

FREE FLIGHT

ISSUE 3/76

MAY/JUNE 1976



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Free Flight

Issue 3/76 May/June 1976

Official Publication of the Soaring Association of Canada



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Cover Photo by Lloyd Bungey
Ka-6E flown by Lothar
Schaubs of Vancouver Soaring Assn.

Graphic Design by Roger E. Murray, Graphic Design Centre, Toronto.
Printed in Canada by Dondi Printing Services Ltd., Toronto.

DIRECTORS and OFFICERS 1976

PRESIDENT	Mr. Terence R. Beasley, 173 Leslie Street Dollard des Ormeaux, P.Q. H9A 1X2	(514) 684-7145 H (514) 744-1511 B Loc. 754
PAST PRESIDENT	Mr. Walter J. Piercy 184 Churchill Crescent Kingston, Ont. K7L 4N2	(613) 546-9937 H (613) 544-6000 B Loc. 639
VICE-PRESIDENT	Mr. Al O. Schreiter 3298 Lone Feather Crescent Mississauga, Ont. L4Y 3G5	(416) 625-0400 H (416) 487-3201 B
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F.A.I. AWARDS	Mr. Ray Wilson Box 971 Kingston, Ont. K7L 4X8	(613) 546-6467 H (613) 544-6400 B
F.A.I. RECORD CLAIMS	Dr. & Mrs. Russell Flint 96 Harvard Ave. Winnipeg, Man. R3M 0K4	(204) 284-5941 H
FREE FLIGHT EDITOR	Mr. Robert F. Nancarrow 43 Sealcove Drive Etobicoke, Ont. M9C 2C7	(416) 621-2276 H (416) 252-4656 B

Tentative deadlines for future issues

Issue 4/76	Jul/Aug	June	14/76
Issue 5/76	Sep/Oct	Aug	13/76
Issue 6/76	Nov/Dec	Oct	15/76

Material for future issues of
FREEFLIGHT should be mailed to:

Bob Nancarrow
43 Sealcove Drive
Etobicoke, Ontario
M9C 2C7

MOVING ?

Send your change of address to:

Mrs. Terry Tucker
786 Chapman Blvd.,
Ottawa, Ontario
K1G 1T9

Letters to the Editor

Dear Bob:

First let me say how much I look forward to Free Flight, especially during the winter months. It has a truly professional look and is a credit to all concerned.

In the Jan/Feb 76 issue a letter by Lloyd M. Bungey re downwind check list has prompted me to suggest a cockpit check list which I have adopted. As a student I seemed to have so much on my mind I could never remember the standard "CISTRSC" check. So I scrambled the letters to make a more readily remembered word "TRICCS". It obviously changes the sequence of checks to:

T - Trim
R - Release
I - Instruments
C - Controls
C - Canopy
S - Spoilers
S - Straps

The sequence does not seem critical and two of my instructors have agreed.

Yours truly,
Ross McNee, York Soaring

Dear Editor:

The article in the November/December 1975 issue of Free Flight on the BD-5 sailplane (so-called) deserves some description of the background to this now well known design.

As a member of the Experimental Aircraft Association (EAA) for more than ten years, I have observed that 99% of all amateur aircraft designs are offered as drawings or kits to homebuilders only after the particular aircraft has been built and flown and for which performance figures obtained from actual flights have been published. Not so with the BD-5. Kits were offered to the public not only before the aircraft had been flown but even before the detailed design had been made. The designer, Jim Bede, claimed the aircraft would achieve a 200 mph cruise on a 32 hp engine. Later, after the aircraft had flown, he did not recommend an engine of less than 75 hp.

The plans of the BD-5 power plane have been on sale for four or five years, and as far as can be established, only one amateur built aircraft of this design has been completed, and no engines have been available from Bede. To me, this is deceiving the public.

Several BD-5 powered aircraft are under construction in Montreal, and all builders agree that the structure is complicated, that to do a decent job access to a number of special power tools is necessary, and many hours of work are required. None of the Montreal builders are anywhere near completion of their aircraft, and one has only to observe the number of kits offered for sale by disillusioned purchasers to assess the problems of construction with this aircraft. Glider pilots would be well advised to steer clear of the so-called "sailplane" model.

Bob Gairns.

Dear Editor:

Bill Adams' letter in the last issue regarding unsafe towing procedures at SOSA needs clarification. I was club president at

the time, and Mr. Adams' complaint was reviewed in the following order at his insistence: Club Chief Towpilot, Club CFI, Club Towpilots and Club Instructors meeting, myself, the Club Board of Directors, the Ontario Regional Superintendent MOT, Two SAC directors, and the Ottawa MOT office. All of the forementioned agreed the SOSA towing procedures were safe and sensible. Let me again suggest to Mr. Adams that he consider the possibility of being wrong.

A.O. Schreiter, SOSA

Dear Editor:

It was interesting to read Bob Gairns article "Safety is a state of Mind" Freeflight issue 2/76 March/April and of course one must concur with his reasoning.

However, I must point out to my old Scottish acquaintance that if one is going to write about flying accidents and/or ground incidents, one must have ones facts right. Therefore; his report about two happenings which occurred at Buckingham Gliding Club in 1975 concerning a Blanik and a 2-33 was not a factual account so I'm obliged to correct Mr. Gairns.

Firstly, I recommend that Bob contact Messrs. Jacques Bisson - C.F.I. Buckingham Gliding Club and Guy Milord - M.O.T. Inspector - Accident Investigation - Montreal International Airport for the true facts regarding each case.

Secondly, since I was the instructor in the 2-33 situation I wish to explain the following:

- 1) My student had executed a good landing (down-wind - a club requirement at Buckingham) and we were paying particular attention to a Blanik lined up on the active ready for tow.
- 2) Towards the completion of our ground roll - (left of the active rwy up an incline) we were still keeping a good look out but unbeknown to ourselves someone had parked a car over the brow of the hill (which was not on the runway but too close to it) in preparation to tow a 1-26 back to the hangar.
- 3) The last split second we noticed the obstruction and tried to avoid same by veering right but simultaneously trying to avoid colliding with the Blanik. It was too late and unfortunately our left wing struck the illegally parked car.
- 4) M.O.T. received our Report and after thorough investigation declared that the whole affair was an unfortunate "Ground Incident" and not an "Accident". M.O.T. recommended owners of cars, park further back off the flight line in future.

A happy ending resulted in a visit to Schweizer Aircraft Corp. Elmire, N.Y. (to pick up a part for a left wing). I was accompanied by Jean Bisson Jr., a PWR student of mine, and we had the pleasure of meeting Paul Schweizer in person and he kindly allowed us to fly his four hundredth production 2-33 radio equipped sailplane.

Don Butcher
Vice President & C.F.I.
ComDev Aces-Flying & Gliding Club.

Dear Bob:

I have been taken to task from two sources concerning the article on accidents which appeared in the March/April issue of Free Flight.

My purpose in writing the article was to remind all pilots of the dangers inherent in various regimes of flight. By giving a description of each accident these dangers can be emphasized, so that pilots can be prepared to take corrective action should they find themselves in similar situations in the future. When accidents occur, people want to know details, and that is what I attempted to provide.

I am certainly aware that in describing an accident, one must be very sure of the facts and that the source of information is reliable. I felt that this was fulfilled when I wrote the article.

In the case of accidents reported at the Buckingham club, I was as surprised as Buckingham club members to read of a second 2-33 accident at their club. This concerned an instructor, a very experienced power pilot, who looked back at the wrong time and his student caused an undershoot by pulling open the divebrakes. This accident happened at York Soaring, and was so described in my manuscript. It was unfortunately misplaced in Free Flight. [Sorry, our error, also it was a 2-32. Ed.]

Regarding the report of the Blanik accident at Buckingham, my information was from sources I felt were reliable. The glider pilot and tow pilot have now contacted me and state that the release was indeed made because full power was not being achieved by the towplane engine and so as to clear the trees at the end of the airfield; the release height was between 80 to 100 feet, and not 250 feet as I reported. This certainly would present a serious problem to any glider pilot, particularly if he was flying from the rear seat as he was in this case, as the flight was with a passenger, and was not solo as reported. Again, the towrope had been released before the glider hit the ground. The article was correct in stating that the glider pilot had been told not to fly the Blanik (by the C.F.I.) however, he had asked for and had received permission to fly this machine from other persons on the field with some authority in the club.

With regard to the accident to the SOSA 1-34 at Glen, N.H., I have been advised that the pilot was briefed by a SOSA instructor on his arrival at Glen, then had a check-out in the local operator's 2-33, and later flew the local operator's 1-26. Unfortunately, the SOSA instructor was not present for the flights in the 1-34. I apologize for not having these facts on the local checkout in my article and thus giving a misrepresentation in part of the story.

From comments received, the message to me is that, while it is desirable that facts concerning accidents should be reported, judgement should be reserved. My article was certainly intended to be written in all humility, knowing full well that mistakes can happen to all of us, however experienced.

Bob Gairns.

Friday evening the wind and snow howled around the Carleton Towers Hotel in Ottawa but all were warm and glowing around the bar as glider pilots from across the country got together for another AGM. The 31st Annual Meeting was well organized by Nick Pattenson and members of Gatineau Gliding Club, the host club this year.

The Carleton Towers is a nice place to visit but I couldn't afford to live there. As one wag put it, "Prices at the Carleton Towers were out of this world....but the dinner was not!"

The meeting on Saturday spent a lot of time on reports that might have been printed and read in advance and then dealt with much more quickly.... maybe next year. Some reports needed time because of their impact on all SAC members; like Insurance which was well handled by Al Schreiter on a question and answer basis. It looks like the underwriters will give us one more shot - but the accidents (read claims) have got to be reduced drastically. Claims in the last three years have been \$22,500 for 73/74, \$23,000 for 74/75, then \$75,000 last year....WOW! We simply must stop breaking gliders and tow-planes or there won't be an insurance scheme.

By-Laws can be dull going after a couple of beers with lunch - they can be duller going without. All the notices of motion were approved except the proposed increase in fees which was defeated - without the fee increase the association would run at a deficit this year so a motion was carried to drop Soaring magazine effective July 1st. Members will have to pay for Soaring if they want it - SAC will check on the possibility of getting a special bulk rate. Relax.... you'll still get FREE FLIGHT and efforts will be continued to improve it if you'll keep sending the articles and photos needed to make it a success. The By-Law bit may be solved at future AGMs as Russ Flint agreed to head a committee to revamp them and hopefully eliminate a lot of the annual "fine tuning" of the constitution. Write to Russ if you have any suggestions.

World Contest funding took some time - the big blow was "no money from the Feds". With a \$36 billion budget just announced, Pierre's boys decided to start restraint with our team for Finland. Our directors went right to the top - via CNCP Telecommunications and cried "Foul". Meanwhile back at the \$36./day Carleton Towers we were

voting down a proposal for a \$5./member/year donation to the World Contest Fund. You will be asked to donate again (and no doubt again)....why? because we believe that this type of activity is good for our sport and what is good for gliding is good for glider pilots everywhere - competition pilots and local flying hacks alike. At the 76 Director's Meeting on Sunday a permanent World Contest Funds Committee was established. Anyone with ideas or help should contact Terry Beasley but watch out, you may get a job!

SAC is going to be registered as a charitable amateur athletic organization which means donations will be tax deductible.

In a World Contest year we do not hold a national competition but there will be a Western Region Contest at Claresholm and an Eastern Region Contest at SOSA at Rockton. The 77 Nationals will be hosted by Montreal Soaring Council.

Terry Beasley is President for 76 and Al Schreiter VP; all the other Directors and Officers are listed on page 2. The Committee Chairmen for this year are:

Air Cadet Liaison	Hank Bruhlman
Air Space	Bruce Hea
FAI Awards	Ray Wilson
FAI Records	Russ & Hazel Flint
Free Flight Editor	Bob Nancarrow
Historian	A.N. LeCheminant
Instructor's Committee	Walter Piercy
Insurance	Al Schreiter
Medical	Drs. R. Mortis, W. Leers & W. Seufert

Publicity	John Brennan
Radio	Nick Pattenson
Safety	A.N. LeCheminant & Max Harris
Motorgliders	Terry Beasley
Sporting	John Firth
Sports Canada	Terry Beasley, Karl Doetsch & Al Schreiter

Technical	Jim Henry, Dave Marsden & Karl Doetsch
World Contest	Terry Beasley
World Contest Funds	Chairman not yet appointed

Temporary Committees:

By-Laws	Russ Flint
Seeding Rules	Peter Trounce

We had some guests at the meeting and dinner. J.T. Richards of the

MoT Aviation Safety Bureau spoke briefly about his group's willingness to work with our Safety Committee and all of us to improve our standards. He emphasized that they are a non-regulatory body with a genuine interest in the safety aspect of sport flying.

Peter Wilkins was on hand representing the Sports Federation who assist us in the Administrative Centre in Ottawa with our mailing lists, printing and mailing etc.

Paul Schweizer and his wife Ginny are hardly guests - rather old friends to many SAC members - and they attended along with Tony Doherty of the other SAC (Schweizer Aircraft Corporation). Paul told of his accident at the 1-26 Championships, the result of fatigue and dehydration after hours in the air - is he still flying?....you bet! As he said, "Just because you slip in the bath, you don't stop going to the bathroom!"

Guest speaker was Don MacClement who talked of his start in gliding at age 10 hanging from a home-made kite a la Lilienthal and leaping off the barn roof. His experiences and contributions to gliding over the years are extensive leading up to organizing Okanagan Soaring Club recently. We all enjoyed his story and hope he will write it down for all FREE FLIGHT readers to enjoy.

John Agnew gave out the many trophies, hindered with the help of Shorty Boudreault....and the winners were:

Five Best Flights	J. Gordon Smith
B.A.I.C.	Klaus Stachow
Carling	Willi Werneberg & Frank Vaughan
200	John Brennan
SOSA	Larry Riegert
Outstanding Air	M.B. Armstrong of
Cadet	Castlegar, B.C.
Instructor's	Tom Bell, Base Borden Soaring Group
Shell - Open Class	Dave Webb
Ball & Chain	Dave Marsden
Dow - Best Triangle	Dick Mamini
Dow - Out and Return	Peter Timm & Peter Lamla
Roden	York Soaring
Wolf Mix - Standard Class	Jim Carpenter
Hawksbury C of C	Dick Mamini

The next AGM will be in Toronto in March 1977 with York Soaring as the host club....see you there.

'76 AGM



M.C. John Agnew

Larry Riegert accepts the SOSA trophy.



Hank Bruhlman accepts trophy for M.B. Armstrong, year's outstanding Air Cadet



Walter Piercy presents Ball and Chain trophy to Dave Marsden.



Jim Carpenter waits patiently for Shorty to do his thing.



Jim still waits while John and Shorty recount the origin of SAC and other weighty topics.



Jim finally gets his trophy.



Walter Chmela of York Soaring accepts Roden trophy.



Delegates at work.



TURNS ON TOW AND IN

Thomas Reisner's article "Turns on Tows" in the Nov/Dec issue was followed by Russ Flint's "Another Look at Turns on Tows" in the Mar/Apr issue. William Langelaan submitted this in January and while there is some repetition, it is an interesting viewpoint nonetheless. Any more comments on turns?

As already stated by Thomas Reisner in his article "Turns on Tows", it is basic in aerodynamics that banking is dependent on the airspeed and the radius of the turn. Therefore while on tow the glider should bank the same amount as the tow plane; always keep the glider's wings parallel to the towplane's wings. If this is done properly in a turn, then one might notice, that to keep things going as they are and to avoid skidding, some rudder should be applied to the opposite direction; i.e., right hand turn, left rudder. Also some aileron should be given to the opposite direction of the turn. The reason for the opposite rudder is to counter the effect of the tow cable not being in line with the longitudinal axis of the glider (fig. 1). The reason for giving opposite aileron is because the angle of attack of the higher wing (α_{hi}) is greater than the angle of attack of the lower wing (α_{lo}), the glider would otherwise roll into the turn (fig. 2). This applies to all climbing aircraft.

During the tow the glider has a tendency to balloon. Everybody knows that the only remedy to this is to keep the nose down. This reduces the angle of attack and thus the lift. Since the lift is perpendicular to the airstream, no conversion to forward thrust takes place. Reducing the angle of attack also reduces the drag. It might be interesting to note

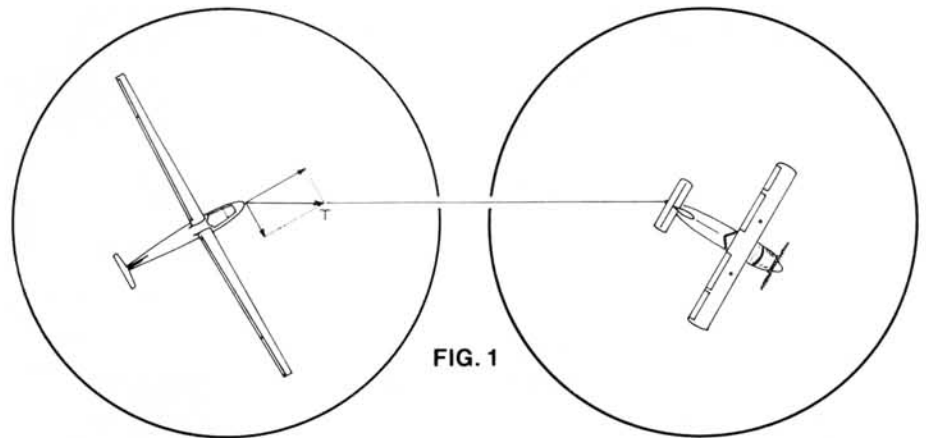


FIG. 1

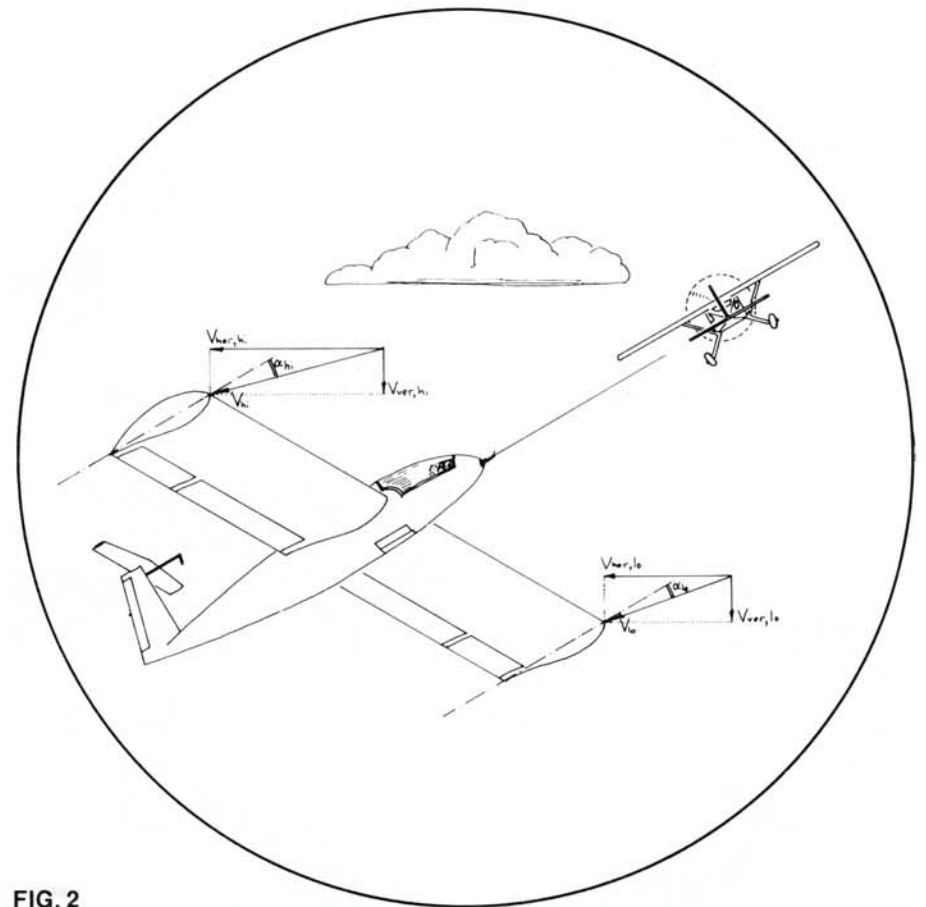


FIG. 2

FREE FLIGHT

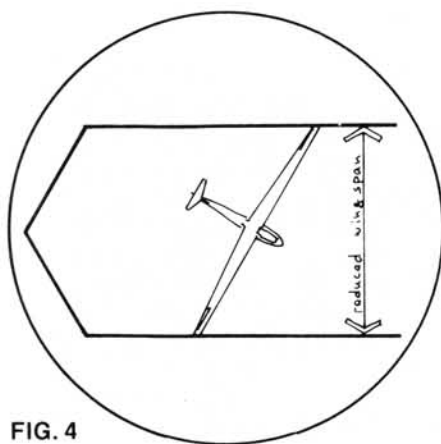


FIG. 4

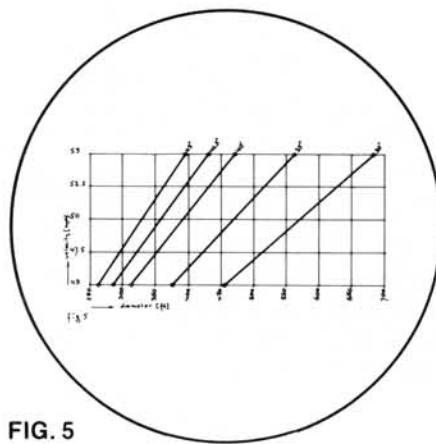


FIG. 5

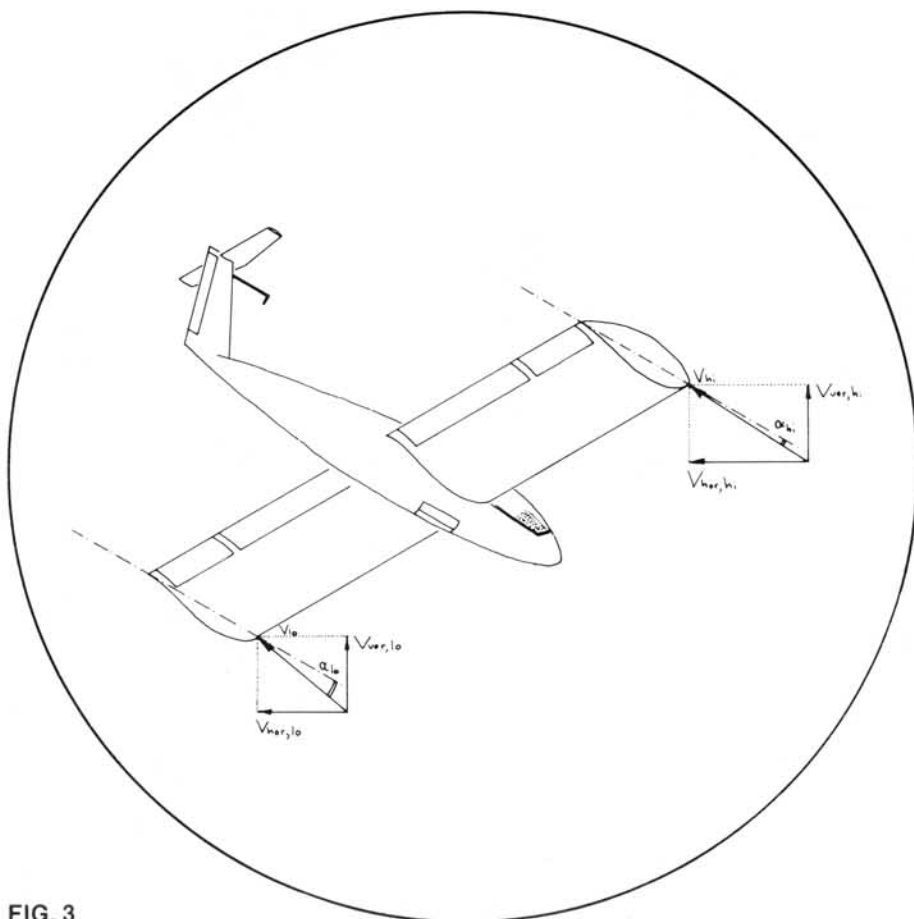


FIG. 3

that a 1-26E at a gross weight of 660 lbs. being towed at 60 mph which results in a L/D of 22:1, the tow force will be about $660 \div 22 = 30$ lbs.!

After releasing the tow cable, the glider is in a situation of constant descent relative to the air. Now while circling things are reversed. Rudder should be applied in the same direction as the turn, because one is engaged in a continuous move around the normal axis. Aileron should also be given in the same direction as the turn. That is because the angle of attack of the lower wing is larger than the angle of attack of the higher wing. This tends to roll the glider out of the turn. (fig. 3).

It might also be worth noting that the reason for applying some more back pressure on the stick while turning is, that one is also engaged in a continuous move around the lateral axis. This becomes more apparent if one imagines a turn with the banking approaching 90° .

A bad practice with some glider pilots seems to be to thermal with insufficient banking and not coordinated, thus skidding. This does not decrease the radius of the turn. It adversely effects the rate of climb of the glider due to the increased drag:

- 1) drag of the fuselage and the tailfin,
- 2) drag of the wing, because the wingspan that is perpendicular to the airstream is reduced, forcing the glider to fly with a larger angle of attack for the same speed (fig. 4)

TURNS ON TOW AND IN FREEFLIGHT

- 3) a different wing profile due to the changed direction of the airflow.
- 4) foul air over the wing that is screened off by the fuselage.

Pilots who think that this is an effective way of thermalling should definitely find some benefit in opening the airbrakes in weak lift.

A better way to improve thermalling is to have enough bank, and also to fly as slowly as one can handle the glider. The latter depends on the characteristics of the glider, the turbulence of the thermal and the abilities of the pilot. I think that there are very few who will dispute the fact that a thermal gets stronger towards the centre. Therefore every thing should be done to remain as close to the centre as possible. One way to achieve this is by adequate banking. But while increasing the amount of bank the rate of descent of the glider also increases. Now the optimum is reached when the ratio of sink and bank equals the ratio of the increase in upcurrent towards the centre of the thermal. Usually this appears to happen at about 40° - 45° of bank. Beyond this point the rate of sink is greater than the increase in upcurrent. Many times I have seen people thermalling with 60° or even more bank without getting any higher. The other way to stay close to the centre is to fly slowly. The graph (Fig. 5) will show how the radius of turn is affected by the airspeed and the angle of bank.

To show more explicitly the area that is involved, not the radius but the diameter of the turn will be given.

$$\text{Diameter } D = 2 \times v^2 / g \tan \theta$$

Another remark can be made on the amount of bank to maintain while thermalling. Often I have found that in weather with generally weak thermals the increase in vertical velocity towards the centre is less than in weather with generally good soaring conditions.

Therefore in conditions with prevailing weak thermals, a better rate of climb might be achieved with less banking, say 30° - 35° instead of 40° - 45° degrees of bank. This can also be applied to the use of flaps. In weak conditions a Blanik climbs considerably better with the flaps retracted. But still the lowest possible speed should be maintained. Also remember while thermalling hardly more than one full turn can be made

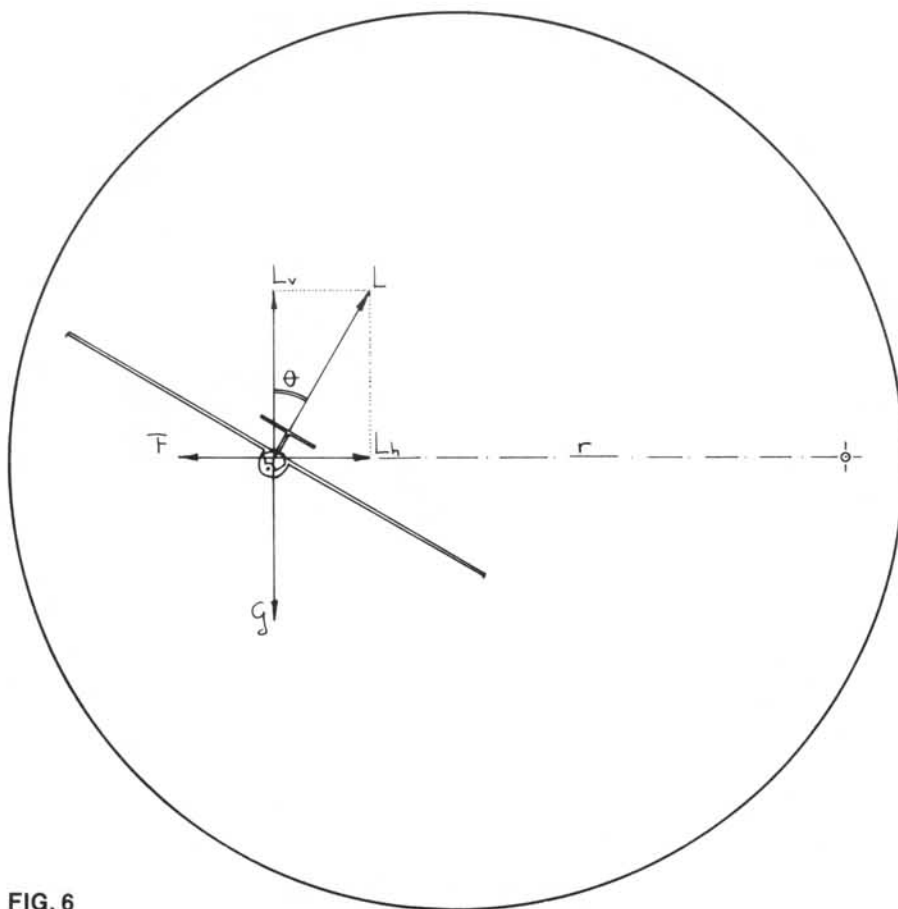


FIG. 6

with a constant amount of bank before the trajectory of the glider has to be readjusted to the ever changing pattern of rising air. But isn't this one of the challenging aspects of gliding!

G = the gross weight of the plane, or more accurately the force resulting from the total mass of the glider and contents and the earth

- gravitation: $G = m \times g$.
- L = the lift, the force that is a function of the aerodynamic properties of the wing and the angle of attack (CI), the density of the air (S) and the airspeed (v): $L = CI \times \frac{1}{2} S \times V^2$
- Lv = the vertical component of L: $L_v = L \cos \theta$.
- Lh = the horizontal component of L: $L_h = L \sin \theta$.
- F = the centrifugal force, that is the function of the total mass and the angular acceleration (a):
 $F = m \times a$.
- a = angular acceleration, depends on airspeed and radius of turn: $a = v^2/r$.
- g = earth gravitation (10 m/s²)
- θ = angle of bank
- v = airspeed
- r = radius of turn.

When a glider is on tow both the glider and the towplane fly at the same airspeed and follow, I hope, the same radius of turn. Now in a stationary situation where the aircraft are flying at a constant speed and a turn with a constant radius, then:

$$\begin{aligned}
 G = L_v &\longrightarrow m \times g = L \cos \theta \longrightarrow m = \frac{L \cos \theta}{g} \\
 F = L_h &\longrightarrow m \times a = L \sin \theta \longrightarrow m = \frac{L \sin \theta}{a}
 \end{aligned}
 \longrightarrow \frac{a}{g} = \frac{\sin \theta}{\cos \theta} \longrightarrow \frac{a}{g} = \tan \theta \longrightarrow \underline{\underline{g \tan \theta = \frac{v^2}{r}}}$$

1976 Regional Contest Entrants

As the result of comment and discussion with both experienced contest pilots and contest organizers, it has been decided to raise the level of experience required for both the Championship and Sports classes. It is felt by this committee that, though we wish to encourage all pilots to try the challenge of contest flying, it is very important for a pilot to have sufficient previous experience in order that he not become an accident risk to himself and others, when first under the added stress of a contest. We feel that the requirements below are easily attainable by pilots with the skill needed to perform the tasks set in the respective classes.

To enter the Sports Class, a pilot must have completed a 50 km flight, as for Silver C distance.

To enter the Open or Standard Classes, a pilot must have either flown 300 km or three 100 km triangles, or have competed in a previous Regionals or Nationals. He may be required to produce proof of these attainments. All pilots must be members of their National organization.

John Firth,
Chairman, Sporting Committee

S.A.C. Western Instructor's Course to be held in the Okanagan Valley

Plans are well advanced to hold this course most probably from 18 to 24 July, to precede the Alberta S.C. summer camp at Cowley. This course is offered for the neophyte instructor, but "old hands" who wish to brush up and to learn the latest S.A.C. techniques are most welcome. If you are interested contact your C.F.I. who will have full details, including costs, accommodation, swimming (for the family), or write to Ian Oldaker, Course Director, Pinawa, Man., R0E 1L0.

Western Regionals 1976

At the time of going to press the Winnipeg G.C. were planning to bid for this contest with dates from 15 to 24 August at Rivers, Manitoba. This is an ex-forces base with 6000 ft. paved runways. It is used by the Air Cadets who will be there 'til 13 August, hence the choice of dates. Rivers is NW of Brandon and you can expect 15-26C temperatures, dryer air than Winnipeg and no lake effect!

For contest information such as pilot qualification, entry fee, etc., write to the Contest Manager, Winnipeg Gliding Club, Box 1255, Winnipeg, Man., R3C 2Y4.

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COLOURS: Red Navy Light Green Tan



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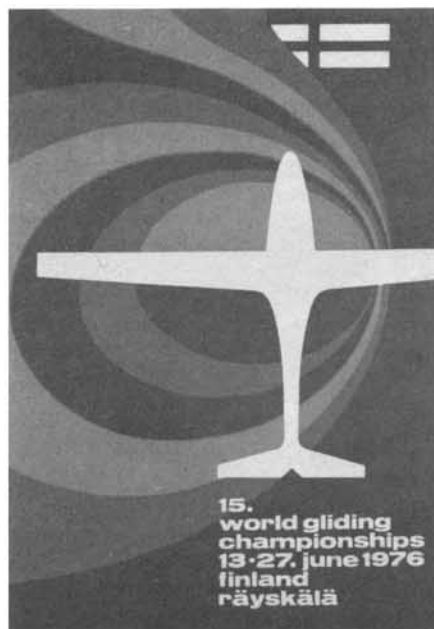
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There will be a Canadian team at the 15th World Gliding Championships at Rayskala, Finland in June. Dave Webb, Jim Carpenter, Hal Werneberg and John Firth will be the pilots competing. Webb and Carpenter will be flying in the Open Class competition and Werneberg and Firth in the Standard Class. The team manager is to be Terry Beasley.

Dick Mamini was selected in the seeding procedure but dropped out leaving a place for John Firth of Ottawa who had placed fifth in the original selection. Also there was a change in the team manager as Peter Trounce was first selected but had to drop out due to business commitments requiring him to be out of the country for several months. Terry Beasley has had experience in a number of World Contests as team manager and should be able to fill the gap for this year's team.

The problems this year with the World Contest team are far from resolved; the high cost of sending a team include travel, entry fees, aircraft rental, retrieve vehicle expenses and living expenses. In addition to the four pilots and the team manager there will be twelve crew members to rig and retrieve each flying day.

At the AGM there was considerable discussion about how these expenses were to be met and there was bitter disappointment about the withdrawal of financial assistance to the team by the Federal Government. There is a chance that there will be some assistance from the government but even so there is much that we can do to help the team. Your club president has received a letter asking to canvass each club member for a donation of at least \$5. to be sent to the World Contest Fund to help the team. In subsequent issues of FREE FLIGHT we will be listing how each club has responded to this appeal. Let's not leave the financing of the Canadian Team to Rayskala up to the competing pilots and crews alone. Make your contribution of \$5. or more. . . it's deductible!



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JUST OFF THE

Translation from "Luftsport" by Hal Werneberg



Photos thanks to Al Schreiter

First flight of the new "Mosquito"

On February 20th, 1976, the Mosquito took to the air for the first time at Halmweide airfield in West Germany. The initial flight was made by its designer Ing. Josef Prasser with Klaus Holighaus taking it up on its second start. Both pilots reported the ship extremely easy to fly with changes in circling flight requiring almost no rudder application. The sailplane is equipped with a new type of flap system developed by the designer. It is a combination of the trailing edge airbrake a la Hornet with a mechanism that extends the flaps automatically to landing position when the airbrakes are extended fully. The Mosquito is built to carry 120 litres of water ballast for a maximum flying weight of 450 kg.



GROUND



LS 3 Prototype Completed

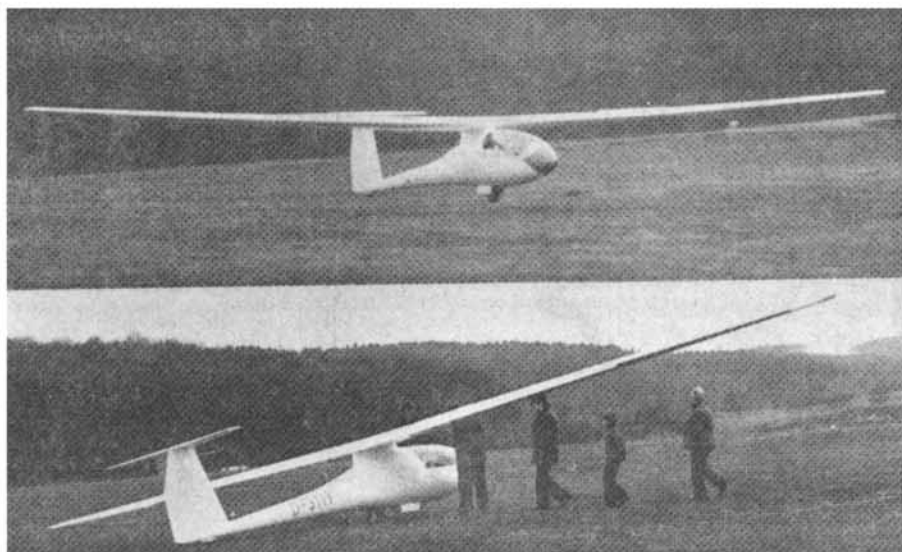
February 4, 1976 was the day on which the new LS 3 MADE ITS FIRST FLIGHT. Designer Wolf Lemke and the builder Walter

Schneider test flew the ship "Somewhere in the south of France". They report exceptional flight characteristics with all of their expectations more than met. The most outstanding feature of this sailplane is the full span "flap-aileron" (flaperons). In comparison

flights with the LS 1f it was apparent that the LS 3 is superior in both slow and especially in high speed flight. Some statistics: Wing Area: 10.5m² (113 ft²), Empty Weight: 240 kg (528 lb), Payload (pilot and parachute: 110 kg (242 lb)).

Latest Schempp-Hirth Research Project

This is no optical illusion or the product of sloppy workmanship, but a new experimental sailplane flown by Klaus Holighaus for the first time on March 17, 1976. It was built by Schempp-Hirth Company to investigate possible improvements in airflow at the wing-fuselage junction. The ship is basically a Standard Cirrus with extended (to 15m) Standard Cirrus wings mounted on a GRP pylon. The first flights of this glider, which will not go into production, showed good flight characteristics and extremely stable circling flight.



KIWI HO

By Wally Norris



On a recent holiday to New Zealand in December, I managed to get in a little gliding. While staying near Auckland on North Island we visited Ardmore Aerodrome, a controlled field with mixed power and glider traffic. No licence is required to glide in New Zealand but a log book is usually necessary plus a check flight. There was some weak thermal activity and the check flight in the Auckland Gliding Club Blanik was about 35 minutes. I was then allowed to fly the club Ka-8 and managed to squeak out a little over an hour.

From talking to some of the other pilots I learned that the New Zealand Nationals were to be held shortly and a lot of clubs were putting equipment

HOLIDAY



further south at Matamata Aerodrome near Waharoa.

The following week we went to this aerodrome for the day; did a little gliding in poor lift conditions and took a lot of pictures. This was a two runway grass aerodrome, approximately 4000' and 3500' by 200' wide; a very nice setup.

The next time I had a chance to glide was purely accidental as I blundered onto one of the best gliding sites in New Zealand at Omarama on South Island where they regularly get thermal, ridge and wave soaring. It seems to be quite common for several clubs to have camps at various times at locations like Omarama and there were two clubs at this aerodrome and two other clubs



on the other side of the mountain just a few miles away.

My check flight was again in a Blanik of the Canterbury Gliding Club, utilizing the 4000' mountain beside the aerodrome to get to 5400' in ridge lift. The next day the wave was operating but only a few of the lucky pilots with high performance ships were in the right place at the right time. I had to be content to ridge soar until my backside could no longer stand the hard Blanik seat. I had to decline the offer to fly the club Pirat as we had a reservation to protect at a hotel some 60 miles away.

The scenery while gliding in New Zealand is fantastic, especially to anyone not accustomed to mountains. Visibility was excellent as they don't get the smog and haze we get here around the Great Lakes.

Pricewise, glider costs averaged between 5 and 10 cents per minute while tow costs varied between 35 and 60 cents per minute. Altogether I flew approximately 5 hours (6 tows) for a total cost of \$53.00 N.Z. (Can. \$57.00) including tows which works out almost the same as gliding costs here.

Typical club equipment seems to be Blaniks, Schleichers Ka-6, Ka-7, Ka-8, ASK-13, Skylarks and Pirat (no Schweizers at all). Private ships included Cobras, Cirrus', Libelles, Phoebus', PIK-20's, Kestrels, Nimbus II's

etc. Towplanes are mostly Super Cubs and Piper Pawnees of various horsepower

As mentioned previously, no licence is required to glide in New Zealand but the gliding movement is governed by the New Zealand Gliding Association much like the British Gliding Association. The N.Z.G.A. has a training syllabus that most clubs adhere to which seems to work very well. There is also more emphasis on cross country soaring than in Canada and a passenger rating is required to carry passengers.

If anyone is thinking of going to New Zealand for a holiday I can highly recommend the scenery the hospitality and the gliding.

Club News

VANCOUVER SOARING ASSOCIATION

This year, the operations at Hope will be undergoing a major change. For the first time in the 10 year history of the V.S.A. the club will be operational with its own launch equipment.

Formerly the launch services utilised by the club have been provided by privately owned winches with the occasional use of aerotow also provided by non-club equipment. At the end of 1975 a decision was made to purchase launch equipment for the club. The purchase of a towplane was greatly preferred to the purchase of a winch in that it gave the club greater flexibility in its operations.

The search for a suitable towplane lasted until mid-March

with the club finally purchasing a Cessna L19. Currently, club pilots are being checked out in this airplane and, hopefully, it will be operational very shortly. In the meantime the club has commenced operations with club member Andy Potomac providing towing services with his Mac Robertson STOL modified Cessna 180.



Hangar Flying

Nick Pattenson reports from Ottawa that the Carleton Towers Hotel has a weekend rate. If you were at the Carleton Towers for the AGM and did not get the special weekend rate then write to manager and send your bill and ask for a rebate.

The Instructor's Committee is planning to hold both east and west courses during 1976. The east course was scheduled for Pendleton during the week of May 23rd and the west course will be at Kelowna (Okanagan Soaring Assn.) during July. Contact I.E. Oldaker, 30 Prescott Crescent, Pinawa, Manitoba ROE 1L0 about the west course. It is necessary that each candidate be a member of SAC and if club affiliated to be endorsed by his club CFI. We have not received word of any Sport Canada subsidy for 1976. If this is not received, the former SAC subsidy

of ½ the cost of flight time will apply.

Peter Masak, an 18 year old Air Cadet from Scarborough, Ont. has been named top graduate of the 1975 Scholarship Flying Training program for Royal Canadian Air Cadets. Warrant Officer Masak, a member of No. 631 Sentinel Squadron, scored an average of 93.43 on MoT flying and written tests to win the CP Air award which entitles him to a return trip to any point on the company's domestic network. In addition to his power flying abilities Cadet Masak holds an MoT Glider Pilot licence. He is a member of York Soaring and is currently a partner in an HP-18 construction project.

The number of licensed glider pilots in Canada increased last year from 1821 to 2030 as of

September 30, 1975: up over 11% from the previous year.

Bob Gairns reminds everyone to send claims for flights to Tony Sawatzky, Box 137, Pinawa, Manitoba, ROE 1L0. The BAIC Trophy is for the best flight of the year. The Canadair Trophy is for the FIVE best flights by one pilot. And the "200" Trophy is for the pilot with under 200 hours who logs the FIVE best flights.

SAC in search of a new visual identity

Consideration is being given by the Directors of SAC to changing the symbol of the Association. Submissions of designs are solicited from which it is hoped a suitable choice can be made. Please forward any designs to K. H. Doetsch, Director-at-Large, by September 1st, 1976.

The club gliders were removed from winter storage on the weekend of March 27, 28 and rigged ready for operations (all except the 1-26 which is being refabricated). As is usual, these two days produced rain in which to rig the sailplanes; however, the misery was worth it since the following weekend was warm and sunny, a beautiful weekend to recommence flying operations. On the Saturday there were excellent soaring conditions with lift abounding on the ridges and a strong wave behind Dog Mountain. Sunday was not so good a soaring day with weaker wind conditions but soarable ridge lift was available for a couple of hours.

The club has formed a

P.R. Committee and they have really turned out to be real fireballs. In the first six weeks club representatives have been on T.V. twice and a course on soaring has been organised with the Burnaby School Board. This course started on 7th April and will run for three weeks, with one three hour lecture each week. At the first evening there were 26 persons enrolled, a most gratifying response.

On the Easter holiday weekend we are having a meet of all B.C. clubs at Hope. The primary purpose of the meet is to hold a conference on a proposal to form a provincial Soaring Body similar to that which exists in Alberta. Certainly, with the number of clubs formed or form-

ing in the Province there is the need for better communications between the clubs which such a body would provide.

SOSA started the flying season on Saturday, April 20th with some reasonable soaring weather; we made about 30 flights. The club bought a third Citabria towplane late last season and sold our two 2-22's. We bought two 2-33's and a Club Libelle.

The Second Annual Canadian 1-26 Championships will be held at York Soaring July 19th to 23rd with practice days July 17th and 18th. All classes are welcome; there will be awards to winners of all classes entered in the competition. For entry information and all other details, contact Walter Chmela at (416) 925-5571 (office hours) or (416) 223-6487 (evenings).

Cambridge Instruments from Firmal Electronics

Need a fast and reliable variometer system with good Total Energy compensation? Buy a Cambridge system designed and produced by a contest pilot, and now selling around the world. Excellent performance from a system of plug-in units, allows you to expand your system as you wish, at a price lower than any other established system.

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A new Cambridge unit, the Speed Director, enables you to fly the right inter-thermal speed by ear alone, with or without ballast. This unit is adjustable for any glider. \$310.

Special price for complete system including Speed Director, \$600.

Blanik owners, add a repeater display and have two varios for less than the price of two mechanical types...\$80.

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TOTAL

Total energy? What is this mysterious force? A formula for better living? A new religion, or a solution to the energy crisis? None of these, but an important part of good soaring.

An article last year in Soaring assumed quite a lot of basic knowledge which, it turns out, most pilots do not have, particularly about Total Energy (compensation), a term much bandied about in pundit circles when discussing instrumentation. What does this phrase mean? It refers to a concept in classical mechanics (no $E=Mc^2$ here) that a

body has both Potential (height) and Kinetic (speed) energy. To accelerate your car from rest the motor has to do work, and some is translated into Kinetic Energy. Likewise to climb a hill at steady speed (no change in K.E.) the motor has to work against gravity which becomes an increase in Potential Energy. This P.E. can be realized as K.E. by rolling back down the hill again, picking up speed.

A glider in flight likewise possesses both P.E. and K.E. and can exchange one for the other, almost without loss, as the glider is a very efficient vehicle. One can trade speed for height, or vice versa, but only lift can help you increase the sum of the two, the TOTAL ENERGY. Why the interest in this quantity? The pilot wishes to find the best lift, not simply to increase his momentary rate of climb by pulling back on the stick. This we all know is a bad thing; it leads to the dreaded stall and spin, thus inducing rapid loss of the coveted TOTAL ENERGY. There is no easy way of measuring directly what the local air mass is doing; one has to measure the motion of the glider by means of static (height) and pitot (speed) pressures, and infer from these what the air is doing. The simple vario measures only rate of change of height and thus of P.E.

Total energy compensation attempts to remove the effects of changes of airspeed (unwanted or intentional) on the vario display, so that it shows only the equivalent lift or sink as would be seen at a constant airspeed. The whole idea was developed in England in the early 50's and helped Phillip Wills win the World Contest in 1952. MacCready did something similar with his famous ring and won in 1956.

Is T.E. just a gadget for contest pilots? By no means, any glider ever used for soaring needs T.E. compensation for the vario. Most students have trouble with airspeed control, especially when turning and watching the vario in a thermal. If they are further confused by "stick lift", then they will have little chance of learning to fly thermals properly. (The same may be true for the instructor). The most air time the students get per tow, the better pilots they will be, and if they learn

to soar while still dual, the later frustrations as a solo pilot will be reduced.

I firmly believe that clubs should be teaching soaring as well as the basics. If the club loses 90% of its pilots trained to solo, this is a 90% wasted effort. Most persons, especially young ones, expect continuing progress. This means, first of all, flying, then solo, licence, C badge, cross country, Diamonds, competition and records. There is always a further achievement to contemplate. If progress stops at licence, we have taken money from a beginner and led him to

ENERGY

a paper qualification which may leave him anywhere from complete insecurity to dangerous overconfidence, and certainly not an accomplished pilot. Therefore, train your students to soar, and keep their lifetime interest and reap eventually their contribution to the sport. So much for digression.

If you take your ship wave flying, you will need to fly quite fast sometimes to hold position, and certainly in order to penetrate through sink. If you cannot rely on the vario while changing speed, you will have a very hard time finding the best part of the wave, or even staying up at all.

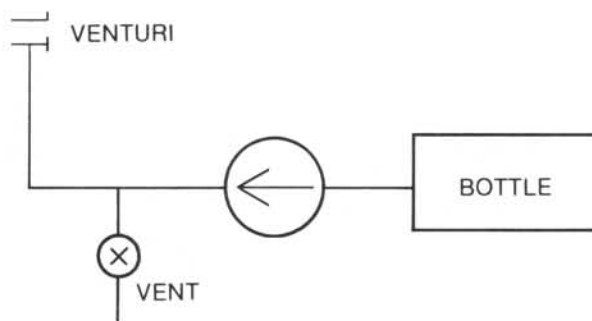
When you start flying high performance ships, airspeed control becomes even harder and in fact, in order to get the best out of a thermal, one is constantly changing airspeed and must be able to rely on true readings from the vario.

Going cross-country, or just joining a local thermal, you need to know if it is worth using. Is it 6Kts or only 3 Kts? No good trying to decide this is the vario is pegged as you pull up. Good T.E. compensation will tell you the thermal strength to ± 1 Kt as you slow down with a 2G pull up from 100 Kts.

There are four available methods; the original venturi, the diaphragm, the Braunschweig tube or T.E. probe and electronic cleverness. They all rely on the same basic law; that change of airspeed with height follows the same square law as pitot (or venturi) pressure with speed. Seemingly fortuitous, but actually an inevitable result of the fundamental mechanics. The change in pitot pressure will be proportional to the change in K.E. Hooray!

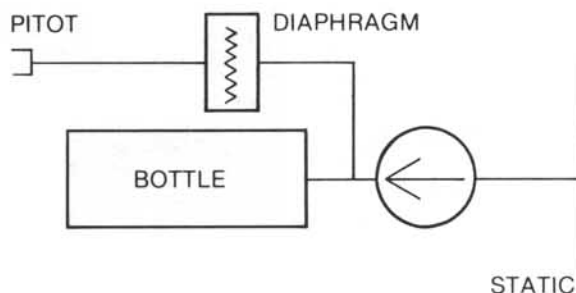
Method 1: Apply venturi suction (magnitude equal to the pitot pressure) to the vario, instead of connecting to the static ports. As the pilot pulls up, the ship climbs, the static pressure falls but the venturi pressure falls at the same rate. There is no net change of pressure and the vario continues to show the inherent sink rate. Problems; venturis are yaw (and pitch) sensitive, and thus depart from the ideal response. Sensitive to rain and ice, they need a tap to vent the vario to static in case they get plugged. Significant drag as originally made and mounted. Cost \$30. to \$50.

FIG. 1



Method 2: The diaphragm was invented to take care of above problems and introduces compensating flow on the bottle side of the vario. The diaphragm is moved by the changing pitot pressure and thus changes the effective volume of the bottle, as the airspeed changes. Air from the bottle fills this space instead of flowing out through the vario. Problems; can only be set correctly for one height, unless one buys a very special and expensive one. Also affected by static port position (position error). Cost \$30. to \$330 (Schuemann). Needs good static ports on the rear fuselage to work well. Limited range of airspeeds for acceptable operation.

FIG. 2





Method 3: Electronic. Anything one can do with pipes and ports, one can do more cleverly and expensively with electronics. Modern electronic air data computers derive an airspeed signal from the pitot-static lines, and process it and apply it to the vario signal producing near perfect, adjustable and filtered T.E. compensation. Great if you can afford it. Problems; needs rear fuselage statics and \$\$\$\$\$s.

Method 4: Brauschweig Tube or T.E. Probe. A development of the venturi, less susceptible to rain and ice and insensitive to yaw. It works well for all normal airspeeds if mounted well away from pressure disturbances due to flying surfaces; i.e., not over the wing or in the wake of the flaps or close to the elevator or rudder. Low drag, when mounted on the fin, cheap, independent of static ports. Problems; Adds turbulence to the wanted signal which disturbs fast varicos. As with all T.E. systems, it makes the vario sensitive to horizontal gusts, especially sharp edged ones. A simple addition due independently to Schuemann and Firth, prefilters the T.E. signal, removing the turbulence and some of the problems caused by sharp gusts. Commercially and aptly called a Gust Filter. Slows the vario response only slightly.

Conclusion, any vario can be used with venturi or T.E. probe compensators. Get with T.E. and live it UP! More flying for your money!

FIG. 3

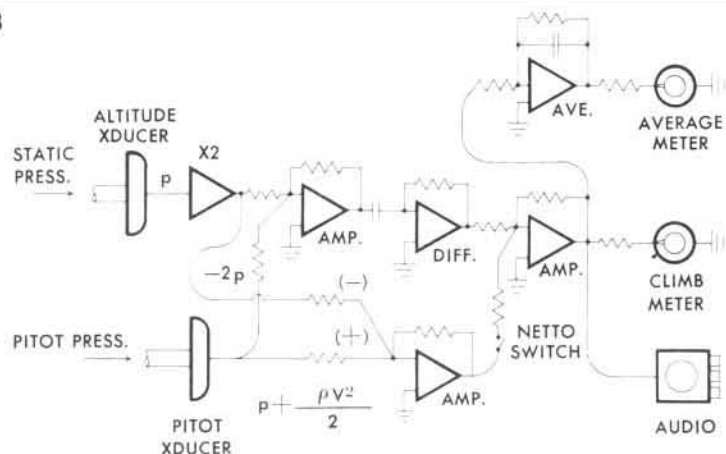
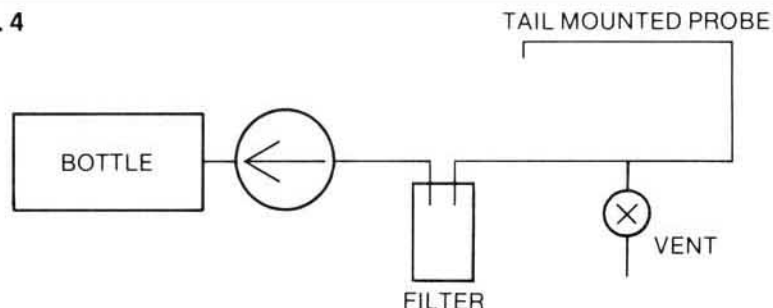


FIG. 4

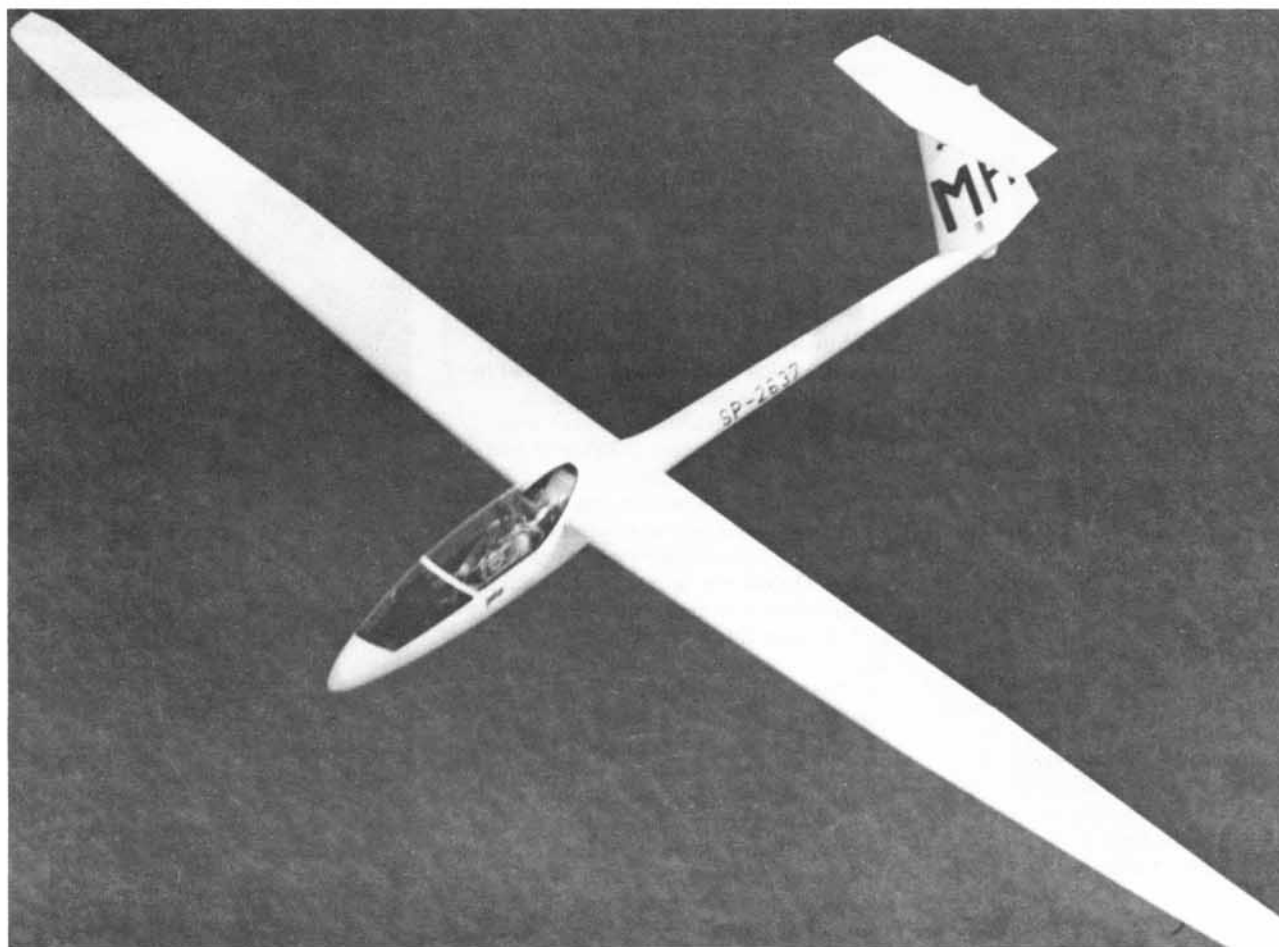


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Span 15m
Length 7.2m
Height 1.6m
Wing area 10.6m²
Aspect Ratio 21
Wing Section NN-8

Empty Weight 227 kg
Useful Weight 133 kg
Water Ballast 40
Max. weight 440 kg
Max. L/D 40
- at speed 117 km/h

Min. sink 0.56m/s
- at speed 70km/h
Min. speed 64km/h
Never exceed
speed 250km/h
Permissible load
factor 5.3/-2.65

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The Ukrainian Air Force

The cold, rainy spring and early summer of '75 at last turned to warm and sunny days in August, with the arrival of the Ukrainian Airforce's gorgeous new Schweizer 1-35. Only a few short weeks of summer were remaining to try out this new bird, and before a dozen flights were accomplished, autumn crept in heralding for me the hunting season.

Shortly after Christmas, the Air Marshall in charge of Vice, Bill Pidruchney, suggested the Ukrainian Airforce attend the '76 Denver Soaring Convention. Commander Dan Pandur, after studying road atlases, realized that Denver was two-thirds the distance to Phoenix, Arizona where both the Turf and Estrella Soaring Centers were located.

At a hastily organized Executive meeting of the Ukrainian Airforce held at one of the local noon hour strip joints, the decision was made to invade the American South West. Subsequently, the entire Ukrainian Airforce arrived in Denver on the afternoon of February 5th after a two and a half bottle champagne flight in the rear section of a Western Airlines 727. As we were being poured off the plane, a blinding snow blizzard greeted us to beautiful Colorado.

The Denver Convention was extremely well organized and a professional approach was assumed not only by those involved in the seminars, but also in the technical exhibit areas. The convention over, our Air Marshall visited the Black Forest while Commander Pandur and Colonel Bachynski proceeded on to Phoenix where once more they were poured off the plane. Fast talking at Hertz sent us down the highway to find our Sheraton hideaway.

Phoenix had been experiencing a six month drought and as Ukrainian luck would have it, at least two inches of rain fell on our first day, washing out our soaring hopes. However, the second morning was bright and clear with a 7:30 a.m. temperature of 55°F, and Dan and I set off for Turf Soaring School, located in the North West portion of Phoenix. At the field were the operators, Bob MacLeod and Roy Couliette, huddled around an old wood stove drinking coffee. The business operation of Turf is held in the open air with one of the two walls of the "office" lined with mugs, next to a continuously hot coffee pot. In the afternoon when the bright sunshine would raise the temperature to between 70 and 75°, we welcomed the shade of the overhanging slab roof.

Jeff Hazelgrove, a most courteous Turf instructor, gave us our check out flights, which could be accomplished in either a Schweizer 2-33 or a Blanik L-13. Aircraft available for rent included three 1-26's, two 2-33's and two Blaniks. Dan in the Blanik felt it difficult to maintain the high tow position due to the rapid rate of climb obtained by the 235 horsepower Pawnee tow plane. On my check out flight, I made a marvelous tow demonstration, ending with a steep side slip on final, just as a BD-4 narrowly flew under me and landed first. The Edmonton Soaring Club operation at Chipman had little or no air traffic to contend with and I had obviously become careless in watching for other aircraft in the landing pattern. You released on tow in Phoenix over large populated portions of the city which were interspersed with mountainous terrain and every square mile is well delineated by a major arterial roadway.



Colonel J. Bachynski



Bob MacLeod

Laszlow Horvath



Charlie Burbank, proud owner of Burbank International Airport near Shelburne, Ontario (2000 ft grass strip) is one of the few motorglider enthusiasts in this country and also a promoting force behind a new Air Cadet Squadron in Shelburne. Thus the obvious advantages of training cadets on motorgliders did not escape his attention. Money however is in short supply and some way had to be found to have the cake and eat it too. Cars Elliot, who keeps his Taylor J2 Cub at Charlie's place had an idea. He is a friend of Chris Heintz, former chief designer of

Elemer's Briefs

by Elemer Balint

Invades Arizona

by Colonel J. Bachynski, M.D.



Dan Pandur

Approximately 52 miles south of Turf is Estrella Sailport, operated by Laszlo Horvath (The Regional Champion 1-35 pilot). This sailport differs from Turf, in that it was built and located primarily for the soaring pilot. The Sierra Estrella Range, four miles north of the field is a noted source of ridge lift and wave flying. It was a pleasure to arrive early in the morning and see the occasional coyote crossing the runway, and it was common to observe roadrunners, California quail, and mourning doves adjacent to the road on our way out to the field. The terrain for as far as you can see from the glider port looks very inhospitable compared to soaring on the Canadian prairie. Occasional irrigated fields and

crop dusting landing sites are located sporadically along major soaring cross country routes.

We checked out in a Schweizer 2-32 with Laszlow, and to our amazement, found the sail plane not the "dog" that many people suggest. All of Horvath's aircraft and his entire operation are kept running like clockwork with the aid of his two sons. Meticulous care is paid to maintenance and cleanliness. Getting into his sail planes you almost feel obliged to wipe your feet before entering. The planes for rent included 2-33's and 1-26's with only one medium performance aircraft, the 1-34.

Fifty hours of solo flight are required before anyone is allowed to fly the 1-34 which left me out in the cold and Pandur grinning behind his teeth. Horvath has an A-frame for his business operation, housing radiocommunication field loudspeakers and a microwave oven for snacks and lunches. Complete service is made available for cross country and badge flights and I was amazed to see a large assortment of barographs in the clubhouse.

Fresh from the fine facilities and hospitality of both Turf and Estrella, the Ukrainian Airforce triumphantly returned to Canada prepared to make a clean sweep of the Western Canadian Soaring Championships in July at Claresholm.

Robin Aircraft in France, now residing in Canada. Chris is the author of the design of the very successful Zenith and Mono Z aircraft for homebuilders. One day over lunch, Cars, Charlie and myself twisted Chris' arms a little and he agreed to produce a motorglider design for homebuilders. Tentative performance parameters were set at 20:1 L/D and 2.5 ft/sec min. sink. It will be a tandem two seater with a modified Volkswagen engine. Chris estimates the cost of the kit including engine and propeller at around \$6500. Anyone interested should contact Chris Heintz at 236 Richmond Street, Rich-

mond Hill, Ontario, telephone (416) 884-9044.

It seems I cannot tear myself away from motorgliders. It is like a good marriage; it gets better with time. In Canada we have about the best motorgliding regulations in the whole world! They are simple, easy to understand and administer and allow glider pilots to fly motorgliders with an endorsement and gliding instructors to instruct on motorgliders with a motorglider instructor's endorsement. There are a few wrinkles to be ironed out yet but these are under negotiation with the

MoT and will be amended in due course. Meanwhile we are the object of envy of our southern neighbours who can register a motorglider only in the exhibition/experimental category and must have a power pilot's licence to fly it. Considering that there are about 50 motorgliders in the U.S.A. and only three in Canada (our Sperber, John Anthoine's Falke in Sault Ste. Marie and a Ka-15 in Montreal) this is an achievement we are proud of.

We hope that, like a good marriage, these rules will be getting better with the passage of time.

Canadian Records as of 12 March 1976

Unless noted otherwise, all records are both Territorial - T (made in a flight originating in Canada) and Citizen - C (made by a Canadian citizen anywhere in the world). NC indicates no claim has yet been made for this record. The FAI No. refers to the code for this type of record.

New records must exceed the old by 10km on distance flights, 2 km/hr on speed flights and 3% on altitude gains.

FAI No.	TYPE OF RECORD	OPEN	FEMININE	MULTIPLACE
<u>Distance</u>				
4.6.1	straight distance	R.M. Cook 724km(C) D.J. Marsden 676km(T)	A. Williams 305km(C) " 209km(T)	A. Pow 235km
4.6.2	Straight distance to goal	D.J. Marsden 676km	A. Williams 305km	R. Shirley 153km
4.6.3	Out and Return distance	R.M. Cook 526km(C) S. Simon 520km(T)	NC	D. Marsden 334km
4.6.4	Distance round a triangular course	NC	NC	NC
<u>Speed round a triangular course (in km/hr)</u>				
4.6.5.	100 km	R.M. Cook 113.4 (C) J.M. Firth 103.3 (T)	A. Williams 31.0	D. Marsden 98.1
(not FAI) a	200 km	R. Mamini 91.6	M. Barritt 68.7 (C)	G. Buhr 42.8
(not FAI) b	300 km	R. Mamini 110.1	NC	D. Marsden 69.9
(not FAI) c	400 km	J. Firth 77.9	NC	NC
d	500 km	R. Mamini 101.8	NC	NC
e	750 km	NC	NC	NC
	1000 km	NC	NC	NC
<u>Gain of altitude</u>				
4.6.6	Gain of height	W.F. Chmela 8320m (C) W. Mix 7420m (T)	A. Williams 5898m(C)	R. Shirley 7100m
4.6.7	Absolute altitude	W.F. Chmela 12450m (C) W. Mix 9705m (T)	A. Williams 9772m(C) A. Williams 3940m(T)	W. Krug 9805m(C) R. Shirley 9085m(T)
<u>Speed in a straight line (in km/hr)</u>				
4.6.8	100 km	D. Band 59.4	NC	W. Chmela 47.0
(not FAI) a	200 km	J.M. Firth 70.0	NC	NC
(not FAI) b	300 km	W. Mix 108.6	NC	NC
(not FAI) c	400 km	NC	NC	NC
(not FAI) d	500 km	D.J. Marsden 97.1	NC	NC

Completed F.A.I. Badges 1975

Gold Badge

No. 111	P.J. Gaettens (York)
No. 112	R.R. Kurzwehnart
No. 113	A.W. Burton (In U.S.A.)
No. 114	M. Frijters (London)
No. 115	A. Williams (V.S.A.)
No. 116	K. H. Doetsch (G.G.C.)
No. 117	G.G. Haslam (In U.K.)
No. 118	J. Dodds (Erin)

Gold Badge With Three Diamonds

No. 21	K.S. Stachow (World No. 1669)
No. 22	P.C. Trounce (World No. 1781)
No. 23	H. Werneburg (World No. 1782)

Silver Badge

No. 400	J.J. Southworth (V.S.A.)
No. 401	J.G. Parkinson (")
No. 402	C.G. Pederson
No. 403	R.L. Barry
No. 404	E. Asche (London)
No. 405	V.G. Ennis (Lakehead)
No. 406	W.D. Gardiner (")
No. 407	H.H. Baeggli (M.S.C.)
No. 408	F. Hinteregger (Wide Sky)
No. 409	C. Eaves (London)
No. 410	H. Tilgner (G.G.C.)
No. 411	J.A. Kopala (Cu-Nim)
No. 412	D.H. Jessenburger (")
No. 413	H. Lach (M.S.C.)
No. 414	G. Cantile (")
No. 415	P. Trent (")
No. 416	G.W. Couser (")
No. 417	A.B. Clarke (")
No. 418	G.K. Hatcher (M.S.C.)
No. 419	I. Spence (London)
No. 420	J-P Mathieu (M.S.C.)
No. 421	T.J. Grayson (London)
No. 422	D. Gauvin (Q.S.C.)
No. 423	J.P. Chevalier (London)
No. 424	J. Cadorel (In Germany)
No. 425	W.J. Oke (Lahr)
No. 426	C.C. Bantin (G.G.C.)
No. 427	D.J. Little (London)
No. 428	M. Gaulin (Air Sailing)
No. 429	F.W. Black (G.G.C.)
No. 430	C.J. Powell (Erin)

Gold Diamond (300 km)

G.G. Haslam (in U.K.)
J. Thompson (London)
G.A. Adams (M.S.C.)
W. Krueger (S.O.S.A.)
E. Hollestelle (London)

Height Diamond (5000m)

P. Rawes (Black Forest, Colo.)
N.E. Pool (")
F. Mueller (")
D.A. Mooney (")
P.C. Masak (")
D.W. Clarke (")
E. Beyke (")
W.R. Brent (")
R.R. Kurzwehnart (")
P.J. Gaettens (")
R. Stokes (Edmonton)
D. Jesseberger (Cu-Nim)
J.A. Kopala (")
N.D. Scott (")
A.W. Burton (In U.S.A.)
D.M. Goulin (Erin)
P.C. Trounce (S.O.S.A.)
H. Werneburg (")
G. Haslam (In U.K.)
J.L. Chamberlin

Distance Diamond (500km)

K. Stachow (Cu-Nim)

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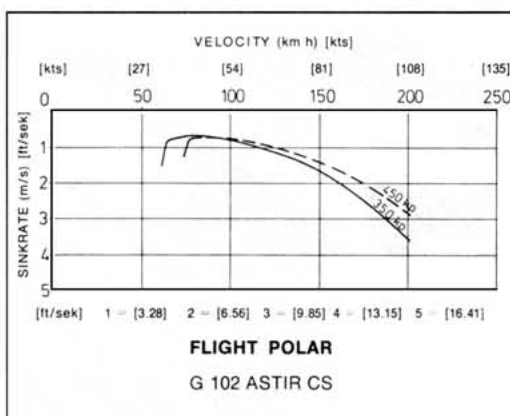
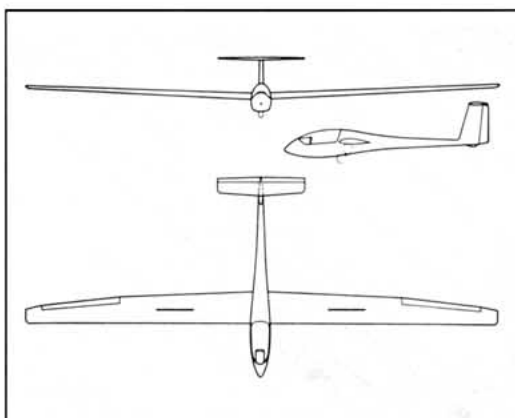
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FOR SALE

Standard Libelle, fully instrumented with PZL total energy, winter electrical, double range vario with audio and Netto reading, Radair 10.S, oxygen, warning lights, ballast and streamlined trailer. Contact: Julius Nagy (416) 225-9433 (H) or 863-1822 (O), George Stanley (416) 483-7834 (H) or 364-0223 (O).

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WANTED

1-26 or 1-34 call Paul, evenings at Montreal, (514) 766-8362

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Club Supplies

Item No.	Description	New Price			
1.	F.A.I. Soaring Badges - "A" & "B"		9.	S.A.C. Blazer Crest (Navy Blue)	8.50
	a) Button - Screw Back	\$ 4.75	10.	S.A.C. Decal	0.25
	b) Button - Clutch Back - "A" only		11.	S.A.C. Tie (Navy Blue with Glider Design)*	2.75
	balance of stock	5.00	12.	S.A.C. Cap (Red, Green or Blue with white Crest)	3.50
	c) Pin - Safety Catch ("A" & "B")	5.50	13.	S.A.C. Glider Pilot Log Book	
2.	F.A.I. Gliding Certificates & Badges:			a) single copy	2.25
	a) Application Forms for Certificates & Badge			b) 25 or more	each 2.00
	Claims available from Club C.F.I.	n/c	14.	F.A.I. Cloth Badges - 3" diameter	
	b) Gliding Certificates - S.A.C. Member	5.00		a) "C"	0.75
	- non member	18.00		b) Silver or Gold	1.50
	c) Badge - "C" (Button or Pin)	6.00	15.	Student Progress Sheets - 5 1/2" x 3 3/4"	
	d) Badge - Silver "C"	7.50		(sticks to back page of log book)	0.08
	e) Gold or Diamonds - S.A.C. keeps no stock				
	but issues a letter of authority for the applicant				
	to order directly from manufacturer.				
3.	F.A.I. Soaring Awards & Rules Booklet	5/\$1.00 or 0.25 ea.			
4.	F.A.I. Sporting Code (English or French)	1.50			
5.	S.A.C. Instruction Manuals:				
	a) Part I - Instructor's Guide	0.75			
	b) Part II - Air Instruction Notes	0.50			
	c) Part III - Student Notes	1.00			
	d) Set - II Plastic Laminated Air Cards (5x8)	3.00			
6.	S.A.C. Tephigram & Weather Briefing Booklet				
		5/\$1.00 or 0.25 ea.			
7.	Weather Briefing Form N-052 (8 1/2" x 11 sheet)	n/c			
8.	Application for Official Observer	n/c			

NOTES:

1. Item 2 (b, c, d or e) available only from Mr. P. Coleridge, 80 Waverley St., Ottawa, Ont. K2P 0V2

2. All other items available from Box 1173, Station B, Ottawa, Ont. or Mrs. T. Tucker, 786 Chapman Blvd., Ottawa, Ont. K1G 1T9

3. All cheques payable to S.A.C.

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