



Free Flight

official publication of
THE SOARING ASSOCIATION OF CANADA

Sept/Oct '74

DIRECTORS AND OFFICERS

PRESIDENT	Mr. Terence R. Beasley, 173 Leslie Street, Dollard des Ormeaux, P. Q., H9A 1X2	(514) 684-7145 H (514) 744-1511 B loc. 754
PAST PRESIDENT	Mr. Terence R. Beasley	
VICE PRESIDENT	Mr. Walter J. Piercy, 184 Churchill Crescent, Kingston, Ontario, K7L 4N2	(613) 546-9937 H (613) 544-6000 B
DIRECTOR, QUEBEC & MARITIME ZONE	Mr. Robert C. Gairns, 130 St. Francis Blvd., Chateauguay, P. Q., J6J 1Y7	(514) 691-4754 H
DIRECTOR, ONTARIO ZONE	Mr. Henry H. Bruhlman, 561 Lacroix Street, Chatham, Ontario, N7M 2X1	(519) 352-7068 H (519) 354-2840 B
DIRECTOR, PRAIRIE ZONE	Dr. Geoffrey P. Anthony, 308 Dromore Avenue, Winnipeg, Manitoba, R3M 0J5	(204) 284-8084 H
DIRECTOR, ALBERTA ZONE	Mr. Bruce M. Hea, 1528 - 23 St. N. W., Calgary, Alberta, T2N 2P5	(403) 282-3874 H
DIRECTOR, PACIFIC ZONE	Mr. Frank Hinteregger, P. O. Box 6629, Fort St. John, B. C., V1J 4J3	(604) 785-5691 H
DIRECTOR-AT-LARGE	Mr. Richard F. Mamini, 13824 Park Estates Drive S. E., Calgary, Alberta, T2J 3W2	(403) 271-3072 H
DIRECTOR-AT-LARGE	Mr. Walter J. Piercy	
SECRETARY-TREASURER	Mrs. Terry Tucker, 786 Chapman Blvd., Ottawa, Ontario, K1G 1T9	(613) 733-2165 H (613) 733-2165 B
F. A. I. AWARDS	Mr. Peter Coleridge, 80 Waverley Street, Ottawa, Ontario, K2P 0V2	(613) 237-2068 H
FREE FLIGHT EDITOR	Mr. Robert F. Nancarrow, 43 Sealcove Drive, Etobicoke, Ontario, M9C 2C7	(416) 621-2276 H (416) 252-4657 B



Free Flight

THE NEWS LETTER OF THE SOARING ASSOCIATION OF CANADA

ISSUE 4/74

SEPTEMBER - OCTOBER 1974

C O N T E N T S

2	EDITORIAL	BOB NANCARROW
4 to 8	WESTERN CANADA SOARING CHAMPIONSHIPS	GEORGE DUNBAR
9	THE INSTRUCTOR	GIL PARCELL
10 to 13	EASTERN CANADA SOARING CHAMPIONSHIPS	BOB GAIRNS
14	CURIOUS BEHAVIOUR OF CARBON FIBRES	
15	ONTARIO OPEN SOARING CHAMPIONSHIPS	WILLIE WERNEBURG
18 to 22	CLUB NEWS	
24	LETTERS TO THE EDITOR	
26 to 28	WHAT ABOUT THE PILOT?	DEPT. OF CIVIL AVIATION, AUSTRALIA
29	HEAVY LANDING	
30	LIST OF SUPPLIES	

EDITORIAL

"SAFETY: The state of being safe; exemption from hurt or injury; freedom from danger." That's what the dictionary says but when applied to soaring operations it might also say, "the result of adequate training and continuous application of careful judgment."

How safe is soaring as a sport? Better than many participant sporting activities. There are probably more accidents and injuries on the highways going to and from the gliderports than there are while flying but we must constantly promote safety in our flying operations.

S. A. C. statistics show no fatalities in 1972 and 1973, however we have no cause for satisfaction from these statistics. There are still too many accidents resulting in injury and damage to aircraft and regretfully there has been one fatality in a soaring accident this year.

It should come as no surprise that the majority of serious accidents occur during landing. Looking over the statistics published by our association's safety committee we see, Heavy Landing - 23% of all accidents; Ground Collision - 19%; Undershoot - 17%; Stall - 14%; Ground Loop - 12%; Overshoot - 8%; 90% of all accidents related to landings!

Obviously this is where our greatest corrective effort should be made, both in training and in regular checkouts to maintain a high calibre of flying among club members. When pilots have misjudged distance on landing, failed to compensate for wind, failed to observe objects in the landing area and failed to maintain flying speed; we see the lack of following some of the basic rules we were taught during training.

We all go through a check list before take off; C-I-S-T-R-S-C, why not a check list as we prepare to land? Each time we land should we not be checking on the operation of the spoilers, undercarriage down and locked, flap selection, landing speed, altitude for landing pattern, wind direction and speed, landing area clear of obstructions and other air traffic. If these checks were done and a careful approach were flown, we should reduce the heavy landings, collisions and undershoots which cause so many of our problems.

The result of safer flying will be to reduce fatalities and personal injuries as well as damage to aircraft; it might even cut our insurance costs.

Glider in CNE airshow

OSCAR BOESCH of Air Sailing Club performed this year at the CNE Air Show. He thrilled the crowds at the show with the performance of his ASW-15 over the waterfront.

The publicity for the Air Show featured a photo of Oscar flying over the downtown area and pointed out that he has been flying since he was 15. He has flown single and multi-engine aircraft but his first love is still gliding.

Youngest pilot

Who is the youngest Canadian solo glider pilot? No doubt Carol Bandmann from the Rockton area in Southern Ontario who will not be 15 until March 1975!

How come? Carol soloed at Franconia Soaring Centre in New Hampshire on July 24th and in the USA student permits are issued at 14 years of age. Carol will have to wait a while before going solo again unless she goes south of the border again.

New Canadian Record

A new Canadian Territorial Sailplane record was established with a flight carried out on July 21st, 1974.

The flight was made by Mr. Steve Simon of Toronto in a 16.5 m Diamant single seat sailplane, number C-GOBG. The flight was an out and return from the Erin Soaring Society field near Erin, Ontario to a point 2.5 km west of Tiltury, Ontario for a total distance of 5.0 km. The flight exceeds the previous Canadian Territorial record for this task held by Helmut Werneburg by 14 km.

Pioneer & York merge

On July 27th the members of Pioneer Soaring joined with York Soaring. This climaxed negotiations which began at the beginning of the season at the suggestion of Walter Chmela.

Pioneer started in 1968 as a commercial gliding school and Schweitzer dealership but as a commercial venture it was not successful and in 1970 it was reorganized into a club operation. In spite of steady growth, the original debt and lack of their own field held back the club. The field used for the last two years is being stripped this summer for sod.

York Soaring has been in operation since 1962 and owns the gliderport four miles east of Arthur, Ontario. York was interested in additional solo members to expand their operation. Pioneer members add experienced instructors, tow pilots and some equipment to York's already capable staff and fleet of aircraft.

The expanded club now has a total of 120 members, 16 instructors, 12 tow pilots and the following club aircraft: 2 Stinson L-5, 1 Piper J-3 150, 1 Piper PA-12 150, 1 Piper PA-18 150, 2 2-32, 2 Ka7, 2 1-26, 2 2-33, 1 1-23, 1 BG-12B and 1 Blanik.

In addition there are nine privately owned ships on the field, 1 1-34, 2 Libelle, 2 K-6, 1 Mu13, 1 Kestrel 19, 1 Skylark and 1 K-3

York has a trailer park for members who camp at the field, a 50' x 100' hanger, and plans are underway for a club house to be constructed in 1975. Plans have also been made to widen the runways which at present are 2400 x 225. In 1975 there will be a seven day a week operation for a four month period so that all that mid week weather will not be wasted.

On arriving at the field, the new members were welcomed by the York members who all were wearing name tags. Within a week it was hard to tell which members were which as everyone quickly settled down to the business at hand - soaring!

1974 WESTERN CANADA SOARING CHAMPIONSHIPSCLARESHOLM, ALTA. - JUNE 30 TO JULY 7

Report by GEORGE DUNBAF

The Western Regionals '74 were held this summer at the Claresholm, Alberta Municipal Airport, with a total entry list of 28 sailplanes; 17 in the Open or Championship Class. Because of poor weather or poor lift on certain days, only the necessary four contest days were achieved for the Open Class and only three for the Sport Class.

The tabulation shows the scoring details. The winners were:

Regional Champion (Open)	Dick Mamini (Calgary)
Regional Champion (Sport)	Ian Oldaker (Winnipeg)
Top Standard Class	Bruce Hea (Calgary)
Top Team Entry	Marion & Doug Barritt (Mercer Island, Wash. USA)

In addition to the above, Dick Mamini also won the SAC award for the fastest triangle with a speed of 86.4 km/hr over a 293 km course.

The first day's task was a 304 km triangle to Arrowwood and Vauxhall with six competitors completing the task. The Sport Class flew a triangle of 107 km with three competitors completing it. A most unfortunate accident occurred on this day when Capt. Bob Denyer, of the Comox and Cold Lake clubs, was killed when he ran into a fence on his approach to the field.

On the second day (July 2nd) seven gliders completed the 201 km triangle, with Dick Mamini holding his lead with a second score of 1000 points. Larry Riegert (Cold Lake) was a close second in his Cirrus with 1890 points. Only one Sport Class pilot went more than 50 km, so it was not considered a contest day for this class.

A quadrilateral task to Waterton, Woolford, McIlford and return was set for the third day, but because of the wind and difficult conditions none of the pilots got back. Larry Riegert came down near Cowley and thus dropped back to

third place, while Bruce Hea moved up to second with a 229 km flight. In the Sport Class no one completed the 126 km triangle, but the team entry of Bentley and Stokes in the Zugvogel covered 112 km to move Ian Oldaker out of first place.

On day four, which was to be the last, a 293 km triangle was set for the Open Class, and was completed by Dick Mamini and Peter Lamla (Vancouver). This gave Dick a decisive win with 4000 points, while Marion and Doug Barritt's consistent performance moved them up to second. Bruce Hea came down after only 57 km for third place. The 126 km triangle was set again for the Sport Class, but in the opposite direction and this time was completed by Ian Oldaker and Lloyd Bungey (Vancouver). This moved Ian back into first place.

The last day of the contest was not a contest day, because of several thunderstorms which had moved across the course. After digging out of a few muddy fields, everyone packed up for home. In spite of several rainy days and several mishaps, it should be considered a successful contest. The double paved runways at the airport, plus the facilities provided by the town helped to make the meet enjoyable.

CLARESHOLM RECOLLECTIONS.....

The wind blowing relentlessly across the open expanse of Claresholm Airport... the cloud base hovering about 1000 feet day after day...the chilly evenings when I had to huddle close to the fire... the sunburn.

Happy meetings with old friends...the three great barbecues we had...the two lively kittens with the Edmonton group.

The hours at the pool table waiting for the weather...Dave Smith struggling valiantly to do everything...and the wind!

From the Winnipeg Sock Talk.

1974 WESTERN CANADA REGIONAL SOARING CHAMPIONSHIPS

SPONSORED BY THE ALBERTA SOARING COUNCIL

OPEN CLASS DAY 1 JUNE 30/74

TRIANGLE: ARROWWOOD, VAUXHALL AND RETURN

TASK DISTANCE: 304.43 KM.

NAME	GLIDER		SPEED KPH	DISTANCE KM	DAILY POINTS	DAILY STNDG	TOTAL PTS	TOTAL STNDG
MAMINI, Dick	ASW-12	ASW	85.9		1000	1	1000	1
RIEGERT, Larry	CIRRUS	XGU	79.8		962	2	962	2
BARRITT, Marion & Doug	LIBELLE	1D	78.6		955	3	955	3
GEBENUS, Helmut	PHOEBUS	WLR	75.9		938	4	938	4
GUNTHER/POMEROY	LIBELLE	BK	65.3		873	5	873	5
BRAYSHAW, Bernie	K6-CR	SHG	50.1		779	6	779	6
HEA, Bruce	LIBELLE	QJS		292.0	701	7	701	7
STACHOW, Klaus	PHOEBUS	KSS		267.0	631	8	631	8
LAMLA, Peter	CIRRUS	BMX		256.0	601	9	601	9
DAMULA/ARCHIBALD	HP-14	ALT		247.0	576	10	576	10
STRONG, Jim	LIBELLE	TQL		97.0	158	11	158	11
FUNSTON, Nelson	LIBELLE	JN		90.0	129	12	129	12
MARSDEN, Dave	GEMINI	TKC		0.0	0	13	0	13
BEDDO/DUNBAR/MORTIS	DART	OAK		0.0	0	13	0	13
BRAUER/GRANT	SHK-1	PLM		0.0	0	13	0	13
DUCKHAM/DEREK/KEITH	CIRRUS	AMK		0.0	0	13	0	13
WILLIAMS, Tony & Monty	CIRRUS	DMW		0.0	0	13	0	13

SPORT CLASS DAY 1 JUNE 30/74

TRIANGLE: CHAMPION, PARKLAND AND RETURN

TASK DISTANCE: 107.36 KM.

NAME	GLIDER		SPEED KPH	DISTANCE KM	DAILY POINTS	DAILY STNDG	TOTAL PTS	TOTAL STNDG
OLDAKER, Ian	TERN	QXI	72.2		1000	1	1000	1
BUHR, Glen	BG-12B	SMW	51.5		861	2	861	2
BENTLEY/STOKES	ZUGVOGL	TFT	48.9		855	3	855	3
WALKER, Ken	L-SPATZ	DKZ		58.5	203	4	203	4
PANDUR, Dan	BG-12A	RCU		0.0	0	5	0	5
McPHEE/THOMAS	BG-12A	RBF		0.0	0	5	0	5
BELL, Neil	1-23	XKL		0.0	0	5	0	5
RONAASEN/OKE	BERG-3	DLP		0.0	0	5	0	5
FLINT, Russ	BERG-11	UVO		0.0	0	5	0	5
FALCONAR, Chris	TG-1	MOY		0.0	0	5	0	5
BUNGEY, Lloyd	K-8	PVL		0.0	0	5	0	5

1974 WESTERN CANADA REGIONAL SOARING CHAMPIONSHIPS

OPEN CLASS DAY 2 JULY 2/74

TRIANGLE: BLACKIE, MILO AND RETURN

TASK DISTANCE: 201.31 KM

NAME	GLIDER		SPEED KPH	DISTANCE KM	DAILY POINTS	DAILY STNDG	TOTAL PTS	TOTAL STNDG
MAMINI, Dick	ASW-12	ASW	73.1		1000	1	2000	1
RIEGERT, Larry	CIRRUS	XGU	66.1		928	2	1890	2
BARRITT, Marion & Doug	LIBELLE	1D	54.5		809	4	1764	3
BRAYSHAW, Bernie	K6-CR	SHG	46.3		725	7	1504	4
HEA, Bruce	LIBELLE	QJS	54.1		795	5	1496	5
LAMLA, Peter	CIRRUS	BMX	57.7		842	3	1443	6
GEBENUS, Helmut	PHOEBUS	WLP		150.5	428	8	1366	7
STRONG, Jim	LIBELLE	TQL	47.7		739	6	897	8
GUNTHER/POMEROY	LIBELLE	BK		40.0	0	9	873	9
STACHOW, Klaus	PHOEBUS	KSS		0.0	0	9	631	10
DUMALA/ARCHIBALD	HP-14	ALT		31.0	0	9	576	11
FUNSTON, Nelson	LIBELLE	JN		DNC	0	9	129	12
MARSDEN, Dave	GEMINI	TKC		DNC	0	9	0	13
BEDDO/DUNBAR/MORTIS	DART	OAK		DNC	0	9	0	13
BRAUER/GRANT	SHK-1	PLM		0.0	0	9	0	13
DUCKHAM, Derek & Keith	CIRRUS	AMK		0.0	0	9	0	13
WILLIAMS, Tony & Monty	CIRRUS	DMW		0.0	0	9	0	13

SPORT CLASS

JULY 2/74

NO CONTEST

1974 WESTERN CANADA REGIONAL SOARING CHAMPIONSHIPS

OPEN CLASS DAY 3 JULY 3/74

QUADRILATERAL: WATERTON, WOOLFORD, NOBLEFORD & RETURN

TASK DISTANCE: 271.78 KM

NAME	GLIDER		SPEED KPH	DISTANCE KM	DAILY POINTS	DAILY STNDG	TOTAL PTS	TOTAL STNDG
MAMINI, Dick	ASW-12	ASW		231.5	1000	1	3000	1
HEA, Bruce	LIBELLE	QJS		229.5	980	2	2476	2
RIEGERT, Larry	CIRRUS	XGU		33.0	0	6	1890	3
BARRITT, Marion & Doug	LIBELLE	1D		33.0	0	6	1764	4
BRAYSHAW, Bernie	K6-CR	SHG		60.0	104	3	1608	5
LAMLA, Peter	CIRRUS	BMX		36.5	0	6	1443	6
GEBENUS, Helmut	PHOEBUS	WLR		0.0	0	6	1366	7
GUNTHER/POMEROY	LIBELLE	BK		53.0	68	4	941	8
STRONG, Jim	LIBELLE	TQL		0.0	0	6	897	9
STACHOW, Klaus	PHOEBUS	KSS		0.0	0	6	631	10
DUMALA/ARCHIBALD	HP-14	ALT		47.0	37	5	613	11
FUNSTON, Nelson	LIBELLE	JN		DNC	0	6	129	12
MARSDEN, Dave	GEMINI	TKC		DNC	0	6	0	13
BEDDO/DUNBAR/MORTIS	DART	OAK		0.0	0	6	0	13
BRAUER/GRANT	SHK-1	PLM		0.0	0	6	0	13
DUCKHAM, Derek & Keith	CIRRUS	AMK		28.0	0	6	0	13
WILLIAMS, Tony & Monty	CIRRUS	DMW		0.0	0	6	0	13

SPORT CLASS DAY 2 JULY 3/74

TRIANGLE: CHAMPION, NOBLEFORD AND RETURN

TASK DISTANCE: 126.4 KM

NAME	GLIDER		SPEED KPH	DISTANCE KM	DAILY POINTS	DAILY STNDG	TOTAL PTS	TOTAL STNDG
BENTLEY/STOKES	ZUGVOGL	TFT		112.0	1000	1	1855	1
OLDAKER, Ian	TERN	QXI		90.5	701	2	1701	2
BUHR, Glen	BG-12B	SMW		52.0	167	6	1028	3
BUNGEY, Lloyd	K-8	PVL		91.0	698	3	698	4
FLINT, Russ	BERG-11	UVO		71.0	431	4	431	5
RONAASEN/OKE	BERG-3	DLP		61.5	299	5	299	6
WALKER, Ken	L-SPATZ	DKZ		0.0	0	7	203	7
PANDUR, Dan	BG-12A	RCU		0.0	0	7	0	8
McPHEE/THOMAS	BG-12A	RBF		0.0	0	7	0	8
BELL, Neil	1-23	XKL		0.0	0	7	0	8
FALCONAR, Chris	TG-1	MOY		0.0	0	7	0	8

1974 WESTERN CANADA REGIONAL SOARING CHAMPIONSHIPS

OPEN CLASS DAY 4 JULY 6/74

TRIANGLE: TABER, MILO AND RETURN

TASK DISTANCE: 293.31 KM

NAME	GLIDER		SPEED KPH	DISTANCE KM	DAILY POINTS	DAILY STNDG	TOTAL PTS	TOTAL STNDG
MAMINI, Dick	ASW-12	ASW	86.4		1000	1	4000	1
BARRITT, marion & Doug	LIBELLE	1D		268.0	796	3	2560	2
HEA, Bruce	LIBELLE	OJS		57.5	61	9	2537	3
LAMLA, Peter	CIRRUS	BMX	66.8		928	2	2371	4
RIEGERT, Larry	CIRRUS	XGU		175.0	471	8	2361	5
BRAYSHAW, Bernie	K6-CR	SHG		223.0	639	5	2247	6
Gebenus, Helmut	PHOEBUS	WLR		225.0	646	4	2012	7
GUNTHER/POMEROY	LIBELLE	BK		211.0	597	6	1538	8
STRONG, Jim	LIBELLE	TOL		0.0	0	10	897	9
STACHOW, Klaus	PHOEBUS	KSS		DNC	0	10	631	10
DUMALA/ARCHIBALD	HP-14	ALT		0.0	0	10	613	11
BEDDO/DUNBAR/MORTIS	DART	OAK		196.0	545	7	545	12
FUNSTON, Nelson	LIBELLE	JN		DNC	0	10	129	13
MARSDEN, Dave	GEMINI	TKC		DNC	0	10	0	14
BRAUER/GRANT	SHK-1	PLM		DNC	0	10	0	14
DUCKHAM, Derek & Keith	CIRRUS	AMK		0.0	0	10	0	14
WILLIAMS, Tony & Monty	CIRRUS	DMW		0.0	0	10	0	14

SPORT CLASS DAY 3 JULY 6/74

TRIANGLE: NOBLEFORD, CHAMPION AND RETURN

TASK DISTANCE: 126.4 KM

NAME	GLIDER		SPEED KPH	DISTANCE KM	DAILY POINTS	DAILY STNDG	TOTAL PTS	TOTAL STNDG
OLDAKER, Ian	TERN	QXI	48.3		1000	1	2701	1
BENTLEY/STOKES	ZUGVOGL	TFT		108.5	664	3	2519	2
BUNGEY, Lloyd	K-8	PVL	45.4		982	2	1680	3
BUHR, Glen	BG-12B	SMW		0.0	0	5	1028	4
RONAASEN/OKE	BERG-3	DLP		83.5	418	4	717	5
FLINT, Russ	BERG-11	UVO		0.0	0	5	431	6
WALKER, Ken	L-SPATZ	DKZ		0.0	0	5	203	7
PANDUR, Dan	BG-12A	RCU		0.0	0	5	0	8
McPHEE/THOMAS	BG-12A	RBF		0.0	0	5	0	8
BELL, Neil	1-23	XFL		DNC	0	5	0	8
FALCONAR, Chris	TG-1	MOY		0.0	0	5	0	8

The Instructor

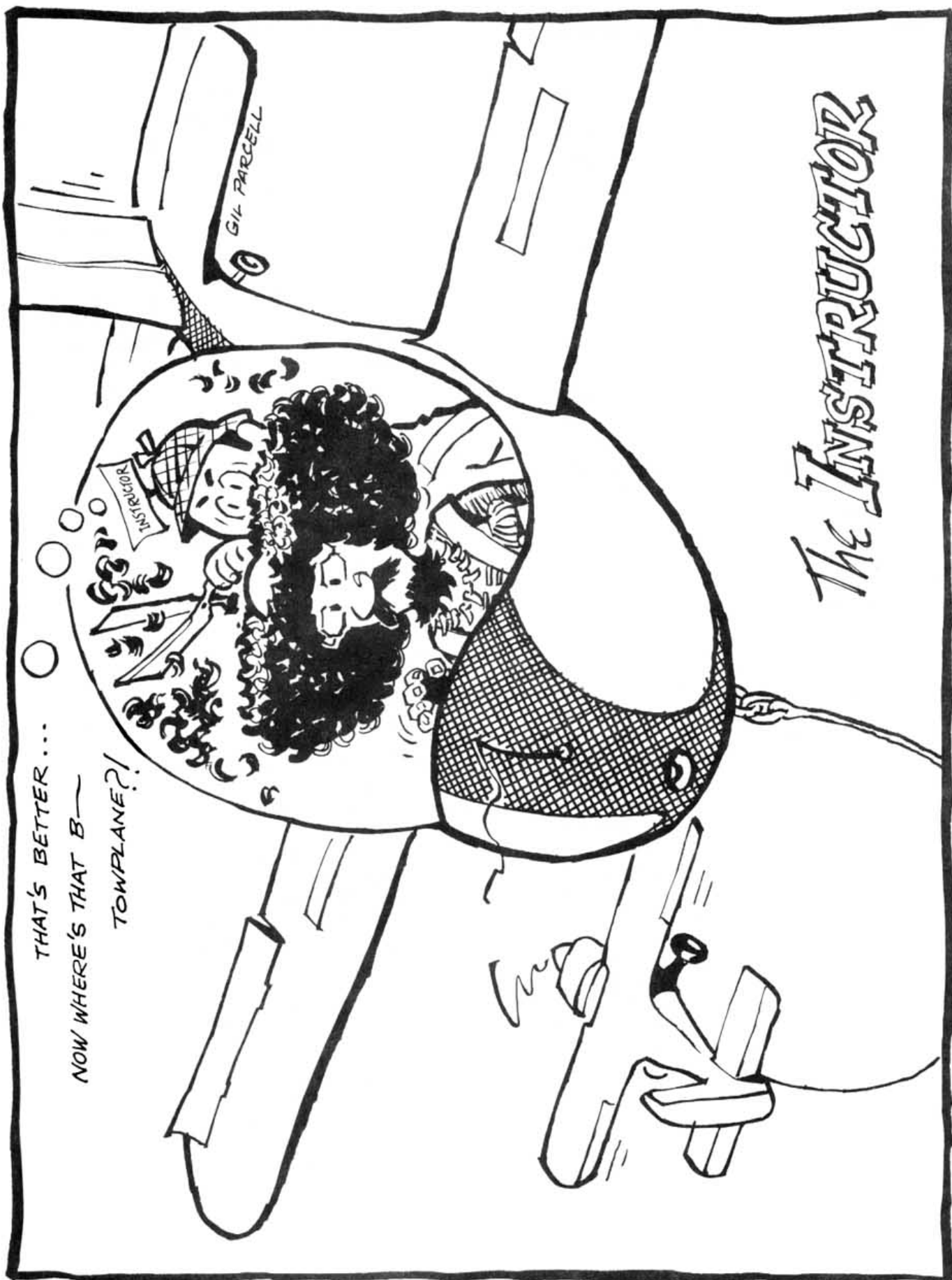
THAT'S BETTER...

NOW WHERE'S THAT B—

TOWPLANE?!

GIL PARCELL

INSTRUCTOR



1974 EASTERN CANADA SOARING CHAMPIONSHIPSHAWKESBURY, ONTARIO - JULY 15 - 24

Report by BOB GAIRNS

Soaring contests tend to be run at the wrong time. When I told our local met. man of the proposed dates for the contest, his comment was, "wrong time of the year; should be earlier or later." Traditionally the weather in mid to late July is hot and humid; but this year, after a disappointing spring, the soaring deities smiled on us and gave five contest days for the open class and six for the sport class.

John Firth advised that he might not be able to attend every day; so I took his place on the task selection committee, assisting contest director Oscar Estebany and Hal Werneburg of SOSA. Being on this committee was interesting and enjoyable but it did not make the tasks any easier.

FIRST DAY: July 15th. A cold front extended from Ottawa to the north and west, not much convection was forecast, with 270° winds 10 - 25 kts. The open class task was a 110 km. triangle, NW to St. Andre Avellin airfield, then south to Pendleton and return to Hawkesbury. The sports class had an out and return to Pendleton, 77 km. The three L-19 towplanes of MSC looked efficient and workmanlike and did a good job with Gatineau club pilots. Off tow thermals were not strong and there was considerable drift. Set off to NW sharing thermals with Blue Fin (Henry Priess' RHJ 8 two seater) and the 17 m Kestrel. Was with Blue Fin one moment, suddenly found he had gone - spotted him in the thermal ahead - followed - same thing happened again, and again. About one third of the way to the first turn point, saw Blue Fin in a thermal to the right, somewhat lower. Decided I had to forge ahead - found a thermal, reached the town of St. Andre; the airfield is 5 or 6 miles to the north and is difficult to find. Climb in a thermal near the town - see Blue Fin low - go on - meet Firth and the 19 m Kestrel above me under a cloud - press on towards airport. Take photo, then

fly downwind to where Firth and the Kestrel were circling - must be good lift there - but no sign of gliders, and no lift! Damn, and there is Blue Fin on the ground just outside St. Andre town - at least he has a good field, which I might use if necessary. Go on - not too much hope now - then a violent kick from a thermal - turn left but find I can't stay with it - will have to make right turns - change position and turn to the right and find the thermal again - altimeter shows 1300' and St. Andre is 600' ASL, Hawkesbury is 167' - the woods look close, and the thermal is drifting like mad - Blue Fin's field is out of reach now - if I don't stay with this thermal my glider will be wrecked for sure - have to bias each turn downwind for two or three seconds each circle, but establish a technique, and gradually gain height and by the time I am at 2500' am above the Ottawa River and can breathe easier. Not many clouds near Pendleton, but a wisp gives lift and by circling steadily I drift over the airfield at 3000'. Take a photo and note that the only clouds are to the north and west - fly to nearest - get a weak reading - fly to the next - don't manage to stay in lift there either, press on to another bank of cloud nearer Hawkesbury, but it is dead, and have to choose a field and land 14 miles from home. Waiting for my crew an hour later, John Firth appears overhead, climbs slowly - flies to the north to a likely looking cloud, finds nothing, flies back to where he was before, goes on and on, doesn't seem to loose height - disappears. No one completed the triangle - Hans Baeggli in the big Kestrel got furthest, with Firth next; I am third. Hal Werneburg lost points because his camera jammed and no one saw him at the second turn point. In the Sports Class only Kovacs in a Ka6E makes it. The 17 m Kestrel has the fuselage broken from a severe groundloop and is out of the contest - pilot is unhurt.

SECOND DAY: July 16th. A better forecast - high pressure over our area - wind 10-15kts.

Cloudbase predicted 7000' to 8000'. Task a 247.5 km triangle, south to Lancaster, west to Kemptville, return to Hawkesbury. Slow in getting away, catch up to Blue Fin 2/3 of way to first turn point, but he is much higher - fly under his cloud but to his right, hit core of thermal and get unbelievable vario reading, off the clock at more than 1000 fpm. In a few turns am level with Blue Fin - bet he is surprised - me also. After first turn Blue Fin is below, I press on, but an hour or so later at second turn point Blue Fin is ahead but reports he is low and struggling. (A very tenacious pilot, he did well at Winnipeg last year.) Weather not promising in direction of Hawkesbury, so get as high as possible and set off. Get to a cloud and am climbing when Blue Fin slips in below. No problems on the way back, though take too much height in the last thermal (to offset the strong wind) and have to dive off excess. Werneburg wins in 3 hrs. 10 min., I take 4 hrs. 7 min. Firth second, I am seventh. Sports Class had a 113 km triangle via Alexandria and Pendleton, only Dick Kirschner in his Cherokee 2 made it (maybe this was the day he hadn't got sufficient height to cross the power lines to the south end of the field and landed across the road; anyway, he won).

17th and 18th July - no contest days.

19th July. Montreal radio gave winds NNW at 20 - 25 kts. at surface and 30 kts. at 3000' to 10000' with rain showers after 4 pm. Task is a 162 km triangle, Pendleton - St. Lazare airport - Hawkesbury for the open class, a downwind dash of 52.5 km to the Farm airfield for the Sports Class. Small fronts and rain showers start earlier than predicted - Werneburg and Preiss get nearly to Pendleton, no one else gets this far except Gairns who found lift ahead of fronts and made first and second turn points, but it was a no contest day for the open class. In the sports, Kovacs was the only one to make the goal, and this did count.

THIRD DAY: July 20th. The Open Class had a 214.5 km triangle, west to Chester-ville, then east to St. Lazare airport and home to Hawkesbury. I leave early, make steady progress to first turn point -

try to stay high. A stronger wind than forecast gives a slow second leg, but get to 6700' just before the second turn point. Not much in the way of thermals on the last leg, so decide that there is just enough height to get home in a straight glide, and after some anxious moments find that it was possible. Only Charbot in the LS-1 and Baeggli in the 19 m Kestrel also made it, Charbot diverting far to the south to stay with the lift, and it paid off. Dave Webb flew hors concours this day in his big Tinbus, and beat everyone by a good margin.

FOURTH DAY: July 21st. With winds 10 - 15 kts. at surface and 15 - 20 from NW at 3000' to 10000'; a 310.5 km triangle is set for the Open Class, 138.5 to Brockville airport, then 37.5 km north to Smiths Falls town, then east again 134.5 km to Hawkesbury. Sports Class have a 94.5 km out and return to Casselman. Through the gate soon after it is open at around 1:00 pm, get down towards the St. Lawrence and meet Blue Fin and the LS-1 near Prescott, 15 miles before the first TP, and after negotiating round a blue hole. Fly all together for a time, at one point all at the same height, would have made a fine picture; they go off to the right, I stick close to the river. After the TP see J. Firth on course for the second TP high above. Several clouds render this into-wind leg fairly easy, but east of the second TP there are no clouds on the homeward leg. Climb as high as possible and head out - find Firth on my right - I circle in a blue thermal, he goes on ahead - see the first cloud, 25 miles from the second TP and make for it. As it gets closer, there is the blue fuselage and white wings of Firth's HP-11 up above - he leaves soon after, I try to climb, make 1000' or so, press on. Progress very slow, but there are small clouds - 20 miles out am down to 2900', with no clouds close ahead it doesn't look good, but fly on - down to 1500' 7 or 8 miles from Hawkesbury, but there are clouds ahead - get to first one and climb at two knots - perhaps I will make it - on to the second cloud with stronger lift - get home, Firth just landing, Charbot comes soon after. Firth wins, Henry Charbot and I are close behind. In the Sports Class, Dick Kirschner in the Cherokee 2 do it again and win the 1000 points.

FIFTH DAY: July 22nd. Winds 250 to 280 degrees, all at 9 kts. at the levels we will fly at. Thermals go to 5000', but an extensive area of cirrus will cut off heating; task is area distance for both classes, with turnpoints those used for the triangles on the previous four days. The start gate is used but no height is specified, to give everyone the same opportunity, and 9 or 10 gliders try to go through the gate at the same time! Find poor rates of climb, with cloudbase not more than 3500' at first - make two turn points, then circle for ages, just staying up. Conditions looked better towards Hawkesbury, so set off in that direction. Pass over to the north over the woods to St. Jerome airport, the furthest east TP, but from 6000' the woods are no threat - nice view of Mirabel airport - look out for parachutists at TP but don't see any - set off back to Hawkesbury, 31 miles, get there about 5:30 pm - some black clouds giving weak lift under a high overcast - climb slowly - set out for Lachute airfield, 12 miles, but find clouds over the woods - at 4500' set off for St. Jerome again, wondering if I have enough height to get there, over that expanse of bush, no roads and no fields - only lose 1500' so no problem - I am surprised but delighted to see a cloud over the St. Jerome airport - get to it and find 200 fpm lift at 6:15 pm! Circle round and round for a long time eventually the lift falls off - set out at 4900' for Lachute. With a headwind progress is slow - near Lachute I see I can't make the airport, but a small cloud appears and I climb, go to another small cloud north of the town, get to 3500', set out for Hawkesbury - 13 miles and a headwind, I'll never make it, but I do, and land at 7:00 pm.

Apart from the weather, a good contest depends very much on good organization. This year we had large notice boards for weather, task description, marshalling and take-off times; we had start and finish gates; very efficient young marshalls and towrope jockeys; a base radio station which was on duty from midday until 6 or 7 pm; a telephone answering service; and incidently, two excellent parties. Grateful thanks

are due to members of the Montreal Soaring Council - too many to name individually - who gave their time to make this meet a success.

WANTED

HP-11 or HP-14 COMPLETE OR PARTIALLY COMPLETED. INSTRUMENTS, TRAILER, RADIO, ETC. NOT ESSENTIAL. ALL REASONABLE PRICES WILL BE CONSIDERED. CALL (514) 739-9895 or (514) 688-8034

OR WRITE

G. NYE, 6825 A Wilderton Avenue,
MONTREAL, QUEBEC, H3S 2M3

FOR SALE

BG-12A CF-RCU FIBREGLASSED. WINGS FILLED, REPAINTED LAST WINTER, YELLOW & BLUE. INSTRUMENTS, OXYGEN, COVERED TRAILER, EXCELLENT CONDITION.

\$3800.00

WILLING TO DEAL

DAN PANDUR
11950 - 56 St., Edmonton, Alberta.

Days (403)424-9174, Eves (403) 474-6318

1974 EASTERN CANADA SOARING CHAMPIONSHIPSHAWKESBURY, ONTARIO - JULY 15 - 24OPEN CLASS

<u>PLACE</u>	<u>PILOT</u>	<u>GLIDER</u>		<u>DAY 1</u>	<u>DAY 2</u>	<u>DAY 3</u>	<u>DAY 4</u>	<u>DAY 5</u>	<u>TOTAL</u>
1	FIRTH	HP-11A	RNN	920	972	689	1000	990	4571
2	GAIRNS	Libelle 301b	XGE	882	706	1000	969	1000	4557
3	ADAMS/BAEGGLI	Kestrel 19	FGR	1000	630	941	733	815	4117
4	WERNEBURG	* Cirrus	AQV	618	1000	778	707	690	3793
5	CHARBOT	* LS-1	LSA	189	890	944	943	792	3758
6	FEATHERSTONE	Diamant	SYL	311	789	635	707	919	3361
7	PREISS	RHJ - 8	FAJS	311	684	337	746	616	2694
8	DOETSCH/SPRINGFIELD	HP - 14	FWZT	349	307	567	352	566	2141
9	EICH	Skylark 4	OUO	0	629	188	707	0	1707
10	GEYER-DOERSCH	* LS-1	TUB	123	775	682	DNC	DNC	1580
11	NYE	* Skylark 2	ZDL	0	339	297	0	368	1004
12	HENRY/NEWSOME	* 1-34	DFK	0	467	135	81	219	902
13	MARKUT	Cirrus	QJH	0	812	0	DNC	DNC	812

* DENOTES STANDARD CLASS

SPORTS CLASS

<u>PLACE</u>	<u>PILOT</u>	<u>GLIDER</u>		<u>DAY 1</u>	<u>DAY 2</u>	<u>DAY 3</u>	<u>DAY 4</u>	<u>DAY 5</u>	<u>DAY 6</u>	<u>TOTALS</u>
1	BRUCE/ROACH	Ka6E		1000	974	153	336	747	1000	3806
2	KIRSCHNER	Cherokee 2		0	1000	198	1000	1000	183	3381
3	HALBROTH/KOVACS	Ka6E		596	353	1000	286	DNC	DNC	2639
4	COUSER/GLAVAS	1-26		0	173	10	495	65	588	1331

Curious Behaviour of Carbon Fibres

Fine fibres of highly graphitised carbon have excited much interest because they are strong, stiff and light. The high strength and stiffness both stem from the strong c-c bonds in the graphite layer planes and, since the interlayer bonds are much weaker, the graphite lattice has of necessity a large anisotropy of both strength and stiffness. Accordingly, the mechanical properties of carbon fibre must vary with the degree of graphitisation of the lattice (a "glassy" disordered arrangement of carbon atoms implies a comparatively weak "average bond") and with the degree and nature of preferential alignment of the graphite layer planes where these are well developed. When, in addition, the quality and degree of alignment of graphite layers are also a function of position in the fibre cross section, the number of structural variables that affects mechanical properties becomes quite disconcerting.

Evidence has in fact accumulated that carbon fibres made according to the British process by pyrolysis of polyacrylonitrile have a duplex structure with a poorly graphitised core of low stiffness surrounded by a highly graphitised and aligned sheath of high stiffness. If, as seems likely, the sheath is of fixed thickness, then a reduction of the total fibre diameter will increase the proportion of sheath material and so raise the overall Young's modulus. Such dependence of modulus on diameter has been established, and the sheath/core hypothesis was advanced to explain this dependence.

In Nature Physical Science (December 3) Hart and Pritchard of Kingston Polytechnic confirm the diameter dependence

of modulus, and report on an attempt to test the sheath-and-core hypothesis more directly. Fibres originally pyrolysed at several different temperatures were submitted to attack by nitrogen dioxide at temperatures up to 925 K. using different pressures and periods of attack. Fibre diameters were reduced by as much as 80%. For fibres originally pyrolysed at 1750° C. increases of modulus of up to 80% were established as the fibre diameter decreased; the amount of modulus increase depended on the conditions of attack, especially time and temperature. Fibres pyrolysed at 1350° C. showed negligible modulus changes in spite of thinning, and fibres pyrolysed at 2750° C. appeared resistant to attack.

The apparent paradox that removal of a stiff sheath leads to modulus increase is dealt with by the authors by the postulate that the attacking gas penetrates capillary pores in the sheath and preferentially attacks the poorly graphitised core. In the process, they believe that the sheath collapses onto the hollow core region and, in doing so, undergoes reformation of the graphite structure with the formation of new bonds. They believe that the inefficacy of low attack temperatures in increasing modulus is consistent with their postulate. It is not altogether clear whether the modulus increase is taken to be due to increased perfection of graphite structure, or increased alignment produced during gas attack. The authors very properly conclude by pointing to the need for high-resolution electron microscopy to test their interesting ideas.

From NATURE PHYSICAL SCIENCE, Vol. 246.
November 30, 1973.

W A N T E D

Ka6 or HP-11 or ship with comparable performance. Call with full details.

Allen Clarke - (613) 544-5400 ext. 157

Ray Wilson - (613) 546-6467

ONTARIO OPEN SOARING CHAMPIONSHIPS

held at

SOSA GLIDING CLUB, ROCKTON, ONTARIO

28 July - Out and return to Belwood Lake, 103 km. The day was one of blue thermals, slight cirrus cover and fairly strong south-westerly winds. Peter Lambert with the L-Spatz did an outstanding job and finished first on handicap. Second and third were Julius Nagy, Std. Libelle, and Peter Trounce, Std. Cirrus.

30 July - Multiple out and return task, pilot's choice of turn points, Woodstock dam, Brantford and Guelph airports. The weather was marginal with large over-developed areas and cumulus all over the sky. Frank Markut did very well to log 202 km for the day in his big Cirrus. Julius Nagy and Willy Krug placed 2nd and 3rd for the day.

3 August - Cats' Cradle task with various turnpoints within 50 miles radius of Rockton. The weather was poor again with strong south-westerly winds and a tendency for overdevelopment. Only a handful of pilots got away from the field. Peter Lambert again won the day, making another outstanding flight in the L-Spatz. Steve Simons in the 16½ meter Diamant, Peter Trounce, Frank Vaughan, (RS-15) and John Chamberlin, Std. Libelle were the only other pilots to score points.

Last contest day, 5 August - Out and return to Tavistock - 102 km. The weather was reasonable with some tendency to overdevelop. Cloud base dropped to 2500' over the turnpoint. About half of the competitors finished the task, the others mainly landing around the turnpoint. U. Werneburg (RS-15) led the field with a speed of 53 km/hr. However, Karl Svatos won the day in his Ka-8B on handicap with a speed of 29 km/hr. Jack Knowles (Std. Libelle) and Heinz Rominger (Phoebus) tied for third with 47 km/hr.

After a mistake in the scoring which had the Vaughan/Werneburg team first overall and Peter Trounce second, the results finally showed that Peter had won first place and the Championship by six points over the RS-15.

Perhaps the most noteworthy aspect of the competition was the tenacity of the pilots who pushed their sailplanes on to the starting grid day after day in the hopes of having a contest day.

Special thanks must go to Jan Tissot, the MOT weatherman who worked hard and stuck to his guns despite the gloomy weather.

MURPHY'S LAWS

1. In any field of scientific endeavour, anything that can go wrong, will go wrong.
2. Left to themselves, things will always go from bad to worse.
3. If there is a possibility of several things going wrong, the one that will go wrong is the one that will do the most damage.
4. Nature always sides with the hidden flaw.
5. Mother Nature is a bitch.
6. If everything seems to be going well, you have obviously overlooked something.

BRITAM AVIATION

CANADIAN SCHWEIZER DEALER
 BOX 660 STATION 'Q' TORONTO, ONTARIO M4T 2N5
 Telephone Day: 416-925-5571 Night 223-6487
 Walter F. Chmela

1974 SCHWEIZER SAILPLANES

Prices shown are U.S. ex factory. A discount of 10% applies on all orders placed through us. Presently there is an additional saving of 3% due to the favourable exchange rate. Please inquire about complete instrumentation and other equipment (also at 10% discount). Average delivery time - 6 weeks, except 1-35. Interest of $\frac{1}{2}$ % per month is credited on deposits for 1-35. (\$500.00 deposit required).

1-26E

This one-design model is the most popular sailplane in America. The favorite of both the clubs and individual owners. Good performance permits soaring under the lightest thermal conditions. Most Silver "C's" and many Gold "C" Flights have been made in the 1-26. Each year more one-design meets are held in different parts of the country. The 1-26E is of all-metal construction, and is available as a complete, ready-to-fly sailplane. Prices from \$6,675.00.

2-33A

Unexcelled for training and two place pleasure soaring. Ideal for individual or group ownership. Light wing loading, small turning radius and low sinking speed permits soaring under light conditions. All-metal wing. Ceconite covered steel tube fuselage and tail surfaces. Lined cockpit for pilot and passenger comfort. Easy operating dive brakes. Price for complete sailplane - \$8,525.00.

2-32

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

1-34

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

1-35

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

BRITAM AVIATION

CANADIAN SCHWEIZER DEALER
BOX 660 STATION 'Q' TORONTO, ONTARIO M4T 2N5
Telephone Day: 416-925-5571 Night 223-6487

- 1-35 Start up of the full production run has been slightly delayed due to the certification of the new bonded flaps, a new one piece canopy and a new trim system. These items are now approved, and production should be in full swing. There are now 93 ships on order, and the first 3 have been delivered.
- SALES TAX: Anybody buying an airplane in the US from a manufacturer or dealer should make absolutely sure that the price quoted allows for local (US) sales taxes if the aircraft is not shipped by common bonded carrier. In the State of New York the sales tax is strictly enforced in this respect. This is the main reason for BRITAM being the Schweizer dealer since we do have a N. Y. State sales tax exempt status.
- PRICE
INCREASE: Present prices are good to about November 1st, 1974, then the factory plans a substantial increase due to increased labour and material costs. So, if you want to save money - order NOW!

All models, except 1-35, can be seen at York Soaring, Arthur Glider Port.


Walter F. Chmela

CLUB NEWS

In May and early June a number of the Vancouver Soaring Association members spent weekends at Ephrata and chalked up some good flights. Brayshaw and Gebenus both did a couple of 217 km out and return flights. D. Duckham made a 189 km triangle. Both M. Williams and C. Grant tried a 304 km triangle on May 28th claiming for Gold distance and Diamond goal. Other flights were by T. Williams, 136 km and 115 km; Galizia, 217 km; Lamla, 300 km; and P. Timm, 384 km.

Later trips down to Washington gave the Vancouver group some experience with aero tows and there were more x-c and badge leg attempts including a 500 km attempt by Lothar Schaub which unfortunately ended 60 miles short of his goal.

from VANCOUVER SOARING SCENE

York has set new records in membership, solos, and badge flights in 1974. The merger with Pioneer (see page 3) has added new members and the achievements to date in 1974 include: 15 solos, 13 silver legs, 4 gold legs, 3 diamond legs, 3 one lennie pins, 1 three lennie pin and 2 Canadian records.

from YORK SOARING "SOAR TALES"

The subject of wire hazards was raised by the tragic death of Captain Bob Denyer at Claresholm. I would like to add some comments about spotting wires from the air. Firstly, wires are almost impossible to see - if you can see them you are probably too close! What has to be done is deduce the probable presence of wires. All wires have to be supported; so if you can see a row of towers, poles or posts, you must assume that there are wires between and possibly to the side (guy wires). Even the poles are not easy to see - on a sunny day their shadows are the best clues.

Some other indications are best discussed in terms of the particular wire hazards.

WIRE FENCES: Look for posts. Boundaries of fields are likely places. Wire fences are used to restrain livestock, search for them if you see animals. Sometimes a grass pasture is divided for grazing, the wire fence could be at the division of two shades of green. The path worn by cows walking alongside a fence may show. Sometimes a wire fence is in a band of rough grass where mowing or cultivating could not reach.

HYDRO or TELEPHONE WIRES: Look for the poles or towers. They are often alongside roads and railways. In arable fields there is usually rough weeds or grass around the base; in grass fields there may be rough grass or bare earth worn by animals. Clear strips in wooded areas are often routes for hydro wires. A bend in a row of poles will usually have guy wires at the outside of the bend. Also watch out for a spur or branch line, this is important if you intend to land parallel to a line of wire.

T.V. or RADIO TOWERS: These may be single structures, in which case there will probably be guy wires radiating outward to the ground. When there are several towers, there will probably be wires joining them as well as guy wires. Most obstructions of this type are marked on aeronautical charts. From the air, the first indication may be a hut in a field, a service road to the hut or concrete anchor blocks for the guy wires.

WINCH CABLES: Landing in a glider field might seem like the safest of all places but beware of winch cables. Do not cross to the winch if you land just after a glider has been launched; the cable may drop on you. If possible observe the landing patterns of club gliders and copy. The same remarks apply to auto-tow cables.

from Winnipeg Gliding SOCK TALK

CLUB NEWS

A FABULOUS WEEKEND AT ERIN. July 20 dawned cool and clear at Erin, Ontario. A group of badge-hungry pilots, frustrated by several week-ends of mediocre conditions, turned out. Jack Dodds (who had earlier sworn to declare a Diamond Goal triangle on the first possible day) got a forecast of "scattered CU at 4000, forming at noon; winds north 15". Vowing that the BG-12 was going cross-country this month, if only to Orton, Jack declared Wingham-Burgessville. The forecaster was wrong - the CU popped at 10:30 and the BG-12 was on course at 11:10. Pete Rawes, the ubiquitous Official Observer, packed Jim Powell into their Ka6-CR for Jim's first cross-country attempt. Much to everyone's surprise (most of all his own) Jack Dodds flashed over the field 7½ hours later, having completed his triangle flying around 4000' in dependable lift of moderate strength. Gold Distance and Diamond Goal! And Jim Powell made his first off field landing in a field of oats near (where else) Orton.

The following day saw several pilots infected with severe attacks of "the-day-after-a-Diamond-day-itis". But the CU popped shortly after 10 am and Steve Simon left in his Diamant 16.5 on a 500 km out and return past Tilbury. Bob Patterson was heard to mutter, "It can't be good two days in a row" - and then to declare a 300 km triangle, Wingham-New Durham. He was off at 11 am in his HP-11. After two hours delay due to tow plane trouble, Ken Del Piero in his M100 and Brent Turnbull in the club 1-26 took off to try for Silver Duration. And Bill Mather sat waiting for Brent to land, to take his first ever 1-26 flight.

They all did it! Bob reported some trouble on the first leg, with a long glide into Wingham terminating in a blue thermal over Wingham Airport, but he bettered Jack's time by an hour. Steve was out of radio range half an hour after take-off, and returned 8½ hours and 500 km later to beat up the

field. (The exact distance hasn't been calculated yet, but this could beat Hal Werneburg's record). IT DID, SEE PAGE 3. Ken and Brent made five hours, and Bill made his first 1-26 flight with the usual perfect take-off and landing.

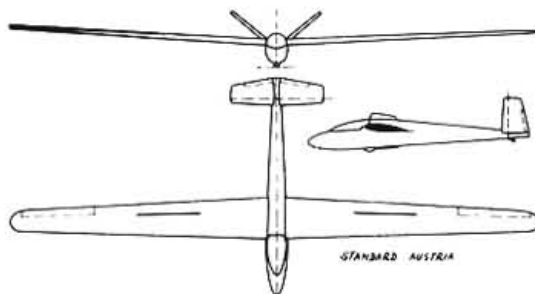
In retrospect, it's fortunate no one landed out, as the clubhouse telephone was out of commission all weekend.

Three diamonds, two gold legs, two silver legs, a first out landing and a 1-26 checkout. Something for everyone - the club pundits calculate that there should be seven cases of "free beer" in the clubhouse next Saturday.

from JACK DODDS, ERIN SOARING.

Larry Springford found himself 20 miles out and 4000' up, battling strong headwinds in the HP-14. He tried penetrating and found there are some things even an HP won't do. In the pilot's own words, "gee-whiz, the wind was strong." So he decided to land out and picked a beautiful spot for a command performance. His landing field was next to the Maxville Fairgrounds, right in front of the grandstand, which at the time was packed with people attending the County Fair! A thousand kids rushed the machine, but Larry managed to get it home safely by hiding it under his coat and melting into the crowd.

from THE GATINEAU GLIDER



CLUB NEWS

Having almost reached mid-season, the club performance is improved over last year but the weather has not permitted any spectacular performances yet.

The season got under way with the Pratt-Read sporting a recovered fuselage, new paint, recessed pitots and a rearward extension to the canopy, improving further the already excellent visibility. We were still without the Skylark due to difficulties in securing a replacement canopy, but with luck we will have it back in the air this weekend (July 20th).

Ed Asche, Clay Titus, Fred Lukianow and Ross Vanderheiden soloed and Ed and Clay subsequently gained their "C" badges.

Our membership is growing a little faster than anticipated, but we welcome the problems which result from this. Paul Sears joins us from England and is our first Diamond holder. Stan Eason, late of Gatineau, is flying again and will be moving his BG-12 here shortly.

The Pioneer is in its final stages and we are eagerly waiting to see if its claimed performance is for real. George Nadalin finally got the balance of his RS-15 kit and is making steady progress.

Other items of note include: Mike Frijters in the lead for the "Little Bowl" with a climb of 5800' in the Austria. Kurt Hertwig qualified as our newest instructor after attending the Eastern Instructor's School. Ed Hollestelle put on a fine aerobatic display at the Woodstock Air Show between thunderstorms.

from Joe Thompson LONDON SOARING

For a long time, it seemed that a soaring summer would never come to Rockton Gliderport. We became so used to scratching around in marginal skies that when the first real cross-country weekend arrived (July 20) it caught some of us by surprise. The weather couldn't possibly be as good as it looked....or

could it?

John Baldock flew his yellow Austia PDM to Bothwell and back for a Diamond goal. Paul Thompson, having earlier managed his Silver height and five hour by coming out on a week day, flew north to Arthur in the Pirat for his Silver distance, got a tow from York Soaring there, and repeated the task back to Rockton. Terry Simmons borrowed ZCO, a club 1-26, and proceeded west for a Silver distance to Embro, home of the London Gliding Club. Karl Svatos tried for a Gold distance on the Saturday, but came back after four tiring hours. Determinedly, he took off again on Sunday and completed an out-and-return to Bothwell in his Ka8 ROP. The same day, two other pilots made it to Bothwell and back for their Diamond Goal -- Otto Bandman in the Phoebus VKY and John Burany in his Kestrel 19 DZV. George Howroyd took ZCO for a Silver height and Distance to Woodstock, and back at the gliderport Rick Bishop soared the 2-22 WTY for his "C" badge. So it was quite a weekend, and shame on people like myself who just didn't believe conditions could be that good!

Immediately after this stunning weekend, the weather started a slow deterioration in preparation for the contest (see page 15).

Once the contest was over, the weather began to improve again and August saw more good flights. Bob Gage flew the club 1-34 QPT for his Silver duration and height, and then a week later went up in the 1-26 ZCO for his Silver distance. Steve Cividino flew QPT for his Silver duration on August 15th (6 hrs. 32 min. - he was making sure). On August 17th John Chamberlin made his Diamond goal in a triangle with Strathroy and Bellwood Lake as turn points, flying his Libelle BDC. And on August 19th Mike Skubicky completed his 5 hours in the 1-26 ZCO.

1974 has seen the arrival of a number of new private ships at SOSA: three new Libelles two RS-15's, a 1-23, a K-45 (a sleek home-built with Cirrus wings), and a Blanik. To help accommodate the growing fleet the club

CLUB NEWS

is erecting an additional hangar, 55' x 100'. Another major construction project, now happily completed, is a brand new washroom. There's no longer a fretful wait in a lineup while CU's are popping. Thanks are due to Al Poldas for masterminding the project, and to many part-time plumbers, carpenters and decorative painters.

This year ground school has been established on a firm basis under the guidance of Dave Ferguson. For student pilots, attendance is mandatory for at least two-thirds of the lectures. So far, we've had a talk by Terry Fielding of DeHavilland Aircraft on airframes, a discussion on Met by Jan Tissot (our guest meteorologist at the contest), and a lecture and films on safety by Max Harris.

Speaking of safety, the club is experimenting with orange Day-glo paint for noses (aircraft variety), wingtips, and tailfins. But we're having trouble getting it to go on smoothly, and keeping it there once it's on. If anyone knows of a method, we'd sure like to hear from them.

The Mount Hope (Hamilton) control zone has been extended by a 10 mile radius, bringing the boundary close to the other side on nearby Rockton village. This has naturally caused us some concern.

Next year, it appears that our main runway may once again be crossed by a pipeline. It's hoped that work can be completed before flying begins. This N-S runway, by the way, is now licensed by MOT.

In closing mention should be made of two excellent social events. The "SOSA Spring Soaree" on June 1st hosted by Bob Richardson and his charming wife. And then we had "ZAP" (ZOZA ! August Party) with the Janiceks doing a great job. Now, if we could get in even more flying between parties....

from Gordon MacDonald SOSA

PILATUS B4

ALL METAL STANDARD CLASS

SINGLE SEATER

SUITABLE FOR AEROBATICS

GLIDE ANGLE 1:35

EASY HANDLING

VERY RESPECTABLE PERFORMANCE

EARLY DELIVERIES AVAILABLE

WILL HAVE CANADIAN TYPE CERTIFICATE

DETAILS, BROCHURE, PRICE ON REQUEST

MADE BY FAMOUS SWISS BUILDER OF

PILATUS PORTER AIRCRAFT

WRITE OR PHONE TO

OFFICIAL AGENT FOR CANADA

PIERRE ROCHETTE,

C.P. 1543,

TERMINUS,

QUEBEC, G1K 7H6

PHONE: (418) 529-4164 OFFICE

(418) 651-2939 RESIDENCE

PILATUS B4

CLUB NEWS

Most of our members were not aware of the excitement with which our 1974 flying season started. The Cobra-15 was on order and a lot of frantic hustle and bustle went on behind the scenes to ensure spring delivery and airworthiness (first of its kind in Canada).

Thanks to our CFI, Dieter Kiklas, the new plane finally arrived in early May. A group arranged to take an afternoon off work to take possession of the Cobra-15 in the Toronto harbour area.

To clear all the paperwork with customs, Claus Hallmann even stayed away from his business for a whole day. Dave Schofield sneaked away from his job to take the trailer down, and then I had to stutter covering for him when his boss was looking for him.

Dieter had the privilege of opening the crate and to the great disappointment of everyone found that the elevator was damaged. It was a shock but everybody recovered and found that it was not so bad after all. The elevator was repaired under the supervision of the MOT.

The mountain of paperwork finally cleared away, Juergen Risch applied the finishing touches to the Cobra by installing an Alpha 100 radio.

On June 8th we took our sleek looking ship out onto the take-off line, but it was early afternoon before the weather brightened up enough. Everybody was beginning to feel itchy and just dying to see the Cobra airborne.

We all held our breath when Dieter got settled in the cockpit and the towrope tightened. The Cobra rolled down the runway and took off ever so gracefully. A wonderful sight.

By now 14 pilots have flown the new ship and everybody is full of praise. We all feel that the Cobra has fulfilled all of our expectations.

That's a lot about our new Cobra but let's look at other activities in our club. After an early start followed by unsettled weather, we finally had THE weekend of the season (hopefully there will be more coming). The 20/21 July weekend our two ASK 13's logged seven hours each both days, the Ka took the record with 8 hours 23 minutes on Sunday. The Cobra did 6 hours each on both days.

Our congratulations to Bruce Finlay and Alfred Liepold, who both managed their 5 hours on this weekend, and to Dave Schofield and Gerald Bunder, who have their barograph traces to prove the height for their Silver 'C'.

The longest flight of 8½ hours was logged by Oscar Boesch who took his ASW 15 to Essex (near Windsor) and back. He landed at 7:30 pm only about 6 miles short of our field. He did not complete the declared task but completed over 500 km for his last Diamond! Excellent performance, Oscar!

from R. Wiesbrook AIR SAILING



To hell with the energy crisis!

Ground School Effect

In cooperation with St. Lawrence College in Kingston, Rideau Gliding Club presented "Ground School for Glider Pilots" during February, March and April of this year. The course was opened with a showing of "The Sunship Game" to a general audience, and admission was free. The following week the maximum allowable number of students, forty, were enrolled and jammed into the classroom for the first lectures.

People who had never flown before were introduced to gliding without having to go up in one of those things. A lot of myths and misconceptions were thereby dispelled.

Many "low-time" pilots gained basic knowledge which was presented in planned and orderly manner, clarifying a certain amount of hazy information picked up around the flight line.

The course also prepared several solo pilots for the DOT licensing examination. Experienced pilots obtained as much benefit as others from the well illustrated "Theory of Flight" lectures which included effective demonstrations of some basic principles of physics.

Since Rideau Gliding Club provided the lectures, the Club itself was rewarded financially to the amount of twenty times the hourly rate for evening lecturing. In this regard the Club is indebted to Joe Dennis, Hank Janzen and Walter Piercy for donating their time.

Members remained in touch throughout the usually closed season, which resulted in a flying start to 1974.

Maybe other clubs might benefit similarly. Approach the local community college, they will probably be quite receptive to your plans.

Trophy Flight Claims

Notices of the following flights have been received as claims for the BAIC, Canadair, and "200" Trophies.

JOHN FIRTH

2 June	Triangle	409 km	613.50 points
23 June	Goal & Return	210 km	315.00 points
16 July	Triangle	247.5km	371.25 points
21 July	Triangle	310 km	465.00 points
22 July	Pres. Area Dis	307 km	307.00 points

STEVE SIMON

21 July	Goal & Return	521 km	781.50 points
---------	---------------	--------	---------------

Pilots wishing to submit claims for their flights to be considered for the above trophies should send the details in preliminary form (within 14 days of the flight) to Jeff Tinkler,
364 Waverley Street,
Winnipeg, Manitoba,
R3M 3L3

FOR SALE

DUE TO AMALGAMATION OF PIONEER WITH YORK SOARING THE FOLLOWING AIRCRAFT HAVE BECOME SURPLUS AND ARE OFFERED FOR SALE.

1. STINSON L-5 TOWPLANE (190 HP) WITH TOW GEAR IN GOOD CONDITION. APPROX. 750 HRS. ON ENGINE. NEW C of A \$3750.
2. SAME AS ABOVE. APPROX. 850 HRS. ON ENGINE. \$3600.
3. BG-12B IN GOOD CONDITION, NEW FLIGHT PERMIT, NO TRAILER \$2500.

ALL AIRCRAFT CAN BE SEEN AT ARTHUR GLIDERPORT. FOR INFORMATION CALL WALTER CHMELA, WEEKDAYS TILL 6:30 (416) 925-5571. EVENINGS (416) 223-6487

YOUR LETTERS

Dear Bob:

The introduction of articles in French language will be welcomed by our Quebec members. However, I was sorry to see a departure from the standard SAC Instructor's Manual spin recovery procedure advocated in the article. We must agree to accept and standardize on "full opposite rudder, pause, then ease stick forward until spin stops, then gently recover from the dive". It has been shown over the years that this is the one method that will work for any aircraft. Just because some gliders are so docile that they will come out of a spin by use of variations on the correct procedure does not justify teaching these variations. It is possible that a student who has been taught such methods may one day become a statistic if he finds himself in a spin while flying a glider that will only respond to the correct procedure.

This may be an opportune place to mention that the SAC Instructor's Manuals are being translated into French by the Quebec Air Cadet League and this should assist in achieving standardization.

Regards,

T. R. Beasley

Dear Bob:

We wish to make some comments on the article on motorgliders. Ray Stafford Allen states that the Ka-7 with two auxiliary engines is a true motor-glider because it cannot take-off under its own power. We consider this statement to be at variance with the definition established by the F. A. I. which specifically states minimum take-off and climb standards for motorgliders. According to the F. A. I. the Ka-7 mentioned in the article is not a motorglider at all. We realize that motorgliding may mean different things to different pilots but the accepted international defin-

ition should still be valid. We believe that motorgliding is an entirely new ballgame and any attempt to force it into the framework of either pure gliding or power flying must eventually fail. There are a number of motorgliders on the market which do not sacrifice good soaring capability yet provide excellent power flying capability. We know because we own one.

Recently we had the opportunity to fly our Sperber to St. Raymond near Quebec City, home of the Quebec Soaring Club. Flight time from Bowmanville to St. Raymond was 4½ hrs. at an average speed of 90 mph. Fuel consumption was 2.2 gallons per hour. This is a very reasonable performance, as good or better than many small two seater aircraft presently on the market, but better fuel economy tips the scale in our favour. Yet once at the site, we soared in the company of an HP-14 and a Kestrel 19 and found that in the same thermal the Kestrel attained only 400 - 500 feet more altitude and the HP-14 barely got 100' above us.

On another occasion while attempting a diamond out and return in the company of a 1-34 and three 1-26's at Estrella in Arizona in weak local conditions, we had soared 150 miles, the 1-34 90 miles, while all the 1-26's had to land before they reached the 70 mile mark. As you can see our soaring performance did not have to suffer. On top of it all, when we had to swallow the bitter pill of realizing we cannot complete the task, we simply flew home at the cost of our pride and \$3. The retrieve for the other gliders needed four to five hours and about \$35. each.

We consider our machine to be what we call a second generation motorglider, being right in the middle performance range of presently available small airplanes and good sporting gliders. Machines of much higher performance in either mode are either being designed or flying in prototype form and it is within the capability of present technology to produce motorgliders with performance approaching that of current standard class fibreglass sailplanes without any sacrifice

in the power-on mode. To the contrary due to the better aerodynamic cleanliness, these machines may have cruising speeds approaching 150 mph, range of 500 miles or more at very low power and fuel consumption figures. Contrary to the Ka-7 mentioned, we believe that our machine is a true motorglider already and we look forward to fly the coming third generation of motorgliders with excitement and expectations of even more enjoyment.

Best regards,

Elemer Balint

INFLATION HITS BADGES

In the new listing of supplies on page 30 the Clutch Back "A" badge is up from \$3.50 to \$5.00. It can be assumed that as new supplies of the other badges are ordered similar increases will be effective.

Scheduled deadline for material for the November - December issue of FREE FLIGHT is October 24th. Mail material as early as possible to

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

Proposed deadlines for future issues are as follows:

January - February	December 16/74
March - April	February 21/75
May - June	April 18/75

The Aviation Weather Service at Toronto have started a Soaring Bulletin for glider pilots on the weekends.

By 11 am the bulletin will include the maximum temperature, trigger temperature, time of trigger temperature, vertical extent of thermals and an estimate of the duration of thermal activity.

The number to call at Malton is 676-3026

We have not had any reports of this service being provided in other areas, check with your local weather office to see if this type of bulletin is to be made available in your area.

The June issue of Canadian Aviation published by Maclean-Hunter devoted a number of pages to soaring, including the front cover photo of a 2-32.

In addition to articles on gliding and what makes glider pilots the way they are, there was a directory of sailplanes and a listing of the gliding clubs in Canada. This may account for the number of visitors you have been having at your field since the magazine came out in June.

FOR SALE

L SPATZ 55
with open trailer
and barograph

C of A to June 1975

\$4,000.00

CONTACT:

Peter Flanagan,
160 Cherryhill Drive,
Apt. 1217,
London, Ontario
(519) 433-1304
or
Peter Lambert
(519) 451-9521

What about the Pilot?

EVEN WITH THE BEST ACCIDENT PREVENTION MEASURES IN THE WORLD, IN GLIDING, AS IN POWER FLYING, IT IS HARD TO ENVISAGE THAT WE WILL EVER REACH THAT IDEAL SITUATION WHERE NO ACCIDENTS HAPPEN.

SO ALTHOUGH WE MUST CONTINUE DOING OUR UTMOST TO REDUCE THE POSSIBILITY OF ACCIDENTS TO AN ABSOLUTE MINIMUM, WE HAVE TO LIVE WITH THE FACT THAT FRAIL FLESH AND BLOOD WILL ALWAYS BE EXPOSED, TO SOME DEGREE, TO THE RISK OF INJURY IN GLIDER ACCIDENTS. IT ISN'T MUCH USE PRETENDING THE RISKS ARE NOT THERE - THIS WON'T MAKE THEM GO AWAY. ON THE CONTRARY, A REALISTIC APPRECIATION OF JUST WHAT THESE RISKS ARE IN GLIDING, SHOULD HELP TO MAKE US EVEN MORE SAFETY CONSCIOUS.

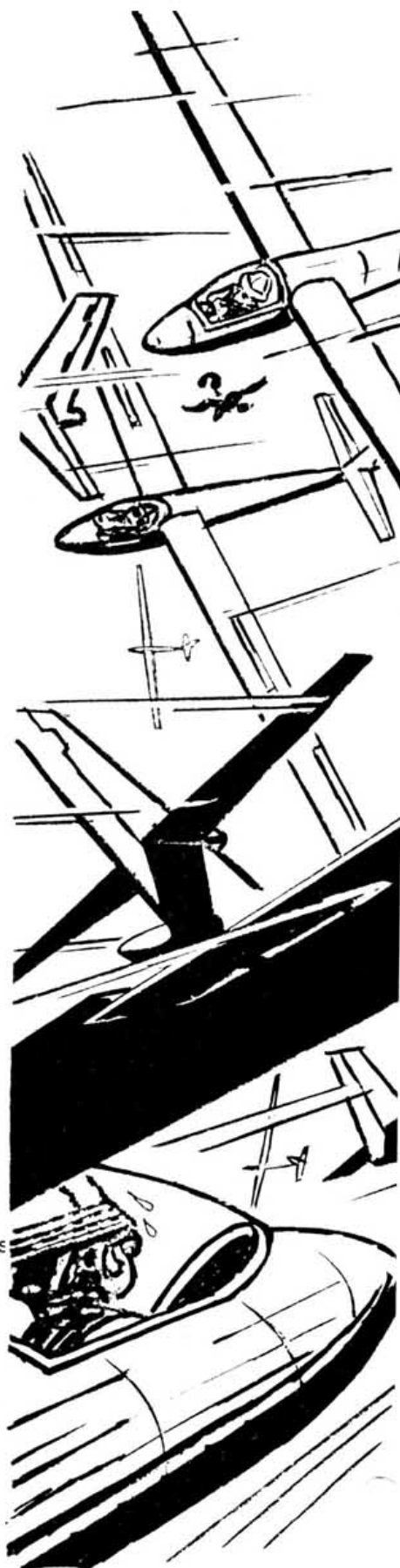
THE ARTICLE THAT FOLLOWS SEEKS TO STIMULATE JUST THIS SORT OF AN APPRECIATION.

"If you prang, you have a good chance of being hurt - badly." So said an experienced member of the gliding fraternity. And of course, he is quite right! Consider these facts of life in the world of gliding:

GLIDER DESIGN

CONSTRUCTION: Material used is of fine gauge or section, and the structure is, of necessity, as light as possible consistent with required aerodynamic and ground handling strength. As well, the wood and fibreglass generally used in glider construction is brittle. The overall result is that the structure has comparatively poor energy absorbing characteristics, particularly in the case of wooden gliders.

SHAPE: Fuselage cross section is kept to a minimum to reduce drag and provide the best Lift-Drag ratio. As a result, there is little room under the pilot's seat for shock absorbing or cushioning material. Modern high performance single-seat sailplanes such as the Kestrel, Libelle and Cirrus, all have a reclining pilot position, with only two to three inches between the underside of the aircraft and the pilot's posterior. If a parachute is worn, it is of the back-pack type so as to contain the pilot within the limited fuselage height. Because of this lack of protection underneath, the pilot's back is particularly vulnerable to injury. This is especially so in non-sprung, non-retractable, undercarriage gliders such as the Boomerang, Kookabuura, Nymph, Cherokee etc., where the pilot's spine is close to the initial point of contact with the ground. In reclining type sailplanes, the pilot's legs and feet are also very vulnerable - there is virtually no protection in front of them - only the light weight shell of the nose.



UNDERCARRIAGE: The single main wheel undercarriages fitted to most types of gliders, means that the landing wheel is in the centre line of the aircraft - in single seaters, the same line occupied by the pilot's spinal axis. In most gliders too, the wheel is positioned slightly in front of the aircraft's centre of gravity. This is usually close to the position of the pilot's seat, and the result of these two factors is that any heavy impact taken on the main undercarriage is transmitted directly to the pilot's spine.

TYPES OF OPERATION

LAUNCHING: Winch, auto-tow and reflex launching methods all place a glider in an extremely vulnerable situation in the event of a power failure or cable break. From the low air speed, steep nose-up attitude, in which a glider can be placed in this situation, rapid recovery action is necessary to prevent a stall and a very heavy landing. At a greater height, a resulting stall can lead to a spin if an incorrect recovery technique is used. Aero-towing, on the other hand, does not have the same problems, though it is more costly. Rope breaks are unusual, and generally occur before the glider begins to roll. Aero-towing these days with synthetic fibre ropes, is a comparatively gentle operation.

VOLUME OF AIRCRAFT MOVEMENTS: Glider flying involves many more take-offs and landings on an hourly basis than power flying, because there is some truth in the old saying that "every landing is a forced landing". For this reason, there is a proportionally greater exposure of pilots to near ground flying. This is manifested in the fact that the number of launches, rather than the number of flying hours, is used as a measure of a pilot's experience. Many gliding clubs in Australia too, operate from rather inadequate areas - in some cases, gullies or ditches cross the club's paddock. A cable break, or a

misjudged landing in these circumstances, can be doubly hazardous.

IN-FLIGHT RISKS: Good thermals attract gliders like bees around a honey pot. In some cases as many as 15 to 20 gliders could all be working the same thermal. A good thermal will usually provide adequate vertical separation, but when an inversion puts a lid on the top of it, the top layer can become a very hazardous slice of airspace, with a high risk of collision.

Cloud flying is not legal in Australia. But as some pilots have learnt, it is quite possible to be drawn up into a large cumulus cloud while thermalling just beneath it, especially in a glider not fitted with powerful speed-limiting air brakes. The pilot is then faced with the very real danger of disorientation, loss of control and exceeding the glider's design limits. In this situation it is not surprising that gliders have broken up in flight. Other dangers inherent in being caught in cloud are that of hypoxia if carried too high by convection, hail, severe turbulence and the risk of a mid-air collision with a powered aircraft operating under Instrument Flight Rules.

COMPETITION FLYING: The stress in competing in a major gliding event can easily push a pilot beyond what he would normally regard as safe operational limits. It may tempt him to:

- *Fly the glider beyond its design limits
- *Prolong the flight past the time when there is enough daylight left for a safe landing in an unfamiliar area.
- *Venture over unsuitable terrain with insufficient height in hand.
- *Deally committing himself to a landing until too low to manoeuvre with safety.

OUTLANDING PROBLEMS: A glider or a sailplane, by its very nature, is often forced to "land out". In this situation the pilot has to choose the best looking area that is available within safe gliding distance of his position. But this is usually in a totally strange paddock, with the ever present danger of

concealed rocks, ditches, roots, stumps, and slopes - not to mention power lines. The single wire power lines so favoured by most rural electrification schemes are particularly notorious hazards - their supporting poles are widely separated and frequently concealed amongst trees, so that it is almost impossible to detect the "run" of the power line from the air. A pilot can be faced with all these problems close to the last light at the end of many hours of flight, during which he might have been flying at high altitudes. Thus, as well as being very tired, he might be suffering from the effects of hypoxia and not seeing too well.

Outlandings too, even if entirely successful from a flying point of view, can be made in sparsely populated areas where communications are few and far between. And with our rural economy as it is today, some farmhouses and homesteads are deserted and without a telephone. As well as proving a profound disappointment to an overtired glider pilot, an extreme case could even pose quite a serious survival problem. Most readers will remember the case of the Blanik pilot, making a local soaring flight from Bond Springs in central Australia, who became lost and was forced to land out at last light in a hostile, desert environment. He had no water or survival equipment of any kind, and was in the final stages of dehydration and heat exhaustion when he was finally found - days later.

Well then, what about the pilot now that we have looked squarely at some of the facts? Statistics that we haven't yet considered show that, in Australia between 1951 and 1971, a total of 119 glider accidents were reported, involving 151 occupants. 25 of these accidents resulted in serious injuries and 15 in fatal injuries. In the 25 accidents that produced serious injuries a total of 14 out of 29 occupants involved, sustained a fracture of the spine. From these figures it is apparent that if an occupant of a glider does receive serious injuries, there is a 50% chance that he will have fractured his spine.

It is also plain from the injury patterns that have been observed, that

even comparatively minor accidents in gliders can cause back injuries of some type.

For this reason, pilots who are involved in heavy impacts, or even heavy landings in gliders, without apparent injury, but who subsequently experience pains in the back, should seek medical attention without delay. You cannot be too careful when dealing with the possibility of injuries of this sort!

Gliding is a fine sport which enables many people who would not otherwise have the opportunity, to savour the extreme satisfaction of piloting an aircraft on their own, and of pitting their skill in a unique way against the forces of nature. And provided the regulations and accepted procedures governing the operation of gliders are faithfully observed, the sport can be engaged in with a high degree of safety.

But as with all forms of flying, the penalties for lack of preparation and the taking of undue liberties can be severe indeed. In any type of human activity of course, there is a constant temptation to take things for granted and to make "short cuts", once a reasonable standard of proficiency has been attained. Experience has well and truly attested to the fact that the old truism "familiarity breeds contempt", is a very insidious foe of safety in the world of aviation.

So without in any way allowing the facts quoted to cast a shadow over their enjoyment of the sport, gliding enthusiasts would do well to regard these statistics as a stimulus to take even more than usual care in all aspects of their operations.

Reprinted from AVIATION SAFETY DIGEST,
Department of Civil Aviation, Australia.



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

LIST OF SUPPLIES

<u>ITEM NO.</u>	<u>DESCRIPTION</u>	<u>PRICE</u>
1.	F.A.I. Soaring Badges	
	(a) Button - Screw Back	\$3.25 each
	(b) Button - Clutch Back "A"	5.00 each
	"B"	3.50 each
	(c) Pin with safety catch	3.50 each
2.	F.A.I. Soaring Badges - "C" & above. (Prices in item 5.)	0.25 each
3.	F.A.I. Soaring Awards - Rules (Booklet)	5 for 1.00
4.	F.A.I. Sporting Code - (Booklet, English & French)	1.50 each
5.	S.A.C. Application for F.A.I. Awards (4 pages)	0.10 each
6.	S.A.C. Instruction Manual:	
	(a) Part I, Instructor's Guide	0.75 each
	(b) Part II, Air Instruction Notes	0.50 each
	(c) Part III, Student Notes	1.00 each
	(d) Air Cards (11 Plastic Laminated)	3.00 set
7.	S.A.C. Tephigram & Weather Briefing (Booklet)	0.25 each
		5 for 1.00
8.	S.A.C. Weather Briefing Form N-052 (8½ x 11 sheet)	No Charge
9.	S.A.C. Application for Official Observer	No Charge
10.	S.A.C. Blazer Crest (Navy Blue)	8.50 each
11.	S.A.C. Decal	0.25 each
12.	S.A.C. Tie (Navy Blue with Glider Design)	2.75 each
13.	S.A.C. Cap (Red, Green or Blue with White Crest)	3.50 each
14.	S.A.C. Glider Pilot Log Book:	
	(a) Single copy	2.00 each
	(b) In quantity of 25 or more	1.50 each
15.	F.A.I. Cloth Badges - 3" diameter - C Badge	0.75 each
16.	F.A.I. Cloth Badges - 3" diameter - Silver Badge	1.50 each
17.	F.A.I. Cloth Badges - 3" diameter - Gold Badge	1.50 each

NOTES

- (1) Item 2 available only from Mr. K Round,
10 St. Remi Drive,
R. R. 3, Ottawa, K2C 3H2.
- (2) Item 5 available also from K. Round.
- (3) Items 6(a), (b) & (c) make up the S.A.C. Manual.
- (4) Item 6(d), Air Cards size 5" x 8"
- (5) Make all cheques payable to S.A.C.