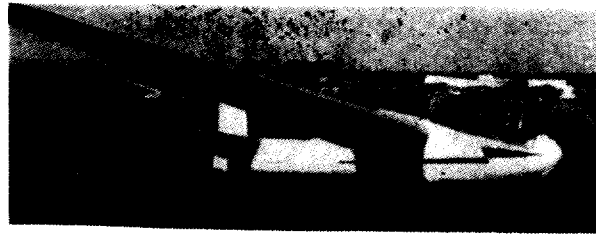


ADELAIDE UNIVERSITY
GLIDING CLUB Inc.
newsletter Vol 3 No 2



The Aircraft

the bocian



the arrow



the kookaburra



the Ka 6



THE BOCIAN 1-E

The SZD-9bis Bocian 1-E is a two-seat training sailplane. The sailplane is equipped for night and high altitude flights and is suitable for training basic aerobatics. It is an improved version of the Bocian 1-D; flying that sailplane Polish pilots set many national and world records. Up till now the gain of height world record of 38,300 feet established in 1966 by Stanislaw Jozefczak and Josef Tarczon and the women's gain of height world record of 27,600 feet set in 1967 by Adela Dankowska and Maria Matelska have not been beaten by other multi-seat sailplanes.

Structure

Wing - tapered, two-section two-spar cantilever monoplane. Wing sections NACA 43018A and NACA 43012A. Covered with plywood down to rear spar, the rear part fabric covered.

Airbrakes - plate-type, provided with strips pressed down to the wing surface. Operation by push rods and steel cables.

Fuselage - plywood covered semi-monocoque structure of oval cross section. Towing hooks are located in the fuselage nose and near the centre of gravity just in front of the main wheel.

Cockpit - tandem seating arrangement; the canopy in two parts: sideways opening forward part, backwards sliding rear part. Rudder pedals in the front cabin are adjustable on the ground. During flight it is possible to reach the spacious baggage compartments, situated in the nose part of the wing, from the rear seat. There is space there for oxygen equipment in case of high altitude flights.

Instruments - there is only one instrument panel, situated in the front cabin, but it is visible from the rear seat. The panel consists of an airspeed indicator, altimeter, total energy variometer of ± 5 m/s range, variometer of ± 5 m/s range, electric turn indicator and compass. The static and total pressure sources are located in the fuselage front part. The sailplane is fitted with navigation lights for night flying.

Undercarriage - a main wheel with front and rear skids. The main wheel is fitted with a shock absorber and a shoe brake which is operated by the full deflection of the airbrake lever.

Tail Unit - wooden structure with control surfaces fabric covered. The elevator is provided with a trimming tab.

Specifications and Performance

Wing Span	17.8m
Length	8.2m
Height	1.2m
Wing Area	20.0m ²
Wing Aspect Ratio	16.2
Max. Permissible Speed	200 km/h (124 mph)
Best L/D at 80 km/h (50 mph)	26
Min. Sink at 71 km/h (44 mph)	0.82m/s (2.69 fps)
Empty Weight	342 kg (754 lb)
All-up Weight	540 kg (1,190 lb)
Permissible load factor	+ 6/-3
Ultimate load factor	+10.5/-5.25

Handling

Entry to the cockpit is facilitated by footsteps cut into the fuselage. These footsteps are covered by hinged panels which keep the fuselage streamlined. Once seated in the cockpit all controls are easy to hand but far enough apart to avoid confusion. The harness is the usual clip-together type, but the cockpit is big enough to allow you to adjust the harness whilst seated. There is plenty of room to wear slimpak or backpack parachutes although 6'2" pilots in the back cockpit just fit in.

The back canopy must be closed first, and pilots using the front canopy must remember to close and open it using the white knobs on the left-hand side, not the knobs on the right-hand side which is the emergency canopy release. The front canopy can be closed by the pilot in the back seat. There is a sliding vent window in the front canopy whilst ventilation in the back is provided by partially opening the back canopy.

Instruments are of a standard type except for the ASI which can indicate 5 or 50 knots depending on how many revolutions the needle has done. From the back seat, the ASI can be seen past the left side of the front pilot's head and the altimeter past his right side. If you want to see the vario the front pilot must lean to the right but this means you can't see the altimeter. However, this causes no problem in practice.

The airbrakes are operated by an 18" lever next to the pilot's left leg. The fine travel of this lever operates the wheel-brake but there is a definite difference in pressure on the lever between full airbrake and operation of the wheel-brake, you shouldn't land with full airbrake and wheel-brake. There is a very positive over-centre lock which requires effort to overcome, particularly since the lever is at full arms length. Therefore, care will have to be taken, during launching, that the all-out signal is not given before the pilot has had time to release the wheel-brake and close the airbrakes.

Although the Bocian is a taildragger there is a pronounced nose down attitude. The usual reaction during groundrun is to use full back stick to "get the nose up" whereas slight forward pressure is needed. This attitude could produce problems with cablebreaks on winch launches where pilots will have to put the nose well below the horizon and check their speed before carrying out any manoeuvre. In flight the pilot soon becomes accustomed to the attitude.

During groundrun the ailerons quickly become effective so there should be no problems with dropping wings. The elevator is steady and not twitchy as with some types.

After release the aircraft can be easily trimmed throughout the speed range. Once trimmed the aircraft exhibits exceptional stability and will stay at whatever speed or position you put her. Whilst the ailerons are very effective and give good rate of roll, they are not balanced with the rudder. When doing a turn full rudder must be applied as soon as possible and usually has to be left on for a while after the stick is returned to centre. The rudder is effective for all other purposes.

The stall is docile being precluded by minor vibrations which can be felt in the front but not back seats. At the stall she will drop her nose quickly and recover but she will also drop a wing. This can easily be picked up with rudder. The speed and recovery, are perfectly normal.

During landing both the airbrakes and sideslipping are very effective. At an air speed of 55 knots and a groundspeed of 40 knots the Bocian doesn't float after roundout but quickly settles down on its well sprung undercarriage and can be stopped quickly by the wheel-brake which is vicious enough to dig the front skid into the ground.

Groundhandling is effected by a fixed carrying rod through the fuselage forward of the tail plane. However, you can easily get back injuries unless someone sits in the front cockpit. Because there is only a rear skid and not a rear wheel the tail should be held up during all groundhandling.

THE ARROW

The Aircraft

Built by Edmund Schneider Pty. Ltd., it consists of an all wood construction. It has a 13m single piece wing, a 7m long fuselage, a swept tail and rudder and anormal tailplane mounted on the fuselage.

Rigging

The Arrow is rigged and de-rigged on the trailer. With practice this becomes a three-man job. It is time consuming but not labour intensive.

The wing is jacked up on its supports, swung into position and a prong on the front of the wing is located in a socket behind the head rest. The wing is then lowered onto the fuselage and a rear pin is bolted through the fuselage and nut fittings on the wing as in the Kookaburra. The controls hook up as for the Ka6

The tail is held on with three nuts. These should be a finger tight, no more, since the fuselage can be squashed by tightening the nuts too much. The elevator connection is accessible through a small inspection hatch on the port side of the fuselage. The elevator is connected to the elevator linkage by a pippin.

Conversion

A pilot will be converted to the Arrow after soloing in the Kookaburra and satisfying an instructor with his solo flying skill. Before being allowed to take the Arrow cross country, the pilot must have had a minimum of three flights in the Arrow. The duty instructor's permission is also required.

Performance

Claimed best L/D 28:1 at 55 m.p.h. Minimum sink 200 ft/min at 45 m.p.h. The Arrow is suitable for Silver and Gold 'C' badge flights. It is the lowest performance glider in the Sports Class, however, experience has shown that it is a competitive.

Handling

The elevator is relatively sensitive with light loads throughout the speed range and an effective spring trim. Aileron loads are low and, with the small wing area, the rate of roll is high - about 2 1/2-3 secs. for 45° to 45°. Rudder power is good for low pedal traverse; if anything it has too much rudder after flying the low rudder powered Kookaburra and Bocian 1-E.

Although a nippy little sailplane without the slipperiness of fibreglass types, it is a relatively easy conversion from most two-seaters.

Trailing

Care will be needed when trailering the glider. The unit is vulnerable as the trailer is open and has a high centre of gravity. Towing requires:-

- (1) Supervision of the retrieve by a crew chief appointed by the duty inspector.
- (2) Towing by the heaviest car available at a maximum of 50 m.p.h. on bitumen and 30 m.p.h. on dirt roads, and
- (3) Permission of the Executive for away from home operations.

LONGWING KOOKABURRA

When the club was formed, the Kookaburra formed the foundation stone. It was used for all sequences in club operations, earning the club its first Silver 'C' proficiency awards, competing regularly in the 1976 regatta circuit, placing consistently in the top three placings in 2-seat class.

In addition she taught the first 20 solo pilots, having been leased to the club at cost, in those days 40% less than current flying fees.

Today, still owned by the Chief Flying Instructor, she is looking a bit worn. Built in 1959, the last few years have taken a lot out of the aircraft, so treat her with a little loving care.

The name is derived, like the sailplane, by stretching the original basic trail

performance sailplane on field, its thick low speed wing gives good soaring performance.

Like the Ka6, it is now operated as a private sailplane alongside the club fleet. Unlike, all the others, she has a '20 yearly' hanging over her head. That is, major inspection in which the sailplane is to be refurbished to its primary structure.

Despite, this, her age, and 'bare bones' appearance, don't let her fool you. As in previous years, she is likely to be the most flown airplane around, due in no small part to her owner, and a few other pilots who love her for what she does best - fly.

THE Ka-6

Hotel Alpha is a privately owned aircraft being owned by Club members Guy Harl, John Mills and David Stobie. It is not always present at the club's airfield at Lochiel since it is usually hangared at Stonefield.

The Ka-6 falls within the same class as the Arrow although it is slightly better in performance. Being a private aircraft it is in considerably better condition than the Arrow.

Club members wishing to fly the Ka-6 must have a minimum of 50 hrs. on sailplane and be approved by one of the owners. Special permission must be obtained to fly it cross country and it is not available for competition flying. The usual club rates of 8¢ per minute apply.

Wingtip Running

With the appearance of a third glider at the airfield operations have become a little hectic. The main area of confusion has not, however, been in the air but on the ground. Here the situation is made worse by the high number of people on the ground who have had little exposure to gliding, the narrow width of the strip and the necessity for vehicles to use the strip areas. It is, therefore, about time we reminded ourselves of the rules we observe on the ground which makes gliding safer.

Hooking-on

Before attaching the cable to the glider the person doing so must assure himself that the glider is in a fit state to be launched. He does this by carrying out "CARD" checks as follows:-

- "C" - Canopy closed and locked? This question is put to the pilot who must be seen to touch and look at the canopy release and say "check".
- "A" - Airbrakes closed and locked? - Same as above.
- "R" - Radio on? - As above.
- "D" - Dolly wheel off. None of the club aircraft have dolly wheels but they are common on fibreglass gliders. They consist of a fully pivoting wheel attached to the aircraft just in front of the tailplane by a red fibreglass bar. They are used only for ground handling and must be removed before a flight. Since the pilot cannot see if it is on, it is the responsibility of the hooker-on to check that it is off.

Once these checks are carried out the cable can then be attached, by the follo

1. Hold the small ring up so the pilot can see it and say "small ring". If the pilot says "Check" proceed.
2. Call "Open" and place the small ring in the release mechanism.
3. Call "Close" and check that the hook engages the ring.
4. If it is the first launch of the day for the glider then -
 - (a) pull on the cable, call "check release" and make sure that the ring comes clear of the release mechanism;
 - (b) connect the cable as before;
 - (c) pull the cable sharply to the rear and check that the automatic back release mechanism releases the cable then call "back release okay";
 - (d) connect the cable as before.
5. Give the cable a good tug forward to check that it is attached and call "You on".

The procedure for aerotows differs in that 4(a) & (b) are done for every launch.

Launching

The decision to launch a glider is made by the wing tip runner (WTR) after the pilot has positively indicated that he is ready by giving a "thumbs up". It is job of the WTR to decide if all the circumstances are right to start a launch. must consider two areas:-

1. The Air. The WTR must balance the wish to get the glider into the air again the need to provide a safe landing area for gliders on approach. This is particularly so for the Lochiel airfield where the strip can only accommodate one glider at a time and where launching covers a long period. As a rule of thumb never launch whilst a glider is on its base or final leg but even if it is on its downwind leg the WTR may have to hold the launch. If there are no gliders coming into land the WTR calls "All clear above and behind".
2. The Ground. There must be no aircraft or vehicles on or about to enter the strip. In particular no-one must be standing in front of the wings or tail. If everything is in order the WTR calls "All clear in front".

The WTR then levels the wings. Just before the cable becomes taut the WTR lowers his wingtip for a long three seconds and then raises it again. If anything goes wrong with the launch then he should lower the wingtip to the ground after the pilot has released the cable. In the case of the Bocian, the WTR must see a second thumbs up from the pilot before he levels the wings after the three second wait.

Movement on the Airfield

The following rules have to be followed:-

1. Vehicles can only move via the strip areas.
2. When entering a strip, whether by car or by foot, check that no aircraft are on approach, whilst on the strip continue to maintain a lookout and keep to one side of the strip.
3. DO NOT park vehicles between the fence and the threshold of the runway, a pilot who misjudges an approach has enough to contend with without an immovable car in his way.
4. When parking cars at the launch point keep as close to the fence and strip possible, park the cars close together and DO NOT drive the car over the crest to get to a parking spot.

In conclusion, remember that your actions on the ground could cause a glider, on approach, to be forced to land in the crop alongside the strip. Not only would this strain our relations with the farmer but it could also lead to the glider ground looping which would cause extensive damage to it and its pilot.

Regattas

TOURING CENTRAL N.S.W. IN A GLIDER - MY FIRST NATIONALS, NARROMINE 1978

by T. Kiek

Narromine is situated some 300k Northwest of Sydney in the Central West agricultural region of N.S.W. The country is characterised by vast wheat-fields and many rivers, chiefly the Bogan, Castlereigh, Lachlan and Macquarie. The Narromine Soaring Centre leases its facilities from the local council who recently spent \$50,000 on upgrading the now excellent facilities. Narromine is the first alternate for Kingsford Smith and boasts huge sealed runways and taxiways which are illuminated at night.

Before leaving Adelaide, I spent a week preparing the Cirrus 75 (Romeo Golf) at Gawler, and this involved sealing pushrods, canopy, etc., cutting and polishing (twice), checking instruments, radio, etc., and getting a supply of spare parts including fuses, tyres, wheels, electrical components, etc. etc. An eleven-hour drive (1300k) to Narromine was uneventful, and camp was raised under the trees at the airport caravan park. A ruling that no pilots could launch from Narromine preceding the first official practice day was sidestepped by the Adelaide mob who provided their own tug Cessna 175 POE and spent three days flying out of Trangie, 20 miles up the road. Including the two official practice days at Narromine, I therefore had five long flights checking out the local geography and turn points prior to the first competition day. By this time my crew chief, Paul "Biggles" Ferguson had arrived and all my pre-flight preparation was left in his energetic hands. He was quickly rewarded by a super flight in RG under boomer conditions over 10,000' on one of the practice days.

Day 1, 3/1/78 - Task 270k triangle Narromine-Curban-Wellington saw many pilots struggling in weak conditions, and unfortunately Noel Burnett landed out in his Pik only 2k from home. I scraped into 15th place at 80.5k.p.h. out of 36 in standard class. The next two days were washed out with infamous Narromine thunderstorms, hail and strong winds, so Biggles, Ray Lamb and I toured the Warrumbungles, a spectacular group of peaks 150k N.E. of Narromine. We drove right up to the top of the Siding Springs observatory 3840' above sea level.

Day 2, 6/1/78 - Another short task 284k Narromine-Gilgandra-Peak Hill was characterised by the very quick overdevelopment of the Cumulus into thunderstorms. David Jones (ASW19-WL), John Rowe (Hornet-SB) and I went around together and had several low scratches in the mountains near Peak Hill. I was very happy with 10th place for a slow 75k.p.h. Unfortunately one pilot was killed in an outlanding accident and this brought a pall of gloom over the comps.

Day 3, 7/1/78 - A longer 380k triangle was set, taking in Tottenham and Coonamble, and this day suffered again from rapid overdevelopment and 4/8 Cirrus over the last turn, several pilots landing out. I averaged only 90.5k.p.h. to get 15th place, and I was starting to feel rather disappointed in my own performance.

Day 4, 8/1/78 - Another day of overdeveloped Cumulus saw only one standard class glider get home, Herbert Frehner (Swiss National Champion) in Michell's Cirrus Juliet Romeo.

Out of the 80 glider fleet, 72 outlanded as the 330k triangle, Narromine-Forbes-Tottenham was too long for the day. Thirteen gliders landed at Tottenham airport, me included. Dave Jones, Dave Pietsch and I spent

must thank my crew for being the first to arrive, having already been to the airport (dirt paddock) and derigged RG in my absence. After turning Tottenham silo at 1200' I decided to land rather than risk a six-mile glide over scrub with no lift for extra points. Knappstein, Rowe, Cleland, Hayes and Schrapel did scrape over but only gained an extra 20-30 points on my paltry 630. Some of these retrieves lasted until 3.00 a.m. the next morning. My position, 12th with 260k completed, but the discard day rule was still in my favour, whereas Briggs, Jones & Pietsch had already used theirs up on the previous day.

The next day was washed out again with typical thunderstorms, hail and winds up to 60k.p.h. One glider was put out of the comps by an untethered trailer in the tie-down area. So far the toll of destruction and damage to gliders had put five pilots out of the comps. One pilot lost his canopy at 105 knots passing thru the start line, another cartwheeled on a low finish, another broke his fuselage in an aerotow retrieve, etc. etc.

Day 5, 10/1/78 - A longer 413k task to Grenfell and Tullamore was a real boomer, with Cumulus bases at 10,000' and occasional 12kt thermals with miles of streeting. I felt as though my legal limit of 13 gallons was going to be restrictive compared with the Hornets 22 gallons and to top it off, I lost my yaw string on tow. However I had a fantastic run in the best conditions I have ever experienced, working only six thermals over the 413k course, and finished with 108k.p.h. to win the day, the fastest I have ever gone. Four pilots came in within five minutes of each other, and my overall position rose to 5th place.

That evening we witnessed the most violent thunderstorm I have ever seen; many aircraft were derigged into trailers to avoid the hail. We left RG tied down with wing and canopy covers padded with towels and wheat bags, and watched as a 70k.p.h. squall line ripped thru the fleet. Another weak day on the 11th saw us all held on the grid for three hours before the day was cancelled. I claimed a "win" because we were the last out of the tie down area and the first back to the bar. My crew and I went touring to the Wellington Caves and various pubs for a well earned rest.

Day 6, 12/1/78 - A shorter 230k task to Fifield and Alectown was ruined for me by the start gate who gave both me and Jonesy four unrecognised each. We both left an hour after the rest of the fleet and suffered in very weak conditions all the way, recording scratchy 85k.p.h. giving me 18th position on the day, my worst, and dropping me to 9th overall.

Day 7, 13/1/78 - A better day with solid Cumulus bases to 9000' sent us out on a 320k to Tichborne-Gilgandra-Gular quadrilateral, which I was determined to do well on. I was first into Tichborne (5k South of Parkes) but was soon caught by Frehner, Briggs and Cleland (Hornet MV) along the second leg. I cruised with Cleland along the ridge tops at 80-90 knots and was completely demoralised as the Hornet steadily moved away into the distance after 20 miles of chasing, and he got home 25 minutes ahead of me. I finished 9th at 100.6k.p.h., Cleland winning the day at 111k.p.h.

Day 8, 14/1/78 - My last chance to get back into the top 10 saw a weak day with 3/8 Cirrus covering the last half of the 322k quad. Trundle-Trangie-Gilgandra, a formidable task.

I got away to a very early start and got down under 1000' several times, so I let go the water very early. Near the first turn I saw Pietsch heading off to the wrong town and my efforts to contact him failed. So it was with some surprise that I saw him stoke past my on final glide two hours later, after I had a booming run under the Cirrus picking up two freak 10 knotters near the last turn. That desperate final glide at stubble top height for the last two miles at redline 120 knots, pulling up over the last treeline and flopping down into the finish line (Wheels up saved only by an astute finish line spotter) was enough to get me into 8th place at 85.7k.p.h. aver-

to 10th overall, and so I concluded my first Nationals on a very satisfying note.

The Anderson Trophy for the best effort at a first or second Nationals had been hotly contested by me and Harry Crossan (2nd Nats.), but he took it out with an overall 6th place. The wind up do in the hangar was hushed with excitement as the team for Chateauroux was announced Jinks and Tabart (open class), Renner and Buchanan (15m class) and reserve pilot Geoff Cleland of A.S.C. The genial Herbert Frehner, winner of the Standard Class Title and four out of eight days gave a memorable speech to wind up the proceedings. Herbert and I had become very good friends, and his words of advice to me on several occasions when I was disheartened had proved to be of great benefit to me. I must also pay tribute to my excellent crew of Biggles and Ray Lamb (A.S.C.) who allowed me to relax in comfort while they did all the preparation and line up etc. Next year it will be on again at Cunderdin, W.A. and I urge any budding A.U.G.C. cross-country pilots to come along and learn, as I did, what it's all about. Cunderdin is another huge airfield with sealed runways, etc., and the organisers are putting in new facilities at the airport park and the nearby Agricultural College. With Perth only two hours away by road, this could prove to be one of the most enjoyable comps ever. Any offers for crew?

THE STONEFIELD 'DIP'

In most areas of the State, they build bridges over creek beds. But where it's dry, they might make do with a concrete spillway. If it's real dry, then a grader across the bed; and that's all.

Well, Stonefield is in a very dry area, with few homes and lots of scrub. So, in addition to the numerous 'dips' across creeks, the dirt roads which often reduce progressively into dirt tracks, sheep tracks, and open paddocks, each have 'dips' of their own.

So in addition to being one of the few to land out on Sunday, the Arrow had the task of sitting on the trailer while we bush bashed our way back to the field. At one stage, the trailer had to be unhooked and pulled across a 'dip' by hand, and despite care, the wing tip bobbed on the car roof occasionally at other parts of the road.

My thanks go to Roman who put up with it all for the three days of the Stonefield Regatta on the Australia Day weekend. It was very pleasant to have the aircraft to myself for a change, and we were rewarded with two good placings behind Ted Pascoe and his Super Goose on both Saturday and Monday.

Anyone who might have thought that our Arrow is uncompetitive should be reassured that from a total seven Sports class competitors, these two second placings were by closer margins than those following. On Monday in particular, we got within 10 minutes of the highly competitive Super Goose, with a 124 km. triangle task completed in 127 minutes.

Emilis

HORSHAM WEEK

The club was represented at Horsham by Guy Harley and Emilis in the privately owned Ka-6-Hotel Alpha.

Day 1. Sunday: The sports class task was O & R Warracknabeal (104km).

into a blue hole to the east of track and being unable to regain the lift producing cloud to the west of track.

Day 2. Monday: Horsham-Antwerp-Daipur-Horsham (170km). The main weather feature was rapidly cycling cumulus on the second leg. Unfortunately Guy continued his affiliation for turnpoints and landed at Daipur after missing the cloud cycle. He came 7th for the day.

Day 3. Tuesday: Horsham-Murtoa-Pimpinio x 3 (210km). The course was designed to give retrieve crews minimum retrieve distance but still provide pilots with a long task. In the event, however, the weak conditions meant that most pilots landed at the airfield the second time round. The day produced a lot of gaggles around the course and Guy spent most of the task being followed by an ES-59 Arrow and an LO150. He came equal third - a creditable effort bearing in mind that his vario failed just after take off.

Day 4. Wednesday: O & R Brim (140km). Conditions were poor with thermals to 3,000' and heavy sink. After setting out on course Guy decided conditions were too bad to complete the course and he returned to the airfield. However, he was proved to be wrong when several of the field did get home.

Day 5. Friday: Horsham-Donald-Stawell-Horsham (227km). Emilis flew this day however a sea breeze arrived at the second turnpoint before any aircraft got there. Only one aircraft got home in sports class and he was a local who had used his knowledge of thermal sources in the Grampians to give him enough height to get out in front of the sea breeze. Emilis came second.

Day 6. Saturday: O & R Lah (128km). The day started late with thermals only going to 3,200', but this later improved with thermals going to 5,500'. Guy was determined to get home on at least one day but he failed to get enough height before hitting the sea breeze and landed 7km from the field, coming 7th.

The competition was disappointing in that the Horsham didn't provide its usual excellent soaring conditions and the usual 300km tasks weren't set. However, it was, as usual, excellently run and nobody could fault the Horsham hospitality. So, it's back to Horsham again next year!

Safety Spot

CABLE TENSION IN CONTROL SYSTEMS

A recent accident involving an ES-52 Mk3 Kookaburra highlights the necessity to continue teaching things which are generally regarded as common knowledge. Twenty years and more ago, people involved in gliding were very much aware of the necessity of maintaining correct cable tension in the control systems of their gliders; however, with the advent of push rod operated control systems much of this lore is becoming forgotten or neglected. The ES-52 Kookaburra has a control system typical of the old generation of gliders.

In an endeavour to reduce control forces in the aileron circuit the glider involved in the above accident had had all bearings in the system lubricated and to further minimize friction the control cable tension was slackened.

On aero-two, following this action, aileron flutter occurred and on aborting the launch the aircraft stalled and spun.

The ES-52 has relatively large chord ailerons which are not mass balanced but years of operation has shown that with correctly tensioned control cables the aircraft is not prone to aileron flutter.

To understand the phenomena of flutter, it is necessary to understand the important terms used.

1. **Circuit stiffness:** This refers to the degree of flexibility of distortion under load of the control circuit. A high degree of circuit stiffness is indicated when only a small amount of movement of the control column is possible when the control surface is chocked, or alternatively only a small amount of movement of a control surface is possible with the control column locked.

A low degree of circuit stiffness arises from deflection of mounting brackets and/or support structure, short lever arms, slack or worn bearings, stretch or springiness in control cables, slack control cables and deflection in the control surface itself.

2. **Circuit friction:** This is a measure of the force necessary to achieve movement of the control circuit independent of air loads. Circuit friction arises from friction in bearings and fairleads and control surface hinges; it is affected by control cable tension, errors in circuit geometry and hinge line misalignment due to manufacturing error or deflection of the structure under load. Air loads can also increase friction.

There are sometimes misunderstanding of these terms as a control circuit with high friction will be "stiff" to operate although the circuit may in fact have low "circuit stiffness".

On the other hand, many modern gliders with push rod operated controls and low friction bearings have high "circuit stiffness" but require very light operating forces due to low "circuit friction".

In general high circuit stiffness is always desirable; low circuit friction is desirable; low circuit friction is desirable for handling qualities but for control surfaces which are not mass balanced may result in inadequate damping against flutter. It is, however, not desirable to rely on circuit friction to provide damping against flutter as factors such as wear, lubrication, etc. can vary the amount of friction present.

Aileron flutter arising from slack cables of an ES-52 Kookaburra is an alternating oscillation of the ailerons at a frequency of about 100 to 120 oscillations per minute depending on air speed. The disturbance of one aileron being transferred to the other aileron by the balance cable; cable slackness prevents damping of the oscillations with the control column. The flutter condition does not necessarily occur at high airspeed; experience indicates rather that the flutter in this case may be more usually damped by increasing the airspeed, however, this should not be looked on as a cure for flutter in general as for many forms of flutter increased airspeed aggravates the condition.

Known incidents involving aileron flutter of ES-52 Kookaburras have not caused serious control difficulties but produce an unpleasant sensation which would readily lead a pilot into error.

The above should emphasise the importance of maintaining correct control cable tension not only in ES-52 Kookaburras but in any glider having cable operated control surfaces including the Bocian 1-E. Proper adjustment of control cable tension being a factor effecting the airworthiness of a glider requires to be carried out by a person with the necessary knowledge and experience.

Ramblings

A POLICY OF PROCURING AIRCRAFT

The ramblings in this newsletter represent the 'thoughts' of our members who contribute. Some of it is crap; some however represents members' opinions, which with open debate and counter proposals leads to a consensus of opinion. Anyone can play.

Last newsletter Guy suggested the range of options open to the club in the

May I suggest a POLICY:

The viability of an aircraft being considered by the club should satisfy the following qualifications -

- * The flying rate charged must
 1. ensure the aircraft is financially self supporting in normal operational conditions;
 2. at the same time meet the club's aim of low cost, thus being equal or less than current flying rates.
- * The aircraft must be compatible with the rest of the fleet.
- * The total number of aircraft should be between 1/12th to 1/15th of the total number of active pilots. As the club will always consist of a large number of active ab-initio pilots, the fleet should favour simpler, easy to fly machines.
- * If the aircraft under consideration is of an advanced type at least 8 pilots should be capable of immediate conversion.
- * The aircraft should be of a construction which favours maintenance within the resources of the club.
- * Aircraft should be considered for replacement once they become less than viable whether financial, fleet size, or compatibility; or future airworthiness presents difficulties.

But what does it mean?

In short, we should look to a third aircraft only at 45 active pilots. Probably we will need to replace the Arrow first.

When considering a glass glider, do we have enough pilots to use it; will it be easy to fix; will it be cheap enough; I personally think not. Perhaps a new Cobra, ASK-18 or similar would suit better.

The next two-seater may have to be second hand, and we'll have to guarantee the instructors and pupils to make it pay. Or it will have to be easy enough to derig for cross country work.

The Options?

Let's say a replacement for the Arrow in 1980.

A second two-seater in 1983.

But for a glass ship wait 'till I'm thrown out of the club.

EMILIS

2 POUNDS OF 'SOUTHERN COMFORT'

Doesn't sound like much, does it. And you'll become even more suspicious when I say it arrived by ship-container from Poland, not by bottle from the U.S.A.

Apart from everything, a couple bottles of Johnny Walker would have been a lot cheaper, but getting high would have meant hangovers later.

Instead we had ours before hand, trying to raise the bread for our new toy.

And what's this got to do with gliding? Well, how else is a bloke supposed to introduce a 'Kilo, Yankee Whisky', which in this case happens to be a Bocian 1E.

This toy happened to be the most expensive toy this little club has ever bought. I suspect those bottles of booze went down anyway, between the weeks of bank pestering, and the meeting stacking that went on to get the interest free loan from our parent organisation.

Finding out which options were available was another headache previously described in the newsletter; and collecting this big 'Stork' 800 km. away with a borrowed trailer made to fit the two-metre smaller Blanik was a three-day headache for the blokes who went over.

However, there is one other step that involved butterflies. Necessity is the mother of invention they say. And the club at that time was just being complacent enough to disregard a few gentle reminders that building a training programme around a leased aircraft was bad news.

So, termination of the lease provided the necessary necessity; the necessity for a project that should have been club initiated.

Which just goes to remind us all, that the success of such a venture is not only a product of a club's administrators, but also occasionally of the devil's advocate.

Like God, C.F.I.'s are known to have moved in mysterious ways.

Bits and Pieces

ACCOUNTS

It is part of the Club's constitution that no member may owe the Club any money. Therefore, the Club cannot operate a credit system for flying fees.

However, in order that members need not carry large amounts of cash with them to the airfield, the Club does operate a debit account system. Basically this means that the account must be in the black at all times.

If you wish to start up an account then send \$20.00 to the Treasurer, Adelaide University Gliding Club, C/- Sports Association.

"COME AND GET IT" TROPHY

The Mid-North Shuttle Trophy is still at Whitwarta. We need a pilot to fly down to get it in the Arrow since the Kookaburra is incapable of doing so - isn't that right Emilis?

BAROGRAPH

Thanks to a group of members too numerous to mention, the Club now owns a barograph. This instrument measures achieved height against time on a revolving scale, and will be kept permanently in the Arrow.

In the morning, as part of the Arrow's daily inspection, pilots should put in a new foil and tape (from the cupboard in Emilis' shed), wind up the clock and strap the barograph into the holder in the luggage compartment. Then switch it on.

In the evening remove the foil for any height or cross country claims that

Diary of Events

- March 17th-19th - Introductory Camp, Lochiel.
- March 24th-27th - Easter Regatta, Gawler.
- April 6th - 7.30 p.m. Club Meeting in Sports Association Office.
- April 14th-16th - "Ratbag" Regatta, Lochiel.

Flying every Saturday and Sunday at Lochiel, but check the notice board in the Sports Association Office.

GUY HARLEY,
Editor.

