberni, B.C. V9Y 7M7  
Bulkley Valley Soaring Club, Box 474, Smithers, B.C. V0J 2N0  
North Okanagan Soaring Club, c/o Mrs. L. Woodford, Grindrod, B.C. V0E 1Y0  
Vancouver Soaring Association, Box 3651, Vancouver, B.C. V6B 3Y8  
Wide Sky Flying Club, Box 6931, Fort St. John, B.C. V1J 4J3



# A LOOK AT SOME ACCIDENTS TO GLIDERS

*The following review of accidents from 1976 to 1978 was done by Ian Oldaker, Chairman of the SAC Instructor's Committee in an attempt to see where current training should be improved. He was surprised to find accidents spread throughout experience levels indicating we can't let up our vigilance. He is a firm believer in learning from our mistakes and hopes that whenever one of us is involved in an accident we will file an incident notification form with the Association.*

Did you know that you may be more susceptible to a serious accident if you have over 500 hours experience? A look at about 40 recent accidents, all of which resulted in injury or substantially damaged gliders, shows the following breakdown:

Hours experience for Pilot-in-Command.	Number of accidents in group.
0-20	7
21-50	5
51-100	8
101-200	5
201-500	10
500-	5
Unknown	1

It may be argued that the groupings are arbitrary; they are. Consider however the fact that we probably have many pilots in our clubs who are in the lower experience groups, so our immunity from accidents is not necessarily lessened as we increase our time. (See Table 1)

Off-field landings accounted for six of the heavy landing/groundloop accidents. Besides Table 1 accidents, another pilot, trying to reach his Diamond distance goal cartwheeled his L-Spatz as he turned at 50ft. to land

uphill. In this case the report suggested the pilot's efficiency and judgement were impaired by fatigue and dehydration. Fatigue was a factor in a 1-23 accident where on the final turn the right wing stalled due to a skidding turn, the glider started to spin and landed heavily. It all started with a poor circuit. THINK, plan ahead and don't leave your circuit planning to the last minute.

Table 2 shows some winching problems leading to accidents, but they all were avoidable. Adequate training for emergency cable breaks is a must - and three duals on winch followed by going solo is not enough even for a licenced pilot. Such a pilot with nine hours was converted to winch, sent solo, climbed too steeply: the cable fell away at 75-100ft., the 2-33 stalled and entered a spin, seriously injuring the pilot. A trainee winch operator compounded the problems here. Winching is serious business; emergency cable breaks obviously need more attention, the nose must be "pushed down" rapidly to prevent a stall - don't let the reduced 'g' sensation fool you that you are still stalled when your nose is pointing well down again; look at the ASI and prepare to land straight ahead if you are low down - a 180° turn is usually not safe below 300 feet and needs adequate runway to land on, as you will be flying downwind. THINK, plan ahead for those cable breaks, winch failure or back release even before you take up slack. (See also the story on Winch Launching in this issue of *Free Flight*).

Low circuits, poorly planned circuits, strong winds often result in rushed pilots. This leads to poor or hasty decisions and often a low final turn with the wings banked to straddle the wind gradient. But a 2-33 and many other

gliders are spinnable - DON'T do it - THINK, plan ahead and don't leave your circuit planning to the last minute.

If you find yourself running out of height in the circuit *cut short your downwind leg* and fly towards the field - no sense in trying to land at the usual place on the field because "that is what I have always done, or been told to do." And on a day with strong winds:

- Don't go downwind of the airfield boundary,
- Don't go chasing thermals downwind unless you own a Cirrus - the 2-33 does not penetrate well. Stay upwind;
- And if in doubt, don't take off.

The two accidents where pitch control was lost involved 2-33's (one in 1977 and one in 1978). This suggests we really short be careful to check the elevator push rod and guide, and elevator horn attachment bolt on our walk-around checks before each flight.

The above information was obtained from the Aviation Safety Bureau of Transport Canada, from the legally required reports we make following an accident. Some data is preliminary and most reports are not mentioned here. The groups in the tables were chosen to illustrate some weak areas in our training, attitudes, airmanship, call it what you like. Wouldn't it be nice if we could learn the same lessons from incidents where no damage or injury resulted, but where by luck or last second action the pilot avoided a potentially serious accident?

If we are to lower our insurance rates, we had better stop bending gliders. The CFI's last year endorsed the idea of immediate reporting of incidents to the SAC and incident report forms have been sent to all clubs. Let's see some returned - it is now up to you.

TABLE 1	Aircraft	Hrs. Total	Exp. on Type	Accident Details	Casual Factors
	LP-49	1100	2	Dragged wing on landing, minor injury	No other data
	ASW-17	374	71	Caught wing on 10° sloping field after long cross-country flight. Aircraft slewed, tail section separated.	Pilot left field selection too late, chose only available field with slope, landed across slope, 4 km short of goal.
	1-23	425	150	Off-field landing, glider cartwheeled and ground-looped; pilot minor injury	On final in 30 kt wind, saw hydro wires decided to land downwind in next field. As aircraft nearly stalled, right wing dropped due to gust, cartwheeled when it hit the ground.

TABLE 2	Aircraft	Hrs. Total	Exp. on Type	Accident Details	Casual Factors
	2-22	28	7	Stall/Spin following winch loss of power at 200'. Pilot injury serious	20 seconds after cable released a turn was initiated. Glider banked more than intended; pilot pulled back to try to arrest descent. Pilot inadequately trained.
	2-22	53	53	Cable failed on winch launch during steep climb at 250 ft. 180° turn initiated, stall and spin to ground. Pilot injury minor, passenger none.	Pilot pulled up too steeply? Failed to follow good practice or emergency procedures, failed to maintain speed at low altitude.
	Berfgalke	48	15	Premature lift off as winch did not accelerate satisfactorily; spin into ground, pilot seriously injured.	Inadequate communication with winch operator
	Blanik	250	90	Cross-wind takeoff, released at low altitude, mushed into trees at end of runway, one pilot seriously injured	Student & pilot assumed each other had control; poor pre-flight planning or briefing
	2-33	128 18	85 18	Landed 1000' short of runway, heavy nose down impact. Minor injuries both pilots	Circuit misjudged; pilots tried "penetration" but did not recover or flare
	2-33	63	25	Undershoot and collision with wire/pole. No injuries	No other data except wind estimated at 35 kts.
	2-22	264 0	15	Undershoot and collision with tree; no injuries	25 kt. wind - poor circuit planning did not compensate for wind
	2-33	277 ?	59	Undershoot and collision with fence/post; no injuries	No other data to date
	2-33	210	1	Stalled on final dropped wing - groundlooped, no injury	Trying to stretch glide; failed to maintain speed

**The accidents fell into well-defined groups:**

	No. Accidents	Injuries
Heavy landing. Groundloop	12	2 serious
Spin	11	4 serious 3 fatalities
Undershoot, or poor circuit planning	9	3 serious
Midair or ground collision	4	2 fatalities
Clear air turbulence or midair breakup	3	1 fatality
Loss of pitch control	2	3 fatalities



Eighteen "student instructors" attended this year's Eastern Instructors Clinic, which was organized and lead by SAC under the leadership of Tom Bell, Chief Flying Instructor of Borden Gliding Club.

Most of us arrived at the airfield during Sunday, 20th of May 1979, a warm, sunny, humid day. We got our checkout from the Chief Flying Instructor of Gatineau Gliding Club, Douglas Tetu, in one of the SGS-2-33 trainers, on the same day.

At 1930 hours on Sunday, we convened in the "lecture hall" of the Club. Over the door is written: "SAC Gliding School". From the inside it looked more like a storage and repair shop for post World War I gliders, than a classroom. But we were told that next year, a repair and paint job will rejuvenate the building. On morning briefings it was so cold there that everybody was happy to get out of the classroom and preferred to push gliders to keep warm.

Tom Bell, presented an introduction of "How to and How not to" instruct student pilots. This was an excellent introduction with many valuable facts, occasionally presented "tongue-in-cheek", which made the presentation lively and interesting. However, if we would have had our Instructor's Course Manual prior to the start of the course, it would have been perfect.

We then were assigned a course partner so that we could interchange as instructor and student (dummy). This "pair" was called a syndicate by some, but not by others. Tom

emphasized that we learn by doing, in our case, this means flying. Therefore, he arranged the course in a way that everyone of us got at least two flights per day. This, I believe, was the most important factor for this very successful course! The lectures were only presented at times when we could not fly because of poor weather or when our flight assignments were finished. Everyone got two flights per day, and, apart from the last rainy day, we achieved our goal. On one day, we were able to fly for fun and thermal over 5000 feet! One of us (WL) was able to fly for three hours in the afternoon practising spins and stalls in one of the two SGS-1-26's, which were kindly provided by the Gatineau Gliding Club. Thanks to the generosity of Douglas Tetu, Chief Flying Instructor, we were also allowed to fly the Blanik and the AS-K13 with Tom Bell, for spin instruction checks.

There were no major problems apart from some wierd looking circuits on the first flights. But the Gatineau airfield is so large, that an outfield landing on the airport boundary could have been claimed as Silver Distance leg.

Our "Routine" was as follows: Tom Bell gave us a lecture in the lecture hall discussing the stages of the exercises to be instructed. A proper pre-flight discussion and a post-flight review were mandatory for each instruction flight. This was done on the flight line during flight activities to simulate the actual conditions of instruction at home. A good discussion prior to the flight proved valuable, because it allowed more flying and actual demonstration

and less explaining in the cockpit.

One of the most important dual exercises was spinning the 2-33. It is not easy to spin the 2-33, but it can be done, and all of us succeeded in doing it. We became aware of the importance of the centre of gravity. We learned to check the location of the centre of gravity and the importance to provide extra ballast to the light student in the front seat.

Every student instructor was given a tape recorder in order to record his instruction during the flight. This proved a valuable tool on reply, especially on the first few flights. It showed the student instructor where to improve and provided constructive entertainment for the rest of the crowd. Here are some specific examples of tape recording:

- "You can see, that in a side slip, the nose of the ship points into the opposite direction".  
(To the tail, Taber?)

- Enter a 90° medium turn" (30° bank will do, Jim!)

- Give me right aileron!" (Author unknown)

- Female student to instructor male "dummy" student: "You can see how smooth it goes when you put the stick right into the centre!"  
(Well done, Christine!)

- "In spins we have a 55 knot speed limit".  
(Not in Ontario, maybe in Quebec...!)

There were several special lectures presented during the course: Dr. Karl H. Doetsch presented a concise and interesting lecture on spins, stalls and wind shear, supported by graphs and mathematics. Dr. Wolf D. Leers talked about medical facts for glider pilots

# SAC INSTRUCTOR



## FRONT ROW LEFT TO RIGHT:

Peter Skensved, RGC  
Blaine Tremblay BBSG  
Chris Barnes RGC  
Wolfgang Weichert GGC  
Andy Ricketts, RVSS

## SECOND ROW:

John Clements, BSC  
Graeme Craig, GGC  
Keith Lee, GGC  
Bill Barnes, RGC  
Ken Russell, BBSG

## THIRD ROW:

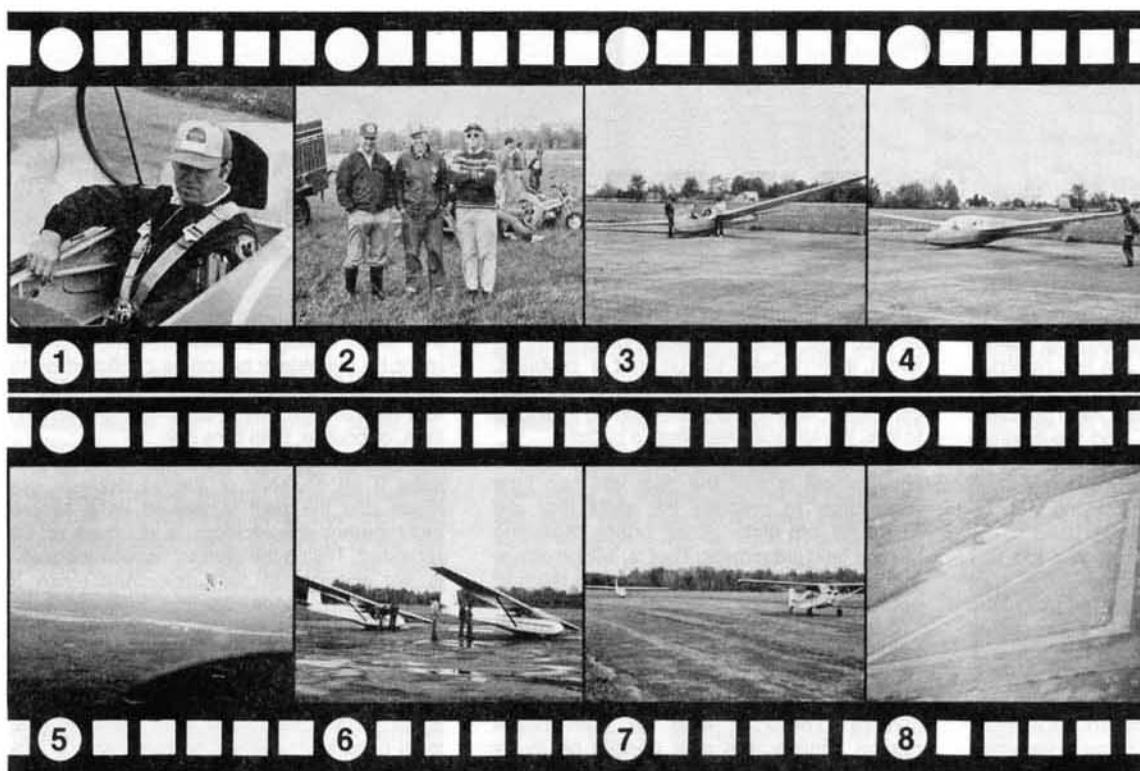
Serge Krieger, QSA  
Tab Bucknell, SOSA  
Wolf Leers, SOSA  
Jim Bucknall, RVSS

## FOURTH ROW

Paul Chalifour, NBS  
Tom Bell, BBSG (Course Director)  
Marilyn Dougherty, NBS  
Bob Dipietro, Champlain

## MISSING:

Frank Vaughan, GGC



**WL 1:**  
Tom Bell, Course Director ready for spin check in AS-K13.

**WL 2:**  
From left to right:  
Dr. Ken Russell, Dr. W.D. Leers, Doug Tetu, CFI of Gatineau Gliding Club on Flight line.

**WL 3:**  
Preparing for spin-check (AS-K13.)

**WL 4:**  
As above - take off

**WL 5:**  
As above - on tow

**WL 6:**  
Our two SGS 2-33 trainers at Gatineau

**WL 7:**  
SGS 2-33 on take-off

**WL 8:**  
Gatineau Gliderport runways

# CLINIC '79

## EASTERN REGION

20th - 25th May 1979 at Gatineau Gliding Club  
PENDLETON, Ontario

and warned that smoking and excess drinking do not mix with flying. He presented slides from high altitude flights in Colorado Springs and discussed effects of hypoxia and other medical conditions important in flying. Inspector, Mr. Hugh Leech from Transport Canada in Ottawa, presented valuable tips for us budding instructors on Do's and Don'ts of instruction. Thanks to those special speakers.

During such a course, there are inevitably some more memorable events; some of them worth noting:

-on the first lecture, Dr. Ken Russell, Radiologist and Major of the RCAF turned out to be the expert on the definition of the horizon. He must have been quoted many times. From that time on, we did not have to worry about the horizon anymore.

-Bill Barnes complained that he could not stay up in the thermal. He was advised that the red colour of his hat would absorb the heat of the thermal and kill the lift. From that time on, Bill only wore his hat on the ground.

-John Clements from the East Coast staggered into the restaurant for breakfast one morning and reported that he did not sleep a wink until 0400 hrs in the morning, because a young couple practised recreation in the next room until the bed finally broke into pieces (at 0400 hrs!)

-found the swamp around the airport cleaner than the swimming pool of the Club (This is an exaggeration!).

-the skid of the glider is there to act as a brake on landing (I never knew this! Are You sure Bill?).

-the Gatineau pilots don't seem to like to taxi their towplanes. They always fly a complete circuit between fuel pump and the flight line (or is it because of some holes on the runway?)

-and finally, the well meant attempt by Ken Russell to destroy all the flight records on the last day of the course, by letting the flight sheets blow all over the air field by a 25 knot wind, failed. There were too many Gatineau Club members to run after them and pick them all up (Too bad!)

We had a barbecue on the last evening before the end of the course. Steaks were expertly done by Ken Russell and a relaxed evening ensued with beer and self-made "vino". All of us felt that the course was a full success.

I think that the success of this excellent instructor clinic was due to several factors:

1. Tom Bell, our course instructor, had the expertise and right personality to teach theory and flying and stimulate our interest.
2. Tom Bell's "Fly when you can and the weather is right and lecture when you cannot fly", seems to me one key point of the success.
3. The 18 students came from a variety of ethnic and professional backgrounds with personalities that provided a good atmosphere.
4. The flight experience of the students was advanced enough that most of us had no problem to fly "back seat" in

the 2-33. (I am not so sure about spins in this respect).

5. The students were sincere, hardworking and eager to learn.
6. Emphasis was on learning, but also to have fun!
7. Tom Bell's humour lifted our spirits and never let us down.

This must have been one of the best, if not *the* best instructor's course that the SAC has ever organized. I spoke to many of my co-eds and found only high praise. Everyone felt that we learned a great deal and achieved our objectives. This was confirmed on the last day on the course critique. Everybody found that the many flights have provided us with the necessary expertise and practice to tackle the task. This could not have been achieved with less flight training, and more theory. After all, we can read up ourselves!

In closing, thanks are due to Douglas Tetu, Chief Flying Instructor and the members of Gatineau Gliding Club for providing their beautiful club facilities, their tow pilots and gliders, and their atmosphere of hospitality.

Thanks to SAC for supporting us with our travel expenses. We wish Tom Bell, course instructor, all the best for this transfer to Germany and express our many thanks for his guidance and expertise. Fortunately Tom will come back next year to organize and teach the Instructors Clinic in 1980.

We all had a most enjoyable and rewarding time!

W.D. Leers

# FROM THE OTHER END

As a tow pilot at a large club, I have been given a unique opportunity to witness human and mechanical failures. I am not referring to the relatively well documented behaviour of glider pilots, but, as you may have guessed, with towplanes, their pilots, and the environment they operate in.

Environment is staggeringly different from your average, run-of-the-mill flying school, as any tow pilot knows. What used to be called slow flight has now become too fast to two the old wooden floater. The pilot becomes very familiar with landing technique and can become quite good at it. He should be. He'll probably do several hundred landings in a season.

The question arises: Where is this pilot not getting experience, and where, as a result, should we be more vigilant? One area which is immediately obvious is in cross-country flying. It is all too easy when occupied with a glider on behind to become hopelessly lost. In fact, I find that it's easier to navigate from the glider than from the towplane! Basically, the problem is that at level flight

power with a high performance glider on behind, the pilot has only to descent in about a 40:1 ratio to run into a problem. This uses a significant portion of his concentration, and if marginal weather is added to this, the situation becomes a cliché.

An additional problem in this cross-country environment is that the pilot has had little opportunity to practise the skills that are drummed into glider pilots' brains regarding landing field judgement. That is, will he notice the field is too wet? Is there enough room to get in and out safely?

A pilot flying constantly on short flights tends to become complacent about fuel. However, I have seen too many pilots run out of fuel to blame it totally on the individuals involved. There is also an operational reason. Initially, the pilot checks on every take-off (if he is any good) how much fuel he has. The day wears on, and the repetition becomes hypnotic. On the Super Cub, the engine feeds only from one tank, necessitating switching from one to the other. The new pilot tends to switch tanks frequently in order

to keep the aircraft "balanced". If he does this often enough in this hypnotic environment he eventually becomes confused as to which tank he has selected and many in fact monitor the wrong tank. The unwatched tank, of course, then runs dry.

It is important to note that in this type of case if an analysis of the situation is not made and the pilot is viewed as a simple incompetent the incident is doomed to be repeated. Telling the pilot to "watch the fuel" is not enough. In fact, this may make a repeat more likely, as the frequent tank switching and gauge watching is conducive to the hypnotic atmosphere mentioned.

A technique I have found effective is in two parts. First, switch tanks at only two spots - half tanks, and at a nominal safe level (where you would normally stop). This ensures that there is always a safe tank to switch to, and minimizes the hypnotic and confusing switching. Second, make it an ironclad rule that in the event of an unexplained power failure, the immediate action should be to switch tanks.



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# OF THE ROPE by Don Band

## Operations and the Engine Failure

I have seen or been involved in a number of engine failures. I have seen enough to feel uneasy about not highlighting some experiences.

It is frequently said that loss of one cylinder (short of mechanical breakage) will not result in such a loss of power that you cannot maintain flight. WRONG. In my experience with aircraft engines the most common form of failure involves just that loss of power.

Let's see what happens when we introduce a failure in our "remarkably reliable" shell-shocked towplane engine. We start with a double-fouled plug cylinder (rare). That is, a cylinder in which neither spark plug is functioning. This cylinder does not fire, and we have 'lost a cylinder'. The engine runs somewhat rough but it's not the end of the world. The RPM drops to about 2100 from 2400 but that's more than enough for level flight. A no sweat forced landing and some straightforward repairs solves the problem.

OK, we have a failure in the vibrated-to-death carb box that results in carb heat all the time and rough running. This too is straightforward. Much for the power can be regained to clear the trees by leaning the mixture (if you're quick).

Now, let's look at a sneaky one. In towing, the engine is heated close to its maximum, and even with rigorous cooling procedures some engines seem to be prone to crack cylinders. This will show up on a 100 hr differential compression test but between these checks it can result in a gradual and easy-to-ignore loss of power. When do you call it quits? The weather is getting hotter and that's why the trees are getting closer as the season wears on, isn't it?

Note: this is not to say this kind of failure cannot be reduced by proper engine handling!

The final Beast we'll look at is the one I've been building to. A real towplane smasher. Let's look at what happens if we cause a valve to stick open. If it's an intake valve, the burnt mixture will be pumped back into the

intake manifold, disturbing mixture and equilibrium on the remaining three good cylinders. The power loss is drastic (to about 1500 rpm) and the engine runs very rough. The reason this can be a smasher is this. Frequently, on the first appearance the problem occurs in the latter portion of a tow, and a successful landing is made. The engine is run up to full power on the ground and nothing seems wrong. The difficulty is put down to finger trouble and the airplane is soon back in service running like a Swiss watch. It is in fact a Swiss time bomb. I have never seen this failure on the ground but have personally experienced it at 50 ft. on take-off after a five minute perfectly smooth high-power run-up on the ground. If this happens to you take note - the only sure way of diagnosing this is to have the cylinders removed and examined. As soon as the engine cools slightly, it will again react normally.

It is my fervent hope that the above discussion may promote discussion in this field and may prevent an accident. Maybe we should form a towplane operator's association!



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# THE TECHNIQUES & HAZARDS OF WINCH LAUNCHES

by Lloyd M. Bungey

## The basics of the launch

The winch launch is best considered in three separate sections,

1. the initial climb, which is up to about 250'.
2. The full climb, which is from 250' to about 90% of the launch height.
3. The top of the launch and release.

During the initial climb the climbing attitude is gradually increased from the liftoff attitude until, at about 250', the full climb attitude has been attained. This change of climb attitude should be done gradually and progressively, since, during the early stages of the launch the stress of the cable is the highest. Too much tension on the cable at an early stage could result in a cable break with insufficient height for an adequate recovery.

A cable break, during the initial climb, can be hazardous if the glider is at too steep an attitude. Fast reflexes may prevent a stall, but the speed at the top of the pushover will be slow and there will be insufficient altitude available for the speed to build up sufficiently to control the roundout. The usual landing in these circumstances is quite hard.

An additional hazard in the cable break situation, during the initial climb, is due to the mental state of the pilot. As the glider has just broken from the ground he has not yet settled down into the launch and his reactions may be a little slower than they would be after a few more seconds of normal launch. Hence he may very well stall before he reacts.

Incidental hazards of a too rapid rotation into the climbing attitude at the start of the launch are that the rear of the fuselage may strike the ground quite solidly as the glider lifts off, resulting in structural damage, and that the tailplane may be either stalled by the severe angle of attack or blanketed by the turbulent airflow off the wings (remember the winch launching attitude is an abnormal flight attitude). In either of these latter cases there will be complete loss of control.

The full climb is an attitude of about 45° and should not be assumed before 200' indicated (250' + actual). It should be held almost to the top of the launch in order to obtain maximum altitude, and the speed should be at least 10 m.p.h. above normal stall but below the winch launching redline.

At the top of the launch the back pressure on the stick should be eased off slightly to prevent porpoising which may otherwise develop. This is caused by the tailplane stalling due to the high angle of attack. At the stall the downforce on the tail is lost and the

glider pitches down which reduces the angle of attack of the tail, unstalling it and resulting in it providing downthrust again raising the nose until the tail once more stalls. Little altitude is gained while this occurs and a reduction of the back pressure on the stick to keep the tail flying at all times will result in a better gain of height.

In most cases, as the top of the launch is reached, the winch driver will slow the winch down to an idle. This slackening off of the pulling force is usually quite noticeable to the pilot, except if there is a strong wind, and, at this point the pilot should lower the nose of the glider to reduce the tension on the cable and then release the cable, preferably by pulling the release knob 3 times, to be sure of it. An extra precaution is to make a moderately steep turn as soon as the airspeed has been stabilised, during which a visual check below should reveal the cable descending on its chute.

## Speed Signals on the Launch

Since most winches are noisy and most operations don't have radios anyway, it is essential to know how to communicate with the winch driver. The only essential information you need to get to him is if the speed is too fast or too slow. A set of visual signals is recognised worldwide. If you need more speed, i.e. the launch is too slow, waggle your wings; if you want less speed, i.e. the launch is too fast, wag your tail. A slight complication lies in the fact that if you use aileron only to waggle your wings then the aircraft will yaw also and the tail will wag in sympathy or if wagging the tail with rudder only there will be simultaneous banking giving a wing waggle. Therefore, when wagging the wings, a little opposite rudder will be necessary to keep the fuselage straight. Similarly, when wagging the tail, a little opposite aileron will be necessary to keep the wings level. When doing these manoeuvres it is advisable to lower the nose slightly.

## Laying off for drift

In a crosswind, during the launch the glider will drift downwind of the strip if no correction is applied, then as the cable falls it will drift further away. To position the glider so that the cable lands on the strip it is necessary to fly the glider on the upwind side of the strip during the launch so that after release the drift on the cable carries it downwind onto the strip. This can only be done by flying the glider in what appears to be a continuous turn into the wind. The pull of the cable prevents the glider actually turning once a certain attitude is reached and the launch proceeds in what is basically a continuous

upward sideslip, quite uncomfortable if the crosswind is strong but necessary if the cable is required to land in a confined area.

In order to effect this laying off of drift both aileron and rudder must be held on continuously. The into wind wing is held down and some rudder applied to point the nose into wind. In light crosswinds a wing held down while the nose is pointed straight along the strip may achieve sufficient results to suffice, but in a strong crosswind both will be required.

## Cable breaks

The greatest hazard in a winch launch is that of a cable break. With the glider at a very nose high attitude airspeed will be lost very rapidly and therefore rapid action is essential. The key actions following a cable break are:

1. Get the nose well down fast.
2. Release the cable.
3. Pick up and maintain airspeed.
4. Size up the situation and proceed to carry out a landing in the safest manner practical.

Very few accidents following cable breaks are caused by choosing the wrong course of action, a poor choice may be a contributory cause but usually the prime cause is failure to attain or maintain an adequate airspeed.

Failure to attain a safe airspeed may be due to freezing on the controls or a too slow reaction immediately following the cable break. Instructors should ensure that any student they solo on winch has well developed reflexes at the cable break. It is absolutely essential that the nose be lowered instantly after the break.

A further reason for the failure to attain airspeed is haste to start the circuit or landing. Although the glider may have been pushed over into a steep, nose down attitude, it may not have yet regained full flying speed following its drastic loss of speed immediately after the break. Immediate application of spoilers or initiation of a turn following the lowering of the nose may result in the stalling of the aircraft and entry into a spin. A one or two second pause between the lowering of the nose and opening of the spoilers or initiation of a turn is time well spent. If you can't afford those seconds then you are already on the wrong course of action.

Failure to maintain a safe airspeed after attaining it can only be considered gross carelessness. The visual illusions of making a circuit at half the normal height, making a downwind turn close to the ground, and a slight amount of panic all contribute their part. The wisest course of action to stay out of trouble of this kind is to devote more of your time inside the cockpit during any low



altitude manoeuvring required. Outside you can suffer from visual illusions, so check that A.S.I. a lot more frequently and keep the yawstring straight. It's the one time when a little more time in the cockpit will pay off. Don't get instrument hypnosis but don't ignore them either.

#### Loss of power during the launch

Occasionally a winch will give mechanical problems which prevent it from developing full power for the launch or may break down during the launch. A total breakdown is just like a cable break except there is no snap to jolt you into action. You should keep sharp for this one!

In the case of a loss of power or insufficient power, the launch should be aborted as soon as it becomes apparent that a normal launch is not possible. It should not be continued beyond the point-of-no-return, abort it while you are in a position to land straight ahead.

#### Cable Hang-ups

A cable hang-up should be a never occurring situation. All gliders being winch launched should have a functioning back release, checked prior to each launch. However, just in case, the winch should have a guillotine to chop the cable free if a hangup should occur.

In the event of a hang-up, the winch driver must trigger the guillotine to release the cable from the winch. The glider pilot should then descend in spirals over the field to prevent the cable from snagging, working his way downwind as he descends to give sufficient room for an into wind landing. During the descent the glider should be flown at sufficient speed to compensate for the weight of cable hanging underneath it.

#### Speed limitations on winch launches

A winch launch results in quite high stresses on an airframe. The loads on the pilot may not seem all that bad, but remember that there is all that cable hanging on below. In normal flight, the bending loads on the wings are nowhere near as great as during a winch launch. Normally, the lift developed by the wings is used 50% to support the fuselage and 50% to support the fuselage & load. (say). In the winch launch situation, however, we are adding a considerable load to the fuselage, hence the lift developed by the wings must be used to a greater proportion to support the fuselage and load. All the extra lift developed to support this load must be transferred through the wing root structure and it is here that the extra bending force is greatest. It is for this reason that the winch launching redline is considerably less than the rough air redline. Adhere to it, you hardly realise what your airframe puts up with as you go up on that wire.

#### Further reading

Soaring Association of Canada Instruction Manual (2nd Edition)

Part 1 - Instructors Guide p29 & 30

Part 3 - Student notes p 31-33

Elementary Gliding by Paul Blanchard p40-44

Theory of Flight for Glider Pilots by R.C.

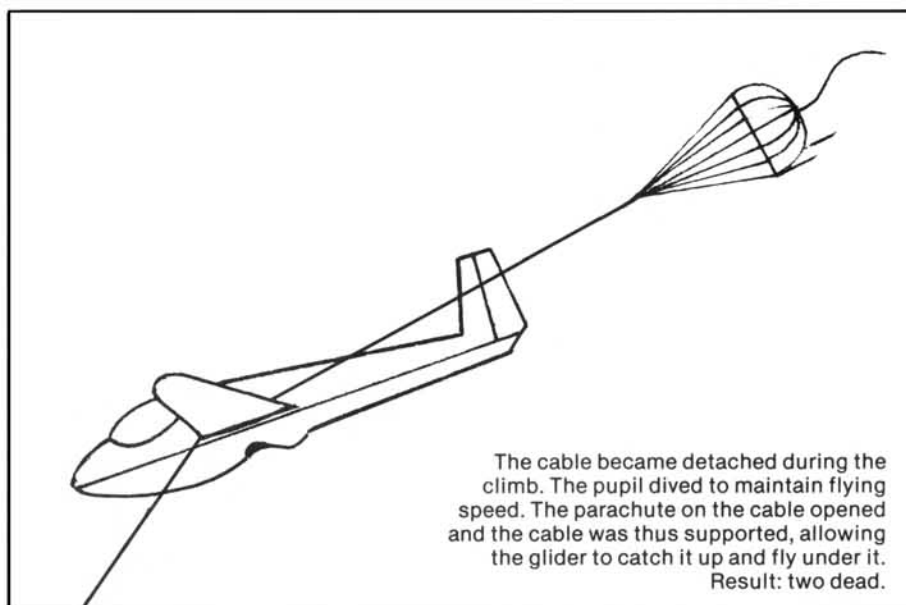
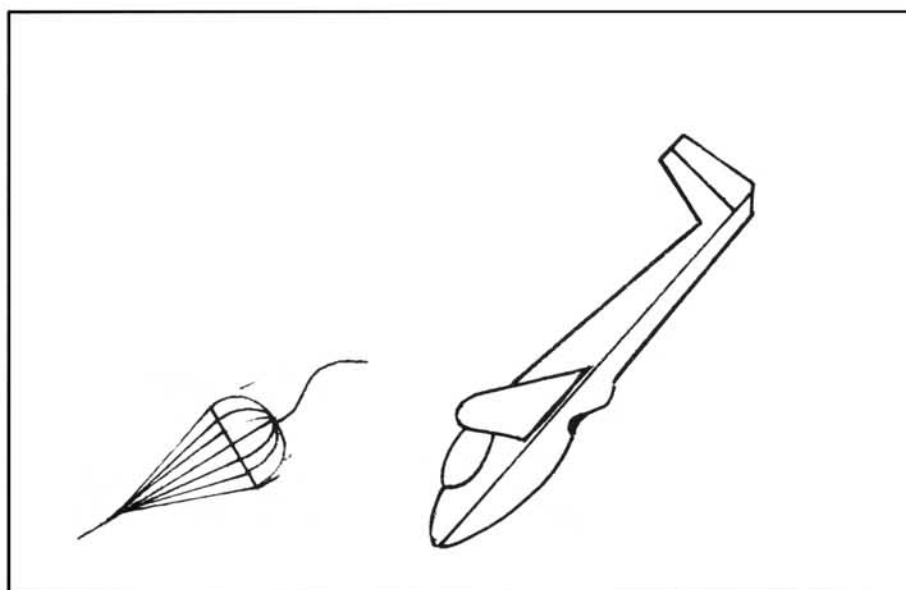
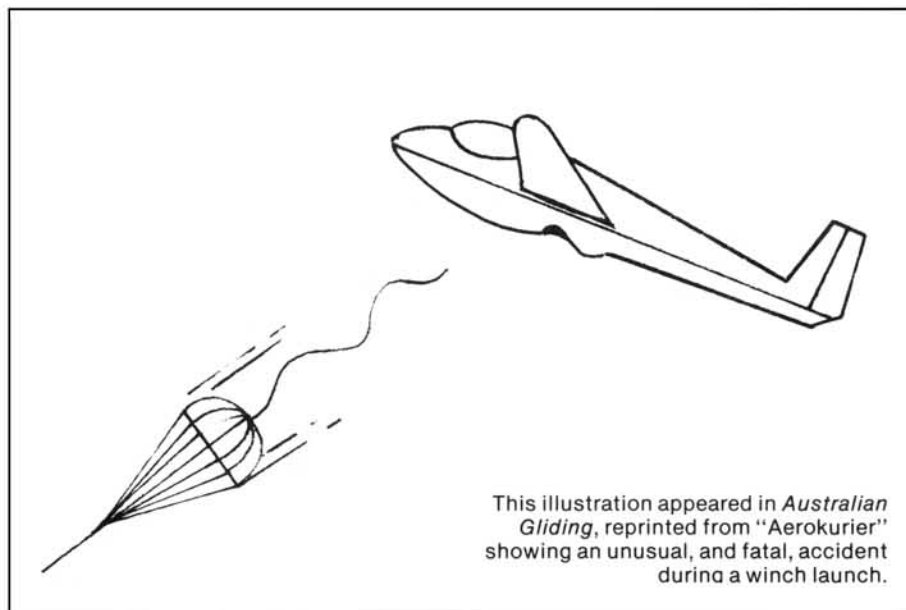
Stafford Allen p93-97

America's Soaring Handbook, Chapter 3, Ground Launch by William R. Fuchs.

The Joy of Soaring by Carle Conway p37-41

Soaring, December 1959 p4-7, The Dynamics of the winch Launch by Harold Drew

Australian Gliding, May 1967, p20-22, NGS Research Reports.



# It's fun to

*Don Clarke of Toronto sent in the satellite photos, and pointed out the features of interest: "I am sending a series of three photos taken from a satellite which show the presence of wave clouds across the continent...My analysis of the photos is something as follows...taken Sept. 23, 1978 at about 4:45 GMT for one of them, as the caption across the top of one of them shows. The overlay of the outlines of the provincial boundaries will help you to get them in the right position.*

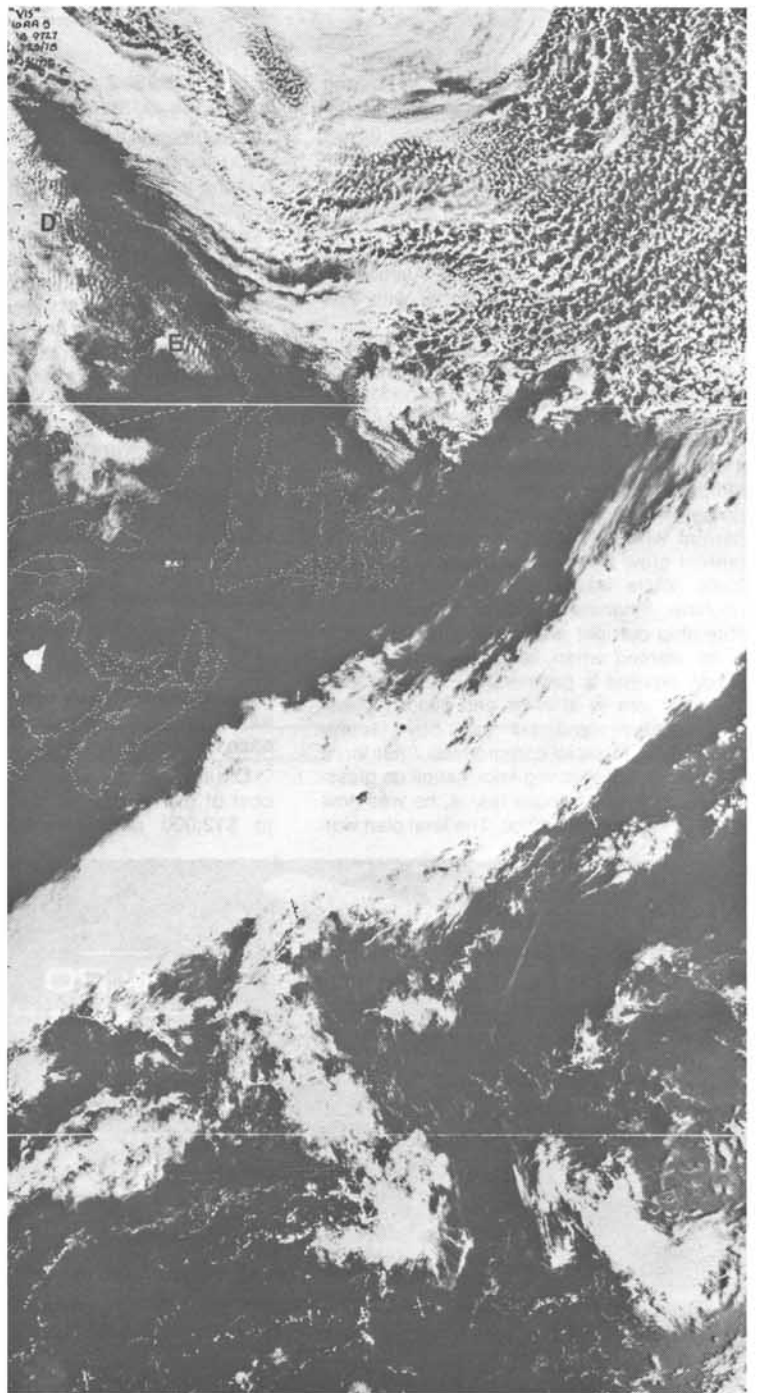
*"The east side of Hudson Bay, position A, shows a nice set. I had thought that this land was flat, but a friend of mine who had been in that area tells me there are rows of small hills - just the thing. Note B and C, interior Quebec, has evidence of wave formation. D and E show very extensive areas of wave - almost the whole east coast of Labrador has wave. Think of the possibilities, going down wind (and escaping the sink areas, one hopes) but there aren't many hospitable landing areas. I think helicopter retrieves would be the only way. (The furthest east photo was taken earlier than the middle one. The wave of the Labrador coast has weakened by the time of the later photo - at least it doesn't seem to be right over the coast. This may be parallax error.)*

*"But there is a dandy wave right in the Cowley area - marked F. This would be a real accessible wave - lovely. Similarly along the U.S. border at the junction of B.C. and Alberta - marked G - there is extensive wave, and a large area marked H in the U.S. There is a dark area marked K, which is Salt Lake...Many other features show up on close inspection: At L there is visible the snow on the only east-west mountain range in the Rocky Mountain area. With a bit of imagination I think I can see in Quebec an almost perfect circle of water (dark) which outlines an old meteor crater of vast proportions.*

*"However, the main feature to my mind is the demonstration of the extensive wave-producing areas on the continent, or at least the northern part of it. Most of the areas are not accessible to us, but it is fun to dream a bit!"*







# How The KW-45 Was Built

BY John Bachynski

Willie Krug's attention was drawn to soaring in 1961 when S.O.S.A. had a display at the C.N.E. Sportsman Show. He was not a power pilot and had no aeronautical background. However, it wasn't until two years later that he joined S.O.S.A. and earned his glider pilot's licence ten months later. Soon after he received an invitation from Erik Ketonen to buy a half-share in a Standard Austria resulting in a very good friendship with Erik and four years of enjoyable soaring.

The superiority of the Standard Austria lasted only a few years as a new breed of glass fibre sailplanes arrived in Canada. Not only did the performance and glide ratio go up, but also the price. After the first results of the new glass ships came in, he was additionally impressed when he heard rumours of "dolphins" from thermal without having to stop and circle. Interest grew from day to day and without a doubt, Willie was hooked on a glassfibre machine. Financially unable to buy a complete ship outright and a strong desire to fly all he wanted when he wanted, made him decide against a partnership. The decision was therefore to attempt and build a glassfibre fuselage and tail and buy factory wings as the financial compromise. After three more years of collecting information on glassfibre and different epoxy resins, he was now ready to start construction. The final plan was

to buy Nimbus 2 wings and build the body and tail around them.

Construction began in Toronto using a balsa wood sandwiched construction rather than building expensive molds. From three sheets of half-inch plywood, the side and top view in actual size were drawn and cut out. Then forms were placed every six inches apart, cut out of half inch plywood, and with a three-inch hole at the centreline. The forms were then lined up on a heavy three-inch steel tubing, covered with seven mm of balsa strips, glued, sanded, and covered with one layer of 181 fibreglass. The next step was to cut the fuselage horizontally in half in order to apply two layers of glassfibre cloth inside. Once that was accomplished, the two halves were glued together and the outside covered with one more layer of glassfibre.

Then came the task of installing the controls and designing and blowing a canopy. The vertical stabilizer was built from solid glassfibre using a male mould. Rudder and all-flying elevator were made of balsa sandwich construction. The wing-fuselage connection consisted of chromoly carrying through steel tubing thus requiring two pins to assemble each wing to the fuselage.

During the four winters of hard work, the cost of the Nimbus wings rose from \$6,000 to \$12,000 and therefore Willie ordered

instead Open Cirrus wings at a cost of \$7,200 delivered. After one more year working on fitting the wings to the fuselage, sanding, painting, and constructing a trailer, the ship was completed at a cost of about \$10,500. Unfortunately there are no drawings available and no pictures were taken during construction.

The sailplane was ready for testing in the spring of 1974. On the day of the big event, the D.O.T. inspector arrived at the soaring field in pouring rain and said, "go and fly it". Undoubtedly he was very impressed with Willie's craftsmanship and there were no problems observed in the test flights. The L/D was calculated to be approximately 45 and Willie therefore christened the ship, KW-45.

Willie relocated to Calgary in the latter part of 1974 and has been a very active and competitive pilot of the Cu-Nim Club. He keeps his ship in immaculate order and handles it in the air beautifully. Personally, it is a pleasure to be in a weak thermal with him working for altitude and my 1-35 can keep even with him. However, once in a glide, his ship can pull away from almost everything except an ASW-12.

Since moving West, Willie has accomplished the following record with him home-built; 2nd May Meet '77, 3rd May Meet '78, 3rd Western Regionals '78.

## A Great Ship and a Delight to Fly



For further information please contact:

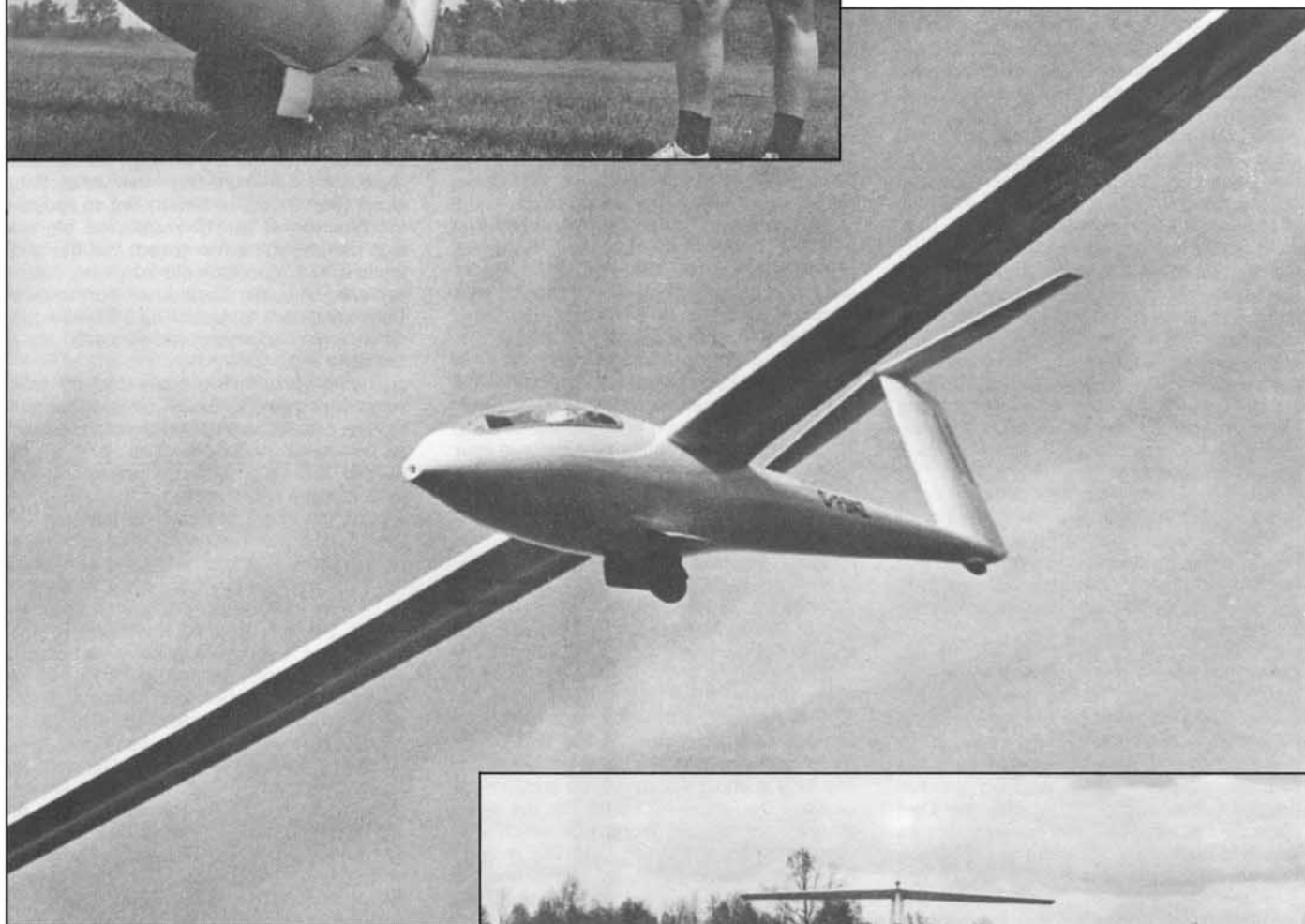
**George Couser**  
735 Rivière aux Pins, Boucherville, Quebec J4B 3A8  
(514) 655-1801

Technical Data	PIK-20D	PIK-20E
Span	15.0 m	15.0 m
Aspect ratio	22.5	22.5
Empty weight	220.0 kg	290.0 kg
Max. weight	450.0 kg	470.0 kg
Water ballast	140.0 kg	120.0 kg
Wing loading	29-45 kg/m <sup>2</sup>	36-47 kg/m <sup>2</sup>
Best L/D (max. wt.)	42 @ 117 km/h	41 @ 117 km/h
Min. sink (min. wt.)	.56 m/s @ 73 km/h	.61 m/s @ 77 km/h
Stall speed (min. wt.)	60.0 km/h	66.0 km/h
Rate of climb		4.0 m/s
Take-off to 15 m height		300.0 m max.
Cruise		135.0 km/h
Fuel consumption		16.51 /h





*Designer-builder  
with his masterpiece*



*Willie Krug in his KW-45 on final,  
showing its lines.*



*Nose on view  
of homebuilt shows its  
clean design.*

# ADVENTURES IN THE ANTIPODES

by Andrew Heineman

For some time I read the advertisements in 'Soaring' about flying in Australia, and had heard about it from the boys who competed at the World Championships at Waikerie. After a few hush-hush letters were exchanged, flying time, glider, motel and thermals booked, I told my family about my decision. I was going to Narromine Soaring Centre, about 400 km north of Sydney in the middle of prairie-like geography dotted with low mountain ranges, unlandable scrub, few people, tens of thousands of sheep and millions of flies.

To get there, you first fly to San Francisco. On this trip I felt I was flying in the wave. It was so cold in the plane, that we had to wrap our feet in blankets. American Air Lines could do a lot more to comfort their passengers, or is it done to appreciate more the warmth of the Pacific Climes? Anyway, I was so numb I could hardly walk off the plane, in spite of the gallant efforts of the captain who provided free drinks to thaw our blood vessels.

To Honolulu the flight was quite pleasant with Qantas Airlines. The 747 landed after five hours without a hitch, then nine and a half hours to Sydney where we discovered that we had lost one full day as we were hanging upside down, without any noticeable effects, for the moment only.

My first shock came as we left the air-conditioned plane and stepped outside the terminal. 42°C heat hit me like a hammer. Bang! Come to think of it a similar thing happened to me back in Hungary when we came up from a cool wine cellar on a hot summer afternoon after sampling the fermented juices of the grape. May the Lord bless all cellar masters and brew masters as well; who cultivate this ancient and noble art. In vino veritas (there is truth in wine). You may wonder what wine has to do with soaring? A lot. It can get you high without leaving the ground. Got it? You think so? No sir, I am not! But I am not a hypocrite, that's for sure!

To get back to our main course, from Sydney your heading is Dubbo. This town can be reached by Ansett Airlines Twin Fokker in one hour and fifteen minutes of \$78 return. The ground below is mountainous, dotted with thousands of small ponds, creeks, scrub and as the hills disappear it is flat as a table-top everywhere. Harvesting is over, they had the biggest crop ever and the people are in good humour. Farmers are discussing the prices of new machinery and their mood is contagious because we are flying over streets of beautiful Cu's at 12-13,000 ft. base and I am smiling too, rubbing my hands, on which some Toohey is spilled. The thermals are

bumping us around a bit but this time I have no complaints.

At the airport one bloke is waiting for me, who is to be my roommate. A 38 km ride on the wrong side of the road gets you to Narromine, a sleepy town of 1500 people, 9 banks, olympic-size swimming pool, soccer, cricket and rugby fields and a golf course and last but not least four pubs with booming business. Tractor trailers loaded with sheep roll through the main drag all day long.

We check into Narromine Motel-Hotel-Pub and are greeted by Malcolm the owner. For \$12 a day you have two to a decent room plus breakfast and dinner. But get your stomach prepared for the menu. Breakfast includes juice, cereals, milk, steak and eggs, bacon and eggs, sausages and eggs or macaroni on toast, which is a local specialty. The evening meal consists of more steak, roast beef or chicken, and fruit for dessert. They also provide a coffee percolator in your room.

Being late in the afternoon we drove out to the airfield 1 1/2 km from town to get acquainted with the people who run the show. First we stopped at the hangar. It is unbelievable! Twenty-three glass ships for hire: 2 Nimbuses; 1 Janus; 1 Mini-Nimbus; 3 Hornets, 3 Libelle; Mosquito; PIK 20B; 3 Astirs; LS-1; 2 Boomerangs; 3 Blaniks; 2 Romanian Larks; 2 Pawnee and 1 Cessna for tugs and many private ships. No rattling tin cans. All are equipped with radios and most with contest-ready equipment. It has two paved runways about 7500 ft. each in top condition. The field is about 400 acres, no problem for landing. The Aussie Air Force left the aerodrome after the 2nd World War which was used for bomber training. The CFI is John Rowe who is a very pleasant fellow, and the smartest farmer I ever met is Mick Doyle who sold his 2000 acres to become part owner of Narromine Soaring Centre. Beryl Rowe runs the show on the ground very efficiently. I learned about four Canadian pilots visiting recently. Several ships are out on cross country flights, mostly on 300 km triangles, 2 on 500 km triangles and students are taking off and landing at regular intervals. They solo in a week to 10 days! Four to five flights a day in the Blanik then after five to six solo flights in same they are transferred to the 1S29 Romanian Lark or Astir. Two sisters soloed on that afternoon, one after 18 takeoffs, the other after 21 takeoffs. Not bad! Their average is about 25 flights including 3 full spins. They must have a good teaching program.

Next day I got check out in the Janus, then took it up solo for a 3 hour flight to

get acquainted with the area. Large grain fields and grazing land stretch north, south and west with 3-4000 ft. mountains to the east. After the harvest the stubble is burned off and huge columns of black smoke rise all over adding more thermals to the existing ones. The cloud base is about 9400 ft. AGL. Lift is up to 8 knots. That afternoon I flew about 200 kms running through the thermals registering 5-6 knots from the vario. Short cloud streets were quite frequent so I pushed the nose down to 110 knots. The big bird didn't even notice the speed, the flat glide angle with 4° flap took me far on my course to Peak Hill to the South, then north-east to Dubbo and back to Narromine. I still had good lift at 5 p.m. so I ventured about 30 km to the north and back.

The ships from the cross country tasks were just coming in. Everybody was happy in spite of two outlandings which mostly happen in the large paddocks. You land in the burned field if possible to prevent ground looping in the high stubble.

Next day I got assigned to the only PIK 20B, having flown a similar one back home for two years. She was quite familiar but I felt rusty not having a flight since last September so it took a good hour to put it together. The lift was just as good as yesterday if not better. The skys were filled with beautiful Cu's and I set my course to Parks 100 km to the south. As I flew over familiar ground and gained more confidence after every minute, navigation became easy, just flying between the railroad and the highway due south. The visibility was at least 40 km and before I knew it Peak Hill was behind me and that's 50 km. The vario was singing a wonderful song in its high pitch and I was having a ball. I had no worries about landing out or finding my turning point. I just flew straight as an arrow until I needed a thermal to climb back to about 8500 ft. then zooming through thermals and blue holes at speeds of up to 115 knots. Oh boy, oh boy, I was beaming. What a place, what a life!

I took a wide turn around Parkes observing the airfield which is one of the turnpoints on a 300 km triangle then set course back to Narromine due north. Ahead of me a big blue hole opened up so I climbed to cloud base and at 9400 ft. anxiously stepped into it. I estimated it to be about 25-30 km wide which proved to be right so I slowed down to 65 knots. Sometimes I got into heavier sink and was down to 2800 ft. before I hooked into my first thermal and up to over 8000 ft. Then it was clear sailing home. My time was 2 hours and 12 minutes from take off. Nothing spectacular but not bad either.



Since it was still early in the afternoon when I got back to Narromine I flew to Dubbo about 40 km to the east taking it nice and easy absorbing the scenery. High mountain ranges to the north east reach up to 4000 ft. The third peak to the left is the direction to one of the turnpoints not having any other landmarks for 140 kms you just line yourself up with that peak and if you are lucky you find what you are looking for. Thousands of watering holes reflect the sun as if they were mirrors dotting the land. There must be sheep around them but from this height you can hardly see the occasional car on the road. The Maguarie River winds through the fields as a giant green snake twisting and turning its light green water and smoldering stubble fires send their last wisps of smoke skywards. It was a beautiful day, perhaps my most enjoyable flight ever. Thank heavens for it. I thought of my fellow soarers who are shivering in -30°C. cold back in Canada. What a lucky bum I am to enjoy this.

The day is over and we roll the ships into the huge hangar from both ends and then go back to the motel. Some blokes are in the beergarden as we get in and the suds are on the table in large pitchers with lots of empty glasses. So you gulp down one midi (that's between the mini and the schooner) buy your own pitcher, grab a chair and in no time a large bunch of elbow benders conglomerate for the evening's calisthenics. Good life! The heat is a very pleasant 30°C. and quite a change from noonday temperatures of 36-38°C. By George, it's 7 p.m. let's got for a bite. Almost everybody disappears for supper then back to the tables - more people come in - more suds appear. The stars are shining in the crystal clear night and I am very disappointed that the Southern Cross doesn't stand out like it should. The moon is growing but down there it is a C not a D as in the northern hemisphere. Flying foxes (giant fruit bats) with 2ft. wingspans scream in the palm trees. They are ugly looking beasts chasing each other feeding on the fruit of the palms. Slowly everybody got filled up, time to turn in, let's get some sleep.

At 9 a.m. in the morning we assemble in the briefing room for weather reports. New people arrive and everybody selects his own task for the day. The news isn't encouraging. A huge cyclone at the north-east corner of Australia is approaching the land with 200 km winds and rain hitting the coast. Its influence is already felt here too.

We set the task for the day of a 300 km triangle. On the first leg the thermals topped at 4400 ft. so I had a height band of only 1500 ft. to work in. Under 3000 ft. the thermals were very weak and it meant slow progress so I reached my turning point at Parks in 2 1/2 hours. I took two pictures and tippit-toed back, hardly any lift and was down to 2200 ft. My roommate was down on the ground at Parks airfield and I thought I'd try the hills. The lift should be better facing south so I moved over to the east when I got into a boomer. 8 knots and 8000 ft. later I felt a lot better and set my course to Gilgandra. The thermals improved to 10 knots in the cores. I lined up with the third peak to the left and just few on in a good rhythm. Climb, penetrate, climb, penetrate. I again had to slow down for a blue hole this time only about 20 km wide, and before I looked around Gilgandra was dead ahead. I was

really proud of myself finding the needle in the haystack. I turned quickly and headed back to Narromine. The left was still good but I had to fight strong headwinds, but the cloud base increased to 9000 ft. and I had no worries at all. I was in no hurry so I took it nice and easy. I had to close all the vents but it was pleasantly cool and did not concentrate on navigation and found myself -5 km east of Narromine. No problem. I got back on course and landed after 6 hours and 26 minutes. It wasn't a bad day after all, although four guys landed out.

The next day the weather was getting worse. There were no cross country flights to speak of only local cruising for a couple of hours. I played yo-yo, down to 1000 ft., up to 3500 ft. and so on. The cyclone caused a lot of damage in Queensland. The weekend was rained out and we were shut in watching T.V., reading and sleeping. The cool breeze felt good for a change.

On Monday somebody was going to fly up to Lightning Ridge where the opal mines are. I got a free ride in the Cessna 400 km to the north. Temperatures reached 43°C. Lightning Ridge is a real frontier town in the out-back in the middle of nowhere. I only had a few hours so I looked around, bought some beautiful opals from the miners for a very decent price and headed back to civilization.

The next three days offered high winds up to 35 knots so we went to the local swimming pool eyeing the local beauties and watching the sky. By the weekend it was getting better. A big high moved in and we got busy flying again but not too far because to the north we couldn't go yet. By Monday we were back in business. Daylight saving time just ended and we were in autumn weather of 25-30°C., a very pleasant dry heat.

I took out the Janus for a few turns and got well acquainted with this beautiful ship and the next day set a task for a 300 km triangle trying to better the Canadian record.

I left at 11:50 a.m. and got a good start at 115 knots and pulled up into a weak lift at 2-3 knots which steadily improved to 5-6 knots. I made good progress until we ran out of Cu's and ran into a different air mass. Inversion was as far as you could see. Here and there a few bubbles were breaking through but I had to try it. Carefully I stepped into this hazy blue air getting weak left of 1-3 knots, narrow thermals, 4000 ft. top. I thought flying straight might be just as good as looking for some unknown source of lift and this proved me right because in less than a half hour I was down to 1800 ft. with not a soul in sight. The nearest homestead was about 15 km on a dirt road and a large gravel pit on my right. Now or never! To land out here will be hard on the body and hard on the wallet too. Let's try the pit. The sink got worse but we kept on going and Bob my navigator very stoically said "you are in deep shit Andy, but try it anyway, I reckon". I looked for a landing field close to a dirt road and got Bob to radio our position in case we had to land and by this time the vario moved up to 0 and began to sing, very slowly but by God it was moving up, 2 knots and 3 and 4, we are down 1200 ft. and banked hard and started to climb out slowly. I felt my knuckles tight on the stick but I couldn't relax it until we topped out at 4300 ft. Oh boy it was tight, I couldn't have hammered the proverbial oats into the donkey's eyes.

Twice more we got below 2000 ft. but the lift seemed to be getting stronger and we reached Condobolin. I took two pictures and headed for Parkes. Now, inversion coupled with 20 km headwinds makes soaring very interesting to say the least, but the lift is up to 6 knots, the ceiling is 5600 ft and we make steady but slow progress. Again flying over the badlands, long stretches of heavy sink were quite frequent but in the distance the long line of Cu's are beckoning mischievously. Just as we left them but they seemed quite high. Oh Lord, if we ever get there... Now we are in a moderate but steady sink and the vario just won't move from 200 ft. down. We are losing precious height. Landing is no problem this time as we are close to the main highway. The Janus sure can stretch the distance but it is coming to the end soon. About 4-5 km ahead a smoldering stubble fire is sending its last smokey breath upwards. A big fire is roaring 10 km to the left but no chance to reach it, we have to land. I selected a black field ahead. We are down to 1400 ft. when something moves! A big puff of smoke! A farmer is lighting a fire! I can clearly see him on a tractor pulling a burning tire on a long chain and the fire is roaring behind him as more and more smoke is bellowing upwards. Down to 800 ft. The tractor is racing away from the flames and just as he turns right at the end of his field I turn into the middle of the smoke at 650 ft. right into the core as the vario starts to scream 6 knots, 7 - 8 - 9 - 10, we are going up like an elevator. The whole field is burning now and our lungs are full of smoke, it feels as good as a million Havana cigars. God bless you mate down there. May the Lord bless your wife with 10 sons. May you live to be 100 and light fires for stray glider pilots and have lot of rain to grow good crops! I kept wishing him lots of more good things. I hope his wife will agree with me.

We got out of the second tight spot and were getting closer to Parks, the second turn point. Again lots of sink but the 8500 ft. gain gets me there at 3000 ft. as I take my pictures. Just 2 km to the left another fire is burning and I get there at 1800 ft. right into the middle of it. The vario is up in no time to 10 knots and pegged there. We top out at 9400 ft. and with this height I reach the line of Cu's. Cloudbase is about 9500 ft. and from here we don't look back. Now the wind is in our back, the Cu's are far apart but there is lots of 0 sink as we are barreling at 85-90 knots. I took one more climb just north of Peak Hill which was going to take us back to the field from 50 km out at a steady 100 knots.

I held the stick with both hands and felt like a million dollars. We had tremendous ground speed with 20 knots of wind behind us as I radioed from 25 km out. They were still at the field when we reached it at 200 ft., pulled up to a left turn, skimmed 6000 ft. over the runway and came to a stop. Four hours, 32 anxious and exciting minutes and no record but a great experience and satisfied feelings.

We rolled in Janus, the two-faced God, into the hangar and back at the motel the boys were already busy with the evening's calisthenics, bending elbows and shuffling chairs. I could hardly wait to tell them my two cents worth. See you next year mates, if the Lord is willing. I sure am.

# CANOPY

by Michael Lai, B.Sc., Member - American Inst. of Aeronautics -

- and Astronautics: May 30th, 1979

## General

Two types of thermoplastic and thermosetting transparent material are commonly used in the fabrication of glider canopies. Thermoplastic is commonly known as acrylic plastic and it conforms to military specification MIL-P-6886, MIL-P-5425 or MIL-P-8184. The thermosetting plastic is better known as polyester and it conforms to MIL-P-8257 specification.

An easy way to identify which type of plastics are used in your glider's canopy is by application of acetone and zinc chloride. Rub a small area of the plastic with acetone solution, where it will not interfere with vision. When the area is dry, if the plastic is acrylic, it will turn white; if it is acetate, it will soften but will not change color. A drop of zinc chloride placed on acetate base plastic will turn the plastic milky, but will have no effect on acrylic plastic.

As a rule, an extensively damaged canopy should be replaced rather than repaired, since even a carefully patched part is not of the same structural or optical integrity. Cracks or damage in the critical vision area should not be repaired. Repairs in this area can distort the pilot's line of vision during landing or normal flight.

At the first sign of crack development, a small 1/8 inch dia. hole can be drilled at the extreme end of the cracks to relieve localized strain concentration thus preventing further splitting.

## Temporary Repairs

Three types of temporary repairs for cracked plastics are commonly used:

1. Temporary repairs on canopy flat surfaces can be effected by placing a thin strip of wood over each side of the surface and then inserting small bolts through the wood and plastic. A cushion of sheet rubber or aircraft fabric should be placed between the wood and plastic on both sides.
2. On a curved surface, repair by placing fabric patches over affected areas. Secure the patch with aircraft dope, specification No. MIL-D-5549 or lacquer, specification No. MIL-L-7178.
3. A temporary repair can be made by drilling small holes along the sides of the crack 1/4 to 1/8 inches apart and lacing the edges together with soft wire. Small stranded antenna wire makes good temporary lacing material.

It must be noted the three types of repairs just described are used as a temporary measure only, and as soon as facilities are available, the canopy should either have a permanent repair or be replaced.

## Surface Patch

Surface patch is the most common type of repair for cracks and damages if the esthetic value of the finished canopy is not of prime importance. However protrusions from this type of repair may be undesirable for high performance sail planes.

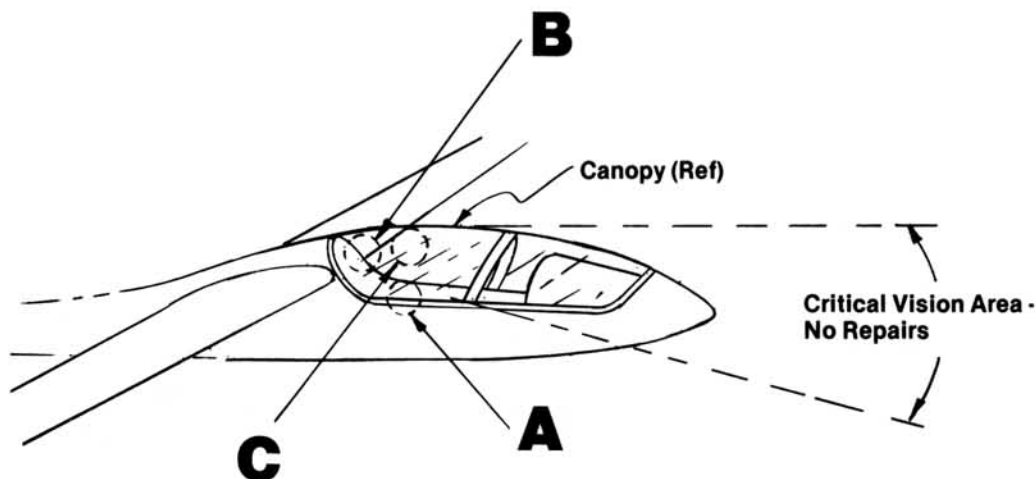
To make a surface patch repair, trim away

the damaged area and round all corners. Fabricate a piece of plastic of same material and sufficient size to cover damaged area plus at least 3/4 inch on each side of the crack or hole. Bevel the edges. If the surface area to be repaired is curved, the patch can be shaped to the same contour by heating in an oil bath of 248°-302°F or heated on a hot plate until soft. Coat patch evenly with good grade plastic solvent adhesive and place immediately over the hole. Maintain a uniform pressure of five to ten PSI on the bond for a minimum of four hours. Allow the bond to cure at room temperature for at least 24 hours before any stress is applied. Buff and polish as required.

## Plug Patch

The plug patch is more time consuming to perform, however if it is finished properly, the repair will be flush with the canopy surface.

To repair using inserted patches, trim the holes to a perfect circle or oval and bevel the edges slightly. Fabricate a patch slightly thicker than the plastic being repaired and similarly bevel the edges. Fit and trim plug as necessary. Heat the plug until soft and press into the hole without cement and allow to cool to make a perfect fit. Remove the plug, coat edges with adhesive, and then reinsert in the hole. Apply a firm light pressure until the cement has set. Sand edges level with the surface using a No. 320 (or finer) sandpaper or abrasive cloth. Buff and polish as required to restore transparency.





# REPAIRS

## REFERENCES

1. Cessna Aircraft Company, "Approved Repair Methods For Acrylic Plastics", various examples on windshield maintenance, Wichita, Kansas.

2. Federal Aviation Administration, "Acceptable Methods, Techniques and Practices - Aircraft Inspection and Repair", AC 43.13-1, U.S. Govt. Printing office, Washington, D.C.

3. Federal Aviation Administration, "Airframe Handbook", AC 65-15, U.S. Govt. Printing Office, Washington, D.C.

## Scratches

Minor scratches can be removed by vigorously rubbing affected area with a soft clean cloth dampened with a mixture of turpentine and chalk, or an automobile cleanser applied with a damp cloth. Another scratch removal method is to sand affected area with a No. 320 (or finer) abrasive cloth wrapped round a wooden block.

After the scratches are removed, polish the affected area with fresh tallow or buffing compound until the cloudy appearance disappears and transparency is restored. Use minimum pressure to prevent formation of "bull's-eye" or other optical distortions.

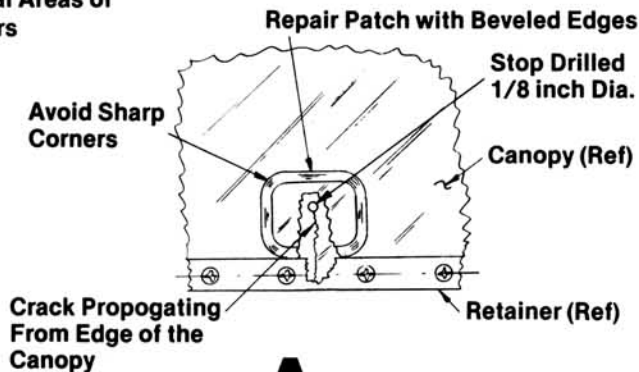
## Crazing

Since optical consideration is vital on the canopy, any severe crazing will necessitate the replacement of the entire structure. Crazing apparently is caused by exposure to harmful solvent and prolonged heat deformation by the sun at temperatures above 120°F. Crazing is in actual fact a minute network of cracks running in all directions over the surface of the plastic or within the plastic.

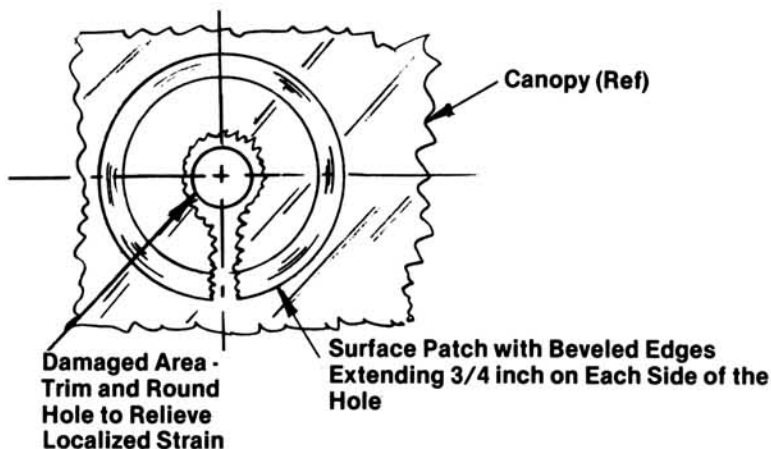
If the crazing is on the plastic surface, it can be removed using the method for scratches.

Crazing propogating within the plastic is difficult to check. Depending on the severity of the condion, a plug or a surface patch can

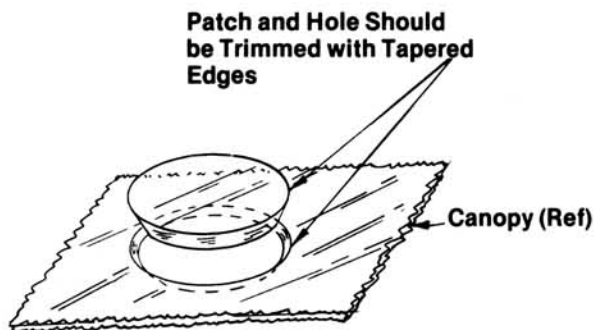
## Typical Areas of Repairs



**Detail A**  
Surface Patch Repair for Cracks



**Detail B**  
Surface patch for Round Holes



Apply Pressure Equally on all Sides

After Cement has Hardened  
Sand Edges Level with Surface

**Detail C**  
Plug Patch Repair for Cracks and Holes

Patch Should be Thicker

Patch Tapered

# CANADIAN NATIONALS '79



This year, the Canadian Nationals were heralded by this beautiful poster. The artwork was designed by Jim Carpenter, for the Nationals' letterhead and T-shirts. When approached by the S.A.C., Jim generously permitted its use for the poster as well. Thank you, Jim!

The poster was sponsored by the SAC, and with the untiring assistance of Terry Tucker, I was able to get it out on time, in spite of the late date of its conception.

An apology is due to our Francophone pilots: with the deadline fast approaching, we had the "camera-ready" (but English-only) artwork printed. An add-on sheet provided the information in French, but even that reached only a few clubs. Next year, bilingual!

Copies of the Poster were sent to each Canadian club, several government agencies, a handful of Canadian newspapers, and the S.S.A. Walter Shmela of Toronto, with the help of others, sent copies to some nearby clubs, libraries, schools, etc. These will attract public interest within the area of York Soaring Association, hosting the Nationals.

I give my sincere thanks to the people, named and unnamed, who helped to make this effort a successful one.

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En ma qualité (très récemment acquise) de responsable de la publicité de l'ACVV, je vous offre mes excuses pour le caractère accessoire de la langue française en ce qui concerne les affiches des championnats Canadiens. Le concepteur de l'affiche nous a envoyé une version unilingue anglaise toute prête pour la reproduction. Vu la brièveté des délais d'impression, nous n'avons pu incorporer les renseignements de langue française au poster. Je vous prie de croire que cette lacune sera dorénavant comblée.

Bien à vous  
Glenda J. Stark  
S.A.C. Publicity



# CONTEST!

Are you 18 yrs. old or younger?

Do you, your family, or your friends, glide?

## YOU COULD WIN

### THE S.A.C. NATIONAL ESSAY/COMPOSITION CONTEST!

#### SUBJECTS?

Anything, anything! to do with gliding!!...(my first glider ride; my most exciting solo; my mother, father, sister or brother, who glides; gliding in Canada; the joy of gliding; birds & gliding; women pilots; teenage pilots, a fiction about gliding; mystery, science-fiction, adventure, romance...) anything!!

#### IF YOU WIN... **1<sup>st</sup>** PRIZE, EACH CATEGORY

1. Congratulatory letter to you, and to school & club, where applicable.
2. Your essay or composition printed in Free Flight!!
3. Five free copies of Free Flight containing your entry.

#### **2<sup>nd</sup> & 3<sup>rd</sup>**, EACH CATEGORY

1. Copy of your entry sent, with congratulatory letter, to you, & to school & club (where applicable).
2. Honorable mention in Free Flight.

#### RULES

1. Please fill application form completely & send with entry.
2. Deadline is Oct. 30/79.
3. Essay or composition must be either about gliding, or have gliding as its setting.
4. Contestant must be 18 yrs. old or younger.
5. Essay or composition must be 400 words or less.
6. Categories are: A - up to 6 yrs old; B - 7 up to 10 yrs old; C - 11 to 14 yrs old; D - 15 to 18 yrs old.
7. Entries should be sent to: Glenda J. Stark, Publicity Chairperson, SAC.  
221 Henderson Ave., Ottawa, Ont. K1N 7P7

*\*NOTE This contest offers no cash prizes.*

*\*NOTE No entries will be returned unless sent with stamped, self addressed envelope.*

NAME \_\_\_\_\_

AGE \_\_\_\_\_ ADDRESS \_\_\_\_\_

PHONE \_\_\_\_\_

CLUB \_\_\_\_\_  
(IF APPLICABLE)

SCHOOL \_\_\_\_\_

TITLE OF ESSAY OR COMPOSITION: \_\_\_\_\_

I \_\_\_\_\_ am the author of the enclosed essay or composition. I understand the conditions of this contest.

I vouch that \_\_\_\_\_ is the author of the enclosed essay or composition.

Signature \_\_\_\_\_ ☐ Teacher ☐ Parent or Guardian

If I do not win this contest, I ☐ do, or ☐ do not, give permission for SAC or Free Flight to use my entry or part thereof at another time, with credit to me.

Signature \_\_\_\_\_

Signature \_\_\_\_\_

# Letters to the Editor

## Dear Editor:

I found the article "No Place For Philistines" offensive when I read it last year. Seeing it again in FREE FLIGHT (March-April/79) prompts me to respond.

Mr. Thomas is the proponent of gliding as an elitist activity. He claims an egalitarian spirit, listing a truck driver, doctor and factory worker among his friends, but this claim is only valid in the socio-economic sense. He resents "newcomers". His very use of the word, as opposed, say to "new students", belies his xenophobia.

Mr. Thomas cites an example, which we must assume he finds typical to be worthy of such note. He was incensed by the "newcomer" who, in Mr. Thomas' opinion, might not have understood "the satisfaction found in testing one's skill and fibre in the privacy of the sky" (it was the student's first flight) and "the strange bond that man develops with machine" (it was the student's first flight).

Mr. Thomas tried and found a guilty a person who had not yet had the experience of touching the controls of an aircraft. He sentenced the student to be cut off from all friendly

communication, and...to be labeled a "philistine".

*Philistine: a person who is looked down upon as lacking in, or being hostile or smugly indifferent to, culture, aesthetic refinement, etc.* - *The Random House Dictionary*

Such is the name Mr. Thomas gives to someone who enjoys the "sensation" of soaring, as well, because this person lacks Mr. Thomas' personal brand of "abiding necessity" for flying. Such is also the name he gives those who threaten his "secret sport", and his "private kingdom". I question Mr. Thomas' own motivation.

Granted, there will be those who will not understand gliding, and who will abandon it. But they will go, and those who do care - new people, new students who hear about us and learn to love the air - will remain. More than likely, some of these good people will have a less than perfect appreciation of soaring during their introductory passenger flight. I am sorry for those among them who will encounter Mr. Thomas on that first day. I am sorry for Gliding.

G.J.S.

## Overseas News

### Australian Gliding

"Sue Martin has claimed the *World Feminine Record* for speed around a 500 km triangle. She flew from Walkerie via Buen Glen (near Pinnaroo) and Coleraine (north of Mildura), in the LS-3, at a speed in excess of 133 km/hr."

### A Town Like Hans-Werner

News came on January 3 this year from Alice Springs, Australia that *Hans-Werner Grosse* had broken four world records with one flight. Flying a 19-metre ASW-17 he flew a triangle of 1160 km, in 8 hours less 30 seconds which resulted in records for 1000, 750, and 500 kg speeds in addition to the largest triangle. The next day he flew a 1220 triangle, topping the previous day's distance. Noted record-holder Grosse has been based at Alice Springs with the carbon-fibre ASW-17; the clipped wingspan is for the strong thermal conditions.

The record flights took place while the Australian National contest was on elsewhere.

## Hangar Flying

Neil MacDougall reminds us that pilots in Southern Ontario may be glad of soaring forecasts, available since late May on Saturdays, Sundays and holidays by calling 676-3026. Demand may make information available from met offices in Hamilton, Kitchener, Peterborough, Kingston, London and Windsor.

### Waiver Forms

The SAC standard waiver form, made available to all clubs last year is available in French this year. Credit goes to members of the St. Jean Glider club for the legal translation. Available through the usual source of SAC material (see Supply List). Merci aux membres de Club de Vol a Voile de St. Jean.

## Class Ads

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# Club News

## Winnipeg Gliding Club

Because of the late, late spring in Manitoba, the Winnipeg Gliding Club became operational a couple of weeks later than we have enjoyed in past years. The Victoria Day weekend was the first fully operational flying weekend, but because of the good thermals we get in May several good flights of distance and duration were made, including Silver "C" legs.

The late, wet spring wasn't the only damper on the season's beginning. Plans to begin construction of a clubhouse, to provide a non-flying focus for Club members at the field, were blocked when the Municipality turned down our building permit conditional use application, because of a strong protest presented by our immediate neighbours to the east. They apparently bought the property with house fronting on the Club's tie-down area one winter and only in the spring really discovered they had an active gliderport quite literally on their doorstep. Relations have been strained ever since. At the zoning hearing they presented a lengthy brief listing their grievances and intention to forestall any enhancement of the Club, and when Club executives paid a visit to the neighbours

prior to the hearing they expressed this intention. This season the circuit pattern has been converted from right to left-hand so towplances will not pass over their house on downwind legs. Perhaps a future application would meet with more agreeable results for a clubhouse.

With certification for the Lark the Club hope to make full use of it as a cross-country and advance training ship this season.

## The Silent Majority

So how come FREE FLIGHT doesn't have more Club News you ask? Because not all the S.A.C. Clubs send in news about their doings often enough, if ever. Sure, we have a few more or less regular club contributions, and a few random items, but there are 50 + SAC-affiliated clubs and some of you we never hear from. We'd like to hear from all the clubs, from all of Canada, on a regular basis. We'd like to know what you're doing - did you get a new glider? Build a clubhouse? Have a cook-out? Send your club newsletter to Free Flight, or delegate someone to write a contribution, whatever it takes - we'd like to know what's going on.

## Montreal Soaring Council

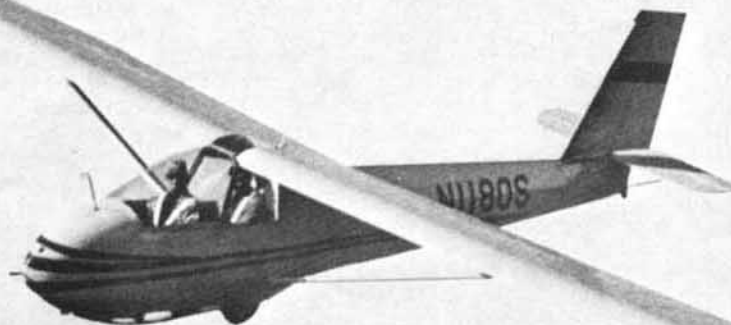
MSC got off to a "flying" start to their season two weeks earlier than usual. The 2nd Astir (Astir 77) has now been allowed to fly by DOT as has Canadair's ASW-17. Anyone who has checked out for the LS-1 (we now have one belonging to the Club) is allowed to fly the ASW-17. I had a flight in it (the ASW-17) last weekend.

Because of the long wings and the relative closeness to the ground, I was apprehensive about the take-off roll. Once in the air the machine is easy to fly, and docile with remarkably good rate of roll. Without water ballast it climbs appreciably better than a 15-meter ship. What is particularly noticeable is the momentum: when the stick is pulled back from 70 knots into a weak thermal the climb just goes on and on, with the speed decaying very slowly — quite remarkable. One has to be careful with this weight for the landing approach if a short field touchdown is required. Dive brakes are good. There is no tail parachute.

I would recommend an ASW-17, provided one has a spare \$30,000 handy and a regular crew of four or five.

— Best wishes, Bob Gairns

## FOR NEW AND USED SAILPLANES INSTRUMENTS, RADIOS, ETC!

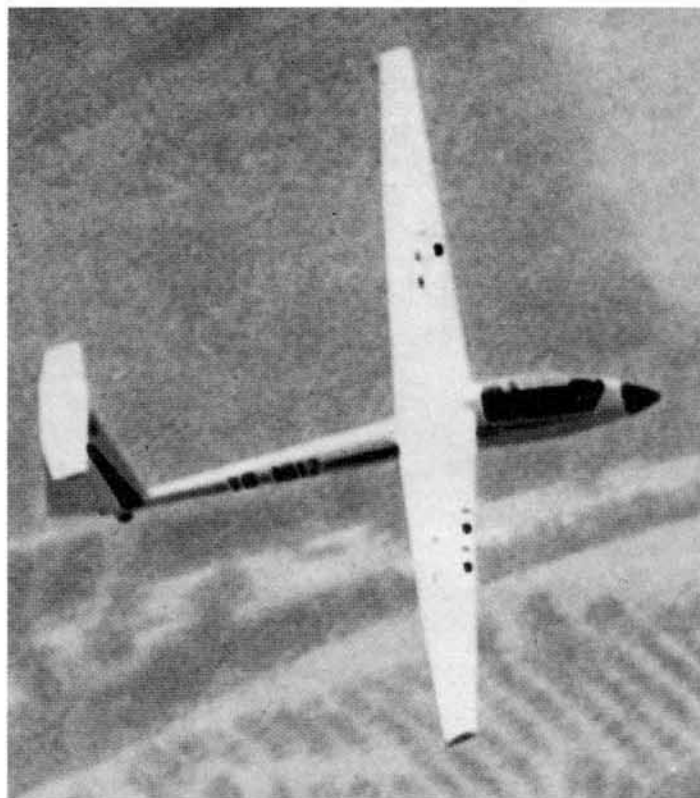


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