



*The concourse of soaring nations:
Pilots, crews and spectators stand facing
the dais while dignitaries announce the
official opening of the 15th World
Gliding Championships.*

U.S.S.R.

FINLAND

The coldest June in 100 years threatened the World Championships in Finland so seriously that organizers and pilots alike were holding their collective breath. Even after the minimum requirements were met, it was evident that weather factors had contributed to many misadventures of top-seeded pilots.

Top Pilots

George Lee of Great Britain captured the Open Class title in a Schleicher AS-W 17 by a significant margin over Julian Ziobro and Henryk Muszczynski of Poland who flew *Jantar 2*'s. Ingo Renner of Australia edged out Gunnar Karlsson of Sweden, both flying PIK-20B's, by the tiny margin of eight points for the Standard Class Championship. A larger gap of 124 points separated George Burton of Great Britain, third, also in a carbon-spar PIK-20B. Renner's substantial prize was his very own PIK-20B, a first in the history of the Championships.

The U.S. team had three pilots in the top ten of the combined classes—Richard Butler at fifth in his own Glasflügel 604, Richard Johnson in a borrowed *Jantar 2* at seventh in the Open Class, and Tom Beltz in a borrowed PIK-20B at fifth in the Standard Class. This was an unofficial national standing matched only by Poland. Ross Briegleb placed 29th in Standard with a Standard *Jantar*, loaned, as was Johnson's ship, by the Polish manufacturers through Glider Aero, their U.S. distributors.

Istvan Hahner of Hungary won the World Class Cup in a 19-meter *Jantar 1* and placed 21st in the Open Class rankings. Only three 19-meter sailplanes competed.

(Continued next page)



has very unusual weather

text and photos by
TOM PAGE

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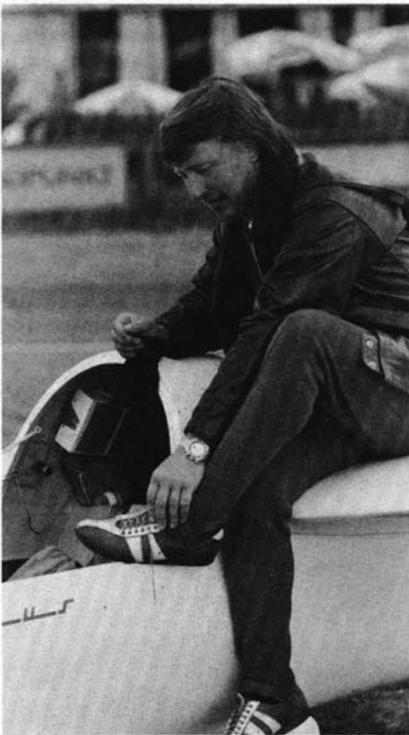


"Drat that gnatt!" Dick Johnson fine-sanding the leading edge of his Jantar 2.

The Finns

Imagine carving an international soaring site out of the woods thirty miles from International Falls, Minnesota, complete with telecommunications and TV monitors on which the scoring computer displayed scoring changes almost on a real-time basis, and you have a fair notion of the energy of the Finnish hosts. Over a two-year period they cleared the disused WWII airfield of a 20-year regrowth of native pine and birch, built a motel, installed three saunas, and added enough temporary facilities to house nearly 1100 people on site, counting many in caravans and tents. They prepared about 900 meals, ranging from adequate to excellent, at each sitting. Some 200 obliging Finns made it all run.

(Continued next page)



A fastidious Russian: Jevgeni Rudenski carefully removes his shoes before entering cockpit of his sailplane.



The race begins here: Start window monitors and their apparatus have become a familiar

sight at soaring contests the world over.

HOW TO OUTLAND IN FINLAND DON'T!

Finland is composed of trees and rocks and lovely blondes who make charming but unexpected moves. Räyskälä itself is right in the middle of the biggest forest area in the southern part of Finland with almost no safe outlanding fields within 0 to 10, or 0 to 25 kilometers, depending on your approach direction—that is except lakes.

If you have to land in a lake, land parallel to the shore and not so close as to bunt under, becoming a mud submarine. Whether you touch water still flying or just stalling, you may bunt under. If you bunt under, don't panic and open the canopy; you'll get unduly wet. Wait for the ship to bob back to the surface, open the canopy, and paddle into shallow water.

If you want to stay dry, pick a field before you get too low and look at it carefully. Most of the fields are drained by ditches from 6 to 18 inches deep, sometimes no more than 15 feet apart; landing across them can be a nuisance to your landing gear.

If the field is surrounded by trees, watch out for the rolling turbulence at the edge of the tree line. If you get through the turbulence, watch out for the powerlines which often cross the fields rather than running along the roads. If you get over (or under) the powerlines,

watch out for the telephone lines which cross the fields at different angles from the power lines. If you get over (not under) the telephone lines, watch out for traffic on the rural roads which pops out of the trees for short distances.

If you try to land on a road, remember they are not very straight. If you find a long enough stretch, watch out for all of the above. If you get over or under or past all of the above, watch out for the signs marked "Moose Crossing." If you get over the M.C. sign, watch out for the moose (mooses, meece?). Remember, a dead moose is not accepted in place of a signed witness card.

If you make a successful landing, follow the telephone line you just missed to the nearest telephone and show the folks your little card printed in Finnish and asking them to help you call.

Ross Briegleb followed all these instructions only to land near the only house in Finland without a telephone, witnessed by the only old lady who couldn't read—even Finnish. So . . . fly straight ahead and climb.

Actually, there were 313 outlandings from some 590 contest launches. Major damage was inflicted on only one ship—Dick Butler's 604—but minor damage plagued several others, three of which had to drop out for lack of proper repairs or spares.

TABLE 1 WORLD CONTEST IN OUTLINE

	Standard Class — 46 Sailplanes							Open Class — 39 Sailplanes						
June 1976 date	16	17	22	23	24	25	26	16	17	22	23	24	25	26
Contest day	1	2	x	3	4	5	x	1	2	3	4	5	6	7
Task Called	TRI	OAR	PAD	PAD	TRI	TRI	OAR	TRI	OAR	PAD	TRI	TRI	TRI	TRI
Distance (km.)	120	153	—	—	393	300	203	199	181	—	526	481	349	235
Scored for	Spd.	Spd.	0	Dist.	Dist.	Spd.	0	Spd.	Spd.	Dist.	Spd.	Dist.	Spd.	Dist.
Best Speed (kph)	55.2	98.1	—	—	—	94.6	—	64.2	97.1	—	112.0	—	100.3	—
or Distance (km.)	—	—	—	731	297	—	64	—	—	408	—	459	—	219
Result: Finished	25	44	—	—	0	41	0	5	39	—	37	0	37	0
Outlanded —	21	2	42	46	46	5	28	34	0	38	1	38	0	36
— Over 100 km.	0	2	4	46	32	3	0	10	0	12	1	38	—	21
— Under 41 km.	2	0	4	0	0	0	3	1	0	9	0	0	—	0
Could not leave	0	0	4	0	0	0	18	0	0	0	0	0	—	0
Did not compete	0	0	0	0	0	0	0	0	0	0	0	1	2	3
Day factor	.586	1.0	0.0	1.0	.891	1.0	0.0	.269	1.0	.115	1.0	1.0	1.0	.689
Penalties	2	3	—	0	0	2	—	3	2	0	0	2	0	0

Note: TRI—Triangle, speed; OAR—Out and Return, speed; PAD—Prescribed Area Distance.

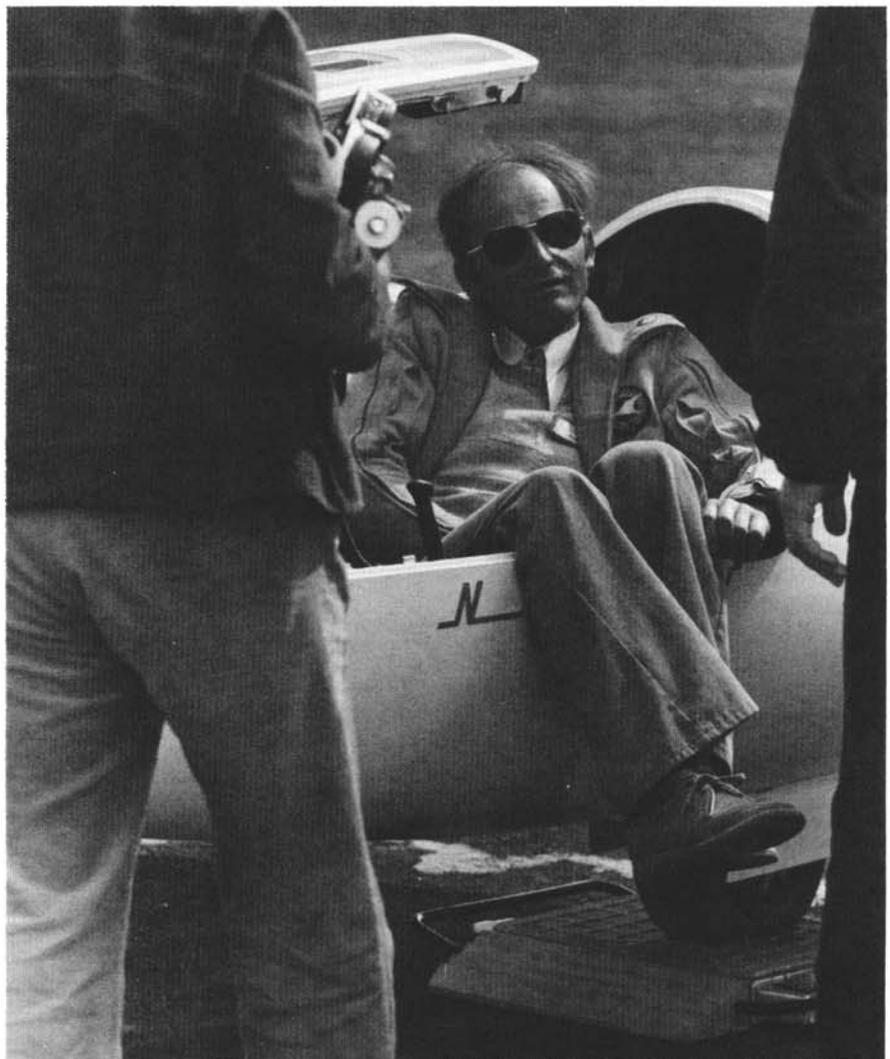
The Weather

One can be less than overjoyed at the coldest June in 100 years without insulting the Finns. After all, they import all their weather rather than handcrafting it during the long winter months. The weather at the Nummela practice site was wettish; the practice period at Rayskala was most promising. But only three of the 13 scheduled contest days looked like the travel posters; six were either unflyable for workable tasks or totally washed out; and four permitted only devalued tasks for one or both classes or aborts for Standard (see Table I). Thus, the Open Class flew seven days—three of them devalued; the Standards attempted the same seven days—two were significantly devalued and two were devalued to zero—net, five.

The weather was, therefore, a significant generator of long-shot gambles by both task setters and pilots. With long shots a lot of people lose who are not normally losers in a game of such high skills.

Opening Day Gala, June 13th

Ten thousand Finns—so say the organizers—watched the opening air show: three PIK's a-picking, two Pitts a pitting, two sticks of paratroops a-jumping, nine Saab Safir's a-rolling, five Fouga Magisters V-tailing, one MIG-21 a-mugging, one Saab Draken after-burning—and a ptarmigan under a birch tree. So, who worries about a sudden rain shower!



To make certain no one over-ballasted to fly a little faster, a last-minute sampling of sailplanes was weighed just before each task. Here Nimbus designer Klaus Holighaus adds his weight to the Nimbus he will fly so that the committee can be sure this Nimbus won't be carrying more weight than its designer said it should.



"Is the U.S. recession getting worse?" asked one spectator after seeing Tom Beltz's hat.

June 14 — Canceled

A middle-level stratus blocked local convection all day while only 10 kilometers east a clear blue sky set off perfectly usable cumulus.

June 15 — Canceled

Intermittent rain. Refer to Table 1, "World Contest in Outline," for day-by-day details of tasks and completions. Daily standings by ranks are shown in "Final Standings."

June 16 — First Competition Day

A promising weather preview by Robin King, transplanted English meteorologist married to a Finnish lady, tapered down by morning to gusty, dusty, 20-knot winds, ragged cumulus under patchy cirrus, and the need for relatively short triangles to the east. Both classes were launched, Open first, into a sky marked by short streets.

Malcolm Jinks of Australia and some half dozen other pilots had done their homework in the OSTIV paper by Kuettner which described the general model of conditions for a thermal cloudstreet wave. Jinks was able to make a running start from a clear-air wave between the streets at 1200 meters, hit the gate, and pull back up to 1160 meters into another clear-air wave. He jumped to another which took him to 1650 meters a few kilometers out-but waves were a brief local thing. (Continued next page)

THE INTERNATIONAL RULES— THE STATE OF THE ART

Rule-making is an art. Let's not burden science with that responsibility; it already has enough on its conscience. The artisans of the rules are in a spasmodic race with the technology of soaring, with the ingenuity of pilots, with the cleverness of manufacturers, and even with the experience levels of contest organizers. Finland, 1976, was no exception.

What's right? First, the contest issues that the rules seem to resolve well: Day devaluation seems to be working. Although it worked with severity at Räyskälä, no one quarreled with the need for devaluation, even to a mere 11.5 percent on a particularly frustrating day. Also, elimination of distances under 40 kilometers from scoring is unchallenged.

The resolution of differences of interpretation through the complaint process in which the Competition Stewards advise the Competition Director (rather than the formal protest involving a vote of Team Managers as International Jury) is preferable. The Stewards at Räyskälä had to insist that they be consulted at first. Later the Competition Director found them extremely useful in resolving complaints on technical and factual grounds rather than by the political complexities of Jury voting.

Unfinished Rule Business: The present rules aggravate rather than reduce the inequity of start order

on a Prescribed Area Distance task in which the front runners are launched first. Australian contestants have become more amiably disposed toward P.A.D. tasks by a bonus (of kilometers) for late starters in proportion to their lateness. This bonus is based on mean speeds made good by the early starters—as relayed back by ground observers out some 50 kilometers on the principal first legs.

Ballast is another growing headache for Contest Directors. It is not solved by sampling weights to ensure conformity to airworthiness certificates. Pilots are competing, manufacturers are competing, and national airworthiness authorities are in conflict on a field of battle only feebly influenced by Competition Directors armed with little discretion and no criteria for its exercise.

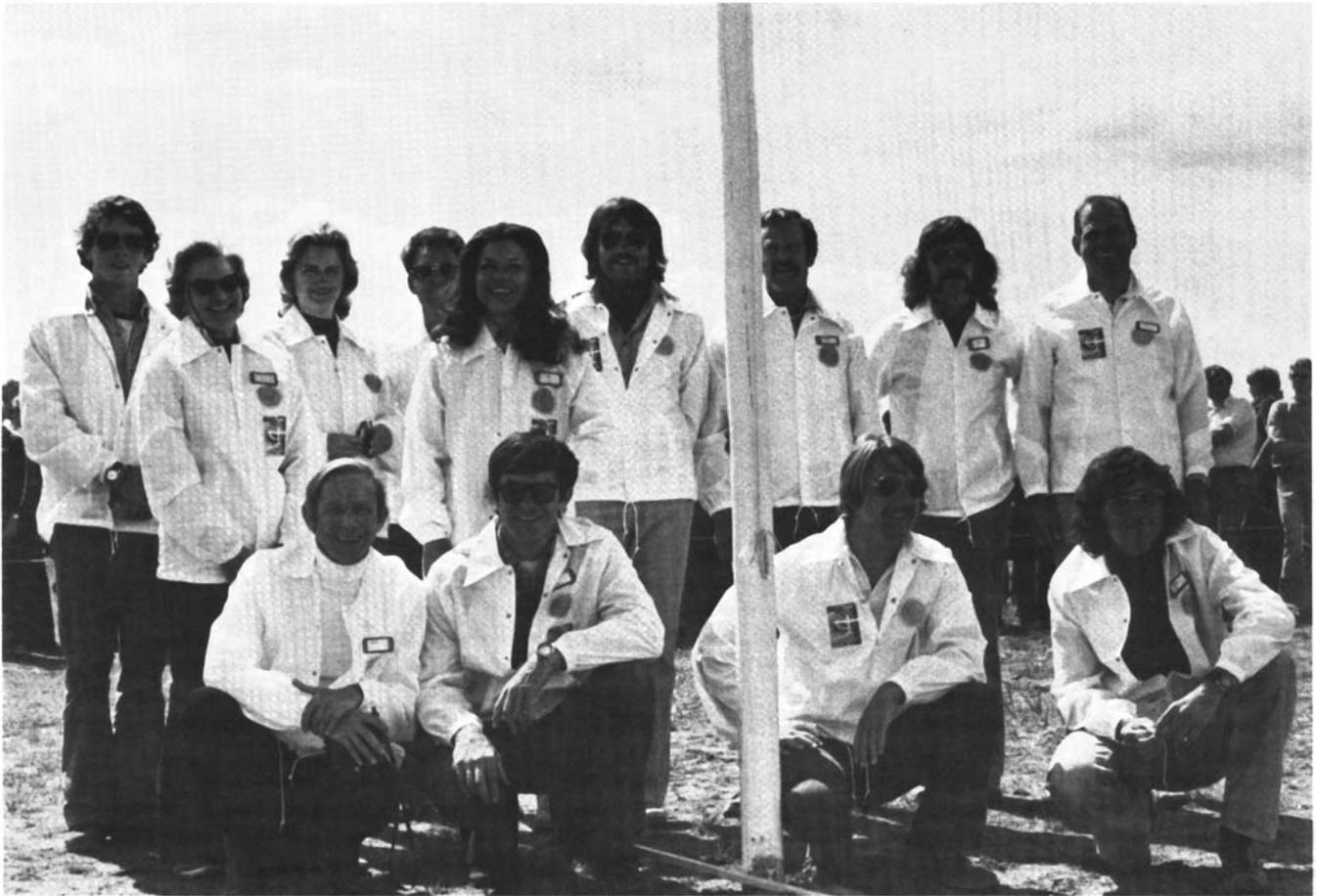
On a smaller scale the ambiguous standards for turnpoint verification deserve better treatment by the rules.

Finally, the task-setting procedures need to be considered. Pilots get the impression, especially when their hindsight has been strengthened by an unflyable or severely devalued task, that a mixture of national pride, meteorological machismo, and sometimes overlong memory of the ease of outlanding slower ships have counted in task setting. As in a well-known sanctification process, the useful role of Devil's Advocate might be examined.



Dick Butler and crewman intently study attach fittings and controls of horizontal. After repair, Butler decided not to take off when elevator control didn't feel right. His suspicions proved

well-founded—the elevator reportedly would have malfunctioned under load. He was soon in the air when things were put right.



The team assembled around the U.S. flagpole at the opening ceremonies on Rayskala airfield: Top row (crews)—Walker Mathews, Alice Johnson, Ada Gyenes, Charles Gyenes, Sarah But-

ler, Herb Mozer, Dave Andrews, David Fletcher, and Mahlon Weir. Not shown are Sherry Reed and the three sequential team managers, Jim Herman, Tom Page, and Dick Schreder.

The rest of the story was foretold by Dick Johnson's cryptic transmission near the first turnpoint: "Lots of glass on the ground."

Among the first to miss a vital thermal was Franciszek Kepka, the experienced Polish pilot. He landed only 18 kilometers out, made a hasty retrieve, but failed to reach the launch line by 1530 hours, the announced closing time. He was among two who failed to earn any points by landing closer than the minimum scoring distance of 41 kilometers.

The contest organizers had been permitted by the rules to choose whether to permit restarts after off-field retrieves—and had done so. Team managers during the practice week had taken an advisory vote, 17 to 3, against retrieved restarts, but the organizers held to their announced intention, while pointing out that they would rather effectively deny such restarts by closing the launch line relatively early.

The shorter task for Standards allowed 25 of them to squeak home—Kuittinen of Finland in a PIK finishing at the top with 55.2 kilometers per hour and Reichmann of Germany at the bottom with 35.6 kmph. Outlanders included veterans Hammerle and Wodl of Austria, Tom Beltz, and Ross Briegleb. The Standard day was devalued to 58.6 percent.

Only five Open ships returned, led by Kuil of the Netherlands at 64.2 kmph only to find his first world contest day devalued to 269 points instead of 1000. Ragot of France drifted in at 41.9 kmph out of a clear sky nearly an hour after the fourth Open ship. Dick Johnson landed only 26 kilometers short of the finish for 6th place and Dick Butler went nearly as far for 8th rank.

Devaluation of the day prevented the acute losses previously suffered by outlanders when the task completion rate was low, so Johnson, Butler, and Beltz remained in good competitive position.

June 17 — Second Competition Day

Despite relatively short Out-and-Return tasks to the northwest, the gusty winds and patchy altostratus made some pilots grumble about a "kamikaze" return into the teeth of forecast cumulo-nimbus.

The worst held off long enough for all but two Standards and all the Open Class to come back for the first 1000-point day. Renner of Australia showed early power by burning back at 98.1 kmph, well ahead of Firth of Canada at 90 kmph. Beltz was fifth and Briegleb 34th. Ross said that, compared to other ships, he found it difficult to climb the borrowed Jantur Standard in the turbulent tops of thermals, although it seemed to run between thermals along with the best.

George Lee of Great Britain took his first 1000-point day, but Dick Butler's close second (only 0.3 kmph off the pace) put him in cumulative first place. Johnson's good position left him in 11th place in a tightening field.



Alice Johnson and Charlie Gyenes roll Dick Johnson out on the runway.

June 18-21, No-Contest Days

A succession of occluded waves loaded with marine air slid across the contest area. Only the 18th might have been flyable, but not until about 3:00 p.m. locally. The possibility of a minimum, or perhaps even the loss of a contest, began to be considered by the informal odds-makers—that is, almost everyone.

June 22 — Open Class Third Day (No-Contest Standard)

The Prescribed Area Distance task (needed to meet contest requirements), which had been called on the 21st but

canceled during a thunderstorm, was rescheduled for both classes. Usable lift was slow to develop and launches were held up until a second sniffer sailplane found 2 m/s to cloudbase at 900 meters. Butler, launched first because he ranked first, was soon back on the ground, but other Open Class ships quickly moved out in very chancy conditions. Butler was relighted before the Standards were launched.

Soon Dick Johnson was heard giving his crew (composed of Alice Johnson and Charles and Ada Gyenes) instructions for a quick retrieve and relight.

Many of the Standard Class failed to stay up as the system cycled down; nineteen were counted on the ground when a rain shower shut off all activity.

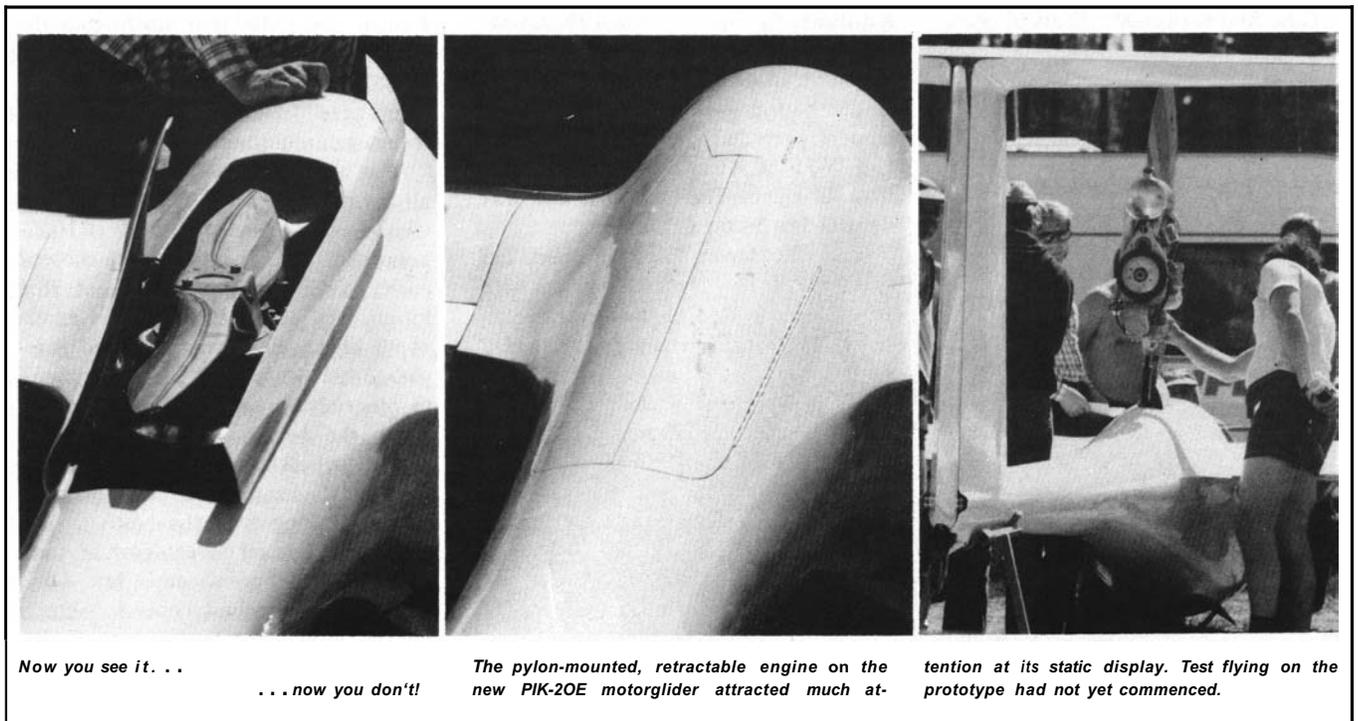
At 3:12 p.m. Butler phoned Team Manager Dick Schreder to report his fuelage broken, the landing gear wiped out, and the horizontal tail damaged in a crosswind landing. Schreder began mobilizing his repair resources. [See "The Game's the Thing"]

Johnson and some five other Open ships reassembled and restarted before 5:00 p.m. when weak cu's appeared in the wake of the shower. Four Standards finally relanded—too late for re-lights.

Final count on the lottery found 12 Open ships making distances ranging from Fitchett's incredible 408 kilometers down to Zegel's bare 100 to permit a highly devalued day—only 115 top points. Only four Standards exceeded 100 kilometers and none of them were sorry to miss a contest day fraught with so much luck, good and bad.

June 23 — Open Class Fourth Day, Standard Class Third Day

The forecast sounded like the pre-contest promise: great. Expected were some cloudstreets, stronger to the west and north, with a west-coast sea breeze front for good measure. And it turned out well.



Now you see it . . .

. . . now you don't!

The pylon-mounted, retractable engine on the new PIK-20E motorglider attracted much at-

tention at its static display. Test flying on the prototype had not yet commenced.



Sara): Butler: a classy lass shining plexiglass.

THE STATE OF THE TECHNOLOGY

The weight saved by use of carbon fiber spars and the consequent higher available ballast is the only major technical innovation in this world contest. Most of the PIK-20B's flown in Standard Class had this feature. The PIK-20D, displayed in prototype, also uses carbon fibers in the cockpit rim.

The multiple-mode electronic variometers and venturi-type or Braunschweig-type total energy sources are almost universal. Some Schuemann-type internal compensators were used also.

Full-span, in some cases differential, interconnection of flaps and ailerons is increasingly common in Open Class. One of the first 15-meter ships to incorporate such a feature is the PIK-20D. It was found to lead to very agreeable low-speed handling qualities in the prototype available at the contest. But these are achieved in the D model at the expense of the 90-degree glide control flap setting which led to the considerably lower landing speeds of the B model. The D model, however, has full dive brakes in addition, and that model

The Open ships were given a long 527-kilometer triangle west and north, but the Standards were handed the previous day's Prescribed Area Distance chart, updated a second time to ensure that contest requirement. Thus, the Open Class had flown its distance on the worst possible day and the Standards on what proved to be the best possible day.

The Standards were launched beginning at 10:45 a.m. and several were still in the air at 8:00 p.m. in the long, long, northland day. George Burton flew an incredible 731 kilometers; even the shortest outlander had 387 km.

The Open ships were launched into weakening local conditions; two had to relight to get away. All but one starter got back and George Lee clocked a dramatic 112 kmph. Dick Johnson "stayed high" with 108.2 kmph to place 7th overall, but Butler was slower, moving down to 6th overall.

Contest requirements were now met

is aimed at the European market in which, unaccountably, the glide-control flap is still viewed with some mistrust.

The articulated flap of the Glasflügel *Mosquito*, which yields positive and negative settings and, beyond a positive camber change limit, drag for glide control as well, has yet to appear in competition.

Similarly, automatically variable interconnection of camber-changing flaps and elevator, of the type assigned by Wil Schuemann to Schleicher, is still to be measured as a competitive advantage. The PIK-20D prototype has a spring-loaded interconnect from trim setting to flap setting which accomplishes a part of this objective, but still needs work to improve cockpit convenience before the serial model production.

The performance gains of the latest generations of Open and 15-Meter ships are pushing against what seems to be a plateau. The improvements likely beyond this juncture seem to lie in the direction of handling qualities which, until recently, have been considered secondary in the performance race.

for Open Class but the Standards needed one more day—any type—with three days left on the schedule.

June 24 — Open Class Fifth Day, Standard Class Fourth Day

Both classes were handed long Speed Triangles—north, then east—in a sky expected to turn to blue thermals by mid-afternoon and be overcast by high cloudiness from the west late in the day.

Early thermals were much weaker than expected and not high enough for speed starts. Enormous gaggles developed. One wise Norwegian owl simply pulled out of the line to let the "house thermal" thin out. Kuil of the Netherlands and Neubert of Germany traded paint from their wingtips in the Open ship gaggle, but inspection upon relanding showed no damage and they were relaunched.

Cumulus developed 30 kilometers out on course to tempt the starters to beat the high overcast, now visible in the west. But the day turned into a scratching contest. The best Standard pilot, Karlsson of Sweden, was nearly 100 km short and the best Open pilot, Jinks of Australia, was 20 kilometers short. Eighty-four more outlandings were recorded, including minor damage to the Russian Pasetnik's Lithuanian LAK-9 which the Finnish airworthiness inspector later ruled to be inadequately repaired and could not be flown.

The day was devalued for Standard Class to 391 because only 32 of 46 exceeded 100 kilometers.

(Continued next page)



World Champion! George Lee, Open Class Great Britain

THE GAME'S THE THING

Last month, near the midpoint of the World Championships in Finland, hopes rose among U.S. rooters that Dick Butler might win the Open Class World Champion title. Butler had taken an early lead and stood #1 in overall standings. But late Tuesday afternoon on June 22nd, pinch-hitting team manager Richard Schreder got a phone call from Butler with the devastating news that a bad outlanding had broken the pilot's Glasflügel 604 fuselage apart and torn out its landing gear. It looked as if Butler were out of the contest.

But Schreder was ready. One of the first things he had done upon arrival at the contest site was to get verbal commitments for repair assistance in case of just such an emergency. "Everyone came through with flying colors," Schreder said. When Butler and crew trailered the remains on the field an hour and a half later, some of the world's finest experts were ready and waiting with tools and materials. The drama was recounted next day in the *Ground Loop*, the official daily bulletin:

"... Butler had no time for



Glass Doctor: Dr. Gerhard Waibel (left), designer of the AS-W 17, was one of a notable group of international experts who donated their efforts to Dick Butler's stricken bird to fly again after heroic all-night repair work.

"Put a skid over it!" That's what they said when they saw the stump of the landing gear. But by next morning Manager Dick Schreder had it working again!



hesitation. He started repairs immediately. The plane was turned around, repair racks set underneath, and the work started. Dick has *sisu*, fighting spirit. This set fire in all the others . . . There were Dick Schreder (top pilot, designer, and constructor of all-metal gliders), Klaus Holi-ghaus (the rival of Butler on the German team, designer of the *Nimbus* and *Cirrus*), Gerhard Waibel (the famous designer of Schleicher AS-W sailplanes), Francois Ragot (Butler's French rival and member of the *Concorde* design group), Walter Schneider of LS fame, the repair group of Start + Flug, the repair group of Eiriavion, and at least one Swedish expert, Mats Johanson. . . .

"As the night wore on the doubts of spectators began to vanish. The broken fuselage was put in upright position and laminated. The scarf was warmed with lamps. [U.S. crewman Herb Mozer stayed up all night to make certain no bubbles formed in the layup—Ed.] The landing gear was more difficult to repair. But the fitter of Start + Flug

welded the tubes together in a couple of hours. He made a new landing gear using only the broken parts of the old one.

"On Wednesday morning the team continued its work. The plane was in one part now, but there was much to be done. The Standard Class was launched and the Open Class was on the runway ready to start, but Dick's big Glasflügel was still in the repair hangar. However, when the last plane of the Open Class was in the air, Dick was ready, too. The spectators gave a big round of applause.

"Dick had only a couple of hours sleep during the night; the members of his crew would have to wait to sleep until the next night at the earliest. Nevertheless, when the big glider took off for the task, the crew hit the road.

"All in all, it was a wonderful show of Finnish-style *sisu* from Dick and his crew, and an indication of seldom-seen sportsmanship and cooperation on the part of the international team which helped him get his damaged beauty up in the air after one hectic night."



Sarah Butler's beauty salon: Heat lamps, air driers and body-contour machines (rotary sanders) are applied to get the tail of Dick's 604 in shape again.

June 25 — Open Class Sixth Day, Standard Class Fifth Day

Another threat of invasion by high cirrus from the northwest induced the task setters to prescribe two flat triangles, west then east, passing just north of Rayskala on the second leg, for more moderate distances than the preceding day.

The high cloudiness held back, however, to allow some very strong performances. Only four Standard Class

ships landed out. Flying blue thermals and rarely getting over 1000 meters high, George Burton whistled home at 94.6 kmph, more than 12 kmph faster than Ingo Renner who was second for the day. Renner, however, had established a narrow eight-point lead over Karlsson in cumulative points on what was to be the last competition day for the Standard ships. This was Tom Beltz's lowest daily rank, 32nd, but his stronger early performances left him fifth in cumulative rank.

George Lee narrowly edged out Dick Butler by 0.5 kmph for first place in the Open Class for the day, but Butler held in 8th rank. Dick Johnson slipped to 11th overall with his placement at 32nd for the day, his lowest daily mark, but most of the Open speeds were very good, so his points were still good—804 for the day.

It was a lovely day for the spectators, with five and six ships on finish runs at the same time, all streaming ballast behind them.

June 26 — Open Class Seventh Day (Standard Class No-Contest)

During the previous night the warm front sector of another depression slid across the contest area complete with embedded thunder showers. The pilots awoke to a warm fogbound morning which looked hopeless. But the obligation of the task setters to play a “deal-dammit-deal” kind of meteorological poker with the lower ranking pilots rather than confer the laurels on the basis of yesterday’s standings, was recognized by everyone. Open Class launching was finally scheduled for 2:00 p.m. with Standard to follow 45 minutes later. The visibility was officially called five kilometers, but few prominent objects besides trees, trees, trees could be seen on the horizon.

A message from the British pilots aloft urged that the start gate not be

opened, but was not acceded to. At 2:45 p.m. the Open ships began to struggle northwestward under 1000 meters high on a 235-kilometer triangle. After the 3:30 p.m. gate time for Standards, only 28 could get away to land out; 18 others landed back.

A vigorous thunderstorm bucketed down on the contest field at 6:00 p.m. for nearly an hour. It had formed and moved in along the third leg of the Open Class triangle, so little hope was held for any finishes.

At 7:20 p.m., genial Tuomo Tervo, the Competition Director, was assuring anyone polite enough to listen, even unbelievably, that Finnish radar showed a group of sailplanes struggling toward Rayskala on the backside of the storm about 30 kilometers out. And so they were, 22 landing in wet fields with distances of 171 to 219 kilometers—the latter for Matousek of

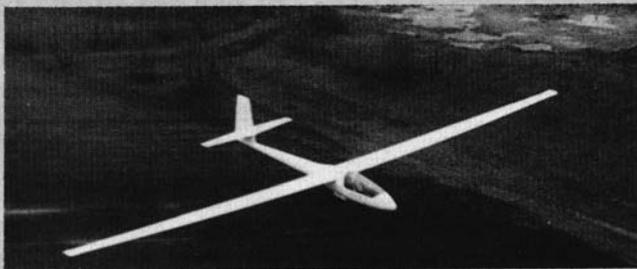
Czechoslovakia. Butler and Johnson both joined the large group in the 190-kilometer range to improve their cumulative standings. Lee held onto his top rank by landing near Butler.

After a minor hagggle over who landed where, quickly resolved by the aerial observation of Steward Jan Coolhaas of Australia, the 15th World Gliding Championship was locked into the Wang computer for the official scoring run.

Conclusion

By the closing ceremonies everyone was so relaxed that the event had all the amiability of a Chinese fire drill. The concluding dinner topped the day and the contest. It ended in a wild trading session in badges and pins. The U.S. Team badge (which used the official contest emblem) was the most sought after—and the scarcest—prize.

The contest had been a close one, first of all, with Mother Nature, and then—under those difficult conditions—with an extraordinary group of pilots flying extraordinary sailplanes. Given the weather and the limited number of competition days and the talent, it is not surprising that the margins of victory are relatively small.



For admirers of soaring machinery, finding out *what's* flying can be just as exciting as knowing *who's* flying in a world championships. So when the Soviet Union's Open Class pilot, Oleg Pasetnik, listed his mount as *Lietuva*, enthusiasts were eager to see the only new Open Class sailplane at this year's Championships. Unfortunately, it was damaged on the fourth day and withdrawn before there was opportunity to see much of it. However, thanks to SSA'er Vytas Peseckas of Chicago, some information is available.

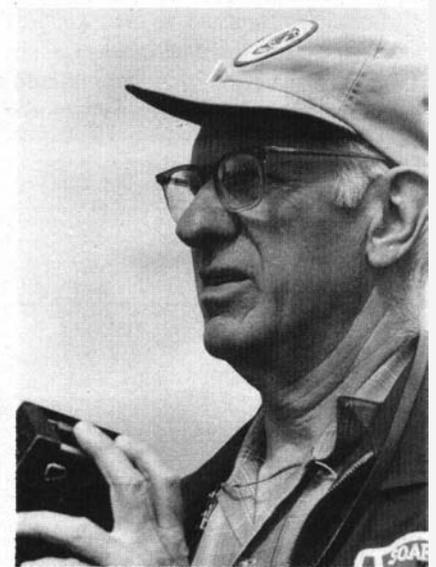
Peseckas reports that in 1969 Lithuanian enthusiasts asked Balys Karvelis, a veteran designer with six sailplanes to his credit, to create an Open Class racer for competition. By 1972 the prototype *Lietuva* (Lithuania) had been built and test flown by the national aero club. This first *Lietuva* had a span of 17.8 meters and was carefully test flown to measure a minimum sink of .52

m/sec. @ 75 kmph, and an L/D max of 43 @ 90 kmph.

In 1975 a new version of *Lietuva* (variously known as BK-7A or LAK-9) was built following three years of continuous development. The span now reaches 20.02 meters and the glide ratio has been measured at 46:1 @ 91 kmph. Redline is 210 kmph. The 26.7:1 aspect-ratio wing can carry 100 liters of water ballast, and, like the fuselage, employs fiberglass/foam/fiberglass sandwich construction techniques. Pedals and seat back are adjustable; a drag chute is part of the standard equipment.

Ground Loop, the official daily bulletin at Räyskälä quotes *Lietuva's* pilot, Oleg Pasetnik: “The performance is about the same as the *Nimbus*. In flight the *Nimbus* is slightly easier to handle, but *Lietuva* is not difficult either.

Highest placing for the Lithuanian sailplane was 6th on the second day.



When Tom Page offered to cover the 15th World Gliding Championships for SOARING, his offer was accepted with alacrity and gratitude. His writing was a known quality based on his many contributions dating back to 1954, and his outstanding boxes in the last world championship report were still fresh in editorial memory. Tom has already received the Society's highest award, the Eaton Memorial Trophy, and has just now become a member of the Soaring Hall of Fame on Harris Hill. NSM News on page 9 carries the accompanying citation to which this journal adds its own appreciation herewith.

TABLE 2
THE SAILPLANES AND THEIR GROSS WEIGHTS

Manufacturer	Type	Gross Weight	Class and Number	
			Standard	Open
Eiriavion Oy	PIK-20B	450 kg	12	
Glaser-Dirks	DG-100	418	1	
Glasflügel	Std. Libelle 201B	350	1	
	Std. Libelle 203	380	1	
	Hornet	420	3	
	604	695		1
Grob	Astir CS	450	1	
Rolladen-Schneider	LS-1f	390	2	
	LS-1f(45)	439	2	
Schempp-Hirth	Std. Cirrus	390	8	
	Cirrus 75	390	9	
	Nimbus 19 m	580		1
	Nimbus 2	580		21
Schleicher	AS-W 15B	408		
	AS-W 17	570*		9
	AS-W 19	408	1	
Slingsby	T59H Kestrel 22	656		1
SZD	Std. Jantar 41A	460	3	
	Std. Jantar 41B	440	1	
	Std. Jantar 41B	460	1	
	Jantar 1-38A	515		1
	Jantar 2-42	580		2
	Jantar 2-42-1	593		1
Lietuva	LAK-9	580		1
TOTAL			46	39

*Maximum increased to 610 kg, if Technical Note No. 8 has been certified to have been executed. Several were so certified either before contest or during practice, and all were offered the opportunity by the designer, Waibel, present during the early part of the contest.



SSA's Bill Ivans was on hand to open the Championships as President of the CIVV. He is

talking to Hans Iund, Norwegian Steward of Competition.

15th OSTIV CONGRESS

During the last week of the Championships, a select group of scientists and engineers who work in soaring meteorology, aerodynamics, structures, instrumentation, and related technologies, met at Räkälä airfield under the aegis of OSTIV (*Organisation Scientifique et Technique Internationale du Vol à Voile*).

The occasion was the 15th OSTIV Congress which opened with the posthumous award of the 1976 OSTIV Plaque to the late Eugen Hänle. SSA'er Bob Lamson was also honored for his work with his pressurized high-altitude sailplane. He was given an OSTIV Diploma as was France's Denise L. Cruette-Foissac.

Sixty-two papers were presented by authors from Australia, Austria, Canada, France, Finland, Germany, Hungary, Poland, and Switzerland. U.S. Papers included "Aerodynamic Design of Tail Assemblies" by E. Eugene Larrabee, "Development of a Computerized Sailplane Performance Analysis" and "Configuration Optimization of a 13-Meter Span Sport Sailplane" by Patrick K. Squires, "Experimental and Theoretical Investigation of Differences between a Manufactured and the Corresponding Design Airfoil Section" by Dan M. Somers, "Advances in Material Science and Fabricating Techniques for Sailplane Construction" by Robert T. Lamson, "Dynamic Soaring in the Atmospheric Boundary Layer: An Experimental Investigation" by V. V. Utgoff and F. G. Johnson, "Flight Test Polar Measurements of Modern Sailplanes" by Richard H. Johnson, "Computed Variometer Response to Elevator Motion and Thermals" by Malcolm J. Abzug, "A Simple Total Energy Sensor" by Oran W. Nicks, "Some Characteristics of Thermal Convection" by Robert R. Long, and "Ground Induced Convection, Thermal Structures and the Local Atmospheric Electric Field" by Winfried K. Rudloff.



15th WORLD GLIDING CHAMPIONSHIPS, RAYSKALA, FINLAND

JUNE 13-27, 1976

FINAL STANDINGS OPEN CLASS

Pilot	Country	Sailplane	Day	1	2	3	4	5	6	7	Score
1	LEE	Great Britain	AS-W 17	12	1	8	1	6	1	13	4594
2	ZIOBRO	Poland	Jantrr 2	3	12	8	4	9	9	3	4535
3	MUSZCZYNSKI	Poland	Jantr 2	4	7	30	6	9	16	3	4488
4	HOLIGHAUS	W. Germany	Nimbus II	10	3	23	18	7	4	3	4471
5	BUTLER	U.S.A.	Glasflugel 604	8	2	13	21	22	2	9	4434
6	ZEGELS	Belgium	AS-W 17	19	13	12	9	4	9	13	4357
7	JOHNSON	U.S.A.	Jantr 2	6	11	13	5	22	32	3	4269
8	FREHNER	Switzerland	Nimbus II	15	15	10	10	18	11	13	4233
9	AX	Sweden	AS-W 17	27	16	2	14	25	6	18	4209
10	MATOUSEK	Czechoslovakia	Nimbus II	22	31	5	14	9	18	1	4193
11	NEUBERT	W. Germany	AS-W 17	30	9	24	7	28	17	11	4147
12	FAHRAPELLNER	Austria	Nimbus II	24	23	30	13	8	23	7	4097
13	SCHUBERT	Austria	Nimbus II	17	20	13	26	19	22	7	4029
14	REPARON	Netherlands	Nimbus II	16	20	30	16	36	6	18	4006
15	JINKS	Australia	Nimbus II	2	25	4	11	1	21	30	3960
16	BRAES	Denmark	Nimbus II	27	36	28	31	2	24	2	3955
17	RAGOT	France	Nimbus II	5	8	30	3	13	12	26	3951
18	FITCHETT	Great Britain	AS-W 17	21	4	1	2	24	14	33	3949
19	MOUAT-BIGGS	South Africa	Nimbus II	35	28	30	17	33	15	11	3909
20	YARRAL	New Zealand	Nimbus II	20	19	26	35	15	25	18	3852
21	HAHNER	Hungary	Jantr I	11	29	30	25	27	35	18	3832
22	GAVAZZI	Italy	Nimbus II	7	10	10	32	5	3	36	3802
23	KUIL	Netherlands	Nimbus II	1	32	30	20	19	8	27	3727
24	MAZALERAT	France	Nimbus II	34	34	13	24	32	27	22	3664
25	GOUDRIAAN	South Africa	AS-W 17	36	22	21	34	26	36	13	3602
26	PETTERSSON	Sweden	Nimbus II	24	17	13	19	19	13	31	3572
27	HORMA	Finland	AS-W 17	23	39	25	12	31	26	21	3564
28	CARPENTER	Canada	Nimbus II	31	14	21	22	15	28	24	3540
29	WIDMER	Brazil	Nimbus II	12	26	13	30	2	29	35	3524
30	BRYSON	Ireland	Kestrel 22	17	30	27	26	29	31	37	3249
31	WEBB	Canada	Nimbus II	37	38	28	8	15	19	31	3246
32	VERGANI	Italy	Nimbus II	39	35	30	36	14	30	23	3229
33	PRYDE	New Zealand	Nimbus II	9	27	6	38	12	4	34	3085
34	WIITANEN	Finland	AS-W 17	32	24	13	28	37	37	9	3028
35	RUDENSKI	U.S.S.R.	Nimbus II	14	5	7	23	37	20	28	3016
36	DE PRETER	Belgium	Nimbus I9	24	37	13	29	34	33	28	2993
37	SZENTVOLGYI	Hungary	Jantr I	38	33	30	37	30	34	24	2954
38	PASETNIK	U.S.S.R.	LAIK-9	32	6	30	33	35	38	37	2426
39	WILSON	Australia	AS-W 17	29	18	3	39	39	38	37	939

STANDARD CLASS

Pilot	Country	Sailplane	Day	1	2	3	4	5	6	Score
1	RENNER	Australia	PIK-20B	17	1	0	4	7	2	4056
2	KARLSSON	Sweden	PIK-20B	2	6	0	11	1	4	4048
3	BURTON	Great Britain	PIK-20B	13	10	0	1	22	1	3924
4	POZNIAK	Poland	Std. Jantr	15	15	0	10	2	20	3802
5	BELTZ	U.S.A.	PIK-20B	11	8	0	25	3	31	3735
6	PETROCZY	Hungary	Std. Jantr	7	26	0	12	7	37	3647
7	BRIGLIADORI	Italy	Cirrus 75	4	39	0	3	5	9	3642
8	REICHMANN	W. Germany	LS-If(45)	25	13	0	5	16	25	3640
9	OYE	Denmark	Cirrus 75	9	37	0	15	7	3	3634
10	STOUFFS	Belgium	LS-If(45)	12	35	0	24	16	13	3503
11	GATOLIN	Yugoslavia	Std. Cirrus	16	34	0	36	7	22	3443
12	JONES	Great Britain	Cirrus 75	24	18	0	6	27	8	3415
13	HAEMMERLE	Austria	Cirrus 75	28	21	0	23	15	7	3378
14	RANET	France	LS-If	8	28	0	30	25	5	3346
15	CAMERON	New Zealand	AS-W 19	29	22	0	26	13	6	3338
16	LOPITAUX	France	Cirrus 75	30	32	0	16	13	23	3285
17	PETER	W. Germany	203 Libelle	26	14	0	2	26	16	3280
18	KEPKA	Poland	Std. Jantr	45	18	0	7	7	18	3271
19	ANDERSSON	Sweden	PIK-20B	5	20	0	3	31	33	3225
20	NURMINEN	Finland	PIK-20B	27	4	0	31	21	29	3215
21	ROWE	Australia	Hornet	35	9	0	33	7	24	3213
22	SORENSEN	Denmark	Std. Cirrus	6	29	0	18	28	40	3148
23	PARE	Netherlands	Cirrus 75	21	7	0	18	32	20	3144
24	RIERA	Argentina	Hornet	9	23	0	14	35	10	3127
25	BLUEKENS	Belgium	Cirrus 75	38	17	0	22	16	36	3110
26	STRUKELJ	Yugoslavia	Std. Cirrus	40	25	0	37	4	14	2991
27	TIMMERMANS	New Zealand	Std. Cirrus	19	16	0	28	43	15	2885
28	MONTE	Italy	Cirrus 75	30	45	0	16	5	12	2872
29	BRIEGLEB	U.S.A.	Std. Jantr	20	35	0	29	40	34	2815
30	JUNQUEIRA	Brazil	PIK-20B	14	27	0	21	44	38	2785
31	FIRTH	Canada	PIK-20B	18	2	0	20	33	43	2754
32	KUITTINEN	Finland	PIK-20B	1	3	0	35	30	44	2739
33	WALA	Czechoslovakia	PIK-20B	4	5	0	13	37	31	2737
34	MUSTERS	Netherlands	Cirrus 75	34	12	0	33	37	16	2648
35	RONNESTAD	Norway	LS-If	37	30	0	46	19	27	2524
36	RIZZI	Argentina	Std. Cirrus	3	45	0	32	40	11	2513
37	SZABADFI	Hungary	Std. Jantr	45	33	0	42	23	28	2509
38	WODL	Austria	DG-100	36	41	0	9	34	30	2498
39	CLIFFORD	South Africa	Std. Cirrus	22	24	0	26	29	45	2400
40	WERNEBURG	Canada	Std. Cirrus	42	42	0	38	20	39	2345
41	JOHANNESSEN	Norway	Std. Cirrus	33	30	0	45	35	19	2307
42	HEDINGER	Switzerland	Std. Libelle	23	43	0	41	42	36	2237
43	INNES	Guemsey	PIK-20B	42	11	0	40	46	35	2065
44	SCHAFFHAUSEN	Brazil	PIK-20B	43	33	0	44	37	41	1854
45	LUTHI	Switzerland	Hornet	38	44	0	43	24	42	1761
46	SHIELDS	South Africa	Astir CS	30	40	0	39	45	45	1341

Help Fund The Future of United States Soaring Teams...

As you have just read our soaring teams have a long and proud history of international participation. Over the last several years the opportunity to compete internationally has grown as more classes become sanctioned by the FAI. More teams and eligible pilots puts the title of World Champion within the reach of entirely new segments of the soaring community including Club, World and Junior pilots. The chart above shows when each FAI class participated in their first World Gliding Championship. Notice the recent growth in classes and events.

FAI Classes Eligible for Competing in World Soaring Championships		
Class	Year	Championship
Open	1937	Germany
Two Place*	1952	Spain
Standard	1958	Poland
15-Meter	1978	France
World	1997	Turkey
Junior	1999	Holland
18-Meter	2001	Spain
Club	2001	Australia
Feminine	2001	Lithuania

* Eliminated 1958

An urgent need...



More teams, eligible pilots and international events have stretched team funding well past the breaking point putting our teams ability to compete internationally at risk.

Contributions make it happen...

While many competing teams receive government assistance our teams rely on a mix of direct contributions and perpetual trust income to compete internationally.

Direct contributions are immediately available to the team at their full value. Participating in the SSA sweepstakes, buying a raffle ticket at a contest or sending a check to the SSA for team funding are all examples of direct contributions so critical to fielding our soaring teams. Perpetual trust income has become increasingly important to fielding our teams internationally. This type of contribution is perpetual as the funds are invested with the income used to sponsor teams perpetually. Robertson Trust contributions provide a critical, stable, long-term, source of team funding.



A long term strategy?

Since both types of contributions are tax deductible, a long-term contribution strategy to minimize tax burden and maximize support might incorporate comfortable direct contribution every two years and larger, trust contributions with less frequency. How much to contribute is determined by each of our individual circumstances. Every dollar counts.



Now is the time...

Not all competition happens in the air. Often it is what happens on the ground months before World Soaring Championships that makes the difference.



Adequate team funding is where it all starts. Our international competitors are doing what it takes to compete and win and so should we. If our soaring teams are going to compete internationally they need our support. While most of us can't be in the cockpit we can still do our part to make sure our pilots have the opportunity to compete and win.

Please make a direct contribution to the U.S. Soaring Teams or a perpetual contribution to the Robertson Trust today!

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