

# Free Flight

official publication of  
THE SOARING ASSOCIATION OF CANADA

JUL / AUG 74

GP

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# *Free Flight*

THE NEWS LETTER OF THE SOARING ASSOCIATION OF CANADA

ISSUE 3/74

JULY - AUGUST 1974

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# EDITORIAL

Until 1970, a qualified pilot could fly gliders in Canada without passing a medical examination. The Ministry of Transport then ruled that a medical every five years would be required to validate a Glider Pilot's Licence. Now a proposal has been made by MoT to have the required medical examination every two years.

Have glider pilots become so irresponsible in the past five years that large numbers of us are flying when we are not physically capable? Are gliders, piloted by the frail and infirm, falling out of the sky menacing the lives and property of earthbound citizens? Do the doctors approved by MoT really need the extra \$15. or \$20. every two years instead of every five?

No, there doesn't appear to be any logic to this proposal beyond establishing a degree of standardization for frequency of medical examinations for non-commercial pilots. The need for an examination at all for glider pilots is questionable. There is nothing in our accident statistics that indicates any improvement because we now see a doctor every five years; and it is doubtful that there will be any change because we see one any oftener.

No one insists that the canoeist, the rock climber or the golfer see his doctor; why then is the right to participate in our sport legislated to such a degree? Are we not intelligent enough and responsible enough as individuals, as clubs and as a national organization to regulate our activities and establish safe standards for the protection of others?

115 years ago, John Stuart Mill said that "the only purpose for which power can rightfully be exercised over any member of a civilized community against his will, is to prevent harm to others. His own good, either physical or moral, is not sufficient warrant".

Let us work with MoT to prevent harm to others, but let us insist on our right to pursue our sport without unnecessary rules to protect us from ourselves.

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## MoT Proposals

OTTAWA - New maintenance of competency rules which the MoT has proposed as amendments to its Personnel Licensing Requirements, will introduce mandatory proficiency checks for pilots to the Canadian aviation scene for the first time. Holders of all types of pilot licenses will apparently be subject to the checks.

The proposed requirements, covering both competency checks and recent experience, are included in a long list of proposed amendments to the Personnel Licensing Requirements which is currently being circulated for comment from the Canadian aviation industry.

Proposed amendments to Glider Pilot License:

1. Amend experience requirement from three hours to six hours.
2. Amend privileges to require ten hours flight experience as a glider pilot prior to the carriage of passengers.
3. Amend medical validity period from five years to two years as required for a Private Pilot License.

## Walter Chmela adds 3rd diamond

Assuming his photos turn out and his baragram is OK, Walter Chmela has his diamond distance in the bag as a result of a flight on July 1st. The flight originated at York Soaring near Arthur, Ontario and went by way of Burlington and Niagara to end about twenty miles west of Albany, New York. The distance is about 535 km (334 miles) and the flight time was 5 hours and 45 minutes.

## Moving?

If you are changing your address please advise the SAC Secretary, Mrs. Terry Tucker at 786 Chapman Blvd., Ottawa. Don't send your address change to the FREE FLIGHT editor as this will only slow down the change which has to be made in Ottawa where all membership records are maintained.

## Correction

1973 Flight Statistics published in the last issue of FREE FLIGHT had two columns incorrectly headed. The column headed "A Badge" should have read "Instructor Rating" and the column headed "B Badge" should have been "A Badge". Reports were received from Wide Sky, Calgary, Edmonton and Alberni Valley but were too late for the report that was printed.



# YOUR LETTERS

Dear Bob,

Last April, while flying a Cessna 172 IFR from Montreal to Oshawa, Ontario, I had an unusual experience. I was at 6000' about 20 miles from Ottawa on Victor 300S when I encountered steady sink. The usual cockpit checks suggested there were no fuel flow, carburetor ice or other aircraft-related problems. Even with increased power and a climb attitude, it proved difficult to maintain altitude.

This situation lasted about five minutes, after which I encountered steady 200 to 300 fpm lift for about five minutes. This cycle was repeated for about 100 miles, making me think I was flying across a series of waves. A Gulfstream which was flying the same route at the same time at 10000' reported only a "light chop".

The winds aloft forecast was for NW winds at 15-20 at 6000'. The sky was clear along the route and to the NW, but to the SE, perhaps 20-30 miles away, was a deck of altostratus, NE-SW. As the flight progressed, the leading edge of this deck produced several unmistakable lenticular clouds. These were not evident when the first waves were encountered.

Presumably the waves were triggered by the low hills in Algonquin Park, although the surface winds were moderate.

In Britain there are numerous places where waves are triggered by insignificant looking hills, sometimes when the surface wind is only 5-10 mph. At Tavistock, Devon, they pick up waves from a 700' winch launch. Canada must have similar spots. If your readers reported waves they've seen, perhaps some new wave soaring sites could be identified.

Yours truly,

Neil A. Macdougall.

Thanks Neil for your report of an interesting flight. I hope the readers take your suggestion and report on their observations of wave conditions across the country. See the article on pages 12, 13 & 14 about wave conditions in Quebec.

Ed.

Dear Bob,

## 1974 TROPHY FLIGHT CLAIMS

The honour of making the first trophy flight claim for 1974 goes to Michael Gordon-Smith for a completed 312 km triangle flight made on June 2nd.

All pilots are urged to consider reporting their flights. Remember that a modest flight made early in the season may give the few points necessary to make the total the winning total for one of the trophies. Any number of flights may be reported - only the best five are taken into account at the end of the season. The rules and method of reporting are given elsewhere in this issue of FREE FLIGHT.

I am anxious to hear from you.

Yours truly,

Jeff Tinkler,  
364 Waverley Street,  
Winnipeg.

See page 24 for the rules the BAIC, Canadaair and "200" Trophies. Also see page 25 for a sample flight report. I'm sure additional copies can be obtained from Jeff Tinkler at the above address.

Ed.

Dear Bob,

It seems that in spite of the many obstacles to overcome, Don Skinner manages to arrange the Western Instructor's Seminar and reign over it during a busy seven days.

June 1st, 1974, the towplane and Blanik arrived from the Wide Sky Flying Club within two hours of the proposed time of arrival. Don was first to welcome the Wide Sky contingent together with Hugh Hicklin. No time was wasted and after lunch the check rides were started. Almost every flight had to be abandoned in good lift to keep the schedule for that day.

Of the eighteen people attending, the following clubs were represented: Alberni Valley Soaring Assn. - Sandy Brown and Art Jackson; Comox Gliding Club - Bob Denier and Gill Boulay; Wide Sky Flying Club - Barry Holland, Harvey Ruddell, Lloyd Haffey, Frank & Lotte Hinteregger; Cu-Nim Gliding Club - Don Skinner, Hugh Hicklin, Simon Vouens and Allan Powell; Edmonton Soaring Club - Neil Bell; Cold Lake Soaring Club - John Erkelens and Jim Howse.

Out of the seven days, two were rained out completely. Fortunately, the first day found everyone in good spirits while trying for good lift during the check rides, which continued the next day with more or less the same conditions.

Monday was a so called "lull after the storm" day. Since the lesson plans had to be followed it was almost a built in condition and very few were tempted to push to their maximum time allowed (30 minutes), in fact, it would have been a mini championship had anyone been able to stay up longer.

Tuesday looked more like a Thanksgiving Day than the 4th of June and the lectures were continued in the afternoon with lesson planning and other discussions. It was agreed that the next day would be devoted solely to flying.

When Wednesday morning rolled around, the idea had to be scrapped because of the scheduled lecture by Mike Shewel from the Department of Environment on Meteorology. Great interest was shown by the participants concerning the problem of forecasting good soaring weather as well as general principles of thermal formation and origin.

As if Mike had brought all the forces of nature to Penhold, the afternoon was blowing in the thirties changing the routine lesson flights into a refresher course on wind gradients. In spite of that every landing was on the button speaking for the quality of the attending pilots.

Thursday evening at the "Granada Inn" Don Skinner presented some of the Certificates which the attending members accepted on behalf of the club members. Mrs. Doris Jewell, Deputy Mayor of Red Deer, thanked the group for the invitation and she was keenly interested in the problems of our sport as well as the problems of General Aviation.

Don Skinner indicated that this was probably the last year the Seminar will be held at Penhold. In her comments Mrs. Jewell assured the group of her support - having a son and husband who are pilots - when arrangements are being made to hold the 1975 Seminar.

The weather gave a repeat performance of Tuesday when some of the "die hards" gathered in the Mess Hall while others had their own "under the weather" problems next morning. The usual lively morning session was strictly business and after summing up the recommendations for future revisions of instructional procedures, preparations were made for early departure.

Yours truly,

Frank Hinteregger.

## CLUB NEWS

The biggest news around Erin this spring was the successful resolution of our conflict with the Toronto Terminal Radar Service Area (TRSA). The MOT has talked about the TRSA idea for some years without publicizing a firm effective date. Air Navigation Order V.25 became effective in January 1974 (though it didn't arrive in the mail until late March) and limited flight in the TRSA to pilots with Private Licences or higher, and aircraft with VHF radio and directional gyro. We could not easily fulfill either requirement, and the Toronto TRSA begins 700 feet above our runway! We initiated discussions with the Regional ATC staff in early April. One of our members, who is an ATC supervisor, acted as liaison. The Regional ATC was very cooperative, and it was agreed that the best solution for all concerned would be an exclusion from the TRSA. (That is, the removal of a chunk of airspace from the TRSA.) The proposed exclusion was five miles in radius (therefore including both the Erin and Caledon clubs) centred on the town of Erin, and extending from ground level to 9500 feet ASL. Before the exclusion was proposed, we had thought that our only option was an Alert Area over the field, activated by a phone call to ATC. The exclusion plan turned out to have advantages both for us and for ATC. On our side, no contact or clearance with ATC would ever be required, and we would always be assured of adequate airspace for our operations. Also, the exclusion would give us a useable corridor to the edge of the planned 22 nm. radius TRSA (it is presently 20 nm. in radius) which a smaller Alert Area would not provide. From the ATC side, numerous "nuisance" contacts with gliders would be eliminated, and ATC would have more flexibility in routing traffic than under the Alert Area scheme. The TRSA exclusion was quickly (two weeks) approved, and will be shown on charts. It will be reviewed after a period of one year. Our club has

never conflicted with power traffic, and the heavy jets cross the field infrequently and at high altitudes. We feel that this was certainly a factor in the successful resolution of our TRSA problem. We were pleased to find ATC so responsive to our needs, and we hope that such cooperation will continue. Our thanks go to the ATC for their helpful attitude. Erin wound up its 1973 season with 1226 flights in three club and eight private sailplanes, with our cross-country activity greatly increased from last year. Our towplane loan was half way paid off after one and a half seasons of service from the Supercub UZE. Over the winter a ground school was attended by about eight people. The club also organized a February gliding weekend at Belleville Flying Club, where ten pilots enjoyed a very hospitable reception. The weather cooperated on Sunday, and thermals to 2500 feet were reported. Not much by June standards but no one complained! Operations for 1974 began April 12, and we had logged 90 flights by the end of April. The month of May opened with cloud bases at 8000 feet ASL. Bill Mather got the first badge of the season, a "C", while the private owners muttered about their unprepared gliders.

### ERIN SOARING SOCIETY

#### FROM THE EDMONTON "TOWLINE" - MAY 1974

The entire roster of the Cold Lake Soaring Club has been transferred...(the Canadian Forces do this sort of thing)... to the Suez Canal observers zone. They would love to take their gliders but are wondering how to avoid being shot at by missiles from both sides.

WIDE SKY FLYING CLUB have received MoT permission to lease land at Fort St. John airport for a club house.



## AIR SAILING CLUB

Born with the idea of promoting soaring rather than gliding on a club basis, a handful of soaring pilots founded AIR SAILING CLUB INC. in 1968. Flying commenced that year in late August with a new Schleicher ASK-13 and a second-hand Supercub.

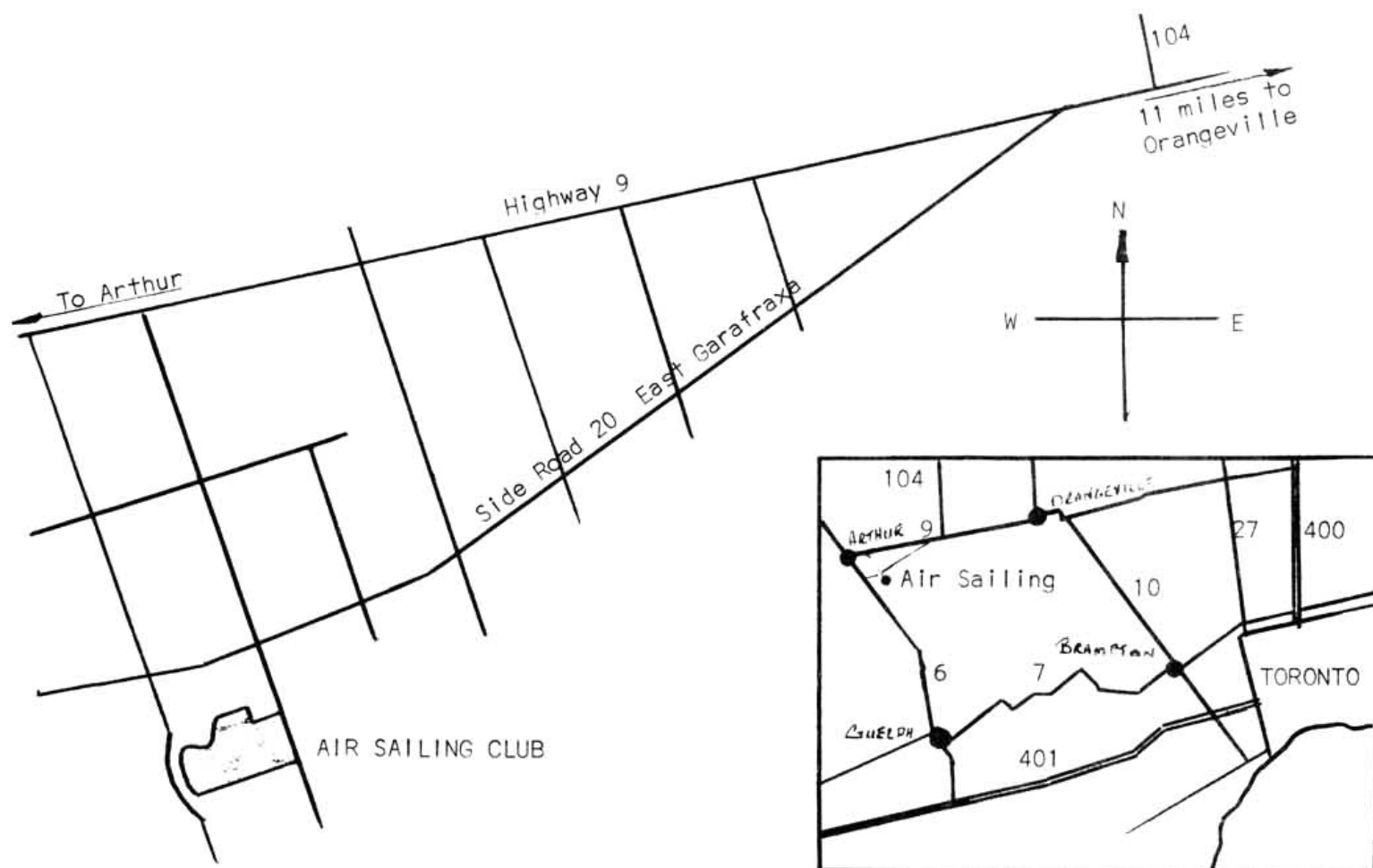
During the following winter the need for a second two seater was realized. We took delivery of a second ASK-13 in June of 1969 and a KA-6 followed in 1970. During the winter of 1971 our Supercub was stripped, overhauled and recovered. In 1972 a brand new 150 HP engine put new pep into the tug and in 1973 our three sailplanes were equipped with Geneva Alpha/10 transceivers plus a ground station. We made several cross-country flights and the radios proved to be an asset.

For the 1974 season a Polish Cobra 15 has been delivered. It has an L/D of 38:1 and is aerobatic with a top speed of 157 mph. Two Alpha/100 s have been purchased to equip the Cobra and the Supercub. These radios will enable us to call most of the Southern Ontario airports for the latest weather reports, which we would like to pass on to all soaring pilots within radio range. Please call Air Sailing on 123.3 MHZ for the latest weather information.

The map will show you our location. Come and visit us during the 1974 flying season. We are operating every weekend plus several weeks during July and August. Gas for your towplane is available, telephone and food, and don't forget your swim gear, we have the use a 30' x 60' swimming pool.

FOR FURTHER INFORMATION CALL:

D. Kiklas, 742-2308 or R. Wiesbrook 844-0328 (Oakville)



## CLUB NEWS

Arthur Martin of Central Ontario Soaring Association reports that their operation north of Peterborough got underway April 27th. There was a little lift about mid-day but most of the flying was checkouts for the members.

Three of the club's instructors are authorized by the MoT to check out glider pilots for aerobatic endorsement.

In addition to the club Blanik, 2-22E and a Grunau Baby; there are five privately owned aircraft operating from Chemong, a Ka6, Blanik, Bergfalke III, Lk-10A and a Cherokee.

The club is hoping to replace the Super Cub with an L-19 in the near future.

These words of wisdom from Jeff Tinkler CFI at the Winnipeg Gliding Club:

The club had an excellent safety record last year. This year we should try to improve it. How? By having another accident-free, incident-free season, and by reducing the number of potentially dangerous situations! It is well known that safety standards tend to slip as the time since the last accident increases, therefore we must make a conscious effort to practise good airmanship. One way is to behave as if someone is watching us critically all the time. Safety is no accident!

Ross Bartlett of Montreal Soaring Council has sent an announcement of an International soaring marriage.

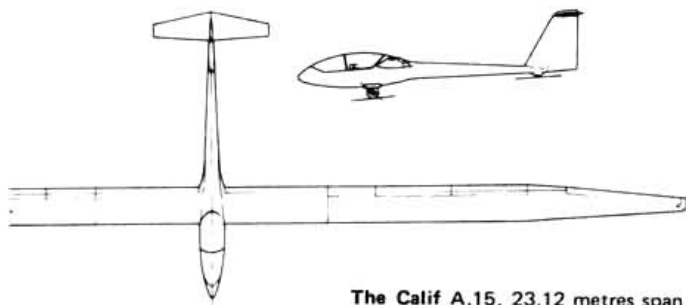
Glyn Morgan of the Montreal Soaring Council and Donna Hueimmer of the Minnesota Soaring Council were married in St. Paul, May 18, 1974.

Glyn and Donna met at last year's Canadian National Soaring Championships while crewing. Glyn was crewing for Gunther Geyer-Doersch flying an LS-1 and Donna was crewing for Walter Hardie of the Minnesota Soaring Council, flying a Ka8. Glyn and Donna plan to reside in Montreal.

From R. Wilson of Rideau Gliding Club: In 1973 we bought a new 2-33 and had it flying solidly from April until December, 800 hours in which ten new pilots became solo pilots and enthusiastic members.

Two Silver "C" altitude gains were achieved in the Cherokee II and a 17 mile first effort cross-country. This encouraged some members to give the homebuilt a facelift. Gary Droppo led the project of recovering through the winter. The "new" bird was test flown on Saturday, May 18th, went to Pendleton on Sunday and on Monday was looking down on "superglass" ships and unbelieving pilots, as Gary soared for over four hours. Another partial recovering, refitting project is almost completed on the LK-10. The Auster continues to be our work horse, though we are looking for a more conventional tow plane as a replacement.

We welcome the opportunity to thank Gatineau Gliding Club for the hospitality and friendliness which they extended during our visit throughout the week of the instructor's course. They certainly give the smaller clubs some admirable goals to seek.



The Calif A.15, 23.12 metres span

# The Spectators



## FREE FLIGHT en français

A l'avenir il y aura des articles en français dans "FREE FLIGHT". Le premier article est publié dans ce numéro.

Veuillez soumettre tout texte (de préférence au dactylo) à l'éditeur; ces textes seront sujets à être édités afin de s'en tenir à l'espace disponible.

Tom Baribault est co-éditeur des articles français. Tom est un nouveau membre du Pioneer Soaring étant auparavant membre du Quebec Soaring Club.

Scheduled deadline for the September/October issue of "FREE FLIGHT" is August 22, 1974. Mail material as early as possible for the next issue to:

FREE FLIGHT EDITOR,  
43 SEALCOVE DRIVE,  
ETOBICOKE, ONTARIO,  
M9C 2C7.

Proposed deadlines for future issues are as follows:

Issue 5/74 November/December October 24.  
Issue 1/75 January /February December 16.

## MOT Criticized

MOT's proposal to end multiple registration of aircraft in Canada has been sharply criticized by Tony Swain, EAAC's western representative.

He described the move as "an unwarranted invasion of the freedom of ownership normally accepted in our country and I am appalled that a more appropriate solution to the multiple registration problem could not be found.

"This hardship is to be inflicted on those who find it advantageous to share an aircraft, apparently because the department finds that some groups ignore airworthiness requirements.

"Surely there are penalties available to bring the slackers into line without visiting their sins on all of us. It is within the department's power to revoke C of A's for just cause, surely.

"Where does this leave the partners building an ultra-light together, groups that share an aircraft to defray expenses? Is flying to be the domain of the single and the affluent?"

MOT gave a number of reasons for wanting to end multiple registrations; claiming difficulties in communication in matters of custody and control, availability for inspection and responsibility for ensuring airworthiness.

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## John Firth sets

### new record

An FAI Awards Record Certificate has been issued to John Firth for a 400 km triangle flight made on June 2, 1974 Buckingham, Quebec.

The flight was carried out in an HP-11, CF-RNN and according to SAC Awards Chairman, Ken Round; it appears to be the first 400 km record attempt since this distance was included in the records list.

The actual record is 408.8 km in 5 hours 15 minutes for a speed of 77.9 km/hr. (255 miles at 48.6 mph.)



## Book Review

"Sailplanes & Soaring" by James E. Mrazek. Published by Stackpole Books, Harrisburg, Pa. 1973.

Mrazek is a retired U. S. Army colonel who had a long experience with military gliders in World War II. His association with the glider crew training program led him to his continued interest in soaring as a sport. The author previously wrote "Fighting Gliders of World War II" and "The Glider War" both published by Robert Hale, London.

This book is for the beginner, it explains what soaring is all about and how to get started. A typical day at the airfield is described and the author is honest enough to say, "Perhaps the most frustrating part of soaring is the amount of waiting one must do."

Facts about sailplanes, controls, instruments, launching methods, meteorology and crewing are covered in separate chapters along with line drawings and a few photos which plug Schweizer's products.

Not the sort of book a glider pilot would buy but certainly worthwhile for the beginner or for the local library to have to satisfy the average reader's interest in soaring.

If you have any new books related to soaring, let us have a report with details of the author, name of the publisher and any comments you have about the contents.

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"Inflation hasn't ruined everything, a dime still works as a screwdriver!"

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## PILATUS B4



## Mountain Waves in Eastern Canada

by Walter Pille  
& Maurice Laviolette

Wave flying to most glider pilots implies long drives and many frustrating trips before experiencing this exhilarating form of soaring. Driven by an unexplicable calling known only to soaring pilots, members of our club have in previous years undergone the ritual of driving hundreds of miles to watch the rain at either Sugarbush or Mount Washington. However, last year we initiated our own wave camp at a site which displays some remarkable and perhaps unique geographical features: Baie St. Paul, 60 miles north-east of Quebec City on the north shore of the St. Lawrence River.

For many years we have been aware that wave formations regularly develop over the Laurentian mountains, since classical lenticular clouds would loudly advertise that fact. On some occasions, wave clouds have been seen running parallel to the St. Lawrence right over Quebec City! The sight of these lenticulars from one's own backyard certainly whets the appetite of a soaring pilot.

From the accompanying chart it is evident that Baie St. Paul is a prime site for wave as it offers a valley about 10 miles long running north/south from the St. Lawrence River. This valley is favoured since the winds are generally from the west. The site is even more exciting when viewed from the air. The west ridge which defines the valley has the shape of a perfect semi-circle from Baie St. Paul north then east toward La Malbaie. The centre of this semi-circle falls half way between these two towns on the high peaks just east of Les Eboulements. Geologists claim that this unique formation resulted from a large meteorite impact millions of years ago! The elevation of this semi-circular ridge is generally about 3400' ASL. Looking from the perimeter of this ridge toward the centre, a pronounced drop of 2000' is followed by a more gradual descent within the valley. The terrain then

rises to the 2500' peaks at the centre of the semi-circle. This all implies that waves should form from any wind direction from the north-east to the south-west.

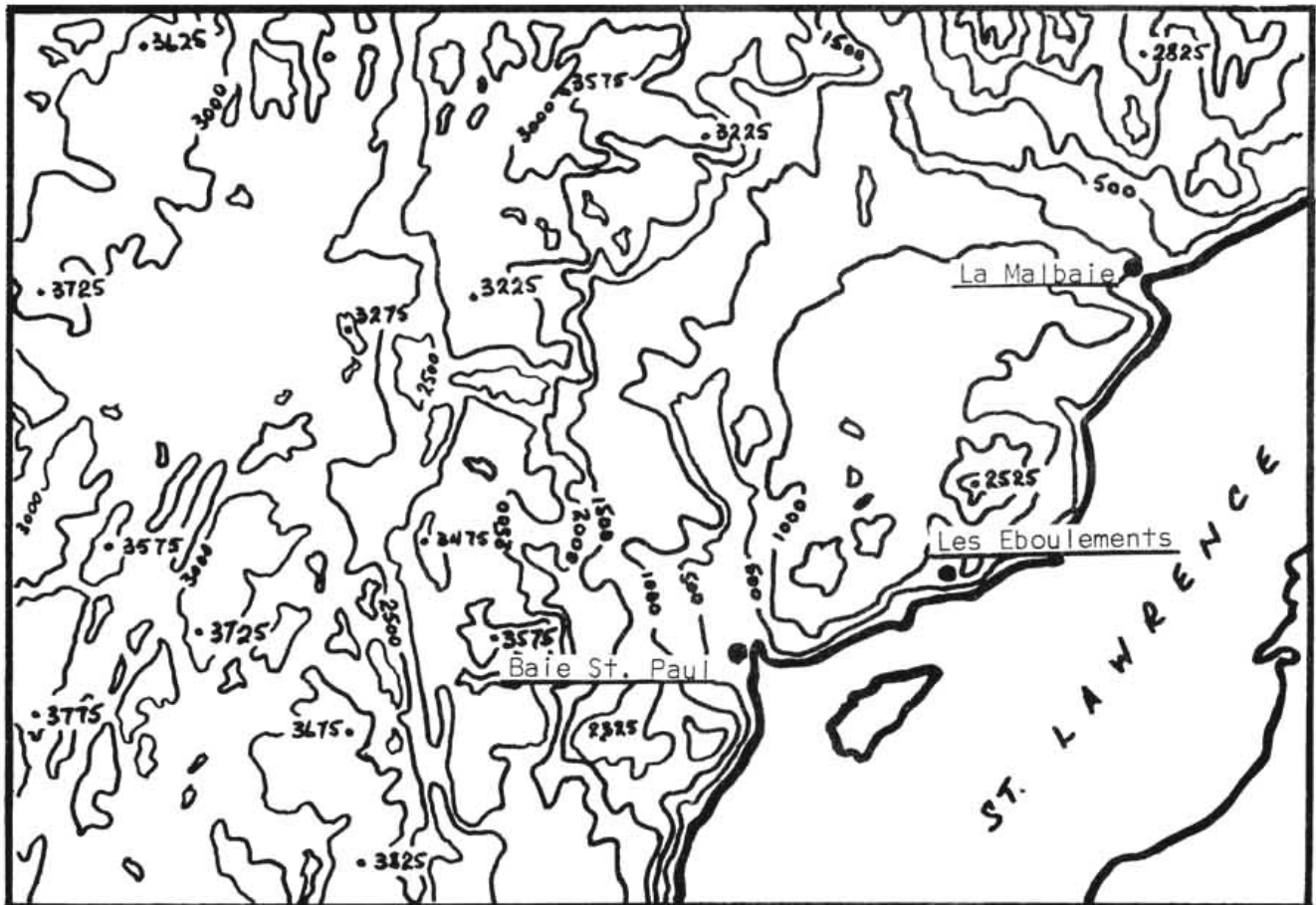
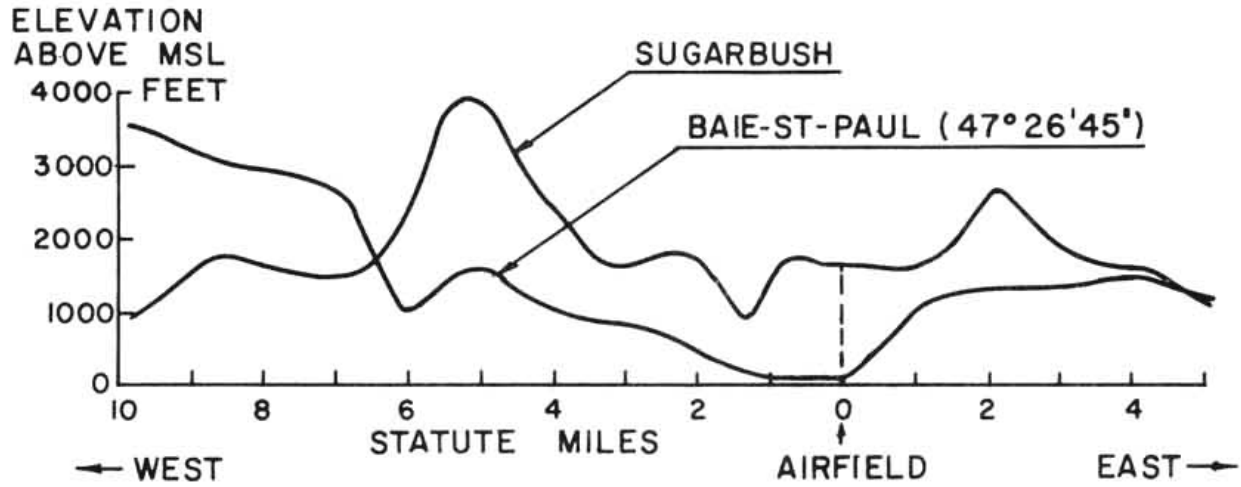
Comparing Baie St. Paul against the well known Sugarbush, we see that in this west/east cross section the effective vertical drop for Sugarbush is about 2500' and 3400' for Baie St. Paul. However, the general profile of Baie St. Paul does not present as steep a gradient, nor is it a symmetrically shaped ridge. Westward the profile remains over 2000' with the mountains of Le Parc des Laurentides. Yet strong waves more than 15 miles long are produced over the valley.

After a three year absence, we decided to return to Baie St. Paul for a second attempt at wave flying. Our first wave camp there was unsuccessful due to poor weather and an unforgettable engine problem with the old Auster. But we had promised to return with a better tow plane. With the new club Champion Citabria and a fleet of four gliders - a Ka6CR, a Blanik, a Standard Cirrus and a 19 m Kestrel - we began our adventure late last September on a small 1800' field (elevation 25' ASL) situated between the town and the river.

The first wave contact at Baie St. Paul was made by Pierre Rochette during the first week-end of the camp. The wind was from the north with no lenticulars on this occasion. The locals below must have been wondering where the "hurrahs" and "bravos" were coming from! The following week-end, several of us made four hour wave flights. The winds in the cloudless sky were only 20 knots north-north-east at 9000', yet the variometer readings were 300 - 600 ft/min. at this altitude.

Perhaps the north wave is also aided by the vast expanse of the St. Lawrence River, 15 miles wide here. Since the terrain north of the river is relat-

# BAIE-ST-PAUL & SUGARBUSH GROUND CONTOURS



ively warmer than the river with diurnal heating, cold air rushes inward in a northerly direction. As a result this wind may act as a local front which the northerly sees as a ridge, enhancing the effect of the mountains further north. We have often observed this "lake effect" where in the morning the winds are relatively warm and northerly, but change rather abruptly to a cold southerly, killing any thermals in the area. The north wave is reached four miles up wind from the field at about 4000' ASL. A wave crest is located just north of the town followed by another south of the airstrip over the St. Lawrence River.

Southerly winds also permit ridge soaring just over the shoreline from Baie St. Paul down-river. The ridge rises from the river with a sharp gradient to about 1500'. A two hour flight was made in the Ka6CR in this manner between 1800' and 2300' with a maximum lift of 200 ft/min. This lift seemed to run endlessly down the river, but one could not venture far in case the lift quit for the only level place to land would be the river! We might add that flying over an expanse of water is slightly unnerving at first - but what a splendid view!

The west wind seems to generate equally good wave. On our last week-end there in early November, we woke up on Sunday morning to see a beautiful display of lenticulars. The tow into the wave was the roughest any of us had ever experienced, with extremely strong gusts tossing the Citabria and gliders like leaves in the autumn breeze. Unfortunately the thermals arrived early that day to break up the wave. Here again a paradox; the air was extremely rough yet we could find smooth thermals of over 1000 ft/min. from 1500' to 6000'.

Another peculiarity of Baie St. Paul is its weather. On a Sunday in late October the weather in Quebec City was absolutely horrible with a steady rain, 40 mph westerly winds, and a very low ceiling. Some of us drove to

Baie St. Paul just to check the machines but upon arriving there we discovered, to our surprise, a sky wide open over the valley, no rain, and very little wind on the field. The most beautiful lenticular structure we ever saw appeared at about 4:00 pm. Three long rows of lenticulars were equally spaced at approximately 5 - 8 miles and beautifully stacked. The scene at sunset is impossible to describe. On our return that night, we came across rain, wind, and a low ceiling just five miles out of Baie St. Paul!

During the six week-ends of the wave camp, we experienced wave on four. Judging from the height of the lenticulars over Baie St. Paul, we are convinced that wave flights over 25000' are possible. Last year we were constrained by the 9500' airspace limit, but we hope that collaboration with MOT and some help from SAC will allow us clearance for diamond altitude gains this year.

A wave of thanks is due to the many people who made the camp a success, notably Pierre Rochette for its organization and Omer Martin as the principal tow pilot. Next fall, expect to read about the first Diamond altitude gains to be made in Eastern Canada!

## ABOUT THE AUTHORS

WALTER PILLE During the past eight years he has been a member of SOSA, Gatineau Gliding Club, and presently QSC, having earned the Gold Badge with Diamond Goal. As a graduate of McMaster University in Electrical Engineering, he is employed at the Defence Research Establishment Valcartier (DREV) in the minicomputer field. Other sports activities include canoeing, hockey, and skiing which overlaps the soaring season in the Quebec City region.

MAURICE LAVIOLETTE He has been involved in soaring activities for twelve years, having assumed a duties at QSC including president for two years. He has accumulated over 600 hours in gliders and is a half owner of a Standard Cirrus. Having received the Aeronautical Engineering degree at the University of Michigan, he is employed at DREV as a weapon aerodynamicist. He is the recipient of the CASI Romeo Vachon Award for an outstanding contribution to Canadian aerospace technology for 1974.

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### Where do you fit?

Membership in every club is made up of four kinds of bones.

1. There are the *Wishbones* who stand there wishing someone else would do the work.
2. There are the *Jawbones* who do all the talking but little else.
3. There are the *Knuckle Bones* who knock everything anyone else tries to do.
4. Then, thank goodness, there are the *Backbones* who get under the load and do the work.



## S a f e t y

During the luncheon break at the last A.G.M. there was a discussion on accident reports; whether or not they should be published and what was gained from them. There was an undoubted consensus that they serve a very useful purpose and when published, reach the largest possible interested group. There have been many discussions on the merits of publishing full details, names, date, type of aircraft, and environment; or just giving the barest details in an effort to provide the lesson but ensure the anonymity of those involved.

S.A.C. has tended to the latter viewpoint although I personally feel there are more problems raised by trying to hide identities than not. To those who badly want the information there is no real obstacle to uncovering it. To the casual reader it may arouse interest in a direction serving no purpose relating to flight safety, what we want to do is provide a lesson to prevent a repetition and that is the primary objective of publishing anything at all.

A narrative report has its place and very often it is adequate by itself but an accident or incident is after all a happening which has cause and effect. It provides data of considerable value, often never again available. It is also a statistic which when properly analysed, can point the need for emphasis and preventative measures either in training, operating or technical aspects. Over the years the Safety Committee has developed a reporting system which as it grows, is beginning to show where the problems lie and hopefully allow those concerned to direct corrective action. It has suffered from lack of data and only when it is consistently completed will it provide real answers.

There is interesting reading on the difficulties of estimating statistics in Herold's Hearsay column in "Soaring" March 1974 (p.30) and Letters to the Editor (p.2) in the May 1974 issue.

Under new terms of reference to be published soon, the S.A.C. Safety Committee will have enlarged its role. The Chairman will be known as the S.A.C. Safety Officer and one of its new tasks will be to try to establish a similarly titled individual for each club. This will enable better communications on the subject and encourage the return of statistical and other information which can be published in FREE FLIGHT. Thus it is hoped that each issue will have a timely lesson from our own or other bitter experience.

Safety, while everyone's business, seems to gain emphasis when someone is made singularly responsible for it.

A. N. LeCheminant,  
S.A.C. Safety Officer.

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## FLY NOW, BRAG LATER

THE FOLLOWING IS AN EXCERPT FROM AN ARTICLE PUBLISHED IN THE MARCH/APRIL ISSUE OF "QUEST"

For some reason, in North America, the air sports have machismo.

Tell someone that your sport is golfing and you're lucky to get an acknowledgement. But tell them that you glide and you get respect.

Ah, gliding! The ultimate sport. The art of Jonathan Livingston Seagull. To soar effortlessly on sunlit wings, free of engine or distraction, to share the silent sky with the eagle itself, to challenge Nature at her own game- that indeed, must be to taste immortality.

Well, yes.

But one day you are competing in this contest and things are going very badly. You're somewhere on the second leg of a 200 mile triangle, you're lost and you're low. Too low: 500 feet above inhospitable terrain. You have two minutes left in the air and you promise God that if He'll only get you down in one piece just one more time you'll never set foot in another glider.

You scrape into the pocket handkerchief field that He provides but He omits to do anything about the irate farmer who owns it or the notably unconstipated cows that populate it and that even now are trying to eat your glider. They like the taste of the glue.

When your crew arrives with your trailer five hours later to disassemble your machine, they wonder aloud at your inability to stay airborne, since every other competitor completed the course hours ago and reported booming conditions. You contemplate killing them but instead you buy them dinner,

because that is a gliding tradition.

You plan to steal away in the middle of the night and never be seen again. But at 10:30 next morning the first cotton-wool cumulus pops in a perfect sky and you would strangle your wife and disembowel your children if they stood in the way of your getting to the starting line by noon.

That's gliding. What comes down must go up.

It is of course in the going up and staying up that the challenge and satisfaction of gliding lie. To learn merely to fly a glider is marginally easier than learning to fly a power plane. You get towed up, generally to 2000 feet by a power plane, you release and some 15 minutes later you are back on the ground. Pleasant enough but not all that exciting.

But to release at 2000 feet, then climb unaided to 5000 feet or so, then set off to a predetermined turnpoint 100 miles distant and then return non-stop to your home airfield, is a task that requires good weather, at least five hours, a fair share of luck and a large chunk of skill. It's also hard work. The reigning American soaring champion, George Moffat, summed it up recently: "If you haven't made an important decision in the last minute, you're loafing."

Glider pilots exploit lift to remain airborne, the most common source being the thermal. All thermals have one feature in common, they are elusive. They are not only hard to find, they are frequently hard to stay in when you do find them. Thomas's Law states that, "The number of thermals existing on a given day will be one less than the minimum number required for completion of the task undertaken."

BY WYNNE THOMAS

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### 2-33A

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### 2-32

This is an all-metal, high performance (2-1/2) place sailplane. Features include limiting speed dive brakes, astrodome canopy, completely furnished cockpit, etc. Monocoque construction, flush riveting and laminar flow wing. Rear cockpit can take two people weighing up to 300 lbs. Excellent for all types of soaring; as well as competition and record flying. Price for complete sailplane - \$17,995.00.

### 1-34

The 1-34 was designed to meet the International Standard Class requirements, and the demand of soaring pilots for an all-metal ATC'd high performance ship. Ideally suited for all types of soaring - sport, wave, FAI Awards. The 1-34 incorporates many famous Schweizer Features, including rugged all-metal construction for safety and minimum maintenance. Limiting speed dive brakes are standard equipment. Special attention has been given the cockpit layout for comfort and visibility. Prices from \$10,225.00.

### 1-35

A new high performance standard class competition sailplane. Production began in the spring of 1974. Positions available for 1975 delivery. Prices - from \$11,675.00.

## ACROBATIE AERIENNE

Paul Bisson

Dans cet article j'aimerais parler d'acrobatie aérienne. Je vais décrire deux manoeuvres primaires. Je me servirai de termes anglais dans ce texte lesquels me sont plus familiers et lorsque je donnerai des instructions en acrobatie je me servirai aussi de termes anglais.

Premièrement il faut comprendre qu'on ne peut faire de l'acrobatie avec n'importe quel avion ou planeurs. Dans certaines manoeuvres l'avion est soumis à des forces que l'on appelle "G". On peut tirer des "G" positifs ou négatifs. Notre 1-26 permet au pilote d'atteindre des "G" positifs de 5.6 et des négatifs de 1.6; ceci veut dire que sur le positifs sa pesanteur peut augmenter de 5.6 fois et au négatif de 1.6 (inverse) avant qu'il y ait défaillance dans la structure. Un "G" positif est obtenu dans un tournant soit horizontal ou vertical avec l'élévateur dans une position élevée, un négatif avec l'élévateur dans une position baissée. Un tournant fait avec l'élévateur est appelé "Elevator Turn". Les deux manoeuvres que je décrirai dans ce numero sont le "spin" et le "loop". Dans un autre numero je parlerai du "hammerhead turn" et de différents "rolls".

"SPIN".....Une manoeuvre où l'avion descend au vertical en tournant, l'aile à l'extérieur du tournant a du "lift", l'aile à l'intérieur ne vole plus. Les ailerons et l'élévateur ne répondent plus aux commandes; le seul contrôle qui demeure actif est le "rudder". Un avion peut tomber accidentellement dans un "spin" c'est pourquoi il est très important que tous les pilotes connaissent la façon recouvrer de cette manoeuvre. La façon normale d'entrer dans un "spin" est la suivante: on amène l'avion au point de "stall" avec le nez élevé à un angle d'au moins 45 degrés, on applique le "rudder" assez brusquement dans la direction du tournant désiré tout en ayant le colonne de contrôle complète-

ment en arrière, à ce moment l'aile intérieure se sera ralentie et perdra son "lift" tandis que l'aile extérieure sera accélérée et augmentera son "lift", alors le nez tombera brusquement tout en tournant du côté désiré. La méthode conventionnelle de recouvrer est de pousser le bâton de contrôle à l'avant et le "rudder" du côté opposé au tournant, lorsque le tournant arrête on tire sur le bâton graduellement pour sortir du plongeon dans lequel se trouve l'aéronef. Le pilote devrait essayer de ne pas obtenir plus de 3 "G" dans le recouvrement.

"Loop".....Puisque les vitesses d'entries ne sont pas les mêmes sur chaque avion ou planeur, je me servirai du 1-26 comme modèle. On obtient le "best penetration speed" en baissant le nez pour obtenir une vitesse de 75 mph, tirant le bâton de commande graduellement avec une bonne pression et maintenant une pression constant sur le "derrière", une fois le planeur à l'envers on doit regarder très vite, même instantanément le bout des ailes pour s'assurer qu'elles sont parallèles à l'horizon. Pour la deuxième partie de la boucle on doit garder une pression constante sur l'élévateur sans exagérer et sans laisser le nez au vertical trop longtemps car la vitesse augmente rapidement et quelques secondes de trop peuvent occasionner des manques de structure. Le pilote qui, à la fin du "loop" obtient une vitesse d'environ 65 - 70 mph a accompli une belle manoeuvre. Il est important au dessus du "loop" (à l'envers) d'avoir un moment d'hésitation par avant sur le colonne de contrôle.

### Recommandations:

Etre certain qu'il n'y a pas de trafic aérien dans la région.  
Avoir une altitude d'au moins 3000 pieds.  
Aucun objet libre dans l'avion.  
Ceintures de sécurité serrées.  
Instruments normaux.  
Obtenir les instructions nécessaires avant de s'aventurer.  
S'en tenir aux règlements de l'air et du club.

## Peripatetic Gliding

Travel around the world a little and you will find great differences among gliding clubs. Some are warm to the visitors and convivial in spirit, adding much enjoyment to the soaring sport. But some are terribly tense and emotional, and make one think of the expense involved in gliding instead of the fun to be had.

However, the greatest variation to be found among soaring centres is in ground facilities available. The mixed bag of aircraft flown doesn't change much from place to place, except Japan, where unnamed and awkward beasts have been designed locally as trainers). Nor do soaring techniques vary a great deal, although flying standards may be higher in one place than another. It is in the area of creature comfort that the differences can be strong, striking and even stupifying at times.

I was invited to fly one Sunday as a guest of the glider club located about 35 miles north of Milan - a car would collect me before breakfast and I could dine before takeoff, I was told. It was the first time I felt I should have turned up in a tuxedo, instead of the second hand overalls I am used to. The head waiter at the gliding club informed me the chef would personally attend my table to discuss the preparation of my "eggs marnier". Meanwhile the wine steward was chilling a half bottle of his own selection. (I wonder how the Italian flight regs. read?) Coffee, it was gently suggested would be served in the pilot's lounge. (I hoped for a short flight at this point.) The Lounge sported its own room steward who moved his finger in a "no - no" fashion each time I approached one of the many comfortable looking armchairs. I guessed they had become sacred but each belonged to one pilot or another. A hard little wooden perch was kindly brought for me from the kitchen. When the waiter arrived with his tray, he looked horrified and held an excited whispered conference with the steward, from

## ANON. FROM VANCOUVER SOARING SCENE

which the name Count Caproni floated from time to time. Suddenly my little perch was whisked from under me and I was allowed to approach and actually sit in one of the armchairs. Soaring had become great!

I thought of the previous week at a commercial operation in Southern California. The flight line was efficiently manned by the fellow who was The Final Authority Regulating Takeoffs - one of the few officials in the United States who does not initialize his post in the great alphabet soup of American abbreviations. The planes were assigned in fair order and on a first name basis, and all was right with the world, with five tow planes dispatching pilots as fast as they could be assembled. After a few hours of sparking around in a rented 2-32, hunger and thirst compelled a landing. The true spirit of democracy then made itself felt. The fellow in charge of the mobile canteen, the sole source of creature comfort within fifteen miles, half-heartedly offered sandwiches and pop. He said, "I dunno wuz in'em. Sumen mixed em up las night, sixty cents, pops forty." ...."Take it or leave it!"

My present head waiter probably would not have been impressed with this service. It didn't add much to the day's enjoyment.

In eastern Europe, soaring centres are not usually far apart and I moved from one to another as a self-invited guest. As the language problem was a real barrier, I would have the head of one club phone of my impending arrival to the head of the next. This saved long explanations each time, in broken English, French and Italian; as to my name, where I came from and so forth. Welcomes were always warm, long and sometimes wet, if a little incomprehensible at times.

For example, in the small city of Celia (north central Yugoslavia) the airport



sports only three gliders, a tow plane that doubles as an air taxi, a Government hanger with a small office that serves as club room for the several members and a very large beer dispenser. (Very large!) Max is the man in charge; very warm and friendly, very competent, couldn't care less about money as long as operations can survive, and considers everyone who flies gliders to be of his personal concern. On my arrival the field was wet and pilots were sitting in the sun waiting for it to dry.

"Aha," said Max, "You must be Mr. Safe-way!" (Close enough.) "Welcome, Welcome....have a beer." Smiles all around. Later I showed them some copies of SSA's Soaring magazine (only Max could speak some English). It was their first time to see an issue and much interest was shown, so I gave them the few copies I had. Another beer in celebration. I showed them a copy of our own Soaring Scene, which made a remarkable impression, especially when I said its Editor is a beautiful young lady. When I also added all members get a free copy each month; one of the fliers present was sufficiently moved to muster all the English he could remember at the moment; "Canadians .... Rich!" he stated. Beer again in celebration.

By this time the field was dry, if the pilots weren't. In honour of my having visited Vrsac (although these pilots lived close by and much wanted to see the event, for one day at least, none could afford the trip) I was graciously assigned their Blanik and was told to use it all day.

That night I had a dinner party for everyone. About 50% came and stayed. About 50% kept coming in and going out. Wife trouble, I was told....same for flying!

Max sent me on to his friend in Sloven Graden. Here comfort on the ground abounded. Besides a large hanger, one could find a first class restaurant, a beer and wine garden which

sparkled with coloured lights at night, a swimming pool, comfortable cabins, and off to one side a tennis court where young Austrian beauties enjoyed both the sun and the game at the same time by playing topless. The flying was also good. This was the only resort style gliderport I was at where it was worthwhile spending a few days at the expense of missing other places. There was good lift in all directions, no one minded where you flew off for how long, after the check ride was completed. Max had warned me that this place was "too commercial". However, prices for aerotows, sailplane rentals, food etc. were very reasonable and no one on the flight line became excited or critical when turns for tows became mixed up. It may have been a little "commercial" but it was a joy to be there.

Other than the spectacular chance to fly in the Alps, the gliderport at Bled offered the worst combination of prices, surly atmosphere for everyone, greasy food, rude waiters and warm drinks. It was so bad it was fascinating. I wish I could have understood the long, involved curses the line boys heaped on each other and various pilots not close enough to hear them.

The Poles made up for Bled. They have an invariable routine, and none of it is concerned with check rides, papers, or red tape. It concerned HEALTH! It must be, for the first three hours were spent in the hanger drinking liquid fire, or molten metal, (it was hard to tell which) to everyone's GOOD HEALTH!

"Will we fly today?" I ask.

"Americans are our friends!" someone shouts, "and so are Canada people..." "...where is Canada?"

"Good Health," comes roaring out again.

The next day we flew; I needed the rest.



## ANOXIA

DON CLARKE is a member of Pioneer Soaring Club and has earned his Gold Altitude at the wave camp at Colorado Springs. Don is professor of Physiology at the University of Toronto.

For soaring pilots, anoxia is something to be avoided. Put on your mask, set the regulator, watch the blinker, and that's about all there is to it! A knowledge of how to avoid anoxia is all we usually need, however, there are interesting facets to the way that the body gets oxygen, and I would like to discuss the process of oxygen delivery to the tissues of the body.

Why do we need oxygen? Most of us would say something like "to burn our food", with the implication that this burning yields energy to the body. It's true of course that much of the material we eat is oxidized, but note that it is not "burned" in the usual sense. The body is not a heat engine like a steam engine obtaining energy via a series of changes from chemical energy to heat energy to mechanical energy. The details of the differences do not concern us here, but it is true that the oxidation of food does yield energy for muscular action, for nerve and brain activity, glandular secretion, growth, maintenance of body temperature, and so forth.

This oxidative process must take place within the cells of the body; and in order to do this, adequate oxygen must be delivered to, and used by, the cells. If these processes; delivery and utilization, do not take place, then the tissues of the body, and especially the brain, cease to function. The two operations of delivery and utilization must be kept in mind, later I will return to a consideration of the latter process. Meanwhile, let us deal with the process of delivery.

The first step must be to get the air into the lungs. Air passed from

## Don Clarke

the nose or the mouth into a flexible tube; the trachea, and thence through branches; the bronchi, into microscopic sacs; the alveoli, and from the alveoli into the blood stream. Normally the lungs are expanded and held against the interior of the chest wall by forces of surface tension. Note that they are not attached to the chest wall by tissue structures. As we inhale, the chest wall moves upward and outward, the diaphragm moves down, the lung tissues follow this movement and in the course of expansion cause a drop in pressure inside the lung. Atmospheric air moves into this low pressure region. When we exhale; the weight of the rib cage, some muscular forces and the natural elastic tendency of the lung tissues to collapse, decreases the volume of the chest cavity and air is forced out. The muscular motions are under nervous control influenced by a variety of factors, such as the concentration of oxygen and carbon dioxide in the inspired air, voluntary effort, pain, excitement, fear, etc. Normally we breath in and out about 500 c.c. of air. With a maximum effort of inspiration and expiration, we can move about 4 to 5 litres of air in and out of the lungs with each breath. This extra capacity is used during exercise, or perhaps in special situations, such as coughing.

The whole process of delivery must result in supplying the interior tissues of the body with adequate oxygen. It turns out that one measure of adequacy is the partial pressure of the oxygen at the tissues. This partial pressure of oxygen should be 100 mm of mercury. If it is less than this, the possibility of anoxia exists. The term "partial pressure" refers to the pressure exerted by a particular gas in a mixture of gases. For our purposes, think of it as "activity" of the gas. For a given total pressure of a gaseous mixture, the lower the percentage of a given gas in the mixtures, the lower will be its partial pressure.

Obviously, to prevent anoxia the air we inhale must have a sufficiently

high partial pressure of oxygen. The partial pressure of oxygen at sea level in a normal atmosphere is  $760 \times 21\% =$  about 150 mm mercury. When we inhale, some of the oxygen and nitrogen molecules are "displaced" by the water molecules in the saturated atmosphere of the lungs, and the partial pressure of oxygen in the lungs is reduced to about 100 mm mercury. Rapid equilibration takes place in the lungs between the partial pressures of the gases in the lungs and the partial pressures of gases in solution in the blood leaving the lungs. Oxygen moves from the alveoli into the blood. Carbon dioxide moves from the blood into the lungs for subsequent removal. In any situation in which the partial pressure of oxygen in the gases entering the lungs is less than 150 mm mercury, there will be a reduced partial pressure of the oxygen in the blood leaving the lungs. Such a condition exists when we soar to high altitudes. The composition of the air we breathe is the same as at sea level, but there is a gradual reduction in the partial pressure of the oxygen in the lungs and thus in the blood stream. To some extent we can counter this by increasing the concentration and thus the partial pressure of the oxygen in the inspired air, but notice that a limit is reached here too. In anything but a pressure system, oxygen delivered to a face mask can never be delivered at more than the pressure of the surrounding atmosphere. This means that at about 40000 feet; where the atmosphere is about 150 mm mercury, the maximum partial pressure 100% oxygen delivered in most systems cannot be more than 150 mm mercury. So if we fly higher, we are liable to anoxia, even if we breathe pure oxygen! Note too, that simply breathing more deeply does not alter the partial pressure of oxygen, so it accomplishes very little.

It has been stated earlier that rapid equilibration takes place between the partial pressure of gas in the lungs and the partial pressure of gas in the blood. This statement holds under normal conditions. However equilibra-

tion is delayed if the inspired air cannot get into close contact with the lung tissues adjacent to the blood capillaries which supply the lungs. This gas exchange takes place in little sacs, or alveoli previously mentioned. If the sac fills with fluid, as in pneumonia or drowning, then the normal gas exchange suffers. If there is sufficient interference with normal gas exchange, then anoxia may be fatal.

Bearing in mind that the usual volume of each breath is about 500 c.c., let us consider a rather artificial and extreme situation. Imagine yourself breathing in and out of a tube of 500 c.c. volume, with one end attached to your nose and the other end open to the air. Obviously the act of breathing will just move a "slug" of air back and forth in the tube. Neglecting the very small amount of mixing, no new air will be introduced and you will suffocate, even though the act of breathing is entirely unrestricted. The region in which no exchange of gases takes place, or "dead space" has been increased in this simple experiment. On more practical terms, we note that the design of face masks and breathing systems must take account of any increase in dead space which is introduced by the system, to ensure that normal breathing is maintained.

All of the above comments have referred to the process of getting oxygen into the lungs, where it can contact the blood stream. In a following article, I will deal with the carriage of oxygen by the blood stream to the tissues.



### BAIC, Canadair and "200" Trophies

The BAIC Trophy is for the pilot making the best flight of the year.

The Canadair Trophy is for the pilot making the FIVE best flights of the year.

The "200" Trophy is for the pilot who, having logged less than 200 hours total gliding time at the beginning of the year, makes the FIVE best flights of the year.

#### Scoring:

1. Altitude gain	1.00 points/50m
2. Free Distance	1.00 points/km
3. Prescribed area distance	1.00 points/km
4. Distance to goal	1.25 points/km
5. Triangle	1.50 points/km
6. Out and return	1.50 points/km
7. Incompleted trinagle or out-and-return:	
Distance to turn points reached	1.25 points/km
Distance after last turn point	1.00 points/km

#### Rules:

1. All flights to originate in Canada.
2. All goals and turn points must be declared before take-off.
3. Turn points for the prescribed-area-distance task must be declared before take-off but may be visited and revisited in any order subject to the requirement that consecutive turn points shall not be less than 50km apart.
4. Evidence of take off, landing, turn points and height gains shall comply with FAI rules.
5. Only height gains require barograms.
6. Preliminary notice of a flight claim for 1974 should be sent, within 14 days of the flight, to Jeff Tinkler, 364 Waverley St., Winnipeg, Manitoba, R3M 3L3. Claims will be reported in FREE FLIGHT and copies of the flight report form will be sent to the pilot for varification of details. A letter of varification, with a report signed by an Official Observer that he has checked and approved all the required documentation, must be mailed within 30 days of the flight to the SAC Trophy Chairman.

# FLIGHT REPORT FOR B.A.I.C., CANADAIR, AND "200" TROPHY CLAIMS

Pilot \_\_\_\_\_ Flight Date \_\_\_\_\_  
 Sailplane: Type \_\_\_\_\_ Registration \_\_\_\_\_

Place Name of:	Latitude	Longitude	Leg Distance
Starting			X X X
1st. Turn			km
2nd. Turn			km
3rd. Turn			km
4th. Turn			km
5th. Turn			km
6th. Turn			km
Landing			km

Altitude at low point after release \_\_\_\_\_ m Subsequent maximum altitude \_\_\_\_\_ m

- Altitude Gain \_\_\_\_\_
- Free Distance \_\_\_\_\_
- Prescribed Area Distance \_\_\_\_\_
- Distance to Goal \_\_\_\_\_
- Triangle \_\_\_\_\_
  - (a) Completed \_\_\_\_\_
  - (b) Incompleted \_\_\_\_\_
- Out & Return \_\_\_\_\_
  - (a) Completed \_\_\_\_\_
  - (b) Incompleted \_\_\_\_\_

Take-off Certificate O/O # \_\_\_\_\_ Signature \_\_\_\_\_  
 Task Declaration O/O # \_\_\_\_\_ Signature \_\_\_\_\_  
 Turn Point Photos. O/O # \_\_\_\_\_ Signature \_\_\_\_\_  
 PILOT'S SIGNATURE \_\_\_\_\_ DATE \_\_\_\_\_

Landing Certificate O/O # \_\_\_\_\_ Signature \_\_\_\_\_  
 Barogram O/O # \_\_\_\_\_ Signature \_\_\_\_\_  
 Distances Claimed O/O # \_\_\_\_\_ Signature \_\_\_\_\_

SOARING ASSOCIATION OF CANADA  
BOX 1173, STN. B, OTTAWA, ONTARIO, K1P 5A0

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LIST OF SUPPLIES

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>PRICE</u>
1.	F.A.I. Soaring Badges - "A" and "B"	
	(a) Button - Screw Back	\$3.25 ea.
	(b) Button - Clutch Back (Tie Back)	3.50 ea.
	(c) Pin - with safety catch	3.50 ea.
2.	F.A.I. Soaring Badges - "C" & above. (Prices in Item 5.)	
3.	F.A.I. Soaring Awards - Rules (Booklet)	0.25 ea.
		5 for 1.00
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## Motorglider with a Difference

by Ray Stafford Allen

Sometime ago I had the opportunity to fly a most unusual glider, a Ka-7 with two detachable two-stroke engines which are mounted on steel tubes and fitted on each side underneath the wings.

This is a true motorglider in the sense that it will not takeoff under its own power (though I understand it has in fact done so on one occasion), as the rate of climb is well below the safe limit. It has to be flown as a glider, but with both motors running you can climb at about 0.5 m/s.

The immediate reaction of most folk is, "What is the use of the thing if it will not takeoff?"

Having flown it one realizes that it has great potential as a training glider, because it means that flights can be extended as long as required, whether or not there are thermals about, and also the machine can be flown cross-country to ridges, etc., which would otherwise be out of reach.

Flying it is great fun. After testing the engines on the ground, the glider is launched in the normal way by winch, car or aerotow. Once in free flight, all that is needed is to turn on the fuel to each engine, turn on the switches, and you are ready to start the engines.

This is done one at a time, by closing the choke lever, and pulling the starting toggle, and as soon as the engine fires, opening the choke lever. The engine at once speeds up to 6000 rpm and you then get busy doing the same thing to the other engine.

You can fly on one engine if you like, in which case the glider descends at about 1:60. Flying on one engine is perfectly simple and there appears to be no yaw whatever from the asymmetric

thrust. Apart from the noise, which is considerable, there is no difference at all in the behaviour of the glider engine on or off, and this is one of the great features of the machine.

From the pupil training point of view, all his training takes place in the same machine. In fact his first solo can be done in the same machine, since the engines are quickly removable. All his launches will have been glider launches, so there is no conversion to a new type. When there are thermals around, the engines will of course be left off, and you then have a perfectly good Ka-7 for training.

The glider can also be flown cross-country from one aerodrome to another on the engines, though it is true that the speed is not all that high. It is, however, far and away the cheapest method of transporting the glider.

The only modifications on the glider consists of two sockets welded on the fuselage just behind the rear pilot, a fuel tank mounted in about the same place, two petrol pipes and cocks in reach of the front pilot, two switches for the ignition and two toggles on the floor of the front cockpit with pulleys to take the starter cables, which have to be led back to the recoil starters of the engines.

Each engine takes about ten minutes to fit. The engine mounting tube is slid into the socket and the locking bolts tightened, the ignition wire is plugged into the switch socket, the choke wire is coupled up and the fuel line is connected. The starter cable is then connected and the engine is ready for flight.

(Reprinted from SAILPLANE & GLIDING,  
April-May 1973)