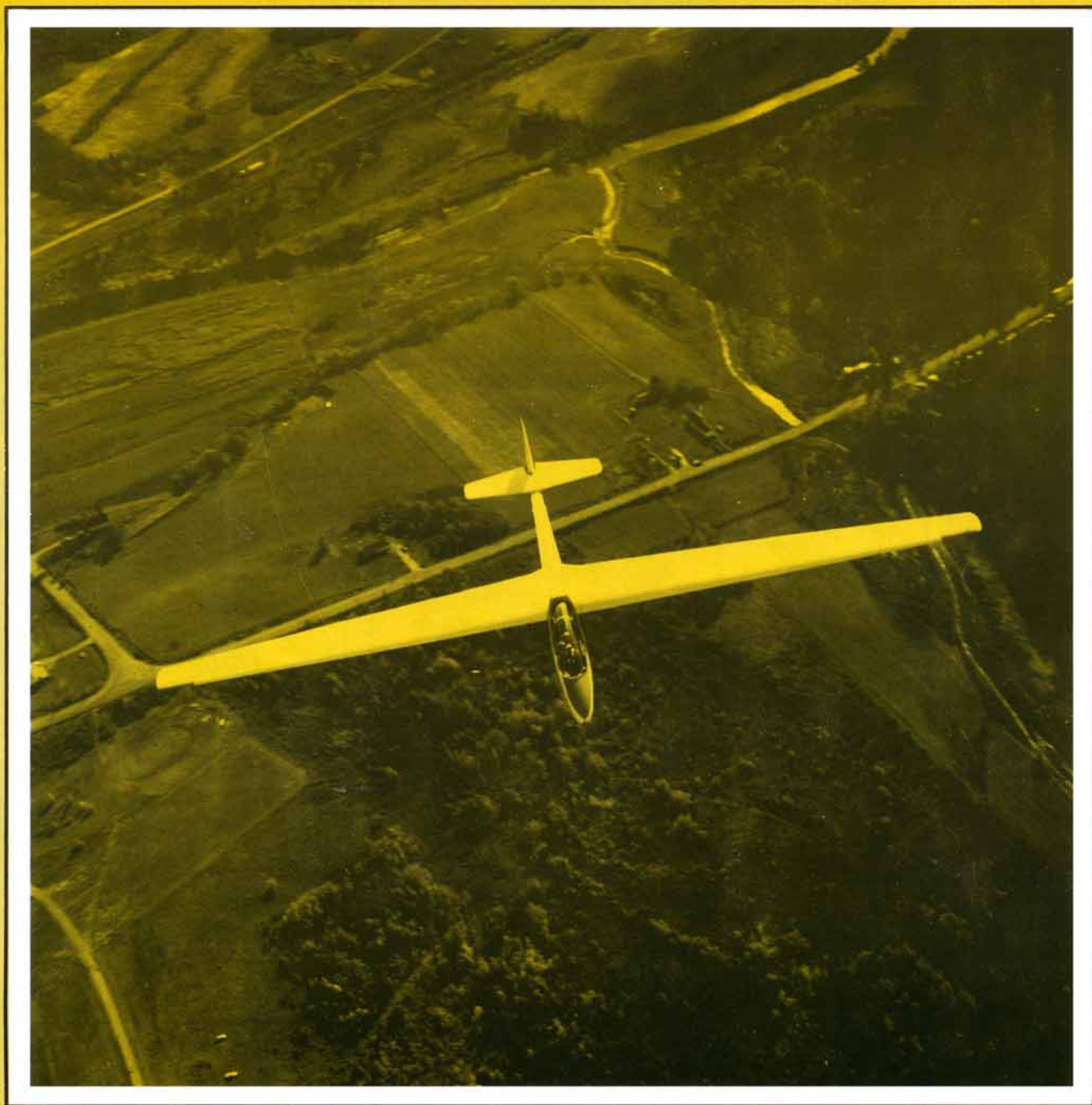


FREE FLIGHT

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FREE FLIGHT



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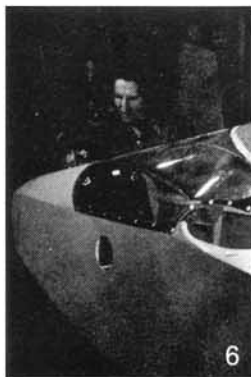
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The photographer, Christopher Purcell,
used a 4 x 5 Speed Graphic with Tri X
film to catch pilot Tom Foote over the
Bluenose field at Stanley, N.S. The
photo plane was courtesy of Sundance
Air Shows and flown by Debra Burleson.



Below 1000' AGL it's serious business

by Gerhard Dittbrenner

3

Home Building

by Gilles-Andre Sequin
and Paul Dorion

6

Project Sigma

by Peter Masak

10

One-Six-Zero- Zero-Zulu

by Maurice (Moe) Aubut

12

Hangar Flying

21

Overseas News

Edited by Lloyd Bungey

21

Building the Duster

by John Bandorf

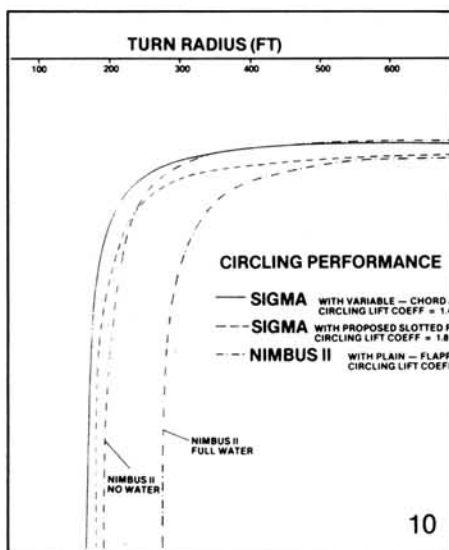
22

Class Ads

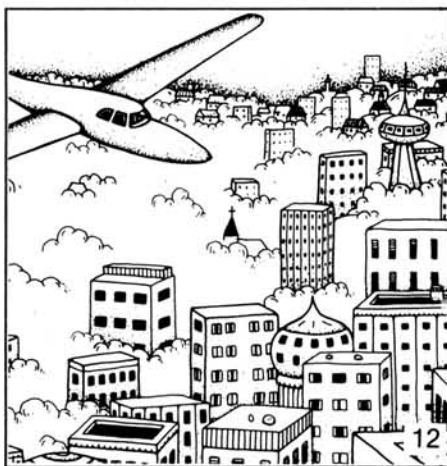
23

Give us a push

23



10



Below 1000' AGL

it's serious business

This is the story of my experience as it happened last summer. It is addressed to all those pilots who, like myself, would not think of ever being involved in one of those flying accidents that one hears about from time to time. These kind of things happen because of negligence, overconfidence, misjudgement, inexperience, and that does not sound like us at all. It usually happens far away and who knows, the guy must have done something - or maybe he was a beginner who just simply lacked the experience we have. Well, maybe he was inexperienced; but then maybe he wasn't. Maybe he had just enough hours to start feeling comfortable and relaxed in his ship - maybe that's what brought him down. At least in my case, I think, this analysis is appropriate. So then, here is my story as I remember it.

The day left no question about what to do; go out there and take off. I could not arrange for a tow pilot earlier and so it was 2:30 when I took off from Gimli Airport. I thought I would make a triangle to Riverton, Chatfield and back. About 100 km plus. The Maule is a powerful plane and the tow took only a few minutes. As usual release was made about two miles northwest of the field to avoid other traffic. Lift was weak at first so I turned east toward Lake Winnipeg. I knew from earlier flights that with northwest winds lift could be found close to or right over the shore line. And so it was. Still over ground at about 1500' the vario showed a shy 1 m/s. Circle, centre and hang in there. Slowly drifting towards the lake but also gaining height, lift was getting better. Two m/s and at 3000' I turned north towards Riverton. Soon I edged out towards the lake. Yes, lift was getting stronger and soon the vario jumped to 4 - 5 m/s. At 6800' I pulled dive brakes to avoid clouds. What a



fantastic time I had. In fact at times I did not have to circle but could just push on north and stay in lift.

I let go of the controls to reposition myself in the cockpit. My bird, an L-Spatz III, was well trimmed and flew right on at 45 mph. What a thrill to sit there, almost like a passenger, watching the countryside move away beneath. Yes, I really felt good. I observed my wings as their tips flexed up and down and I felt proud of the fact that I had brought this bird to life again. Two years ago it was ground damaged and I had just spend one and a half years rebuilding. In fact this was flight number twelve since the overhaul, and in looking around I felt great joy and satisfaction about the way things had worked out. Everything was nice and clean - almost new-looking. Everything functioned well, and flying this machine was really a relaxing experience. There was no fight, at least not that day, and controlling the bird required only gentle pressures. I really couldn't ask for more and my emotions soared high along with me.

Today, I believe that at this point I should have become suspicious. It seemed as if I didn't have a concern in the world. In fact this time there wasn't even anybody waiting down there to fly the ship. I could and would stay up as long as possible. Look-

ing back I believe that it was this uncontrolled state of emotion that led to the events that lay ahead of me.

While dazing along and enjoying my flight fully, I was getting lower. In fact, when over Riverton, I was back at 2500', but I was not worried. Lift would have to be found on a day like this. I turned west now to reach Arborg and to go on to Chatfield, my second turn point. I was back at 3000' and that was plenty to go on and look for more. I stayed north of highway 68, power lines, Icelandic River etc. searching for lift. Arborg was soon in sight and I had not been able to find a decent thermal. In fact I was getting down to about 1000' as I picked a field - just in case of course.

Here again I must admit that the usual sense of excitement and awareness, the necessary concentration, was not with me. Freshly plowed and close to a residence, the field looked O.K. I would come back to this one later - a bad idea, but my feelings described earlier had not yet worn off and I refused to believe that my flight would soon end. I simply was not concerned enough about the situation. I would have to make my approach from the south, starting from the highway. There were some power lines to watch out for just at the boundary of my field - no problem.

However, I should soon find my situation worsening. I was searching around for that thermal that had to be around here somewhere. Nothing. I looked back at my landing field as it stretched out there - black soil and all. If anything, that's where it had to be. At about 500'-600' I made a pass over it with no results. That was it - finally I faced reality.

I am getting low now and I had better get this landing done. I turn downwind and right into sink. A quick

Below 1000' AGL it's serious business

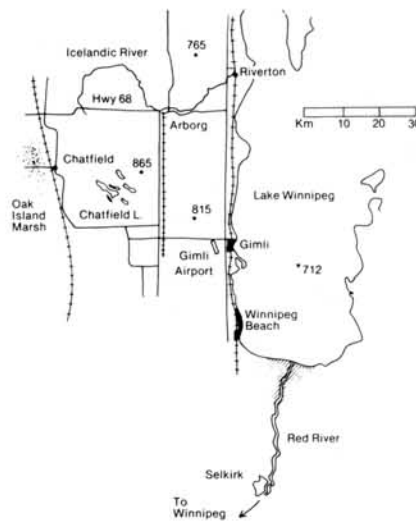
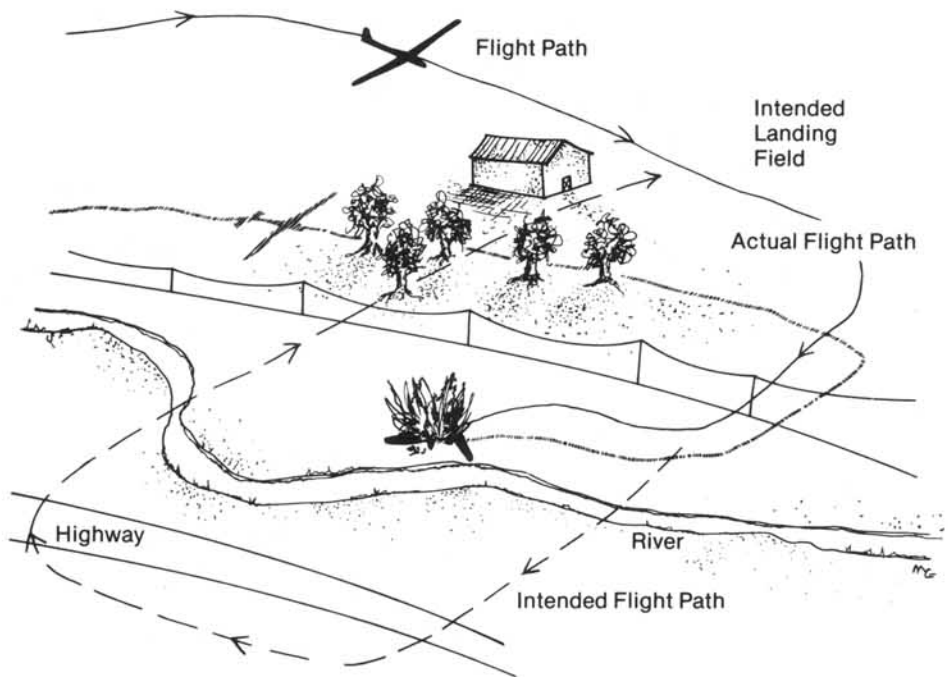
downwind check: winds light northwest (I know this from circling). Airspeed at 45 mph (that's cruising, can't afford more because of altitude). Tighten those straps - (the best thing I did as it turned out). I am really getting low now. I should trim and check my brakes but time is running out. I must cut short this downwind leg and turn onto base at once. That is done now - wings level and I am positioned midway between the highway and my field - almost exactly above the Icelandic River. A quick look at my field to the right - yes there it was, only 200' - 300' away and enough room to clear those power lines. I am now flying parallel to the highway and the river. They are about 200'-300' apart and the total riverbed is about 500' wide, its banks filled with haystacks.

And there it happens. The sudden silence, the awareness of not flying anymore but rather hanging there motionless. At flying attitude, not nose high as might be suspected, I find myself with insufficient airspeed. I realize what will happen next and push the stick forward. Reaction seems quick enough and I hold it forward for a long time it seems. Why don't I pull out? Somehow I feel that I need yet more speed to recover - I keep pushing. I see the ground coming up fast. I must pull now or never. Yes - there is the flare out, but the ground is awfully close and I see haystacks. As I anticipate my touchdown, I feel relief - the worst seems over and I concentrate on those haystacks in front of me. Then contact is made.

I remember my surprise about the impact, and I felt my back, but otherwise we seemed to be alright - my bird and I. I suppose I passed out at this point, since I know nothing about the destruction that took place from here on. Later I find myself undoing my harness and chute and I was able to crawl out of the cockpit, not realizing that there was no canopy and that the fuselage was laying on its side. I was bleeding from somewhere and my back hurt and I couldn't get up. I heard a truck pulling up, a young boy helped me up and into the cab. I vaguely remembered the sight of a broken wing. After that was pain and nurses and a week's stay in the Arborg hospital.

Two months later my recovery was almost complete and my feelings toward our great sport have not changed. I will however, have a great deal more respect for its hidden dangers and no matter how enjoyable the flight, anything below 1000' will be regarded as a serious business.

Many times since then I ask myself, "What happened to your airspeed?" I have no direct and absolute answer ready. Only a theory; the terrain I was flying over, a riverbed with turbulence.



One thing however is for sure; proper planning at a safe altitude would have saved a nice bird.

Then there is something else; a tight harness and a lot of luck saved this writer.

Comments by Ian Oldaker, Chairman SAC Instructor's Committee.

Receiving a report like this is extremely useful (and interesting) as it allows others to share the thoughts and decision-making

processes of the pilot. The fact that he was involved in a crash is unfortunate (the pilot has now fully recovered from a crushed vertebra) but this is now why we have the report. Let's look at it.

So he got low you may say - but trouble started at 6800' when in his own words his emotions soared along with him. Professional pilots will tell you to beware of becoming complacent or of relaxing, if you find yourself whistling for example, you are not "flying the airplane" - beware of this - we should always plan ahead - lift can't be guaranteed on a cross country - so plan ahead. It takes concentration especially when low over unfamiliar ground, so let's give ourselves a break and consider the following.

The first decision point about a possible landing was made on this flight at 1000'. This is too low to be looking for and choosing fields. On early cross country flights (as in this case) we should start looking at 2000', the usual height for aerotow training flights when we "know" where our landing will be. By 1500' it should have been chosen and then inspected, after which we can still safely go looking for a thermal. As we descend we come back to the field to set up a proper circuit (just like at home). This may be at a height below 1000' but should be no lower than the circuit entry height at your club (what is the rule there?).

At low altitudes, say below 1000', many pilots deliberately fly faster when thermalling to avoid that inadvertent stall or wing drop (and spin), and a golden rule that many have adopted is 50 mph minimum. This is an excellent idea for 1-26's and many other early solo machines, especially for windy, turbulent conditions; in later flying the rule may be modified, and in my Tern for example, which stalls at 37 knots, I thermal low at 50 knots. We should also remember that when thermalling low we often circle with a steeper than normal bank angle because the thermal is small. At steeper bank angles the speed for minimum sink goes up so thermalling tightly should automatically call for flying faster. When low the need to also avoid a stall makes the need for flying faster even more urgent.

A hurried downwind check was partially made on this flight (note - he did not retrim), which included a decision to depart from his normal practice of flying faster in the circuit. This was a decision that by itself would not necessarily have mattered, but in any event was a poor one. Having turned onto the base leg early he looked at his intended landing area. Now he should have been increasing speed to that for his approach and landing. Unconsciously however, he may well have begun easing back on the stick "to try to reach his landing point". There appears to be a slight upslope toward the intended landing area. It is possible, again subconsciously, to fly relative to a sloping ground contour thinking it is flat (have you

ever flown in the mountains?). In this case it was an upslope toward his landing point which may have resulted in a flatter glide than would be normal, hence less speed (I know the opposite happening to a pilot who flew downhill and never did land - he tried a 180° turn to land uphill, cart-wheeled and wrote off a BG-12). So, either one or both these effects may have resulted in a reduced airspeed, and in a bit of turbulence or shear near the ground the pilot suddenly heard silence.

But to get back to the circuit for a while. A circuit had been planned, if a bit briefly, while the pilot was still "searching around for that thermal..." After passing over the field heading east at about 500-600 feet he made his landing decision, and began a normal square circuit. Did his earlier planning of this circuit now "lock" him into flying it, come what may? We should look at our own flying and ask ourselves whether we are too rigid in circuit flying, or are we flexible enough to modify a circuit to account for a changing situation? Was our own training rigid? And now that we are instructors, are we constantly trying to teach students to think ahead by deliberately varying circuit patterns and heights?

Looking at the figure we see hazards over which the glider would have flown on its final approach, hazards which are enough to send shivers down most pilots' spines particularly if they get low during the approach. We all know the temptations of landing close to a road, or edge of a field, to reduce retrieving efforts. Whether

there was room in the selected field to have a clear approach is not certain, but this pilot inadvertently made the flying more difficult by his selection, and this may well have influenced his actions when in the circuit.

Then the stall - but did he actually stall? From the article it seems the pilot pushed the stick forward even before the aircraft dropped its nose. As the nose now began to go down, the pilot says that he still felt stalled, so he kept pushing. Perhaps he never did stall, but his efforts to "recover" resulted in a reduced 'g' pushover. The sensation of this is not unlike that of a full stall, and this often leads pilots to "feel" they are still stalled even as the aircraft is gaining speed and can be pulled out of the dive. This is an interesting phenomenon, which affects individual pilots differently. However it requires all of us to become aware of the difference between a true stall and a reduced 'g' pushover, when the aircraft is of course still flying and can be doing so at well below the normal (1g) stall speed.

All the effects discussed above may not have occurred or be appropriate to this particular flight. However they are possible, and each of us as responsible pilots and instructors should be aware of them and should be teaching our students to avoid similar hazardous situations in their future flying. Our thanks to Gerhard for writing up this accident thus hopefully allowing us to learn something from it.

Now go back and re-read his last two sentences - I agree.

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Max. Weight	450.0 kg
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Load Factor	+ 7.1 to -5.1
Best L/D	42 @ 108 km/h
Min. Sink	.63 m/s @ 85 km/h
Stall Speed	60 km/h @ 300 kg
Max. Speed	262 km/h

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HOME BUILDING

by Gilles-Andre Seguin and Paul Dorion

"If you don't really want to work in your basement for four years, get a spare-time job evenings and weekends and save the money so you can buy yourself a sailplane."

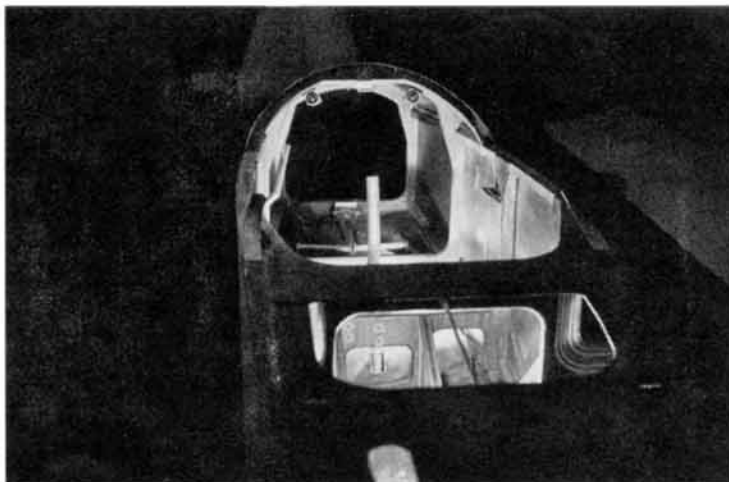


First take-off



Paul Dorion

Fuselage under construction



Philosophy, or, How to Lie to Yourself

Very often, when you talk with people about homebuilding aircraft, the dialogue turns around problems. Everything is seen as a problem by some and these people will probably never start a project let alone finish it.

I think that when I started to really get serious about building a Duster, I saw the whole thing as a challenge of new learning and to achieve something with my hands. That was fine, but in the next four years I found I had overlooked a few things., to say the least, but the rationale was there.

But I found an answer to all the problems (that word again) I thought I would run into -- it's much better than watching Dr. Welby on T.V., and if I can't handle it myself I'll get a partner, and I'll tell my wife it'll cut the cost in half. That should be a good argument since she's going to be paying for it because I'm in my second year at university! Full-time student equals full-time unemployed.

But to find a partner is no easy thing. And to find one in whom you'll be confident and whose personality will match yours is even harder. Now there's someone in our club, a guy everyone respects, who never seems to get mad, and if something has to be done and you say to yourself, there's something I should do for the club, when you get around to doing it, you find it's been done by somebody; guess who?

So I talked to Paul of the pleasures of ownership, and he kept talking about the problems, and he always added the story about the rowboat he build a few years ago and would you know he had to tear down part of the stairs to get it out of the basement.

Now here's a guy who can really live with his mistakes, and he's having a barrel of laughs telling this story. But I wonder how he felt when he discovered the boat was too big for the door. I don't ask -- I might not like the answer.

So Sunday after Sunday I talked with Paul and it became normal to say it can't be that difficult; you choose wood and glue and this and that and so on. We were near the end of summer and nothing had been done.

Now, when you want to believe in something the only thing you need is confirmation of what you think. Hank Thor, the designer of the Duster, was the one who put the final seal on everything with a story in Soaring: "A Duster in 800 Hours of Work". Now let's see, that's only 40 weeks at 20 hours a week of work or 80 x 10. Let's stick with 40 x 20 and add 12 weeks for a few delays and mistakes, and we'll have a ship in one year. The first mistake of that few is not knowing how many is a few. The second mistake is to believe the skill the advertiser is talking about is yours!

D.K. Sailplane told us somebody near Montreal had bought a set of plans from them. We thought maybe we could see a Duster under construction or at least have a look at the plans.

Commitment, and a step in you don't know what.

Well, we walked out of the place with 11 pages of plans for \$65.00. That was very

important since we saved \$10.00 over the regular price. That helped us from not thinking about what we had just undertaken.

We were to discover, four years later, that you should not build something you have never seen because maybe it's not exactly what you want.

We had selected the Duster because it came on the market at that time, and because of the advertisement by California Sailplane in Soaring, and because an article in "Private Pilot" by Dennis Shattuck said the handling was like a 1-26, and what wasn't like it was better. Because of the amount of money we read it would cost. Because it is made of wood and everybody knows it's easy to work with, and don't I have most of the tools needed to repair a door. Today I realize it's a good thing I had access to a school wood-working shop because the money involved in tool buying would have added 30% to the project cost or a couple more years in labour.

Since my friend Paul had more tools than I, we set out to build our Duster in his basement. It was convenient for me since I had to go to the University of Montreal at least four days a week. Classes finished at 4:30 p.m., I would be at his place by 5 or 5:15, and would work until 10:00, two or three nights a week, and I got three meals a week free for two years that way. My wife keeps saying it's not really a bargain.

And do you know what I did on Saturday and Sunday? Wrong, I studied and did my homework.

One of big problems is getting parts, especially here in Canada, it seems. We were fortunate to find a replacement spar beam for a Norseman at Noorduy Aviation, a beautiful 4" x 10" x 26" piece of straight grain Sitka Spruce for \$175.00. We built the entire airplane from that beam. Plywood was a real pain in the neck, because of the various sizes and thicknesses and transport costs, which almost double the price. We got ours from a mid-Western U.S. company. One thing I and Paul agree on now is that we should have bought the kit from California Sailplane. Over the three years, with inflation, it would have been cheaper. Well, next time we'll know.

In the Duster there are few metal parts and you need them only after you have done a large amount of work on the spar and when the fuselage is ready to close. The only skill needed is patience. We got everything ready, assembled on a board with nails and took it to a welder who was a friend and did it for nothing and did a beautiful job.

Being religious does not get you to Heaven any faster.

We started to build as directed by the small brochure provided with the plans. We followed that book without even asking ourselves what we were doing. We didn't think, we followed. Our insecurity was so high at first we didn't trust certified nuts and bolts.

We started by first building the spar, three pieces of 3/4" x 4" tapered to 1/4" x 1 1/2". We simply cut a slice 1/8" thicker than needed and shaved 1/16" on each side with an electric planer. To get the

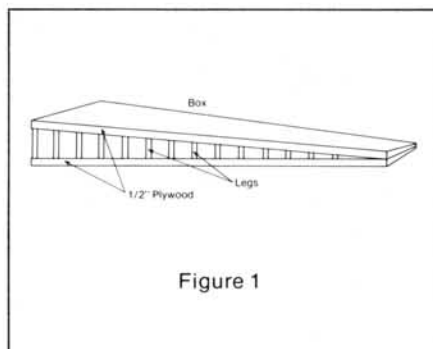


Figure 1

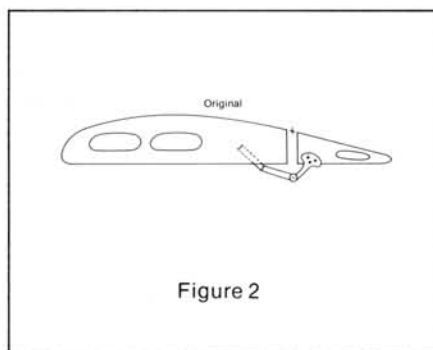


Figure 2

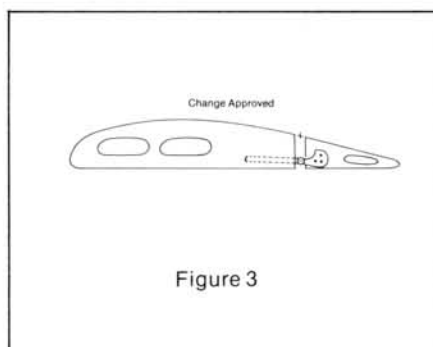


Figure 3

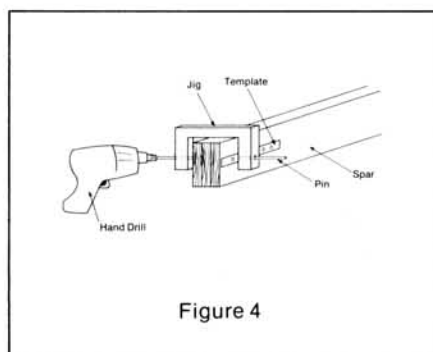


Figure 4

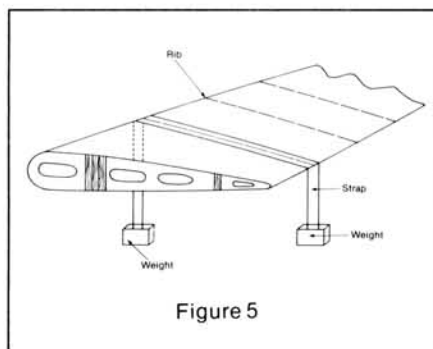


Figure 5

taper needed we built a box with the correct angle, put the box with a straight board in it and put everything on the electric planer. Fig. 1

Unfortunately I got a bit of a wave because the legs were too far apart. A friend in the Club had built a Duster too and had put a hand planer on wheels and used aluminum angles as tracks and got less wave in his finished work, and we think that's a better way to do it.

After that we simply glued everything with epoxy glue. We used Ciba Geigy RP 106-H 953 epoxy and hardener because mixing is simple: equal weight of both and it has a pot life of 4-5 hours and is accepted by MOT. The only bad thing about that glue -- it's very hard on the nose! While I did the spars my partner cut all the ribs. I don't think I could have done the job, it's so time-consuming. Because we could not afford a bandsaw we used a sabre saw that we bolted upside down on a bench with a thin top (1/4") of hard masonite and used the saber as a bandsaw. By using the proper blade we hardly needed to sand. Any sanding done was for excess material only.

The difficult part with the ribs is getting the same amount of precision with the template for every rib. And when you're finished one all you have to do is start again for the other wing.

When you look inside the wing there are not that many parts apparent but a rib every 11 inches on 13 metres is a lot of work. It took us two winters to build the three-part wing, ailerons, tailplane and elevator. Everything is built the same way.

When the student shows something to the master

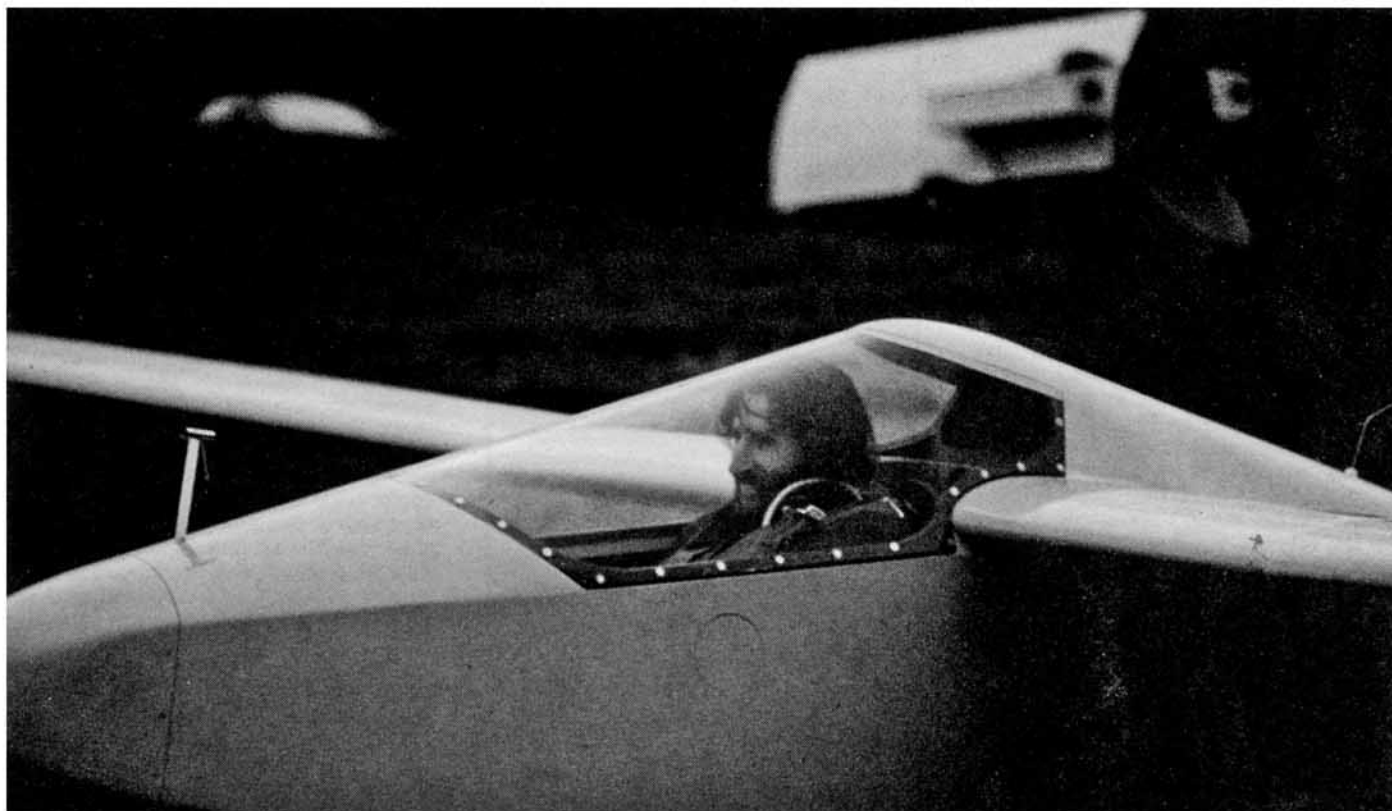
The original aileron horn arrangement didn't please us because it came through a hole in the bottom of the wing, so my partner, who is a draftsman, tried some sketches to find a way of actuating the aileron with a concealed pushrod. But there lay a few problems. We had to change the geometry of the first horn in the wing. After some hours of work we ended up with a neat arrangement on paper and sent it to Hank Thor for approval. He approved it and said it was a better arrangement than the original. Now we were really glad, and would you know, it works well, too! Fig. 2 Fig. 3

The plans for this arrangement have been given to the Duster Owner's Association and are free for use by anybody now.

Not being a miser at the right time and place pays off

The single most, really, the most, difficult job to do is fixing the wing attachments, not that it is such a complicated job, but accuracy and consistency is needed so that everyone of the 240 holes is properly aligned. After you have tightened the 120 bolts and nuts and slipped in your wing pins and everything goes together smoothly and precisely, man, have you done something! Fig. 4

The main spar fittings, match drilled in pairs, were sent to a specialized shop for hardening and to another one for cadmium plating. They were then positioned very ac-



Paul Dorion



Putting tail on



Tight fit



Gilles-Andre Seguin

curately and C-clamped to each face of the outer wing spar. For drilling we used a C-jig as described in the plans. This jig is wide enough to accommodate the spar and fitting assembly. In order to maintain constant accuracy, it is very important to fit this jig with hard steel drill bushings. One leg of the jig is used to guide the drill bit while the other leg, fitted with a same size bit is pushed through a hole on the opposite face spar fitting which gives perfect alignment.

In the "Dust Rag", the Duster builder/owner Association newsletter, I read about a fellow who drilled a few holes crooked. It took him a full winter of work to correct all those mistakes, and it sure ruins a spar.

Can I cover my wing with clear plexiglas?

We put so much work on the spar, ribs, fittings, ailerons, dive brakes and drag spars I couldn't believe we had to cover everything. The process was quite easy with 3/32" plywood. We used staples driven through popsicle sticks to make them easy to remove using pliers, and it doesn't mess up that nice plywood cover. We used about 10,000 staples for the entire sailplane, but I think stapling is not a nice way to do it since it leaves a lot of little holes to fill. To do it again, I would make myself some metal straps with weighted ends. Fig. 5

I saw this method used by a fellow building a wooden airplane and it does a beautiful job.

After that, we covered everything with Dacron of 1.2 oz. weight. As a filler we used paint brushed on then wet-sanded, and repeated until those millions of little holes were filled. A friend of ours, a real magician with a spray gun, put the final

touch on everything. With a wax job, most people think it's made of fibreglass.

After final MOT inspection, we received our flight permit, and then came that great flight test day, October 24, 1976, a chilly grey autumn day. However, the wind was low and enthusiasm high. After struggling a bit to fasten all the parts on our home-built trailer we arrived at the field at Richilieu about noon. We started immediately with the help of very cooperative assistants and admirers to rig our bright yellow bird. We then tossed a quarter to choose the test pilot. I got it and Paul told me he preferred it that way because being an instructor I had more flights and experience than he did.

After double-checking all the fittings and controls, I harnessed my parachute and sat in the cockpit to find my face against the canopy. After placing the parachute differently we could finally close the canopy in a satisfactory manner.

A final check was given to controls and tow hook and away we went. At about six feet up I released, did a straight flight and landed. I was so tense I almost forgot to use the wheel brake. After a second similar flight I was towed to 3000'. I did lazy eights, short stalls and felt a little more relaxed. After a satisfactory landing you should have seen the hilarious smile on the souvenir photo compared to the worried preflight expression. Paul did a good 34-minute flight and was also delighted.

My wife had brought some Champagne for the occasion and you can be sure that the result of four years of work was really honoured!

Gilles-Andre Seguin
Paul Dorion



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Project Sigma

by Peter Masak

When design studies were originally undertaken to develop a radically new variable geometry sailplane, the British Sigma project promised to rewrite all open class records known. Ten years of labour and over \$150,000 have been unsuccessful in bringing the project to fruition. Plagued by inherent complexities arising from the unusual wing structure and control system, the Cranfield based group saw three world championships pass by from the original target competition debut. Seemingly insoluble gap sealing problems finally convinced the group to admit defeat and a worldwide search began for a buyer for this troubled machine. Evidently there were no takers; shortly thereafter the prototype was offered to the person who submitted the most promising proposal for its development as a research/competition aircraft.

As reported in the previous Free Flight, Canadian Dave Marsden's proposal to modify the Sigma wing to incorporate his successful slotted flap airfoil was accepted from among 12 applicants. Professor Marsden developed a number of low drag slotted flap wing sections in his wind tunnel at the University of Alberta. His two seat variable geometry Gemini using the slotted flap concept has been the first successful variable geometry sailplane

built. Exotic schemes such as the British Sigma and the South African BJ-4, have relied on variable wing area to vary wing loading. Superlative high speed performance resulting from high aspect ratio "toothpick" wings and good low speed thermalling performance with the lower aspect ratio flap extended wing result - on paper. The BJ-4 never lived up to its claims at the 1970 World Contest in Marfa, Texas.

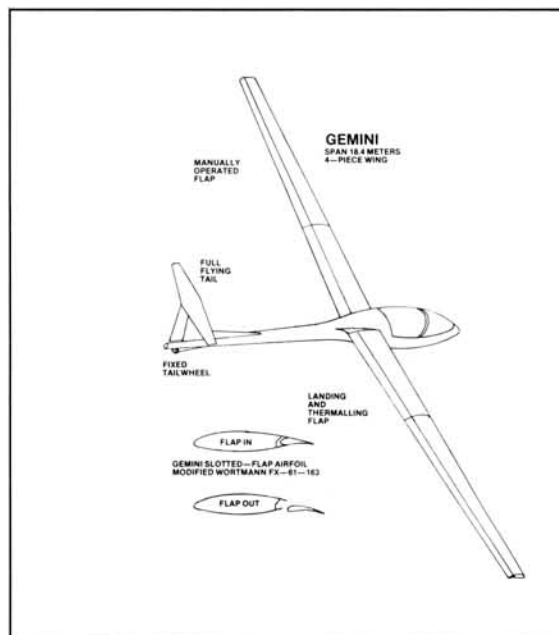
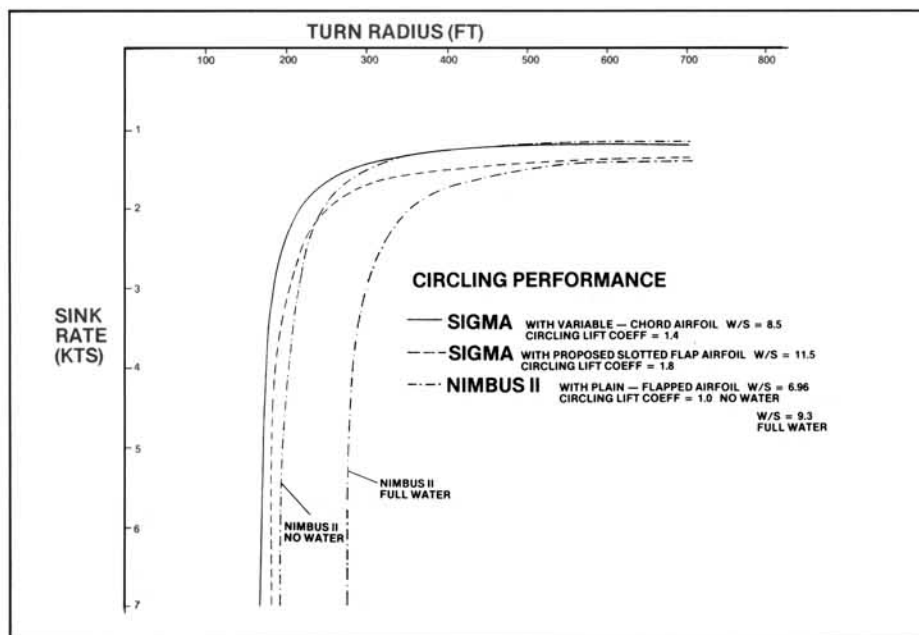
The BJ-4 made use of a comparatively high drag Fowler flap and variable wing area for circling, and pilot reports confirmed that it was no match for other open class superships; with the exception of particularly strong contest days (+1000 ft/min thermals). Precious time was lost each time the flap mechanism had to be extended or retracted. A. J. Smith, one of the American competitors commented, "In the BJ-4, you sat with a ratchet wrench in your hand (literally, a great big hardware store ratchet wrench). Then, you ratcheted out the flaps every time you would come to a thermal or better yet what you thought was a thermal. When you suddenly discover it wasn't a thermal, you flipped over the lever on the ratchet wrench and you ratcheted it all back in again. This took a lot of time, and in the meantime all of the

troops had filed past." (Ref. 6).

By storing the energy required for flap retraction and extension in a hydraulic accumulator, the British hoped to lick this problem. Sigma was designed so that energy could be stored in the system by unlocking the rudder pedals and pumping the accumulator during interthermal cruise. As many as 15-20 cycles would be necessary to restore energy lost during a single flap extension and retraction; maybe another 15 for the hydraulic landing gear. Enough energy would have been stored prior to flight to allow for 3-4 flap operations without repumping.

Marsden's Gemini eliminates either of these problems by doing the flap extension-retraction manually, and without major effort or time. This is possible due to the small flap extension required for the slotted flap - 10% of wing chord. Compare this with the 30% chord extension required for the Sigma and BJ-4.

Weight penalties arising from variable wing area designs are severe. Because of the prolific number of control surfaces, the deep enclosure provided for the large flap to nest in, and the high aspect ratio (36) wing, Sigma is a heavy sailplane. Little room is left for a spar, and as a



result, the wing skin carries much of the load. At the root it is 5/16 inch thick. Compare this with the 1/32 inch thick aluminum skins used on Dave Marsden's Gemini. Special lifting bars and 4 people are necessary to move the 800 lbs. wing around for rigging and derigging. Goodhard readily admitted that Sigma was definitely not designed to be a Sunday afternoon glider (Ref. 7). He visualized building a small crane on the trailer in order to hang up the center section and lower it on the glider fuselage.

Another rather striking fact about the Sigma is its complexity. A horrendous number of wing control surfaces (roll spoilers, ailerons, airbrakes, trailing edge tabs) plus the large flap created numerous problems for the British Sigma group. Foremost among them, according to reports, was an inability to maintain an adequate seal between the extended flap and the main wing structure, destroying the laminar flow around the highly cambered airfoil. Conversely, Marsden's slotted flap Gemini (see drawing) requires no gap seals. Wind tunnel test data showed only a slight increase in drag with the relatively large (3/8 in.) lower surface gap.

Apart from the fiberglass fuselage pod, both the prototype Sigma and the Gemini are built from aluminum alloy. Here, the similarity ends. The Gemini's four piece wing is easy to handle, with rigging accomplished in less than 10 minutes. All controls couple automatically, and the heaviest wing panels weight no more than 110 lbs - a two man operation.

Performance-wise, the slotted flap airfoil has only slightly more drag than Wortmann's profile drag data shows for the variable chord airfoil. The slotted flap doesn't require increase wing area to provide slow circling speeds. While thermalling, its high lift airfoil generates about 25% more lift/sq.ft. than Sigma's airfoil, and almost 80% more lift/sq.ft. than the plain flapped airfoils used on the Nimbus for instance.

Marsden's proposal for reworking of the Sigma involves replacing its wing with one incorporating his slotted flap design. How

would its performance stack up against current state-of-the-art open class sailplanes, and the original Sigma design? I pulled out the calculator and churned out a few polars for comparison. Some assumptions have been made, since I am not familiar with the details of Prof. Marsden's proposal.

AIRFOIL - The wind tunnel data for the Gemini's FX-61-163/SF airfoil has been used. Work on modifying other popular Wortmann airfoils to incorporate the slotted flap has been done at the Univ. of Alberta. I don't have data for these, but I know that using the slotted flap FX-67-K-150 airfoil would result in a reduction in sink rate of a least 0.6 kts at 120 kts forward speed. Thus, the polar generated for the slotted flap Sigma is likely pessimistic.

AIRCRAFT WT. - The Sigma's normal flying AUW is about 1500 lbs., the heaviest sailplane ever build. Use of the slotted flap on the Sigma could reduce this weight significantly (possibly 500 lbs.), because of the simpler structure. Addition of a water ballast capability could provide an outstanding versatile performer in both weak and strong conditions. I have assumed that the AUW is the same for the new slotted flap Sigma.

As is evident from the calculated polars for the Sigma and Johnson's measured polar for the Nimbus II, the Sigma outperforms the UNBALLASTED Nimbus by a considerable margin. What surprised me more was not how good the Sigma is, but how close the ballasted Nimbus polar is to the Sigma. The polars are virtually identical throughout the important high speed region between 70-110 kts. Both, at the very high speeds above 110 kts. and the low speed region below 60 kts., the Sigma (slotted flap and variable chord) outperforms the heavily loaded Nimbus.

Reference to the calculated circling performance graphs shows that the slotted flap Sigma would show slightly poorer climb performance than an empty Nimbus or the variable chord Sigma design, except in very tight thermals. The Sigma could

easily take care of any climb losses in high speed cruise configuration, but not by the same margin as was predicted for the open class Cirrus - the sailplane that Sigma was designed to beat.

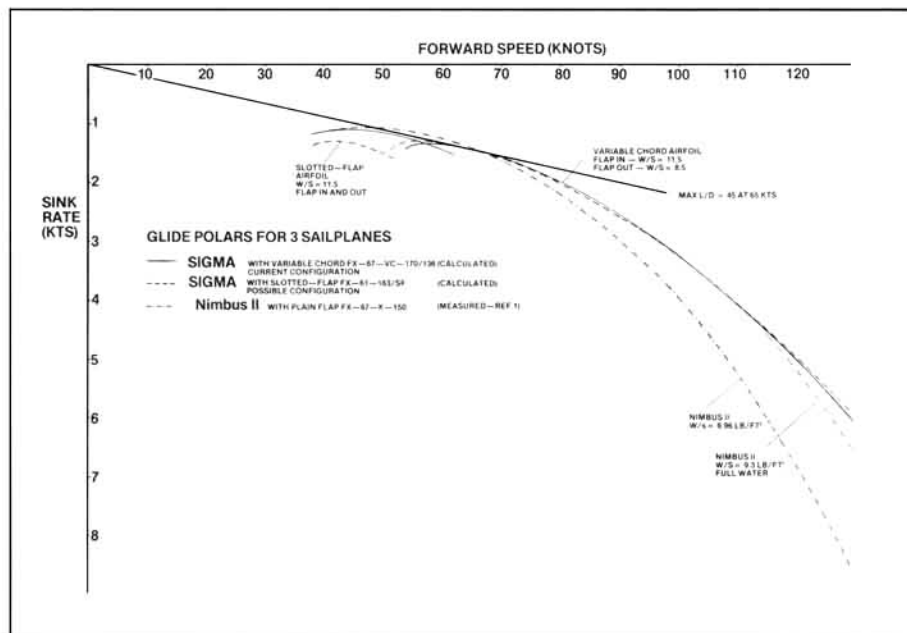
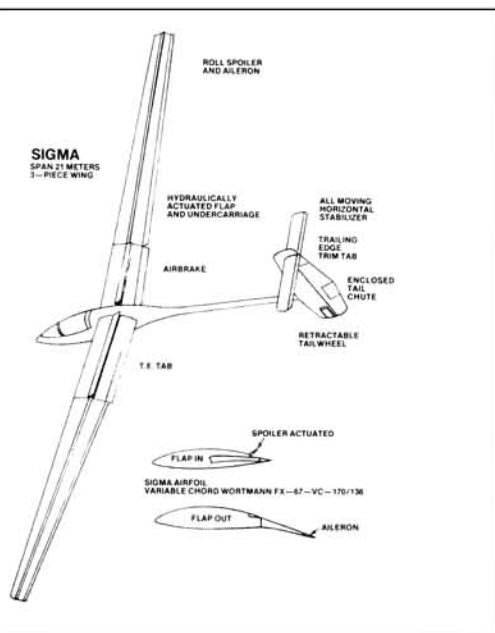
Climb performance of the slotted flap Sigma is impressive when compared to that of the fully ballasted Nimbus (see graph). A real significant gain becomes evident in thermals of less than 700 ft. diameter. This is most impressive when one considers the wing loading that the slotted flap Sigma is flying at-over 11.5 lbs/ft²!

One important fact that the graphs don't show is that the slotted flap remains unstalled at flap deflections of 20 degrees or more. The outer wing flap sections double as ailerons; thus circling at speeds much closer to stall is possible, without losing control effectiveness.

In conclusion, Dave Marsden's slotted flap proposal for the Sigma looks like a promising and feasible alternative to the original Sigma design. Canadian competition pilots are no doubt eagerly anticipating the appearance of Sigma on the Canadian competition scene, possibly one of the next world championships as well. Good luck Dave!

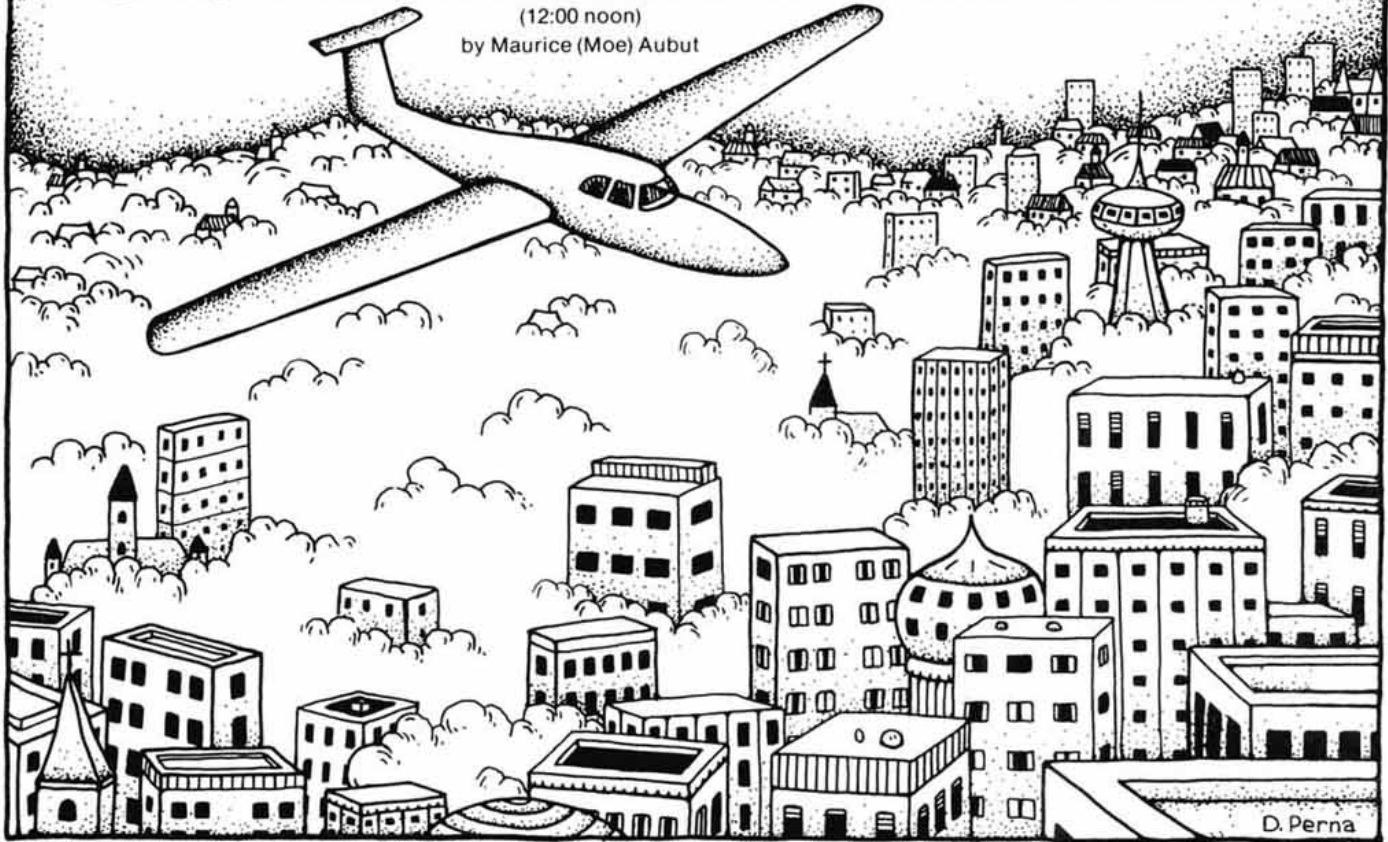
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ONE-SIX-ZERO-ZERO-ZULU

(12:00 noon)
by Maurice (Moe) Aubut



GLIDER TRAVEL

Ottawa (CP) The Assistant Deputy Minister for Transport Canada, Mr. Jean-Marc Charbonneau, announced today that the Minister will be one of the invited guests to the inaugural flight of a passenger sailplane.

The heavier-than-air ship will depart from Uplands Airport in Ottawa at 10:50 a.m. Wednesday and attempt to fly 110 miles; arriving at Montreal's Dorval Airport at 12:30 p.m.

The Volplane will utilize thermals (meteorological phenomena energy) to stay aloft. Petroleum fuels will not be used, except by a power aircraft for the initial take-off. It will tow the glider to an altitude of three thousand feet. The sailplane will then gain sufficient height by circling in a man-assisted thermal over Earthstation 30 (Ottawa).

The sailplane will reach a height of six thousand feet before leaving this station. It will begin a long straight glide towards Earthstation 31, near Hawkesbury, where it will pick up another artificial thermal and climb to a similar altitude, then glide the remainder of the distance without interruption, or the need to circle again.

"If this type of commercial transportation proves equitable - without a doubt," a spokesman for the Minister's office said, "other stations will be built between Ottawa and Toronto - then others - until it is possible to fly from sea to sea."

The controversial enterprise is heavily subsidized by the Federal government. It has already cost taxpayers over a hundred billion dollars.

The manufacturer, Soar Across Canada Ltd., who designed and developed the prototype, claims that other countries have expressed interest in the passenger sailplane. "Consequently," the Vice President said, "manufacturing passenger sailplanes will create job opportunities which are desperately needed at this particular time of record high unemployment and help balance our National Export Trade."

Ms. Lydia Turner who is a well known syndicated columnist and host of the television program, "WHO" will be a passenger on the ceremonial flight; along with Ben Venables, public relations officer for the builders. Pete Cruthers will pilot the ship.

V.I.P.'s from other countries are expected to attend the landing in Montreal. The Minister is expected to address the gathering and expound upon the need for the government's continued support of the program.

It is estimated that six sailplanes will begin regular flights on that route before the year's end.

"Gliderport three-zero," the pilot of the sailplane said. "This is Delta-Victor-Alpha-Four - six thousand at Earthstation three-zero - over?"

"D V A-Four - this is three-zero - helicopter

traffic at fifteen hundred," the air traffic controller responded. "All clear."

"Leaving three-zero at six thousand, three hundred, for Earthstation three-one," Pete Cruthers said.

"D V A, we copy - have a good flight."

"Thank you, three-zero," Pete said.

"Call gliderport three-two, in Montreal," Ottawa tower advised.

"D V A-Four," Pete said, automatically terminating the transmission.

"Gliderport three-two - this is sailplane Delta-Victor-Alpha-Four - on one-two-three, decimal three, megahertz - over."

"Sailplane Four - go ahead."

"Leaving Earthstation three-zero - one-five-zero-zero, zulu - six thousand - IFR to three-one - one thousand feet reserve - one-one-zero miles per hour - estimating three-two at one-six-three-zero, zulu," Pete said, communicating his flight plan to Earthstation thirty-two in Montreal.

"D V A-Four - request glide stats," the air controller asked.

"Convets, two hundred feet per minute - rapid cu build up, four hundred feet per minute outside station - scattered and broken lift," Pete said.

"Thank you Four - IFR cleared to three-one."

"D V A."

"I like it better with the wings level," the Federal Minister said. "Going around in

circles is for the birds. This is more enjoyable."

"He was securely strapped in the front seat, next to the pilot, and he seemed fascinated with the noiseless flight of the sailplane.

"I'd rather look down at the landscape - better than having it go around at the wing tips," he said.

"How old are you, Pete?" Lydia asked in a high pitched melodious voice.

She was seated in the rear seat, directly behind the Minister. Lydia was the only journalist chosen for the one hundred and ten mile ceremonial flight.

"Twenty six, Miss Turner," Pete said.

"Isn't that young for a commercial pilot, Minister?" she asked.

"I think Ben can answer that," the Minister said.

Ben Venables was the public relations officer for the manufacturer, Soar Across Canada Limited, and he was seated beside Lydia. Ben was a meticulously dressed person in his late thirties and spoke with a self assured low droning voice.

"Miss Turner, Pete has been flying airplanes since he was fourteen."

"All types of airplanes," he said. "From gliders to jets."

"Pete soloed in an old glider at the minimum permitted age of fifteen," he said, as if he was reading from Pete's dossier. "He has flown over twelve hundred hours in the DVA series."

"Should I be impressed?"

"What are you after, Miss Turner?" Ben asked.

"Inquisitive, Ben." "Also a story." "What about academic competence?" she asked.

"Pete has an M.A. in aeronautical engineering," Ben said. "He also has post graduate studies in meteorology."

"What about his glider?" she asked. "I feel insecure ... it's flimsy ... it could break up in mid-air, couldn't it?"

"This glider has already logged a hundred and fifty hours," he said. "There has been extensive testing prior to its maiden flight."

"How?"

"We've tested wings and fuselages for structural failure - dozens of them - every safety precaution has been taken to ensure passenger safety."

"What about a mid-air collision?"

"Unless it's a direct hit," he said, "the aircraft will withstand any fracture because of the compartmental honeycomb construction."

"What d'you think, Minister?" she asked.

"Miss Turner," he said, "I think I should've learned to fly gliders a long time ago."

"They all laughed except Lydia. She forced a smile on her pursed lips and remained silent. In her mind brewed a story that would almost cripple the program.

"Sailplane Four - this is gliderport three-two - what is your altitude?"

"Three-two this is Four - five thousand - one-five miles from Earthstation three-one - reserve altitude three thousand, five hundred - increase in convets under cu streeting - estimating three-two at one-six-two-zero, zulu."

"Thank you Four - all clear for three-one."

"Estimating climb out peak six thousand, four hundred - five miles at Earthstation three-one."

"Report seven miles from Earthstation three-one."

"D V A - Four."

The smoothly finished glider with blue markings on a bone white gelcoat surface, climbed steadily at the rate of two hundred feet per minute under the black bottom of a long streeting cloud. Pete had observed the cloud streets forming in the north, over the Gatineau Hills. Since he had flown the area so many times under similar conditions, he decided to alter the planned track to take advantage of the continuous lift. The long wings of the sailplane measured twenty-five metres, and they seemed to taper down to narrow, slender tips. The all-flying elevator was sprung on the top of a fifteen foot high stabilizer, which was slightly drooped backwards. The empennage was boom type and fabricated to a strong fiberglass strength with carbon fibers.

Three earthstations and two gliderports had been built between Ottawa and Montreal. Six other stations and five gliderports were being secretly planned between Ottawa and Toronto.

Earthstations were designed primarily for communication and scientific training institutes, meteorology observation, high power transmission and earth orbital satellite tracking. The National Research Council had modified the quarter mile wide concave disc from its original concept. They had experimentally installed thousands of small heat absorbing metallic panels to trap solar energy. The accumulating daytime solar heat was stored under the mammoth disc which comprised a storage chamber that was equal to the gross area of a ten storey office building. By routing water through thousands of heat absorbing pipes in the chamber, NRC scientists calculated that residential communities within a twenty five mile radius could be heated by solar energy. Consequently, suburban housing developments began to mushroom overnight in the vicinity of the complexes.

To relieve the excess heat build up, fifteen percent of the panels had to be mechanically opened. The resultant effect was an unbroken, invisible column of warm air rising to tremendous heights.

The man-assisted thermal was discovered by a glider pilot who attained fifteen thousand feet by circling in it. He was obliged to break off because the lack of oxygen equipment in his sailplane. Other sailplanes were soon attempting to climb in the column of rising air, some reaching 35,000 feet ASL.

Soon larger sailplanes like D V A Four were being tested over Earthstations. It became apparent that they could climb regularly at a rate of two hundred feet per minute. Gliders were able to soar from one Earthstation to another under VFR conditions without taking the ominous risk of landing out somewhere in the wilderness, or having to ditch in a farmer's field at the very last minute for an emer-

gency landing.

Pete Cruthers was comfortably harnessed and relaxed in the lightweight bucket seat that had been moulded to the shape of his body. The digital read-out screens on the busy instrument panel kept changing figures. It provided new glide configurations and best-speed-to-fly numbers. The green screen changed with bright red numbers every time he fed the ravenous computer bits and pieces of updated information. Pete untiringly and methodically scanned the sky for dangerous cumulus nimbus cloud formations. He mentally noted minute changes and developments in the unstable air mass, and he continuously scrutinized what was happening to the changeable weather, more often than the expensive instruments in front of him.

"Minister?" Lydia asked.

"Yes, Miss Turner," he said.

"Why does the government continue the glider program?" she asked.

"It's not only gliders that are involved in the program," he said.

"Scientific research," she said. "I know, but what else?"

"National Defence, scientific institutes are all integrated, along with several other services of national importance."

"Who else benefits from it?" she asked and added, "except the scientists?"

"The whole country will, Miss Turner."

"Poor people lack staple foods," she said. "Half the population of this country is dying from malnutrition."

"We're helping these unfortunate people through incentive education grants."

"Ninety five percent fail to qualify for the grants."

"They must pass an illiteracy test first," the Minister said. "Otherwise we would be accused of wasting the tax contributor's money."

"Humf! If they had proper nutritious foods," she said, "they could pass that examination, intellectually and physically!"

"The Department of Agriculture has successfully inter-pollinated a wheat grain that will produce bumper crops for the next fifty years."

"We need that now, Minister! These people are desperate."

"If free aerial travel in glider is as suc-wide problem," he said and continued.

"If free aerial travel in glider is as successful as the agriculture programs, it will revolutionize transportation ... not only for this nation, but for the world over."

"It seems that the free flight program has priority over the welfare of human beings!"

"They must help themselves too, eh?" he said. "We can't do everything for them."

"They need employment!" she said.

"Furthermore, as you well know, Minister, some people have better chances than others because they are given the opportunities."

"We're trying to generate employment," he said. "We'll get the economy of this country back on its feet - after fifty years of inflation."

"It's all one sided," she said. "The rich

man is still controlling the economy, and they're getting even more filthy rich."

"The government is doing everything in its power to inject work on the market for these people."

"Still, Minister," she said, "large amounts of money are being spent on gliderports which could become redundant in a few years, while that money could be more advantageously spent on research for processing food from the seas and the development of northern wastelands."

"The free flight program will generate some needed employment and new technical skills. It's a whole new exciting industry for this country."

"Expenditures for transportation budgets keep increasing sharply; worthwhile humanistic programs dwindle into nothingness."

The fifty-five year old Minister was silent, looking diligently at the mute landscape far below, slowly passing under the long thin wing.

"As you know, Miss Turner," he said, "governments across the face of the earth were aware of our worldwide vanishing resources, food shortages and unchecked population growth long before the World Economic Crisis in the late nineteen eighties."

There was silence, everybody waited for his next sentence. The only audible noise was a high pitched whistle from the glider slicing through the unstable air.

Lydia was physically a petite woman and measured a full five feet. She was thirty five years old. Her hair, once jet black, was streaked with white. Her dark brown eyes were inquisitive and embarrassingly shy when she looked a stranger straight in the eye. She had become well known over the years and was especially criticized in political circles. She was often the topic of dour conversation within its social arena. She hosted a weekly television program and utilized the media to expose people in high places. Some politicians had actually pointed the finger at Lydia Turner as the culprit for their abrupt downfall in public life. She had never married and resolutely devoted her life to fighting governments, one after the other. Lydia's passion in life was to help the needy, those who were unemployed and the decrepit starving in the streets; to free them from the bondage of illiteracy.

"The cost for gliderports is exorbitant. They have been estimated in the billions of dollars," she said.

"The estimated figures you quote also include Earthstations," the Minister replied.

"Why aren't these figures made public?"

"They are."

"Through piecemeal items," she said. "Nobody can calculate accurately the real total costs."

"There are many contracts that are of a specialized construction," the Minister said. "They're intricate complexes."

"Why the secrecy?"

"We're committed to our NATO allies," he said. "Some of the electronic detection installations are top secret."

"While contract costs continue to increase beyond the original estimates by forty



percent?"

"These are inflationary times," he said.

"Everything costs more."

"Or somebody has their hands in the till."

"That's an irresponsible statement, Miss Turner."

"The government has been accused of it," she said.

"Yes, but the allegations were immediately retracted after they were made."

"It has to stop somewhere, Minister," she said. "The poor people need government assistance with work programs."

"Earthstations are necessary for many reasons," the Minister said.

"They're research institutes," Lydia said. "Their scientific findings are secret - it's not available to the public."

"Operating expenditures have been cut by one third," the Minister said. "Crown corporations, private communication syndicates and our National Defence budget is shared by all these enterprises using the main computer facilities."

"Like telecommunication consortiums, who monopolize the facilities, she said.

"Smaller companies in this case, don't have a chance to grown and compete."

"We have admitted many applications from small companies who regularly utilize the satellite weather information computers."

"Again, she said, "it's all piecemeal, whereby the government is catering to the big outfits and the smaller ones are left by the wayside."

Not necessarily, Miss Turner," he said. "There are teaching aids programs for universities and high school around Earthstations. When these teaching aids are expanded along the free flight pipeline, we'll be able to mass educate the whole nation, and small companies will pay a major role."

"At the cost of human suffering that we are experiencing?"

"Everybody must work, our monetary system is built upon that fact," he said. "Socialism in the mid-eighties did not work; strong unions did not work either. They destroyed themselves from within."

"If the government continues to increase spending by buying out large corporations, which are then badly administered by civil servants, this country is going to declare bankruptcy in the next year or so!"

"Private telecommunications syndicates must be controlled by the government.

Therefore, they become Crown Corporations."

"Crown Corporations are no different than governments," she said. "They're all subsidized by the taxpayers anyway."

"They must justify their spending and revenue," he said. "They are closely monitored for deficit spending."

"Humdrum!" she said.

"Come now, Miss Turner," the Minister said, annoyed. "Crown Corporations provide essential services. What would happen to our housing standards? Scientific research? Telephone networks? Telecommunication systems? There would be no controls - no future!"

"That's all well and good," she said, "but the present government can't substantiate the cost of gliderports."

"I must concur with you Miss Turner," he said. "It's too early in the program to predict the success of free flight. But from the reports I have received, and they have been carefully scrutinized, this evolutionary sailplane could change our destiny! I'm very optimistic."

"Gliderports every sixty miles?" she asked. "All across this country?"

"Some generating stations will be completely automated," he said. "Furthermore, some gliderports will be two hundred miles apart."

"You mean using natural ridge skyways?" she asked.

"Precisely!"

"They're just as unpredictable as the elements."

"Others will be over artificial and natural hot spots on the earth's surface," he said. "These sites have been discovered by infrared photography from weather satellites."

"That's also unpredictable."

"We'll see, Miss Turner," the Minister said, "we'll see."

Pete Cruthers felt the blood curdle in his veins at this exchange, but he wisely chose to remain aloof. He did not interfere with the conversation between the Minister and Lydia nor did Ben. Their superiors had impressed upon them the importance of thinking out beforehand just what Lydia Turner was to be told. Pete preferred to forget about politicians and newspaper people altogether. Flying his own fiberglass single seater in solitude was a joy and relaxation; sharing the blue sky with

cumulus clouds as companions. Completely free and away from the ambitious people that comprised his working environment and businessmen who were in a hurry to make a fast dollar by revolutionizing the world, or corrupting it.

Pete knew Lydia Turner's journalistic talents and reputation: to put it mildly, she was a wizard, always probing at the unknown. She possessed that uncanny intuition to detect facts behind a cover story and the unprecedented ability to pose double-edged questions.

"In this affair," Pete's boss had said, "any leak about the new experimental sailplane, which was funded by the Defence Department, could be extremely embarrassing for us and the government."

Pete wanted to tell her to go to the devil. On the other hand, he impulsively felt he could explain the numerous benefits that could be derived by using natural sources of energy for aerial transportation. He also felt the urge to divulge the development of an eight seat passenger sailplane and how the country could emerge into a glider manufacturing giant. All the precautionary warnings prevailed and Pete held back from bluntly expressing his own thoughts on the matter.

Lydia already suspected what was behind the closed door policy when she had toured the corporation's five hundred acre complex that morning. She had not been allowed to enter a sector that was heavily guarded by armed soldiers. The area was fenced in with a twelve foot high barbed wire barrier and signs that read, "Top Secret - No Admittance".

"Gliderport three-two - this if Four - over?"
"This is three-two."

"Seven miles west of Earthstation three-one - altitude five thousand - two hundred feet per minute under streeting cloud - estimating at three-one, one-five-two-zero, zulu."

"Looks good Four," tower said. "Cleared to three-one."

"D V A-Four."

Pete did not show any outward signs of emotion, but stayed poker faced like a marble statue. Neither did he attempt to explain to his passengers the energy phenomena the sailplane was flying through. He was too busy analyzing the weather.

They should have enclosed the pilot's seat from the rest of the cockpit, Pete surmised. I'll take it up with the engineers.

Emotionally he was slap happy because he had hooked up into a long cloud street. He had perceived its momentous energy and gambled that the cloud was active. This time it had paid off handsomely. After all, he thought, what is soaring about if it's not a challenge and a gamble? Flying gliders across country and never knowing whether one is going to reach his destination. Although this type of soaring is altogether different. In fact, flying by the numbers is damn close to powered flight.

Pete Cruthers pressed a yellow colored button on the instrument panel. Figures instantly began to light up. They indicated the elapsed time of the flight, the arrival

time over Earthstations and the total flight time: one hour and twenty minutes. Pete mentally calculated that he could actually gain ten minutes on the computed time. The instruments also estimated from the actual rate of climb the estimated arrival time over Earthstation thirty one at an altitude of five thousand feet, instead of the safe minimum eight hundred usually planned for under normal still air conditions.

"What was that jargon all about?" Lydia asked.

"Pete is using the lift under these black bottomed clouds," Ben said.

"How does he know that it's there?"

"Those three sensitive instruments," he said and pointed to the instrument panel. "What are they?"

"Variometers."

"You're just brimming with details, Ben," she said. "Can't you tell me about them? Or is that top secret too!"

"What's important," he said, "is that we have hardly lost any height since we left Earthstation thirty."

"I humbly admit that I cannot visualize how the sailplane is staying up at all."

"In a sailplane," Ben explained, "we sacrifice height for distance."

"You're always going downwards?"

"Yes! The minimum rate of sink is two hundred feet per minute. If you don't find lift to climb back up again, you'll fly until you hit the ground, or land at an airport."

"If you're at two thousand feet, it will take you ten minutes to reach the ground then?" she asked.

"That's right, more or less," he said.

"Now, if you find a cloud street or a thermal and the rate of lift is four hundred feet per minute, that means that you'll climb two thousand feet in ten minutes because you'll have given up two hundred feet per minute for flying."

"Why haven't we climbed higher then?"

"It's always an equation: distance and time; speed and height."

"The faster you fly, the faster you come down?"

"Right on," Ben said and smiled.

"We left at six thousand?" she asked.

"Yes."

"What height will we arrive the next station?"

"A little below the altitude we left," Ben said. "Isn't that right, Pete?"

"Yeah," Pete said, "fourteen hundred feet lower."

"Without using fossil fuels," Ben added.

"Fifty percent efficiency is not considered a breakthrough."

"I don't understand," Ben said.

"Well," she said, "if it takes four hundred feet per minute lift to climb, you sacrifice two hundred to fly, that leaves you fifty percent."

"That's one hundred percent efficiency," Ben said.

"There is zero to begin with. Anyway, Earthstations are able to produce only four hundred feet per minute. Sometimes, thermals outside stations produce upcurrent much greater than that."

"How do you arrive at a hundred percent efficiency?" she asked.

"The glider is using a self renewable

source of energy."

"Thermals, yes I know that."

"If you start with zero," he said, "and get two hundred feet per minute, that's a hundred percent!"

"Zero usually equals zero!"

"Yeah," Ben said, "but that source could be easily destroyed by man."

"How?"

"By using combustible fuels at the rate we have been."

"There's very little fuel being used today," she said.

"Some industrial plants are using both fuels and lethal chemicals."

"All refineries use chemicals," she said. "It's necessary for certain alloys cutting."

"Well, our ionosphere will be destroyed by chemicals."

"Scientists have contradicted themselves on the subject."

"Even our atmosphere is breaking down slowly," Ben said. "We have known that for years and haven't taken the warning seriously."

"Aren't you being a little pessimistic?" she asked.

"This is strictly off the record?"

"As you like."

"Our own scientists have measured extreme high solar radiation," he said. "It's not dangerous yet, but it could be eventually."

"When did they take these measurements?"

"Not very long ago," he said. "Nevertheless, it is a continuous process of observation."

"So you believe that the end will eventually come some day!"

"When the time comes," he said, "we'll all be living underground like moles."

"You're being baceticious!"

"I wish it were so!"

"If the atmosphere is destroyed, she said, "so will thermal energy."

"Yes, that will go too."

"Sailplane travel too?"

"Yes!" he said.

"If you're predicting the end," she said, "why all the money on sailplane travel?"

"It won't matter much by then."

"You're predicting the end of the world, Mister Prophet!"

"I didn't say it would be the end of the world!" Ben said angrily. "I implicitly stated that if we continued using fossil fuels for transportation instead of natural solar energy, that we would be a doomed populace!"

"Don't get upset, Ben," she said.

"Why does the media always manage to turn things around by misquoting everybody?" Ben asked.

"Just give it to us straight."

"We try, he said, "jeez, how we try."

"Miss Turner, the Minister said, looking straight ahead.

"Yes, Minister."

"Why upset the people who are responsible for inviting you on this flight?" he asked.

"I'd much rather have my two feet planted on solid earth to be quite honest."

"Aren't you enjoying this?"

"I've travelled by air before," she said.

"Too much!"

"Just relax and enjoy it."
 "I don't like airplanes anyway."
 "Why did you accept the invitation then?" the Minister asked.
 "Because I can get a better insight into the free flight program and sailplanes. People must be brought to realize that this project by its very nature will be perpetually expanded at ever increasing costs and that it's not going to put food in their stomachs."
 "But Miss Turner," the Minister said, "on the contrary, it will put food on their tables."
 "How will it?" she asked.
 "By providing employment for those who want to work and to get the remainder off social welfare and unemployment."
 "There's no allowance for people who won't work in my campaign either, Minister."
 "Then what is all the fuss about?" he asked.
 "The government is being excessively generous with interest free grants."
 "To whom?"
 "To corporations like Soar Across Canada," she said.
 "You're a purist and a romanticist."
 The Minister made a physical effort to turn around to face Lydia. His harnesses restricted the movement of his shoulders and he could not budge.
 "I prefer to be known as an objective journalist," she said.
 "Alright then," he said, "a journalist."
 "Thank you!" she said looking up from her pad. "I don't like to see scallawags and carpetbaggers take advantage of new and uncontested legislation."
 "You organized anti-pollution protest marches on Parliament Hill ..."
 "Yes Minister," she said, "and there will be more too!"
 "You defended the Agriculture Land Bill in your daily column," the Minister said, trying desperately to make a point.
 "Yes," she said.
 "This program is within the scope of your own advocations."
 "Not quite!"
 "Cost sharing among communication and scientific institutes has reduced expenditures which the government played fairly godmother to previously."
 "The government should have played fairly godmother to the education system," she said. "A long time ago."
 "It does," the Minister said. "These new institutions have created employment for young technicians and scientists who are graduating from university."
 "But in the meantime people are being skinned alive by high taxes."
 "Taxation is calculated on an escalation formula," he said. "The more you earn, the more you pay."
 "That's just fine for the young people who have university educations, but older people should have the opportunity to learn on the job; to develop marketable skills."
 "Most of them don't want to work," he said.
 "They lack education," she said. "It's up to us to help. They're all the victims of illiteracy, caused by the World Economic

Crisis."
 *
"Gliderport three-two - this is Four - two miles west at three-one - five thousand, six hundred - estimating at three-two - one-six-one-four, zulu."
"Four - climb maximum altitude required at three-one - deterioration in air mass system - massive cirrus cover twenty miles southeast - cleared IFR for three-one."
"Affirmative - D V A-Four."
 *
 The bright silvery concave disc was checkered with two types of dissimilar panels. When Pete called Earthstation thirty two, seven miles from thirty one on an inbound leg, the solar heat-absorbing panels had automatically opened, venting the warm air from the dank chamber. It ascended skywards.
 "As the three thousand pound sailplane approached Earthstation thirty one, it encountered rough turbulent air from individual detached bubbles that had escaped the main core of the man-injected thermal. Pete Cruthers reduced the air speed of the glider to fifteen miles per hour above the stall speed. He cranked thirty degrees of flap and banked the sailplane into a gentle turn that was perfectly coordinated. The ball in the turn and slip indicator did not sway a fraction. During the first 360 degree turn, Pete adjusted the apogee around the imaginary centre of the thermal, circling into the strongest possible area of lift.
 "If you feel dizzy," Pete said, "concentrate on the instrument panel."
 "It's not bad this time," the Minister said.
 "Three more turns," Pete said, "then we'll be flying straight and level again."
 "Thank God!" Lydia commented, looking below at the large disc where the thermal was coming from.
 "Are you alright?" Ben asked with a sardonic grin.
 "Of course I'm alright!" she answered.
 *
"Gliderport three-two - this is Four - six thousand, four hundred - drifted five miles southwest of three-one - commencing final glide - speed: one-two-five, MPH - estimating three-two at one-six-zero-eight, zulu."
"We copy, Four," a controller said at Earthstation thirty two.
"D V A-Four."
 *
 The interior of the cockpit was silent. Pete concentrated on the continuously changing conditions that the weather was bringing from the southeast. The Federal Minister for Transport was contented to gaze longingly into the emptiness of the checkerboard landscape below and the white cotton ball clouds towering and enlarging high above the plexiglass canopy. Lydia jotted notes in her pad while Ben peered sideways at the writing, wishing he could read Lydia's glyphs.
 "That's an impressive view from here," Ben said, crouching forward to get a better look at the ever enlarging boundaries of the metropolis which had appeared on the horizon.

Lydia continued writing in her note pad. Ben wondered if she was powerful enough in the media to influence the opposition party to sway their votes. The program would be scrapped if it did not pass in the House of Commons. We shouldn't have invited her, Ben thought, but it could be worse.
 *
"Glider Four - correct glide path to four thousand."
"Four thousand," Pete repeated.
"That's good, Four."
"Thank you three-two."
 *
 "Look ahead, Minister," Pete said.
 "What is it?" the Minister asked.
 "The city of Montreal."
 "Where?"
 "Straight ahead, at twelve o'clock."
 "It's a fantastic view."
 "That hump on the horizon is Mont Royal."
 "Oh yeah!" the Minister exclaimed. "I'm oriented now."
 "How far are we, Pete?" Ben asked.
 "Approximately twenty miles, Ben."
 "How fast can this ship fly?" Lydia asked.
 "Max speed is two hundred and seventy miles per hour," Ben replied.
 "How fast are we flying now?"
 "One hundred and then, hundred and twenty."
 "Why don't we fly faster, if the ship will go faster?"
 "Because we fly by the numbers," he said. "Distance and time; speed and height."
 "You haven't answered my question!"
 "I'm coming to that!" Ben said. "If we fly at a speed higher than indicated on fly by the numbers instrumentation, our rate of descent would be too great."
 "How high would the rate of descent be?" Lydia asked.
 "Depending on the speed," he said, "it could be between five hundred and seven hundred feet per minute."
 "But the streets cloud or thermals would decrease that rate of descent, wouldn't it?"
 "Yes, of course, he said. "We still wouldn't be able to reach one Earthstation after the other at those speeds."
 "We'd be forced down?"
 "Yes," he said, "in a farmer's field."
 "That would mean an emergency landing."
 "That would be ridiculous, if one of our sailplanes landed outside a gliderport."
 "It wouldn't be too bright," she said calmly, without raising the pitch of her voice.
 "Especially for this sailplane. It would have to be derigged and transported on a flat bed trailer."
 "What about a small engine?" she asked.
 "We don't have to."
 "In the case of an emergency."
 "If one flies by the numbers, it's not necessary."
 "But the safety of the passengers is important."
 "Yes, of course," he said. "An engine would add to the weight and defeat the purpose of free flight."
 "Risking lives is another purpose?"
 "We are not risking lives."

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"IN one sense, you are!" she retorted.
 "No!" he said. "It's as safe as walking."
 "It doesn't sound safe to me," she said.
 "Our safety standards have been impeccable," Ben said.
 "It takes only a single human mistake."
 "Yes," he said. "Our fliers are carefully screened. They must be in physical and mental top condition."
 "What would happen if one Earthstation broke down?"
 "We would make an emergency landing at a gliderport," Ben said. "We'd still have enough altitude."
 "What if the gliderport couldn't be reached?"
 "That's impossible," Ben said. "The height and speed is computed on that instrument." He pointed to a six inch diameter instrument on the panel.
 "What if the failed?"
 "There's a backup."
 "And if that failed?"
 "Christ! Come on now," Ben exclaimed, "how many hypothetical failures can one have on a flight?"
 "Many, I'm sure."

"Gliderport three-two - this is Four - one-five miles at two thousand, one hundred - landing instructions?" Pete asked.
"Winds: six-zero degrees at one-five. Altimeter: two niner, decimal seven - no other traffic - you're number one - cleared straight in on runway zero-niner."

"Gliderport three-two - this is Triple X - twenty miles northeast - request clearance for high speed final run."
"Hold position Triple X - passenger sailplane fifteen miles on final."
"I can't thirty-two - already on final glide."
"You're number two, Triple X."

"D V A Four - this is three-two - glider Triple X doing low pass over gliderport - you're still number one."
"Thirty-two - can you stop Triple X - this could be dangerous."
"Sorry Four - nothing we can do - you're number one."

"Who the hell is that turkey?" Ben asked.
 "I don't know," Pete said.
 "Where is he anyway?" Ben asked.
 "At St. Jerome, I think."
 "What's wrong, Ben?" Lydia asked.
 "A glider is coming in at red line."
 "Can you see him?" the Minister asked.
 "Not yet sir," Pete said, "he's too far out."

The nose of the sailplane pitched slightly downward when Pete set a new flap position and trimmed the aircraft anew. The passengers had a panoramic view of the suburban outskirts of the city.
 "Look at the maze below," the Minister said.
 "It's beautiful," Ben said.
 "Up here one would say it's peaceful and serene," the Minister said. "One wouldn't believe there was mass crime being committed down there, with all that lush greenery and expensive housing."

"If there's unemployment," Lydia said, "the crime rate will continue to rise substantially."
 "Miss Turner," the Minister said, "have you changed your mind about this program?"
 "No Minister!" she said emphatically.
 "I guess nobody can change that," he said. "It's been our democratic way of life for a long time."
 "And it will continue to be so," she said.
 "I certainly hope so!" Ben said.
 "Miss Turner," the Minister said.
 "Yes, Minister?"
 "I think you're being supportive of the opposite side of the issue, just for the sake of being argumentative."
 "I will be on the opposite side as long as there's human suffering," she said.
 "Hmmm," the Minister mumbled.
 "Read my column tomorrow, Minister."
 "I will, Miss Turner," he said.
 "And if it's not constructive, I'll eat the whole newspaper."
 "I wouldn't want anybody to do that."
 "Look above, over Earthstation thirty two," Pete said, "see the five gliders circling."
 "Where?" Ben asked.
 "South of the station," Pete said.
 "They look like mosquitoes circling," the Minister said.

"Four - correct glide path - three thousand, two hundred," the air controller said.
"Three thousand, two hundred," Pete repeated, confirming the ATC order.
"Haven't heard from Triple X, Four - you're still number one."
"Could you give me his position when radar contact is made?" Pete asked.
"Affirmative - Four."
"D V A."

"Glider Four - correct glide path - two thousand - you're coming in too fast."
"Two thousand - reducing speed," Pete said.
"Have you made contact with Triple X?"
"Negative!"
"On radar?"
"Negative, Four."
"We're nine miles inbound - I'd like to know his position."
"We think he's turned away - broken off his final glide."
"I hope so!" Pete said.

"There's the runway, Minister," Pete said.
 "Where?"
 "Straight ahead at twelve o'clock," Pete said.
 "About five miles."
 "The other gliders have moved off?" the Minister asked.
 "Yes," Ben said, "they've reached a predetermined height and are flying to the next station."
 "It was a miracle that this type of transportation was discovered," the Minister said.
 "Gliderport were flying across this landscape for many years," Ben said, "but they didn't have thermal generating stations - it was always pure luck and a hell of a lot of gut feeling to do that type of flying."
 "I'm told that some pilots still won't

use Earthstations," the Minister said.
 "They would rather soar, taking their chances with the elements, as in the olden days."
 "Yes," Ben said. "They're still around: the romanticists, the adventures and the stubborn purists."

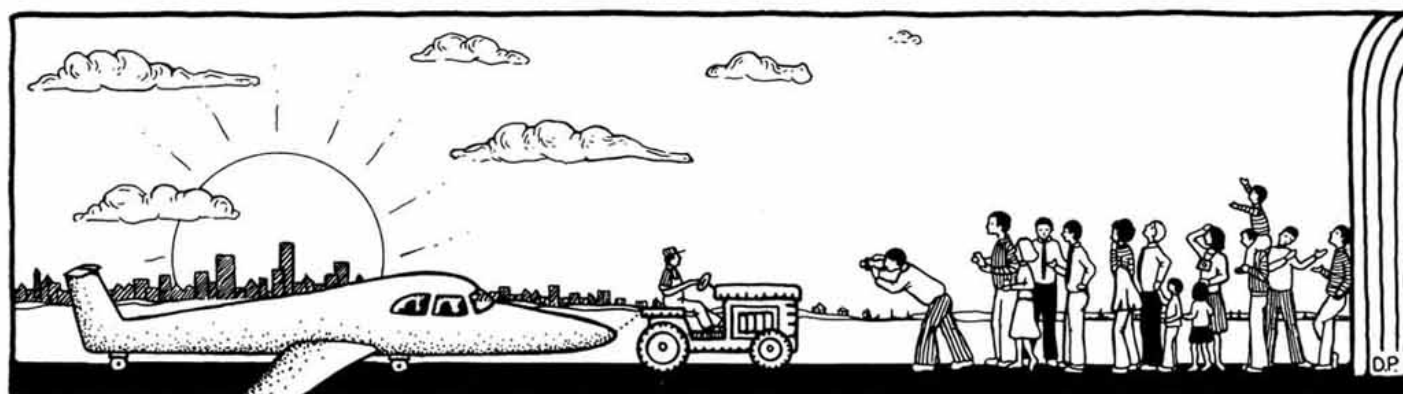
The glider was three hundred feet above the sprawling community, heading straight in on final as the runway seemed to come up to meet them. The twisting roads and equidistantly spaced houses seemed to pass by quickly, more so than at five thousand feet. As they crossed over the parking lot of a shopping complex, an assembly of spectators were gathered, looking up at the white sailplane.

"Four - we made radar contact with Triple X - he's still on glide path for thirty-two."
"What's his position?"
"Twelve miles out."
"How fast is he travelling?"
"It seems over red line - can't tell - just made contact."
"Veer him, thirty-two!"
"He won't answer our communication."
"Who owns Triple X?"
"Nobody knows."
"What's going on?"
"We don't know - security is checking it out."

"Four - can you hold your position?"
"Impossible - too low - committed!"
"Triple X still on same glide path - speed calculated above red line - this is something we haven't seen. He's fifty miles per hour over red line!"

"He'll kill himself!" Ben said. "There's nothing that can go that speed."
 "Unless it's a modified version with titanium fibres."
 "Who would have the expertise to modify the ship?" Ben asked.
 "Dozens of institutes."
 "Nobody is that advanced!" Ben said.
 "Even our competitors don't have the expertise to construct a sailplane like that!"
 "How do you know, Ben?" Pete asked.
 "They would produce papers on new discoveries or our intelligence would know about it."

"There has been a lot of industrial spying on both sides," Pete said.
 "But we're the only ones who have used titanium on the new ..." Ben said, hesitated and looked at Lydia to see if she understood. "... the new GDVA-B series."
 "It would be, Ben," Pete said.
 "Wow!" Ben exclaimed. "If that's true, our security is going to get a revamping in a hell of a hurry."
 "What new series B?" Lydia asked.
 "It's a new wing section with a high loading."
 "How long has this been in the making?"
 "A few years now," Ben said.
 "Miss Turner," the Minister said, "this information is classified. Since the titanium process is under national security and top secret, you're not permitted to report any-



thing that has been said about titanium."
 "You'll have to make me swear the oath of secrecy, then."
 "Yes," the Minister said.
 "If I won't?" she asked.
 "Then you'll be in contempt."

"Dive! Dive, Four!"

Pete pushed the control column forward with a quick jerk and the nose of the sailplane plunged. The ship was into a forty five degree dive towards the houses below. The passengers felt the speed increase in their marrow. Pete caught a glimpse of Triple X coming towards the canopy - it was just a blob. It increased in size exceedingly fast. The next instant the blob was a glider fifty feet away from the canopy.

The Minister held his arms in front of his face to protect himself from the impact. Pete shut his eyes. A momentary reflex. The sailplane trembled furiously from the g forces as Pete pulled out of the dive fifty feet above the roof tops.

"Four! Four! Is everything OK?"
 "Affirmative," Pete said.
 "We thought you were a goner."
 "Everything OK, thirty-two."
 "Can you make the runway?"
 "Affirmative."

Fortunately the kinetic energy of the dive enabled Pete to pull the glider up again and regain a hundred and fifty feet. The runway was only a short distance away. D V A Four slowly glided over the fence, wings level, the long fuselage crabbing slightly to compensate for the quartering head wind.

Pete neatly flared out five feet over the runway and the sailplane lost airspeed slowly; it kept floating as if it would never come down. The left wheel touched the concrete runway, then the right and the small forward wheel descended gently from a nose-high attitude. Pete let the momentum of the glider decrease without applying the brakes. At the same time edging off the runway onto a taxi strip, mid-way down the concrete slab. The glider finally lost all its inertia and came to a halt. A small tractor truck with a man dressed in bright orange coveralls drove

up to the front of the glider. He hooked a double pronged hitch to the main wheel axle and taxied D V A Four the remainder of the distance. There were reporters and throngs of visitors and curious people awaiting the arrival of the historic aircraft in front of the hangar. Everybody saw the near miss three miles from the airport. There was little cheering, the crowd could not believe what they had seen, or understand how both aircraft had missed each other.

"Thirty-two Gound - this is Four," Pete said. He had managed to remain unperturbed throughout the whole incident. "The Minister would like to talk to security on channel one-two-three decimal one." Pete handed the microphone to the Minister.

"Security is checking the unauthorized aircraft," a strange voice said.

"Did you get the registration?" the Minister asked.

"Sorry sir, there was no registration."

"No registration!"

"No sir," the controller said. "Security is checking for markings from the photos."

"Hello Minister - this is Colonel Gibbs - Airport Security."

"What have you got Colonel?" the Minister asked.

"Nothing sir."

"Nothing?" the Minister exclaimed over the microphone. "You got pictures didn't you?"

"Yes, Minister."

"Then what's on them?"

"There was no registration, sir."

"Who manufactured the sailplane?"

"We can't identify the make - it doesn't exist."

"It doesn't exist?" the Minister asked. "I saw the glider with my own eyes!"

"We can't trace the manufacturer."

"Where did it go, Colonel?" the Minister asked.

"It vanished in mid-air."

"It must have landed somewhere!"

"We sent a security aircraft after it - it just disappeared."

"Even from the radar screen?"

"Yes."

"What about other observation posts?" the Minister asked. "Did they make contact?"

"Nothing, sir."

"Are you sure it disappeared, Colonel?"

"Yes sir," he said, "no doubt about it, sir."

"Even from radar?"

"We'd be unable to pick it up on radar if it landed," the Colonel said.

"Keep me informed on all developments."

"We're combing the area where it disappeared, sir."

"What are the procedures from here on in?" the Minister asked.

"All personnel are restricted from speaking to the press on the matter," the Colonel said. "Everybody in the sailplane will report to security."

"I have a rendez-vous with VIP's."

"Immediately afterwards, security will want to have a briefing."

"Anything else, Gibbs?"

"Miss Turner is restricted to the material she is going to publish, everything must be approved by security."

"This is still a democratic society, Colonel," the Minister said. "The press have their rights too!"

"Sorry sir," Gibbs retorted, "this is National security policy. Until we know who is behind this incident, everything is classified A-1, Top Secret."

"Thank you Gibbs."

"Somebody tried to sabotage this flight," the Minister said.

"Who would want to do that anyway?" Ben asked.

"Who knows," the Minister said. "There are all kinds of companies bidding on the new sailplane, with ridiculous designs."

"None of our competitors are that desperate," Ben said. "Gambling on such a stupid act of sabotage..."

"Well, Miss Turner," the Minister said, "you have a fantastic story for the newspaper, but it will have to wait before it can be printed."

"There is no way they can stop me," she said.

"There is no way you can print it," he said, "unless you're ready to spend some time behind bars."

"We'll see about that, Minister!"

"Now, Miss Turner," the Minister said. "I wish you could. It's democratic, but the security boys are dead against it."

"It's the same old story, Minister!" she said. "I think this was a plot by your

security agency to hold any story until it is passed in the House of Commons."

"It can't be, Miss Turner," he said, "they wouldn't go that far!"

"A sailplane that can't be found?" she asked.

"They'll find it."

"An aircraft that disappears in mid-air," she said, "come now, Minister. Let's not be naive!"

"Newspapers and other companies would have a motive," the Minister said.

"Your own people have a better motive, Minister."

"Security will find who tried to scare us."

"The contracts for the free flight program will have already been given out and passed in the House of Commons when they find the guilty party."

"It will go through anyway, Miss Turner."

"Soar Across Canada had the best motive!" Lydia said.

"I can assure you, Miss Turner, that we had nothing to gain by such stupidity."

"Do you know everything that goes on in your company?" she asked.

"No, but his would have leaked out," Ben said. "It would have been too hot an item."

"You're awfully sure of yourself."

"I wouldn't work for a company that would jeopardize the lives of people like these idiots did!"

"Three-two - this is Four - would you close my flight plan?"

"Affirmative Four - you just set a new record - congratulations! Your flight time was ONE-SIX-ZERO-ZERO, Zulu."

"Thanks, three-two," Pete said.

"Security would like a debriefing, Pete."

"Affirmative - where?"

"Room 1101."

"Anything on Triple X?"

"Sorry Pete - Top Secret now."

"D V A."

The members of the press began to shuffle towards the parked sailplane. The overhead gull-wing type doors of the cockpit had been left open. In appearance the doors gave the impression that there were a small forward pair of wings.

"Ben," Pete said after they had disembarked from the aircraft. They walked out of the crowd's hearing and stood there looking at each other in dismay.

"What's on your mind, Pete?" Ben asked.

"Do you believe Lydia's theory?"

"About the agency?"

"Yeah, of course, Ben!"

"Christ, I don't know any more what to believe or who to believe."

"There are only a few glider pilots who could fly a sailplane like that."

"Who?"

"One of them is in the secret security service."

"It could be one of a hundred, Pete."

"I don't think do, Ben."

"National security wouldn't have the gall to fabricate a job like that."

"There could be a security force within National security."

"That's far fetched."

"Perhaps, but it's a possibility that we can't overlook."

"The best thing we can do right now is ignore the whole damn thing, not say a word about it to anyone until we get back to Ottawa."

"Why?"

"Something bigger that what concerns us is behind this."

"Goddam military state," Pete exclaimed.

"Watch what you say, Pete," Ben said.

"For gods sake don't express your opinions to security."

"I guess not."

"OK! I'll see you back in Ottawa tomorrow."

"OK Ben."

The Minister for Transport, Lydia and Ben entered a black limousine. They were escorted by four security vehicles. The short ride would take them inside a parking lot at Earthstaiton thirty two. There, an auditorium had been prepared to receive reporters, military Generals and Heads of State representing many countries across the earth.

Pete walked away from room 1101 frustrated, exhausted and insulted. Security had asked him questions about Triple X for two solid hours. Pete never had liked the people at security very much and now he loathed them. He walked over to D V A, did a quick walk around the aircraft. He asked ground control to be taxied to the active runway and a tow plane to be readied for take off.

Pete immediately relayed his flight plan directly to the control tower. He went through the check list and filled the empty spaces on a green preprinted form: Fuel - none required; markings - blue on white; destination - gliderport thirty one; departure-thirty two. He carried on with the boring details that were necessary to be reported and filed with Air Traffic Services before a controlled flight.

"That's it three-two," he said when he had finished giving all the information.

"D V A tow plane - this is ground control - over."

"This is tow plane."

"Cleared for take off."

"Tow plane," the pilot said, "ready Pete?"

"One minute, tow plane," Pete said.

Pete wrote the final piece of information on the form: July 16, 2025.

Like the National Railroad and Pipeline bills that were passed in the House of Commons in by-gone days, the free flight bill was passed two months after the ceremonial flight of GDVA-FOUR. It was also passed in the same obtuse manner of olden days; desk pounding, late into the night debating, name calling and character assassination in partisan newspapers the following day. The seat of the democratic government was nothing short of disorderly and archaic.

The western phase of the gigantic building program was immediately started; Ottawa to Toronto and Toronto to Winnipeg. The designated route followed a yearly soaring telethon that was sponsored by a

large brewery conglomerate. The great race started in Quebec City and ended at the foothills of the Rocky Mountains in Alberta. Earthstations and gliderports would eventually be interspersed along the airway.

The sailplane, Triple X was never found, although a massive security force was deployed in search for the mysterious sailplane. Their efforts were inept and fruitless. The near-miss was never explained, neither was a written word published in newspapers, nor through the television media. A year later the files were lost from the RCMP's headquarters on Alta Vista Drive. They were never recovered.

Ben was suspiciously dismissed six months later and disappeared with his family. They were never seen again or heard from.

The remains of Pete's body were found near the wreckage of his sailplane deep in the Gatineau Hills a year after his disappearance. It was rumoured that he had ventured too far into the wild country and got lost because there were no prominent landmarks, except miles of trees and lakes. The nearest landable hay fields were a hundred miles away.

An Indian trapper accidentally found one wing of the sailplane, ominously sticking out of the deep winter snows; leaning against a fir tree. The following spring search parties found the sailplane where it had come crashing down through the trees, breaking into several parts. The body was identified only by a gold neck chain that Pete always wore. The animals had picked everything clean.

Lydia never was able to print her story about the passenger sailplane and the strange happenings of that morning. She hemmed and hawed to her Member of Parliament daily for months on end in vain. Lydia wanted a Royal Commission into the free flight project, hoping that the disappeared sailplane, Triple X, would be mentioned which would open a full scale investigation, but she was unsuccessful.

With devoted passion she continued her personal fight for the poor people in the streets dying of hunger. She probed into the National Security's suspected misdeed. As much as she did, nothing was uncovered or any evidence found that would support the grounds for an enquiry.

The Minister of Transportation and Communications was given another portfolio with the Department of Supply and Services, which was a less meaningful position in the political echelon. The Minister retired voluntarily shortly afterwards and was appointed to the Senate, where he leisurely lived out his daily life, unrecognized for the enormous task he had performed to establish an intricate network of Earthstations and gliderports and new legislation for sailplane travel.

Hangar Flying

The CFIs' Seminar will be held in Toronto on 14, 15, 16 May as planned, with flying on 15 May at SOSA promising to provide CFIs with the chance of flying a variety of sailplanes. At the time of going to press we have an indication that a Lark IS-28B2, Astir CS and perhaps Club Libelle, Hornet and other machines will be available; Papers from B.C. to Nova Scotia will cover topics from computer-analysed approaches to lesser known medical facts for instructors, training for flying high-performance machines and flying in the mountains. We hope to have made arrangement for a high altitude indoctrination course to follow the Seminar for those who wish to stay the extra day. Local arrangements in Toronto were being made by Al Schreiter, Max Harris and Gord MacDonald.

Ian Oldaker
Chairman Instructors Committee

F.A.I. AWARDS

Take note all you pilots who are learning your "A" "B" "C"s and looking for Silver, Gold and Diamonds; the new SAC FAI Awards man is Tony Burton. His address is 209 - 860 Blackthorne Ave., Ottawa, Ontario K1K 3Y7. (613) 749-7618.

STOLEN

Recently a parcel of instruments was reported missing and presumably has been stolen en route. In case these reappear on the gliding or power scene we request that anyone with information about them call collect to (613) 731-6997. The contents of the package were: Cambridge vario no. 1438; Audio 22 no. 1094; Smith's ASI no. 3344 and a Kelvin-Hughes Altimeter (serial no. not known; T. E. Probe, Gust Filter etc. were unmarked.

Overseas News

Results of the Australian National Soaring Contest held at Narromine, N.S.W. from December 30, 1977 to January 14, 1978.

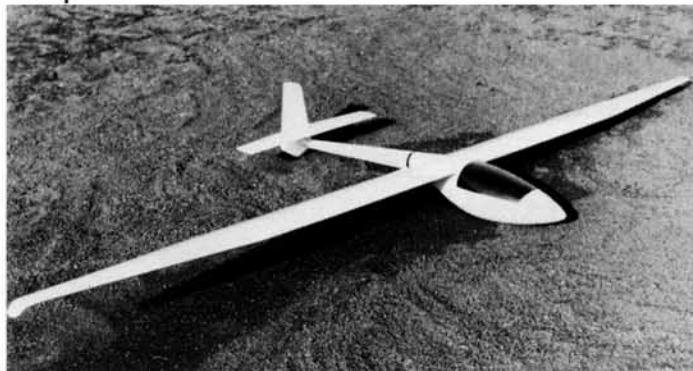
Open Class:	Points
M. Jinks, Nimbus II	6694
A. Tabart, Nimbus II	6666
T. Cubley, Nimbus II	6562
I. Renner, LS-3	6553
M. Giles, Nimbus II	6467
I. Evans, Nimbus II	6404

Standard Class:	Points
H. Frehner, Cirrus	6700
G. Cleland, Hornet	6401
J. Rowe, Hornet	6363
T. Knappstein, Hornet	6246

P. Mander, Hornet	6121
H. Crossan, Cirrus	6108
15 m Class	Points
I. Renner, LS-3	6764
J. Buchanan, Pik-20D	6555
M. Bradney, ASW-20	6295
A. Wilson, LS-3	6288
R. Martin, LS-3	6042
J. More, Mosquito	5848

Open Class champion, Malcolm Jinks took this title for the fourth year in succession, making a total of ten times he has won a National title. Ingo Renner, the current Standard Class World Champion, won his second successive 15 m title and has won National titles for five successive years.

HIGH PERFORMANCE TWO-SEATER POWERED GLIDER WK-1 'MS' with 3-blade folding pusher propeller, 18.8 m wingspan, L/D 35



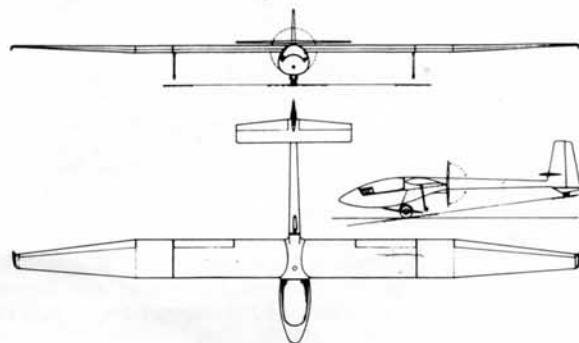
- Easy to fly with power one or off
- Ideal for student training, club and performance soaring
- Offset tandem seats for comfort and unrestricted visibility
- New design concept; modular construction for easy maintenance

- The XC ship! Instead of trailer-ing, you fly home
- Deliveries to start in late '78. Order your WK-1 'MS' NOW!

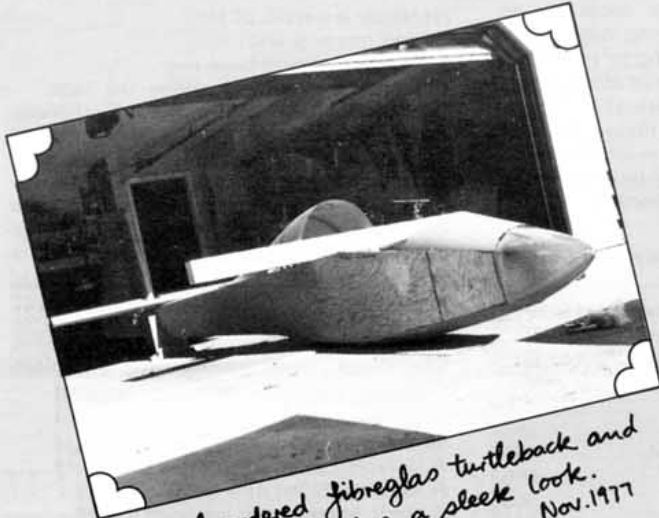
For full information write to:

E. KOSTOLNIK,

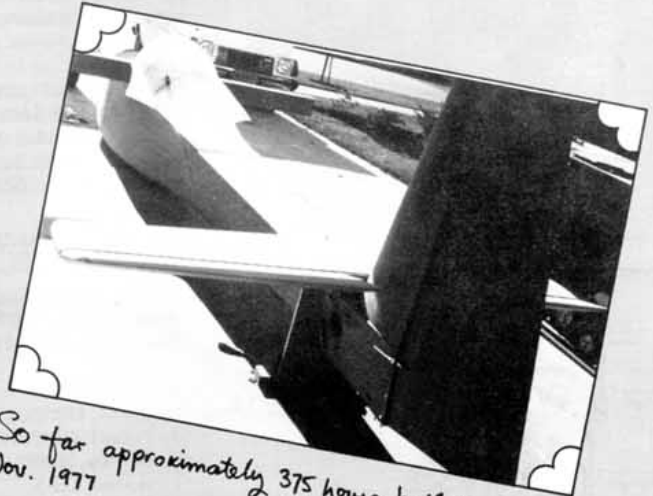
R.R. 1, Moffat, Ontario, Canada.
Telephone (519) 824-0024



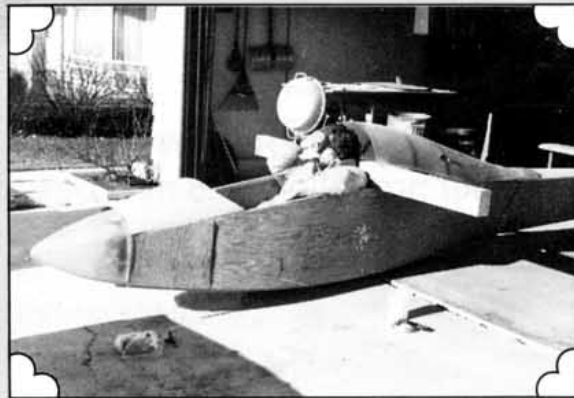
John Bandorf (18 Emerald Grove Drive, Winnipeg, Man. R3J 1H2)
sent along the following news and photos
of his progress in building a Duster Sailplane Kit.



Special ordered fibreglas turtleback and
nosecone should give a sleek look.
Note predrilled main spar.
Nov. 1977



So far approximately 375 hours building time.
Nov. 1977



My son Peter trying cockpit for size.
Lots of room lengthwise. Sitting on
modified security type parachute. Nov. 1977

DSK Aircraft Corporation, the people who make up the hardware and kits are doing a great job. Service so far is first class and all shipments arrived in good order here. All wood is of best quality and the MOT inspector was very impressed with the hardware. All kits fall under the category "Aircraft parts not available in Canada", therefore dutyfree and only the 12% Federal Sales Tax is applicable.

I myself decided for the "Buy as you Build" program which is very well thought out and gets you started on a lot of work with just the first few kits. Kit No. 1 contains all the wood for the tailfeathers. Kits No. 2 and 3 contain all the wood to get you started on the fuselage. One disadvantage here in Canada is the shipping cost. The minimum charge for trans-

port shipping is around \$30.00 up to a weight of 200 pounds. After I had to pay so much for the first kit which was only 30 pounds, I started to order 2, 3 and 4 kits together which is more economical.

I started in February of 1977. The fuselage framework with bottom and sidesheeting is complete. I am working on the covering (one side) of the tailfeathers and getting ready for the inspection. The center wing section will follow in fall and the wings next summer. The finishing touches and flying will hopefully be in the early summer of '79. Manhour estimate to complete the plane as per designer is 800 to 900 hours. I myself figure more like 1200.

So far I have not encountered any problems. Anybody who is familiar with building model airplanes and has some idea of

wood work is able to tackle this job. The tools required are common household power tools like a tablesaw, jigsaw, drill and not to forget if possible a power-stapler. Thousands of staples have to be driven. Lots of sandpaper, a blockplane, a surfboard file and elbow grease complement the power tools.

In the meantime the fuselage and tailfeathers were inspected, the rear fuselage and the tailfeathers sheeting.

I ordered extra fiberglass parts from John Sinclair (see Soaring Dec. 1977 Homebuilders Hall) such as turtledeck, canopy, nosecone, bucketseat, wheelfairing and aileron fairing. All those parts are beautifully made and give the ship a sleek look. See enclosed photo.

Class Ads

FOR SALE

PIK-20B and factory trailer, glass spar, water ballast, instruments, Braunschweig tube. C of A until September 18, 1977. Price \$20,900.

A. Heinemann,
R.R. 1,
Gormley, Ontario
(416) 727-9566

FOR SALE

Scheibe MU13D-3, Excellent condition. Enclosed metal trailer, wing stands etc. Glider is one-of-a-kind antique.

G. Bryan MacDonnell,
R.R. No. 3, Senger Rd.,
Kelowna, B.C. V1Y 7R2
(604) 860-2192

FOR SALE:

'77 Blanik L 13 Serial no. 026945 available for immediate delivery. Has standard instruments, tools, manual. This ship has "0" time. Delivered Winnipeg (west) at \$14,500.00 U.S.

Contact: F. Hinteregger,
Box 6629,
Fort St. John, B.C., V1J 4J1
(604) 785-5691

FOR SALE:

High performance Sailplane and trailer; Schempp-Hirth SHK-1, fully instrumented, radio, turn and bank indicator, equipped for oxygen, enclosed trailer, includes stands to enable easy rigging. This ship offers fibreglas performance at much lower cost. Price \$9,000.00

Contact: Lloyd Bungey (604) 884-5341 or
Charles Grant (604) 922-5739

FOR SALE:

Schweizer 2-33, completely rebuilt by Schweizer agent to like new condition, low hours, basic instruments, ideal trainer for new club, no trailer, but might help move it a reasonable distance, offers to Okanagan Soaring Association, Box 1135, Kelowna, B.C.

FOR SALE:

Schweizer 1-19, rebuilt up from wood and steel, one piece canopy, was a record setting ship, a real doll, light wind soarer gives you lots of air time for recent solo pilots, a real vintage sailplane, offers to Okanagan Soaring Association, Box 1135, Kelowna, B.C.

WANTED

New pilot needs used equipment; Security chute, barograph and/or PIEP audio. Limited budget, unlimited hopes!

Murray J. Snyder,
Box 711,
Didsbury, Alberta T0M 0W0
(403) 335-3694

WANTED:

Winter Barograph. I have an OK barograph, but it does not fit into my plane properly, so am interested in any proposals re trade, sale of OK or purchase of Winter.

Dick Robinson,
48 Checkendon Drive,
Rexdale, Ontario, M9W 2Y9



PLEASE WRITE A CHEQUE FOR THE CANADIAN TEAM FUND
AND MAIL TO THE WORLD CONTEST COMMITTEE CHAIRMAN:
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CERTIFIED REPAIR STATION 101-07

FOR SALE:

Schweizer Deluxe SGS 1-35, S/N 35, built June 1975, Registration C-GTEC. White with red trim. Factory filled wings. Fully equipped including gear warning, tip wheel, Braunschweig T. E. Cambridge dual range with audio, Winter Sollfahrtgeber, Genave Alpha 100 and Electro-voice Headset, Pioneer Thin Pack. The machine is in mint condition. Low time.

Contact: Tom Comery,
R. R. 1, Erin, Ontario
(519) 855-4856

FOR SALE

Bergfalke II overhauled by Scheibe 1967 and rated 0 time, total since 355 hours. Basic instruments front and back. Exceptional condition with BF III features. Open trailer custom built to factory standards. Parachute as new. Asking \$5500.

J. B. Stout,
78 Marsh Crescent,
Regina, Sask.
(306) 585-0042 (H) 569-1262 (B)

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