free flight • vol libre

1/85
Jan-Feb

MUSINGS

I've written to express my concerns about flight safety. So have others, notably the Flight Training and Safety committee and Eric Newsome with his "Bumble" anecdotes. All have focused on flight safety because that's where most of our problems reside. However, this issue, I would like to direct your attention, interest and action to ground safety.

Every club works to attract new members to expand or to replace those who drift away. The result is that many people come to our rented, owned, or borrowed fields knowing little about aircraft, much less gliders. It has always bothered me the way visitors often wander around quite freely on runways and taxiways and into the buildings and hangars that are part of our club facilities. I don't mean to suggest that we should discourage visitors and potential new members — far from it. We need all the new blood we can get. But let's make sure that it is not real blood; let's be sure that the hazards present in our ground operations have safeguards. Ground safety is just as important as air safety.

I'm not smart enough, nor does Tony have enough space to allow a listing of all the ground hazards and their answers. What I'd like to do is ramble on a bit with some questions that are speculative. However, if they touch a nerve that causes action or further assessment, they will have done their job. Let's go!

Are there fences and warning signs, preferably around the whole field that will control visitors (people, game or farm animals) and, if possible, advise or warn them of hazards? Does your club have liability coverage on the entire ground facility? Fire insurance?

Do you have a separate hangar for towplanes to minimize fleet fire hazard? Are your hangars free of explosion sources such as paints, solvents, non-explosion proof motors or wiring? If you store power aircraft with gliders, has your club thought through and accepted the relative cost of separate hangars vs the loss of aircraft and avenue? Or a negligence suit for loss of pleasure and enjoyment?

Are there Halon fire extinguishers in all powered aircraft, hangars, and at all refueling stations? Why Halon? It leaves no residue; it is relatively non-toxic in confined areas, but above all it is **very** effective.

Does your club have a disaster plan to cope with a serious accident, fire or health incident? If you have a plan, does anyone remember what to do? Have you ever practised? Is the plan still valid? Does everything work? For example, asbestos fire blankets are a hazard in themselves and they are often held together with cotton yarn that can rot. Do you have a working first aid kit — on the flight line? — in the club house? How many in your club are trained in CPR — is this a good subject for a winter course?

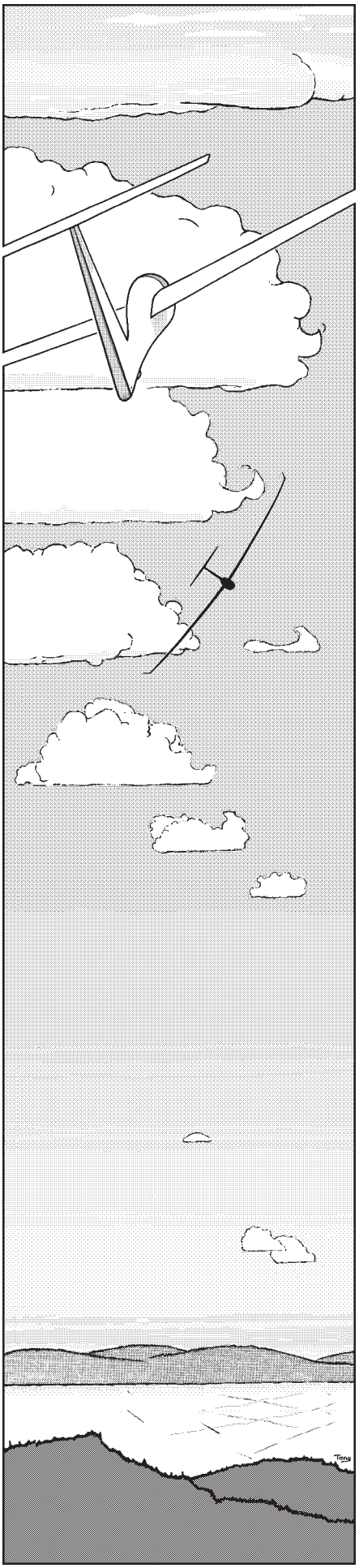
How is the safety in your club house/storage/work areas? Are wood stoves far enough away from walls to prevent fire? Is there a Halon fire extinguisher next to all stoves, including those in the kitchen? Are solvents and paints stored away from sparks of any kind and open flame? Are vehicle storage areas/garages well ventilated, especially when running engines? Gasoline and many other solvents are fearsome, violent, unpredictable explosives when mixed the right proportion with air and a spark. Engine exhaust fumes are rich in odourless carbon monoxide and dioxide, prime ingredients for the infinite final glide.

How high are your standards for club ground equipment? There are some who feel that the only thing that matters is the glider or towplane; maintenance of tractors/mowers/buildings/fences/runways and other facility equipment are deemed irrelevant, unworthy of their notice. Then they and we wonder why equipment never works or why it takes so long to take off from long wet grass with soft tires, or why newcomers never come back to the tacky facility or aircraft (when did you last wax, wash or refurbish your club aircraft?).

Had enough? Probably, I suspect. But seriously folks, ground safety and standards are just as important as air safety and standards. They are immediately visible to any visitor. First impressions are important and we all know that the joy of flight isn't the only thing that turns people on. Aircraft and ground equipment that are clean and obviously well-maintained and operated are confidence-builders as well as indicators of competence to visitors and prospective members. I read an article the other day that claimed that today's "Yuppy" (Young Urban Professional) is oriented and trained to expect instant gratification. These are the people who have the time, youth, money and potential to become sailplane pilots and soar. Do we have the environment, the facilities to attract and hold them and others? When we have their attention, how do we instruct them in our modern clean, well-maintained equipment? Ian and his committee can establish the finest training standards, curriculum and procedures in the world. They will be useless if the active instructors are not current or consistent practitioners of the art. When did you, venerable and venerated CFI, last hold a renewal course for all of your instructors? Or when — heavy, long-in-the-beak and tattered-feather class 1 instructor — did you actually instruct in the air? Do we discourage and drive students away because of inconsistent, confusing, contradictory instruction? Some instructors say we do. What do you think? Talk it out with your CFI.

There has been no special reason for my questions other than those stated. I have tried to reflect the opinions of many. Write if you feel comment is necessary as rational debate never hurts. Above all, let's improve. In the meantime have a pleasant winter. Let's all plan for good weather, great flying and lots of fun in 1985. Our AGM is in Toronto on March 23 and 24; I hope I'll see you there. We plan to have an interesting program and principal speaker. I also hope that many of our founding members will be there to give us the inspiration for a great 40th year and all that follows. Please do not forget that the following AGM and EXPO '86 are in Vancouver. Plan for both.

If you can, with snow and all that, fly; then fly safely, fly well and fly often.



free flight • vol libre

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1/85 Jan-Feb

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

Cover

2-32 head on. The shot was taken while standing on a promontory of an escarpment above Calistoga in the Napa valley in California. It may seem like the 2-32 does not have many options in landing spots at the moment, but there is over 2000 feet of "freeboard" behind the photographer. Photo by Tony Burton

INTERNATIONAL MEETING OF SOARING COACHES

Ian Oldaker
Chairman, Flight Training and Safety committee

In mid-October a meeting was held at the Dutch National Sporting Centre at Papendal near Arnhem. For three days, national coaches (chairmen of committees, or "representatives", etc.) met under the chairmanship of Bill Scull, Director of Operations for the British Gliding Association, to discuss safety and training in gliding and to share ideas for improving communications so that we can all benefit from the programs being developed in each country.

Canada was represented by Alex Krieger (in Europe on other business but he made it to the meeting) and myself. Countries represented included Sweden, Finland, Norway, Denmark, Germany (FRG), France, Australia, USA and UK.

The Dutch were gracious hosts and provided excellent facilities. They made several presentations on their national programs including one on liability insurance. Below I shall try to give a bit of the flavour of the meeting and summaries of the discussions.

INSTRUCTOR TRAINING

In 1984 a new system came into force in Holland as part of a deregulation policy, and in another year or so all aspects of training will be fully governed by the Royal Dutch Flying Association. The final licence endorsement will remain (as in Canada) with the Authority. To qualify as an instructor, a pilot must be 20 years old, have passed an exam, flown 500 (winch) flights and have over 70 hours, at which point instructor training can start with a mentor. The mentor must have at least three years experience and must train the pilot to a set syllabus. After about 25 flights, a coach from another club checks progress. A coach has a minimum of six years as an instructor and can only be appointed by the Association after having trained three pilots to be instructors. He also has to be nominated by his club. After the trainee is fully trained (includes MacCready flying, X-C flying, etc.), the candidate is examined by the Ministry of Transport (next year this may be done also by the Association).

The advantages of the above, in my view, are that several people are involved in the training, experiences are shared between clubs, and the discussion between mentors and coaches is an advantage in passing the candidate. It may seem a tough requirement to be 20 and have over 500 flights, but we should also note that the Dutch accident rate is the lowest of all the countries represented at this meeting. The fact that their Association has been able to negotiate deregulation is to a large extent due to the careful and thorough training system that they have developed over the years.

Other countries mentioned their requirements — they make interesting comparisons:

France	200 hours before attending a one-month course
Australia	75 hours before being trained on a 5-day course to be an "assistant". Two more levels are "qualified" and "senior".
Germany	150 hours and Silver C and cross-country experience. Use mentor system. Written and flight tests are required before a three week course which includes 60 hours of ground school. Final exam and licence given after teaching three ab-initio students.
USA	Requirements almost non-existent. Commercial rating requires 125 flights and 20 hours. Written test only.
Denmark	Assistant plus full ratings; require 100 hours, 200 hours respectively, eight and nine-day courses.

continued on page 23

The SOARING ASSOCIATION OF CANADA

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

free flight is the Association's official journal.

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

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

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

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

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

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

vol libre est le journal officiel de l'ASSOCIATION.

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

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

L'exactitude des articles publiés est la responsabilité des auteurs et ne saurait en aucun cas engager celle de la revue vol libre, ni celle de l'ACVV ni refléter leurs idées.

Toute correspondance faisant l'objet d'un sujet personnel devra être adressé au directeur régional dont le nom apparait dans cette revue.

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

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

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

EDITOR
Tony Burton (403) 625-4563
Box 1916
Claresholm, Alberta T0L 0T0
Address for courier service:
c/o Claresholm Local Press
Claresholm, Alberta

COMMERCIAL ADVERTISING
National Office (613) 232-1243

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OPINIONS

TRAILER STABILITY

If your car has radial tires, put them on the trailer too. The Kestrel trailer with radials (and the other fixes described in my article in 4/84) is completely happy behind my old Rover at 100 km/h. You can pick up used but good radials at car wreckers for $40 a pair; check the sidewalls though. It's a cheaper fix than a sway bar.

John Firth

LIES MY VARIO TOLD ME

Last season I had an interesting, but minor incident and the recounting thereof may save somebody a case of instant cardiac failure.

In addition to the hobby of soaring, I am also a radio amateur. On this particular day I was using a hand-held radio transceiver to communicate briefly with a distant repeater station. After the transmission I glanced at the instrument panel to note with horror (see above re heart failure) that my Cambridge TE vario was pinned at over 1000 ft/min down. After the initial shock had worn off I tapped the face of the instrument and the needle swung to its more usual position (ie. 200 down — I spend my days in sink). I then wondered if the radio transmission had caused this malfunction. A brief click of the "transmit" button with the radio about a foot from the panel elicited the down response. The unshielded electric vario, with attendant wiring to an audio unit, was certainly picking up radio energy, rectifying it somewhere in its electronic innards, and presenting the result to the meter movement of the vario.

Enough said — check your electronics for possible interference from radio operation. Just like in the real big airplanes.

Don Clarke
York Soaring

John Firth, our vario expert, says that the early versions of the Cambridge Mk-IV could be sensitive due to the glider radio transmitter, and as more powerful transmitters come into use, no amount of rerouting of wiring will help. A remedy for the problem is available; contact him for information. John says the new models are completely insensitive to interference, and proved it to me by keying a transmitter with its antenna right next to the vario. But Don is right, the spaghetti of wiring behind many panels can produce "interesting" effects. Proper design or shielding of instruments and of wires carrying low level signals is a must. Editor.

A RESPONSE TO THE INSURANCE QUESTIONNAIRE

Dear Mr. Wooller,

Many of your comments [on the questionnaire] are true, in fact one might say self-evident. And God knows, Canadians understand better than anyone else the value of insurance (being, by reputation, the world's best customers).

As you can see from my response, I wish to protect my investment from the dubious flying habits of my two partners, and I expect they have much the same attitude! My problem is the exhorbitant cost of insuring our [low value] club aircraft at such a high premium, with such a high deductible that we could roll up the glider every two years and break even. At our club general meeting I shall recommend that we charge members at a similar rate, invest the proceeds, screw down our operating rules to reduce the risks as much as possible, and hope for the best. At present, insurance is by far the highest single expense at Bluenose. Our record has been far from blameless in the past, but the one member responsible for three of our four accidents has left the club and we now teach cross-country soaring — this previous lack being responsible for the fourth.

Bob Carlson's comments in the last free flight point out the lack of flexibility in your company's administration of the policy. For goodness sake, set up your computer so that you can respond to club's payments by a simple note saying A/C Reg # ... covered, individuals ... covered; all others not covered and get it in the mail by May 1st. If all understand this and are notified of the premiums and the deadlines in time they have no excuse. We are after all paying 1/4 million and as such should represent a valuable customer.

I can understand why, according to Carlson's comments, others are "sniffing" for our business — in fact the SAC Insurance committee should obtain three quotes from the insurance brokers each year, publish the terms, and state that this or that company has been awarded the contract. I agree that we cannot expect service if we change every year if the difference is minimal but at the moment, we have absolutely no measure whatever of the value for money we receive. If I'm way off in this, please let me know.

Dick Vine
Bluenose Soaring

continued on page 19

REAL PILOTS EAT RATTLESNAKE

& FLY UPSIDE DOWN

The soaring season in Edmonton, Alberta, Canada, is not famous for its extended duration. Frustrated by the unusually short 1984 season, four instructors from the Edmonton Soaring Club decided that the time had come for decisive action to extend the season and their own flying horizons by attending Les Horvath's sailplane aerobatic program at Estrella.

Dave Runyan
Chief Flying Instructor
Edmonton Soaring Club

This is the brief story of our pilgrimage. It is intended to entertain and to provide the reader with sufficient detail to whet his appetite for aerobatics. *It is not intended to teach anyone sailplane aerobatics.* As will become obvious, trying to learn aerobatics by reading, or by trial and error, is about as smart as taking a correspondence course in the manufacture of nitroglycerine – you'll probably not have to worry about taking the final exam.

We had planned to economize by driving to Arizona, and the trip was scheduled for mid-October to minimize the chance of encountering bad weather en route. This precaution failed completely, as a very respectable early blizzard hammered all of Alberta the day before our departure. It was moving south, too, right along our intended route.

In the interest of developing an aerobatic program in the Province of Alberta, we were provided with sufficient emergency funds by the Alberta Soaring Council to make flying down possible. Two of us were also receiving government scholarship as coaches developing new skills. The involvement of the Public Purse, and a good-natured rivalry among the group members, led to a certain pressure not to fail the course; and especially not in any sudden, dramatic fashion.

Estrella Sailport is located about 30 miles south of Phoenix, and 7 miles west of the very small town of Maricopa, a centre for cotton-growing. The reason for our visit was such that we did not really mind the isolation and relative barrenness of the locale. We had not come as tourists, but as students — to sit at the feet of the Master and learn to fly upside down.

Having stayed the night in Kingman, Arizona, we rolled into the gliding field on Monday just at the 11 am start time of our first lesson. Baggage was promptly chucked into the spartan but completely equipped bunkhouse, and we sat down to "ground school" in an outdoor pavilion, trying hard not to grin too much while basking in lovely warm sunshine. My compatriots found less trouble in restraining their smiles than I did, as they had the previous night discovered a slight snoring problem of mine, which I had not wished to worry them about in advance. I felt completely refreshed.

Les Horvath is a most impressive instructor, both in technique and in the enthusiasm he exudes. He immediately demoralized everyone by announcing that we would be doing a great deal of inverted flight, and that he would expect very high standards of precision and smoothness in all of our maneuvers. He emphasized that we were to release the controls immediately if told to do so, to avoid interfering with his attempts to save our young lives after we had got into some colossal mess. I was sure that I could earn high marks in both the colossal mess and the releasing of controls department. Les also explained that we were probably in the habit of flying the aerotow in an incorrect fashion, ie. by the horizon. Saying this to four glider instructors who fancied themselves quite proficient at flying behind a towplane seemed a bit unreasonable. It turned out that the Estrella horizon is quite lumpy.

Fate did not demand that I be first to actually demonstrate my ineptitude, but it awaited my turn patiently enough. The first maneuver we tried in the air was the loop, which I had done under supervision a few times. The loop is not too intimidating, and it served to introduce the standard entry to an aerobatic maneuver in a sailplane. This consisted of a dive at a 45 degree angle, held until the airspeed reached the desired value for the entry; in this case, 100 knots. At this point, the pilot directs his attention to the accelerometer, the "G" meter, and commences a pull-up at 4 G's. This means that you have effectively 4 times the pull of gravity on the body, and is not unpleasant except for a tendency for the face to sag. As the sailplane goes "over the top", the pull on the stick is relaxed so that the loop remains round, and is not tightened into an oval shape. Smooth back pressure is again applied to 4 G's, and the plane dives through the bottom, completing the circle. We all had a tendency to release back pressure too soon, with resulting loss of speed at the top of the loop. I was pleasantly surprised that, once 4 G's had been attained by reference to the accelerometer, it was not too difficult to attend to other things, maintaining the G's by the seat of the pants (literally).

Some find peace as a rural resider
Or silence as a sailboat rider
But to really get quiet
You'll just have to try it —
The top of a loop in a glider

Les was as good as his word, and the very next maneuver was an entry to inverted flight, the "easy" way, off the top of the loop. As the nose approached the horizon (coming down), he moved the stick forward to check the descent, and we were flying upside down. I had been told to hold my shoulder straps with both hands, and not touch the controls. It's a damn good thing. The initial impression is that one will fall through the canopy, and only by force of will can the novice cease clutching the straps and grasp the stick when finally told to do so. The problem of the "Other Hand" now surfaced. To my horror, I found my left hand lying on the harness quick-release instead of exerting a death-grip on the spoiler lever as we had been told. As I willed it gingerly to its proper place, I resolved to cut it off if it ever exhibited such behaviour again. I had the dubious distinction of being the only one of the four of us who flew from the back seat, owing to my weight, but it was reassuring to see Les ahead of me, completely at his ease.

Inverted flight demonstrated vividly how one could have a very bad experience if trying to learn on their own. At first, I was unable to concentrate on anything but the novelty of being upside down in an airplane. Only after practice was I able to control airspeed, monitor altitude, locate myself in relation to the field, watch for traffic, and thermal (just kidding).

A more fundamental problem was the unexpected nose-high attitude while inverted. A pilot experimenting by himself would be unlikely to realize in advance that the sailplane flies this way inverted: that is, with the nose high above the horizon, or very "low" as seen by the upside-down pilot. The consequence of not pushing the stick firmly forward to maintain that attitude was an immediate and precipitous increase in airspeed. If one were to then panic and follow the initial impulse to "pull-through" as from a loop, one would probably die in an airplane with no wings. To steel myself to push forward to slow the plane (pulling even more negative G's against the harness) was all I could manage, even with Les' calm voice encouraging me. Combine all this with the fact that on some days there was moderate thermal turbulence, and you have a really stimulating ride.

The thing I thought would be difficult — turning while inverted — was relatively easy. This involved using the stick and rudder in a cross-coordinated manner, with the stick being pushed "away" from the desired direction of turn, and the rudder pedals being used "normally" in reference to the desired direction. I did not mention this pleasant discovery to my fellow students, as comments concerning the advantages of never having learned proper normal coordination would have been inevitable.

In subsequent lessons we covered the split-S (pull through from inverted), the half-roll to inverted, the half-roll from inverted, the aileron roll, and the Cuban-8. Speed control was always a nagging problem, as it was easy to become caught up in the intricacies of performing seemingly unrelated tasks with the rudder and ailerons, and forget to keep the stick forward. We all experienced the "short-arm" syndrome at one time or another. This is the tendency to pull the arm toward the body when under stress and G-loads, resulting in less than full aileron or elevator deflection even when the pilot feels he has the stick against the stop. We learned to tense our neck and upper body muscles under positive G to avoid blood draining from our heads, and to relax them (!) under negative G.

On Wednesday, we were all turned over to Les' assistant, Nancy Blank, to be schooled in the art of the full roll. Les had taught the half roll to inverted, inverted flight, and the half roll back to normal flight. Putting these together smoothly should theoretically result in a full aileron roll. I cannot adequately cover all of the technique here, but the roll is certainly a demanding maneuver, especially if one is to maintain a straight course while doing it. On my first roll with Nancy as instructor, I was treated to the unnerving sight of her hair standing on end! I am sure it was only the negative G. Nancy gave us tips such as no aerobatics in the rain (it's impossible to maintain inverted flight), or with a poor horizon.

Thursday brought the return of Mr. Horvath, who promptly announced that we must now prove to him that we were safe to solo in his airplanes. I was a nervous wreck. On my last dual of the day, I got a chance to thermal awhile and relax, and it finally started coming together. Upon landing Les said, "Rest for half an hour, then have a go," and walked away. I was tempted to rest for considerably longer than that. When the time came, I found that by saying, "Well, let's move the plane out onto the runway" very slowly and deliberately, I was able to avoid choking on the words.

Once on tow, everything was fine. After release, and a short pause for reflection, I put the nose down, aimed at a cactus, and hung on for 100 knots. To make a long story short, I did all the maneuvers we had been taught, and found that once each had begun, there was a pleasant sense of commitment, and everything occurred almost automatically. We had apparently been taught well. Party time! We had already decided that real pilots flew upside down, drank Coors, and ate rattlesnake.

Our first flush of success was tempered on Friday and Saturday by the discovery of just how difficult it is to put these maneuvers together smoothly, with no pause between each for getting the heart rate down. We were quickly disabused of any illusions that we were hotshots, as there was a veritable epidemic of the old "short-arm" and other illnesses. We were shown a film shot over the head of a passenger in the front seat, with Les flying from the back. Watching the whole world go topsy-turvy, while the yaw string just lay there, was a humbling experience.

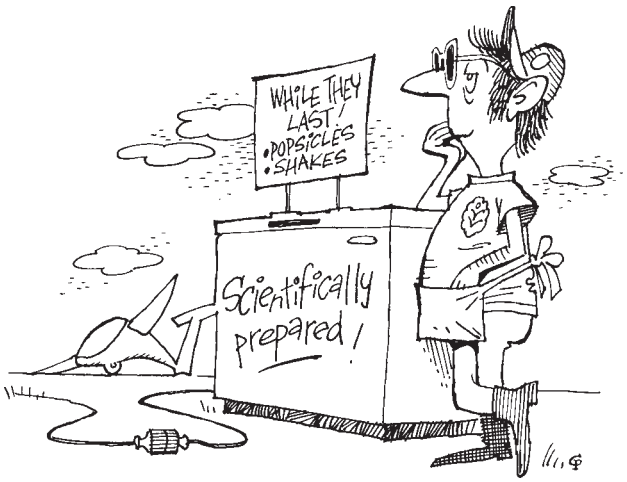
In conclusion, I wish to caution that through this course we merely attained sufficient skills to be safe in practising the basic maneuvers, while building our time and confidence. When that has occurred, perhaps we will be fortunate enough to progress to the Intermediate or Advanced courses. What else did we come away with from this course? A very healthy attitude toward acro, for one thing. Acro is not only for high-timers, but would make better pilots of most of us. It must, however, be approached seriously, under experienced supervision, and in proper equipment. We were given a step-by-step methodology for safely introducing ourselves to acro in other aerobatically rated sailplanes also.

Best of all, we rediscovered the thrill of being students again, and of being completely absorbed in the stimulating process of learning. Having been shown, by Les and Nancy, instructional professionalism of the highest order, we hope we have taken the first tiny step toward an aerobatic program in Alberta that will develop safer pilots, and add a rich new dimension to our soaring. □

Post-script: The other three ESC instructors that took the course with Dave were Andrew Jackson, Simon Mackintosh and Dave Lacy.

IFR PROCEDURES

This little fable should give you some food for thought



Phil Thorndyke

illustrations by
Gil Parcell

Thanks to Lloyd Bungey, who found this story for us in WIND & WINGS, 3rd printing, September 1975.

Of the many skills demanded of the serious glider pilot, a knowledge of IFR procedures is one of the most useful. Over the years, a wealth of information has come down to us concerning this subject, not the least valuable of which is the meaning of the initials. IFR, of course, stands for In-Flight-Refreshment.

In the earliest days of gliding, In-Flight-Refreshment training was hard to come by. With the bungee launch from a 30 foot hill, the hapless aviator hardly had time to peel a banana before splintering to a stop. However, as equipment and soaring techniques improved, the store of data on IFR procedures increased. A milestone was reached in 1914 when Helmut Steurer was able to consume an entire apple during a slope soaring flight. The hazards of IFR were demonstrated on this same flight when Steurer hooked a wing tip during a re-supply pass at the apple tree.

During the 1920s, a feverish development of IFR procedures occurred. Numerous exhaustive tests proved the infeasibility of such foodstuffs as ice cream, watermelon and pomegranates. By trial and error, statistical analysis, and scientific deduction, wrapped candy was established as an airworthy snack. Logbook entries made during the tests indicate that candy wrappers were no easier to remove in those days than they are now, and it is significant that scientific papers dealing with recovery from unusual attitudes flourished during this same period. All of the IFR test gliders were open cockpit designs, ruling out cotton candy, and it is a curiosity that in spite of today's enclosed cockpits, there is apparently a blind adherence to tradition, for one never sees a pilot carrying cotton candy aboard a sailplane.

Development of IFR procedures slacked off somewhat during the early 1930s, but nonetheless, there were a few significant developments. Merton Gnepser carried a quart of chocolate milk to 23,000 feet in a wave, and following a descent through the rotor, discovered the chocolate milkshake. Rolf Resnik followed suit by carrying a carton of orange juice to 27,000 feet and discovered the popsicle. Not to be outdone, Harold Veeble placed 2 gallons of apple cider in the coldest spot of the aft fuselage and discovered the flat spin.

In the years that followed, experimentation showed that for severe turbulence, eating oranges provided the pilot with a non-slip grip on the stick. The opening of a carbonated beverage container under these same conditions was found to produce a non-slip cockpit, with the combined advantage of evaporative cooling.

By the end of World War II, most of the dangers of IFR had been documented, ranging from the minor irritations of popping a large piece of taffy into one's mouth just prior to seeing the ground crew take the wrong road, to the more insidious dangers of licorice whiplash. Inadvertent connection of the drinking water tube to the electric variometer and subsequent effects on instrument sensitivity was also studied carefully.

Of recent work accomplished in the field of IFR, that of Dr. Hudspeth Nangle, is of paramount importance to glider pilots. The following information is taken from his Technical Note entitled, *"An Investigation of Sub-Surface Thermoplastic Flow and Cyclic Creep in Non-homogenous Isotropic Chocolate Bars Subjected to an Integrated Rayleigh Load Spectrum."* In this work, Dr. Nangle states:

> Following exposure to solar heating, candy bars subjected to high G loads may suffer stratification of ingredients. The effects of stratification may be minimized by placing the plane of the bar normal to the acceleration vector, so that if stratification occurs, any random bite has a high probability of containing all of the initial ingredients. However, when the acceleration vector lies along the axis of the bar, transverse stratification may occur. In this case, a bite may contain only one ingredient, resulting in unpredictable facial contortions. Successive occurrences of this phenomenon may cause wrinkling of the nose, which disrupts the breeding of the fatal Mesopotamian flu virus. Since many flu viruses are on the endangered species list, it is of critical importance to their survival for glider pilots to properly align their candy bars before attempting loops or steep turns."

As a direct result of these findings, an airworthiness directive will be issued requiring mandatory replacement of candy bars subjected to loads in excess of 3 G.

Also of current interest is the following excerpt from the February issue of the Dirigible Navigator's Digest:

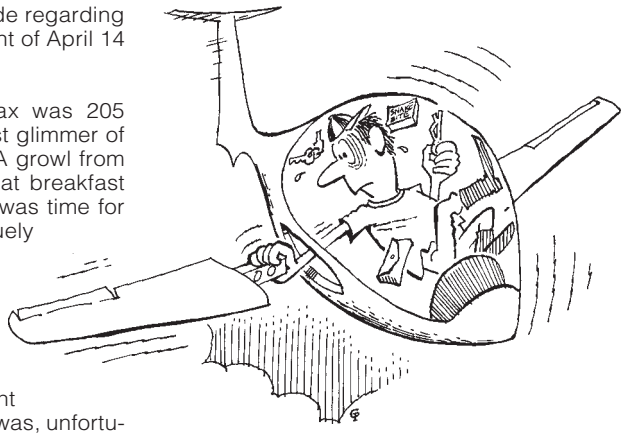
> ... magnetic disturbances affecting the compass were traced to the foil wrapped candy bar placed under the instrument panel. The pilot was found guilty of negligence and fined $500."

As a result of this event, a confection licence is now required, renewable yearly for $16. The revenue thus collected from pilots will go to the C.P.F.S.O.F. *[Committee to Promote Flying Safety by Outlawing Flight, ed].* Furthermore, two years hence all sailplanes must be equipped with magnetic candy wrapper warning devices.

To point out the importance of adhering to proper IFR procedures, the following case history is presented.

Max S — was widely known as one of those gifted pilots able to fly hither and yon on a day when most others were scratching to stay in the air. There is little doubt that

Max would have achieved world fame were it not for his profound ineptitude regarding In-Flight-Refreshment. His flight of April 14 is typical:



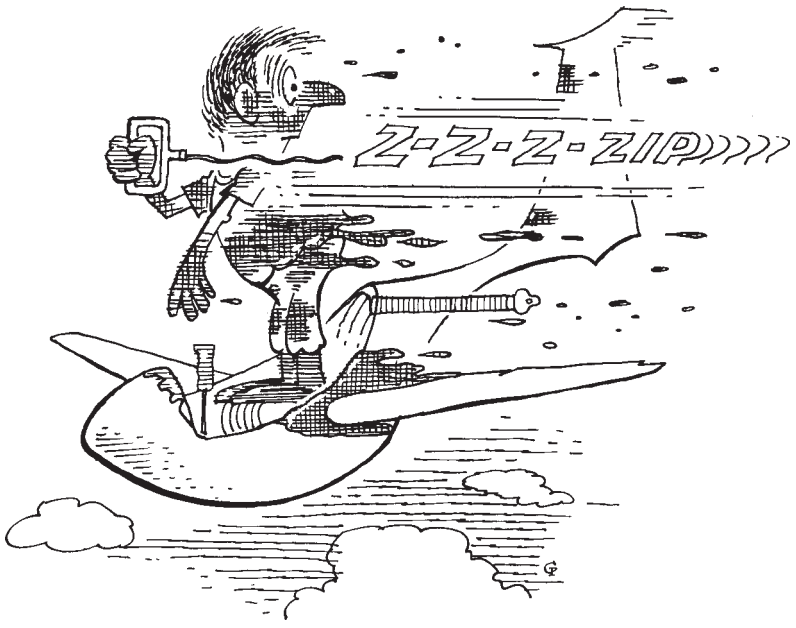
Two hours after release, Max was 205 miles out on course as the first glimmer of dawn lit the eastern horizon. A growl from his stomach reminded him that breakfast had been 4 hours ago and it was time for a little quick energy. Max vaguely remembered grabbing a couple of candy bars prior to takeoff and was trying to recall where he put them, when a bulge in his right pants pocket caught his eye. The top of the pocket was, unfortunately, sealed by the parachute leg harness and the lap belt.

Up to this point, his hunger had been a mere twinge, but the inaccessible nearness of the food created a gnawing pain. Max pondered the situation as the sun cleared the horizon and began to warm the cockpit. Thermals had been smooth so far, and Max unbuckled the seat belt and parachute leg clasp. Reaching into the pocket, he withdrew a snakebite kit and the case for his dark glasses. No candy bars. Max gritted his teeth, knowing that the search was reducing his flying efficiency. Unbuckling the chute harness of his left leg, he came up with a pen knife and the keys to the crew car. Were it not for the FAI rules concerning badge flight, and the low drag profile of his ship, it might be said that Max was beside himself. Tearing open the chute chest buckle, Max angrily thrust his hand into his shirt pocket and came up with three milk chocolate bars and the main wing pin safeties ... the ability of a small wire clip to eliminate hunger, when viewed under the appropriate conditions, is remarkable.

By inventing three anatomically impossible positions, Max finally managed to install the safeties, but not before making several recoveries from diving turns and incipient stalls. Blundering into a thermal, he gratefully centred it. As his trembling limbs gradually came under control again and the ship climbed, Max began to breathe easier. Things having settled down somewhat, Max decided that after all that trouble, he may as well eat the candy bars.

The bars had been hot in Max' shirt pocket, and they were now suspiciously soft. Instead of employing the "toothpaste" method preferred by experienced pilots, he carefully unpeeled one blob and found himself holding a piece of chocolate-plated paper. He repeated the process with a second bar with the same results. It was as he sat pondering what to do with the mess that he hit the turbulence.

A crunching jolt on the top of the head and a strange floating sensation reminded Max that he had neglected to rebuckle his seat belt. As he was accomplishing this, the nose dropped through in a sharp stall. The two candy wrappers, each with a full complement of Hershey's best, plastered themselves to the top of the canopy, and as the nose pitched down, painted two heavy brown stripes the full length of the canopy. Due to a slightly delayed recovery, a 2.5 G pull-up was made, at which point the wrappers made the oblique transition from plexiglass to instrument panel, painting out most of the instrument faces as they slithered floorward.



Max tried to wipe the chocolate off the plex with his sleeve, but only managed to smear it. As the sun heated the dark candy, it flowed like syrup until the outside world was viewed through a thin, sticky, yellow-brown film of molten chocolate. Distracted, Max allowed his speed to build up dangerously close to Vne, and it was at this point that he encountered the legendary "Thirty-Foot-per-Second Gust" ... downwards ... and all the neglected cleaning and vacuuming jobs caught up with Max in that instant. From the inside of the ship rose the fine particulate collection of three years of flying: sand, dust, dirt, dried weeds, leaves, frayed rope fibres, bits of paper, yaw string scraps, lint, decayed foam rubber, cookie crumbs, metal shavings, paint chips; all rose and were trapped by the sticky film of chocolate covering the canopy and instruments.

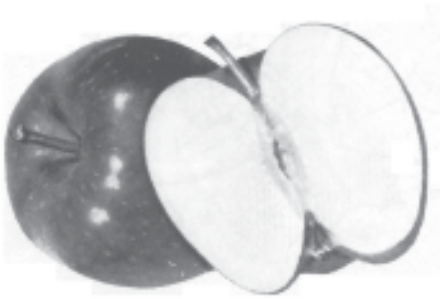
The situation had now gone from irritating to dangerous. Max couldn't see out. He couldn't see his instruments. Turbulence was bouncing him about mercilessly. The airstream hiss grew to a roar. Max decided the time had come to abandon ship. He had thought only a little about bailing out in the past, but had decided on a procedure which was risky but simple. Jettisoning the canopy, Max unlatched his seat belt, stood up in the blast of air, and pulled the ripcord. There was a sharp crack, his arms and shoulders were yanked backward, and Max was standing there bolt upright in the cockpit at 9000 feet with no parachute. He had forgotten to refasten the parachute buckles.

For the first time since he thought of those miserable candy bars, luck smiled on Max. Before he could ponder his precarious position, the glider and its vertical occupant struck an up-gust which buckled his knees and plunked him right back down into the cockpit. It then dawned on him that, with the canopy gone, he could see well enough to fly. With a white-knuckled grip on the stick, Max spiralled rapidly down towards a good-looking clear patch next to a road.

Enter the third — and until now forgotten — candy bar. This bar had fallen to the side, absorbing the energy of the sun, and having its wrapper torn by the glider's wild gyrations; it sat waiting, waiting to deliver the final crippling blow commanded by the Great Glider Gremlin. Max set up his approach. The bar waited. Max glided in on final. He wasn't about to release his left-handed grip on the seat belt, and without benefit of flaps, he was hot on touchdown. Running water had eroded a rut across the landing path, and the ship bounced sharply. The candy bar leaped up and was caught in the rushing airstream; Max caught just a glimpse of the approaching words, "ARTIFICIAL FLAV..." and the world turned chocolate...

As he sat amongst the shards of chocolate fibreglass, 390 miles out, at 8:30 in the morning, looking at dust devils and cloud streets stretching as far as the eye could see, Max began to realize the true importance of In-Flight Refreshment procedures... □

THE ONE MAN FLY-IN BREAKFAST



Seth Schlifer
from York Soaring's "Soar Tales"

Burlington Airpark has got to be one of the more interesting little airports in the Southern Ontario region. Antiques, homebuilts, and classics along with the usual collection of modern day "spam cans" are tied down here, there, and everywhere. All around the maintenance hangars, the ground is littered with tortured, twisted results of other people's mistakes, reminders that the ground is a hard place indeed. I am thinking those people must really have been idiots to think that they could fly, for any flyer worth the title couldn't possibly do that to an airplane.

We were here, Don Band and I, to ferry the club's 1-23 and the PA-12 back to the gliderport on this sunny early Saturday morning and, oh, what a beautiful day. As Don went about inspecting the towplane, I did the same on the glider.

Our inspections completed and each of us satisfied that all was well with our respective mounts, we positioned the glider on runway 15 and launched into a crosswind from the right of 20 miles per hour or so. Shortly after crossing the creek just south of the field we did an about face and set sail for good ol' York Soaring, bumping through some turbulence as we did. That turbulence is caused when the wind from the southwest spills over the Niagara escarpment. It's just one of the ways you can tell that you're at Burlington airport. It's pretty rare that you can tow out of Burlington without banging your head on the canopy once or twice on the way. Don took a little detour to the east so we could fly over the Milton fairground, and as I looked down I could see that they were holding an old-fashioned steam tractor show of some kind, with great plumes of smoke and steam issuing forth from the many smokestacks and funnels below. Thanks Don, great show!

As we droned along northwestward, I began to smirk that special smirk, which I save for occasions such as this. I love to fly these 40 mile ferry flights and I love very much to fly this airplane, and since this morning I'm doing both at once and not being charged for it, well you can see that I simply must smirk!

This plane is magic — it must be — it was just the week before that "KJT" and I took off for a five hour attempt and made it. What's so magic about that you ask? Well, I launched early in the morning as soon as I figured I could stay up. Although the lift was weak, it was early in the day and bound to improve. Little did I know that I took off at the best part of the day, because the lift got weaker as the day went on. The last two hours of the flight were spent in a sky as grey as grey is grey, and it was a tired and disbelieving glider pilot who climbed out of the cockpit 5 hours and 17 minutes after takeoff. Half an hour later it began to drizzle!

To this day, "KJT" does little favours for me like that and so the airplane must be magic.

In the distance up ahead I see Belwood Lake which is 7 miles southeast of York Soaring and so I begin to figure out when to release in order to let Don get there fast and begin towing. "KJT" is one airplane which I know pretty well and I know just how far it will glide for any given height loss. I've flown it quite a bit you see, and so I begin to figure. Let's see now — the altimeter reads 3000 feet, but I'm not really 3000 feet above the ground because before takeoff I set the altimeter for the elevation at Burlington which is 640 feet asl. Really I'm about 2500 feet above ground because Burlington is 900 feet lower than York Soaring.

Suddenly Don begins a slow climb, so I wait until we level off to figure my new point of release. As we climb, I think of other things as I watch the receding landscape slide by below. A couple of minutes later we levelled off and a look at the altimeter shows 3800 feet, and so I begin to figure again. A bit later we are at the proper distance, taking into account the crosswind and altitude and assuming that I will fly at 60 mph once I release, which I do. We were towing at 85 mph, so I pull up to turn the extra speed into a bit more altitude and then quickly level off to fly at 60 mph toward home. A short while later I am flying over Belwood Lake and looking down at the town of Belwood and the bridge across the lake. There are a few sailboats out on the west end of the lake. It's pretty stuff. I suddenly notice that instead of speeding off to the gliderport, Don has throttled back and is flying loose formation off my left. Come on Don, get over there fast and get towing! Why do you think I released so early? Oh well, I guess he's just having a bit of fun. Soon the Air Sailing club appears ahead, and as it slides by below I check the altimeter and grin at the accuracy with which I've set up this homeward glide. For it was going exactly as planned.

"KJT" gives a little twitch and tells me about an early morning thermal that we've stumbled upon. We try a few turns just for the heck of it, but I don't expect much because it's only 10:30 in the morning. We gain 50 feet or so and then lose it again and so I leave the thermal and head for home before I drift much further. I wouldn't want to have to land at Air Sailing after all. I point the nose toward home and fly a bit slower, 55 mph because as I circled in the thermal I drifted a bit. This slower speed will make up for that.

I suddenly find myself disoriented. Looking in the direction where York Soaring should be I see only farmland. A look behind my right shoulder reveals Air Sailing, so straight ahead I should see York Soaring. Left, right, no dice! This is silly, I've been flying here long enough not to get lost so close to home! This morning nothing looks familiar, I look further and further ahead, all the way to the horizon, squinting as I do. What the heck is that on the horizon? It's York's hangar, doors open and everything. No, it can't be, but look, there are the runways and the farmhouse, and the trailers, and ... it's York Soaring, way over there on the horizon! Looking straight down now it suddenly hits me that I'm lower than I thought. The ground is less than 300 feet below. With a critical eye I squint at the runway ahead and watch closely for a few seconds, trying to decide if I can make it straight in. A few seconds is all it takes to decide and immediately I bank over to the left and at the same time pop the spoilers open. The field below had been planted in hay which was now cut and lay arranged in rows. I can land between them.

Twenty seconds later "KJT" and I are down and stopped, a mile and a half short of home. Swinging the canopy open and stepping out (very sheepishly I may add) I began to pace the distance from the glider to the wooden fence ahead. Fifty paces is not close, but then again it's not very far. At the fence stood a lone apple tree, so I reached up and grabbed a couple the worms had overlooked and sat on the fence to think. After Don had levelled off at 3800 feet and I began to calculate my release point, I forgot that I was not really 3800 feet above ground. I completely forgot about the 900 feet elevation difference between Burlington and York Soaring! A little bit of aerial daydreaming is all it took. So that's why Don had been flying beside me, to see where I would land! I felt stupid, really stupid.

Macintosh apples have always been my favourite, and fresh off the tree they're the best, so sitting on the fence I munched on the bitter fruit and thought about idiots who think they can fly airplanes and thought about the mistakes that can be made. □

DIE WINDE

THE WINCH, AND WINCHING

Eric Durance
Windsor Gliding Club

illustrations by
Fritz Schreiner

Launch The pilot walks to his glider, parked left wing down, at the end of the runway. He enters the cockpit and begins the preflight check. That finished, he closes the canopy and shifts his attention to the man busily engaged in attaching a weak link to a rope on the end of the drag chute. The chute is already secured through a swivel to the thin, steel wire lying on the grass.

The wingman tips the glider over so its right wing rests on the ground and thirty-three hundred feet down the runway an engine quietly comes to life. The wingman holds up the weak link for inspection, the pilot notes the identification printed on its scabbard and, satisfied it's right for the ship, nods approval.

After connecting the towrope, the wingman verifies the hookup both visually and by tugging on the rope. He scrambles to his feet, straightens the yaw string, taps the ship affectionately on the nose, and mouths through the canopy, "You're on".

He positions himself at the right wingtip and inspects the runway and pattern airspace for traffic. Finding that all is clear, he raises his thumb and waits for the pilot's response.

The pilot has completed his inspection, and gives a thumbs-up for takeoff.

The wingman stoops down, grasps the wingtip firmly and proceeds to waggle the wing up and down. Silently the steel wire slithers through the grass until the slack is taken up then, straining against the weight of the ship, stops.

In case of any emergency the wingman would put the wingtip to the ground as a signal to halt the procedure, but he now levels the wing and holds it steady. After a moment's pause the glider leaps forward seemingly hurled by the wingman into the air.

As he watches the glider climb, the details of the only accident on winch tow in the club's history run through his mind. It happened during a training flight several seasons ago:

> "The winch engine stalled at the start of the tow, and the jerk introduced into the cable caused the glider to overrun the drag chute in such a way that the chute tangled in the wheel. The wing was held level, by the wind or by manipulation of the aileron control, and the winch operator restarted the tow without benefit of a new set of signals.
>
> The glider, then pulled from the wheel located behind the centre-of-gravity hook and with the weak link by-passed, shot almost straight up. The winch speed slacked off because of the tremendous load and the glider stalled at about 700 feet with an extreme attitude to the ground.
>
> The pilot in command barely managed to get the ship righted before it landed hard, with the wire still taut and the chute tangled in the wheel. There were minor injuries to the pilot, and the glider was damaged."

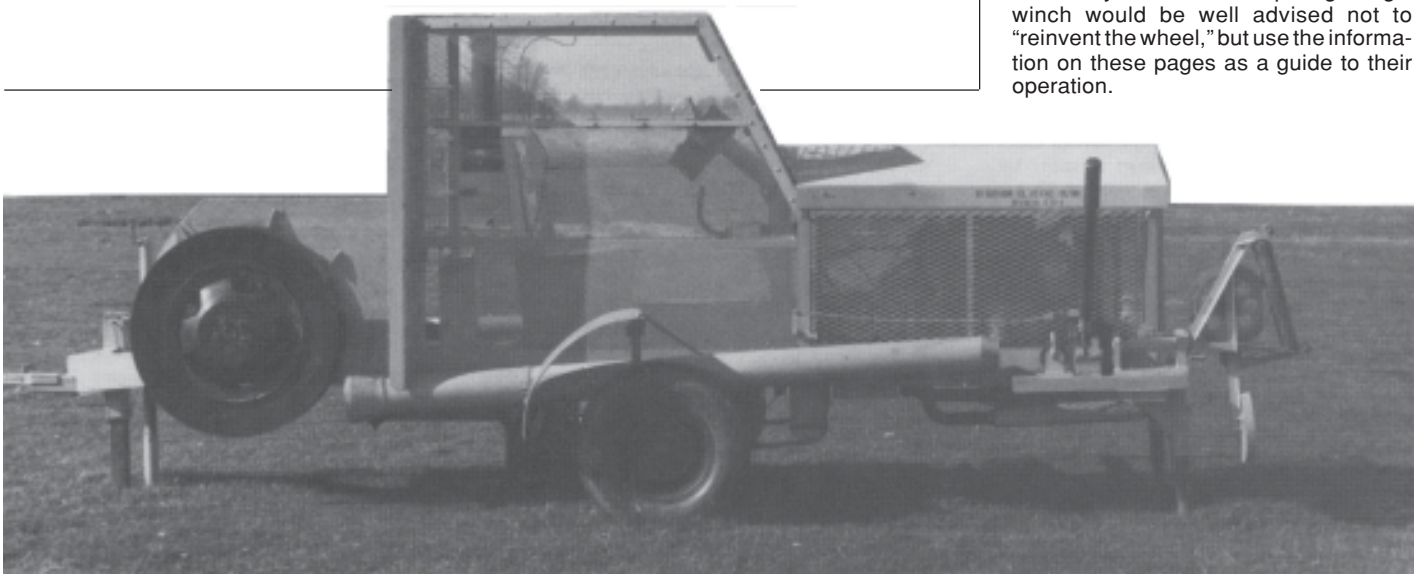
The wingman continues to watch admiringly as the glider climbs slowly at first and then faster until finally near the top it tapers off. He sees the glider separate from the cable — at 1400 feet he guesses — and then circle back over the runway as the drag chute opens and floats the cable down. Reluctantly he turns away, but can't hide his feeling of satisfaction. The silence, the hint of mystery, and the tradition surrounding this method of launching a glider fit in with the idea of soaring, he thinks. He is pleased that it is being preserved and perfected by his club...

The pilot on this flight having tugged his shoulder straps tight one last time and given the thumbs-up-for-take-off signal, holds the control stick slightly forward. He reaches flying speed about 30 feet down the runway and neutralizes the stick as the glider continues to accelerate and climb at a flat angle. At about 100 feet, he commences a gradual and smooth pull-back.

There has been some controversy in the club about this crucial maneuver and its effect on the launch. Some pilots commence the pull-back at an earlier point or restrict the rearward stick travel to a more moderate amount. He is prepared to acknowledge the need for variation because of differences in hook location, aircraft weight and balance, and individual pilot preference, but from his own experience at the winch end of the wire he knows it is imperative that the maneuver be smooth and definite.

The sooner the glider is silhouetted above the horizon the better the speed control by the winch operator is likely to be, but an overly aggressive attitude at low altitude is of concern in the event of a cable break. Nose down! is the instant pilot response should a break occur. Landing is then a routine straight-in, a quick 360 and in, or a shortened version of a normal circuit, depending on altitude.

Eric's contribution here is perhaps the longest article ever to appear in free flight. Over many years, the Windsor Gliding Club has fine-tuned its winch launching and winch design to the point where any other club anticipating using a winch would be well advised not to "reinvent the wheel," but use the information on these pages as a guide to their operation.



Eric Durance

Stick nearly back now, he feels the load come on as the ship heads skyward. Glancing out the side of the canopy, he observes the bending of the wing that always startles him. He remembers his first solo winch launch and how he failed to pull back on the stick at the critical time and ended up ignominiously bounding down the runway. The oldtimers said, "You just didn't want to leave the ground."

He also remembers a never-to-be-forgotten flight when he was towed too slowly he thought — and the glider stalled at 600 feet. "You didn't watch your airspeed and adjust the nose accordingly," they said that time.

And there was the surprise last summer when he hung on grimly while being towed extremely fast. "The pilot in command is responsible for pulling the release," they said when he complained.

He doesn't remember much about his presolo tows except that there seemed so little time to learn and he required double the usual fifty to solo. The techniques of drift correction in a crosswind (while keeping the yaw string straight) and airspeed control had been most difficult. Airspeed control in particular was confusing. Pulling back on the stick would increase the glider's airspeed if cable speed was maintained constant by the winch operator. However, if the wincher didn't respond or if the winch engine was already struggling because of poor gear selection or excessive load, pulling back would decrease speed and forward stick movement was more likely to increase it.

He had settled into a practice of setting the angle of ascent early and allowing the winch operator to control the speed. As long as it remained within a reasonable range, he did not try to make corrections. He could always signal gross errors by measured and coordinated application of right and then left rudder for too fast, or right and then left aileron for too slow ...

Early in his training it had all been a blur and somehow he was deposited in free flight. Over the course of a thousand tows, however, he had learned to make time stand still. Now he feels confident, relaxed, in charge. He is flying the wire, not just being dragged up, and he is enjoying every second, he looks around for clouds or circling birds, and is alert for surges in speed that might indicate he is flying through lift.

As the ship continues its upward rush, anticipation of the coming free flight starts to build. Although it seldom has been a problem for him, "getting away" after a winch launch requires character and he knows he must make the most of that first thermal. Close to the ground the thermal will be strong at the centre, but narrow.

The fast, tight circling required to stay in the core safely will generate forces that tug at the flesh around his cheeks and eyes. Banked over at such steep angles, his field of vision will be narrowed, and with the ground just off his shoulder, the awareness of speed is greatly enhanced. It all creates excitement and an urgency that will make the adrenaline flow — and the body sweat. "How often it is", he thinks, "that the tow and the first thermal stick in my mind when the flight is over."

At 1000 feet now, he increases pressure on the stick slightly as the climb angle flattens out. Finally at the top of the arc he nudges the stick purposefully forward and hears the faint metallic click that tells him the cable is off the hook. He pulls the release twice to make sure. "Great tow," he says to himself as he knuckles the altimeter and deftly turns back over the runway to search for the thermal he felt on the way up ...

The winch operator on this particular tow, having completed his walk-around inspection and started the engine in response to the right-wing-down signal from the other end, sits attentively peering down the runway.

He sees the wing waggling up and down and since there is a slight breeze and this is one of the lighter ships, he drops the winch into second gear. If this was one of the heavy, large-wing-area ships where the demands on engine power are great he would use first gear. On a calm day he would start this tow in third or if the wind was very strong, first gear.

Engine still at idle, he watches the cable slack take up as he feathers the brake pedal. If he saw a wingtip grounded during this preliminary part of the tow, he would immediately take the winch out of gear and wait for the new set of signals, starting with the "wing-waggle". Under no circumstances would he proceed otherwise. Now the wing is level and steady and after a deliberate pause he applies almost full power with a smooth pull on the hand throttle. The one thing a pilot appreciates is to get off the ground fast, he thinks.

This is the part of the tow he dislikes for the glider is over 3000 feet away and coming right at him. It makes it difficult to judge the speed. "Won't he ever pull back on the stick?" he worries.

At last the glider attitude changes and he can see it heading skyward. He senses the increased load on the winch from the groaning engine and the sharp upscale swing of the force-gauge needle. He must stay alert to the possibility of a cable break. All controls forward! is the immediate reaction if one should occur — throttle to idle position, transmission in neutral, and brakes applied.

With the glider in a steep climb now, he is better able to assess its speed and he confidently manipulates the throttle as he concentrates on the glider with an occasional glance at the force gauge. He particularly does not want the ship to get too slow at this point because of the added power required to reaccelerate it to speed. Too slow is easily detectable by a tendency of the glider to wander. It requires a fine exercise of judgement, however, to evaluate the glider's top speed at altitude in the presence of an abrupt wind gradient and sometimes pronounced shear. He might become aware of these from sudden changes in the force gauge reading or from yaw or roll signals from the aircraft.

The height and movement of a cloud formation can play tricks on him too. At a certain time, he might make a tow that felt and sounded right but looked way too fast against the backdrop. Yet, he would learn later from the pilot that it had not been too fast at all. That's the reason he likes to run the cable retrieve car when he's winching. It allows a quick word with the pilots between tows.

The glider is now climbing straight and true and he tries to keep it at a constant airspeed which roughly corresponds to a steady reading on the gauge. Near the top he has to throttle back the engine to compensate for the flatter climb angle and the load indicator drops accordingly. When the glider is almost overhead, he throttles abruptly down the idle and watches appreciatively as the pilot dips the nose slightly to ease the tension as the weak link automatically back-releases. "Nice", he mutters.

If the cable disengages from the ship under tension, it quickly creates a great deal of looseness in the wire and can throw a loop off the drum. This had often happened in the past and meant down time while the drum was cleared. The present less springy wire and improved lead-in gear design make it easier now to control the slack.

He sees the glider double back over the runway and the drag chute open gracefully as he accelerates the engine to pick up the cable slack. "We never seem to have a wire break any more," he muses.

He remembers the time the cable did not release from a homebuilt glider on its maiden flight and the winch operator cut the wire with the guillotine. That had been years ago.

There has been the odd break on tow when the wire became work-hardened and brittle after a couple of years' service. In the early years as many as five breaks a day had occurred. They often talked about those early years around the picnic table at day's end. A fragment of a recent conversation comes to his mind. The oldster was saying:

"We were towing with a strong wind blowing across the runway and the cable broke at the winch with the glider at 1000 feet. The wind blew the chute over the road and dragged the wire across the power lines. Sparks flew in all directions!

It blew a breaker in the transformer station and blacked out the whole damned area. To make matters worse, it so happened that the last game of the Stanley Cup playoffs was on TV. I'm gonna tell ya, if those people had known that we were responsible for the power failure, it would have been the end of the Windsor Gliding Club right there!"

And on another occasion, someone mentioned bringing a dog to the field and our storyteller was secretly against the practice:

> "You know, one of the members once brought a dog to the field and at the start of a tow it spotted a splice in the moving cable and started chasing it. Somehow the dog straddled the wire as it was leaving the ground and was hoisted in the air! It must have been 20 feet up before the dog finally fell off — but — the glider kept right on going. Funny thing though, it didn't hurt the damned dog a bit!"

The winch operator chuckles again as he recalls the straight face of the storyteller.

Tangles with the present music wire used to occur regularly while hauling the cable back to the takeoff point. If the manually operated brake on the wind-in drum was not properly set or if the cable retrieve car stopped too fast, the inertia of the rotating drum would roll off extra loops of wire The loops would get alongside the drum and if they were not discovered and manually wound back on before the cable retrieve was continued or the tow commenced, an unholy mess was created that could take an hour to clear. That problem was now history, completely eliminated by the newly developed, automatic drum-retard system.

But no, the improvements did not come easily. He grins mischievously as he thinks of the temporary ill feelings and lack of recognition usually visited upon those who try to change things. He can smile now, but at times there were heated discussions and displays of temper.

Now he sees the glider flying in those tight circles that speak louder than words and he wishes it were he up there battling for altitude. Never mind; his turn will come. The chute comes to rest about 100 feet from the winch. With an occasional glance at the glider overhead to mark its progress he hooks the cable to the retrieve car and, at about 20 mph, pulls it back to the take-off point.

Background

Winch tow number 20,580 took place at the Windsor Gliding Club field near Dresden, Ontario on August 19, 1984. The field is 3300 feet long. The tow's actual height of 1350 feet was about 250 higher than the seasonal average of tows that range from a low of 900 feet on a calm day to the highest ever of 2200 feet into a strong wind.

Besides the length of the wire and the wind component down the runway, the coordination between the winch operator and pilot is the important factor. With more field space available, a longer wire would increase tow heights considerably but could present different problems related to signalling, wire handling, and the added weight. If the club had more runway, it would probably opt first for a designated landing area behind the take-off point to reduce the pushing of gliders.

One minute elapsed between takeoff and release, one more from release to cable haul-in, and three to take the cable back to the takeoff point for a total cycle time of seven minutes, taking into account the time to hook up. When both winches are in operation and the cables are retrieved in tandem, the average cycle time per tow is reduced to six minutes or less.

The two dollar charge to the pilot covers the operating expense for the launch with 30 cents left over for profit. In 1963 the first winch tow at the Windsor Gliding Club cost the pilot one dollar. Next year it will be three dollars. By comparison, our pilots make five flights for the price of one at many gliding operations. It encourages more flying on marginal days, producing increased revenue, and pilots gain vital and interesting experience at low altitude. Many flights are made on days with difficult weather just to challenge the conventional wisdom and to struggle for those few sweet minutes of extended flight that comes from working reduced sink, chopped up thermals or, on occasion, a wind shear.

The winch requires no specially licensed personnel to operate. With rare exception, pilots are also trained winch operators and take their turn. Although an individual learns to operate on his own in ten tows with an experienced wincher, he will still be learning after a couple hundred are behind him.

Wire breaks on tow are essentially a thing of the past. During the entire 1984 season the club had only three. In those events the glider is right over the runway, the safest possible place to be. Club members regularly practise simulated break during training and handle the rare occurrence with aplomb.

There are no complaints from the neighbours about noise. No licence, inspection, or other fees need to be paid. Repairs can be made by anyone. The Windsor Gliding Club's first winch ran for 18 seasons before it required a major overhaul. With two winches now, the second is used in tandem on busy days and at other times serves as backup in case of a breakdown of the other.

The winch launch suffers from one general condition for which there is no rebuttal: glider release altitude and location are realistically limited to 900–1600 feet right over the end of the runway. Although not much help in windy, overcast days if the ridge is five miles away, this has proven to be no problem on soaring days. There have been several Gold and Diamond distance flights made from a winch launch at our field. With the odd exception — anyone can have a bad day — our pilots get away consistently after only one tow, and go on with their cross-country tasks, unhindered. However, instruction time on training flights during periods of no lift is very short (less than five minutes). This is excellent for takeoff, pattern entry, and landing practice, but instruction on spin and extended-flight maneuvers must await soaring weather.

Student pilots normally require from 50 to 65 flights to solo and they probably end up at solo stage with more takeoffs and landings, but less total flying time than would otherwise be the case with aerotows.

Members of the club understand the fears of nonwinching clubs. "All those cable breaks must be frustrating? I would never take off with my feet over my head! It's too hard on the glider! How often can you get away from 900 feet? It takes three times the manpower to operate!" Our experience has shown that they are all valid concerns, but we have learned to overcome.

Now, with our two home-built winches functioning like Swiss watches, we would not exchange our launch system for any other. It has been perfected and proven over twenty-one years and is a reliable safe, quiet, and cost-efficient method of putting a glider into the air.

Success in the long innovative struggle to settle on a single-strand music wire and to perfect the wire-handling and splicing techniques, wire lead-in gear, and automatic drum-retard system is our great achievement.

It is probable that many failed winch operations were attempted by clubs trying to start from scratch in the presence of an alternate launching method. This approach is likely to fail without a core of members experienced in winching such as the Windsor Gliding Club had. A better way would be to carbon copy a system that works well. This would eliminate many of the technical growing pains and allow club members to concentrate on pilot and winch operator training. Familiarity and confidence in the system would grow and then ideas for perfecting it still further could be tried out. Hard though it may be, the temptation to fix something that works should be resisted.

It is seemingly a complicated system with many interdependent actions — which it is — but in execution, the winch launch of a glider is a simple, beautiful event to watch and is crammed with excitement and joy for the participants.

Technical Details

The winch launch has three phases, each imposing different requirements on the winch design. By lift-off and the first few feet of altitude gain the glider has been accelerated to 55 mph (4840 ft/min). The wire is moving at the same velocity and, with calm air, a 24-inch diameter wind-up drum would turn at 770 rpm. In the case of a tow conducted in first gear providing an overall transmission/axle ratio of 6.48:1, the engine would turn at 4990 rpm. These circumstances require a compromise of transmission and axle ratios with drum diameter to ensure that the engine speed is not excessive.

During the steep climb from 200 to 850 feet the glider airspeed is still about 55 mph and its climb angle is approximately 45 degrees. In calm air the vertical component of airspeed would be 39 mph (3432 ft/min) and the power required just to lift the heaviest glider plus cable (1500 pound total) at that rate is 156 hp. If consideration is given to the possibility of greater vertical speed components, and to additional load factors from the tow-induced sink[1] of the aircraft, the power demands on the winch could easily exceed 200 hp.

During the round-off phase the angle between the aircraft and the wire can be 70 degrees or more and with 55 mph glider speed the wire speed would be 20 mph (1760 ft/min) and the drum speed would be 280 rpm. For a calm-air tow conducted in third gear with a 2.7:1 axle the engine speed would be about idle.

Throughout the tow the winch must have a stable stance to avoid oscillations in sympathy with any tendencies of the glider to porpoise, and to prevent creeping of the winch down the runway. It also must be convenient to set up and move from end to end as the wind changes, or to transport on those occasions when flying is scheduled at other sites than the home field.

All these design requirements can be met in many ways since several choices of engines (horsepower and torque), transmissions, axles, wind-in drums (overall gear ratio), and mounting configuration (truck mount, trailer mount, self-propelled etc.) are available to the winch builder.

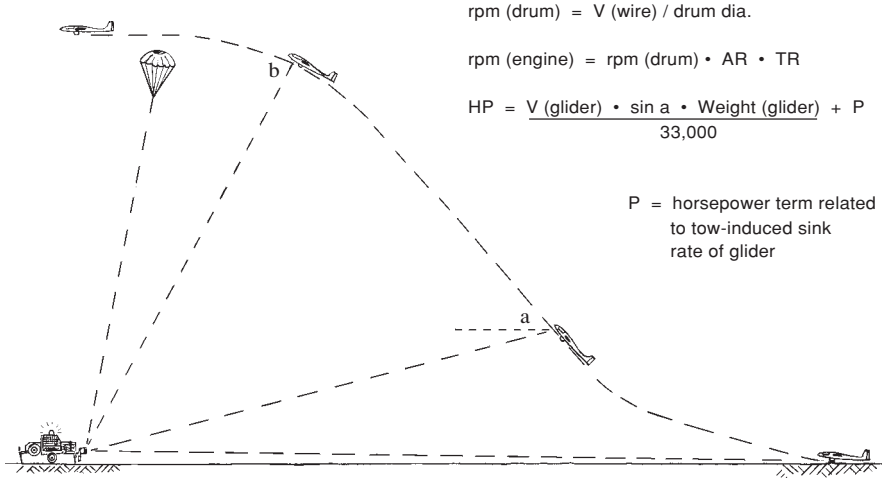
1. From a discussion with S.M. McDowall, of Chrysler Canada, Ltd.

In 1980 the Windsor Gliding Club opted for increased power and broader range of transmission gear ratios when constructing its newest winch, FS-1. It uses a Ford 351W, 8-cylinder marine engine; FMX, 3-speed automatic transmission; and truck axle to drive a 24-inch diameter wind-in drum. Much of the material for the FS-1 was purchased from the local autowrecker and a lot more was donated by club members and others. The rest was purchased at retail along with certain skilled services such as welding and metal sawing. Except for the skilled services purchased, all the labour was donated by club members.

The chassis is constructed of 6-inch steel channel in a fashion to allow a normal rear wheel drive configuration of power train components. It is supported by a leaf spring mounted axle with 14-inch wheels positioned to provide a fifty-pound trailer tongue load with the full length of cable on the drum.

The winch is set up for operation with the weight off the wheels by lowering the hitch end with the built-in mechanical jack — a hydraulic one would be better — and dropping down and pinning the two front legs and then rejacking the hitch end and pinning its support leg. The entire setting up takes about three minutes and provides a very simple, sturdy, three-point support.

The safety cage is fabricated from heavy steel grating. Wider spaced material is used in front for better visibility. No compromises should be considered. In the case of a cable break near the drum, the free end of the wire is whipped around the drum before it is stopped and, in the absence of protection, could easily injure the operator.



$$V_{(wire)} = V_{(glider)} \cdot \cos b$$

$$rpm_{(drum)} = V_{(wire)} / \text{drum dia.}$$

$$rpm_{(engine)} = rpm_{(drum)} \cdot AR \cdot TR$$

$$HP = \frac{V_{(glider)} \cdot \sin a \cdot \text{Weight}_{(glider)}}{33{,}000} + P$$

P = horsepower term related to tow-induced sink rate of glider

Transmission ratios, axle ratio, and drum diameter are selected to limit maximum and minimum rpm of engine during start and finish of launch, while engine size is determined by power requirements during the steep climb of the middle part of the launch.

The dash panel is organized in a normal vehicle layout with standard instruments. Throttle, brake pedal, and transmission gear selector controls are designed to operate forward to stop — a natural reaction in an emergency.

The engine has a rating of 236 hp at 4200 rpm and 343 ft-lb torque at 2900 rpm. It has dual mufflers routed forward with the outlets just ahead of the radiator. The fan is the pusher type found on many industrial engines. Since the winch is always facing downwind, the pusher fan takes advantage of the wind assist to provide increased air flow through the radiator and also sucks engine fumes away from the operator.

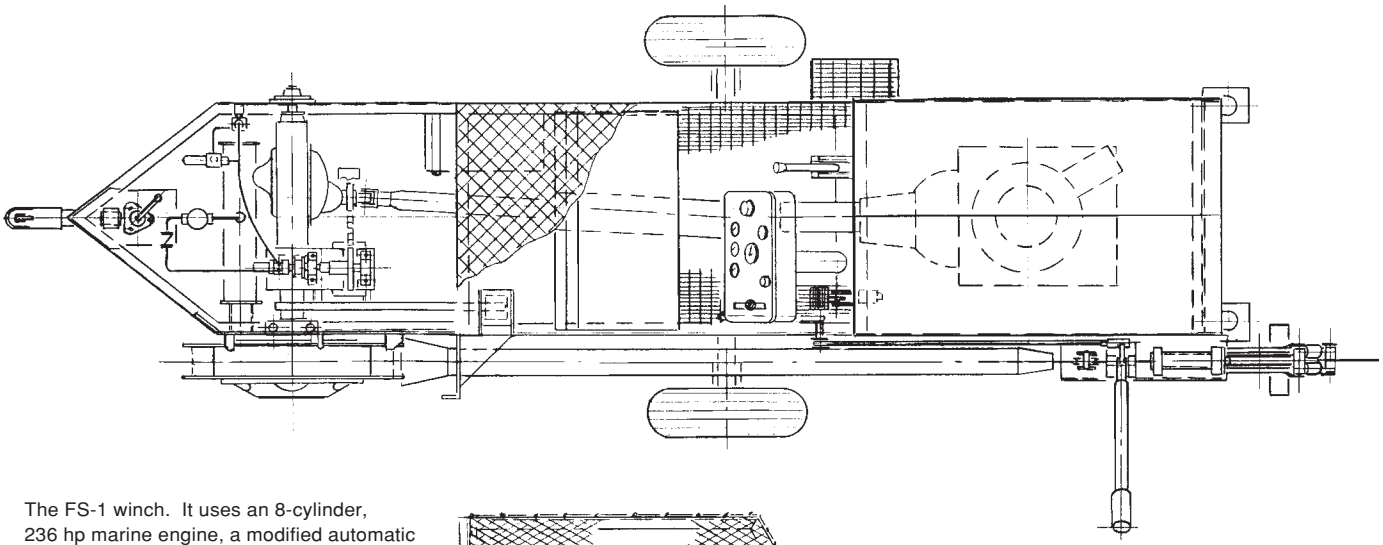
A manual choke is used to eliminate unnecessary complexity and wasted fuel. The only pollution control device is positive crankcase ventilation. Other than the exceptions noted, the engine is standard and is mounted as it would be in a vehicle.

The automatic transmission has gear ratios of 1:1 in third, 1.47:1 in second, and 2.4:1 in first. Its valve body has been modified to prevent automatic shifting. This can be done by a creative mechanic and usually requires the plugging of a small orifice. The transmission must stay in the gear selected for the duration of the tow. A shift during tow would be unacceptable, to use a manual transmission would negate the other advantages of the automatic such as torque multiplication, slip and soft engagement which match nicely with actual launch requirements.

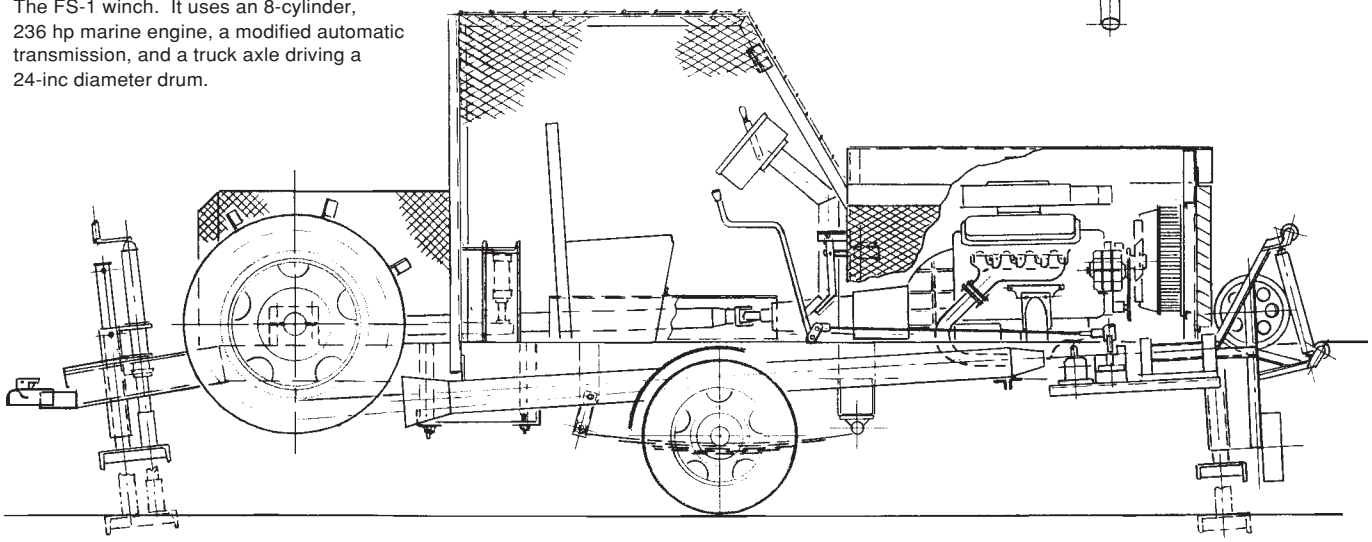
Only four transmission gear selector positions are used: neutral, third, second and first (reverse gear and the park position are inhibited by the shift lever bracketry). A neutral start switch insures a safe start, and when in neutral the rearward drive train is free to rotate in the reverse direction while the cable is being retrieved. The transmission is connected by a standard length propeller shaft to the rear axle.

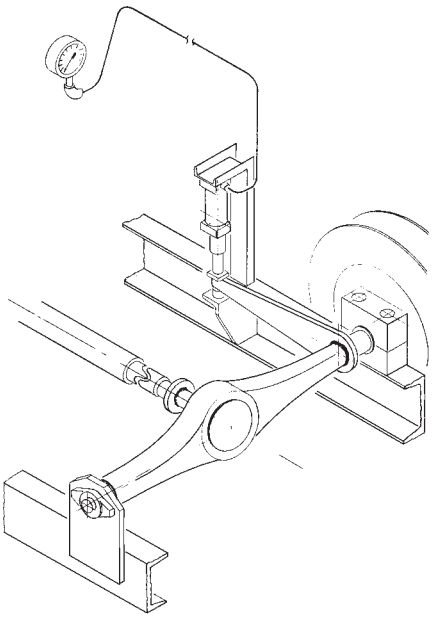
The rear axle has a gear ratio of 2.7:1. Its pinion gear flange has a sprocket welded to it to chain drive the automatic drum-retard system. The differential gears are welded together to prevent differential action, and the left axle has been removed and its housing shortened to reduce the overall width of the winch. The right axle housing has a long, heavy, steel arm welded to it, and the entire axle housing is mounted to the frame on bearings so that the load on the wire during tow can be sensed from the axle torque acting through the arm which strokes a piston in a hydraulic circuit to a meter calibrated in pounds of cable tension.

A standard wheel-brake assembly is mounted to the end of the right axle housing; a brake drum and the wire wind-in drum are bolted to the axle flange. The wind-in drum is fabricated from a truck wheel by welding a flat steel plate on each side at the tire bead seats (in a future design, consideration would be given to an aluminum drum for weight reduction). It is balanced on regular wheel balancing equipment without the cable.

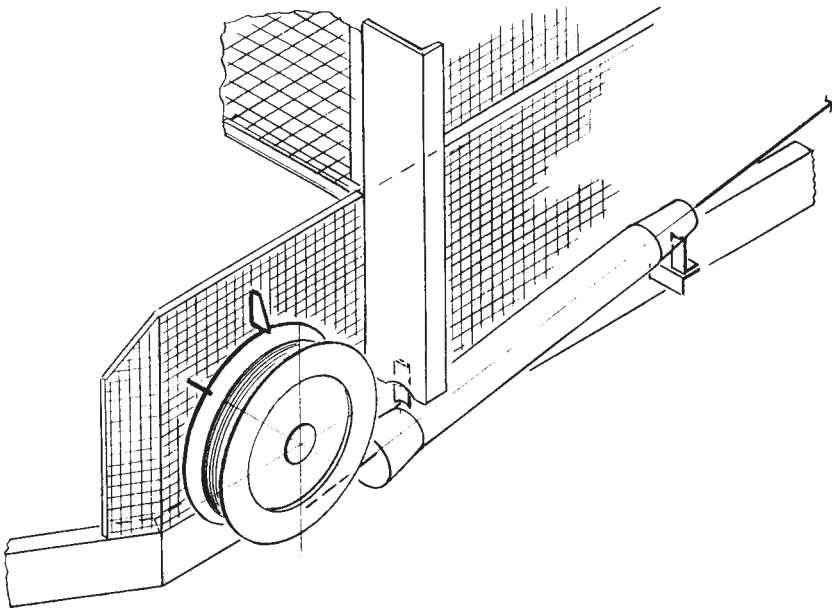


The FS-1 winch. It uses an 8-cylinder, 236 hp marine engine, a modified automatic transmission, and a truck axle driving a 24-inc diameter drum.

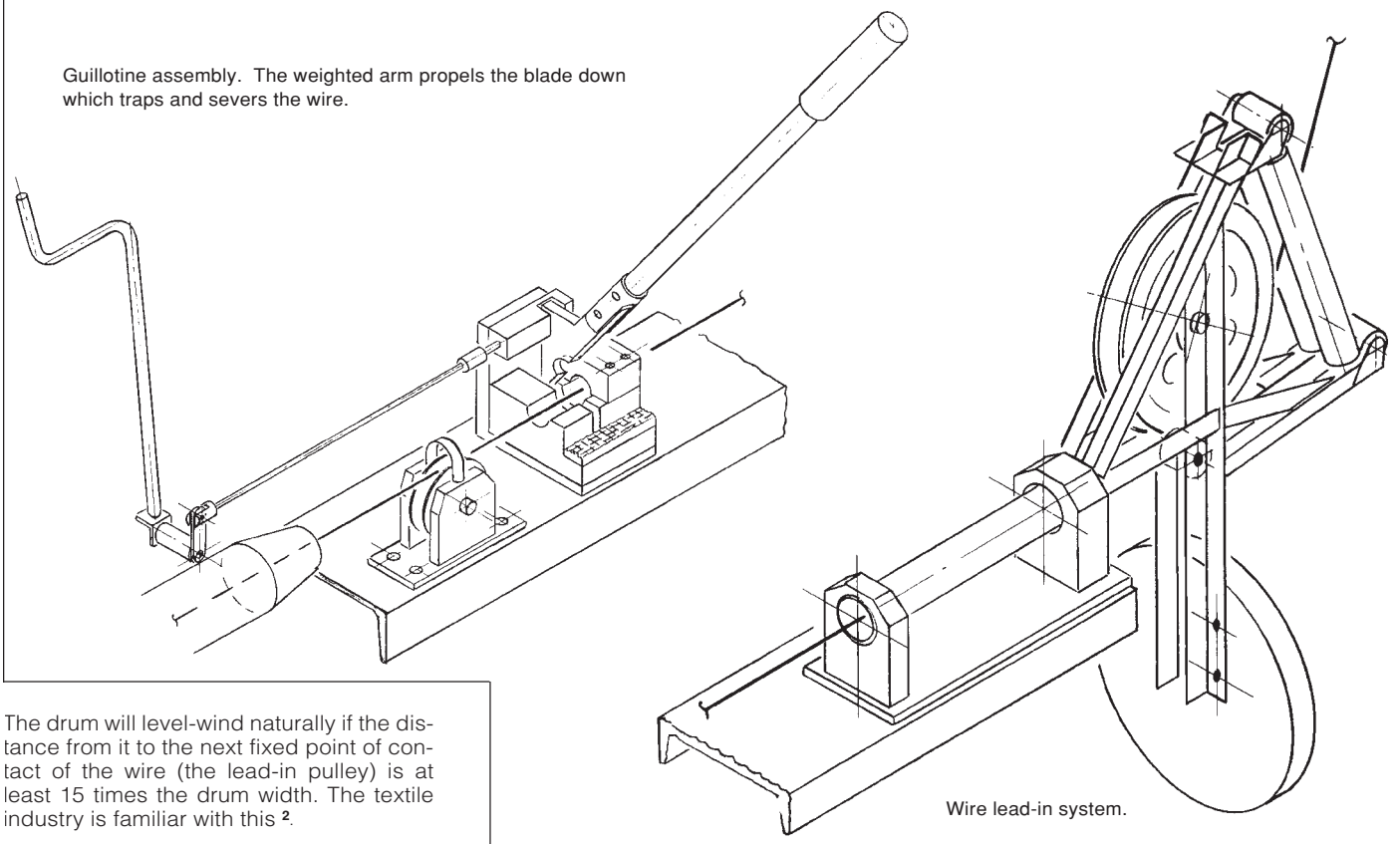




Wire tension measuring system. Load sensing arm is welded to axle housing which is mounted in large bearings. Load on wire will cause arm to move a piston conneced to a hydraulic pressure gauge.



Wire leads through an aluminum tube to the wind-in drum. Note the vertical barrier in front of drum to limit any flailing of the wire in the event of a break close to the drum.



Guillotine assembly. The weighted arm propels the blade down which traps and severs the wire.

Wire lead-in system.

The pulley and rollers are counter-balanced, and swivel on a tube mounted in bearings.

The drum will level-wind naturally if the distance from it to the next fixed point of contact of the wire (the lead-in pulley) is at least 15 times the drum width. The textile industry is familiar with this [2].

The lead-in gear has to be able to receive the wire from any angle within one quadrant of a sphere centred at the winch. The extremes occur from the glider release point (approximately 80 degrees overhead) and from the effects of crosswinds on the chute while it is pulled in (up to 90 degrees to either side). The main lead-in pulley is 12 inches in diameter to minimize work hardening of the wire during these extremes. It is framed in front by two vertically mounted conveyor rollers and two short horizontal rollers. The lead-in gear is counterbalanced and swivels on a steel tube mounted in bearings. The wire is routed through the roller frame, the pulley, the tube, and then to the guillotine and on through a metal chute to the drum.

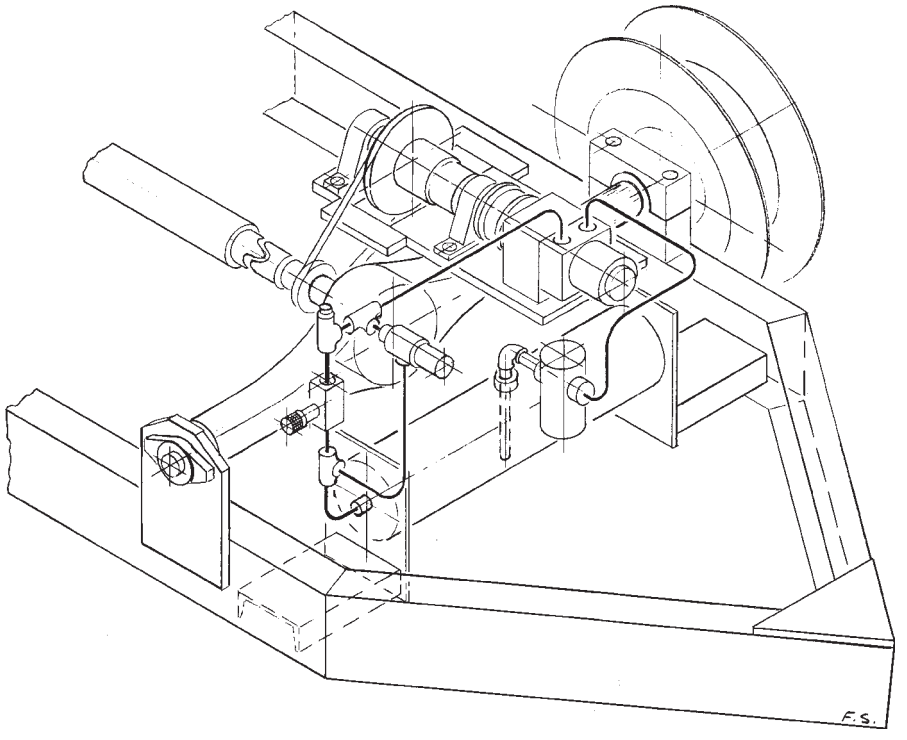
The guillotine must be able to cut the wire in an emergency if for any reason it cannot be disengaged at the glider. It is a scissor type with a 1/2-inch wide moving blade pivoted between two fixed blades. The wire is routed through a 1-1/2 inch diameter tube immediately ahead of the cutting blades. Both the fixed blades have 1-1/2 inch, semicircular cutouts symmetrical with one in the moving blade to trap the wire during the cut.

The removable weighted arm that powers the guillotine when released should be heavy enough to force the cutter through a double wire thickness to provide a margin of safety. When in place, the arm juts out from the winch as a clear indication to all that the guillotine is armed. The weighted arm is released by a spring-loaded lockout pin that is pulled by a handle located beside the operator.

2. H. H. Herrdegen, "A Short Introduction to the Necessities and Possibilities of Tow Winch Design," Windsor Gliding Club, 1972.

The automatic drum-retard system uses the work done in pumping a fluid through an orifice to retard the drive train as the cable is retrieved.

An industrial sprocket is welded to the axle pinion flange. By means of a chain, it drives an over-running clutch freely during the tow. When the cable is being retrieved,



Drum retard system. A pump, at top, is engaged automatically when wire is pulled off the drum. Hydraulic fluid is forced through an orifice, and the work required damps out the drum rotation when the wire retrieve vehicle slows or stops, preventing uncontrolled unwinding of wire.

however, and the wind-in drum and axle are reversed, the over-running clutch is engaged to drive a pump which forces hydraulic fluid from a reservoir through an adjustable orifice. The work done damps the rotational effect of the drum inertia when the cable retrieve vehicle is stopped quickly, and no loose loops of wire are created alongside the drum. The operation is automatic and requires no operator attention to brake setting at the end of a tow or brake release at the start of the tow. It has been very successful in eliminating wire tangles during cable retrieve.

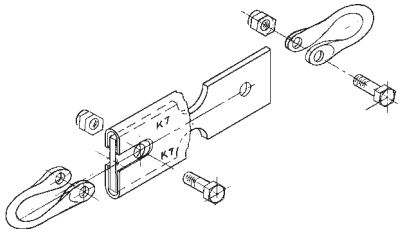
The drag chute used to float the cable down after the tow is the type deployed by jet fighters to reduce stopping distance when landing. Unserviceable ones can be obtained occasionally at flying bases, or surplus stores. They can be tailored to the weight of the cable by cutting out panels as necessary.

During tow, the chute is an integral part of the cable assembly and carries the same load as the wire. It is fastened by a clevis (for easy removal at day's end) to a swivel permanently attached to the wire. Its top end is tied to a length of rope which in turn is fastened to the weak link by means of a clevis. The length of rope is to space the chute away from the glider so it won't tangle with the wheel or skid if the cable is jerked at the start of the tow.

During retrieve, the chute must be kept clear of the ground so the cords do not become worn. Care must be exercised when picking up the chute that it does not get inadvertently turned inside out or otherwise tangled. The swivel allows any twists in the cable to turn themselves out so there is little torsional load on the hookup connection at the glider and the chute shroud lines are not overly twisted.

Weak links are fabricated from 1/8-inch 2024-T4 aluminum. They are cut 2-7/8 inches long, 5/8-inches wide, and calibrated for individual ships by machining a neck in the middle to break at the force recommended by the aircraft manufacturer. Each one is enclosed in a breakaway scabbard that protects the weak link from abuse and from bending and twisting forces that would otherwise lead to nuisance failures.

The Windsor Gliding Club uses three calibrations: 2200 pounds for K7, RHJ10, Open Cirrus, and Lark; 1500 pounds for Ka6 and K8; 1200 pounds for Pik3C.



Weak link assembly. A necked-down strap is enclosed within a protective break-away scabbard that has the weak link calibration printed on it.

The wire is a steel music type HT1829 purchased from Gibbs Wire and Steel Company in Burlington, Ontario who import it from Sweden. It is 0.135 inch diameter and is ordered in three-foot rolls with about 4000 feet on a roll. Each roll weighs about 200 pounds. The last purchase was made in 1981 at a cost of 4.5 cents per foot. This wire is very tough and springy. Throughout its useful life it always tends to revert back to its original coiled state if any looseness is allowed. Although practically immune to breaking on tow until it has become work hardened, it requires special but simple handling techniques on the ground to avoid tangles which would require cutting and splicing to get rid of.

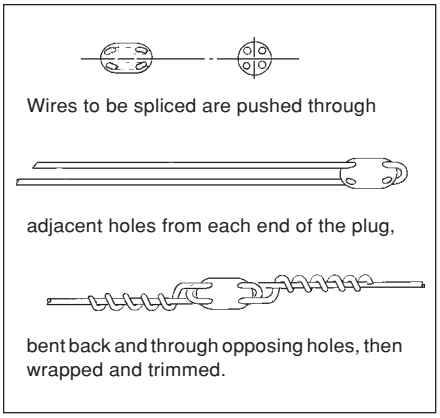
Changing the wire is a chore that can be quite simple if done carefully or it can turn into a nightmare with one wrong move. The old wire is removed from the drum by manually looping off individual coils, one after the other, from the drum to the ground. (Be careful; one coil at a time please.) As it is removed the wire is cut into manageable sections for disposal.

The new 4000 foot long wire, in a large coiled bundle, is placed on the tailgate of a jeep. The end of the inside coil from the bundle is routed through the lead-in gear and hooked through a hole in the side of the wind-in drum and a few turns are manually wound on the drum. As the vehicle is driven down the runway at a snail's pace, individual coils are lifted out of the bundle and dropped to the ground. This results in the wire forming a stretched "slinky toy" down the runway. When all the wire is out, the free end is attached through a swivel to the vehicle which is driven slowly on down the runway to pull the wire straight and wind the twists out. The winch is now ready to make a tow or the wire can be wound on to the drum while pulling an old tire down the runway. A new wire usually lasts about two years before it work hardens.

Wire splicing is done using a small, machined, steel plug that has four small clearance holes drilled in it. The two ends of the wire to be spliced are pushed through adjacent holes from opposite ends and bent against their natural coil direction and then forced back through the symmetrically opposite holes. The free ends are then wrapped around the wire using a very simple tool fabricated from a 14-inch length of 1/2 inch pipe. A pair of vise grips is required to assist in completing the sharp bend in the wires as they are forced back through the holes and to hold the plug while the wire ends are being wrapped and trimmed.

The wire wrapping tool has small flanges formed symmetrically opposite and a hole drilled in each end to trap the wire and space the wrap. Either ends is used depending on the direction of the wind.

A hacksaw with a special round carbide grit blade (a normal blade will not touch the wire) is used to nick the wire where a break is desired and the wire is bent away from the nick and snaps off cleanly with no burr.



Splices formed in this fashion are done by two people — one in a pinch — in 5 minutes and last the life of the cable. They are flexible enough for winding on the drum and do not catch in the lead-in gear. Splices tend to unbalance the drum and may add a slight roughness to the tow quality, but usually before enough have accumulated to be a problem, the entire wire has become brittle and needs to be replaced.

The cable retrieve vehicle is generally a small car that is past its useful life on the road. It has hooks mounted on either side of its roof. Pulled from this location, the chute shrouds are off the ground during retrieve and separation of the cables is maintained during tandem retrieves. (For greater separation of the cables or to lay the cable in the grass alongside an asphalt runway, fold-forward outriggers with hooks can be mounted on the roof of the vehicle).

Cost

The costs associated with building winch FS-1 are in 1980 dollars and the operating costs are in 1981 dollars. The donated labour cost was calculated using a rate of $10 per hour and the donated material costs are rough estimates only and are probably undervalued. The purchased material and labour costs and the operating costs were taken from club records.

Capital Costs (1980)

	Donated	Purchased
Materials	$ 6,146	$2,002
Labour	9,200	1,600
	15,346	3,602
Total capital cost		$19,948

Operating Costs (1981)

Gasoline and oil	$1,800
Other	583
Total operating cost	$2,383
Total number of tow in 1981	1,780
Total cost per tow	$1.35

And that is our story. It was a much longer one than usually appears in **free flight**, but it is hoped that the detailed technical discussion of our winch and how it is operated will be of value to another club contemplating using this method of launching. □

SAFETY

Here are two more safety articles which, like the pair on trailering in 5/84, arrived on my desk begging to be printed together. I'll let you decide if one is at least a partial solution to the other. Tony.

INCIDENT ON CONTEST DAY 1

by "88"

Six miles back it was obvious I would finish. "Contest Ground, 88 is three minutes back, will finish high." Speed, 100 knots. Tailwind component 10+ knots. I would finish too high but decided not to increase speed in this line of reduced sink and light turbulence.

I crossed the finish line at 1000 feet paralleling the downwind leg, pulled up gently to level at 1200 feet, gear down and locked. Knowing I was high I extended downwind, turned a short base and on to final. Definitely high, still at 1000 feet I selected full landing flap and watching the landing spot remain steady at the threshold of runway 30. Halfway or more through the approach I noted the airspeed was 90 knots. Shortly thereafter, 100 feet or less above ground, there was an audible "bang" and the aircraft climbed. Seconds later I had it under control, noted the flap lever had come out of its landing position (+3) and moved to a negative position. I moved the flap lever to 0 for max L/D, checked the g meter (surprising less than ±1). I decided to go around and made a conscious thought that this time I would select +2 flap (rather than full 'L') on final.

Turning downwind, short base and establishing myself on final, I crossed the threshold at 30-40 feet above ground; speed and attitude normal. With approximately 300 feet remaining in 3000 feet of runway, I was still 2-3 feet above ground! I pressed forward on the stick and was rewarded with a solid thump of the main gear. The aircraft did not noticeably bounce but rolled off the end of the runway and just into the long grass overshoot area.

My crew arrived as I got out of the aircraft. To my wife's anxious but restrained "Are you alright?", I replied, "Sure, I'm okay." But I was puzzled. Why had this landing been so difficult?

Some 40 minutes later we had pulled the glider back to its tie-down position, secured it, and I turned in my film. Shortly thereafter I was talking briefly with a good friend and fellow contest pilot who had witnessed my initial approach. I said little other than the "flaps had let go" and "I had to go around again." I was still too confused by the event to talk about it.

A few minutes later, walking by myself, there was a sudden realization — throughout it all, I never once used the spoilers!

That evening, after dinner with my crew, I continued a rationalizing process. The camera mount was relatively new, mounted well forward to clear the canopy release and it necessarily "shaded" the black-handled spoiler lever ahead of and just below the camera mount. Was the failure to see it clearly part of the problem? Or had I flown a Standard class ship for so long that once I had extended a lever (the flap) on the left side fully rearward I couldn't conceive the need to pull another lever (the spoiler) on the same side. I lay awake an hour, longer than usual, still seeking answers.

The next morning, reasonably rested, there was much to do as this would be the second contest day. No more time for rationalizing. My take-off betrayed my lessened confidence. That extra tail waggling came from too much rudder fanning. Airborne safely, I began to relax. It looked like a good soaring day. Little did I know the entire fleet would land out.

Just prior to reaching the first turnpoint, a heavy shower to the northwest was in progress. I took my picture and turned west to skirt the southern edge of rain. Twenty miles further on, another shower was evident as well as signs of heavy weather over the second turnpoint. Eventually I was forced to penetrate a light precipitation area in the shower front The air was now dead flat. A final glide was all that was left. Landing spots were few. I picked a fallow field and made a textbook landing. Full pattern, full flaps, full dive brake, etc. straight into wind. No problems. It was a confidence builder.

Following five more contest days, and a pleasing fourth place finish on the last day, it was all over and we were homeward bound next morning. My somewhat erratic contest performance wasn't too surprising — the ship was relatively new to me and I hadn't contest flown for two years. Yet that first day continued to haunt me ... there had to be a better answer.

Two days at home and I began to look at some of the more interesting mail — including the *"Sailplane and Gliding"* magazine. Buried in its pages was the story of a high time pilot who had suddenly failed to make his usual routine approach and landing *["Oh! Yes it could"! p123, June/July 1984 issue of S&G]*. Revelation began. No, it wasn't just complacency on my part, it was probably mental incapacitation — temporary — but dangerous. I had reached a very low level of operational consciousness. Readers might note that in committing a host of errors not only did I fail to use spoilers, but on the second attempt, I stayed in 0 flap condition! Yet throughout the entire approach and landing attempts I was totally calm, could not be alarmed by anything — an approach speed of 90 plus knots, flap handle letting go, etc. I was lucky that on flying instinct alone, I had "arrived" and was safe. My usual state of alertness on any landing was totally absent.

Why did it happen? I was wearing a hat, light gabardine flying suit, had eaten a good breakfast, had lunch just before take-off, had a water supply tube inches from my mouth and used it when necessary. I ruled out sunstroke or dehydration.

Many of you who fly competition know that intensity on the first day. In this instance it had been a long day — about five hours. Prior to the second turnpoint, I was low and slightly downwind, unable to go in for a photo and drifting downwind in a barely useable thermal. Even as I gained a little altitude the probability of going upwind to the photo point was fading just as fast. Concentrate, sweat, and grind away. With time, the thermal strengthened and eventually I got in for a photo. The last leg went more quickly until finally, six miles back, I knew I was heading home. I think that is where my problem began. But it was too subtle to be noticed.

I suspect that I had, at a subconscious level, began to "shut down" after having home base in sight. I was suffering from much more than just complacency — nothing aroused or alerted me. Pilot incapacitation is as close as I can come to suggesting the answer. However caused, it could have been a killer.

My own personal lesson? Fly at least one practice day, even if it is just up and down with a look around. Learn to fly more relaxed, but keep a little adrenalin in reserve; you cannot afford to be in a mental lawn chair while still airborne. □

TEACHING OLD DOGS NEW TRICKS

George Eckschmiedt
Flight Training & Safety Committee

While trying to analyze accidents, one often experiences mixed emotions. No sane person wants to remember the unpleasant events, yet one feels obligated to study them in the hope that another may be avoided. Heaven knows, VSA has had its share of them. After attempting to evaluate the cause of the latest mishaps from the often inaccurate reports, thoughts inevitably arrive at trying to find commonality, a connecting link.

Such was the case after a very experienced pilot put his Ka6 into the trees at the downwind-to-base leg turn. This was in no way an unusual accident, if accidents can be termed usual. But it was a catalyst for further soul-searching. Looking at the 1983 accident reports, the majority of pilots had hundreds of hours experience (most of the VSA accidents involved instructors — none were students (thank God for that). The only common factor appeared to be experience. It would be easy to accept the logical fallacy of, "the more experience you have, the more likely it is that you will have an accident."

I had numerous discussions on this subject, with some insisting that the main reason for the high accident rate of the 'oldtimers' could be obsolete or nonexistent routines and procedures, or just plain complacency. I could not fully agree with this since some of the oldtimers involved did use modern methods and procedures. Then Transport Canada's Aviation Safety letter, issue 5/85, seemed to hit the nail on the head — "checklist discipline". Although the article was not soaring-related, the idea was valid.

I believe that if every pilot involved in an accident had followed the appropriate checklist, the accident could have been prevented. To me, the accident itself is the proof that a checklist was either not done at all, or not executed completely.

When I learned to fly I did not learn any checklists. We moved the controls, they flapped, and that was that. When CISTRSC was introduced, it seemed like a good idea so we accepted it and learned to use it. The CALL and SWAFTS checklist was introduced much later, and I still have difficulty recalling SWAFTS (I cheat and use the list on the instrument panel). So I asked a few oldtimers what SWAFTS meant to them; only some knew that it was a pre-landing checklist, no one could tell me what the mnemonic meant. They all said that they had their own method of determining the conditions for landing.

Let's consider landing-related accidents. What are the common causes? Either not knowing, not performing, or not following a pre-landing checklist. Most of all, perhaps, flying in a manner that allowed no time to go through one. The landing should begin by placing oneself in a position to have adequate time to do a pre-landing check. It should be started just before entering the downwind leg so that the pilot's attention is not diverted from attention to the circuit.

As I take a close look at the SWAFTS checklist, I think it is incomplete. It should always be preceded by the CALL checks so that the pilot places him/herself in the proper position to go through SWAFTS. In discussing this idea with other instructors, some thought that not all landing accidents can be prevented by timely and consistent use of the pre-landing checklist. Maybe. It would also be very difficult to convince the oldtimers to take a look at the changing procedures developed as a result of past accidents. If the use of a checklist prevents only one accident — yours — wouldn't it be worth the effort?

COACHING THEORY COURSES

Just a reminder that those of you who wish to become an instructor (or are one already) — the Flight Training and Safety committee recommends that you attend a local Coaching Theory, Level I or Level II course this winter. These courses are put on by your local community recreation department, Technical College, University, etc. They will be advertised with the sports programs, or give your local sports organizer/ recreation department a call. These courses will cover the theory of coaching, how to handle students, etc. and are part of the National Coaches Certification Program (NCCP) of the Coaching Association of Canada.

Ian Oldaker
Chairman Flight Training
and Safety committee

LOOKING OUT, AND AVOIDING COLLISIONS

1. Aircraft recognized and seen early, and continuously kept in sight, rarely present a danger.

2. Aircraft on collision courses appear stationary with respect to the background. If they increase in size, evasive action should be taken. Two times 60 knots equals a 12,000 feet per minute closing rate!

3. Gliders approaching at the same or from a lower altitude are generally not dangerous (beware though the zoom-type thermal entry); closely observe those approaching from a greater height than you.

4. Never fly closely over, below or behind another glider; and do not allow other pilots to do this to you.

5. Never say, "THIS CANNOT HAPPEN TO ME!" Collision dangers threaten the experienced as well as the beginner. Only the ATTENTIVE, CAREFUL and DISCIPLINE-CONSCIOUS pilot will escape this attitude threat.

In Germany, where poor visibility and high traffic density (including low-level military jets) cause many mid-air or near miss incidents, the Deutsche Aero Club is advertising these rules. More will appear in subsequent issues. As Queen Victoria almost said, "We are not immune."

Sailplane enthusiasts are a community of individualists, each of whom voluntarily sacrifices as much of his complete independence as the others need in order to remain individualists.

UTTERANCES of the UNWASHED

Geoff Johnson
Rideau Valley Soaring

Sooner or later every glider pilot is struck by a classic utterance from the uninitiated on the subject of staying aloft in an aircraft that has no engine.

No other sport or pastime I can think of (short of running for public office, anyway) engenders such breathless exclamations made up of one part excitement and three parts misconception.

Probably the most popular of these misconceptions is the one about the wind: "I suppose you need a good breeze to keep one of these things in the air, then?"

Where do the uninitiated come by such notions? One source, of all places, is the encyclopedia, as my son Ian, then 12, discovered while researching aviation history for a school project.

In an ancient volume of *Odham's Encyclopedia for Children*, he came across the following:

"Another way in which power is obtained from the wind is in flying. A balloon rises because it is lighter than air, but once up it travels along by wind power. The winds often blow in different directions at different heights, and the aeronaut navigates his balloon by rising and falling to a suitable level. If there is no wind blowing in the direction he wants, he comes down to earth again. But navigating balloons is too difficult for practical purposes.

A glider pilot has more control over his machine, for though he relies on the wind to lift him into the air at the start. Once he is up he can control his machine almost as well as a sailing vessel. But, like a sailing vessel, a glider is helpless if the wind fails altogether.

An aeroplane is only a glider which is kept moving swiftly by an engine, so that the air is kept sweeping past the wing and keeping it aloft. It is thus independent of the natural wind. But we may truly say that by rushing through the air it produces a wind of its own, and it is this which maintains it in flight."

In my few short years of winging it sans motor and wind at the Rideau Valley Soaring School at Kars, 45 kilometres south of Ottawa, I have kept a note of some of the more memorable utterings in and around cockpits. Herewith is a sample:

- On lifting off with the tug still rolling: "Oh dear, we're going without the other plane."
- On turning base at the end of a passenger flight: "There aren't many people waiting, let's stay up a little longer."
- From a passenger to a pilot fighting wicked turbulence on tow: "When we let go of the rope, I guess you'll have to start working the controls yourself?"
- From a passenger, on being asked why she was so anxious to change places and sit in the back of the 2-33: "Because the things you need to drive with are up at the front."
- From a 74-year-old woman flying for the first time in her life, as the 2-33 released and executed a gentle climbing turn to the right: "Young man, that was just lovely ... can you do it again?"
- From a young Scot, here on vacation: "I've only just got up the nerve to go in a bloody great 747, and you expect me to ride in this thing?"

Among the more memorable one-liners in my collection are the following:

- "Is it true I can't smoke while we're up?"
- "Does your mother know you fly around in aeroplanes with no engines?"
- "I hope we won't be flying upside down. I have loose dentures."
- "Would you say there's a big difference between landing a glider and landing one of those big jetliner things?"
- "Let's you and me go over to my car and have a beer before we go up."
- "If it really gets too warm up there, I can always take my coat off."
- "I know a guy who has a glider for sale that he made himself. He wants $1600."
- "Hey, look at this Mildred. It's got controls and instruments."
- "My feet are cold. Is there a heater or something you could put on?"

I swear to you these are all true. I bet Karl White of Seaside Park, New Jersey, believes me, too. He wrote to SOARING magazine in August, 1978, to say: "In my effort to interest others in the wonders of motorless flight, I took a hesitant but curious Ms. for her first flight in a 2-33 sailplane at Kutztown gliderport. Having reached 3000 feet agl, I cut loose and started to explain the advantages of the variometer. I had barely started when my rigid passenger exclaimed, "Never mind the instruments – just pay attention to your flying." □

THE EXECUTIVE DIRECTOR'S DESK

Jean Matheson

With the excitement of Christmas and the welcoming in of a new year, we can now turn our energy toward SAC activities for 1985. Hope everyone had a very happy holiday!

A great deal of my time late 1984 was spent surveying the computer field in order to acquire the best possible equipment to meet both current and future needs of the Association. The amount of information available and advice about computer procurement is unfathomable. By the time this has reached your hands we should have the "monster" installed in the office and be well into our first programs.

Hopefully, membership lists and members addresses will be easier to update.

And on the subject of addresses, we have received in the National Office over 77 returned envelopes containing the past two issues of free flight marked "incorrect address" or "address unknown". Would you please ensure that we have your correct address as the cost to the Association of mailing the magazine and the return mail penalty is quite high. I am also sure each member looks forward to receiving it.

Looking forward to seeing everyone at the Annual Meeting, Skyline Hotel, Toronto, March 23, 1985.

ORGANIZING A BEGINNERS CONTEST

Seth Schlifer
York Soaring

Although the 1984 Ontario Soaring Championships was held last Labour Day weekend and is thus rather "old hat", there were some very interesting features to the event which bear pointing out, regardless of the uncooperative weather, which other organizers may wish to consider.

Along with the recent reactivation of the Ontario Soaring Society came the realization that for soaring to be viewed as a sport in government's eyes and not "merely" a recreational activity, more competition on a club, regional and provincial scale was needed. Why would we care how the government views soaring? Well, apparently the Ontario Sport and Fitness branch has some funding available in order to help produce competitive pilots. Enough said? Let's hold a contest on a provincial scale: we'll call it the 1984 Ontario Soaring Championships! And it was done. So much for chasing the Almighty Dollar. Now of course this wasn't the only reason for holding the event. It just happened to be what was needed in Ontario anyhow and besides it's good fun too, let's not forget that.

Now to the contest itself. There were two classes of entry: Novice and Sports. The Novice class was intended for those who had never flown in a national or regional contest before or who had not flown in such within the past five years. The pilot qualifications were kept rather loose for this class — after all the intent was to get newcomers involved in competition. Novice class pilots needed only to hold a valid glider pilot licence, have completed at least one leg of the Silver C or, in lieu of that, present a letter by their CFI approving their participation. Even the Sports class qualifications were rather non-limiting, these being two legs of the Silver C, and of course a valid licence.

The tasks of the Novice class were to be kept modest, keeping in mind the abilities of those involved and the fact that only aircraft handicapped at .90 or less could fly in this class, in other words, Ka6E performance or less. The turnpoints intended for use in setting up triangles or quadrangles were only twelve miles or less away. The two turnpoints at Silver distance were chosen so that if we had a real "honker" of a day, we could send the folks out to earn their Silver distance as a bonus.

The whole idea was to make this class very accessible to those new to competition or even to cross-country. For the past few years, I've had a little internal club contest going based on the same sort of modest tasking **and it works**. It gets people into cross-country and quite often many come away from it surprised and delighted that they can indeed make a glider cover ground and that it wasn't really so bad after all!

For both classes, a handicap system was incorporated into the scoring in order to try and even out the large differences in glider performance. Of course nobody is pretending that we can assign handicap values with 100% accuracy, but at least it's more fair than expecting an M100-S to compete on an equal footing with an ASW-20!

The start gate was kept very simple, no speed restriction or height restrictions. One could go through the start window as high as one pleased. As long as the gate keepers could make out your contest number, you got a good start. It's still fair for all because the thermals go to the same height for all the pilots. Removing the start gate ceiling also removes the need to pass the start line at high speed, so that ends that safety problem at the same time.

The use of water ballast has been under fire of late. At this contest water was not permitted. Although certain conditions would give advantages to a particular glider due to differing wing loadings, the same is true even if everyone does carry water, so what's the difference? Although none of these particular contest features were new by any means, this is about the only contest that I'm aware of that has incorporated all of them at once. It made for an easily organized, easily run, and easily flown contest and upped the safety factor to boot. Rule changes come and go, but it seems that whatever the rules of the game are (barring blatantly unfair ones) the cream will continue to rise to the top! □

OPINIONS

continued from page 3

ODDS AND ENDS ON 6/84

Well, I've just finished consuming the Nov/Dec issue of **free flight** and thought I'd pass on a few random comments.

First of all, I thought the cover shot was great, good work Mike. Can you show us how you mounted the camera to the strut please? *[Mike will explain in the next issue. Tony]* And that bit on finding and keeping the rewards of soaring, although reprinted from a hang gliding journal, does indeed apply to us as well. For the past three years now, I've watched exactly the same thing happening here at York Soaring and I know that it happens at other clubs as well. A person shows up at the field, takes an introductory ride, loves it, joins, takes training, solos, runs ropes, gets the five hour flight, runs the "van", does a year or two of circuit bashing, then disappears forever. Hard to believe but true. They go from nothing, learn to fly, put in some effort towards the club operation, all the while improving as a pilot and making happy gurgling noises, and then they're gone.

It's hard to think of solutions. At York Soaring we are seeing the light lately, and trying to slow down the attrition a bit. Perhaps if we all read the third paragraph of Brian Hollington's letter in the Opinions section of the last issue we will find some clues, who knows? It's been my approach to make sure the pilots always take off with a personal goal in mind. Go up and have some fun, sure, but don't get caught in the trap of repeating the same flight over and over again. When one goes up and just meanders aimlessly around or sits — fat, dumb and happy — at the top of the first thermal they find, it's no wonder that stagnation and eventual disillusionment sets in!

Amen to Pat O'Donnells' bit concerning "Distraction". Pat is obviously one of these guys who has done a lot of "intro" and passenger flying. I've done quite a bit myself whenever I've been able to escape the back seat chores in the club trainers, and know just what Pat is saying. To all you pilots who may at some time or other have looked at the "intro jockey" with disdain, envy, or even jealously — it ain't all that easy or glamourous. That distraction is all too real sometimes! Those who do this sort of flying for long stretches at a time know the fatigue it can cause. All the while answering questions thoughtfully, truthfully, diplomatically, flying smoothly to avoid upsetting the passenger, and writing the lady's phone number down on your kneepad — it's tough, I tell you!

Seriously though, these pilots have to have their program all together to do it time and again and do it safely.

Finally, the article on the 1984 Ontario Soaring Championships did little to cover the event but was a very good pilot's eye view of the flight. Glad you're hooked on competition Sid. Gil Parcell has found stiff competition judging from the cartoons by Albert Seaman which accompanied Sid's article.

Seth Schlifer
York Soaring

CLUB NEWS

CHAMPLAIN NOTES FROM KEMP

The Champlain Soaring Association is holding its AGM on 7 December and should be the occasion for cheers as we made 999 flights with one towplane and two active club gliders for most of the year.

The AGM agenda includes consideration of Bob Hyam's "Migrating Eagle" trophy that he invented to encourage flights between Mansonville, Sherbrooke, and Asbestos (where our three small clubs operated). The trophy, with case, comprises a plaque and a record book in which each flight is recorded.

Only Bob and I made qualifying flights, but now I'm hoping that even though these clubs are all but dead, and Bob is in Australia soaring barn doors, the trophy can be adopted by Champlain and live on.

We had some fine late autumn weather, giving me a chance to remove GUMY [Kemp's Pioneer flying wing] from her trailer and into a shed where I can work on her in the spring.

It comes as a shock to hear that Alberta's cross-country conditions were poor last year. As you know we can count on 405 good days here on weekends wherein long flights can be made. Next year I hope to devote every one of those days to ridiculous adventures afield. My charts are a maze of possible courses ...

Kemp Ward

Good luck, Kemp. The "Migrating Eagle" trophy is a good idea, and a few clubs have similar ones. In any area where clubs are in "easy" soaring distance from one another, it is a sin not to take advantage of the opportunity for inter-club soaring events/ prizes which increase the quality of club life. Developing this dimension of club flying could help retain the otherwise bored drop-out. Tony

THE BLUENOSE SEASON

Bluenose is having a good safe year so far. Some Silvers and a few first solos have been accomplished, and our membership may be up to 40 by season's end for the first time. We will probably make about $10,000 over our direct expenses this year and may be able to retire all but a fraction of our loans!

We may consider building a new superwinch like the "Balaklava" (Australian) with two drums and which requires no retrieve vehicle. This truck does the launch, drives to the take-off end and runs the cable off as it returns, then repeats. Only one engine to maintain and pay for, much reduced wire wear, and only one operator. Our main holdup is committed manpower, although once our debt is gone, we could buy some of the bits we might otherwise make.

Our pilots can fly club gliders for about $8 per hour ... no one does it for less!

Dick Vine

THE EAST VISITS COWLEY

It was like leaving the toddler's pool for the great ocean. Three members of Bluenose stood on the dry, dusty prairie field watching textbook lenticulars stacked over an angry rotor cloud — to the west, the Livingstone Range reaching into the west wind, set it bouncing across the Porcupine foothills.

On the ground, a collection of pilots from across the country fettled a picture book fleet of glassware for the coming challenge. Club two-place sailplanes were rigged for check rides and the directors of the wave camp, Mike Apps and Kevin Bennett, warned of the penalties should some careless pilot stray beyond the limit of the airspace freed for our benefit.

The Eastern contingent, Joanne Daley, Nick Sleyden-Dew, and Dick Vine were entered on the flight sheet for the two-seaters, secretly wondering about the air tow in rough rotors and the hazards of hypoxia.

Although we were up at the crack of dawn to the tune of fluttering tents in the stiff west wind, there was plenty of time to get the chores done since the airspace didn't open till 1100 hours. A briefing was held and special tow tickets were issued to ensure that all had been approved for the conditions.

Tows began before noon and wave clouds could be seen all along the Oldman River Valley. Some aircraft were soon climbing in lift, although it was somewhat broken.

Kevin Bennett kindly offered to demonstrate his skill by taking Dick Vine up for his first experience of wave. On tow, the conditions were quite smooth at first, but became more demanding around 3500 agl — then all became still and the vario wound around the dial to 12 kt lift without any indication of roughness. Absolutely uncanny! The Blanik was tacked back and forth to remain in the hot spot with a few digressions due to lack of experience, but gradually the limits of the lift area were recognized. At one stage, a lenticular cloud formed below the glider and rapidly spread and then subsided and disappeared — spooky. Soon, a cloud deck at 17,000 feet was reached, so the descent began with full spoilers and the sink in the downside of the primary. Although height was lost very rapidly, it still took nearly 30 minutes to reach circuit height. After a few minutes of level flight to gain one's bearing, a smooth landing was achieved — whew!!!

Later Joanne Daley, a new member of Bluenose Soaring Club this year, was tucked into the Edmonton Blanik, rigged in chute and oxygen for an attempt on the two-place record with Chester Zwarych at the controls. After several attempts to climb above 21,000 feet, they returned to the field after a spectacular view of the Livingstone Range and the Rockies at the continental divide off to the west.

On Sunday there was a chance for Nick Sleyden-Dew to ride the Blanik to dizzy heights, again with Chester, also to find wave good for around 20,000 feet and a flight of two hours or so.

The pilots from Alberta, already used to their spectacular conditions were, we thought, pretty much well able to take it all in their stride: the Nova Scotians were much impressed however, both with the conditions and also with the kindness and generosity of the local pilots.

Some time before the camp was due, we had phoned ahead to Tony Burton to find out if some flying might be had by out-of-town pilots and were assured that the organizers would do their best, and by Jimminy, so they did !

Much praise is due to the many Albertans who have done the research in the air and amongst the red tape of MoT airspace regulations, and also to obtain the use of the airfield which dates back to the need of Trans Canada Airlines for emergency landing fields in the early days of cross-Canada passenger service. Modern gliders are now flying much higher over Cowley than they ever did.

Congratulations, and many many thanks to you all.

Dick Vine
Bluenose Soaring Club

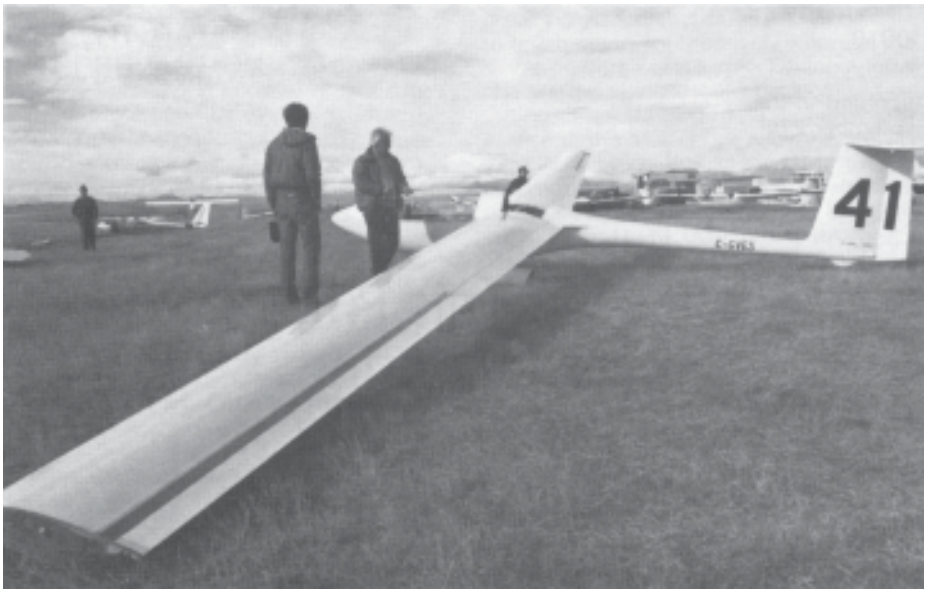
ONTARIO SOARING SOCIETY AGM

The meeting of the society will be held in Peterborough on 2 February, 1985. On the agenda is a panel discussion of the use of ultralights to assist in training glider pilots, plus sessions on improving soaring performance, and a keynote presentation by John Firth on how to prepare for, plan and fly a long cross-country flight.

Notices have been mailed to all OSS members.

Bob Nancarrow
Secretary

HANGAR FLYING



Hans König

Jerry Vesely (centre) with his VES-1, showing the general configuration of the Pik-20B/ HP-18 hybrid.

LS-4 TYPE APPROVAL

The Airworthiness Branch of MoT has issued Canadian certification for the Rolladen-Schneider LS-4 sailplane, type approval G-110, as of 29 July 84.

COMING EVENTS

Jan 16, 1985 and the next ten consecutive Wednesdays, **Toronto Ground School**, 7 - 10 pm at Bathurst Heights Secondary School, North York. Cost approx. $25. Call (416) 789-0551 for registration.

Mar 23-24 **SAC AGM** in Toronto. More details later.

Jun 8-15, **Eastern Instructors School**, York Soaring. More details later.

Jul 13-19, **Western Instructors School**, Vancouver Soaring Association, Hope, BC.

Juillet 16-26, St-Raymond, co. Portneuf, Que. **Championnat canadienne**, class 15m et libre, organisés par le Club de vol à voile de Québec. Contactez Alex Krieger (418) 681-3638.

Jul 16-26, 15m/Open class Nationals,St-Raymond, Que, sponsored by Club de vol à voile de Québec For information contact Alex Krieger (418) 681-3638.

NOTE TO CLUB EXECUTIVES

Coming events is getting thin, folks. It's time to give me notice of club events that are of possible interest to other people in your area. Tony.

WHERE'S YOUR STORY?

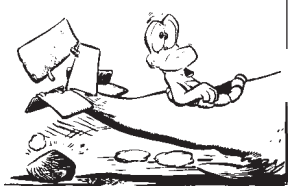
Now that you have time to reflect on last year's soaring adventures, why not write a story about it?

Whatever your experience level, we are all students of flight if we approach the sport with an active mind and lively eye. Was a flight particularly pleasing for any reason, or did it teach you more all at once than you really wanted to learn? Tell me your story, and look again through your slides and prints for god gliding photos.

Much thanks to all contributors who helped make **free flight** a great magazine in 1984.

CROCODILE CORNER

No accidents reported since last issue. Make sure this corner stays empty over the winter. Is your glider really safe where you have stored it?



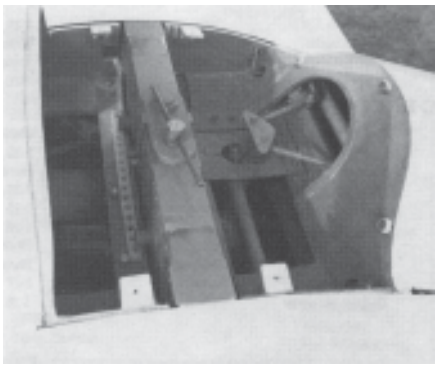
THE VES-1 FLIES

Jerry Vesely of Cu Nim is finally flying an unusual homebuilt. Called the VES-1, for "Vesely-Eriavion-Schreder-1", the sailplane is a hybrid combining a PIK-20B fuselage with HP-18 wings. The name combines the three designers who had a hand in its creation, albeit the last two unwittingly.

Why, is a question on which hangs a tale. Jerry, an AME, had his business burned out in a major hangar fire in Calgary in 1979. Lost in the fire was the fuselage of his almost-completed HP-18 that he was putting the finishing touches on.

During the 1980 Nationals in Claresholm, a competitor severely damaged his PIK-20 in an outlanding north of Taber. The fuselage was broken, and the main wing pin had to be laboriously cut through with a hacksaw blade to get the wings off. The ship was written off, and Jerry bought the fuselage from the insurers (the wings were obtained by Mike Kiss of Calgary).

Since then, Jerry has slowly matched the odd components in his slack time at work. The fuselage was repaired with about 50 hours of effort, and modifying the fuselage structure to carry the wings took at least another 200. Stripping out the PIK control system and tying in an HP flap drive and aileron control was relatively minor work. The HP-18 wing is "stock" with the exception of the outboard two feet of the flaps, which were sawn off and added to the ailerons.



Hans König

A large turtledeck has been cut out of the top of the PIK fuselage and remaining structure reinforced. Note the aileron actuator mounted on top of the tube that can move fore and aft in the slot to provide the aileron/ flap interconnect motion.

"41" had its maiden flight last summer, and Jerry has accumulated about 25 hours to date, including a Diamond altitude climb at Cowley. He says it handles well (I tail-chased him once for 20 minutes both cruising and climbing with my RS-15, and his ship seemed fractionally better).

What is Mike Kiss doing with the PIK wings? That's another story.

Tony Burton

FAI BADGES

Boris Karpoff
24-1/2 Deloraine Avenue
Toronto, Ont. M5M 2A7 (416) 481-0010

The following badges and badge legs were recorded in the Canadian Soaring Register during the period September 27, 1984 and November 28, 1984.

GOLD BADGE

212 Simon Davies	London	
213 Ulo Okapuu	Gatineau	
214 Patrick Wickenhauser	Regina	

SILVER BADGE

702 Michael Steckner	London	
703 Jean Louis Racine	Quebec	
704 Fred Schnell	York	

DIAMOND GOAL

Simon Davies	London	301.4 km	HP-18	Embro, ON

DIAMOND ALTITUDE

Patrick Wickenhauser	Regina	6218 m	1-35	Cowley, AB

GOLD DISTANCE

Simon Davies	London	see Diamond goal		
Ulo Okapuu	Gatineau	306.1 km	1-35	Pendleton, ON

GOLD ALTITUDE

Patrick Wickenhauser	Regina	see Diamond altitude		
John Davies	Cu Nim	4910 m	Pilatus B4	Cowley, AB

SILVER DISTANCE

Michael Steckner	London	66.5 km	1-34	Embro, ON
Gary Burniston	Cu Nim	80.0 km	Pilatus B4	Cowley, AB
Rod Crocker	SOSA	80.0 km	1-26	Rockton, ON
Fred Schnell	York	70.0 km	1-23	Arthur, ON

SILVER ALTITUDE

Michael Steckner	London	1250 m	1-34	Embro, ON
Rod Crocker	SOSA	1128 m	1-26	Rockton, ON
Barbara St. Cyr	York	1372 m	1-26	Arthur, ON
Michael Landry	Windsor	1340 m	K8	Dresden, ON
Graham Midwinter	Rideau	1219 m	1-26	Kars, ON

SILVER DURATION

Barbara St. Cyr	York	5:28	1-26	Arthur, ON
Stewart Baillie	Gatineau	5:16	Skylark 3	Pendleton, ON
Chris Petzinger	Gatineau	5:29	Skylark 3	Pendleton, ON
Graham Midwinter	Rideau	5:19	1-26	Kars, ON

C BADGE

Paul Chamberlain	Grande Prairie	1:04	Blanik	Grand Prairie, AB
Csaba Gaal	York	1:10	2-33	Arthur, ON
Peter M DeBay	Vancouver	1:13	Blanik	Hope, BC
Michael Walther	York	1:06	2-33	Arthur, ON
André Moreau	Bonnechere	1:59	1-26	Deep River, ON
Rod Crocker	SOSA	1:50	1-26	Rockton, ON
Stewart Baillie	Gatineau	5:16	Skylark 3	Pendleton, ON
Chris Petzinger	Gatineau	5:29	Skylark 3	Pendleton, ON
Tracie Wark	Huronia	1:45	2-22	Bordon, ON
Graham Midwinter	Rideau	5:19	1-26	Kars, ON

CFIs, Senior OOs, and OOs

Boris informs me that many clubs did **not** send the National Office a listing of **current club OOs, required at the beginning of the '83 season**, in order to regenerate the SAC OO Register. It was stated then that claims subsequently signed by non-registered OOs could/would be rejected by the Awards chairman. It is not bureaucratic nitpicking that SAC asks for this information, since the FAI has every right for example to ask SAC (through the Royal Canadian Flying Clubs Association, the national aero club) for proof that a Diamond badge claim was signed by a "legal" 00. Presently, it would be embarrassing to have the RCFCA look at our register!

The National Office will again be asking clubs to return a list of every current OO (and the club Senior OO, if appointed) in a general club mailing prior to the AGM. So, you delinquent executives, get off your butts and respond, or you will affect your club's badge applicants. Why should it take two reminders and a baseball bat to get your attention??

Everyone affected is urged to re-read immediately, before you forget, the article "The New Official Observer Program" in 6/82, page 18.

The new FAI Badge Application Form (revision 5, 1984) is now available from the National Office or Boris. Get a stack now for your club's pilots for next season.

Remember to throw away all the outdated forms when the new ones are in your hand. Old forms often contribute to application errors which waste everyone's time.

Also, the new **Edition 4** of the **"FAI Badge and Record Procedures"**, SAC's companion to the FAI Sporting Code, is now available at the National Office at $3 a copy. All OOs are required to have a current edition in their possession to aid them in the proper performance of their responsibilities. CFI s / SOOs are requested bulk order for OOs in their club plus a few for their badge/record flying hopefuls in order to speed the distribution process prior to next season's flying.

Edition 4 contains additional interpretation of distance flight possibilities using remote start/finish points, how to make effective use of the dog-leg flight, a clarification of the sections on height evaluation, and extensive general improvements to the text and the illustrations.

Special thanks to George Dunbar, Boris Karpoff, and Jack Davies who took the effort to suggest changes, read over my drafts, and pick at nits.

The National Office and the FAI Awards chairman would be grateful if **ALL** applications for badges and badge legs be addressed to: Boris S. Karpoff, 24-1/2 Deloraine Avenue, Toronto, Ontario, M5M 2A7 and **NOT** to the National Office in Ottawa. Valuable time and money are wasted each time with applications directed to the wrong place.

Tony Burton

International Coaches meeting

continued from page 2

It is interesting to note that several countries have two-week or even four-week courses, and that countries with the larger gliding movements (Germany, UK) require a Silver C before instructor training can begin.

ACCIDENT RATES AND ACCIDENT PREVENTION

The great variation in number of pilots in the different countries reporting made comparisons difficult. An attempt was made to compare launches per accident (or fatality) but here again winching is prevalent in Europe, and neither the USA or Canada have reliable data for numbers of flights, so a table was drawn up for members per fatality and gliders per fatality. We came out bottom (of ten reporting countries) in members per fatality and eighth in glider per fatality averaged over the past twelve years. Maybe we should be reporting numbers of pilots rather than members.

We were able to analyze 435 French accidents, a 5 year total. Over 200 were outlandings, 94 occurred when landing on or short of an airfield, 28 on take-off. This is over a total of 220,000 flights. Competition cross-countries accounted for only 15, whereas "free" cross-countries had 126 accidents of which 49 were when the pilot was flying locally and did not make it back to the field or had not been trained for off-field landings, or both (we see this trend in Canada, I might add).

Collisions are a problem, with a large increase in the UK. The Germans have produced an excellent slide set and commentary on collision avoidance which will be available shortly to clubs in Canada for their own programs. Fred Weinholtz commented on bailing-out problems for modern gliders — pilots should practise on the ground. He mentioned competition rules often encourage poor flying habits; reports of bold exploits are bad but they get well publicized. Research shows that colour schemes are not suitable for sailplanes, and that pure white is now considered the best for visibility. He added that strobes are not favoured in Germany (problems when thermalling).

We discussed the need for instructor training to emphasize these and other points, particularly of the need for instructors to caution their students that mistakes can be very dangerous and that people will often laugh at the cautious attitude.

Aerotowing accidents were touched on. It seems that several accidents have occurred recently and that these usually happen below 300 feet with the glider getting too high behind the tug. This has been a problem in Canada too. Australia will not import a glider with only a cg hook, because if the glider gets too high there may not be enough "nose-down" elevator to prevent divergence, and with some tow hooks it becomes difficult to effect release. Typical minimum tow rope lengths are 45 to 50m, with longer ropes (as used in USA) being considered very helpful especially in rough air. The key is: if the pilot loses sight of the tug, or is out of position — release!

Spin training was discussed. Most countries require full spin training despite the fact that several modern two-seaters cannot be spun easily. The problem will increasingly occur that clubs will not be able to teach spinning effectively whereas the single seaters will still spin. During annual checks full spins should be included — during spin training it is important to realize that a student at a low height will tend to pull back, to use too much rudder (if turning) and not relax. In Australia they emphasize prevention, then the ability to do spins and to recover from them.

It was agreed that a strong recommendation would be sent to all manufacturers that two-seaters should be spinnable. Unless the supply of two-seaters now coming onto the market are easily spun, clubs may find that they will have to retain older K13s, Blaniks, etc. to supplement their glass fibre two-seaters. This is happening now in the UK, for example, in order to comply with the BGA spin training requirements.

COSTS OF GLIDING

Several countries are making concentrated efforts to reduce or to keep costs down as they are worried over the trends in decreasing membership.

In Germany a typical winch launch costs $1.60 with rentals at $4-6 per hour (Cdn). In Holland, costs are kept down by all members doing work. The French have government subsidies; for example, all their tugs are government owned. There, the cost of training is about $300–$350. In Norway, 30–40% of members are youth, and half the pilots in Sweden are under 21!

Good club management and good promotion are required to keep the sport healthy. Think of it, a week's skiing holiday is equivalent to learning to glide.

Several other subjects were discussed and ideas exchanged but I won't prolong this report. It was an excellent opportunity to compare our organization and how we are trying to prevent government intervention, with similar problems elsewhere. I am encouraged with our overall way of doing things — two things are fairly clear though. First, we have a bit of catching up to do in our accident statistics. Either we have to have less (and not just in one year) or we have to fly more or have more members for the same number of accidents. I'll be addressing accident trends in a future issue. Second, I believe we are not very consistent in the details of how clubs do things. For example, some use 30m tow ropes, some 60m, some signal this way, some that; weak links are/are not standard, are/ are not used — take your pick! We are haphazard about tie downs, about leaving aircraft unattended, etc. In Europe you won't get away with being so slapdash, everyone is taught to be a thinking pilot, to be safe. I wish we were too — don't let's get complacent after a good (low accident) year in 1984. □

Trading Post (page 24) and back pages omitted

SAC DIRECTORS & OFFICERS

PRESIDENT & DIRECTOR-AT-LARGE
Bob Carlson
57 Anglesey Boulevard
Islington, ON M9A 3B6
(416) 239-4735 (H)
(416) 365-3558 (B)

VICE-PRESIDENT & PACIFIC ZONE
Harald Tilgner
90 Warrick Street
Coquitlam, BC V3K 5L4
(604) 521-4321 (H)
(604) 263-3630 (VSA)

ALBERTA ZONE
Ton Diening
Box 2569
Medley, AB T0A 2M0
(403) 594-2583 (H)
(403) 594-8369 (B)

PRAIRIE ZONE
Dave Hennigar
404 Moray Street
Winnipeg, MB R3J 3A5
(204) 837-1585 (H)

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

ONTARIO ZONE
Al Schreiter
3298 Lone Feather Cres.
Mississaugua, ON L4Y3G5
(416) 625-0400 (H)
(416) 926-1225 (B)

QUEBEC ZONE
Alexandre W. Krieger
1450 Oak Avenue
Quebec, PQ G1T 1Z9
(418) 681-3638 (H)
(418) 656-2207 (B)

MARITIME ZONE
Dick Vine
11 Garnett Street
Dartmouth, NS B2W 2N9
(902) 434-1573 (H)
(902) 426-3476 (B)

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

TREASURER
Jim McCollum

COMMITTEES

AIRSPACE
Dave Tustin
581 Lodge Avenue
Winnipeg, MB R3J 0S7

FLIGHT TRAINING & SAFETY
Ian Oldaker
135 Mountainview Road N
Georgetown, ON L7G 3P8
Mbrs: G. Eckschmiedt
John Firth
Alex Krieger
Chris Purcell
Manfred Radius
Ed Sliwinski
Al Sunley

FREE FLIGHT
Tony Burton
Box 1916
Claresholm, AB T0L 0T0

FINANCIAL
Gordon Bruce
Bob Carlson
Jean Matheson

HISTORICAL
Christine Firth
542 Coronation Avenue
Ottawa, ON K1G 0M4

INSURANCE
Al Schreiter
3298 Lone Feather Cres.
Mississauga, ON L4Y 3G5
Mbr: Bryce Stout
Bill Mather

MEDICAL
Dr. Wolf Leers
4-4889 Dundas Sreet W
Islington, ON M9A 1B2

METEOROLOGY
Sepp Froeschl
1845 Brookdale Avenue
Dorval, PQ H9P 1X5

PUBLICITY
vacant

SPORTING
Al Poldaas
36 Lake Crimson Cl. SE
Calgary, AB T2J 3K7
Mbrs: Jim Carpenter
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Wilf Krueger
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Ian Spence
Al Sunley
Hal Werneburg
Ex Officio: Dave Marsden

• **FAI AWARDS**
Boris Karpoff
24-1/2 Deloraine Avenue
Toronto, ON M5M 2A7

• **FAI RECORDS**
Russ Flint
96 Harvard Avenue
Winnipeg, MB R3M 0K4

TECHNICAL
George Adams
12 Hiawatha Parkway
Mississauga, ON L5G 3R8

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

WORLD CONTEST
Al Schreiter
3298 Lone Feather Cres.
Mississauga, ON L4Y3G5