R/C PATTERN WORLD CHAMPIONSHIPS

The U.S. team: Dean Koger, EU-1; Mark Radcliff, Phoenix; Dave Brown, Tiporare.

THE U.S. TEAM EMERGED VICTORIOUS, BUT WE JUST COULDN'T BEAT WOLFGANG MATT.

by Sally Brown

• What a fantastic month Dave and I have just spent! I only hope I can convey even half the emotions and events we were a part of—South Africa and her people are beautiful. Dave and I left home September 12 and drove East in our trusty motor home filled with suitcases, airplane boxes and excited people. We picked up Dave's folks (who accompanied us and eventually became Mum and Dad to half the world!), and headed for Kennedy Airport where we met the other team members: Team Manager Don Lowe and wife Clara; Dean and Barbara Koger—Dean placed third at the Masters and Barb is his mechanic; Mark Radcliff, who placed second at the Masters and was on his third World Championship team; Dick Penrod and his gal Friday, Barb—Dick was Mark's mechanic, assistant team manager, and head cheerleader; and Wayne and Emily Ulery and their son Brian — Wayne designed Dean's EU-1 and also did huge amounts of work on Dean's 1978 Vegas ship, the Laser.

The author, left, with what's-his-name.

Our team had a loyal cheering section.

We were a super excited group getting on that airplane, believe me! Of course, 17 hours later as we got off again in Johannesburg, we were just as excited but not nearly as bouncy—amazing how a long air trip can affect you that way! The doldrums were soon expelled when we were met at Customs by friendly South African faces. Gerry Levy, John Brink, John Mee, and Joe Studder were all awaiting our arrival. And they had us all arranged with the Customs officials; we only opened one of Dean's wing boxes, and they asked Dave to take the top off his box, but "decided he was safe" when they saw enough foam noodles inside to fill three garbage bags!

The South African management furthered an idea the U.S. began in Springfield. You may remember we had an all-team liaison in the persons of Ray and Bob Underwood—their job was to help any foreign team member in any way

Hup-two-thuree-four! Are those guys in shape, or what?

Quique Somenzini is Argentine National Champ, at age twelve!

Jan van Beek of the Netherlands flew this Deception.

Naphtali Horowitz of Israel had engine troubles with Nesher III.

possible, from replacement parts to transportation to helping load boxes. Well, South Africa took that basic idea and developed it to perfection. They assigned a liaison from the South African association to *each* of the 17 teams who participated — they even managed to find a member who spoke Italian for the team from Italy (they always seem to be the team left in the cold as far as language is concerned). Anyway, these 17 men were responsible for any need, request, or basic plea for help from their assigned team.

I only hope all the other teams had the dynamo we had. Our team liaison was Gerry Levy. Many of you may know of Gerry Levy, as he has attended the Tournament of Champions in Las Vegas, and has had at least two articles published in USPJA and NSRCA newsletters. Gerry met us at Jan Smuts Airport and conducted us through Customs; he then proceeded to get our rental vans rented and packed with twelve people's stuffed suitcases—not to mention nine airplane boxes! He led us to our hotel (a Holiday Inn no less), made peace with the hotel clerk about our rooms, fed us our supper, and tucked us into bed with the word that at 2:00 p.m. the following day he would lead us to the flying field.

As it was dark when we arrived, there wasn't much sightseeing; but the following day, when we all finally woke up, we saw part of a very lovely city—much like any American city with high-rise office buildings, lots of shopping and industry. The only differences were the multitudes of flowers (much like Europe) and the gold mine dumps. Gold mines are the reason for Johannesburg being were it is, and the city is surrounded by large "hills" of crushed stone from whence they got the gold. We visited a mine later in the trip and it was fascinating—I got to hold a gold bar worth $40,000, but had to give it back, darn it!!!

Monday, September 17, we went practice flying—we used one of the area club fields as Baragawanth (the actual World Championships site) was not usable until the contest began. The field was very nice, but the runway was narrow and we had lots of fun teasing each other about who missed the runway when, etc. And believe me, everyone missed it at least once (Dave about half the time!) except ol' smoothy Don Lowe. This caused the Israeli team to offer him the third spot on their team (there were only two Israeli team members) and Don nearly said yes—except it would have cost him a new Phoenix!

In South Africa their spring was just arriving, and during our three-week stay, the flowers, trees and green "bloomed." Mum Brown, Barb Koger and I had grand times collecting flowers (weeds probably!), stones, etc., but the guys were very single-minded — flying and more flying. Mark seemed to have the problems-department trophy. The first few days (we arrived in South Africa September 16 and the contest was September 24-29) his engine simply refused to cooperate. It would cough, sputter and quit, then run fine the next flight, and then cough, sputter and quit again—very frustrating. We finally decided it was alti-

Bruno Giezendanner's Scorpion had inverted O.S. engine with tuned pipe.

Dean Koger's EU-1 just didn't want to fit in anywhere. It flew well, though.

Gerry Levy, team liaison, was made an official U.S. team member.

Canadian team of Ivan Kristensen, Ray Pinner, Gerry Shaw. Model is a Saturn.

The winning team: Sally and Dave Brown, Barb and Dean Koger, Dick Penrod, Mark Radcliff. Standing: Wayne Ulery, Don Lowe, Gerry Levy.

tude plus plug problems, although the first combination had worked fine in Denver the month before. One flight when his engine quit he had to land downwind (15-20 mph) and ended up hitting a rock pile off the runway's end. This meant a discouraged Mark and a team meet in his room to fix some cracks, gouges, loose engine mounts, etc. But with resident humorist Jeff Tracy (from Australia) and many hands, the airplane quickly mended—as did Mark's depression. Mark has the ability to turn adversity into great flying — in fact, I sometimes wonder if Mark could fly at all without some kind of problem!

Dean had some good luck stemming from bad luck. He had a receiver problem, but luckily when his range went to something like two feet, he was on the ground taxiing back from a landing! He ended up using his backup plane's receiver, but did fix the first one.

Dave had no problem in practice except the wind, which was very frustrating to everyone. It blew very strong all the time we were in South Africa (during the contest it was over 20 mph many times, and we had gusts of over 30 mph), was very turbulent, and would change from crosswind to up and down the runway in a matter of minutes. The poor South Africans! They had rain twice and very cold weather a few days—all totally wrong for that time of year. My experiences of the past few years have me faithfully believing that no matter where an R/C contest is held, there will be wind, rain and miserable weather, be it South Africa, Ohio or the Sahara Desert!!

The wind was a great equalizer — everyone looked bad, especially in the crosswind. In fact, Dave looked so bad the day before the contest that he flew his backup plane once because he thought the radio was "bad" in his #1 (his backup flew just as poorly). It was a shame, in a way. You go to a World Championships hoping for some really great flying. There were some good flights (Dave, Mark, Ivan Kristensen and Gunter Hoppe, to name the best), but no one was really on.

On September 24, the official processing was done. This consisted of weighing, measuring and marking the engine (the contestant's number was engraved on the crankcase), and noise testing. No one had any problems with the first three, but there were lots of rumors and questions about that final one. The noise equipment wasn't available (even to the contest management) until the day before use and no one knew what to expect. It was set up so that everyone would have two chances; if you tried once and failed (were over the limit of 84 dB), you could try again after some "corrections." I realize the reasons behind the noise test rules and agree with their intent (many countries are having very serious flying field problems because of noise), but this area needs lots of work. Everyone passed this test eventually, although many tested more than once. Mark and Dean both tested in the 82 range and then came Dave—he tested 77. The people running the event said that would stand as his official reading, but would he test again? He did and the second reading was 83,

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you must see to believe! Gorgeous is too mild a word. I'll try to have a report for you next issue, as a couple are being put together now for testing. As the man said: "You ain't seen nothin' yet!"

HAMS AMONG US. There are apparently some Radio Amateurs out there who are also R/C glider nuts, just like me—Pete Carr, Ed Eggert, Hi Johnson, Louis Hemphill, P. S. Hamilton, Don Clark, and hundreds of others. Some have written me to see if we can arrange a "sked" for getting on the air and yakking about R/C soaring. If any others out there would like to get a net going, write and let me know. I'll mention it in this column, and work up a list of calls, addresses, and possible meeting times.

EPPLER AIRFOILS AND GLIDER DESIGN. In another month or so, I hope to have some information on a series of Eppler glider airfoils for you. These are the 193, 195, 197, 201, and 203 profiles. I have some drawings and ordinate data, plus an extensive article (in German) entitled "New Eppler Profiles for Large Sailplanes." It's good stuff, and tells how to figure tailplane area, rudder/fin area, etc., for different types of flying and tasks expected, using the new airfoils.

Well, folks, thanks for listenin'. I'll be seeing you next month. Meanwhile, if you have anything to contribute, write me at P.O. Box 186, Peterborough, NH 03458. Even if you don't, write anyway —I enjoy your letters! ■

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and we hadn't changed one thing! In fact, after the first reading Dave played with the needle valve trying to get it as loud as he could, but never got it higher than that 83! Which proved that given long enough, any combination of airplane/engine/prop could be made to comply or not comply in any one testing.

About this time, we were all hit with the news that the man we were all there to try to beat would be absent. Word had come that the day before the Austrian team was to leave for South Africa, Hanno Prettner had fallen down a flight of stairs and broken his wrist, and was in an elbow-to-mid-fingers cast. He had tried to fly anyway, but because of numbness and immobility of his thumb, he just couldn't. That put an instant damper on things, as you have to beat the best—and the best was not to be there. Our prayers went to Hanno, as well as numerous cards and letters, but I don't imagine it helped his depression very much.

We had glorious hospitality all week from our South African friends; nearly every night we were invited to dinner or bar-bar-ques. The locals went all out to entertain us and help us in any way. We all gained weight, as we ate like gluttons. We had some fun with Gerry the evening we were invited to his house for dinner. A bad storm "blew up" and the electricity went off, and we had our first (and only) glimpse of "darkest Africa." We also got some glimpses of our very talented team's other talents. Dean played the piano for us (when Dean isn't flying he is an accomplished classical pianist) and Barb is a super accordian player. If nothing else on a trip like this, you learn many strange facts. Did you know that Don Lowe plays a good harmonica? Or that Heinz Freundt (the Austrian judge) is the reigning World Champion table magician? ("Table" means he does all his tricks on a table or small stationary place.) He put on a fantastic show for us one evening, and had Wolfgang Matt really confused and the rest of the guys checking out the table and mumbling something about being glad he doesn't fly!! And we mustn't forget the Italian mechanic who played his nose (yes, I did say nose) at one of the dinners. We modelers are a talented people.

September 25 was official practice and opening ceremonies. We got to "spy" on the opposition a bit as we watched the expected "goodies" fly, and got a little high when we realized we hadn't seen anyone who could beat us! Was a 1-2-3 sweep possible? We were all impressed by one of the Argentinean team members. He is 12-year-old Quique Somenzini and is that country's *National Champion!* He flew quite well—looping maneuvers were excellent. A bit of super coaching and he'll be one tough competitor. More impressive even than his flying was his cool, calm manner—he flew in the same relaxed manner that he might use to brush his teeth. Gad, twelve years old and at a World Championships. My congratulations to him.

The opening ceremonies were impressive and spine-tingling to me at least. I may be silly, but National anthems, flags, and uniforms do it to me every time. Our team looked very sharp in white pants and blue shirts with the large patch depicting the World Championships and our names embroidered on them. We were a good looking group.

We ended up with 49 contestants from 17 countries. Notably absent (besides Hanno) were teams from Japan, Sweden, Australia, and Mexico. The scoreboard in use at the World Champs made it easy to see individual and team standings after each flight. At the site, we were flying off a full-scale glider landing strip that was about 18-20 feet wide and 3300 feet long. The length was sufficient, as the two circles were separated by 2600 feet, but the width was a problem. In order to draw a 50 ft. circle, it was necessary to pour tar over a sanded area on either side of the runway—this might have been acceptable except that

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someone in a car had driven over these areas and left them very rough and rutted. The judges were told to take that into account in scoring; there were a few problems with it, but everyone did their best. We had the full scale airport behind us, which remained open, but there were no problems there. There were five judges per line (in qualifying) and all scores counted. The judges sat as they have in the past—side by side rather than in a straight line back from the flier. As in other competitions, there were boxes set up so that each pilot would know when he flew and be in the number 1, 2, or 3 box when his turn came close. This was all fine and dandy—except they didn't expect an airplane as big as an EU-1. We teased Dean a lot, as only his tail or half a wing would fit.

The judges stayed put during qualifying, and the pilots moved each round so that we flew two flights on site A (one A schedule and one B schedule) and two flights on site B (same). One A flight and one B flight counted toward the finals.

September 25 was the day official flying began. It was set up so that 1⅓ rounds would be flown each day (totaling four complete rounds by Friday's end). Flying began at 7:00 a.m. every day and ended as close to 2:00 p.m. as possible because of an afternoon sun problem.

We had gone to our hotel after official practice with super high hopes, but ol' mother fate had yet to stomp us! And it didn't take her long. Dave woke up pale and shaky with his stomach churning. I thought it was nerves or something he ate, but that turned out to be wishful thinking. Dean flew first (ninth off) and the stomping began when his engine quit just over halfway through his flight—we eventually discovered his throttle servo stuck for some reason. Dave was next to fly (about 16th off), and by that time I wasn't sure he could stand up. He was dizzy and faint, but he did fly—not that it did us any good, as his engine also quit in the spin. We later determined he must have gotten the throttle trim too far back. Dave crawled back into the van after his flight, too sick to care about engines or anything else. Mark flew his flight near the end of the round with strict orders NOT to lose his engine and he did fairly well. After round 1, the U.S. team members were 40th, 22nd, and 7th — UGH! What happened to our sweep? Leaders were Kristensen, Matt, and Hoppe.

Dean flew a second flight the first day and posted a decent 179 to raise his spirits considerably. Dave was taken home and put to bed. Gerry came to the rescue again by getting a doctor and four kinds of medication for Dave's "gastro-intestinal virus." Against all bets, Dave was on his admittedly shaky feet the next morning.

Dave flew first Thursday, much against my wishes. (I didn't think he should even be out of bed!) Actually, if he would fly that well every time he got sick, he should be sick more often. He posted a 216, high flight up until then, and then collapsed in the van again. Mark flew and scored a 200, which was in the top scores also. At the end of the second round, our team was 28th (Dean), 6th (Dave) and 3rd (Mark), with Matt and Kristensen leading the way. Ivan was flying very well indeed. And even with the disasters, our team was still in 1st!

Dean flew his third round flight on Thursday and scored a 172 that brought him up much closer. Dave flew his third round flight right near the end of the day and scored a 214 that—HURRAH—put him in first place! We all went home much happier; Dave went back to bed directly.

The team standings changed around constantly. Switzerland was 2nd after two rounds and Liechtenstein 3rd, with Italy and Germany close behind. Germany had more problems than could be counted—each of their three team members were plagued with radio and engine problems from the minute they arrived in South Africa to the last flight when one of their engines quit! I was very impressed with the Italian team — these same three guys have been on the team a number of times, but each time they are better. They ended up 7th, 8th, and 9th, with only 1.6 points separating them.

Friday, September 28, dawned sunny and clear but windy again. Mark was first to fly and posted a 210, which was very good but not nearly what he hoped for. It was obvious by now that it would take over a 200 average to make the finals. Mark had a 205 average with this flight and had just flown his last flight in front of the "good" judges. (As usual, we had a high set of judges and we had a very low set. Several of the judges were excellent; several were booed by the spectators. Personally, I feel that it would have been better to throw out the high and low scores on a per maneuver basis. I do hope this eventually comes to pass, especially in international competition. My apologies to Bill Northrop, who was the chief judge, and to Bob Upton, who also was a judge. My comments are not directed at them—in fact, they were as upset as anyone, Bill especially.)

Dean flew next. The wind had calmed somewhat and Dean, who had flown in a blowing dust storm the previous day, finally got some reasonable weather. He put that EU-1 through its paces to score a 219, which was high flight so far, and ended up fourth highest for the qualifying. Believe me, he had people asking why he was "way down" in 12th with flying like that.

Wolfgang Matt flew just a few in front of Dave. They both had the "low" judges the last flight and we honestly didn't expect the score would change much in front of them. But suddenly these judges began giving 8s and even a few 9s, and Matt scored a high of 224. Well, Dave and I decided that if he could do it, so could we—Don added that he wanted a 10! So we flew and really had our act together. From the reaction of the crowd, we were doing pretty well. As I turned to walk back after the landing, I saw the scorecards for the landing—three 9s and two 10s!!! To my knowledge, those were the only tens of the entire meet. Dave's score was a 227, putting us in first by three whole points! Sure did end qualifying with a bang for us.

Mark flew his last flight after this. He didn't improve his scores and was left hanging until all the results were in to see if he had made the top five. Having placed sixth at his previous two World Championships, he was mumbling nasty things about placing sixth again. But when the final qualifying scores were tallied, Mark took a deep breath and gave us a big smile:

1)	Dave Brown	442.2
2)	Wolfgang Matt	438.8
3)	Ivan Kristensen	421.8

4)	Gunter Hoppe	420.8
5)	Mark Radcliff	410.8
6)	Bruno Giezendanner	409.8

And these six guys would fly again tomorrow in a two-flight final, with the best of their two flights being added to their qualifying score for the end result.

Because of the closeness between 5th and 6th—one tiny point—the jury decided to let Bruno fly also, instead of only the top five fliers as was originally stated in the published material. This was only one of many decisions the jury made that was exactly opposite of what the rulebook as well as the published material had stated.

The team standings did some more switching around—except for 1st, which the U.S. held on to very firmly:

1)	U.S.A.	1244.2
2)	Italy	1194.6
3)	West Germany	1172.6
4)	Switzerland	1159.8
5)	Liechtenstein	1117.2
6)	Republic of South Africa	1113.8

Italy was one happy team, as it is the first time they have been that close.

So we were down to the finals—flown Saturday (Sept. 29), beginning at 10:00 a.m. And, of course, the wind was as high as it had been all week—it was a challenge, I'll say that much! We all flew on site A in front of all ten judges. The flight order was determined by the Team Managers drawing from a hat. Mark flew first both flights, which we originally thought was terrible luck of the draw. Actually, it was good luck, as the wind that was blowing pretty hard, but more or less down the runway, early blew harder and harder as the morning progressed and changed to crosswind by second round flights. As a matter of fact, not one flight from the second group counted.

So Mark began the fly-offs and flew a heck of a flight—I share the opinion of one of the judges that had the fly-offs counted for everything, Mark would be World Champion today. Dave flew third and also flew a very nice flight, except for his square horizontal 8 in which he pulled off heading. He salvaged it for a fair maneuver, but it was a "what if" that could have made him World Champion also. Ivan, who had been flying exceptionally well all week, had a terrible finals day. I know he felt badly, but the wind really ruined the drama. Gunter, Wolfgang, and Bruno were all bothered badly—everyone except Mark "blew" at least one maneuver, mostly figure Ms. By the time the second round flights were flown, the wind was a disaster. Dave's takeoff got caught in a crosswind gust and did a nearly 90° turn! You just can't play catch-up that way. The final scores were:

1)	Wolfgang Matt	5531
2)	Dave Brown	5493
3)	Mark Radcliff	5275
4)	Gunter Hoppe	5264
5)	Ivan Kristensen	5189
6)	Bruno Giezendanner	5144

Thirty-seven darn points! Needless to say, Dave and I were very disappointed, but decided that we'll just have to try again in Mexico in 1981. Mark was on cloud nine, having moved from 5th to 3rd. I don't think he stopped smiling for days.

The awards ceremony was held at the field after flying. It is still a spine-tingling event to watch your team or husband being honored with your national anthem and praise and applause from his peers. What a thrill!

That night a banquet was held—like everything else the South Africans did, it was superb. It was buffet-style, and they had every kind of food imaginable and all in an airplane theme, complete with an archway holding a plane all done in fish varieties—which Dean immediately claimed was a "scale" model!

It was a lovely evening — one where we could all relax and enjoy the company of people we wouldn't see again for a year (Vegas) or two (next World Championships) or maybe even longer.

My congratulations to Wolfgang Matt. My best wishes to Hanno Prettner. And my heartfelt thanks to SAARF for the super World Championships you hosted. Your people and country are beautiful. Thank you for having us and I pray we may return again. To Gerry Levy, my greatest appreciation for your being a true member of our team.

And to my teammates I say thank you —what a super wonderful three weeks we had! ■

RADIO CONTROL NEWS

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"I don't know what the officials at the Nats had in mind. I got the impression that they were all ¼ scale people and admire these underpowered planes even though most of them stagger around the sky — especially when they use scale props. However, I feel that if you could fly the ¼ scale airplane within the AMA rules, and if it flew very steadily and didn't wallow around the sky, then it shouldn't be downgraded much because it was going too slowly. If it was flown perfectly, you would have to give a perfect score.

"It appears that there are factions within the scale fraternity that either don't understand how airplanes fly or haven't given it any thought. The only way that makes sense in judging model speed is in proportion to its stall speed. This would remove the handicap to the smaller airplane. For example, a real WWII fighter doing air show work flies about 2° nose down and can pull up into a 1000′ loop straight as a die. The only way you could match those flight characteristics with the

World Championship Technicalities

by Tony Dowdeswell

IF ANYONE EXPECTED that a new R/C aerobatic schedule would produce very drastic changes in aircraft design, they're now disappointed.

Innovations did show of course at the 11th World R/C Aerobatic championships but the development is more suttle than one might perhaps anticipate.

Flap happy?

Whereas in 1977 at Springfield in U.S.A., the use of flap/airbrake systems was not a widespread inovation, these are now being used in earnest and with some ingenious variations. Italian Benito Bertolani for example used very large strip ailerons which actually double as flaps and in one mode electronically couple with the elevator. For landings, the "flaperons" simply depress for the required lift/drag configuration. Supplementary to this system were the outboard fixed aileron trim tabs which Bertolani had installed, with a simple metal bolt for the incremental adjustment required.

Others also used the coupled elevator/flap configuration for some manoeuvres although some competitors, including some who did well, were insistant that these were not necessary.

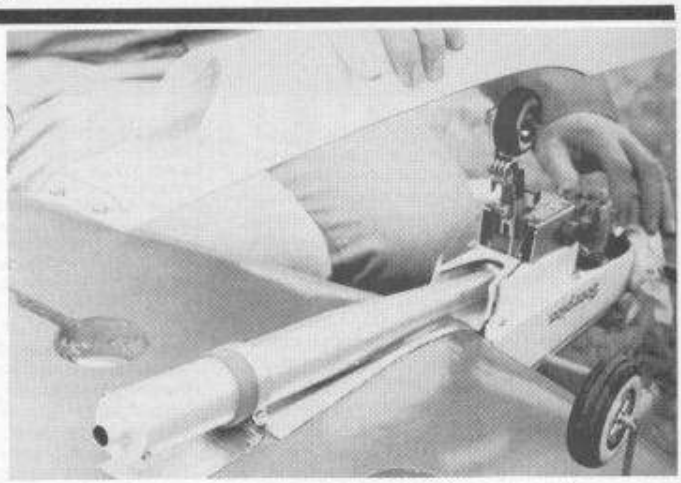
Hiding the pipe

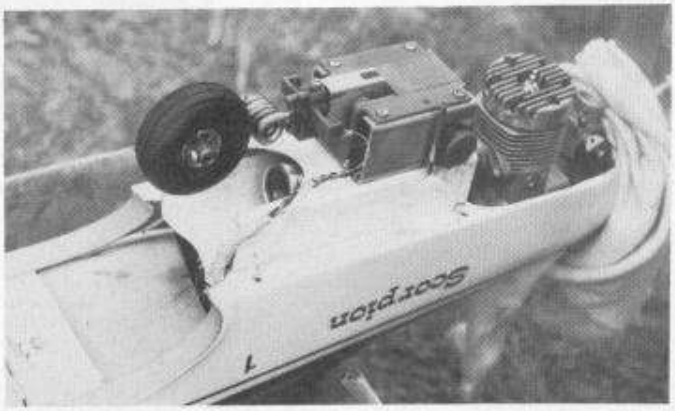
The now virtually universal use of the tuned pipe exhaust muffler (only Warren Hitchcox of Canada did not use it) has brought a trend to fuselage-enclosed mufflers. Webra, O.S. and OPS rear exhaust motors have made this development much easier, but a number of competitors were using side exhaust motors with circumventing manifolds to feed the fully enclosed pipes.

Two advantages acrue from the internal pipe installation. Noise, which is now a concern at this world championship event can be more effectively muffled by a well engineered muffler installation — in effect, a muffler within a muffler. Then there is Trim, for there is no denying that a muffler installed right down the centreline of the aircraft aids in trimming, both aerodynamically or static and dynamic balancing.

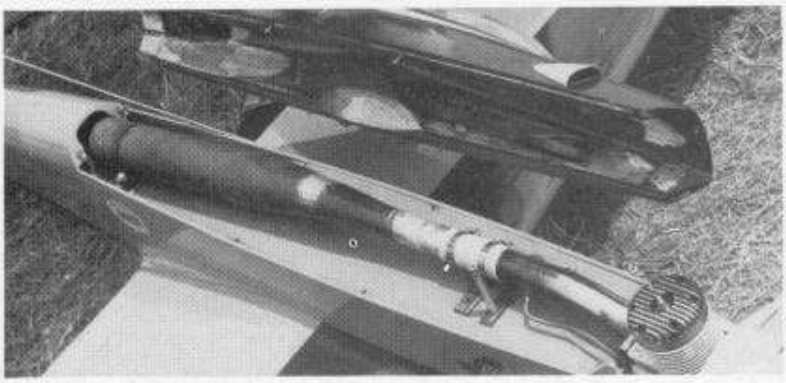
Among the pitfalls, the one perhaps most immediately obvious is the problem of heat dissipation, but since no one using the internal pipe installation seemed to suffer, this potential problem seems to have been overcome. The other obvious pitfall seems to be the risk of the exhaust orofice down the

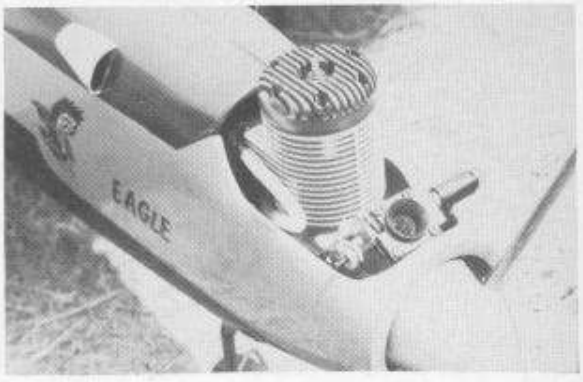
Right: the Giezendanner brothers' Scorpion design showing the internal underslung muffler pipe installation. Note the recess in the wing skin to pass the pipe and the asbestos protective sheet under the pipe. Close-up detail of the nose showing the bridge arrangement which mounts the Giezendanner electric retract unit and through which passes the exhaust manifold to the pipe can be seen below.





Below left: centre section of Dean Koger's EU-1 wing. Two massive plywood spars are all that join the panels. Below: typical of internal pipe installations seen, this upright arrangement invites creation of interference turbulence over fin. Bottom left: internal pipe installation by Jan van Beek of Netherlands. Note his cooling air intakes in close-up bottom right.

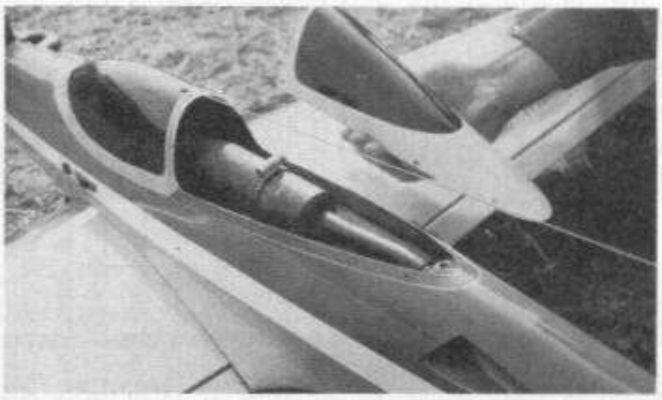




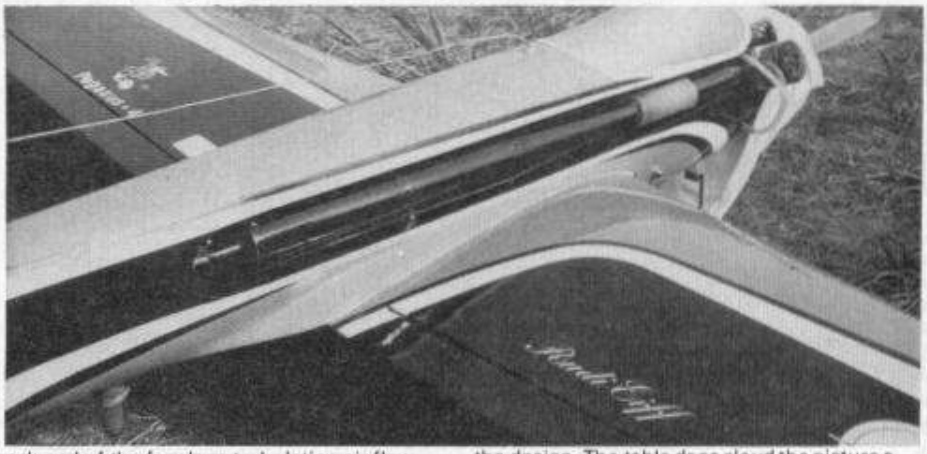
World Championship Model Data

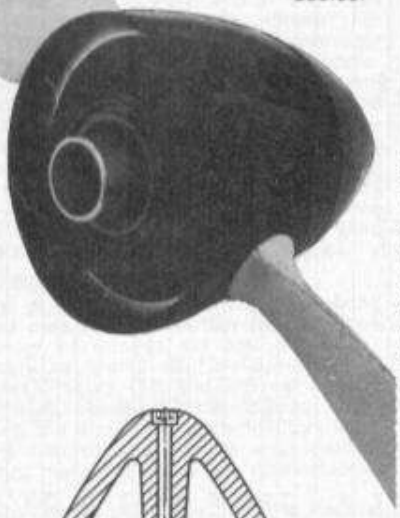
Competitor	Nation	Model	Wing span (in.)	Wing area (in²)	Tail area (in.²)	Wing section root/tip	Weight (lbs)	Motor	Silencer (Pipe unless indicated)	Prop	Plug	Radio	Retract	Other details
1. W. Matt	Lichtenstein	Arrow	63	736	194	20%	9.92	Webra speed 61 rear exh.	Graupner	Bartels	OPS	Webra	Kolibri	Flaps coupled with elevator and uncoupled for landing
2. D. Brown	USA	Tiporare	64	706	158	17%	8.05	OS 60FSR	ED	T/F 11 × 7 Supreme	Fox	World Expert	Goldberg	Couple and uncouple flaps. 15% nitro fuel
3. M. Radcliff	USA	Phoenix 8	65	730	155	16¾/17¾	8.25	Rossi 60 side exhaust	Rossi	Rev-Up 11 × 8	Fox	Kraft Signiature	Southern R/C	15% nitro fuel
4. G. Hoppe	West Germany	Sultan 5	63.75	682	170.5	18¾/14¾	8.47	Webra 61, speed side exh.	Webra	3 blade 10 × 7½*OPS		Microprop	KDH Mains Goldberg nose	*Prop g/f by Gunter Meterhausen
5. I. Kristensen	Canada	Saturn SE	64	728	175	16¾	8.5	Webra 61 side exh.	Rossi	11 × 7½ Max Daly	Rossi R5	Pro-Line	Rom-Air	Rossi carb on motor; wing ¼" ply skinned
6. B. Grezendanner	Switzerland	Scorpion 3	63	760	186	11¾	9.25	OS Max 61 VF	Super Tigre	Zinger 11 × 7½	OS8	Pro-Line	Giezendanner	All-flying ball bearing tailplane
7. R. Pasqualini	Italy	Gallaxy	63	690	163	17.5%	9.15	Super Tigre 60/rear exh.	OPS	11 × 8 g/f BB	Rossi 5	Futaba J	BB (Bertolani)	Flaps coupled to elevator/spoilers
8. B. Bertolani	Italy	Komet	65.75	705	163	18¾	9.68	OPS 60 Pipa	OPS	11 × 7½ g/f BB	OPS	Simprop SSM	BB (Bertolani)	Elev./flap mixer and landing flaps
9. G. Bertolozzi	Italy	Kosmo III	64.5	682	163	18¾	9.68	OPS 60 Pipa	OPS	11 × 7½ g/f BB	OPS	Simprop SSM	BB (Bertolani)	
10. Dieter Fritz	Austria	Curare	64	715	158	15¾/14¾	9.02	Webra speed 61	Webra	11½ × 7¾ Gilles		Simprop	BB (Bertolani)	Landing flaps
11. K. Binks	Great Britain	Pacemaker	64	698	155	15¾/16¾	8.44	Redshift 60	ED	11 × 7¾ Rev-up	OPS 300	Skyleader TSX	Rom-Air	Motor used Redshift fuel regulator
12. D. Koger	USA	EU-1	63	1000	—	—	10	Webra 61, rear exh.	Rossi	11 × 7½ Max. Daly	OPS	Pro-Line	Multicon	15% nitro in fuel
13. E. Giezendanner	Switzerland	Scorpion 3	63	760	186	11¾	9.25	OS Max 61 VF	Super Tigre	Zinger 11 × 7½	OS 8	Pro-Line	Giezendanner	All-flying ball bearing tailplane
14. N. Matt	Lichtenstein	Arrow	63	736	194	20%	9.75	Webra 61 Speed. Rear exh.	Graupner	Bartels G/F 11 × 7¾	OPS	Webra	Kolibri	
15. R. Eiff	West Germany	Pegasus 4	63	695	170	15¾/10¾	8.36	Webra 61 rear exh.	Graupner	10 × 7 3 blade	OPS	Webra	Rom-Air	Metterhausen 3 blade G/F prop
16. J. Brink	South Africa	Phoenix 8	65	730	155	16¾/17¾	8.36	Webra 61 side exh.	Super Tigre	11 × 8 Rev-up	Webra	Futaba J	Rom-Air	
17. M. McIntosh	Great Britain	Dragon	67	770	171	16¾/12¾	10	OPS 60	OPS	11 × 7¾ Rev-up	OPS	Simprop SSM	Rom-Air	TK pressure regulator; air brake; mixture control
18. G. Shaw	Canada	Saturn	64	728	175	16¾	8.5	Rossi 60 side exh.	Rossi	11 × 7 Zinger	OPS	Royal Omega	Rom-Air	Mixture control
19. C. Marincowitz	South Africa	Dirty Bird	62	680	152	17¾	9.46	Webra 61 side exh.	Rossi	11 × 7¾ Rev-up	Enya 5	Sataba JB	Pro-Line	
20. G. Metterhausen	West Germany	Sultan 6	64.5	683	170	18¾/14¾	7.92	Webra 61 side exh.	Graupner	10 × 7 3 blade	OPS	Microprop prop	Rom-Air	Metterhausen 3 blade G/F prop
21. A. Degotte		Gallaxy	64.5	682	170	17.5%	8.48	Webra 61 rear exh.	Rossi	11 × 7¾ Rev-up	OPS 250	Kraft Signiature	Rom-Air	Mixture control; flap-elevator mix and uncouple for landing
22. J. van Beek	Netherlands	Deception	63	—	—	—	9.9	Rossi rear exh.	ED	11 × 8 T/F	OPS 250	See details	Rom-Air	Original Tx with Robbe airborn pack
23. R. Schumacher	Switzerland	Arrow	63	736	194	20%	9.8	Webra rear exh.	Graupner (mod)	11 × 7¾ Bartels	OPS	Simprop SSM	Kolibri	Flap elevator mix and uncouple for landing
24. J. Mersh	Luxembourg	Bootlegger	63	698	202	17%	9.3	Webra 61 rear exh.	Webra	11 × 7½ Bartels	Webra	Simprop SSM	Rom-Air	Flap/spoilers
25. I. Olivier	S. Africa	Curare	64	715	158	15¾/14¾	8.5	Webra 61 side exh.	Rossi	11 × 7¾ Rev-up	Enya 5	Sataba JB	Pro-Line	
26. J. van Vliet	Netherlands	Eagle	63			17%	9.25	Webra 61 rear exh.	Graupner	11 × 7¾	OPS	Simprop SSM	Rom-Air Hydro-Loc	
27. C. Bossard	France	Gallaxy	64	682	170	15%	9.9	OPS 60 rear exh.	OPS	11 × 7 Madore	OPS	Multiplex	Orig.	Flaps and spoilers
28. T. Tubee	Netherland	Atlas	65	760	202	22¾/18¾	8.58	OS 60 FSR	HP	11 × 7 Zinger	Rossi 5	Multiplex		Landing flaps
29. G. Werion	Belgium	Mixer S	64	698	186	17¾/12¾	8.77	HP 61	HP	11 × 7¾ Bartels	OPS 250	Kraft Signiature	MK	
30. A. Laffite	France	Arrow	63	736	194	20%	9.9	OPS 60 rear exh.	OPS	11 × 7¾ G/F	OPS	Simprop SSM	Pro-Line main Violet nose	Flap/elevator mix and flap/spoiler
31. P. Stevens	Great Britain	Lightning	64	713	170	17%	10.8	Super Tigre G60 Bluehead	ED	11 × 7¾ Rev-up	Taylor	Skyleader TSX	Rom-Air	
32. F. Schaden	Austria	Uranus	63.75	—	—	—	9.25	Webra 61 speed	Sonex	11 × 8 Zinger		Graupner	Rom-Air	
33. F. Lenaerts	Belgium	Gallaxy	63	690	163	17.5%	10.25	Rossi 60 rear exh.	Rossi	11 × 7¾ Bartels	Rossi	Futaba	Rom-Air	Mixture control; air brakes
34. G. Maxer	Lichtenstein	Arrow	63	736	194	20%	9.5		Graupner	Bartels 11 × 7¾	OPS	Webra	Kolibri	
35. V. Westarp	Brazil	Alpha	64.5	713	164	15¾/15½%	8.98	Webra 61 side exh.	ED	11 × 7½ Rev-up	Webra 3	Simprop SSM	Rom-Air	Perry Pump; elevator/flap couple and decouple; airbrake
36. M. Watanabe	Brazil	Curare	64	715	158	15¾/14¾	7.7	OS 60 FSR	OS	11 × 7½ Rev-up	OS7	Futaba J	MK	Flap/elevator mix and decouple; Perry Pump
37. P. Brennan	Ireland	Curare	64	715	158	15¾/14¾	10	Webra 61 side exh.	Webra	11 × 7 Rev-up	OPS	Multiplex	Rom-Air	
38. L. Gerrard	Belgium	Baracuda	64.5	729	185	17¾	10.35	Webra 61 rear exh.	Webra	11 × 7¾ T/F	Enya 3	Simprop SSM	Pro-Line	
39. P. Behm	Luxembourg	Curare	64	715	158	15¾/14¾	9.25	Rossi 60 side exh.	Rossi	11 × 7½ Zinger	Enya 3	Simprop SSM	Pro-Line	Flaps/spoilers
40. B. Euzet	France	Mach 1	63	713	186	15%	9.25	Rossi 60 side exh.	Rossi	11 × 8 Zinger	Rossi 5	Simprop SSM	Goldberg	Flap/elevator mix; flap/spoiler
41. D. Falco	Argentina	Oclaf 3	65.5	682	155	17%	8.15	Webra 61 side exh.	Rossi	11 × 7¾ Rev-up	Rossi	EK Logictrol 7	Goldberg	
42. T. Hutchinson	Ireland	Jeuson Mk4	61				9.24	Redshift 61	ED	11 × 8 Graupner		Skyleader	Rom-Air	Landing flaps
43. M. Somenzini	Argentina	Curare	64	715	158	15¾/14¾	9.9	Rossi 60 side exh.	Rossi	11 × 7½	Rossi	Futaba	Goldberg	
44. S. Pompei	Brazil	Curare (mod)	64	715	158	15¾/14¾	9.46	Rossi 60 side exh.	Rossi	11 × 7¾ Rev-up	Rossi	Kraft Signiature	Rom-Air	Flap/elevator mix and decouple
45. W. Hitchcox	Canada	Saturn	64	728	175	16¾	8.5	YS 60	YS	11 × 7¾	Fox	Kraft Signiature	Rom-Air	Mixture control; only model using non-pipe type muffler
46. O. Somenzini	Argentina	Curare	64	715	158	15¾/14¾	9.25	Rossi 60 side exh.	Rossi	11 × 7½	Rossi	Futaba	Goldberg	12 years old
47. D. Doitch	Israel	Nesher III	65	729	186	17¾	9.25	Rossi 60 side exh.	Rossi	11 × 7¾ Rev-up	Fox	Pro-Line	Pro-Line	Mixture control
48. N. Horrowitz	Israel	Nesher III	65	729	186	17¾	9.25	Rossi 60 rear exh.	Rossi	11 × 7¾ rev-up	Fox	Pro-Line	Pro-Line	Mixture control
49. J. Clark	Ireland	Seiceamin	59	—	—	—	7.75	Webra 61 side exh.	ED	11 × 7¾	OPS	Simprop SSM	Rom-Air	Mixture control

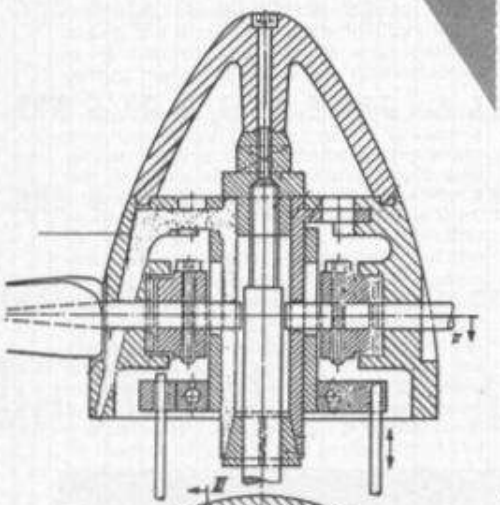
Below: the Swiss Landert variable pitch prop, as used by Wolfgang Matt in the fly-off is fully variable from -5° to +10°. The blades appear to be glass filled nylon, while the mechanism is built into the nylon spinner. Diagram of the unit from the manufacturer's instruction sheet, is seen at bottom of this page. The unit is available in U.K. through Slough Radio. Control price, £63.95.

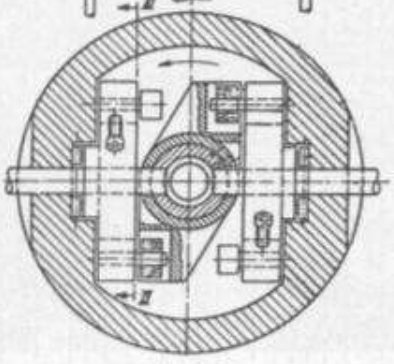


Far left: Metterhausen three blade 10 x 7in. prop.
Left: Gunter Metterhausen's very neat and clean internal pipe installation. Note bifurcated exhaust outlet just below and behind cockpit position.
Below: Rudi Eiff of West Germany recessed glass fibre fuselage of his Pegasus design to bring pipe close to centre line of fuselage, while still benefitting from external fitting. Note that pipe exhausts through bottom of fuselage.









back end of the fuselage turbulating air flow to the tail cone.

Gunter Metterhausen of West Germany had a particularly neat internal pipe installation, with work access hatch formed by the rear of the long streamlined cockpit canopy. Exhaust fed into a bifurcated duct arrangement exhausting either side of the fuselage just behind the cockpit.

Dutchman Jan van Beek also had a very practical arrangement on his *Deception* design, with the entire fuselage front deck removable. His installation included cooling air intakes and a flush top deck exhaust orifice with a wire mesh cover. However, by far the most cleverly engineered arrangement was that used by Bruno and Emil Giezendanner on their *Scorpion* design, in which the rear exhaust, internal pipe concept had been fully engineered into a very clean, and surprisingly slim airframe. The Giezendanner machine employed one of the new O.S. Max-61VF installed inverted. The glass fibre moulded fuselage shell incorporated a bridge arrangement just aft of the firewall, upon which the retracting nosewheel mechanism was mounted, and through which passed the Graupner tuned pipe to exhaust under the fuselage behind the wing. The physical arrangement did entail a fairly drastic dissassembly, just to get the wing off, but the entire arrangement was very cleverly thought out and, like everything the Giezendanner brothers do, was beautifully prepared.

Three blade prop.

Gunter Hoppe and Gunter Metterhausen both used the latter's 10 × 7in. three blade glass fibre propeller, which they claimed to give a better climb and less noise. Of the latter point one must admit that, for a given engine speed, the tip speeds must be slower at the smaller diameter, but on the other hand, there are three blades instead of the normal two! However it's an interesting lead in the quest for noise reduction.

Models and equipment

In spite of the popularity of Hanno Prettner's *Curare* design over the past two years, surprisingly few were actually using the design. The table does cloud the picture a little in that quite a few so-called original designs were really not much more than superficially reshaped versions of the Prettner original. Anhedral tails were by no means the universal vogue. Surprisingly in view of the altitude at Johannesburg, models tended to be heavier than previously and the winner, Wolgang Matt's Arrow was well up at 9.9 lbs — a heavy old hammer!

Engines now seem to be a three way choice between the Webra in both side and rear exhaust versions, Rossi 60 and OPS. Of the radio systems, Simprop SSM was the most numerous, although without dominance. Rate switches and mixers are now very much the vogue among the Europeans.

Arrow at the head

Wolfgang Matt's winning *Arrow* design is entirely conventional — that is if you're prepared to accept the internal muffler as the norm, rather than innovative. Wolfgang has never used the anhedral tailplane concept and *Arrow* is no exception to his rule.

If anything, it is somewhat smaller than his previous *Atlas* design at 720 sq. in. wing/94 sq. in. tail, where the Atlas had used a 760/202 combo. Wing section on the *Arrow* is thinner too at 20% against 22%

For the fly-off Wolfgang used the new Swiss variable pitch prop, which he claimed to have been flying for only two weeks — although I suspect he meant two *months*. Pressed about how much of the variable pitch facility he had actually used, he was a bit non-committal, but did admit to using course pitch to drag out those long sweeping rolls.

He did not appear to vary the pitch through the manoeuvres and one is left to reflect that with all those rate and mixer switches to programme during a flight, the added workload introduced by a variable pitch facility must be quite a mind strainer. Chris Sweatman of Radio Control World (Cape Town) had one of these props on show, but although the unit drew interest, this seemingly revolutionary device was not exactly the talk of the meeting.

One thing's for sure though. At around £60, it is very pricey nose ballast!