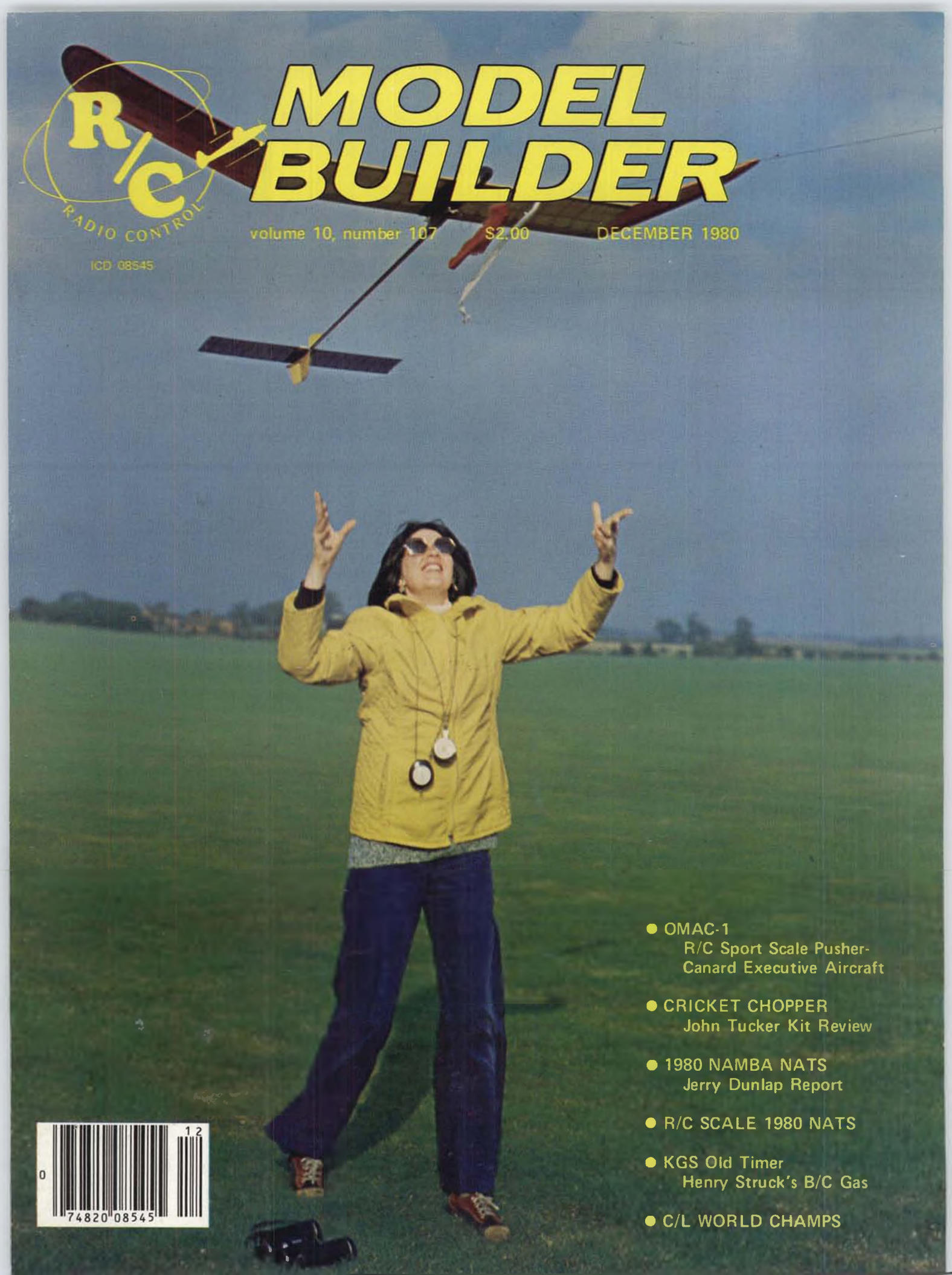
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MODEL BUILDER
volume 10, number 107 $2.00 DECEMBER 1980
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Jerry Dunlap Report
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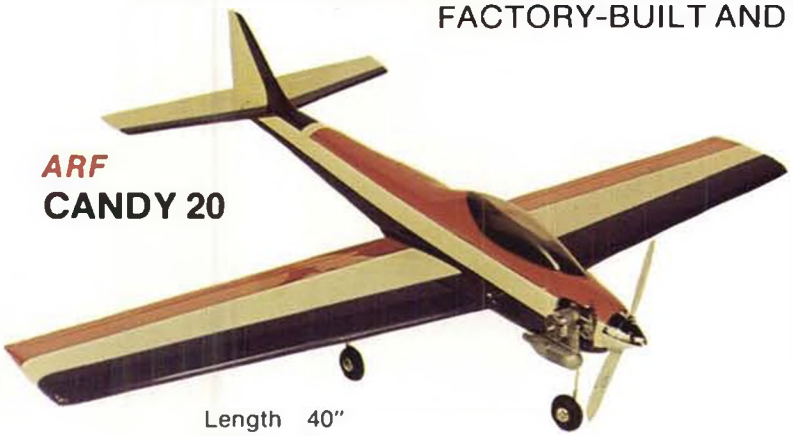

Length 40"
Span 49"
Weight 4 lbs.
Engine .20 size Schnuerle

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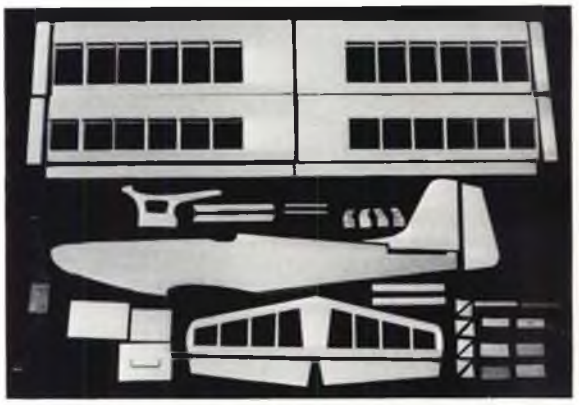

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Engine .60

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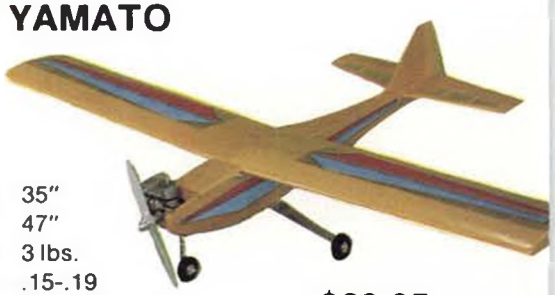

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Span 47"
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Engine .15-.19
Radio 3 or 4 channel

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R/C MODEL BUILDER

DECEMBER

1980

volume 10, number 107

621 West Nineteenth St., Costa Mesa, California 92627 Phone: (714) 645-8830

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FEATURES

SCALE VIEWS

CONSTRUCTION

Cover: A beautiful portrayal of what model aircraft flying is all about, by England's John O'Donnell. Stephen Philpott's A/2 just after launch by wife Christine. Two stopwatches around her neck, plus binoculars at her feet, reveal her next job is to time the flight! (It is accepted practice at British F/F contests for the competitors to supply their own timekeepers).

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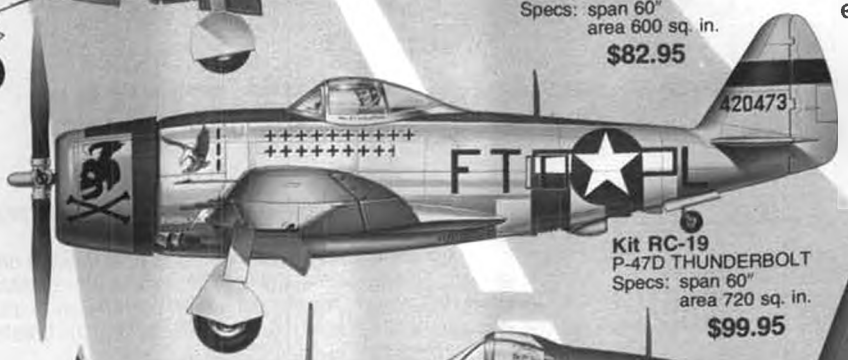

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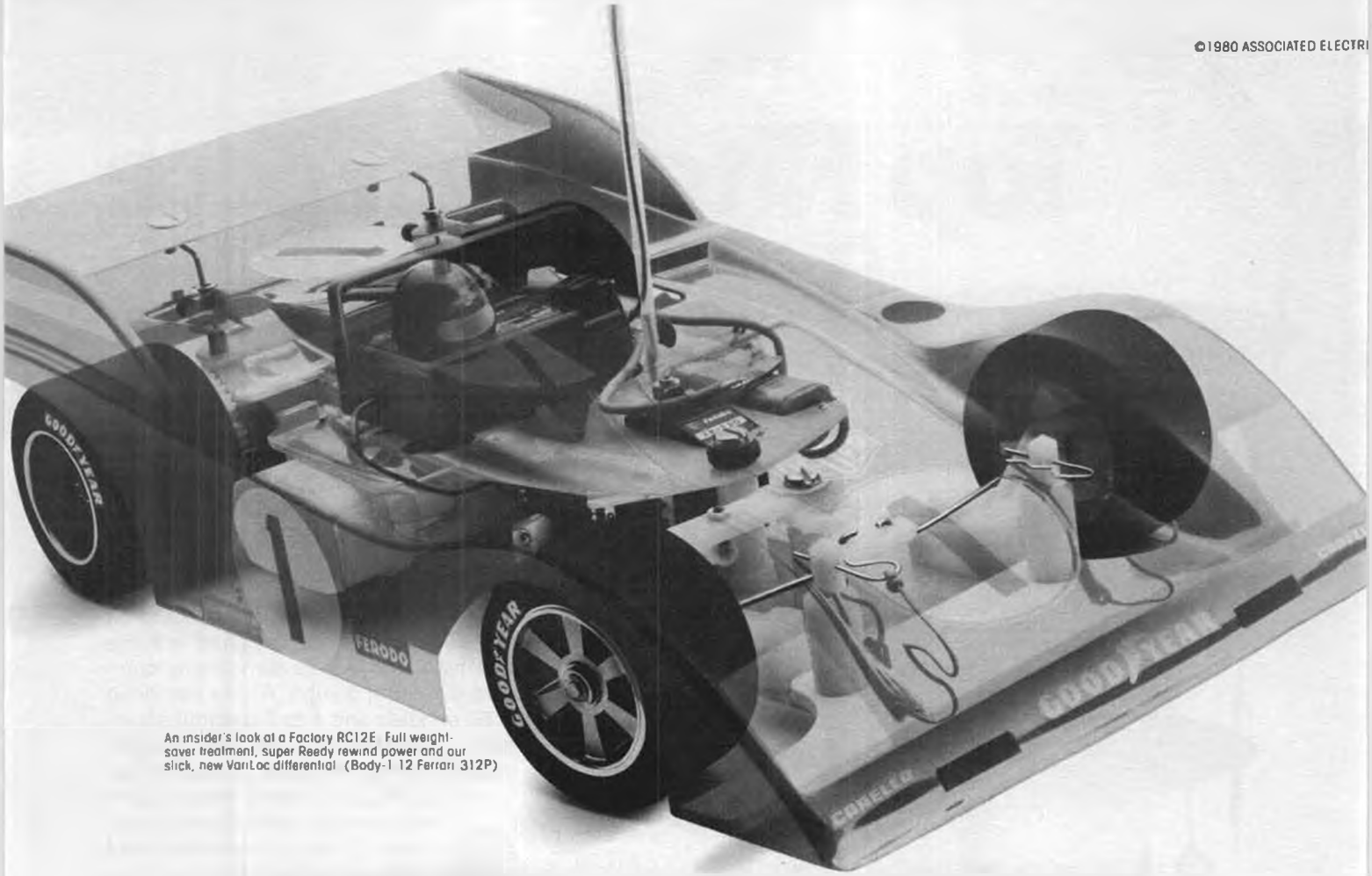
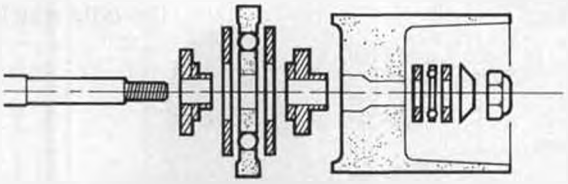


An insider's look at a Factory RC12E. Full weight-saver treatment, super Reedy rewind power and our slick, new VariLoc differential. (Body-1 12 Ferrari 312P)

SPEED SECRETS OF THE TEAM

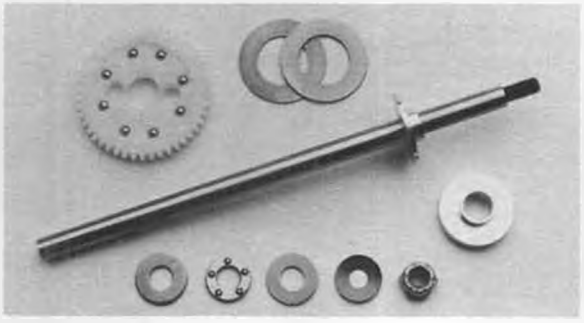


Our VariLoc differential delivers total performance. Fits all RC12E's with no modifications and allows precise fine-tuning for maximum traction.

A full winter's testing and a spectacular debut in the Western Regionals. The Team's top-secret differential was a winner right from the start.

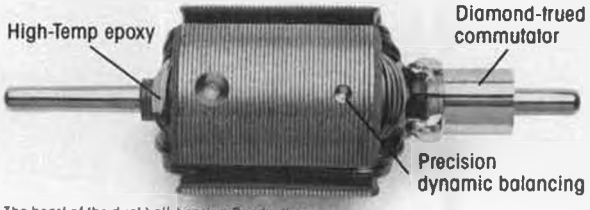
Our VariLoc is the proven racing differential for 1:12 scale electrics, featuring adjustable limited slip action, light weight and easy maintenance.

Simply installed on any RC12E, the VariLoc puts all of your power to the ground, all of the time. And the increased efficiency of the VariLoc increases your run time significantly.



The power for the Team comes from the Reedy Modified 05... already twice the National champion.

More than just rewinds, the hand-built Reedy's are individually blueprinted to racing tolerances to provide Modified class drivers with canned dynamite. Each Reedy is also dyno-tuned, then bench run to perfectly seat the brushes and eliminate the need for "break-in."



The heart of the dual ball-bearing Reedy, the competition-proven rewind.

High performance products like the VariLoc diff and Reedy motors can give your RC12E the competitive edge you need. That's why they are standard equipment on the Team's factory race cars.

ROAR Nationals Expert Class 1:12 Scale Electrics				
		Production	Stock	Modified
1978	4cell	No event	MRP	**RC12E**
	6cell	No event	**RC12E**	**RC12E**
1979	4cell	No event	**RC12E**	No event
	6cell	**RC12E**	**RC12E**	**RC12E**

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STICKS - 36" Lengths

B-001	1/16 x 1/16	.09
B-002	1/16 x 1/8	.11
B-003	1/16 x 3/16	.14
B-004	1/16 x 1/4	.18
B-005	1/16 x 3/8	.22
B-006	1/16 x 1/2	.25
B-007	1/16 x 3/4	.34
B-008	1/16 x 1	.42
B-009	3/32 x 3/32	.12
B-010	3/32 x 1/8	.13
B-011	3/32 x 3/16	.15
B-012	3/32 x 1/4	.18
B-013	3/32 x 3/8	.24
B-014	3/32 x 1/2	.29
B-015	3/32 x 3/4	.39
B-016	3/32 x 1	.48
B-017	1/8 x 1/8	.13
B-018	1/8 x 3/16	.18
B-019	1/8 x 1/4	.22
B-020	1/8 x 5/16	.25
B-021	1/8 x 3/8	.28
B-022	1/8 x 1/2	.32
B-023	1/8 x 3/4	.44
B-024	1/8 x 1	.53
B-025	3/16 x 3/16	.22
B-026	3/16 x 1/4	.27
B-027	3/16 x 3/8	.32
B-028	3/16 x 1/2	.39
B-029	3/16 x 3/4	.48
B-030	3/16 x 1	.59
B-031	1/4 x 1/4	.32
B-032	1/4 x 3/8	.37
B-033	1/4 x 1/2	.44
B-034	1/4 x 3/4	.62
B-035	1/4 x 1	.74
B-036	5/16 x 5/16	.40
B-037	5/16 x 3/8	.50
B-038	5/16 x 1/2	.59
B-039	5/16 x 5/8	.72
B-040	5/16 x 1	.83
B-041	3/8 x 3/8	.55
B-042	3/8 x 1/2	.65
B-043	3/8 x 3/4	.77
B-044	3/8 x 1	.94
B-045	1/2 x 1/2	.75
B-046	1/2 x 3/4	1.00
B-047	1/2 x 1	1.24
B-048	5/8 x 5/8	.87
B-049	5/8 x 1	1.29
B-050	3/4 x 3/4	1.21
B-051	3/4 x 1	1.43

TRIANGULAR CUT BALSA 36"

B-416	1/4 x 1/4	.39
B-417	3/8 x 3/8	.47
B-418	1/2 x 1/2	.60
B-419	3/4 x 3/4	.76
B-420	1 x 1	1.00

STICKS - 48" Lengths

B-061	1/8 x 1/8	.18
B-062	1/8 x 1/4	.25
B-063	1/8 x 1/2	.41
B-064	3/16 x 3/16	.29
B-065	3/16 x 1/2	.48
B-066	3/16 x 3/4	.64
B-067	1/4 x 1/4	.42
B-068	1/4 x 1/2	.56
B-069	1/4 x 3/4	.80
B-070	5/16 x 5/16	.52
B-071	3/8 x 3/8	.70
B-072	3/8 x 1/2	.84
B-073	3/8 x 3/4	.99
B-074	1/2 x 1/2	.96
B-075	1/2 x 3/4	1.30

48" AAA SHEETS

B-388	1/32 x 3	.98
B-389	1/16 x 3	1.10
B-390	3/32 x 3	1.28
B-391	1/8 x 3	1.49
B-392	3/16 x 3	1.84
B-393	1/4 x 3	2.12
B-394	3/8 x 3	2.79
B-395	1/16 x 4	1.60
B-396	3/32 x 4	1.82
B-397	1/8 x 4	2.05
B-398	3/16 x 4	2.58
B-399	1/4 x 4	3.00
B-400	3/8 x 4	4.25
B-401	1/16 x 6	2.85
B-402	3/32 x 6	3.25
B-403	1/8 x 6	3.60
B-404	3/16 x 6	4.15
B-405	1/4 x 6	4.69
B-406	3/8 x 6	5.95

TAPERED CUT SHEETS - 36"

B-430	1/4 x 3	1.55
B-431	1/4 x 4	2.30

LEADING EDGE - 36" Lengths

B-085	1/2 x 3/8	.63
B-086	3/4 x 5/8	1.09
B-087	1 x 3/4	1.42

36" ROUNDED EDGE AILERON & ELEVATOR STOCK

B-441	1/4 x 1	.84
B-442	3/8 x 1	.98
B-443	1/4 x 2	1.32
B-444	3/8 x 2	1.49

LAPPED EDGE BALSA SHEETS

B-610	1/16 x 3 1/4 x 36	.96
B-611	3/32 x 3 1/4 x 36	1.14

SHEETS - 18" Lengths

B-173	1/32 x 2	.25
B-174	1/16 x 2	.28
B-175	3/32 x 2	.34
B-176	1/8 x 2	.39
B-177	3/16 x 2	.49
B-178	1/4 x 2	.62
B-179	3/8 x 2	.69
B-180	1/32 x 3	.37
B-181	1/20 x 3	.39
B-182	1/16 x 3	.41
B-183	3/32 x 3	.48
B-184	1/8 x 3	.56
B-185	5/32 x 3	.61
B-186	3/16 x 3	.69
B-187	1/4 x 3	.80
B-188	5/16 x 3	.95
B-189	3/8 x 3	1.06
B-190	1/32 x 4	.54
B-191	1/16 x 4	.64
B-192	3/32 x 4	.69
B-193	1/8 x 4	.79
B-194	3/16 x 4	.97
B-195	1/4 x 4	1.20
B-196	3/8 x 4	1.49

SHEETS - 36" Lengths

B-134	1/32 x 2	.51
B-135	1/16 x 2	.55
B-136	3/32 x 2	.67
B-137	1/8 x 2	.76
B-138	3/16 x 2	.97
B-139	1/4 x 2	1.24
B-140	3/8 x 2	1.36
B-141	1/32 x 3	.76
B-142	1/20 x 3	.79
B-143	1/16 x 3	.83
B-144	3/32 x 3	.96
B-145	1/8 x 3	1.14
B-146	5/32 x 3	1.23
B-147	3/16 x 3	1.38
B-148	1/4 x 3	1.59
B-149	5/16 x 3	1.89
B-150	3/8 x 3	2.12
B-151	1/32 x 4	1.08
B-152	1/16 x 4	1.29
B-153	3/32 x 4	1.38
B-154	1/8 x 4	1.59
B-155	3/16 x 4	1.95
B-156	1/4 x 4	2.42
B-157	3/8 x 4	2.99
B-158	1/16 x 6	2.20
B-159	3/32 x 6	2.45
B-160	1/8 x 6	2.75
B-161	3/16 x 6	3.15
B-162	1/4 x 6	3.55
B-163	3/8 x 6	4.55

BLOCKS - 3" Lengths

B-251	1 x 1	.14
B-252	1 x 2	.26
B-253	2 x 2	.35
B-254	1 x 3	.35
B-255	2 x 3	.48
B-256	3 x 3	.75

BLOCKS - 6" Lengths

B-266	1 x 1	.27
B-267	1/2 x 2	.36
B-268	3/4 x 2	.42
B-269	1 x 2	.50
B-270	1 1/2 x 2	.60
B-271	2 x 2	.69
B-272	1/2 x 3	.45
B-273	3/4 x 3	.55
B-274	1 x 3	.69
B-275	1-1/2 x 3	.83
B-276	2 x 3	.95
B-277	3 x 3	1.50
B-278	1/2 x 4	.69
B-279	3/4 x 4	.77
B-280	1 x 4	.85
B-281	1-1/2 x 4	1.09
B-282	2 x 4	1.32
B-283	3 x 4	2.09
B-284	1/2 x 6	.98
B-285	3/4 x 6	1.16
B-286	1 x 6	1.36
B-287	1 1/2 x 6	1.88
B-288	2 x 6	2.08
B-289	3 x 6	2.92

BLOCKS - 12" Lengths

B-299	1 x 1	.52
B-300	1/2 x 2	.69
B-301	3/4 x 2	.82
B-302	1 x 2	1.00
B-303	1 1/2 x 2	1.20
B-304	2 x 2	1.37
B-305	1/2 x 3	.88
B-306	3/4 x 3	1.09
B-307	1 x 3	1.37
B-308	1 1/2 x 3	1.65
B-309	2 x 3	1.98
B-310	3 x 3	3.00
B-311	1/2 x 4	1.37
B-312	3/4 x 4	1.54
B-313	1 x 4	1.70
B-314	1-1/2 x 4	2.17
B-315	2 x 4	2.64
B-316	3 x 4	4.17
B-317	1/2 x 6	1.92
B-318	3/4 x 6	2.32
B-319	1 x 6	2.72
B-320	1 1/2 x 6	3.75
B-321	2 x 6	4.15
B-322	3 x 6	5.84

BLOCKS - 18" Lengths

B-333	1 x 1	.77
B-334	1 x 2	1.50
B-335	2 x 2	2.05
B-336	1 x 3	2.05
B-337	2 x 3	3.00
B-338	3 x 3	4.50
B-339	1 x 4	2.55
B-340	2 x 4	3.95
B-341	3 x 4	6.25
B-342	1 x 6	4.10
B-343	2 x 6	6.25
B-344	3 x 6	8.75

BLOCKS

B-354	1 x 1	1.05
B-355	1 x 2	2.00
B-356	2 x 2	2.75
B-357	1/2 x 3	1.75
B-358	1 x 3	2.75
B-359	2 x 3	4.00
B-360	3 x 3	6.00
B-361	1 x 4	3.40
B-362	2 x 4	5.25
B-363	3 x 4	8.35
B-364	1 x 6	5.45
B-365	2 x 6	8.30
B-366	3 x 6	11.65

AIRFOILED SHAPED SHEETS

B-111	3/16 x 3 x 36	1.49
B-112	1/4 x 3 x 36	1.70
B-113	1/4 x 4 x 36	2.53

TAPERED TRAILING EDGE 36" Lengths

B-097	1/8 x 1/2	.37
B-098	3/16 x 3/4	.48
B-099	1/4 x 1	.61
B-100	5/16 x 1 1/4	.74
B-101	3/8 x 1 1/2	.86

BAGS OF BALSA

B-524	Bags of Balsa	2.79

ODDS & ENDS PACKAGE OF BALSA

B-534	Packages	1.95

BULK BALSA - 3" x 36"

Not Stamped or Sorted

B-508	1/32 x 3	.56
B-509	1/16 x 3	.63
B-510	3/32 x 3	.74
B-511	1/8 x 3	.88
B-512	3/16 x 3	1.06
B-513	1/4 x 3	1.20
B-514	3/8 x 3	1.59

MODEL BUILDER'S ASSORTMENT

B-600	Balsa Wood Assort	9.25

PLANKS - 36" Lengths

B-206	1 x 1	1.54
B-207	1/2 x 2	2.05
B-208	3/4 x 2	2.40
B-209	1 x 2	3.00
B-210	1-1/2 x 2	3.60
B-211	2 x 2	4.10
B-212	1/2 x 3	2.62
B-213	3/4 x 3	3.25
B-214	1 x 3	4.10
B-215	1-1/2 x 3	4.95
B-216	2 x 3	5.95
B-217	3 x 3	9.00
B-218	1/2 x 4	4.10
B-219	3/4 x 4	4.60
B-220	1 x 4	5.10
B-221	1 1/2 x 4	6.50
B-222	2 x 4	7.90
B-223	3 x 4	12.50
B-224	1/2 x 6	5.75
B-225	3/4 x 6	6.95
B-226	1 x 6	8.15
B-227	1 1/2 x 6	11.25
B-228	2 x 6	12.45
B-229	3 x 6	17.50

36" C GRAIN AAA 8 - 12 LBS

B-470	1/32 x 2	.56
B-471	1/16 x 2	.60
B-472	3/32 x 2	.72
B-473	1/8 x 2	.81
B-474	3/16 x 2	1.02
B-475	1/4 x 2	1.31
B-476	3/8 x 2	1.41
B-477	1/32 x 3	.81
B-478	1/16 x 3	.88
B-479	3/32 x 3	1.01
B-480	1/8 x 3	1.19
B-481	3/16 x 3	1.43
B-482	1/4 x 3	1.64
B-483	3/8 x 3	2.17

VH - VERY HARD

B-493	1/16 x 3	.88
B-494	3/32 x 3	1.01
B-495	1/8 x 3	1.19
B-496	3/16 x 3	1.43
B-497	1/4 x 3	1.64
B-498	3/8 x 3	2.17

CONTEST BALSA - 36"

Very Light 4 - 6 Lb Stock

B-454	1/32 x 3	.84
B-455	1/16 x 3	.91
B-456	3/32 x 3	1.04
B-457	1/8 x 3	1.22
B-458	3/16 x 3	1.46
B-459	1/4 x 3	1.67
B-460	3/8 x 3	2.20

GET IT ALL TOGETHER WITH SIG GLUE

SPECIAL FORMULAS CAREFULLY TAILORED TO THE REQUIRMENTS OF MODEL BUILDING

SIG EPOXY

EG-001 1-1/2 Oz. Pack - $1.69
1 Oz. Part A, 1/2 Oz. Part B

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See your dealer first! To order direct, add $1 postage under $10. Postage free over $10. No C.O.D.
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from Bill Northrop's workbench

• • •

Two new regular features will be appearing in this and future issues of **RCMB.** Ken Johnson, an indoor expert of many years, is starting in this issue with an alternate-month column on the activity and how-to of indoor modeling. One of the oldest of model airplane categories, indoor is a highly scientific and exacting phase of modeling that gets very little attention in national publications. With the winter months coming upon us, it seems the appropriate time to consider bringing our hobby indoors. Not only that, if the economy continues to stiffen, this may be the only model airplaning many of us will be able to afford. Think of all the Easy B's you could build out of a couple of sheets of 1/16 x 3 x 36!

Our second new regular feature will be full-scale. Our recent full-scale photos on the inside cover for the F/F and C/L section have brought lots of favorable reaction, and though there are plenty of full-scale aviation magazines around, we still feel that a bit of full-scale material in each issue will help us remember that there is not that much of a gap between model and non-model aircraft. Check the difference in size between some giant scale engines, and those being used in powered hang gliders . . . the so-called super-light aircraft.

• • •

One regular feature is missing this month, and we should point it out, as otherwise, no one will notice its absence. We had to drop "R/C World" again (yes again, didn't you miss it last month?) in order to leave room for the many competition reports that come up this time of year. Next month we hope to get back to normal (?).

And keep those rare old kit plans a-comin'. If anyone needs proof that there are still lots of genuine model builders around, in addition to those who just "visit" the hobby for a short length of time, they should see the orders coming in for our "Collector Plan" series. This month's Wanner kit plan for the Wedell-Williams Racer is a prime example of the great material that was available to model builders in the late '30s.

• • •

Perhaps you noticed the slight change in the title of Larry Renger's column. It is now called "Half-A *Sport* Scene." Please, don't act like some of our F/F readers when we added "R/C" to the magazine title. We are *not* going to desert half-A! The purpose of the new title is to go along with Larry's intention to *expand* his half-A column to include sport flying of models with larger engines . . . no, not the big, snorting, fuel drinking 40's, 60's, and so on, but the popular .06, .09, .15, and .19-powered sport models that really dominate sport flying, particularly in R/C and C/L. If you have questions or comments for Larry, write to him care of the magazine . . . he lives nearby, and drops into the office weekly.

AN APOLOGIA

The following from our Scale Views expert, Pete Westburg:

On page 43 of the August issue of **R/C Model Builder,** *there is a picture of a Grumman F2F-1, 5-F-1, which states that the tail colors were black. I have been chastised by a couple of experts, one an eyewitness and a survivor of the sinking of the* USS Lexington, *who says that the tail color was red and that the squadron was based at the time on the* USS Yorktown. Yorktown's *tail colors were red,* Wasp's *black; but the* Wasp *was not commissioned until April 25, 1940. The reference book I used was in error. The caption should read: ". . .based on the USS Yorktown. Tail color was red; band, wing chevron and cowl were red."*

And while we're at it, take a look at the August cover, where we listed Pete's Scale Views as the "Grumman F3F-1" instead of the F2F-1. Our only excuse is that we *could* have been thinking of the F3F-1 Collector Plan that we published in the June issue! According to Pete, they were very similar, but the F3F-1 had more wingspan and a bigger engine.

MYSTERY WRITER

Just recently, Walt Mooney, our private, perennial, persistent, and certainly profilic Peanut plane and plan perpetrator, forwarded us a letter he received from whom we suspect is a young reader, which in its *entirety* reads as follows:

Dear Mr. Mooney,

I'm wondering if I can somehow obtain the Peanut plans for your "Upton Baby Ace," published in **Model Builder.** *Please reply.*

That's it, folks. No name, no address,

The mysterious Fokker Nieu-Spad, modelled by Bill Hadley, Detroit, Michigan. See text.

DOWN MEMORY LANE . . . MB's Editor at the 1965 Philadelphia Nats, with engine starter - moral supporter - OFB (old flying buddy) Graham Lomax, about to start taxiing the Gipsy Moth for one of two official flights, which helped net 3rd Place (only one category in those days) in R/C Scale, plus Sterling Models' Flight Achievement award. That old Quadruplex transmitter weighed about 6-1/2 pounds, allowed coupling or uncoupling rudder and ailerons.

"...THREE if by AIR"

(Letters to the Editor)

Dear Bill,

I am 11 years old and I have just completed the Olympic II. I think R/C is great, but difficult at first. For all the young modelers out there, I just want to warn you, it's more difficult to fly than to build! If you have never flown before, I advise you to have help standing by! I wish you luck!

Tom Martin
Albuquerque, New Mexico

Tom, your letter says a whole lot in a few words, and it's talking to all ages of modelers, not just the young ones. First, be not discouraged if you find it more difficult to fly than build. This tells us that at least you are a genuine modeler! Real modelers like yourself, not the buy-and-flies, tend to develop building skills faster than flying skills because they really enjoy building. Consequently, they build "over their head." This editor is an example.

In 1961 we appeared at the Nationals in Philadelphia with our freshly built Gipsy Moth, and entered R/C Scale. This was called a 3" = 1 foot scale model in those days, as the term "Quarter Scale" was still more than 10 years in the future. Only our 3rd or 4th R/C model, it was built at a time when powerful enough model engines were scarce and radios were in their Flintstone age, but we built it anyhow because it was a heck of a challenge. Needless to say, the Forster 99 ignition engine only succeeded in producing a high-speed taxi down the runway. We were lucky the plane survived, as the radio and servos were homebuilt, and neither the plane nor the radio had ever been in the air together.

At a dinner gathering that evening, we were assailed by Henry J. Nicholls, a world renowned modeler, hobby dealer, FAI officer, and severe modeling critic, from London, England. He said to us, "Bill, you're just like so many G-- D--- modelers I've met all over the world, and there are more of you here in the Colonies (this Britisher is something else!) than anywhere else. You build beautiful models, but you're way over your head when it comes to flying 'em!"

Well, Tom, that comment really struck home. We put the Moth away after the Nats, and for the next few years, built simpler models and learned to fly (we also purchased radios built by someone who knew what they were doing!). When the Nats came back to Philly in 1965, we again appeared with the Gipsy Moth, equipped with a more powerful engine and a reliable radio, and won a special trophy for putting on the best scale flight, and also third place in the Scale event.

So, Tom, if you enjoy building, chances are you're a real modeler, and you'll be with it for a long time. Just continue developing your building skills and don't worry about learning to fly. Your flying will improve as you get more time in the air, and to do that, you need to build. Kind of a crazy circle, but it's all fun!

Dear Bill:

Your favorite Latin slogan, bottom of page 104, October issue...

Don't let the Ba------ wear you down!

I assume that, if I am the first to respond, I get a personally autographed piece of your next broken prop?

Bob Henson
Hobby Manor
Davis, California

Dear Bill:

After many months (years) of reading RCMB *I have finally found inspiration to write. The subject, of course, is "your favorite saying" which was printed on the last page of last month's issue.*

"Non illigitimi carborundum" means "don't let the ba------ get you down." An uplifting little quip if I ever heard one, regardless of whichever group of higher-ups you apply it to.

The reason I know what it means, is here at the University of Oklahoma, College of Engineering, "non illigitimi carborundum" is emblazoned on the front of a T-shirt we engineering students wear. (We stole it from the med school students.) Strangely enough, it is very popular here.

So there you have it ... one of life's lesser mysteries solved by a lowly control line flier (keep it up, Dirty Dan!)

Sincerely,
Pete Chandler
Oklahoma City, Oklahoma

P.S. By the way, C/L is very popular here, with the local club having about 50 members.

Dear Bill:

Those words — Illigitimi Non Carborundum (that's the way I learned 'em) — have kept the fighting spirit of our armed forces alive and vibrant for lo, these many years.

Without these stirring words to spur our fighting men on in the face of danger (and utter frustration caused by our own red tape), the U.S. of A. might never have survived.

I, myself, throughout the twenty years I flew for Uncle Sam, found strength and solace in this most succinct of slogans.

The literal (?) translation, "Don't let the ba------ get you down," became my battlecry eons ago, and these very same words (in foot-high day-glo orange) are emblazoned on my workshop wall for all to see and contemplate.

Hope this clears up any confusion you may have had. And if anyone else writes in and offers a different explanation or translation, he'll obviously be an imposter and should be shunned and ostracized.

Bigger Birds Fly Better,
Al Alman
Arlington, Texas

Hi ya...

Had hoped to get this note off to you sooner, but had to make the annual trek to Ohio to get Bruce & Barry back to college, so I just got back into town...

As you have probably heard from innumerable sources by now, the "correct" translation of the Latin puzzler at the end of your last column in Model Builder *(I refuse to accept the "R/C" prefix!!) is... DON'T LET THE BA------ WEAR YOU DOWN... as you will note from the enclosed Xerox copy of a placard on display around Grumman. Incidentally, please also note the "correct" sequence for the Latin words (Illigitimi Non Carborundum).*

Jean Pailet
Glen Head, New York

You just never know what will prompt readers to write in to a publication! The above points out that we were not alone with our favorite Latin quote (the only one we know!). For all we knew, it was merely "Lacerated Latin" (like "Fractured French"), but it seems to be more deep-seated than that.

Art Phillips, Steelton, Pennsylvania, sent in a clipping, which by coincidence appeared in the Sept. 2nd "The Patriot," a Harrisburg, Pennsylvania newspaper. It's from a regular column "Roundabout," by Paul Walker, and we quote in part:

Ralph Bretz of Camp Hill started us on the serendipity trail when he brought us a beautifully engraved wall sign for our "Cluttered Oasis" which looks more like an undumped wastebasket than an efficiently operated office.

The Latin inscription intrigued:

"Illigitimi non carborundum est."

Freely translated, it means:

"Don't let the ... grind you down."

We pondered the source, remembering that when Charles E. Wilson was Secretary of Defense, he had these Latin words under the glass on his desk as did Ronald Reagan when he was governor of California. Reagan is now running for president, as you may have noticed.

Whence the phrase? Not Cicero, nor Caesar, nor Cassius, nor Horace. Maybe Plautus. Maybe!

A year or so ago we wrote to Reagan, who answered and said he liked the "reassuring quotation" on his desk, but had no ideas as to the name of the author.

Library research was fruitless. Even Freda Rynard of the Dauphin County Library, a researcher's researcher, couldn't locate it.

On a chance, we called Ralph B. Miller, retired superintendent of the Camp Hill schools. He knew the phrase, but had no ideas as to the source. Miller suggested we call Robert Grant Crist, the local historian. Like many readers, Crist knew the quotation, but not the author.

Like many of us, he was a little rusty on his Latin composition (remember?) and referred us to his high school Latin teacher, who promised to "work on it" and said, "No name, please, until I get the answer." The serendipity trail was getting hotter, but has cooled with the passing of time. •

just what you see above. The envelope indicates that our mystery writer is from Providence, Rhode Island, and it was mailed on August 23. Anyone know who it might be?

The Upton Baby Ace appeared in the May 1978 issue of **MB**, both as a 1/4-scale R/C model by Bob Upton, builder of the full-scale aircraft, and as a Peanut model by Walt Mooney.

This brings up an interesting point. Up to now, we have published 105 Peanut plans, and as they have always appeared full size in the magazine, we have never offered them as part of our plans service. On the one hand, you can obtain them by purchasing the whole magazine from our back-issue supply, but then, you don't know what Peanut appeared in what issue. Hmmm, it would seem that we had better compile and publish a complete list, and also arrange to duplicate plans from the issues that are no

Continued on page 104

OVER THE COUNTER

All material published in "Over the Counter" is quoted or paraphrased from press releases furnished by the manufacturers and/or their advertising agencies, unless otherwise specified. The review and/or description of any product by R/CMB does not constitute an endorsement of that product, nor any assurance as to its safety or performance by R/CMB.

• R/C fliers have still one more electronic power panel to choose from, with the introduction of the Power Panel Super Deluxe from Playtron USA. This is a more elaborate version of their Power Panel Custom and features outlet plugs for a 12-volt electric starter, 6-volt electric fuel pump, and glow plug clip. An ammeter and variable resistor are wired into the glow plug circuit so that you can dial the desired current for your particular plug. Another nicety is the slide switch (actually a reversing switch) in the fuel pump circuit that provides for both filling and draining your model's fuel tank. The pump itself is operated by a push-on/push-off pushbutton switch; a nice touch, but just don't ever let yourself be distracted when filling the tank!

In a bind, the glow plug circuit on the panel can be used as an on-the-spot quick-charger for your transmitter and receiver batteries, although the manufacturer does not recommend you do this on a regular basis. The Tx and Rx each have to be charged separately, requiring 45 minutes total (15 to put a 60% charge on the Rx batteries and 30 for a 50% charge on the Tx).

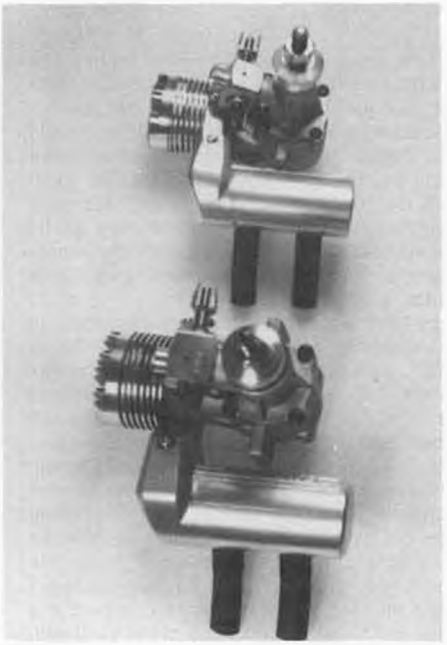
Streamlined low-profile muffler from RPM (Robert Paul Mufflers).

Playtron USA's Power Panel Super Deluxe with metal field box.

The Power Panel Super Deluxe is supplied complete with two large alligator clips for hooking to a 12-volt battery, six color-coded banana plugs for the various power cords, and four mounting screws. Suggested retail price is just $24.95, making it one of the least expensive power panels on the market.

Playtron USA is also offering the Power Panel Super Deluxe with its own metal box . . . sort of a mini field box. There is enough room underneath the panel for a 12-volt motorcycle battery or gel-cell (which can be recharged through the starter plug sockets). The 3-1/2 x 4 x 5-inch-deep compartment beside the panel is big enough to hold an electric starter, props, plugs, etc. The complete box measures approx. 3-3/4 x 10 x 5-1/2 inches deep and is made of sheet steel, spot-welded together and painted matt black. Cost of the panel/box combination is $39.95.

From Playtron USA, 344 London Bridge Plaza, Suite D, Lake Havasu City, AZ 86403.

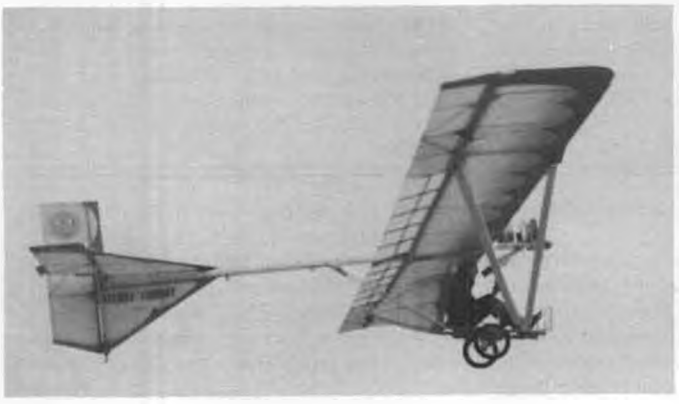


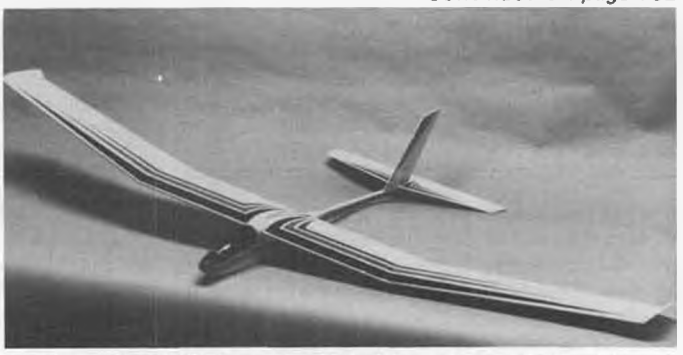
Tatone's new mufflers, designed for tight cowling applications.

* * *

Revolutions Per Minute? Nope, in this case RPM stands for Robert Paul Mufflers, a line of attractive and exceptionally well-built mufflers manufactured by Robert Paul of Lakewood, Ohio. These very compact units are designed to fit most every engine cur-

Continued on page 102





Above, the "2x2" two-meter glider from House of Balsa. Left, Volmer Jensen cruising by in his VJ-24W Sunfun microlight.

Skip Mast and the NASA Flight Achievement Award he won for his big C-130. Took 3rd in Expert Sport Scale. 18 lbs., 4 K&B .21's.

Claude McCullough, plagued with engine problems, placed 3rd out of four entries in Precision with his veteran Shinn.

1 TO 1 SCALE

By BOB UNDERWOOD PHOTOS BY AUTHOR

• In the Midwest, the first of September shapes up as being a pivotal time of the year. Summer lingers, but suddenly, night comes earlier and lasts longer. School doors open, shutting off the freedom of this writer's days. This year the eldest daughter of the Underwood crew begins a new adventure as a college freshman at a school in Iowa. (I lose a proofreader and typist . . . Rats!)

Summer 1980 was filled with many memorable experiences for us, as most summers have for a decade. Contests, a trip to Ottawa, sharing moments with old friends, and meeting new ones filled the hours. A week of such activity occurred with the Nats in Ohio. Once again, the Underwoods took care of the AMA souvenir booth, the AMA Cub (Delta Dart) program with the Dave Abel family from St. Louis, and some general odd jobs like gluing down loose carpet, etc.

Scale occupied some of that time, of course, as we became one of the 80-odd scale entries at the Nats. This being the first year of competition with Giant Scale and the use of the two Sport Scale classes, it is interesting to note the good turnout of models. There were 30+ in Sport Scale Sportsman class, 30+ in Expert Sport Scale, just under 20 in Giant, and four in Precision. With these healthy numbers, there was bound to be good competition.

The site had good and bad features. The runways, while somewhat narrower than some previous Nats, were smooth. Good spectator control was maintained. Actually, not too much "maintaining" was required, since they seemed to set up in a comfortable spot and stayed there without a lot of wandering through the pits. A simple rope was all that seemed to be required. A bean field was located between the model runway and the active runway. It would be interesting to be around when the beans are harvested, since the yield will include a bountiful supply of balsa pieces, spinners, prop blades, etc.

A definite minus was the proximity to the active runway. Not many problems developed during the week, but as Friday and the weekend approached (and scale flying!), the increase in lightplane activity made for some interesting "shared space" moments. I wonder what the pilot said when, as he was taking off, he saw Skip Mast's big C-130 model occupying parallel airspace.

It became evident as the models began to assemble on Tuesday that a great variety of subjects were going to be represented. Probably the subjects in greatest numbers were the ducted fan A-4 and the Smith Miniplane. Missing almost altogether were representations of the "big war," WW-I. Some innovative types of aircraft were in evidence. Certainly, one of the subjects which attracted considerable attention was

Tom Cook (left) received a special award from Airborne Express representative for the best ducted fan. A-4 Phantom has two K&B 7.5's.

Tom Cook's twin fan F-4. The sound of the two fans, the blue smoke, and its imposing size made it a show-stopper (and we must not forget the drag chute deployed during the landing rollout). The effort earned Tom a special award provided by the airport operators, Airborne Express, for the best ducted fan. A plaque and check were awarded following a demo flight on Sunday during the airshow. Skip Mast's C-130 is

Colorful Lockheed Orion by Steve Sauger is another version of the Precision Scale "Detroit News" flown at last year's Nats. Weighs 10-1/2 lbs., is a smooth flier with K&B .61.

Who says Scale is dead? Shown here is just a fraction of the scale models that filled the gym in preparation for the static judging. Four classes attracted more than 80 entries.

Stewards handle Sport Scale models for static judges seated 15 feet away.

Expert Sport Scale winner was this slick P-61 Black Widow by Roger Brennon, beat out second placer Hal Parenti and his Bearcat by a mere one point.

an imposing sight as well. The big round fuselage, retracts, and Fowler flaps all add up to a great scale job. He also has a cargo drop.

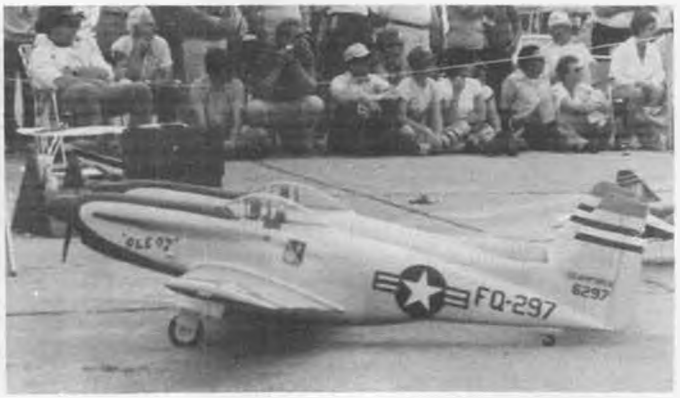
In the Giant Scale class, there were a number of models, imposing on sheer size alone. The sight of the fellas trying to get them through the door into the gym for static judging was interesting. It reminded one of the two-pound whatever in a one-pound thingamijig. One must say they generally flew nicely and the fellas handled their bulk well. Dick Graham with his Pawnee duster did a real job on the bean field. While I was at the other flight line, we could still see the big model swoop low over the beans, dump one load, make his turn, and run a second pass in the other direction. Now all Dick needs is a scale man with the marker flags to line up his run! I'm subject to correction, but I understand he used about two pounds of "dusting stuff" each flight.

There were, unfortunately, many airplanes which were put out of the competition due to crashes or mechanical problems. This seems to be a problem which ebbs and flows from year to year. Certainly a variety of reasons are always present. The biggest problems always seem to be due to some mental lapses on the modeler's part, such as ignoring some cardinal rule of Mother Nature, not hooking something up properly, or allowing the model to get too far away. As an example, I *thought* I had enough flying speed to take off with the DH-88, but the wing tips didn't see it that way and the almost-tailwind did me in. It flew to the 10th row of the beans and fell into the 13th. Chalk another up to pilot error, or as Dave Brown is wont to say, "He who stalleth, falleth."

The judging this year was handled a little differently than in the past. The static judging consisted of three sets of three. One set did the C/L and R/C Precision models, a second took care of R/C Sport Scale (both Sportsman and Expert), and the third set did the C/L

Gorgeous Beech Staggerwing earned a well-deserved 2nd place in Sportsman Sport Scale for Al Kretz. Missed a tie for 1st place by only 2/3 of a point!

Gee Bee R-1 was Granger Williams' Precision entry. Placed 4th following an accident on takeoff. A real bomb with O.S. Max .60.



Art Johnson wowed the crowd with his big F-82, flown in Sport. Greased-on landings were especially impressive. Two O.S. .60's.

Whey they get big, sometimes even a doorway can pose special problems.

1980 was the first year for Giant Scale at the Nats. Dick Graham won it with his Piper Pawnee, made very realistic dusting passes. Ship spans nine feet, 20-3/4 lbs., Webra .91.

Granger Williams had another "flying silo," a Gee Bee Z, this one for Sport Scale. It's a copy of the full-size Gee Bee Z replica built by Bill Turner and Ed Marquart of So. Cal.

Sport Scale and Giant classes.

The Giant static scores ranged from 60.67 to 119, with 14 out of the 18 entries receiving at least 95 points out of the 120 possible. In Expert Sport Scale, the static scores ranged from 64.33 to 92, with 18 of the 34 entries receiving a score of 80 or better. Unfortunately, I'm missing that info for the Sportsman class. The spread in the static effectively took some of the models out of the competition, due to any inability to catch up in flying.

The flying judges consisted of five on each line and were a mixture of USPJA judges and other enlisted help, including the static judges. The high and low scores were discarded and the remaining three scores averaged (except for Precision). After the first round, it was evident that no freebies were given and scale-like flight was being looked for. Some comments overheard following some rather "hot" type flying seem to indicate a concern for what was happening, but it was interesting to note that those who made the comments used the throttle a bit more on subsequent flights and saw a definite improvement in their scores. A strenuous effort was made to keep the maneuvers typical of the subject and listed on the score sheet as to the type to be done. For instance, you listed the type of roll to be done. Some concern was in evidence as to flying the FAI eight instead of the AMA eight, however most of the fliers were definitely in favor the FAI substitution, made because of the proximity of the active runway. (A rules proposal has been submitted to change the present AMA eight to the FAI eight.)

While on the subject of judging, may I throw in an editorial aside. Several comments were overheard at the Nats concerning the fact that Sport Scale is no longer "Sport" but is becoming too nitpicky. In the same vein, the comments were heard that Sport Scale was killing Precision. To justify these statements, an individual would point to the low number of Precision entries and then single out a Sport Scale or two that sported considerable surface detail and suggest that they ought to be in Precision.

Several thoughts come to mind concerning these complaints. First, maybe we are not killing Precision but rather creating a much larger class. However, before you grasp that idea and utter *AHA!*, think awhile. The difference between a very well done Sport Scale ship with oodles of external detail, dummy engines, and cockpit detail, and a Precision Scale model can be *very, very* great, requiring many hours of additional research and construction. Slap-

Continued on page 88

Bob Wischer has certainly got his money's worth out of his Piel Beryl; this year it garnered him yet another 1st in Precision.

Vito Tomeo's Sea Fury was one of 18 entries in Giant Scale, met an unfortunate end during the competition.

CHOPPER CHATTER

By JOHN TUCKER

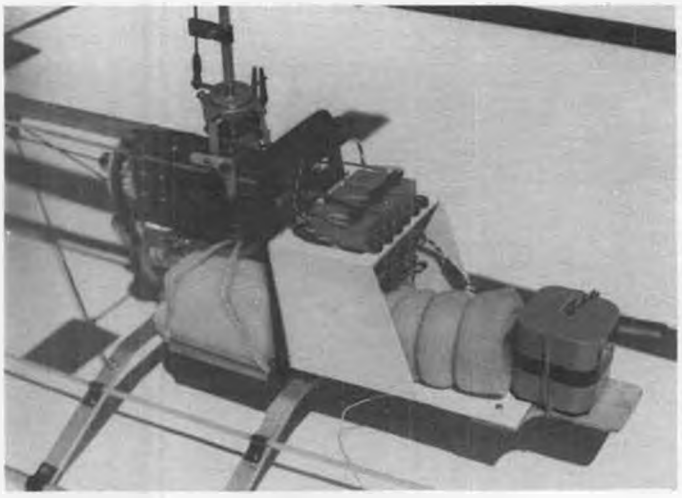
PHOTOS BY AUTHOR UNLESS NOTED

Product Review of the Gorham Model Products "CRICKET"

Although John Gorham probably wouldn't admit it, his latest creation, the "Cricket," began life back in 1970 when several R/C modelers from the Los Angeles area got wind of a new branch of the hobby industry in Germany and decided to try their hand at making R/C model helicopters. The previous year, Dieter Schluter, the acknowledged Father of the R/C Helicopter, flew the first successful flight with his own design and subsequently made it available through a German toy manufacturer, Schuco-Hegi.

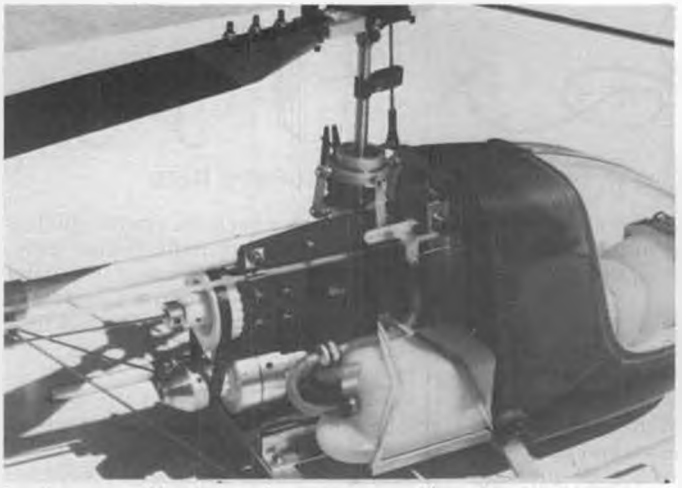
Most of the original group started flying helicopters built from these Bell Huey Cobra kits, and others designed their own machines using the mechanical parts from crashed Cobras. And they *did* crash a lot in those early days, when knowledge of control systems and proper flying techniques was either nonexistent or very limited. John Minasian flew a Cobra, as did Tino Villanueva. Charlie Gilbert scratch-built his own, including the mechanics. Nate Rambo very soon came up with his own version called the "Runway Sweeper," while yours truly was flying the big Cobra. My son Kim eventually joined the group with a smaller Kalt Cobra and a DuBro Whirly-Bird, which he really flew quite well for his age. John Gorham initially started out with the Kalt Cobra but after a dozen or so crashes, he finally designed a very satisfactory model which he called the "Jelly Bean," because of its close resemblance to the edible candy bean. It was really a fine flying helicopter, but in those days it wasn't unusual to have frequent engine and radio failures.

Many modelers who tried helicopters dropped by the wayside very quickly, but almost all of the original group are still going strong. Eventually, Gorham purchased a Schluter Heli-Baby and fell in love with its maneuverability and ease of maintenance. Later in 1976 John became a promoter of the helicopter and was teaching his techniques to anyone who would show up at his weekly flying sessions in Van Nuys, California, until the city took over his

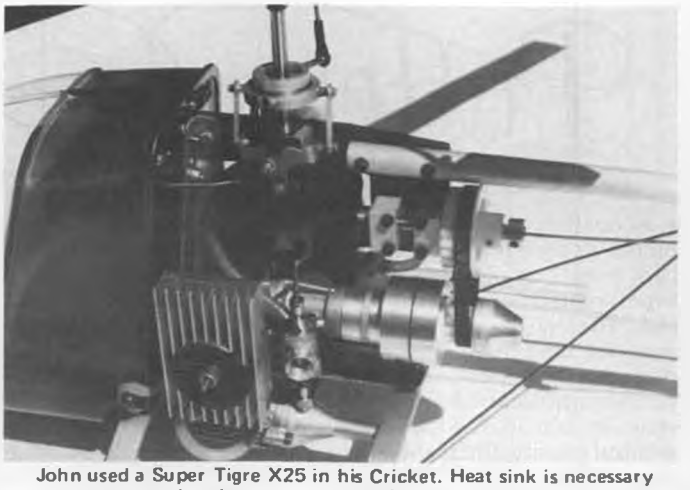


The Gorham Cricket, sans canopy, showing the servo box with Rx underneath. Battery mounted on ply extension to keep C.G. forward.

Nyrod tube clipped to landing gear is for the radio antenna, keeps it up off the ground (and out of the rotor blades!).



Fuel tank is held in place with rubber bands. Nyrod housing for tail rotor control is clipped to the main frame for rigidity.



John used a Super Tigre X25 in his Cricket. Heat sink is necessary to prevent overheating, as no cooling fan is provided . . . gets all the engine power to the rotors. No cooling problems to date.

Cricket's rotor blades are machine-carved from gelutong, a wood used extensively in patternmaking. Very simple rotor head design.

Tail rotor details. Blades turn at 6000 rpm and are carved from wood to keep the weight down, reduce inertia for fast control response.

flying site.

With the advent of the new Schluter Heli-Boy, John organized his own company, Gorham Associates, and opened a helicopters-only sales and service center. Being an aeronautical design engineer, specializing in flight controls and instrumentation for Lockheed Aircraft, it was natural for John to design his very own model down to the last nut and bolt. Several years of experience and experimenting eventually led to the present "Cricket" kit, which was expressly designed for the beginner but which would also appeal to the sport flier. As to John's design philosophy, he wanted to produce the most inexpensive R/C helicopter kit on the market, so as to attract new modelers to the hobby. The model must be light in weight to provide good performance on hot days and at high altitudes. It must also be small enough to carry in the back seat of a compact car without disassembly. Above all, it must have superb directional stability, since this is the most critical thing for beginners. And finally, it must be powered with an inexpensive, low-power engine that doesn't drink expensive fuel like the big engines!

Last month, I obtained one of his Cricket kits, put it together like the plans called for (no modifications), and flew it to see if he really met his design criteria. As you read this short rundown, you'll soon realize he certainly *did* achieve those goals, and then some. In my old age, I'm getting pretty critical of parts, plans and other things that go into the makeup of a new kit . . . at the same time, though, I'm very appreciative of the nicer things I run into! This kit is very nice, from the *heavy* cardboard box to the neatly packaged and labeled parts packages. The quality is excellent throughout!

With so many magazine construction articles available, I won't attempt to duplicate the fine instructions that come with the kit. I will, however, include in this issue several photographs of the model to give you an idea of its simplicity and attractiveness to the beginner. Most parts have been prefabricated and only simple workbench tools are needed to complete the little cutie. John claims an out-and-out beginner can complete the model within a week, and the expert can do one overnight and fly it the next day. (I consider my workbench technique as expert, but it took me three evenings to do the kind of job I wanted.)

Now, for some of the technicalities and specifications of the Cricket. Main rotor span is 35 inches, overall length is 31 inches. Weight with no fuel in the tank, but otherwise ready to fly, is a mere four pounds! With the O.S. 25 FSR or the Super Tigre X25 engine, the main rotor

Continued on page 98

The hairy hand belongs to our columnist's son, Kim, and serves to illustrate the Cricket's overall small size. Makes a great first chopper for beginners. Price is under $200.

Pattern Flying

By DICK HANSON . . . Part 9: Figure "M" with half-rolls, and the Eight-Point Roll.

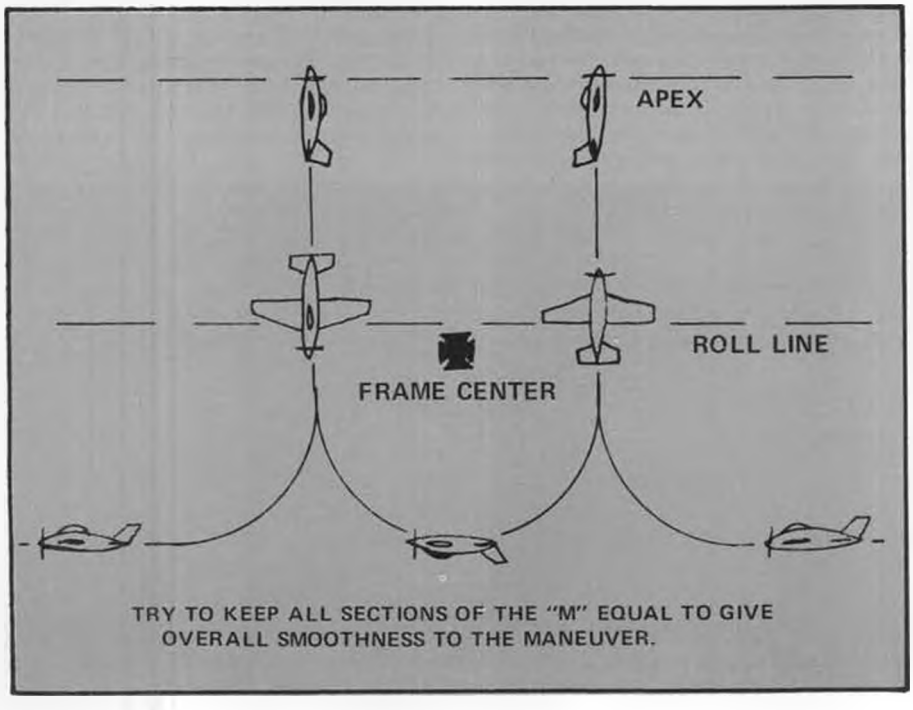
• According to our calendar, this month's column will be devoted to the two most complex maneuvers in the Expert pattern, the "M" and the 8-point roll. The figure "M" requires a very accurate model which tracks well and doesn't exhibit twisting tendencies with rudder application. Also, the thrust setup should allow wide speed changes without causing the plane to pitch up or down (or left or right for that matter). We favor a thrust line above the effective center line of the wing chord because sudden increases in power don't appear to cause any zooming.

FIGURE "M" WITH HALF-ROLLS

Remember the maneuvers you've already learned? The stall turn? The outside loop? You will use the techniques used on them for the "M." Start practicing this maneuver by establishing a heading at about 50 feet altitude and 300 feet out. When you reach about a 30° angle from the frame center, pull the nose up vertically and try to climb exactly straight up for approximately two seconds. Go back and try this repeatedly till you get it. You should be able to release all elevator control once the plane has established a vertical heading (a tiny tendency to overshoot into a loop is normal). After you have released elevator pressure, hit the ailerons hard and go for a 180° roll. If the exhaust smoke trail shows a snaky look during the roll you were probably holding elevator and the roll was sort of a vertical barrel roll. Make certain the basic trim adjustments are correct if you are having trouble at this point. Once the roll is complete, keep climbing vertically for approximately two more seconds. Work this sequence over and over until the climb, roll, and climb stay vertical.

Now we can add the hammerhead turn exactly as we did on the double stall turn; go back and read that sequence if necessary (Sept. '80 issue). As the plane falls, roll 180° to begin the outside loop section. Look at the sketch and note how the rolls and the turns are all lined up with each other. As you reach the bottom of the outside loop, the altitude should be the same as the entry position and should be smack dab in the center of the frame, left to right. Keep the wings exactly parallel with the ground as you climb inverted to the vertical and do the second roll and turn. This can be a difficult portion of the maneuver, especially if the wind is blowing. It may be necessary to "lead" the vertical climb slightly into the wind in order to maintain position. That's OK, as the rules only call for a vertical climb; the plane may not be pointing exactly vertical, due to wind drift. It's better to keep the maneuver framed properly than worry about the exact direction the nose is pointed. The second turn is done in an opposite direction from the first roll. This means the rudder is applied in the same direction each time. Think about it.

Many times the judges will not catch the wrong turn on the second leg, but don't bet on it. If there is a crosswind toward you, try to do the upwind turn first. This will place the model away from you and prevent the possibility of the remainder of the sequence blowing in too close. The final 180° roll and exit should put you back on a path which is even with the entry path. It's not easy, but if you split the maneuver into pairs and make sure you correct headings each time you change from a roll to a turn, etc., it will all fall into place.



8-POINT ROLL

We've already discussed the 4-point roll and the slow roll in previous articles, so will only review those parts of the 8 points which bear further comment.

You do not need to learn to fly the plane in the 1st, 3rd, 5th, and 7th point positions, as you did each point in the 4-point roll. The sequence is supposed to be four to six seconds long, so that only leaves a little over 1/2 second for each point hesitation.

The way your plane is set up makes a great difference in how smoothly the maneuver can be done. Here are some hints. The elevator should be fairly gentle in response around center, with no tendency to be touchy on application of down. On the ailerons, a very quick positive response is essential. Wide or short stick movement is up to you, but we prefer short movements on this maneuver because there is less chance of accidentally disturbing the elevator control.

We've said it before but we will say it again, "You need a plane which will easily fly on its side if you want to do these slow roll and point maneuvers accurately."

When the plane is set up right, you can do the 8-point by doing a 4-point as described in the October 1980 article and adding just a quick aileron application between each 90° point. Remember the four to six second frame time; the tendency is to stretch an 8-point into two 4-point rolls.

Let's go through a sequence downwind. Start the approach at about 100 feet altitude 300 feet out and allow a very long approach to establish a level entry. Call the start early enough to permit a one-second straight heading before starting the first aileron deflection. The position and time for this maneuver should be exactly the same as used for the 4-point roll (read the book if you doubt this). Be sure to wait one second after the final point before calling "complete."

Here are some typical mistakes you can make. On the first point, an excess rudder application will change the heading. If you use rudder on the 1st point, learn to use a slight up elevator touch at the same time. An excess down elevator application on the 3rd point will really throw you off. What we're really saying here is avoid corrections on the odd number points. If your plane is set

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PHOTOS BY AUTHOR

OMAC-1

By Col. BOB THACKER . . . Not many models have been able to stump the Col. as completely as this one did, but he stuck with it and gradually got all the bugs ironed out to the point where the final version of the Omac is a fast, stable, impressive machine. Be the first on your block . . .

• The Omac 1 is an eight-passenger, executive turboprop aircraft. This new machine was designed and engineered by Larry Heuberger, who was the chief engineer for the Lear Jet. It appears the aircraft is going to be as popular as the Lear, but because it is a turboprop, it is much more fuel efficient than the straight jet airplane. In fact, if you were to take a look at any of our big commercial 747's or 707's, in the nacelle ring you would see a tremendous fan inside the cowling which gives the same effect as a propeller. If you want even more fuel efficiency, go to a big external propeller. However, all of this fuel efficiency costs you top speed. If you want more speed, take away your big fans and props and go to a straight jet. But enough about turboprops.

Being the world's greatest single-pusher flier in 1934, we thought, let's become the world's greatest canard flier in 1980. The exciting Omac three-views were presented to us by Bill Hannan, of Peanut Scale fame. Sometimes we wish he had kept the aircraft to himself!! However, we decided to go ahead with the project. So, what was done first? Actually the full-size airplane had not been flown when we started the engineering on this machine, so we were working with several unknowns. We built two balsa gliders, a little six-incher and a twelve-incher, and both flew well. We proved and substantiated that the aerodynamic principles were correct. Then we built a 24-inch all-balsa free flight profile, powered by a Cox .020. This aircraft flew exceptionally well, so we decided that we would go ahead with the big model. It was going to be approximately 1/6 scale and would use a .61 for power. So this is what we are really going to talk about: the trials and tribulations that we have had in developing this thing.

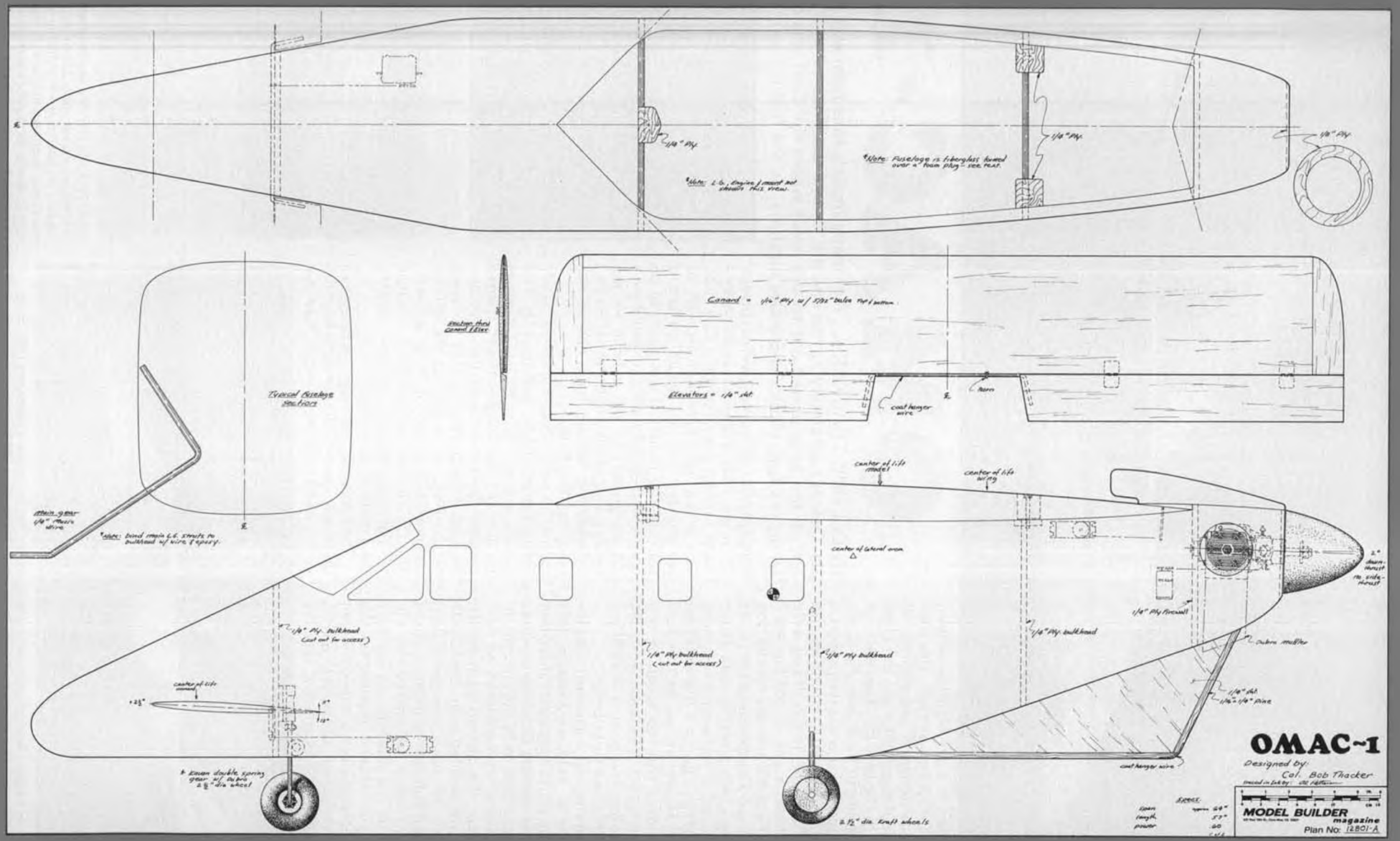
First, let's talk about the aerodynamic setup on the little .020 profile. The canard was set at plus 2-1/2 degrees incidence, the wing was set at zero degrees, and the thrust line was two degrees nose down. The wing tips were reflexed up just slightly at the aileron position, about two or three degrees. The C.G. is very hard to dicuss because we have no common reference points. Let's establish them right now!

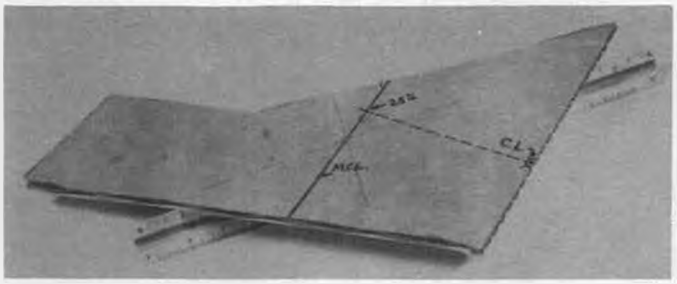
The first thing you are going to have to do on any canard is figure out where the center of lift is for both wings. Now, we

SPECIFICATIONS	
WINGSPAN	63 inches
WING CHORD (mean)	14-1/2 inches
WING AREA	1090 sq. in.
AIRFOIL	Florshime 8-1/2 C
WING PLANFORM	Delta + sweep
DIHEDRAL (each tip)	1-1/2°
FUSELAGE LENGTH	57 inches
STABILIZER SPAN	34 inches
STABILIZER AREA	196 sq. in.
TOTAL WING AREA (canard & main wing)	1286 sq. in.
ENGINE USED	K&B .61 Pumper
FUEL TANK SIZE	16 oz.
NO. OF CHANNELS	4-6
TOTAL WEIGHT	13-1/2 lbs.
WING LOADING	31 oz./sq. ft.

The Omac 1 in its final configuration with the extended lower winglets (compare this to the top photo). Extra winglet area was necessary to eliminate Dutch rolling.

GANGWAY!! Bill Hannan snapped this photo just before diving under his car as Col. Bob made a crosswind landing during demo flights for Omac company officials. It would be putting it mildly to say they were impressed with the model's performance!


1/4" Ply.
*Note: C.G., engine/mount not shown this view.
*Note: Fuselage is fiberglass laid over a foam plug - see text.
Typical Fuselage Section
Elevator Horn cannot flex
Canard - 1/4" Ply w/ 1/32" balsa top & bottom
Elevators - 1/4" slot
coat hanger wire
horn
main gear 1/4" music wire
*Note: bind main L.G. struts to bulkhead w/ wire & epoxy.
center of lift model
center of lift tail ply
center of lateral area
2° down-thrust re. side-thrust
1/4" Ply firewall
1/4" Ply bulkhead (cut out for access)
1/4" Ply bulkhead
Cobra muffler
1/4" slot
1/16"-1/8" pine
center of lift
+2½°
0°
-1°
* Sullivan double spring gear w/ Cobra 2½" dia wheel
2½" dia. Kraft wheels
coat hanger wire
OMAC-1
Designed by:
Col. Bob Thacker
Drawn in Lobby: Bill Hannan
SCALE:
open rough power
MODEL BUILDER magazine
Plan No: 12801-A



For would-be canard designers, these photos demonstrate how to find the center of lift of a wing (left) and center of lateral area of a fuselage (right). Profiles of a half-wing and fuse are cut from cardboard and balanced over the edge of a ruler. Fully explained in text.

can give you four or five different formulas on how to find the center of lift of any wing, but we're not going to. The simplest and easiest way to do it is to take the planform right off of the magazine page (our apologies to Mr. C. Grant). Stick a piece of cardboard underneath the page, take a pin and go all the way around the extremities of one half of the wing, then take the cardboard out and cut out the half-wing. Now you are going to balance that half of the wing in two 90 degree planes. Just stick your ruler underneath it and balance it in one plane, mark a line on it, turn the little half-wing 90 degrees and mark another line on it. Where they intersect, draw a straight line along the airflow of the wing from front to back. The line that you have drawn on the wing, and we don't care how much sweep or whether it is a double delta or whatever planform, is going to be your *mean chord.* Now, 25% back from the leading edge of that chord, go straight over to the center of the fuselage and mark a little X. That is the center of lift on that wing. Repeat the procedure for the forward tail or canard. Now you've got two lifting points, one forward and one aft.

Now what we're going to do is figure out where to put the C.G. First, let's figure the canard area and the wing area. On this particular aircraft the forward canard is 20% of the lifting surface and the aft wing is 80% of the lifting surface.

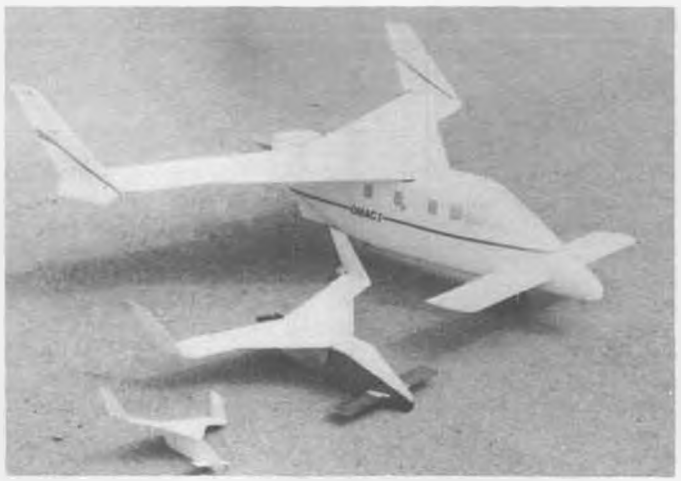
OK, now measure 20% forward of the aft lifting point (or 80% back from the lifting point on the canard); this establishes the *mean lifting point* of the entire aircraft. On a conventional aircraft, we always have the C.G. forward of the center of lift, right? On a canard, use 10% of the distance between the two centers of lift and put your C.G. forward of the mean lifting point by that amount. Canards are very, very forgiving of forward C.G.'s but they are absolutely unforgiving of aft C.G.'s.

We were not going to go into any of the gruesome details on building the big model, reasoning that if you want to take on this kind of project, you are experienced enough not to be told how to build a model airplane. But the so-called editor of this rag asked if we would fill in more space, so here goes! The fuselage is started by carving a foam plug to the correct shape. If you haven't made a large foam shape before, try this. Cut the general outline on a large bandsaw. Take a broom handle and ram it into you-know-where, then start shaping with very coarse sandpaper, being careful not to dent it. Foam is very soft!

After you are satisfied with the shape, final sand and glue a 1/8 ply ring on the cowl; this will give you something solid to put the glass cloth onto. We used two

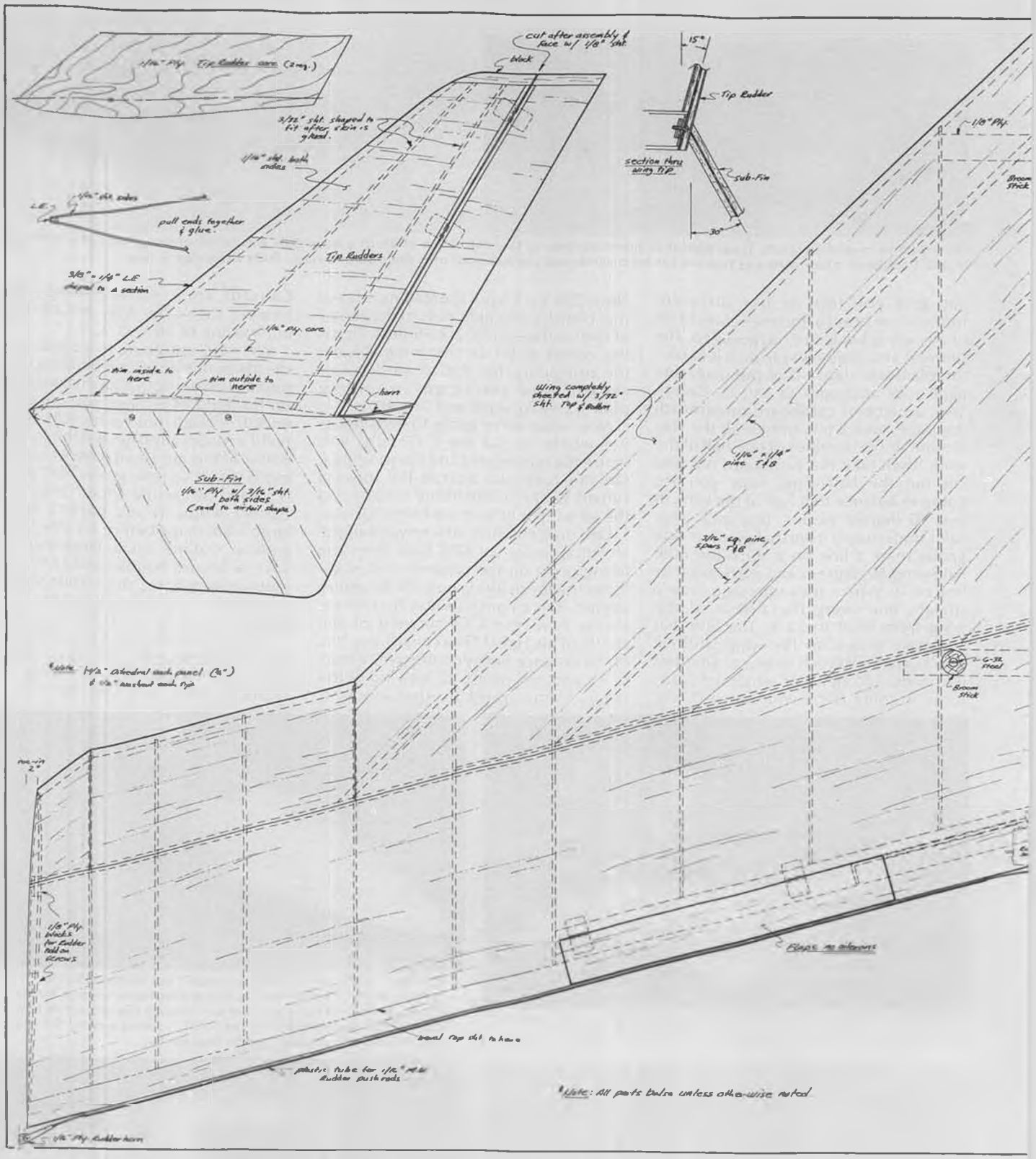
IT FLIES!! IT FLIES!! After five tries and five snap rolls on takeoff, the Col. finally got the darn thing to fly. He's understandably happy.

Col. Bob calls this his "dead porpoise," but we know better. It's actually his first try at making a glass-over-foam fuselage for the Omac. Polyester resin somehow got through the protective covering of Econokote and ate up the foam . . . what a mess! Solution was to use epoxy instead, works beautifully.



A family of Omacs. The 12-inch glider and 24-inch .020 F/F were built to prove the design's airworthiness before starting on the big one.

Not much radio mounting room in the fuselage, eh? Wadded-up newspapers keep resonance to a minimum.



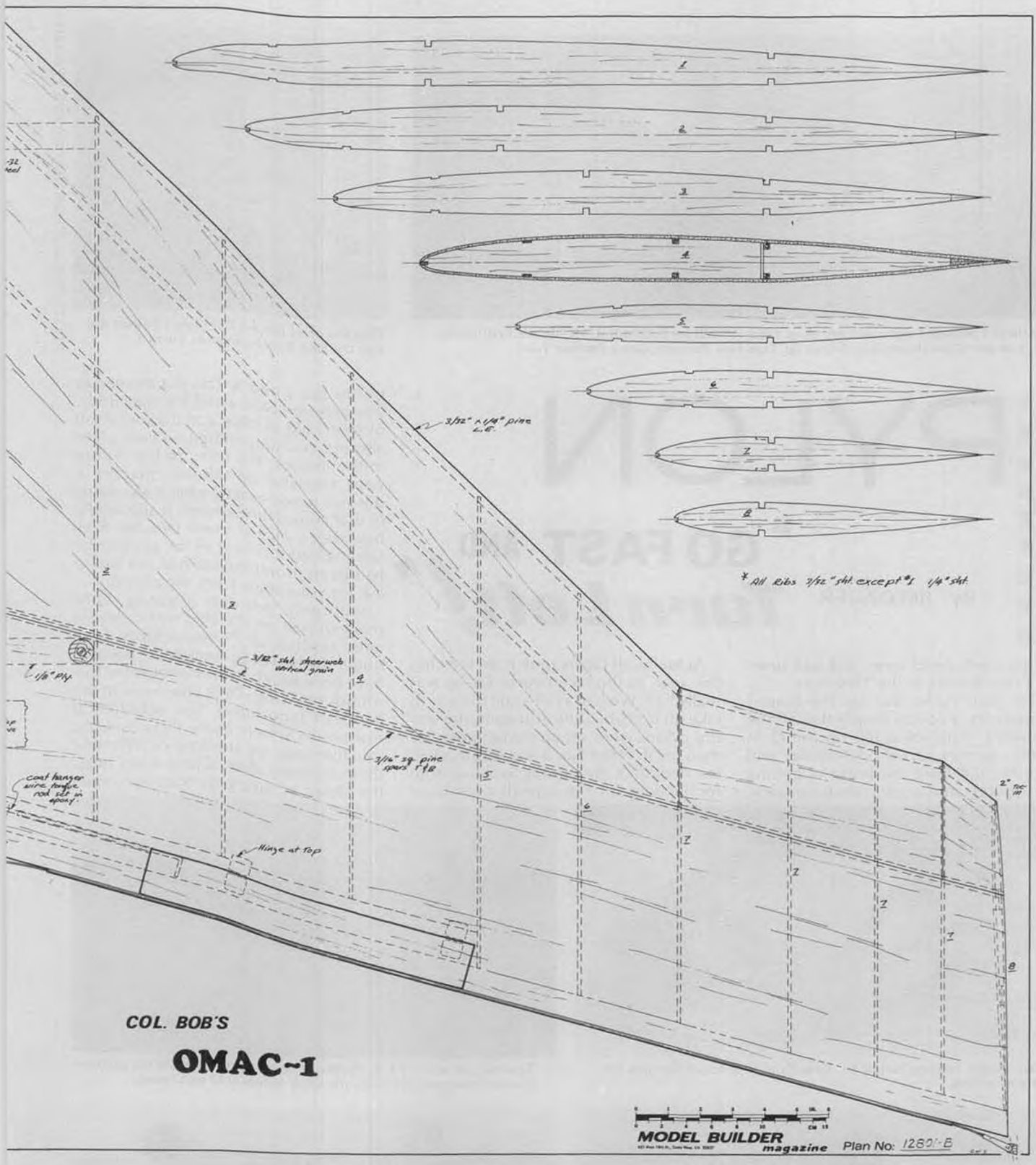
layers of 6-oz. cloth, one of 4-oz., and finished with a layer of 2-oz. cloth. If necessary, add a layer of 3/4-oz. cloth for a final, smooth finish. The finished depth of material is approximately 1/32 of an inch, strong as steel but better.

The reason the plans show no bulkheads is that your fuselage will be slightly off, because it's a hand-shaped deal. For a pattern, just go in and make cardboard ones till they fit. Good luck!

What is that dead porpoise doing in the picture layout? Please, that's our first plug attempt . . . Econokote over polystyrene foam. We put on the polyester resin and the first glass layer . . . look what happened!! Evidently polyester resin will bleed through any film. *Epoxy* is the only way to go!

Wing and canard construction is strictly conventional and should present no problem for an experienced builder, so we'll skip any comments about them and get to the *really* interesting part of the story: the flight tests.

It took about four months to finish the model. We set it up exactly like the .020 model and were ready to amaze the troops at Mile Square, right after the 1980 MACS Show. Well, the first high-speed taxi went quite well. The airplane handled well on the ground but would not rotate (no, we didn't have the elevator hooked up backwards). To make a long story short, we decided it was now or never, so caution to the wind, balls to the wall, full power, we went steaming down the runway, full up stick . . . the left tire whirled off, the plane snapped on its back and went scraping down the runway. What a humilation for the world's greatest



FULL SIZE PLANS AVAILABLE – SEE PAGE 100

single-pusher flier!!! Obviously, the reason it snapped on its back (we thought) was that it lost a wheel. You can imagine what that model looked like after it went tearing down the asphalt at 60 miles an hour, upside down, on its top and two winglets!! We repaired the model in a week and came back with really no aerodynamic changes. Guess what happened? Exactly the same thing. It snapped on its back and broke the wing in three places and tore most of the winglets off. There must be something that we are doing wrong here!!! We could not get the big model to fly like the small one, so we started changing the thrust line. We went from two degrees nose down to zero and that had no effect on the airplane, so we went from a zero thrust line to four degrees nose up and that had no effect on the airplane either. Finally we decided the C.G. was a bit too far forward, so we started moving the C.G. aft and got it to snap-roll on its back at half the speed that it was formerly doing it. Well, it was back to the shop for a complete rethinking on what could be wrong.

We took a hard look at the little .020 and suddenly realized we had forgotten to figure in one of the most important things. The fuselage on the big model is so wide at the canard location that we were losing almost 50% of the lifting surface! We built another .020 profile and flew it, and then built a little false fuselage up front. You guessed it, it

Continued on page 66

Top three Formula 1 Nats winners were, from left: Brian Richmond, 1st; Tom Christopher, 2nd; and Jim Moorehead, 3rd. Brian and Tom flew Polecats, Jim a Prather Toni.

Flawless paint job on Jim Maki's Polecat got him the Best Finish award in Form 1.

PHOTOS BY AUTHOR AND WAYNE YEAGER

PYLON

"GO FAST AND Turn Left!"

By JIM GAGER

• There was good news and bad news for Pylon Racers at the 1980 Nats.

The good news was for the Form I contestants, and was simply that all the problems (bad news) fell on the Q-M racers, as they raced on Monday and Tuesday and bore the brunt of getting the workers and organization on track.

Actually, all racers took it on the chin this year, as the race course set-up was really bad. We had a full-scale runway to take off from, but unfortunately, the way the pylons were set up made things less than ideal. Pylon No. 3 was set smack in the middle of the runway to allow room for landing on the asphalt outside of pylons No. 2 and 3. This put the center line between Nos. 2 and 3 in the middle of farm field stubble and tractor ruts. It also put you (depending on your place in the lineup) 100 feet to the left of your airplane on takeoff, making it difficult to see exactly what it was doing in that critical time period. It also would have been nice if Event Director Rick Gerling had received all the workers he had been promised and had not had to ask for volunteers from the crowd.

With only two days of racing, Q-M really took it on the chin with a decent entry turnout of 74 competitors. Even under the best of circumstances it would have been tough to have completed five rounds of racing. Then you throw in the late start (one hour); the lackadaisical manner in which many fliers took up valuable time by stunting or trimming their airplanes after almost every heat; the delay in racing as Nats personnel

Karen Yeager holding/calling for Greg Doe. Nice to see the girls out at the races too.

Typical race start in F-1. Puddle in foreground indicates the weather was not too good earlier in the week (when Q-M was flown).

Pilot Rex Knepper and caller Bob Hisey trying to fire up for a heat. Hot, humid weather robbed power, made for generally high race times.

A little pre-race strategy between pilot Jim Moorehead and caller Dave Pearce. Must have done some good, Jim finished 3rd in F-1.

Handicapping judges hard at work, looking for the best finish aircraft . . . a tough job, they were all good!

Formula 1 handicapping. All these airplanes were judged to be 1's in finish; from this they narrowed it down to the top four, then selected the best one from those four.

Nice trim job on this Polecat by Dave Timcoe of Detroit, Michigan. S.T. X-40 up front.

searched for the ghost transmitter on 72.320 that shot down several aircraft; and last but not least, the tremendous storm that blew through late Monday afternoon. The storm came up out of nowhere, with winds in the 50-60 mph range and *torrents* of rain. Canopies were blown down and in some cases away. Airplanes were blown around and some suffered damage from flying lawn chairs and tent canopies. Rain inundated everything and found its way into flight boxes, engines, and all of your clothing. The winds and rain went on for approximately 30 of the longest minutes in the history of recorded time, and with the forecast for more of the same, racing on Monday was cut short with only one complete round and three heats to show for over four hours of racing.

The shortening of time allotted for Q-M really had many contestants upset with the Nats Organizing Committee. The feeling was that, given the normal high interest in the midwest and looking back to the 1976 Dayton Nats Q-M event with 81 entries, they should have had enough background and foresight to know that this year's entries would likely be high. Given the expense of attending the Nats (an entry fee of thirty dollars plus accommodations for the three days necessary to be there), and combined with the poor course site and lack of racing time, there was much discussion among the fliers of skipping the Nats in the future and breaking off on their own for a contest and/or simply making the Rough River Q-M Championship Race the main "Nats."

Perhaps, though, the solution is to have a representative attend the Nats Organization Meeting to see that we receive a just amount of racing time. As I understand, we didn't have anyone in attendance at the 1980 meeting and I'm sure it's every event for itself when it comes to divvying up time.

Well, that's the background; now to racing. With the weather in the high 80's/low 90's and humidity around 100%, times were very mediocre, as at the end of racing on Monday, the best times were only in the low 1:30's, and there was a 20-way tie for first. Tuesday went considerably smoother, as the contest workers were into the groove and Rick Gerling put a stop to the showboating

Dave Pearce and Chuck Greenwood. Dave managed a 4th place in F-1 . . . not too shabby.

Best F-1 Senior, Eric Ristrim (left), receives trophy and congrats from Rick Gerling.

Bill Williamson and Dennis O'Brien, with hardworking starter Larry Eads (left). Dennis had tough luck this year, ruined two engines in the first two heats, wound up 62nd. Next year, Dennis!

Not roughnecks in the pokey, it's the No. 1 pylon crew. From left: Duke Eads, Kevin Matney, Ed Baso, Daly MacGrayne, Bob Privette.

Nats Q-M ready area. Good organization and a place in a numbered line made it easy to keep track of your heats.

The Q-M top three and their callers (standing), l to r: Gail Jacobson - Dave Latsha, 1st; George Parks - Ms. Parks, 2nd; Bob Brogdon - Brian Richmond, 3rd.

after the heats were over. The weather was still lousy for speed and it wasn't until Jimmy Bartels put in a smokin' 1:24.9 (which held up as fast time of the meet) that anyone showed what a Q-M could do.

At the end of round two there still remained nine fliers with a perfect score and it wasn't until round three that it got shaken down to three fliers. By then, due to the lateness of the hour, it became obvious that it would be impossible to fly any more complete rounds, and the Event Director decided to take the top twenty-four fliers to fly another round to see if it would change the standings. The partial fourth round didn't change the standings significantly and the three-way tie for first between Bob Brogden, Gail Jacobson, and George Parks had to be flown off.

After a clean start and only a short way into the flyoff, Brogden cut out and Jacobson pulled ahead easily and led Parks throughout the race, giving Jake first place, Parks second place (this made George bridesmaid at three Nats now), and Brogden third. In the closing darkness, Event Director Rick Gerling handed out trophies to the winners who, though happy they won, were still disappointed they weren't allowed to prove their talents under the NMPRA-required five rounds of racing. Standings appear elsewhere in this column.

Since I was unable to stay for Form I, I asked (begged, pleaded, bribed) Wayne Yeager to cover it for you. He has delivered a brilliant piece of journalism and, I must admit, I wish I could submit his copy as written because I was impressed by his way with Crayola. NEVER have I seen the box of 64 used so effectively. Thanks, Wayne.

Continued on page 93

Jimmy Bartels was ultimate Q-M fast time man, did 1:24.9. Prather Toni with Cox .15.

Rick Gerling was event director for both Q-M and F-1; he and his crew did a super job!

Dick Sonheim, all dressed in white. One of the good guys who make the Nats possible.

The "Florida Flash" (Jim Maki) with caller Bill Williamson and a D&L Rivets, making their Nats Q-M debut.

Typical racehorse start in Q-M . . . looks like someone's a little late getting off!

FUEL  LINES

JOE KLAUSE
P.O. Box 2699
Laguna Hills, CA 92653

• At one time or another, we have all heard or used the expression, "Things run in cycles. . ." This past month the mail seemed to hit a peak in its cycle. All of the letters were enjoyable, and it would be nice to share them all with the readers. Unfortunately, space will not permit. So I've chosen one that seemed to have considerable potential for reader interest. Here are excerpts of the letter from Dennis Maller of Racine, Wisconsin:

I wish to pose a question which has long bothered me and several of my fellow R/C fliers. Why do all commercial glow fuels contain 20% or more lubricant? I am aware that the rpm's of these engines are extremely high; however, compared to many larger displacement two-cycle engines, i.e. outboards and motorcycles, the surface velocity of the wear surfaces is probably lower. In spite of this, these larger engines can run on fuel blends containing two to five percent lubricant.

Other questions which come to mind are: 1) Does methanol seriously detract from lubricant performance compared to gasoline? 2) If no nitromethane is used, can lubrication be reduced? 3) Are the clearances in model engines much smaller than conventional engines, thus necessitating richer lubricant blends? 4) Are fuel blenders playing things far to the safe side just to guarantee long life for lapped piston and bushed crankshaft engines, consequently producing fuels containing more lubricant than necessary with ringed pistons and ball bearing crankshafts?

Whew! Dennis, any university engineering professor worth his salt could generate a dozen or so courses on the subjects you've raised. Nevertheless, I'll ignore all ordinary dismay and try to charge ahead with a few simple and relatively direct answers, or at least partial answers. For the moment, I'll reserve comment on your opening general query and go to the numbered questions. Let's take them in order.

1) In general, fuels, in their basic state, do not affect lubricant performance. Lubricant molecules remain intact. For simplicity we can consider that the fuels only dilute the concentration of lubricant. (One notable exception is that castor oil will not stay in solution with forty or more percent nitromethane unless other additives are used.) So, we can't blame methanol as a culprit compared to gasoline. Heat is the major factor affecting lubricant performance. But if you'll recall from this column in the February 1980 issue, we need heat to operate our engines. Hence, we want a lubricant that can withstand heat. In this regard, you might want to review my comments on the composition of commercial fuels in the October 1978 issue of **Model Builder.**

The answer to question No. 2 is similar to No. 1. There is no direct correlation between nitromethane and a required percentage of lubricant. Again, heat is the critical factor, and, contrary to popular belief, nitromethane does *not* automatically increase heat. In fact, as one example, a mixture of 50% nitromethane, 20% methanol, 10% propylene oxide, and 20% lubricant will burn approximately 15% hotter than a mixture of 65% nitromethane, 15% propylene oxide, and 20% lubricant.

No. 3). Close tolerances in model engines is not the reason for high percentages of lubricants. Certainly not in ringed engines. Virtually all large two-cycle engines, such as motorcycles, use ringed pistons. Their total piston diameter clearance will vary from .002 to .006 of an inch. On our model engines with rings the clearance is usually about .002 of an inch. Considering that the bore of the motorcycle engine is a couple of inches and ours is less than an inch, the tolerances certainly are not lopsided. Once more, heat is the significant factor. We burn fuel to generate heat to increase pressure to push the piston down. Subsequently, we must dissipate the heat. If there is too much space between the piston and the sleeve, there will be poor transfer of heat from the piston to the relatively cooler cylinder for further transfer to the atmosphere. With respect to slug piston (lapped) engines, the amount of necessary lubricant is more in a gray area. Obviously there is more surface area contact than with a ring. However, in a ringed engine, during the power stroke, the ring-to-cylinder force is quite high. So, you can see that there are no simple answers as to how much lubricant is enough.

Nevertheless, now is the time to throw all caution to the wind and bite right into question 4. Yes! In my personal opinion, commercial fuel blenders are playing things on the safe side. However, I hasten to add that I think it's a very sound concept. Here's why. We know that, musically, many people are tone deaf. Similarly, an amazing number of quite experienced modelers are "mixture deaf." Other than extremely rich or lean settings, they can't discern when the mixture is ideal. Pity the inexperienced modelers. One very practical solution to this dilemma is to put extra lubricant in the fuel. Since a lean mixture is the surest way to generate too much heat and ruin engines, fuel and engine manufacturers hedge against such disaster with extra lubricant. The extra amount is a roundabout way of dealing with the heat. Actually, in the ideal mixture the lubricant does not deal significantly with heat. It's primary function is to prevent heat by decreasing friction between moving parts. The major coolant that deals with the heat is the non-lubricant portion of the fuel . . . the methanol, etc.

In a way, what has been said thus far has also addressed most of the initial question. I think by now the readers will perceive how, over about 30 years, 20% lubricant customarily became the "right" amount. That still doesn't answer the question of how motorcycles or outboards can run on two to five percent, or what percentage is enough for model engines. There are two major reasons for the former. First, during the last ten years the so-called two cycle "super" lubricants have been developed. Second, the carburetors on motorcycles, etc. are quite sophisticated in comparison to ours. They are factory set, and there's no needle to tweak. Hence, the chances of getting a lean run are slim, and extra amounts of lubricant are unnecessary.

Now, for the final question of how much lubricant is enough in our engines. Unfortunately, I cannot provide a definitive simple answer, but I can give you some examples, suggestions, and a note or two of caution. Here are two lubricant percentages recommended by manufacturers of four-cycle engines:

Damo	2%
O.S. Max	Standard fuel (20%)

In discussing this subject with Otto Bernhardt, he advised that 10% castor oil was fine in any gasoline ignition engine conversion. He also felt that 5% castor oil was sufficient for a glow ringed engine. Henry Nelson, the designer and manufacturer of the world famous Nelson .15 slug piston diesel recommends 5% castor oil in his engines. He also told me he had tried 5% synthetic oils with some success and some heat problems. Since he had no problems with castor oil, that's his choice. (Note: The flash point of castor oil is 495 degrees fahrenheit. Most synthetics are about 450 degrees.)

How about slug piston glow engines? Well, from personal experience, I know that 10% Klotz KL 100 will work quite well provided that the mixture is not on the lean side of the power curve. Get it a tad lean and you've got a real heat problem. To be on the safe side, I regularly use 15%. In a similar vein, here's some conjecture. About five years ago George Aldrich developed his

Continued on page 72

PHOTOS BY AUTHOR

DD's wife, Cheri, races this Delta Super J with a swoopy Budweiser Spyder body from MRP. This particular body is highly recommended by Delta for diff-equipped Super J's.

R/C AUTO NEWS

By DAN RUTHERFORD

Our resident Control Line scribe has found an additional direction for his writing talents, a direction he has now explored for at least three years. Let's see if he has learned anything!

• For a modeling activity that is growing so quickly and growing on an established base of solid, well-financed manufacturers supplying equally committed long-time racers, the sport of racing R/C cars has not had much in the way of exposure in the normal R/C enthusiast type of publications.

The dumping of *Race Car World*, as well as *RC Sportsman*, by a fast-talking fellow who bought these magazines and then split (only thing faster than his mouth was his hasty exit) with anything that wasn't nailed down reduced coverage of R/C cars to an occasional column in *M.A.N.* and Gene Husting (head guy at Associated) doing his consistent column on R/C cars for RCM.

Now, that simply isn't enough, and so I have (finally) convinced **RCMB** that what is needed is for them to have a column on the subject and that there is only one write-for-hire type in the whole world who is eminently qualified for the job. But he was not available.

So here I am. . .

Before going much further, it needs to be mentioned that WCN and I actually talked about this column before several times, but with the idea in mind that I would only cover 1/12 on a bimonthly basis, Chuck Hallum doing 1/8-scale on alternating months. But Chuck hasn't been able to do any writing at all lately, and I decided it was all or nothing anyway. So WCN has agreed to a monthly column on R/C cars, one that will cover *all* aspects of the sport. What we are talking about here is a financial commitment. I don't write for freebies, so **RCMB** would no doubt like to be able to gain your support. Write to them direct, my ego is already huge enough, don't need any atta-boys. . .

My personal interests in R/C cars cover the whole range, even to R/C motorcycles, but I find that 1/8-scale gas is the more demanding of the racing events and so gives me the most personal satisfaction on those odd days when everything works just as it should. However, 1/12 electric is not ignored by the DRT (Dirty Racing Team), I actively race the 1/12 cars and regard them as a terrific kick in the pants; they are super clean, very quick, and dead-nuts reliable, as well as placing a premium on clean, smooth driving and thorough setup.

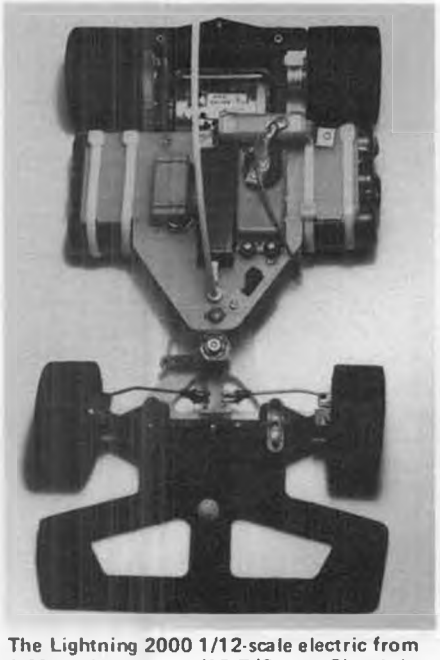
The off-road R/C car scene has not escaped our notice, even though we have yet to stage an off-road race in this area. This is an area that very likely might catch on, and you'll be hearing more about it in coming months. Off-road racing is already really hot in Japan, so the vehicles are already highly developed pieces.

As for myself, I have been very active in R/C cars since the ROAR Nationals held here in Seattle in '77. This was the first R/C car race I entered (just as well start at the top and work down), and other than embarass myself a bit, it was great fun.

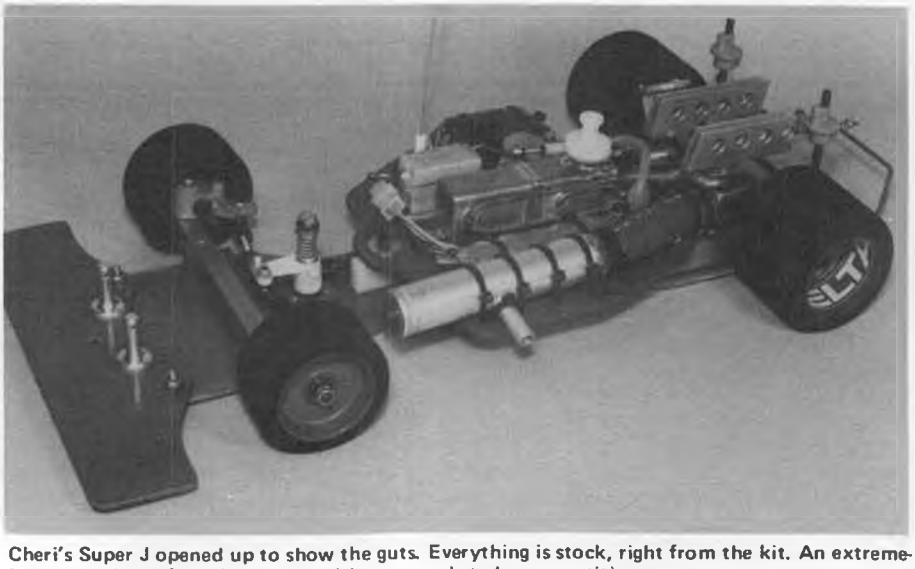
From there, I started in club racing with the SARCAR group (Seattle Area Radio Control Auto Racers . . . now you know why we shortened the name), a club of which I am still a member. In fact, the fools allowed me to be president of the club this past year.

Somewhere along the line I was asked to be editor of *Race Car World*, a magazine devoted strictly to R/C cars, and as previously mentioned that mag has bit the dust. At least *I* didn't kill it, although during my two-year duty as editor there were those who disagreed with some of the articles I generated, so claiming that I was killing the magazine.

And that neatly brings us to the present and what you can expect from **RCMB**'s R/C car column. A lot of the time you can expect tongue-in-cheek B.S. that will be presented in a style, uh, well, that is regarded as slightly unique. I



The Lightning 2000 1/12-scale electric from JoMac, pioneers in 1/12 R/C cars. Chassis is fully adjustable and quite well designed.



Cheri's Super J opened up to show the guts. Everything is stock, right from the kit. An extremely potent piece of machinery, requiring no mods to be competitive.

do this kind of thing mainly for the enjoyment of it, as the pay ain't all that hot, and if I'm not having fun at it there are many other things to keep me busy.

However, and that is a huge "however," when dealing with R/C cars, vehicles that are primarily used in competition, it is a relatively easy thing to determine what works on the track and what is either inferior or just foof. This column, with your support, will be able to tell-it-like-it-is (Gawd, I hate that Cosellian phrase, but it seems to apply) and when a race car or accessory is looked at, bashed in competition and otherwise thoroughly subjected to basic destructo testing, we can say with authority that it works or it doesn't.

In case you missed it, that is a big hint that this column will be brutally frank about the subject of R/C cars. I have enough confidence in myself to approach it that way. Before agreeing to the present arrangement, the folks at **RCMB** knew what was coming, so they are covered. Only unknown quantity in the equation is the readers of this column. If you back us up with support for what we are trying to do, I'll be around for a good long time. Otherwise. . .

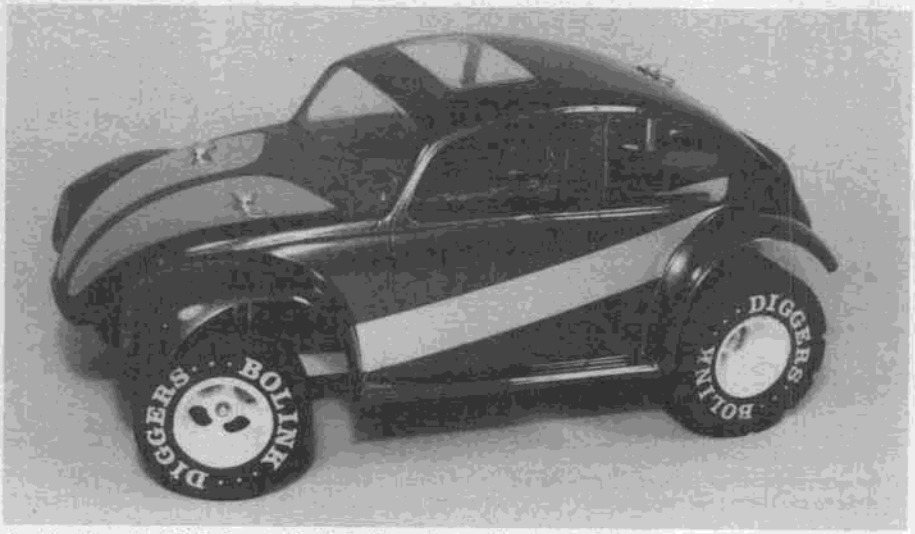
DIRTY CARS AND THE DRT

Couple of things to cover here. I suppose mention should be made of the fact that I intially wasn't all that interested in R/C cars. Don McKay laid an MRP Class B 1/12-scale gas car on me years ago, primarily so I could just play with it and then write a test-type article about the car, the test being published here in **RCMB**, back when it was just plain **MB.**

It was fun, bashing that little sucker around, but what was really odd was the fact that my wife, Cheri (you think *you've* got trouble, she's got me!), fell in love with the thing. Gad, my dear wife taking an interest in one of "my" hobby activities. It was too good to be true. Maybe so, but it turned out to be true indeed, and we have progressed from there to the point where the whole family races in 1/8-scale and Cheri and the kids (Billie Lee,13; Joshua, 10) are sometimes-racers in 1/12. For us, R/C car racing has turned out to be a terrific family activity, a point that is not lost on many R/C car racers, hence there being a lot of family participation in R/C cars, just as there is in the R/C boating scene. Oh, yes, someplace in there I also got hooked, just took a little longer and I am now deeply committed to car racing.

The race cars campaigned by the DRT are an unusual lot, one of the reasons I feel I can write with confidence about the several different brands available. Lots of people have their own opinions about various R/C cars, but very few have my background of racing the different types in one season.

For what it is worth, Cheri and I race Delta Super J's in 1/8-scale. My car is now a couple of years old, but the basic car has been updated to '80 specs with a Delta diff, new SVC 800 carb, front-mount pipe, and new radio tray. Cheri's is barely a season old and built from a



Just for fun, the 1/12 electric BoLink Digger is terrific. Does tricks previously thought to be impossible with an R/C car . . .

1980 Delta "Super" Super J kit, which comes complete with diff, front pipe, etc. Even though the Super J's are not the ultimate race car we will be racing in a few years, for now they are truly super and neither of our cars, both of which are identical, incidentally, have ever let us down or caused us to think about racing another brand.

Joshua is racing an Associated RC300, a good, solid race car, something we know for a fact, as Josh has just spent most of a season pounding the poor thing into every immovable object around. Just recently we fitted one of Associated's new diffs and the car has taken a good jump in drivability, which relates to quicker lap times.

Billie Lee has inherited the oldest of the 1/8 cars, an old-style MRP car. Old, yes, but it is still a very good car for club racing on a local basis. I raced this same car for a year, Cheri for another year, and now Billie is herding it around the track. It works very well for us and I

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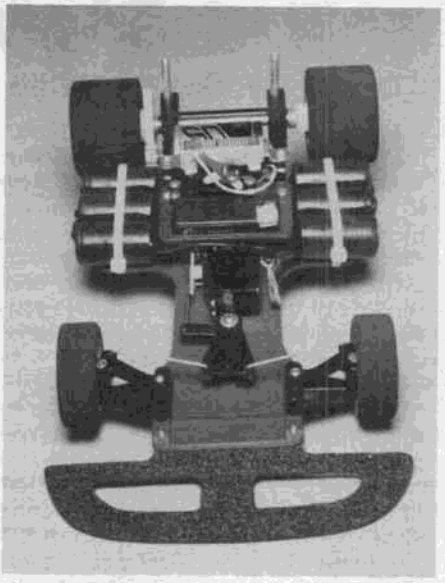
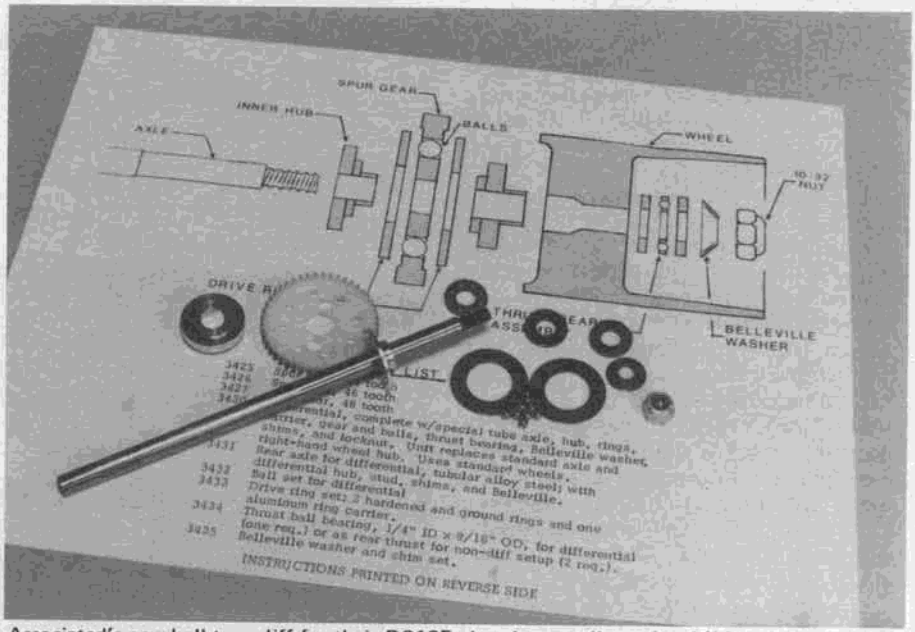


The new MRP GP-12 1/12-scaler, a quick and fast electric with molded chassis pan, bolt-on front and rear pod.



Associated's new ball-type diff for their RC12E electric, as well as other 1/12-scale cars. It's presently the Hot Tip in diffs for the wee ones.

Our Soaring columnist recently made a tour of Europe and had the pleasure of meeting Hans Graupner, president of the 50-year-old company founded by his father, Johannes. Two photos above show Herr Graupner with an electric R/C sailplane (left) and interesting 1937 F/F glider.

R/C SOARING

by Dr. LARRY FOGEL

PHOTOS BY AUTHOR

• For years, Germany has played a leading role in full-scale soaring. Now, West German firms offer a wide range of R/C sailplanes. These range from elementary trainers to high-performance machines and from planes designed for a specific task to high-fidelity scale replicas of their full-scale counterparts. Before considering the trade-off across these dimensions, let's take a bird's-eye view of what's currently available. First, let's check out the larger manufacturers, then look into some of the more specialized firms.

Graupner is certainly one of the best-known names in R/C soaring. Johannes Graupner formed that company in 1930 . . . that's right, 50 years ago! Several different glider kits were offered in the late '30s. Their line of leisure products then expanded until it now includes all sorts of aircraft, boats, cars, and even the radios to control these. The latest Graupner catalog (more than 400 pages) includes eight R/C sailplanes and a number of free flight gliders that could readily be converted to R/C using micro servos or scaling these planes up to a suitable size.

The Dandy (1600 mm span) is an old stand-by. The Beta (1970 mm), the Amigo II (2000 mm), the Ultra-Fly (2300 mm), and the Mosquito (2500 mm) are alternatives for the beginner. I've owned both the Dandy and the Amigo and can vouch for them. They perform in a predictable manner and can offer countless hours of pleasure.

The Graupner Cirrus has long been a favorite. This 1/6 semi-scale plane has won many contests. It's graceful and spans 3000 mm (as compared with the 18.34 meter full-scale Cirrus). The model weighs 1000 grams. Only rudder and elevator controls are required.

Graupner now offers two new semi-scale planes. The Cirrus 75 is a stand-off scale model of a recently developed T-tail version of the Standard Cirrus. The model spans 111-1/2 inches and looks great. The epoxy fiberglass fuselage comes with the control cable tubes already cemented in place. The wing panels and tail are of balsa-covered foam. Building time is minimized to maximize flying time. The other new addition to the Graupner line is a stand-off scale model of the Mini-Nimbus produced by Schempp-Hirth of Kirchheim/Tech (across town from Graupner). Here the 50-foot span of the original is reduced to 11-1/2 feet. The kit includes a fiberglass fuselage and

Horst Handler is the chief sailplane designer at Graupner. He's holding one of his most recent efforts, a 3290mm span Mini-Nimbus.

The Mini-Nimbus (top) and Cirrus 75 are the newest R/C glider kits from Graupner. Both are stand-off scale and are set up for ailerons, best suited for slope flying.

material for built-up and balsa-covered foam wings. If you want to use only rudder and elevator, the recommended six degree dihedral angle is appropriate. On the other hand, if you plan to use ailerons too, you ought to reduce the dihedral to four degrees. Neither of these new models is intended for aerobatics, but a clever builder could beef them up accordingly.

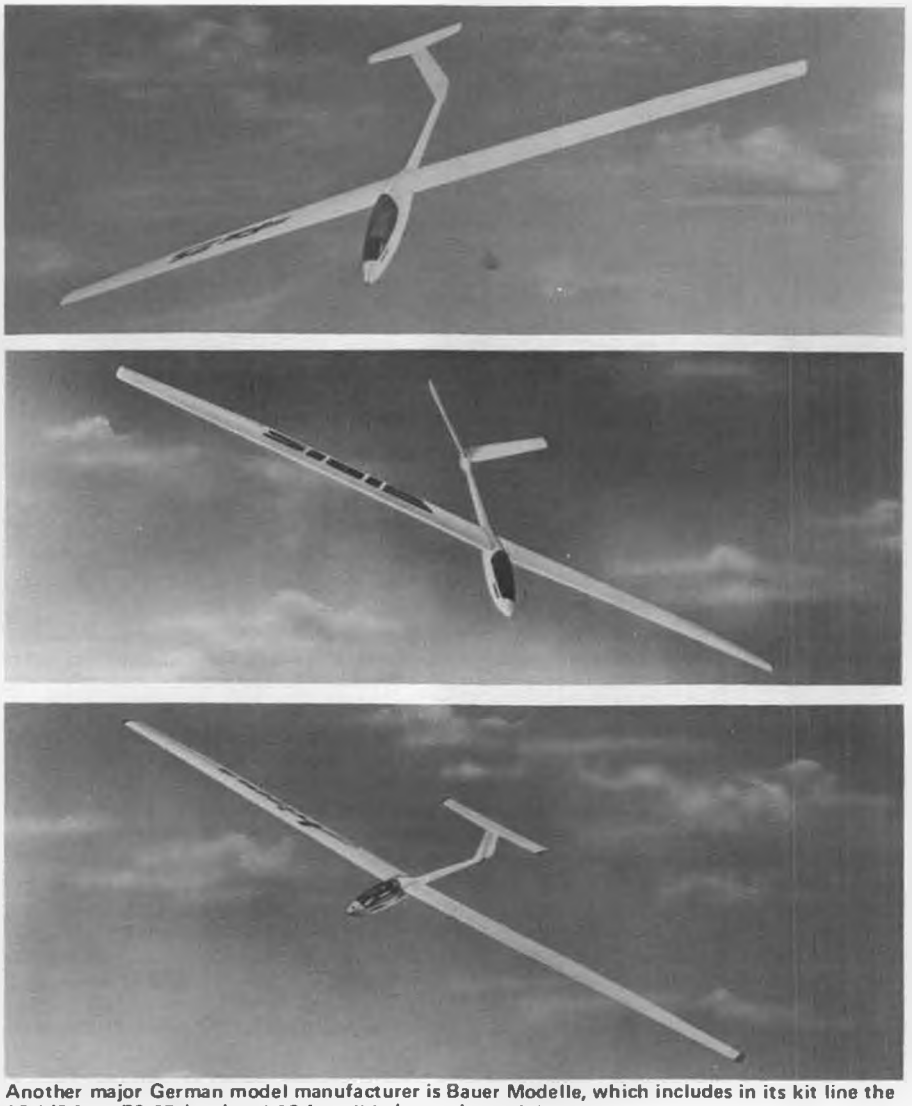
While at Graupner, I was hosted by Wolfgang Randecker, who introduced me to Horst Handler, their chief sailplane designer. We talked about each of the planes on the line and those coming downstream. Clearly, he was proud of his efforts.

I then had a chance to talk with Hans Graupner, president and son of the founder of the firm. We toured their extensive production and inventory control facilities. There are 350 employees in this single plant alone, and Graupner has other operations as well. They sell hundreds of thousands of kits each year . . . this is big business in the modeling industry!

The discussion turned to the kind of kits that ought to be produced. Herr Graupner emphasized the importance of trainer aircraft . . . kits for the beginner and student pilot. He's certain that the expert competitors will want to design their own ships from scratch or demand particular features that would make the planes too difficult or too costly for most fliers. We talked about the growing market for R/C sailplanes in the hands of retired men. I asked, "And why not women?" The answer probably lies in their early training, which usually doesn't emphasize mechanical devices and technology. But things are changing, and we may both be surprised in the future. I asked him how often he flies. His answer: "Every Saturday, no matter what the weather." That attitude is not uncommon in Germany.

One evening I wanted to see what night life was like in Kirchheim/Tech. I dropped in at the "Crocodil" . . . a basement pub covered with people wall to wall. You shout if you want your nearest neighbor to hear what you have to say. There I met Constantine Welissariou, who works for the local full-scale sailplane manufacturer. He suggests a new way to cover foam core wings: Spread a sheet of flexible plastic (the kind used for garbage bags) on a smooth surface. Cover this with a thin layer of epoxy, then add the cloth desired. Place the core on this base. Invert and add the cradle. Prepare a similar sheet for the other side of the core; affix, then add the cradle. Now hold uniform pressure on the cradles until the epoxy has cured. Remove the cradles and the smooth plastic and voila! Your wing is ready for the leading and trailing edges. You might want to add spars or whatever to the core before the "cooking" takes place.

I also visited Bauer Modelle in Schwabisch Gmund. There Monica Myer introduced me to Hans Posingis, manager of production and design, then



Another major German model manufacturer is Bauer Modelle, which includes in its kit line the 13-1/2 foot FS-25 (top) and 10-foot Ibis (center) and Arizona.

took me through their current catalog which includes a number of beautiful sailplanes in stand-off scale. Their Diamant II is about 2100 mm span; the FS-25 is of 4140 mm span and weighs 3500 grams. This high-performance T-tailed glider is well-known in the Stuttgart area. The fuselage is of seamless fiberglass reinforced plastic. The airfoil is a modified Eppler 197. A fixed wheel is optional. The other Bauer models are also very attractive, especially the stylized Arizona and Ibis, which differ only in that the former has a T-tail while the latter has a V-tail driven by the mechanical mixer supplied in the kit.

Bauer also offers two unusual aircraft. The Starlet is a slow-flying aerobatic delta wing plane suitable for hand launch or high-start. The Silberpfeil is a flying wing developed especially for fast slope soaring. Its 1900 mm span makes it particularly suitable for small slopes. According to the brochure, "It is not possible . . . to down the Silberpfeil by stalling; on the contrary, this brings

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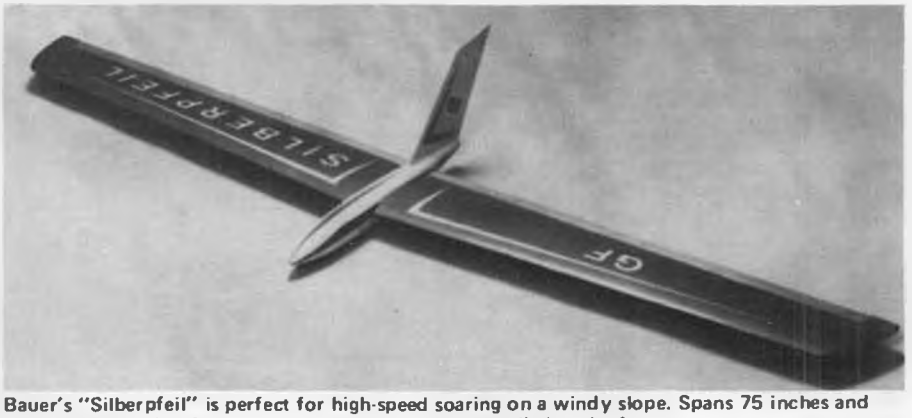


Bauer's "Silberpfeil" is perfect for high-speed soaring on a windy slope. Spans 75 inches and features a very thin foam wing with veneer already applied at the factory.

This unmarked SBC-4 was finished in aluminum over fabric and metal. Steps on right side had black painted flaps. Streamlined fairings cover the catapult hooks at the lower wing leading edge on this shore-based airplane.

CURTISS SBC-4

By PETER WESTBURG

PART TWO

The appellation "Helldiver" was so glamorous that Curtiss used it on several different airplanes, beginning with the original Curtiss Navy Falcon OC-1. The name continued through the F8C series, the true Helldiver which starred Clark Gable and Wallace Beery in the movie of the same name. The SBC-3's and -4's were also given the name and it was carried to a fitting end by the SB2C in World War II.

On that fateful day of December 7, 1941, the Navy had 69 SBC-3's and 117 SBC-4's on hand. Two Navy squadrons of SBC-4's were on board the USS Hornet and one squadron of Marines flew them. Soon obsolete, the SBC's went to Naval Reserve Air Bases for training and patrol duty.

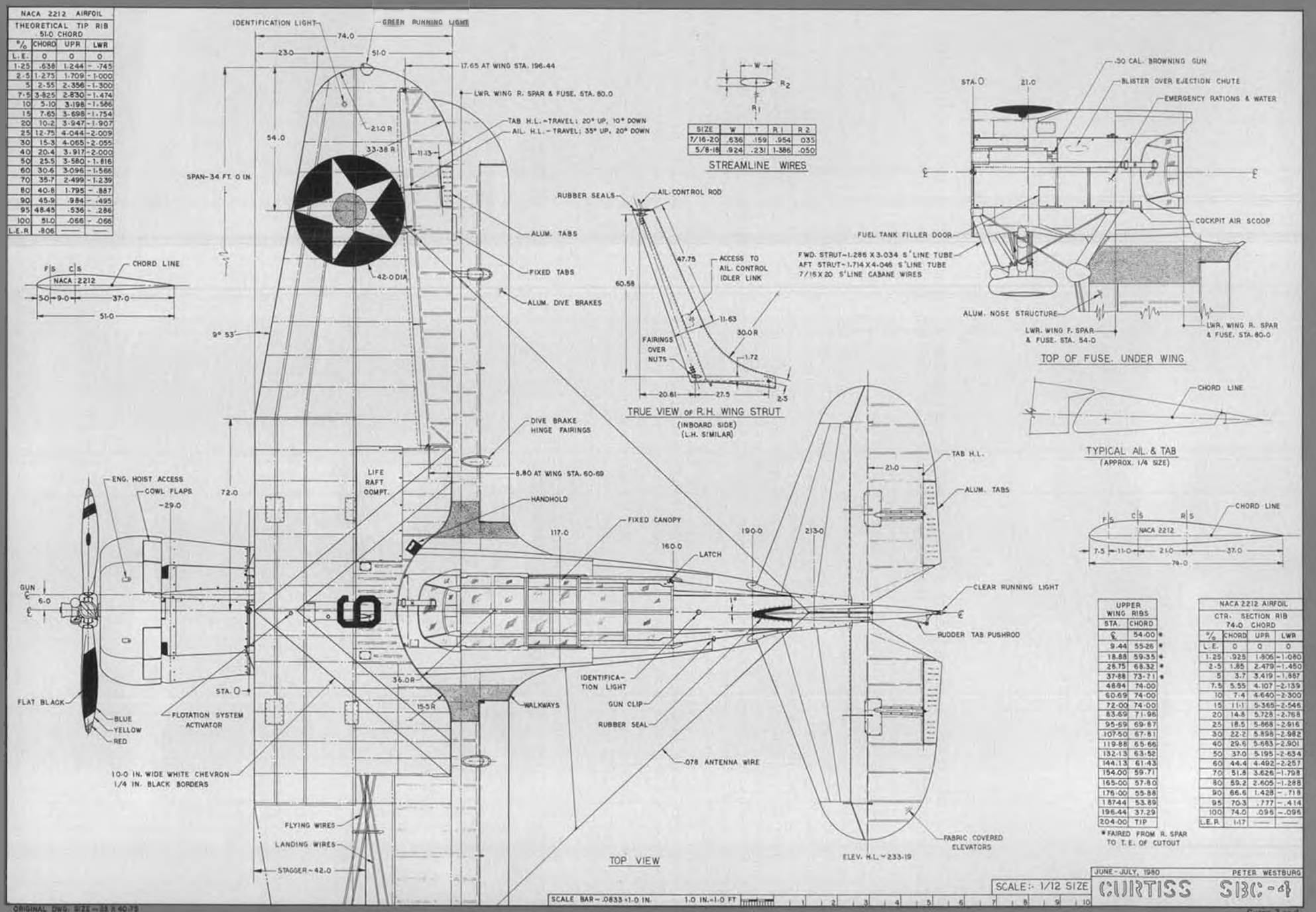
The SB2C definitely showed its descent from the SBC, but it reverted again to a monoplane, this time a low-winger. A total of 7535 were produced in various dash numbers, including many built by Canadian Car & Foundry and Fairchild in Canada, and 900 as A-25A's for the USAAF. The old XF12C-1 could not have imagined how prolific its offspring would be.

The familiar Navy gray was replaced with an aluminum finish on fabric and metal surfaces in 1936. No. 2-S-6, shown on the drawings, was the third airplane of the second flight on the USS Lexington. It was aluminum overall except for the usual chrome yellow on the top surface of the upper wing, and the lemon yellow tail surfaces of the Lexington. Color of the second flight was white, but only 2-S-4, the flight leader, had a white band around the fuselage. The bottom half of the cowling of 2-S-6 was white, as was the wing chevron, both being outlined by 1/4-inch black borders.

Many Naval Reserve aircraft had a shield and anchor insignia with the name of the base on the anchor flukes. Some SBC's had the red, white and blue rudder stripes of airplanes that came from Marine squadrons, and many retained the solid color tail surfaces and fuselage bands of airplanes that came from carrier squadrons. Squadron, mission, and plane numbers were removed and usually only the plane number of the base appeared on the sides of the fuselage; "U.S. Marines" was replaced with "U.S. Navy." •

Tail gunner had a .30 caliber Browning on a horseshoe rack. Right and left hand and shoulder grips were provided. Nat'l Archives photo.

Scouting Squadron 2-S-1 from the carrier Lexington. Commander's airplane had red band and cowling, should have a lemon yellow wing chevron, traces of which are visible under the reversed red chevron. Photo courtesy Fred Dickey Jr.



NACA 2212 AIRFOIL THEORETICAL TIP RIB 51.0 CHORD			
%	CHORD	UPR	LWR
L.E.	0	0	0
1.25	.638	1.244	- .745
2.5	1.275	1.709	- 1.000
5	2.55	2.356	- 1.300
7.5	3.825	2.830	- 1.474
10	5.10	3.198	- 1.586
15	7.65	3.698	- 1.754
20	10.2	3.947	- 1.907
25	12.75	4.044	- 2.009
30	15.3	4.065	- 2.055
40	20.4	3.917	- 2.000
50	25.5	3.580	- 1.816
60	30.6	3.096	- 1.566
70	35.7	2.499	- 1.239
80	40.8	1.795	- .887
90	45.9	.984	- .495
95	48.45	.536	- .286
100	51.0	.066	- .066
L.E.R.	.806	——	——

SIZE	W	T	R1	R2
7/16-20	.636	.159	.954	035
5/8-18	.924	.231	1.386	.050

UPPER WING RIBS	
STA.	CHORD
℄	54.00 *
9.44	55.26 *
18.88	59.35 *
28.75	68.32 *
37.88	73.71 *
48.84	74.00
60.69	74.00
72.00	74.00
83.69	71.96
95.69	69.87
107.50	67.81
119.88	65.66
132.13	63.52
144.13	61.43
154.00	59.71
165.00	57.80
176.00	55.88
187.44	53.89
196.44	37.29
204.00	TIP

*FAIRED FROM R. SPAR TO T.E. OF CUTOUT

NACA 2212 AIRFOIL CTR. SECTION RIB 74.0 CHORD			
%	CHORD	UPR	LWR
L.E.	0	0	0
1.25	.925	1.806	-1.080
2.5	1.85	2.479	-1.450
5	3.7	3.419	-1.887
7.5	5.55	4.107	-2.139
10	7.4	4.640	-2.300
15	11.1	5.365	-2.546
20	14.8	5.728	-2.768
25	18.5	5.868	-2.916
30	22.2	5.898	-2.982
40	29.6	5.683	-2.901
50	37.0	5.195	-2.634
60	44.4	4.492	-2.257
70	51.8	3.626	-1.798
80	59.2	2.605	-1.288
90	66.6	1.428	- .718
95	70.3	.777	- .414
100	74.0	.096	- .096
L.E.R.	1.17	——	——

PHOTOS BY AUTHOR

1980 NAMBA NATS

By JERRY DUNLAP . . . Directed by our R/C Power Boats columnist, the week-long 1980 NAMBA Nats was a huge success. Next year's Nats is scheduled to be held in Amarillo, Texas. Don't miss it!

• The North American Model Boat Association conducted its 1980 Nationals during the week of August 3-9 at Lake Waughop, Fort Steilacoom Park. The site is located a few miles south of the city of Tacoma, Washington. A big concern of many of the participants was the possibility of Mt. Saint Helens erupting. It just so happened that the mountain did decide to vent a little steam and ash on Thursday, August 7, and there was a very little dusting of ash on the Tacoma area. However, it was not a problem in the running of the model boating events.

The mountain may have blown, but the wind didn't. The entire seven days of racing was conducted on near-perfect water conditions for model boat racing. The weather tended to be cool in the mornings and then warmed up in the afternoons. Such conditions made the setting and maintaining of needle valve adjustments rather difficult.

The list of individuals entering this year's NAMBA Nationals reached 140. There were 400 different boat entries in the sixteen different events conducted for national titles. If any trends can be predicted from analyzing the participation in different classes, it would appear that model boating is heading in the same direction as new car purchases: *smaller is better.* The most popular class was the A OPC Tunnel class with 48 entries. The A Monoplane and Hydroplane classes were also very popular. In NAMBA, the A Class boats use the .21 cubic inch displacement engines. The most popular engine in this class was the K&B .21. For outboard competition, it's the only one available. But it was also the dominating engine in all the other A Classes. The K&B .45 or 7.5, depending on whether you're into cubic inches or cubic centimeters, was the dominant engine in the B Class. In the area of radio equipment, Futaba radios were used by approximately 75% of the contestants. The most popular single boat was the new Prather 31-inch Deep-Vee. This boat proved to be an excellent choice, winning more awards in the A Deep-Vee, A Mono, and A Enduro events than all the other hull types combined. In the hydroplane classes, the Octura Wing Ding did very well. In A Hydro it took second, third, and fifth; in B Hydro it earned first, second, and fourth; and in C Hydro it place first through fourth. In the B, C, and X Monoplane classes, Frank Ward designed deep-vees did very well.

The results for the top five finishers in each of the events can be found at the

The pit area during the R/C Unlimited Class run on the first day . . . a busy place! Starting clock can be seen on left.

Les Ruggles' Notre Dame on the inside racing with John Brodbeck's Miss Circus Circus. Ruggles placed 6th in the final heat.

Bud White used a Dumas U-76 wood kit to place 2nd in the Sport 40 class. Two U-76's placed in the top five.

Dave Blacksten's beautiful Sport 40 (an R/C Glass Sport 40 hull) turned in the fast time of 1:49.77. A very smooth runner.

Howard Power tries a little knife-edge flight (above) with his Miss Budweiser but doesn't quite make it (right). KERSPLASH!!

R/C Boating is a sport for all ages. George Campbell holds the boat he designed for Prather Products while Paul Dunlap tries to keep warm. George was one of the older participants, Paul was the youngest at age 8.

Butch Melewski had his Miss Bardahl really flying going into the final heat of Unlimited, then somehow got into a tangle with Ed Fisher's Coral Reef, putting both out of the race.

Dumas Deep Vee 60 with Rossi .65 won Class C in the Deep Vee Classic, placed 2nd in C Monoplane heat racing for Don Reutlinger.

Herb Stewart (left) makes a point while NAMBA president Stuart Russell checks it out in the rulebook.

Dot and Al Prather represented Prather Products. Dot holds her Prather Deep Vee 40.

The Circus Circus R/C Unlimited Racing Team had John Brodbeck driving and Gale Whitestine calling. John was 2nd in the Second Consolation race for Unlimiteds, Gale was 3rd in the First Consolation.

Four A OPC tunnel hulls line up for the start of a race. Jack Garcia won the event with a Hammel Tunnel, also turned the fastest heat time of 2:05.4.

In X Monoplane heat racing, Howard Power leads Frank Ward and Jim Whitlatch through a corner. Howard was 1st, Jim 2nd, and Frank 3rd. All three used Ward Vees.

Look who showed up! RCMB's Control Line columnist, Dirty Dan Rutherford and son Josh spectated at the NAMBA Nats. Goes to show that boaters are a very accepting group.

Jim Whitlatch's Octura Wing Ding won the C Hydro event and was 2nd in X Hydro. Boat holds the oval record in C Hydro.

end of this article. The remaining narrative will be devoted to personal opinions and observations. I suppose I should tell you readers that I was the overall director of the meet, and it might seem like boasting to say that the event went very smoothly with a minimum of problems, hassles, or delays. But it really did run quite smoothly. A big part of the reason for the success goes to the one-and-a-half years spent in planning for the

District 19 director, Jack Garcia, holds the new Prather Tunnel and boat/car radio system from Airtronics.

Steve Slusher's Slighter Vee on the inside races Frank Ward's Ward Vee to the finish line in a B Monoplane heat. Frank won by just a half-boat length.

Hap Mulvaney came up from Florida to race in the Outboard Hydro class, but experienced radio problems which kept him from placing. Note the tuned pipe on the K&B Outboard.

event. The other big reason was the excellent support given by District 8 model boaters in the actual running of the different events. Each of the event directors did a super job of handling their events. The following individuals assisted as event directors: Jerry Dunlap, Dave and Nancy Austin, Chuck Rudorfer, Russ Kominitsky, Vic and Cindy Roberts, Vic and Liz Drew, Gary Jensen, Leo Dreith, John Havens, and Norm Nordby. I would like to give special recognition to the efforts of Nancy Austin, who coordinated all the recording and scoring of the different events, rescheduled heats, worked on registration, and did a hundred other things that needed to get done. Other boaters' wives providing extra help were: Cindy Roberts, Liz Drew, Susy Nordby, Arleen

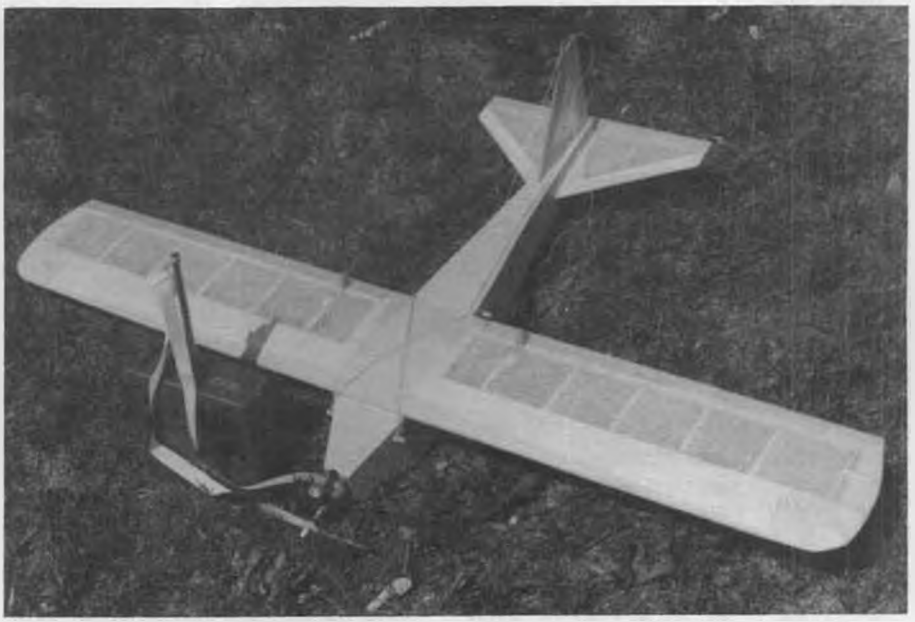
Continued on page 72

NAMBA's executive secretary, Myrtle "Mom" Coad, pitched one inning for the Dist. 9 softball team that beat the Dist. 8 team 13 to 11.

Two-time World Champion R/C model plane flier, Dr. Ralph Brooke, entered the A OPC Tunnel event. Didn't have much luck, but said he had a good time and learned a lot.

X Hydro race action finds Jim Whitlatch leading Frank Ward on the outside and Howard Power on the inside. They're getting lined up for the start of a heat.

Our columnist's pride and joy, a brand new Cannon Super Micro R/C system. Anyone care to R/C a 35mm film box?



Although fairly large, Del Ogden's .049 trainer is fast. He uses silkspan and dope to keep it light, ailerons and elevator to aim it where he wants. He calls it the "P.A.T.H." (see text).

1/2A 'Sport' SCENE

By LARRY RENGER

• Once I mentioned that it may take a while, but I do eventually answer letters. I finally got around to a stack and found, to my dismay, that some were over six months old! Some of the questions and answers are of general interest, so here goes:

From David Hrynkiw:

I would like to get info on your March 1980 issue section of the "1/2A Scene." I would like to know more about the SBD-3 built by Gary Paczkowski and also info on the pusher built by Ron Van Vlear. I think both would make good articles. By the way, are there no such construction articles on 1/2A's? You see, I am a 1/2A guy. I am just getting into R/C. I've been in C/L 1/2A for about six years and haven't seen many articles for 1/2A.

How can you have a throttle on a Tee Dee? For all I know, Tee Dee's don't have R/C throttles! Also, I would like to know it you could use an R/C Bee on it (the SBD-3) and also if it could be flown without throttle control.

The only information I had on the SBD-3 and Ron's pusher was published in that column. Perhaps Gary and Ron will be kind enough to write in with more data on those models. I agree that they would make interesting articles, and that we have all too few 1/2A designs, but we are limited by what is submitted. If no one sends us a particular type, we can't do much. So, the moral of the story is that all you hot 1/2A designers out there, get with it and send us your stuff.

Now, as far as throttling is concerned, you can usually do without a throttle on models unless they are horribly heavy and cannot glide at all. There are several different add-on throttles for the Tee Dee available, from Tarno, Hiscott, and Ace R/C. The Ace exhaust baffle ring will cost you the least power off the top end, but also has the highest idle speed. Send to Ace for their catalog, as they sell all three!

David Unruh built this "Little Sport" to prove that R/C'ers can fly a F/F, too. That ain't sand on the ground; Dave lives in Alaska.

Fox .19 is a hard engine to beat for sport flying. Inexpensive and very reliable.

The Holland Hornet was *the* 1/2A competition engine until the T.D. .049 came out. This one belongs to Phil DeLong, Atlanta, Ga.

An alternative I prefer is the new G-Mark .06 imported by Cannon Electronics. It can be ordered with or without throttle and muffler. Performance in the throttled and muffled condition is about the same as an unmuffled, unthrottled Tee Dee .049.

Next letter is from Robert Creighton:

Would you please write and let me know who makes or where I can get an .074 engine used (new or used). Does K&B make an .074?

I am building a Guillow Focke-Wulf FW-190 for U-Control and the plastic wheels don't get it, so I want a little bit more power than the .049. It will be heavier when done right with rubber

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Photo No. 3. Joe Konefes showed up at the 1980 SAM Champs with his Bombshell II, a follow-on to his famous Buzzard Bombshell design.

Photo No. 4. Joe Konefes' brother, Ed, flew this little-known "Cloud Snooper" at W-P. Looks like a big So-Long. Bob Larsh drawing plans.

PLUG SPARKS

PHOTOS BY AUTHOR AND HAROLD JOHNSON

By JOHN POND

• Would you believe 170 contestants at the 14th Annual SAM Champs? Wow! This figure was only exceeded by the number (173) held four years ago by the COFFC group at the same location, Wright-Patterson AFB, Dayton, Ohio.

Without Bob Larsh, the meet in Ohio would never have been a reality. Larsh's attention to detail and his dedication to setting up the meet proved to be the catalyst that made for an extremely fine contest.

Robert K. Larsh even made sure that he had his reservations in for good weather, as only one rain squall was encountered over the three-day session. Also, Larsh's attention to detail in getting most everyone to pre-register helped immensely. Actually, 131 signed up for the free flight events and 76 for the R/C events, indicating quite a bit of cross-over in the categories.

Of course, Larsh would have been really strapped for help if Woody Woodman had not sacrificed all his time and ran the R/C events. In this line, Woody was helped immensely by Mike Granieri, the Head Timer, and the girls who kept things running at the desk, Evelyn Woodman, Dorothy Granieri, and Bobby Haley.

Bob Larsh also points out he had the help of Meredith "Goofy" Chamberlain as F/F Contest Director. Bob sez it was the first time Chamberlain has ever remained in one spot that long. This is based on over 20 years' experience! Also a big help were Don Kegg and Bob Laybourne, Assistant C.D.'s, who labored mightily on behalf of the modelers.

We mentioned the weather, which was excellent from an R/C standpoint, but the changing wind made Larsh change his free flight location as many as four times during the day to take advantage of the maximum size of the field. This is reflected in the results, as all gas events were limited to two-minute max flights and rubber was held to three minutes. Nice thing about the meet was that darn few models flew off the base. You had to forget to set your timers to lose them this time!

The Wright State University dormitories turned out to be a great facility for SAM Headquarters, living quarters for the contestants, meeting hall, and for the Bean Feed and Victory Banquet. Larsh didn't leave anything to chance! About the only thing we could complain about was the air conditioning system, which broke down. This made the Victory Banquet a little uncomfortable, but will all the trophies and prizes being given out, it wasn't all that unbearable.

Picking a F/F Grand Champion turned out to be a very close finish with Bruno Markiewicz nosing out Larry Boyer and Larry Willis. For his efforts, Bruno took

Photo No. 2. Woody Woodman, the perennial C.D. for the R/C events at the SAM Champs, confers with wife Evelyn. Did his usual terrific job this time, too.

Photo no. 1. Bill Baker won the mass flyoff of the Twin Pusher event at the SAM Champs with his 1929 Burnham Twin. His was one of eleven pushers entered.

Photo No. 5. Good grief, those "slag" engines do run after all! Jim Root tunes the Genie .29 in his Comet Mercury while son Eric holds. Placed 3rd out of 14 entries.

Photo No. 6. Tom McCoy, Detroit, poses with his excellent flying R/C Super Buccaneer. No luck at the SAM Champs this year, though.

home that gorgeous perpetual trophy plus a Wahl-Brown Jr. engine donated by Herb Wahl. Boyer, who topped Willis by only one point, received an O.S. .25 converted ignition engine donated by 77 Products (Otto Bernhardt).

On the R/C side of things, Bruce Norman did it again! Although he didn't win a string of trophies like he did at the West Coast SAM Champs, Bruce did garner enough points to outclass the rest. In addition to the huge perpetual trophy, Bruce also received a K&B .40 R/C Perry Pumper donated by Johnny Brodbeck of K&B. A flip of the coin had to decide the tie for second place, Dick Huang taking the S.T. .25 Bluehead over George Haley.

Naturally, the perpetual trophies were awarded by Miss SAM Champs 1980, Miss Sheree Larsh (Bob's lovely daughter, of course!). This bit of window dressing always helps liven things up!

As has been our practice in the last few issues, we are going to describe the activities of the 14th SAM Championships by a series of photos taken at the field. In that respect, this columnist is extremely fortunate that Harold R. Johnson, of 1415 Trollhagen Drive, Fridley, MN 55421, has been taking pictures of every SAM Champs for the last ten years. His photos are generally in color and well taken. Actually, we should call Johnson the unofficial SAM Photographer. He does a good job!

Photo No. 1 indicates what this columnist thinks is the spirit of Old Timers, a real honest-to-goodness good-flying twin pusher! Designed in 1928 by Bob Burnham for the 1929 A.M.L.A. (Lindy League) competition, this model was an easy winner! Bill Baker, 1902 Peter Pan St., Norman, OK 73069, says he was lucky to win as a rain squall came up just about the time he ready to wind up for the mass flyoff (last man down wins) and broke his wing.

With the new cyanoacrylate glues, Bill was able to repair the model in less than a half hour. He got off a terrible launch and while the other models were going downwind, Bill's model went upwind, found good air, and then circled downwind in the lift. Bill says the reason for the bad launch was that he let go of the props with the A-frame still below the horizon. Bill concludes by saying this event was the greatest for just plain fun. He recommends it to everyone.

Photo No. 2 shows Woody Woodman and his wife, Evie, hard at work at the SAM Champs. Woodman, who recently retired, has more than paid his dues to the cause of SAM. Ever since the inception of the R/C O.T. events, Woody has been involved as Contest Director, the only exception being the Salt Lake City Champs last year. Woodman is also a stiff competitor, flying in almost all meets held on the East Coast. In-between times he discharges his duties as East Coast Vice-President of SAM and is extremely active in the Old Time Eagles club. A few more guys like Woody and we will have an assured future for SAM!

Photos No. 3 and No. 4 show the Konefes brothers. Not many modelers are aware that Joe Konefes has a brother who was active in model flying. Photo No. 3 shows Joe with a later version of his famous Buzzard Bombshell that won the 1941 Chicago Nationals with a flight of 47 minutes. The latest version, called Bombshell II, appears to be an excellent flier. Just as soon as we can prevail on Joe, we will run plans of his latest model as approved by the SAM Executive Council.

Picture No. 4 shows Ed Konefes with a model he calls the "Cloud Snooper." The model has a superficial resemblance to Bill Englehardt's So-Long. If Ed did take some ideas from Bill's model, he couldn't have made a better choice, as Bill won his class at the same Nats. Plans for the Cloud Snooper are being prepared by Bob Larsh, 45 So. Whitcomb, Indianapolis, IN 46241. Just as soon as he gets them done, we'll advise you!

Photo No. 5 shows Jim Root, 3412 Norton, Independence, MO 64052, with his entry in the "Slag" event. Sponsored by Mark Fechner, who runs Fechner Motors in Salt Lake City, this event, so called because of the low-cost dow metal/aluminum engines specified, is probably the most interesting of all. Jim

Photo No. 7. R/C Grand Champ, Bruce Norman, the man to beat in both F/F and R/C, flew an H.A. Thomas Challenger in Class A Glow R/C with K&B 3.2 (.19), placed 5th.

Photo No. 8. Harold Johnson, who took most of the SAM Champs photos in this issue, flew this Mercury with O&R .23 in B Pylon.

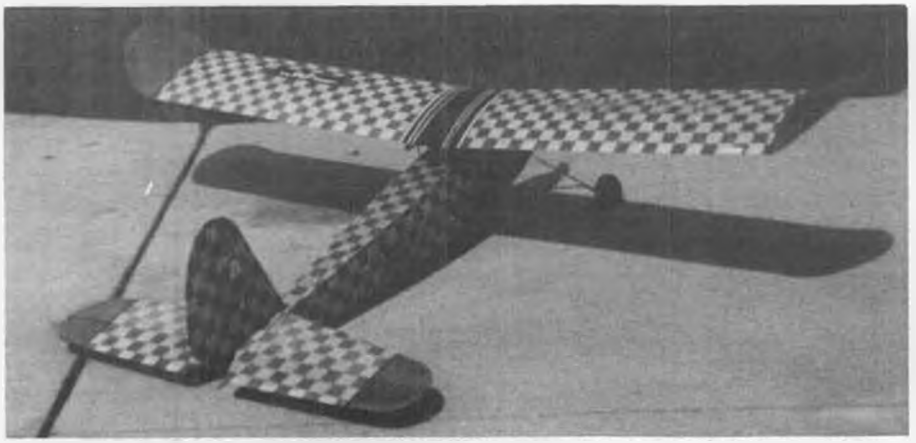

Photo No. 9. Ivan Tarbert's 19:48 flight in R/C Texaco was good enough for 1st place. (His eyes probably couldn't stand to look at all those checks much longer!) It's a PB-2.

is shown tuning a Genie engine that most of us will remember sold for about $5.00 when new.

This year, the Slag event had only three official fliers, the rest being unable to register flights. Getting these "cheapie" engines to run is quite a trick in itself. Interestingly enough, in character with this event, the top award went to the last place! In this case it was Jim Root, who was third.

In addition, to help spur interest in this event, Fechner has been giving away kits of the Genie engine. You put 'em together and try to make them run! Incidentally, anyone interested in obtaining one of these motors (not for free, of course!) can write to Mark Fechner, 4456 W. 3145 So., Salt Lake City, UT 84120. Don't get discouraged if Mark doesn't answer right away; he is a very busy boy!

Photo No. 6 shows Tom McCoy of Detroit, with his vari-colored Super Buccaneer. Although Tom didn't win, he said he had the best time of his life at the SAM Champs.

Tom and his buddy have really grasped the meaning of the word fun when they offered to repair this columnist's Swoose that was damaged when one of the contestants attempted to catch it. Tom and his friend took a very badly smashed tail and rebuilt it from scrap materials available, then even Hot-Stuffed the existing Monokote back in place!

The repair job was anything but a work of art, but imagine this columnist's surprise when he was informed he could again fly! Although the model did not perform as before, it was still good for third place. Not too shabby!

Photo No. 7 shows the "Texas Tornado" (as Bob Larsh calls him), Bruce Norman, 3417 Creston Ave., Ft. Worth, TX 76133, with a little-used design by H.A. Thomas, called the Challenger. Bruce built this model just to show his critics you don't need a Playboy Senior to win all the time. With R/C, this model has proven to be quite a creditable performer.

Bruce is lucky in having his wife, Leslie, on hand to assist him. This dynamic duo paralyzed the boys four years ago in free flight, winning seventeen trophies! Now that they have come over to torment the boys in R/C, things are quite interesting. Can't say you don't have the heavy competition now! We'll gettum next year!

Photo No. 8 shows Harold Johnson with an Ohlsson .23 powered Comet Mercury, testing in the early morning. Weather was great in the early hours but the humidity was rough. When the breeze would spring up, this made life worth living again. As we mentioned earlier, Harold has been submitting photos of SAM Champs for years and it is indeed a pleasure to run one of him.

Photo No. 9. When Ivan Tarbert, Lake of the Woods, 437 Meadowood Blvd., Fern Park, FL 32730, left the field early on Sunday morning, he had no idea that his

Photo No. 10. The one-and-only Chet Lanzo entered R/C Texaco with his "Bomber," recently approved by the SAM brass as an Old Timer.

Photo No. 11. A real purty job on this Cleveland Wakefield Gull, by Paul Nelson. Placed 3rd in Rubber Cabin at the SAM Champs.

Photo No. 12. Compressed Air keeps getting bigger all the time, this year drew seven entries. Here we see Tim Banaszak launching his Hughes Hobart design, Ed Konefes doing the timing.

flight in R/C Texaco would stand up all day. For that reason, Ivan didn't show up at the Victory Banquet, and was he surprised when Bill Seidler brought him back the Texaco First Place trophy!

Ivan got an even more pleasant surprise when the Smith boys of Ft. Lauderdale, Florida delivered the new Texaco Perpetual Trophy to him. This trophy, donated by Chet Lanzo, was the original Edward Roberts Trophy for R/C won by Lanzo in 1937. Completely refurbished by Tom Sutor, trophy purveyor deluxe, this perpetual trophy is well worth winning!

Talking about Chet Lanzo, Photo No. 10 shows Chet himself, with a variant of his Record Breaker called the "Bomber." This model, approved by the SAM Board of Directors, was flown by Chet in an effort to win the Texaco Trophy he had just donated! More darn fun!

Chet, who can be reached at 1485 Lester Road, Valley City, OH 44280, also was the recipient of the Hall of Fame award at the SAM Victory Banquet. Awarded by the AMA Executive Director, John Worth, Lanzo jokingly commented what took you guys so long! Many a truth has been said in jest. We agree!

Photo No. 11 shows an extremely well-built Cleveland Wakefield Gull. Too bad we don't print in color, as Paul Nelson's model is in basic white with red and blue stripes all over it. Talk about being patriotic! It even has them on the propeller! The model not only looked good but flew equally well to place.

Photo No. 12 depicts Tim Banaszak, 1947 Superior, Whiting, IN 46394, launching his Hughes Hobart compressed air model. Tim has been responsible for sponsoring the Compressed Air event for the last six years. In the last few SAM Champs, competition has been picking up to the point where it was no longer a walkover for either Banaszak or Karl Spielmaker.

Tim, the SAM Secretary-Treasurer, has been a tireless worker on behalf of SAM. He has been in office so long that no one can remember who the original Treasurer was. (Give up? Harley Elmore of Denver.) Those interested in having one heckuva good time, better join the SAM organization. For ten bucks you get all the membership benefits including an excellent publication called *SAM Speaks*, ably edited by Jim Adams. Send your dough to Tim today before you forget it!

Photo No. 13. John Stott tinkers with his compressed air entry, a REAL oldie dating back to the early '20s. No slouch in performance, John flew it to a very creditable 2nd place.

Photo No. 14. Joe Percy of Ft. Worth, Texas, has had exceptional luck with his scaled-up Riser Rider. Another 9 seconds in Antique would have tied him for 1st with Bruce Norman.

Photo No. 13 is another compressed air entry by John Scott, the 1978 winner of the C.A. event at Lakehurst. This design is one of the earliest and simplest model airplanes. In an effort to keep every component as light as possible, the fuselage was simply reduced to stick form.

Most everyone uses Hoosier Whirlwind motors for the compressed air event. Bert Pond, when he ran the Peru Model Shop in Indiana, made those engines in 1934. With the renaissance of C.A. flying, Bert is again making all sorts of compressed air engines, varying from one cylinder to three to five. If you are interested in this phase of Old Timer flying and want to procure a motor, write to Bertram P. Pond, 128 Warren Terrace, Longmeadow, MA 01106.

Photo No. 14 shows another one of

Photo No. 15. Larry Fair shows off his nicely built Miss New York IV, designed by Frank Zaic. Larry didn't place at the SAM Champs; he says he needs more lift. *We* say he needs a new hat!

Photo No. 16. Danny Sheelds entered King Burd models in F/F gas, R/C, and Compressed Air (which he won!).

Photo No. 17. An Ohio SAM Champs wouldn't be complete without a photo of Harry Murphy. Flew this Banshee in A Pylon.

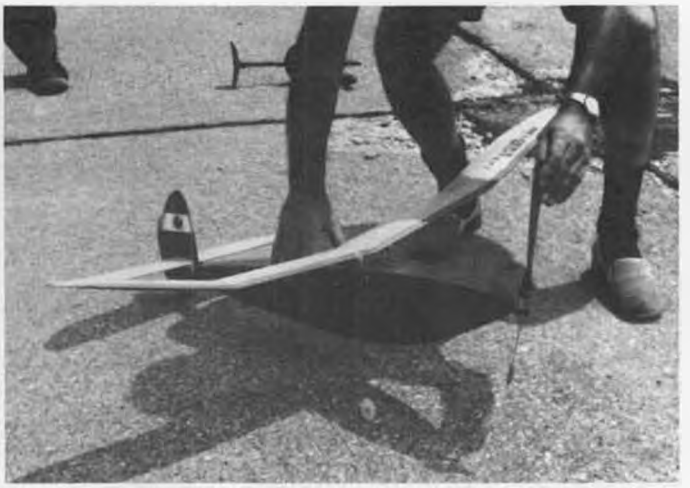

Photo No. 18. Neat flying Nelder Moffett by Ken Groves. Model must be launched in 3-point attitude, otherwise the prop hits the ground.

the Texas boys, who are real threats to win any contest. J.H. Percy of the Ft. Worth area scaled up a Roy Marquart "Riser Rider" to eight feet. This model has proven to be an outstanding soaring machine. Joe has yet to place out of the money anytime he enters.

Percy has been most gracious in allowing anyone to build a copy of his model. The plans to the eight-foot model are presently being drawn by this columnist's draftsman and should be ready by November. Even if you build it for sport, it still is a beautiful flier.

Larry Fair has gone in for rubber power in a big way, as noted in Photo No. 15. Since the SAM Champs at W-P AFB four years ago, Larry has had an increasing interest in free flight models, to the extent that R/C flying has taken a back seat. The Frank Zaic model he is holding is called Miss New York IV, somewhat in the line of the Scientific Model Co. names. Larry didn't win this time, but watch out next time!

No column of the SAM Champs would be complete unless we ran a shot of Danny Sheelds, the "Clown Prince of SAM," so-called by *Aeromodeller* magazine. In conjunction with Jim Crim, Danny Sheelds puts out a labor of love creation called the "King Burd," as can be seen in Photo No. 16.

Sheelds, as you will recall, was responsible for initiating the Twin Pusher event with a most unique perpetual trophy. Interest has gradually climbed to the point of where the mass flyoff sometimes causes mid-air crashes because of the number of models being launched simultaneously.

If you are interested in obtaining one of the King Burd kits, write to Danny Sheelds, 7 Cinnamon Circle, Apt. 1-C, Randallstown, MD 21133.

Photo No. 17 shows our redoubtable C.I.A. newsletter editor, Harry Samuel Murphy, sometimes known as "Murf," or as he likes to call himself, "Dirty Harry." Murphy edits the C.I.A. *Informer*, the newsletter of the Central Indiana Aeromodellers. Those wishing to receive this publication, as it does

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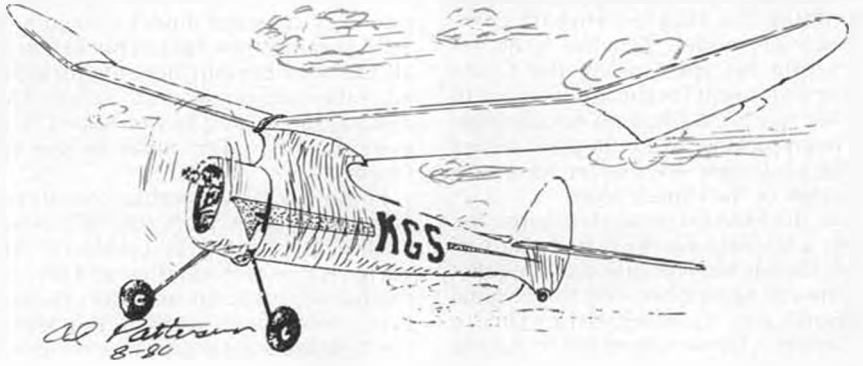
KGS



OLD TIMER Model of the Month

Designed by: Henry Struck

Drawn by: Al Patterson

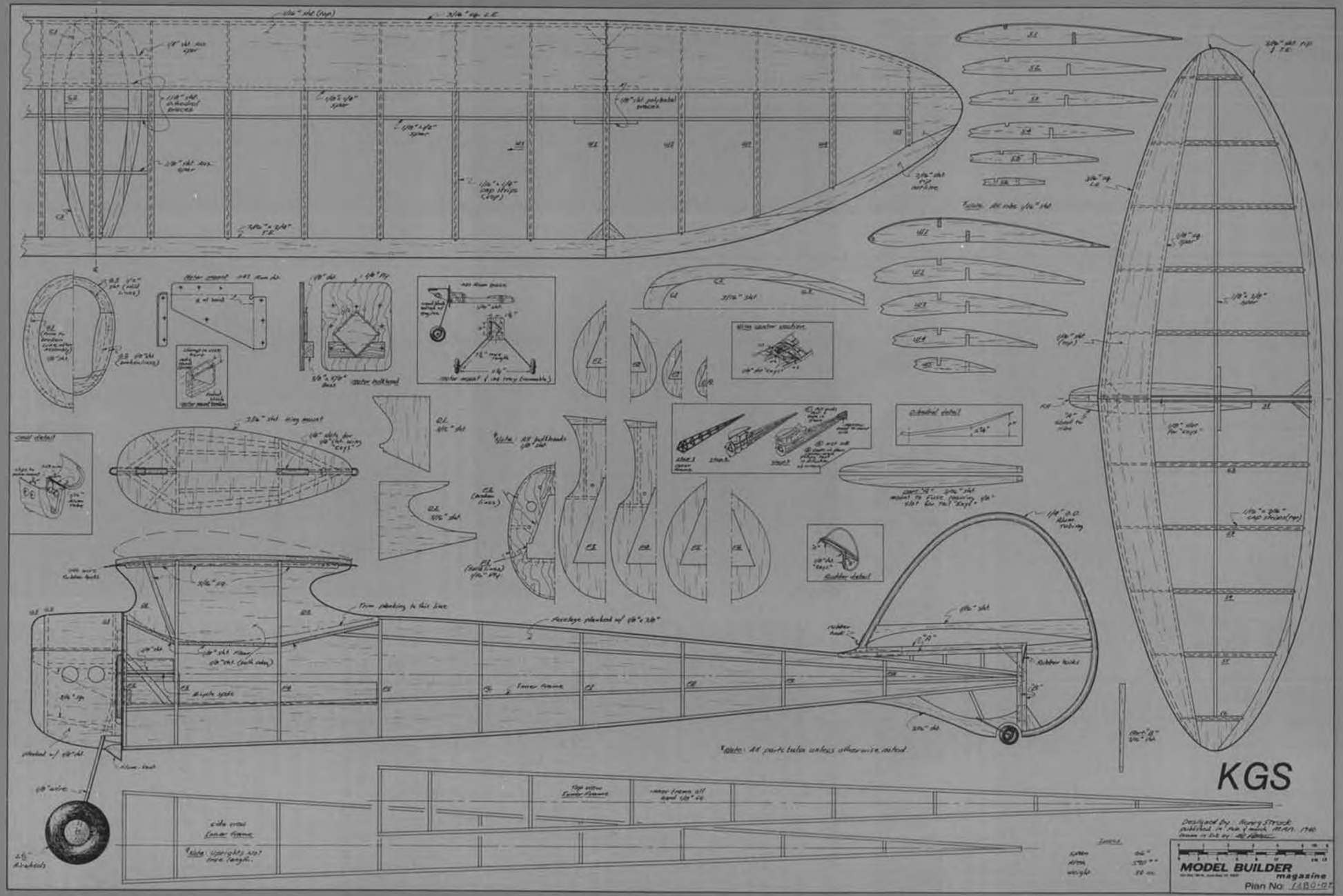
Text by: Phil Bernhardt

• The 1934 K-G (Kovel-Grant), designed by Charlie Grant and built by Joe Kovel, was Henry Struck's inspiration for this month's featured Old Timer, the KGS (Kovel-Grant-Struck). Hank designed this competition pylon job over a 3-view drawing of the old ten-foot K-G, keeping all the moments and areas in direct proportion to those of the big airplane in an attempt to duplicate the big ship's remarkable stability. Stability, he maintained, is the basis of a winning design, so what could be better than to take the aerodynamic arrangement of a rock-stable, proven model and incorporate it into a much cleaner airframe? The result was the KGS, a much smaller and very much more streamlined version of the old clunker that did so much to popularize the gas model movement. Plans for the KGS were published in the February and March 1940 issues of *M.A.N.*

Not many copies of the KGS have appeared in recent times, for some strange reason. The ship certainly looks like it has real potential for being a contest winner, and that's what 98% of all O.T. enthusiasts are looking for these days. Perhaps it's the combination of the planked fuselage and silk-covered pylon that scares builders away. Neither is really all that big a job, and we think you'll agree that the finished fuselage, with all those lovely shapes and contours, is well worth the extra work involved.

The fuselage is built on a triangular box framework, which serves to hold the formers in place while laying on the planking strips . . . very similar to the Joe Ott "Ott-O-Former" kits. Wing and stab construction is strictly conventional, whereas the fin is shaped from a piece of 1/4-inch aluminum tubing. (Struck used this same technique on his later Apache and New Ruler designs also.) The idea here was that the tubing could be easily bent to any desired setting and would not warp in any weather conditions. Of course, the fin could be redesigned for a wood structure if you don't go for the tubing method.

For those who want the technical specs, the KGS has a projected span of 66 inches, projected wing area of 590 square inches, length of 42 inches, and must weigh at least 33 oz. to meet the SAM wing loading rule of 8 oz./sq. ft. Largest allowable engine for O.T. R/C events is a .25. •



FULL SIZE PLANS AVAILABLE – SEE PAGE 100

PHOTOS BY AUTHOR

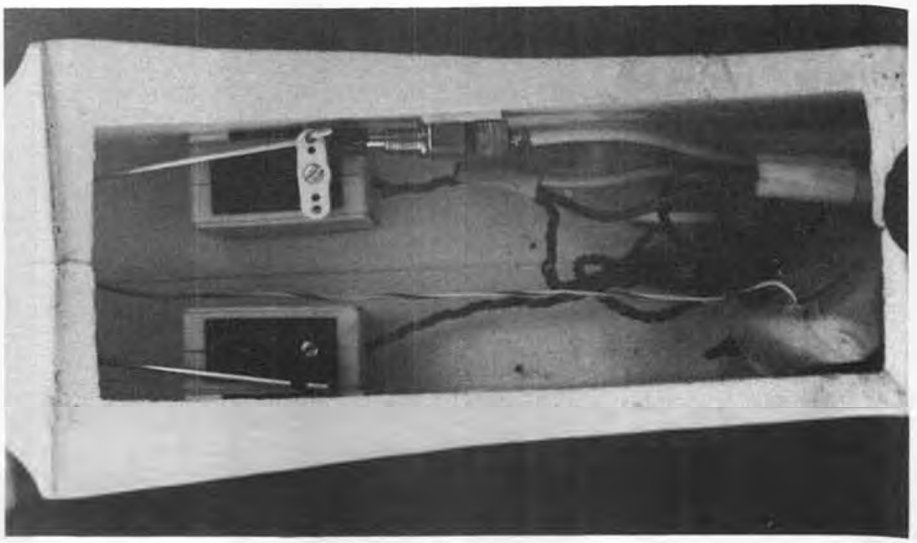
Real clean Velie Monocoupe, built by Woody Woodward from the popular Astro Flight kit. Astro 05 up front. Woody didn't say if he went ahead and finished up the nose with the scale engine detailing or just flies it as is.

ELECTRIC POWER

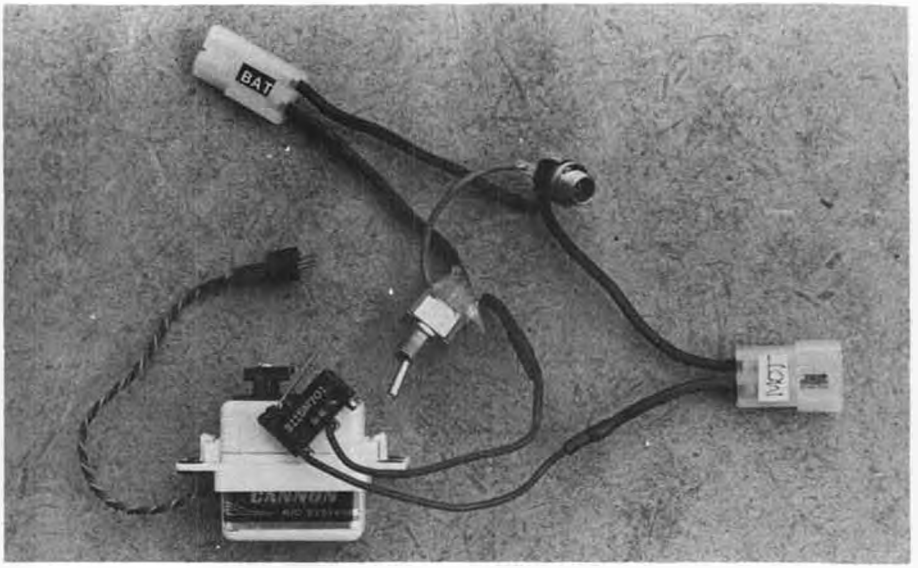
By MITCH POLING

• Solar powered aircraft are here and are practical. Bob Boucher sent an Astro Flight news bulletin describing the solar powered flight of the Gossamer Penguin on June 18, 1980. It flew for 500 feet on solar panels alone, and since then it has flown for two miles on solar power alone. The next step for the MacCready group is the Challenger, which will have much more power, 2500 watts from 15,552 solar cells (about 3-1/3 horsepower). The Challenger will be capable of true cross-country flight and high altitudes. Bob and Astro Flight have been responsible for the solar panels and the electric motors for both the Penguin and the Challenger. Those who have Bob's book on electric flight are already familiar with Astro Flight's Project Sunrise, a real pioneer solar plane. It is exciting to see and be a part of history in the making!

A couple of years ago I looked at the prices of solar cells and concluded that though it was practical for the R/C hobbyist, it was much too expensive. The price of solar cells has gone down drastically since then, and now it is starting to get in the range of the R/C enthusiast. The present cells cost about $8.50 a watt; for four-inch cells that produce .5 volts at 2 amperes, this comes out to $8.50 a cell (hard math!). I talked to the local solar energy retailer about this and found that a thirty-watt panel covers four square feet, with a cost (cells only, no wiring) of about $250. This seems like a lot at first, but it is in the range we pay for radios, fancy engines, ready-to-fly outfits and so on, so it is in the same ballpark as other aspects of our sport. An Astro 02 takes 40 watts input, so a panel this size would be adequate for the Astro 02. The Astro 05 takes 90 watts of input, so three panels would drive it well, and two panels would be good



The Astro Flight push-push switch offers a lightweight, simple method of on/off motor control without need for an extra servo. Mitch recommends full down elevator to trip the switch.



Woody Woodward uses this micro switch/servo setup to control the motor in his Monocoupe. Switch is Hot Stuffed directly to the servo case. Text has more details.

Bill Watson's entry in the first R/C Indoor Record Trials (at the 1979 IMS Show) was this stretched-wing version of his ultra-light two-meter R/C glider, fitted with both CO_2 and electric motor pods.

Hal Cover and Hank Fasola getting their 22-oz. model all buttoned up for their winning 23:04 flight at the '79 IMS Show.

enough for climbing flight. I have flown a 3-1/3 square foot sailplane weighing 24 ounces with an Astro 02 and the climb was slow but acceptable. The solar cells themselves wouldn't weigh any more than a battery pack producing the same power . . . about 4-1/2 ounces for thirty watts. It all looks so promising that I just may try it, but I'll have to wait until next summer when the sun returns to the northern and cloudy Pacific Northwest!

For us northern types blessed with a winter season, electric indoor R/C holds the promise of some real potential. Next year the Pasadena IMS Show (January 10 and 11, 1981, Pasadena Convention Center, Pasadena, California) will feature Indoor R/C Scale. For information, write to IMS, Box 127, Costa Mesa, CA 92627. The rules are simple: the models must be of a real plane, maximum weight is 24 ounces, maximum wing loading is three ounces per square foot. Scale points are a maximum of 100. The 90 points for flight are divided into 50 points for 100 seconds of flight (one point each two seconds), 10 points for flight perfection, 10 points for scale flight speed, and 20 points for landing perfection. A hand launch is required unless the judges allow an R.O.G., but no points for R.O.G. The flight course will be a figure eight. All pilots must fly their planes in the flight qualification trials the Thursday night before the show, no exceptions; this is for the safety of the public during the show. There will be a category for blimps as well as for scale monoplanes and scale multiwing.

This should be really a lot of fun, as well as being a historical first as far as I know. I am definitely going to be there, hopefully with an entry. It is fun to speculate on what types of planes will show up. The best possibilities, I think, are the Peanut Scale planes scaled up (Pumpkin Scale?). I would be inclined to take the structure as shown on the Peanut plans and use it directly. This opens up a world of possibilities, as anyone knows who has ordered the Walt Mooney bag of Peanut Scale plans (Walt Mooney, 2912 Cabrillo Mesa Dr., San Diego, CA 92123). My personal favorite is the Waterman Gosling Racer, which was recently featured in the September *M.A.N.*, and was originally a Flying Aces Peanut plan by Dave Stott. This is a parasol monoplane with a 4:1 aspect ratio. Under the contest rules, if it were built for the maximum weight of 24 ounces, the wing would have an area of eight square feet, or a span of 67 inches and a chord of 17 inches. The length from nose to tail would be 56 inches, with a scale prop of 24 in. diameter. The photos of the 1979 IMS indoor entries show that these dimensions are quite reasonable, in fact, they are small compared to many of the endurance models, which had spans of eight feet and more.

The basic equipment adds up to between eight and eleven ounces for the power plus R/C. If three channels are used, the Cannon 100 mah receiver pack is one ounce, the servos are .5 oz. each, the receiver .75 oz., for a total of 3.25 oz. for the R/C. A four-cell motor battery pack is two oz. for 250 mah cells, or three oz. for 500 mah cells. The VL-101 motor with gearing is two oz., the Astro 02 with gearing is four oz. The sum of all this gives roughly 12 to 16 oz. remaining for the structure for the largest planes (eight square feet). This is quite possible if the plane is built lightly, i.e. "Giant Peanut Scale."

Scale models may actually have an advantage over the endurance models, since their large cross-sections and drag will help slow them down. This has been a problem for me in the indoor R/C; the planes fly too fast. At three ounces per square foot loading, there is no problem of slow speeds cutting climb, in fact I found that the Astro 02 has more than enough power for this size of model.

Continued on page 77

Tony and Addie Naccarato had the only entry in the Rubber event at the '79 Record Trials. Radio was mounted in the pylon. Flight duration was about a minute.

Bob Boucher holds the Naccaratos' first indoor electric, very similar to the one used to set the 1980 duration record of 1-1/2 hours. This one used a direct drive Astro 020, flew surprisingly fast.

1000 KIND WORDS for SPORT FREE FLIGHT!

By DAVE THORNBURG

Long John, the author's favorite sport free flight. Uses 1/4-inch balsa fuselage, 1/16 sheet surfaces, and an ancient K&B Infant .020. One evening to build, another to cover and trim.

What's this? Is our R/C glider guru suggesting that a model plane can be made to fly without a radio in it? Remember, you read it first in RCMB!

• Your true free flighter, gentlemen, thinks too much. He thinks too much, and he *runs* too much. He's all forehead and leg. He's built something like a bust of Homer mounted on two doric pedestals. Except, of course, he isn't blind. He has the eyes of an eagle. In fact, if you could combine the eyes of an eagle, the patience of a vulture, and the legs of an ostrich, you'd have the perfect free flighter . . . a strange bird.

I bring these observations to your attention, not out of spite, but out of a spirit of fairness. I propose to say a few kind words for the sport of free flight, and don't wish to be accused of one-sidedness. *Let the worst be said first*, is my motto. Particularly if it concerns other people.

Actually, I don't claim to be a true free flighter, myself. I've never experimented with dry ice as a dethermalizer. I haven't entered an AMA free flight contest since I was a Junior. Hell, I don't even own a trail bike. In fact, I began to lose a lot of my enthusiasm for free flight about the time that motorcycles became common on the flying fields.

Motorcycles were not invented by teenagers, as you might have supposed. They were invented by middle-aged free flighters, to carry their paunches. They were invented after long years of experimentation with children, winos, and golden retrievers, none of which proved reliable in The Chase, and the chase is the heart of free flight. It always seemed appropriate that free flight should be the original and oldest form of aeromodeling, because the chase is symbolic not just of free flight, but of all forms of modeling.

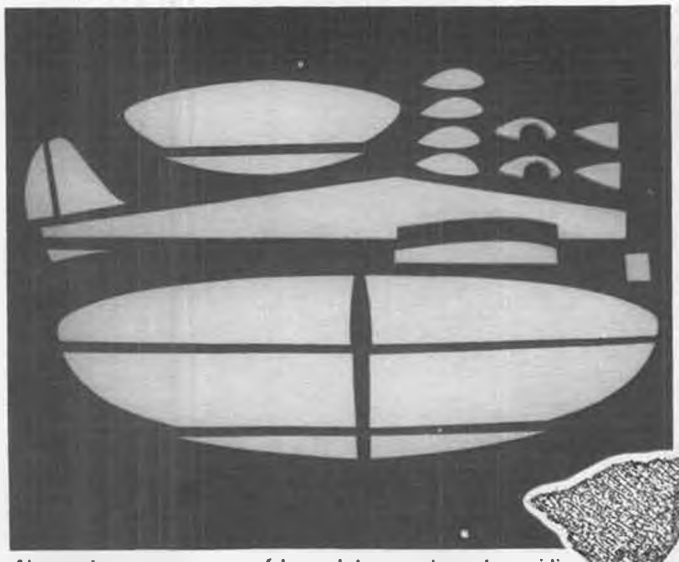
As modelers, R/C or otherwise, we all pursue an impossible dream: *the next model (or flight, or contest) will be the perfect one.* It's a dream that, if we're lucky, always recedes in front of us, staying just slightly out of reach. Like a mirage on the desert. Or our neighbor's wife. It's the dream that carries us through all those long, lonely, spine-warping hours at the building board, while the rest of the family is improving their minds with Charlie's Angels or The Dating Game.

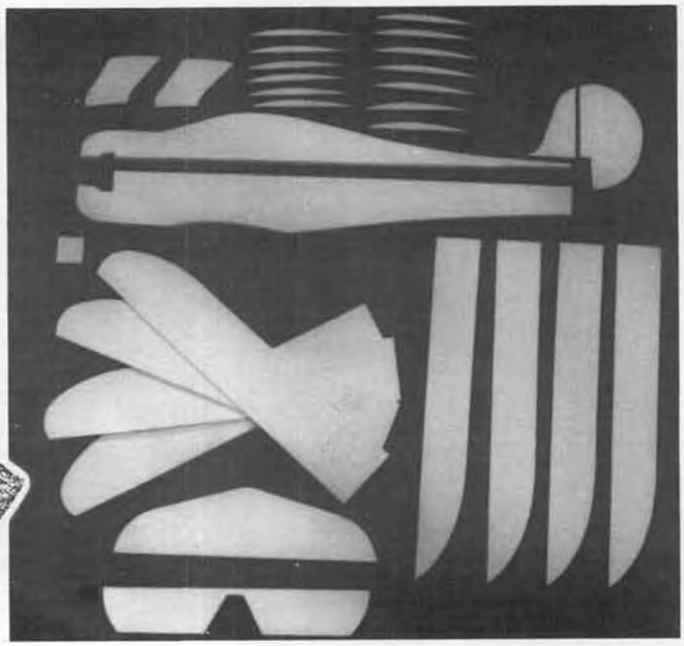
It's a dream we pursue in spite of criticism and condescension, through thick and thin. But only free flighters pursue it through dry cornstalks, through knee-deep mud. (Well, only free flighters and those R/C'ers who fly — brand radios.)

But I digress into slander again. What I really want to talk about is the fun I've been having lately turning airplanes loose and watching them fly themselves. Rediscovering sport free flight. It's a bit like opening an old box in the attic and finding a really prized possession you'd packed away years ago and forgotten. It's a bit like Christmas.

Model airplanes really can fly them-

Continued on page 69





Above, the separate parts of Long John . . . shows how ridicu simple a sport F/F can be. At right are all the pieces for a Stagg wing Beech profile F/F. It's a slightly more ambitious project, designed for a Cox Babe Bee .049. Both are good small-field ships.

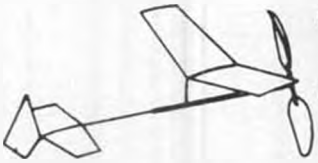
FREE FLIGHT AND CONTROL LINE

National Air Transport No. 21 is a Travel Air 5000. CAM No. 3 on wing means Contract Air Mail, Route No. 3, Chicago to Dallas. NAT flew mail and express only. Wright Whirlwind J-5, 225 H.P. Similar aircraft to "Woolaroc", which Art Goebbel flew to win Dole Race (U.S. to Hawaii) August 16, 1927.
Photo provided by Pete Westburg.

Our new Indoor columnist, Ken Johnson, with flapper no. 93. After this many, he's running out of names!

Barnaby Wainfan holds the Lesher Teal Peanut model designed and built by his friend Lynne Buben.

PHOTOS BY DICK BURKHALTER



INDOOR

By KEN JOHNSON

This is the first column, on an alternate-month schedule, dealing with the activity and how-to of indoor modeling. The author will cover the full range, from fun models to the exacting science of 'microflimsies'.

• *Indoor column editor Ken Johnson began flying indoor models about 1963 in Pittsburgh, Pennsylvania, starting with simple tissue covered stick models, then moving on to autogiros, microfilm duration models, and ornithopters. Under the tutorage of indoor master Ron Ganser, Ken was exposed to virtually all types of indoor airplanes.*

His first love, autogiros, held Ken's interest for several years. He set his first national autogiro record in Cleveland, Ohio, in 1964. Four more records followed in this event.

Then came ornithopters and three more records. Ken's interest in "flappers" is still alive today, as he is now building his 97th ornithopter.

About 1969, Ken began building indoor scale models and is the current president of the Flightmasters West indoor scale club of Los Angeles.

With outdoor flying sites shrinking (because of urban expansion) or disappearing altogether around the country, many model builders are looking for a new direction to move with their hobby.

I think indoor "fun" models hold a lot of appeal for several reasons:

1) You can fly indoors the whole year round.

2) Almost every neighborhood has a school gym or community center. Many areas have military reserve training centers with large indoor drill facilities. And these sites are usually within a half-hour's drive of your home.

3) The cost of indoor models is so much less as compared to gas, Wakefield, or radio control. No tick-off timers in indoor. The average indoor kit or scratch-built model costs less than $6 complete.

4) No more lost models in the weed fields. Have you ever tried finding a rubber or 1/2A gas model in a cornfield? The airplane can be ten feet away and you can't see it. Or have you lost your Old Timer Korda in a large grassy field with only a half hour to get that last official flight in before the meet ends? How maddening to pound that field, back and forth, knowing your model is there and you just can't find it!

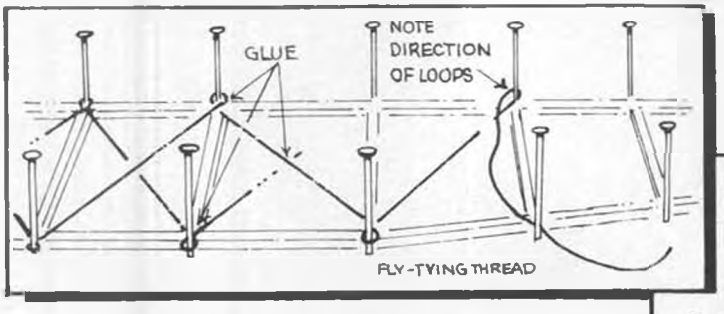
5) Many modelers, as they advance in years, cannot chase a gas free flight all day long in the hot sun.

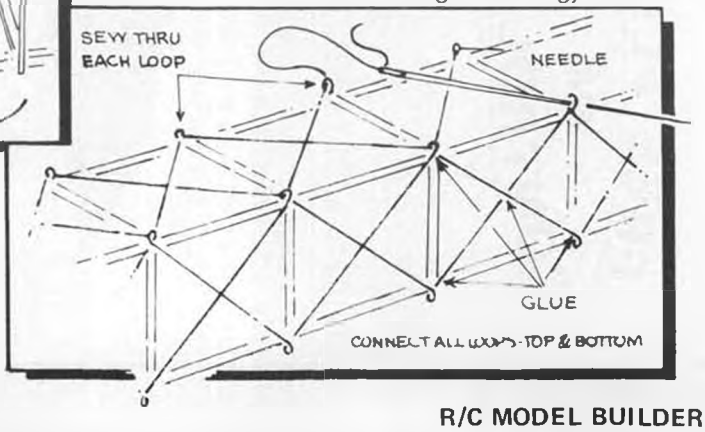
6) Because indoor models are lighter (if properly built), they fly slower and are less apt to be destroyed when they hit something. The trim corrections are easier to note and the novice builder can easily see what a trim tab will do to the airplane. The effect of a shim of down thrust can be quickly seen.

7) The last and most important reason is that indoor models are FUN. And there are so many ways to go, whether it's Indoor Scale, Peanut Scale, Manhattan and Bostonian Cabin, Microfilm or Paper Stick. Perhaps your thing is Helicopter or Ornithopter. Or the new Air-XX or Hawthorne Flying Wing. Which one do you favor? Maybe you want to try them all. They're all fun and rewarding to build and fly.

LET'S GET STARTED WITH INDOOR SCALE

An idea size for indoor scale seems to be about 18 to 20 inches span. You can build as large as 30 inches, but it's difficult to make a large scale model turn a circle in a high school gym without





Ken Johnson's method of applying X-bracing to an open structure fuselage such as the 1911 Cessna mentioned in the text. Not only does this add to the scale appearance, it also contributes tremendously to the structural strength. Fly-tying thread is available at sporting goods stores that sell fishing supplies. Procedure is fully explained in text.

An excellent example of outstanding indoor Peanut design is the Folkerts SK-3 racer by Kurt Enkenhus. Very light model flew just over two minutes at 1977 P.P.P.P. Contest. RCMB has plans (No. 1783, $2.50). For experienced builders only.

banging off the walls. If you build the model too small, the amount of scale detail you can put on it will be limited.

Are you a kit builder? Pick your kit carefully. As a general rule, outdoor kits such as Guillows, Sterling, and High Flyer do not fly slow enough or long enough for indoor scale. Any of the Peck-Polymers kits are good. For the "super light" builders I recommend Micro-X kits. If you can't find these in your model store, send $1 for a catalog to Micro-X Products, P.O. Box 1063-A, Lorain, OH 44055. Some of the English kits (Andrew Moorehouse) are OK, like the Currie Wot biplane. The important thing to remember is that *the airplane must be kept light*. You don't need a lot of strength indoors, where there's no wind factor.

I can't say enough about the Classic Model kits by Gene Thomas. They are well worth the price you pay for them. The plans are well drawn, the wood is good, and Gene offers superb booklets containing 3-view drawings and photos for scale documentation.

Several years ago I built a 1911 Cessna Peanut from a Gene Thomas plan. The model went together well and flew beautifully. The wing was single-covered and the model was light. My best time under a 25-foot ceiling was 1 min. 30 sec. The model was later destroyed and I built another Cessna. This time the wing was double covered. The times on this ship averaged about 1 min. If this model is built light and trimmed well, it is almost unbeatable in competition.

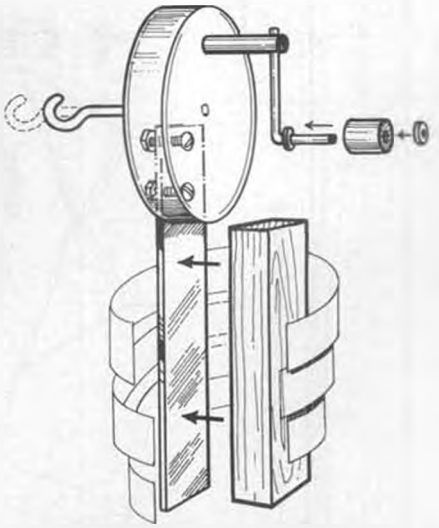
If you are going to build a scale model for competition, search out a 3-view of the real airplane *before* you start to build. And photos, if you can find them. Your local public library contains many aircraft reference books. Look for *Jane's All The World's Aircraft*, the *Aircraft Yearbooks*, and *Flight International*. You must have a 3-view drawing to get scale points on your model at a contest.

THREAD BRACING OF UNCOVERED FUSELAGES

Airplanes like the 1911 Cessna having open-frame fuselages require thread X-bracing in the uncovered areas. The thread I prefer is fisherman's fly-tying thread. Look for a fishing equipment store that sells fly-tying supplies. The thread is called Danvilles Fly-Master Waxed Thread. And best of all, the price is under a buck. Previously I was using surgical suture thread, but at $4 per spool, it was running me broke.

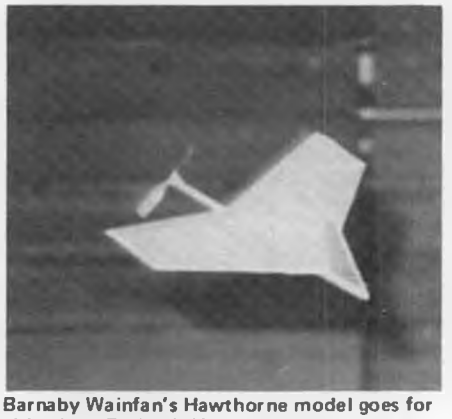
To do this, you must apply the thread bracing to the completed fuselage sides before joining them together into a box structure (see sketch). After you have pinned one side of the fuselage down on the board, position a straight pin vertically at each upright. The pins should be just outside the longerons, above and below the uprights at each station. Remove all other pins. Starting at the front, loop the thread around the pin and carry it down to the next upright. Begin the next looping at the other end of each upright, so that the thread forms an X between all of the uprights. Glue

Continued on page 95



A graphic explanation of how to go about modifying the Micro-X (or Wilson) winder for a shorter hook and more convenient handle.

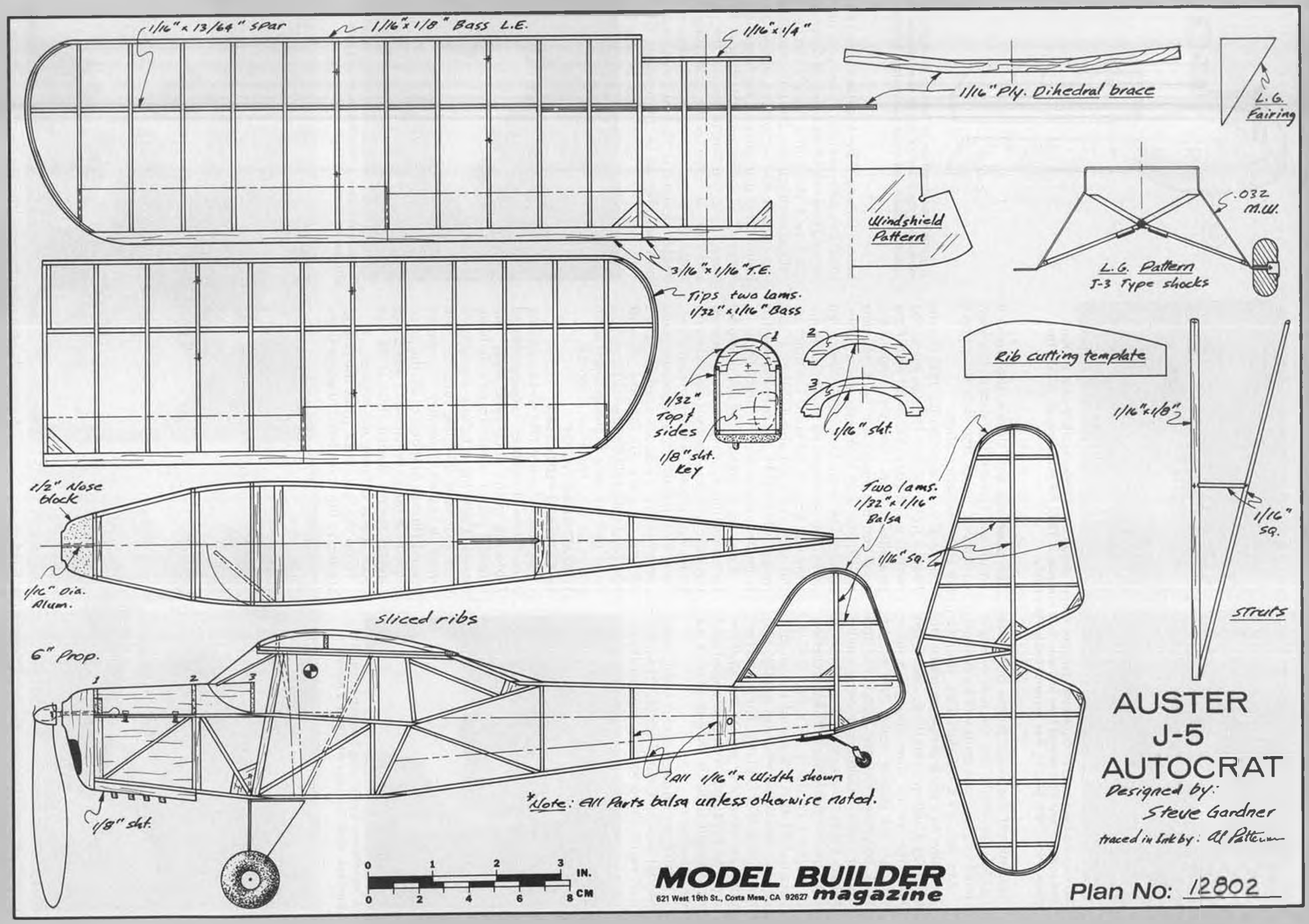
A Hawthorne flying wing takes to the air at Burbank High Contest. Al Hieger's model.



Barnaby Wainfan's Hawthorne model goes for altitude at Burbank High contest.

Carlo Godel readies his new Nieuport Schneider Cup Racer for a test flight. Looks large for a Peanut, it's probably AMA Scale.

Barnaby Wainfan again, this time attaching the rubber motor to the rear hook on his Hawthorne wing. Event is quite popular in So. Cal.


1/16" x 13/64" Spar
1/16" x 1/8" Bass L.E.
1/16" x 1/4"
1/16" Ply. Dihedral brace
L.G. Fairing
Windshield Pattern
.032 M.W.
L.G. Pattern
J-3 Type shocks
3/16" x 1/16" T.E.
Tips two lams. 1/32" x 1/16" Bass
1/32" Top & sides
1/8" slot. Key
1/16" slot.
Rib cutting template
1/16" x 1/8"
1/16" sq.
Struts
1/2" Nose block
1/16" Dia. Alum.
Two lams. 1/32" x 1/16" Balsa
1/16" sq.
sliced ribs
6" Prop.
1/8" slot.
All 1/16" x Width shown
*Note: All Parts balsa unless otherwise noted.
IN.
CM
MODEL BUILDER magazine
621 West 19th St., Costa Mesa, CA 92627
AUSTER
J-5
AUTOCRAT
Designed by:
Steve Gardner
traced in Inkby: Al Patterson
Plan No: 12802

PHOTOS BY AUTHOR

AUSTER J-5

By STEVE GARDNER . . . A good flying 18-inch model of the "British T-Craft" of the late '40s. Should be great for indoor flying if built light, or how about a double-size version for Jumbo Rubber Scale?

• In 1940, Taylorcraft Aeroplanes Ltd. of England started building Taylorcrafts with English engines. They made more and more changes to the basic American Taylorcraft until it wasn't really a Taylorcraft anymore, so in 1946 they changed their name to Auster Aircraft Ltd. They started to produce a large number of different airplanes, including the Autocrat, the subject of this article.

The J-5 was produced for use in Australasia and differed from previous models by the bigger engine (130 hp Gipsy Major) and heavier gross weight.

The model was designed for easy and light construction for the beginner and the lazy expert. It will fly very well if a minimum of care is taken and can be detailed to compete, although mine has never been flown in a contest.

Begin construction by selecting very springy, hard wood for the longerons. They have a fairly tight curve to make, so choose flexible wood. Build the side of the fuselage over the traditional Saran Wrap. When one side is finished, lay the plastic wrap over it and build the next side over the first. This will insure identical sides. This is a little difficult to do for the beginner, but it is a good technique to master.

The sides are joined next, starting at the tail and working toward the nose. Take care at the bend and the nose to keep everything straight and square. Then sheet the nose over the hard balsa formers and carve the noseplug, including a healthy dose of down thrust and a little right thrust. Install the gear and cabin braces, then the side stringers.

Next, build the wings, laying them out like the fuselage sides. The wing tips may be a bit different than the beginner is used to in kit jobs, but there isn't anything difficult about them. To make the tips, use two strips of basswood (three if you use hard balsa), about 1/32x1/16. Glue them together with white glue, and while still wet, wrap them around a form cut to the inside edge of the tip, and pin until dry. When they are done they will hold their shape and look good, too.

After the tips are done, place them on the board and glue them to the wing frame, then glue the spar in place and add the wing ribs to the top of the spar, taking note of the riblet at the root of the wing, and the gussets. Join the wings to the center-section using the plywood dihedral former to set the dihedral of the wings. The expert may want to reduce the dihedral for more scale points.

Start the tail surfaces by pinning the outlines to the board and building them just like the fuselage sides. The expert may also want to make the rudder and elevators separate from the stabilizers for flight trim.

The model should be covered with silver or gray tissue, as the standard finish was silver dope. The model is easy to cover and since there have been several good articles on covering with Japanese and domestic tissue, I will refer you to them for the finer points of covering. I suggest white glue and water in a fifty-fifty mix for adhering the tissue, for a neat job.

Add roundels and/or the civil registration numbers to the model now. The outlines were added with a Sharpie permanent marking pen, although the old method of thin strips of black tissue will look fine and is not as risky as the pen. Assemble the model, adding the wing struts, gear fairings, tail wheel, exhaust stacks, and the windshield. Paint the details with enamel, but use it sparingly to keep the weight down.

If you haven't flown too many models successfully up to now, this one will help teach you how to trim a scale model. The model's tail is rather small and is on a short arm; this is a common problem with scale models, and the secret to easy trimming is to use a forward balance point. The forward balance point will require a large amount of up trim to get a good glide. The model balances at the point indicated on the plans with some clay in the nose. Once you have it gliding the way you want, try some power to see if you need more down thrust than you built into the model; it is likely that you will. Let the model follow its natural turning tendency if you fly outdoors, or fly it left if indoors. Use side thrust to control the power turn and let the glide go where it will, as long as it doesn't stall or dive.

The model is powered by a loop of 1/8-inch brown rubber about as long as the model from prop hook to tailpost.

Enjoy your British T-craft and please, if you do, write me about it care of **RCMB.** •

Text calls for two strands of 1/8 rubber, but this shot reveals at least four. Light, simple construction make it especially good for beginners to Rubber Scale.

the Jimmie Allen story

(CONCLUSION)

By WALTER HOUSE

Jimmie Allen photo from the 1936 Album. It's really Murray McLean, and no one seems to know whatever became of him.

Jimmie Allen reached the ultimate height of his popularity in 1936, when Paramount Studios jumped on the bandwagon with the production of the movie "The Sky Parade," starring Jimmie Allen, William Gargan, Katherine DeMille, and Kent Taylor, with Grant Withers and Billie Lee. The plot was built around three WW-I fliers: Scotty Allen (Jimmie's father), Speed Robertson, and Tommy Wade, going from barnstorming to commercial flying and finally devising an autopilot that Jimmie Allen saves from being stolen by foreign villains. The movie was a big success and the merchants again used the Jimmie Allen theme to promote their products. Sky Parade posters went up at all Skelly outlets and 600,000 special Sky Parade movie stills were passed out to motorists.

The Sky Raider model was featured in the 1936 Jimmie Allen Air Races. An Old Timers group in Kansas City has revived the Jimmie Allen mania by holding the Jimmie Allen Air Races (model meets) again.

Little is known about the Jimmie Allen who was seen publicly. Radio, being much different than television, used actors for their voice. The radio Jimmie Allen was played by John Frank, who was over forty years old during the first recordings in the 1930s. The Jimmie Allen who made personal appearances for sponsors such as Skelly and Richfield and acted in the movie, was Murray McLean. He was born May 23, 1917, in Chicago. His mother was the actress Betty McLean. Richfield Oil Company had some of the episodes rerecorded at ratio station WBBM in Chicago, and Murray McLean was picked for the role of Jimmie Allen over twenty-five other youngsters. An article in a popular radio magazine of 1936 stated that he was an accomplished pilot and had received his first flying lesson in 1927. What ultimately became of Jimmie Allen (Murray McLean) is not known at this writing, but he did have a part in at least two other radio shows. He did a short stint as Billie Fairfield in the "Jack Armstrong" series and was featured in "The Secret Three," date unknown. John Frank and other members of the Kansas City cast (Shelby Storck, Art Ellison, Al Christi, and Randall Jesse) continued on through the second recordings in 1937 through 1940.

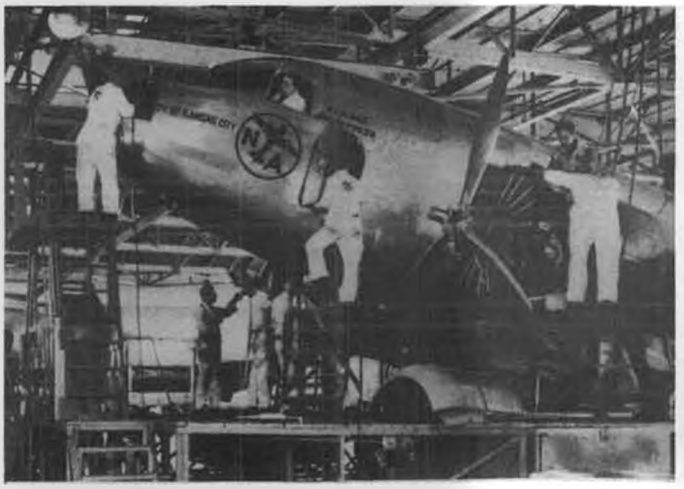
During 1937, the Jimmie Allen/Skelly partnership was dissolved and Skelly's development of a new show by Burtt and Moore was well on the way. This series, which eventually hit the big time, was the legendary Captain Midnight. There is evidence that The Air Adventures of Jimmie Allen appeared as a newspaper strip at this time, but no examples have been found.

The Air Adventures of Jimmie Allen continued through WW-II on various radio stations that obtained local sponsors. This went on for several years before fading from the airways. Seemingly gone by the mid-1940s, Jimmie Allen had made a marked impression on several million youngsters. It would be interesting to know how many World War II or Korean conflict airmen were motivated into aviation by this first radio air adventure series.

Gone but not forgotten, The Air Adventures of Jimmie Allen made a short comeback in the immediate post-war years. Again through the Comer Advertising Agency and now sponsored by the International Shoe Company of St. Louis, 495 shows were recorded in 1946 and 1947. The plots were updated to fit the times, and the aircraft mentioned in the stories were of the latest types. The nearly all Kansas City cast and

Skelly Oil Co.'s Spartan Executive. The Skelly/Jimmie Allen partnership was dissolved about this time and the "Exec" never took Jimmie and Speed to their personal appearances.

Warren Comer was the post-war Jimmie Allen seen by the fans, is now a pilot for KLM.



Jimmie and Speed worked for National Airways, the radio story airline. Jimmie Allen's Album featured several shots of the bogus company's airplanes. They were actually photos of TWA DC-2's with the National Airways logo airbrushed in the proper places.

In the Jimmie Allen movie, "Sky Parade," Katherine DeMille played the part of Geraldine "Jerry" Croft, a barnstorming parachute jumper. "Jerry Jump-Up Croft" appears to be getting a little help (out of sight of the camera) during recovery after a jump.

production crew consisted of Jack Schlicter as Jimmie Allen and Shelby Storck as Speed Robertson, with other parts played by Randall Jesse, Al Christi, Paul Nesselrode, Sherward Durking, Jim Burke, and others. When the script was modernized by Shelby Storck and staff, the part for Jimmie Allen's girlfriend was expanded. Her name was Barbara Croft and the part was played by Twila Comer. The recording engineer was Bill Godden. The postwar Jimmie Allen who was seen in public and posed for the promotional photographs was Russell Comer's son, Warren, who is now an airline pilot for KLM. This third series was broadcast for several years, becoming popular but never reaching the heyday of the 1930s, eventually giving way to television.

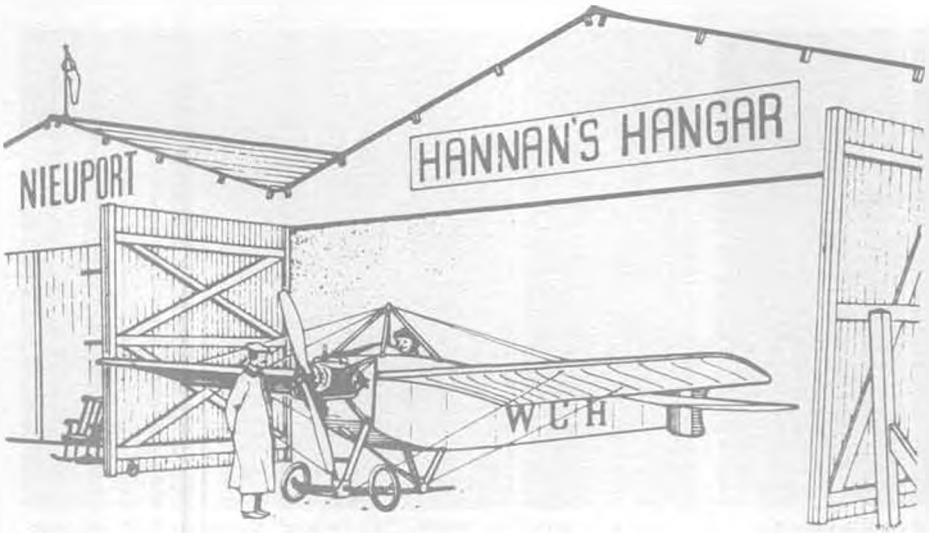
Down but not out, Jimmie Allen was to be given his chance to try for TV. In the early 1950s, plans for a television series were set in motion. Jets were now in and as none were privately owned, permission was obtained from the Air Force to shoot scenes using the latest types. But Jimmie never made it into the homes of the young viewers. This at-

Continued on page 85

The three barnstorming heroes of the 1936 movie, "Sky Parade," posing with their Hollywood Warbird, a Curtiss Fledgling with guns and camouflage. Left to right is Scotty Allen, Speed Robertson, and Tommy Wade, played by Robert Fiske, William Gargan, and Kent Taylor.

The Jimmie Allen role in "Sky Parade" was played by three different actors for three different ages. Shown here on the wing of the Fledgling is Billie Lee as Jimmie at age 4.

Scotty, Speed, and Tommy, this time in front of a Travel Air B4000 (Wright J5 Whirlwind) used in the "Sky Parade" movie.



"Skill is an asset, enthusiasm a necessity."

• Our desk calendar yielded the above quotation, which is apt for the fine art of model aeroplaning!

FAREWELL SIG

Modeling has lost one of its staunchest supporters with the passing of Glen Sigafoose in an aircraft crash. How can one possibly pay proper tribute to such a giant in the industry? Starting as a basement business, the Sig Manufacturing Company grew to what is likely the largest producer of wood-based flying model construction kits in the world, under Glen's skillful guidance. And he saw to it that no facet of modeling was overlooked in the process, producing everything from simple beginner's free flight models through control line subjects to complex R/C kits.

Along the way he even published *Sig Air-Modeler*, possibly the most fun-oriented publication since *Flying Aces*, which catered primarily to the grass-roots segment of the hobby.

Sig's firm eventually became the largest employer in the town of Montezuma, Iowa, with about 125 members working in what might best be described as a "family" atmosphere. Even with the head of the family absent, the firm intends to continue operation just as Glen would have wanted them to do. A memorial fund to be set aside for scholarship awards to young model builders has been established, and donations may be mailed to the "Sig Fund," Route 1, Box 1, Montezuma, IA 50171.

HISTORY REPEATS

Our mention of the Gordon Bennett Balloon Race led to some interesting follow-up reports: It seems that the very first of these competitions was held in France during 1906, with entries representing some seven countries. Curiously, one of the American entries was piloted by a Brazilian! Alberto Santos-Dumont's country was not a member of the FAI (yes, the same FAI which today sanctions international model aircraft records), so he entered as a representative of the U.S. with a balloon called "Les Deux Ameriques" (The two Americas).

The launching site of the first Gordon Bennett Balloon Race was the Garden of Tuileries in Paris. So what? you may ask. Just this: That particular location was also the place where Alphonse Penaud's famous "Planophore" rubber-powered model of 1871 was publicly demonstrated! Thus it seems particularly appropriate that the 1980 Gordon Bennett Balloon Race was conducted at Mile Square, among the better-known model aircraft flying fields.

AND SPEAKING OF FRANCE. . .

J.F. Frugoli of that country wrote in to mention that Walt Mooney's Farman

Joe Gallagher kneels behind his award-winning "Zeta" R/C Scale model. Standing, l to r, are Henry Haffke, designer of the model; Dotti Miller, and Pete Miller, designer of the full-size Zeta now in the Springfield Museum.

1000, published in **RCMB** a few issues ago, does not qualify as a Peanut under the French interpretation of the 9-inch fuselage optional rules. They measure the 9 inches *overall*, whereas the Farman length does not include the propeller.

Evidently there is confusion in the United States on this point too, and differing opinions can result in quite radical variations in resulting model sizes. Consider, for instance, some of the pod-and-boom pusher designs. We suspect more will be heard on this subject, but meanwhile, if in doubt, why not stick with the traditional 13-inch span rule and be on the safe side?

Frugoli also offers the humorous observation by Pierre Blhum on the subject of overweight indoor scale models: "I recognize a good or wrong indoor model by the noise made when it strikes an obstacle!"

SOFT WATER?

Keith Schwimmer of the San Diego Scale Staffel club assures us that he test-glides his small models onto his water-bed. Well, OK, but we'll still keep on the lookout for tall grass. . .

WHERE THERE'S A WILL

Much ado has been made about the

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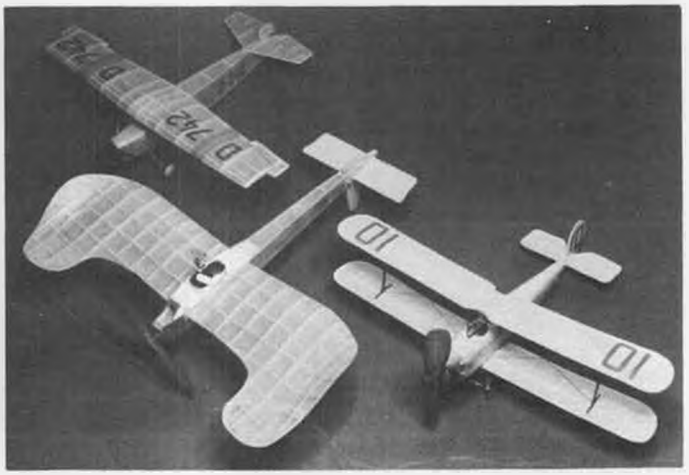
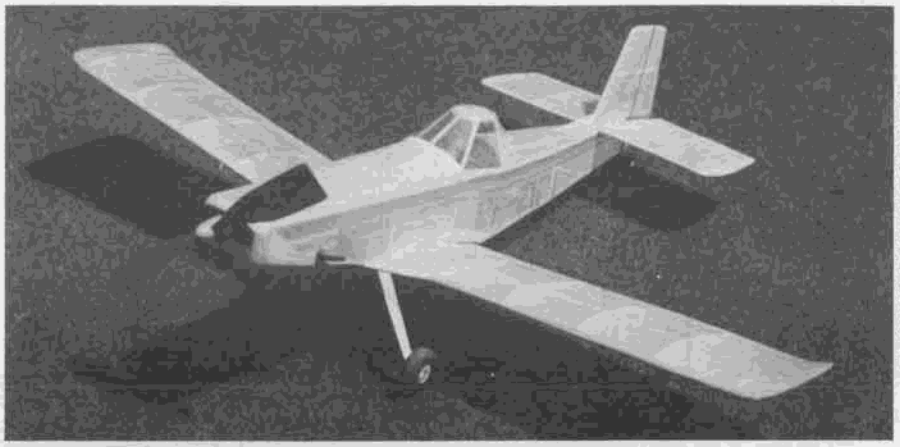
CONCENTRATION: 12-year-old Carl Linstrum prepares his 1st place winning Lacey M.10 for flying inside the Miami Goodyear blimp hangar. Photo by Dave Linstrum.



A mixed bag of Peanuts: Hannan's Fokker F.2 (upper left); Benno Sabel's Bleriot 5 (center); and Ray Malmstrom's AVRO Avis.



PHOTOS BY FUDO TAKAGI

Peanut Embraer "IMPANEMA"

By WALT MOONEY . . . South America provides the subject for this month's Peanut, a cropduster especially well suited to novice builders.

• The state-of-the-art today in agricultural aircraft design is well known. It is a low-wing, highly-powered airplane with its dust or spray cargo carried over the wing, and its pilot cockpit located behind the cargo for impact safety. To provide the necessary good visibility for low altitude crop dusting, a 360° visibility canopy is provided, and the long nose is angled sharply down to provide as much view forward as possible.

The Embraer Impanema, built in Brazil, has all these characteristics, and at the same time has a unity of shapes that render it quite attractive. Especially if it is compared with some other aircraft designs of the same genre, whose designers have apparently felt their aeronautical masterpieces should look like a piece of farm equipment; a Fordson tractor, perhaps.

From a strictly Peanut modeling point of view, the Impanema has much to offer. It has a relatively long nose, non-tapered wings and horizontal tail, adequate dihedral and tail size, and a flat-sided fuselage. Although its aspect ratio is fairly high, so that a 13-inch Peanut cannot match a Fike for wing area, it is a very clean design aerodynamically and can be made a competitor with enough attention to keeping it light.

The plans are drawn for the use of 1/16 structure in most instances. This should be an aid to the novice builder. Thinner sticks could be used everywhere, and if you feel competent with the weaker wood sizes you'll certainly get a lighter model than the one in the photos, which weighs nine grams with a twelve-inch loop of 3/32 rubber.

This model utilizes conventional construction techniques in all of its components. There is nothing new for anyone who has built a few kits. However, because I believe it is a suitable model for a relative beginner in the Peanut model game, we will discuss all the parts, some in more detail than others.

I like to start by making the two fuselage side frames. First get a piece of waxed paper to place over the plan so the glue will not stick the balsa permanently to the plan. Both side frames are best made at the same time, one over the other, so they can be as nearly identical as possible. Cut two wing mount pieces out of sheet balsa to the shape shown in the fuselage side view. Pin these in place over the plan and then add the two lower longerons. Use as many straight pins as necessary to locate the longerons accurately. Now place the two upper longerons in place and secure with straight pins. Do not push the pins through the longerons, which may split them, rather put the pins on either side of the balsa sticks. Check to make sure your longerons are exactly one above the other vertically. Now carefully cut the uprights and cement them in place. Don't hurry this step. Make each upright fit precisely; if you cut one too short, make another and use the first part to make an upright for a further aft location. Note that the uprights at A and G are wider than the others. The one at the nose needs the extra strength because that's the one the model will be impacting on first, and the one at G has a hole drilled in it to accommodate the peg that supports the rear end of the rubber motor.

The fuselage frames must be allowed enough time pinned to the workboard for the cement to dry completely. I generally take this time to cut out all the ribs, tip pieces, and formers, and then assemble the tail structure and wing structure over the plan. All the wing ribs are alike, as fas as shape goes. This shape is shown on the side view. The root ribs have a short extension forward of the basic wing, also indicated in the side view. Root and tip ribs are thicker than the others for strength.

The tail structures are assembled by pinning the leading and trailing edges in place on top of the plan and adding the other pieces in a manner similar to the way the fuselage sides were assembled, except of course there is only one of each.

Start the wing in the same manner, by pinning the trailing edge in place over the plan. Now place the tip ribs in position against it and locate the leading edge against the front of the rib. (It is handy if you leave an inch or so of excess length at each end of the leading and trailing edges. First, you can pin through it without too much problem, and second, it allows for a little misalignment in the tips.) Now cement all the ribs in place. They should all be perpendicular

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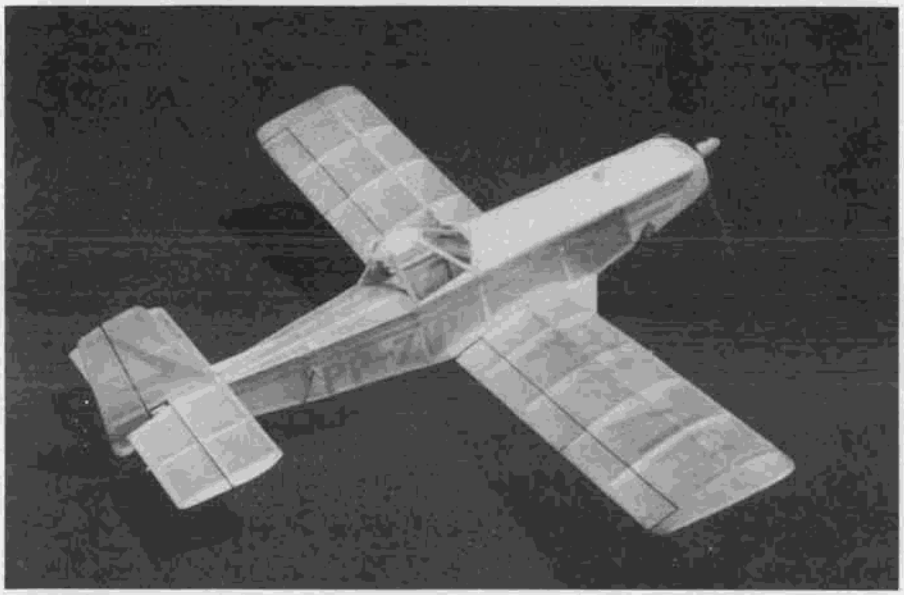
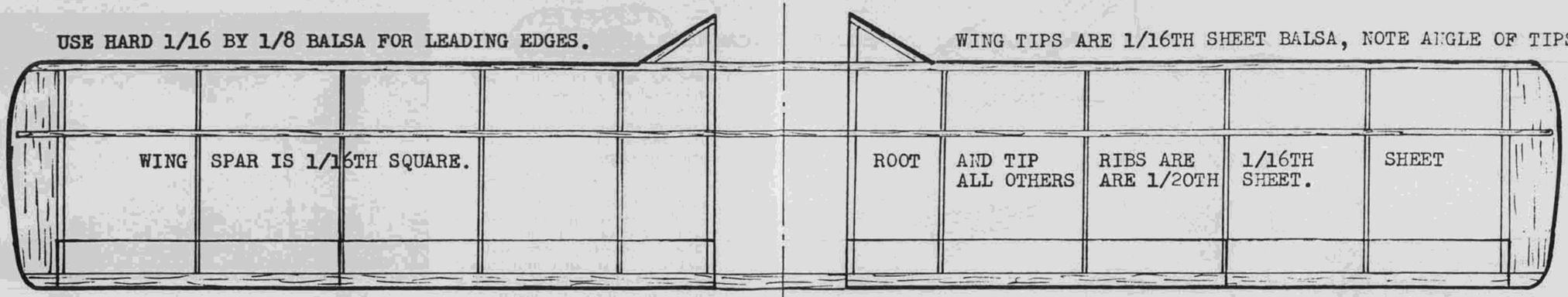


Much better looking than most ag-planes, the Impanema has all the right moments and proportions that go toward the making of a good flier.

USE HARD 1/16 BY 1/8 BALSA FOR LEADING EDGES.

WING TIPS ARE 1/16TH SHEET BALSA, NOTE ANGLE OF TIPS.



MAKE WING TRAILING EDGE FROM 1/16 BY 1/8 MEDIUM BALSA.

THE DIHEDRAL BREAKS ARE AT THE INSIDE OF THE ROOT RIBS.

WING PLAN VIEW

WING DIHEDRAL IS ILLUSTRATED IN THIS VIEW.

COWL INLETS AND EXHAUST STACKS ARE CARVED FROM SCRAP BALSA.

THIN PLASTIC SHEET LANDING GEAR LEGS.

REAR MOTOR PEG.

1/16 SQ. STRINGER

1/16 BY 1/32 STRINGERS.

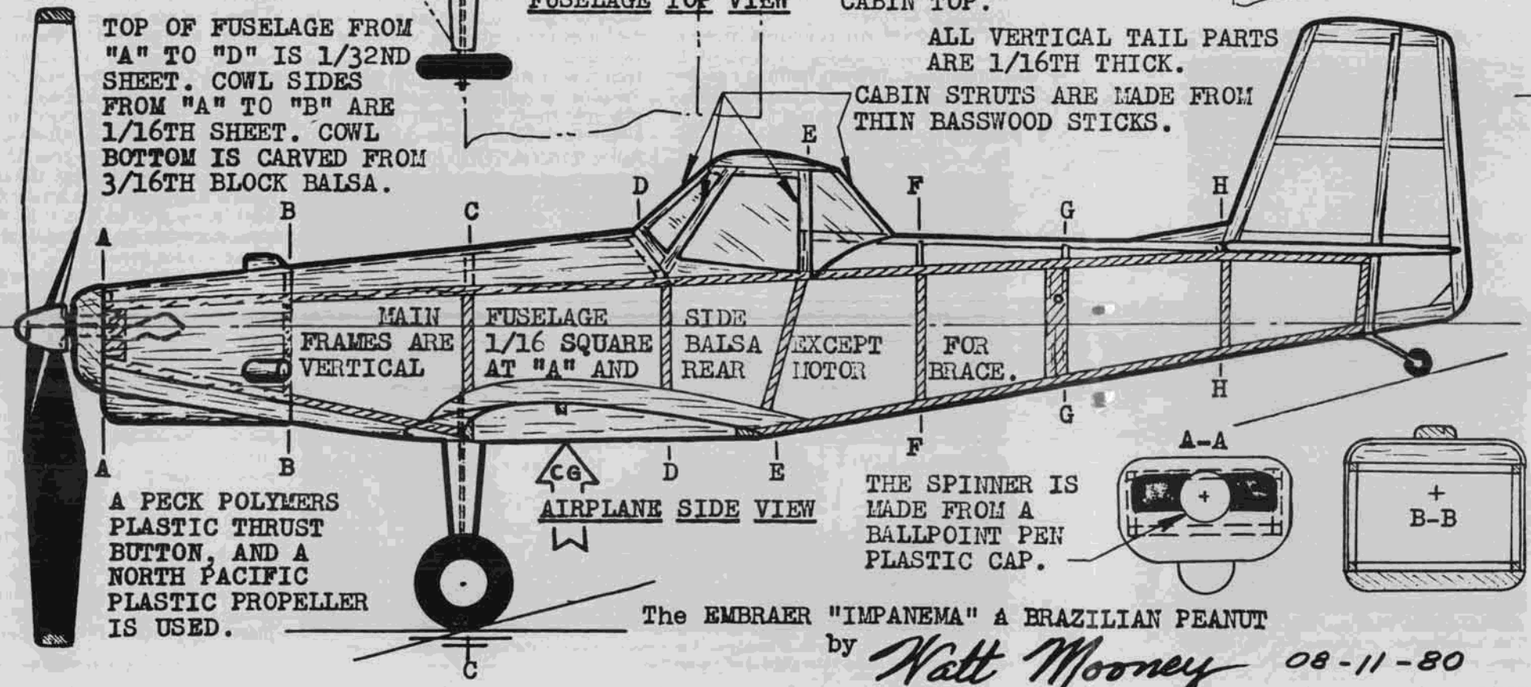
CARVED BALSA BLOCK CABIN TOP.

FUSELAGE TOP VIEW

TOP OF FUSELAGE FROM "A" TO "D" IS 1/32ND SHEET. COWL SIDES FROM "A" TO "B" ARE 1/16TH SHEET. COWL BOTTOM IS CARVED FROM 3/16TH BLOCK BALSA.

ALL VERTICAL TAIL PARTS ARE 1/16TH THICK.

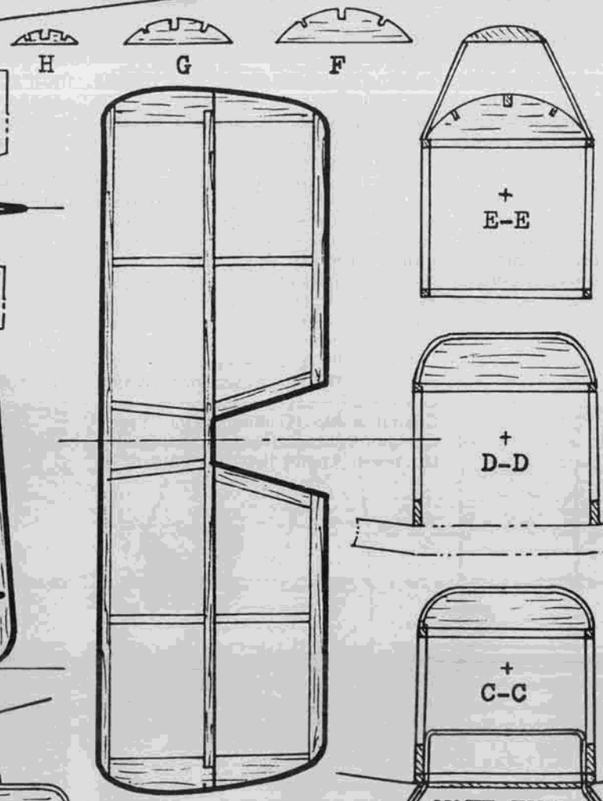
CABIN STRUTS ARE MADE FROM THIN BASSWOOD STICKS.



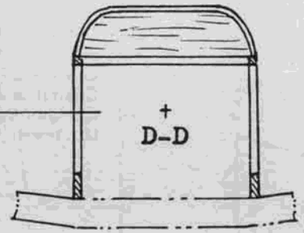
AIRPLANE SIDE VIEW

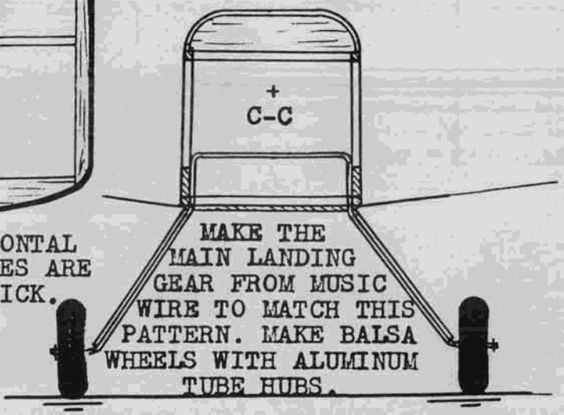
A PECK POLYMERS PLASTIC THRUST BUTTON, AND A NORTH PACIFIC PLASTIC PROPELLER IS USED.

THE SPINNER IS MADE FROM A BALLPOINT PEN PLASTIC CAP.



ALL HORIZONTAL TAIL PIECES ARE 1/16TH THICK.





MAKE THE MAIN LANDING GEAR FROM MUSIC WIRE TO MATCH THIS PATTERN. MAKE BALSA WHEELS WITH ALUMINUM TUBE HUBS.

The EMBRAER "IMPANEMA" A BRAZILIAN PEANUT

by Walt Mooney 08-11-80

FREE FLIGHT

by TOM HUTCHINSON

PHOTOS BY AUTHOR

• I'm really racing Bill N.'s deadline this month, having moved lock, stock and RM Enterprises to a new location for both work and residence. As a result of the move, I wasn't able to attend the recent Taft Bi-Annual FAI Free Flight Championships (F/F Team Selection Finals) on Labor Day weekend. However, a few phone calls to Bill Blanchard, Al Hotard, and Jim Quinn netted me the results of the three-day affair. The following people will represent the U.S. at the 1983 World Champs in Valdepenas, Spain:

F1A
- Jim Wilson
- Juan Livotto
- Jose Dona

F1B
- Joe Foster
- Carroll Allen
- Walt Ghio

F1C
- Doug Galbreath
- Roger Simpson
- Charlie Martin

From all accounts, it was a closely-matched bunch of fliers competing for the three team spots in each event. Weather was typically Taft this time, but relatively cool, reaching a high of only 95°F. Thermals were huge, especially in the afternoon rounds, and a slightly stiffer breeze than usual made for some very long chases (A/2's were taking 10 to 15 minutes to D.T. down!). A smooth-running contest organization made for fewer hassles this time out.

Allen is the only team member without World Champs experience. Livotto and Dona have flown proxy at previous Championships; Galbreath, Ghio, Simpson, and Wilson are repeaters from the last team; Martin flew in Denmark in 1977; and Joe Foster, of course, was the first person ever to win a Wakefield flyoff at a World Champs . . . 27 years ago! Foster and Galbreath spearheaded the Northern California contingent's successful efforts by maxing out for all 18 rounds.

DARNED GOOD AIRFOIL: Gottingen 134

This airfoil (also called the M.V.A. H.12) is a nice "plain vanilla" airfoil for most modeling uses, especially AMA gas. Use it wherever you would like to use a moderate thickness (9.5%) flat-bottom airfoil, and also if you've lost your favorite zip/zip French curve. This

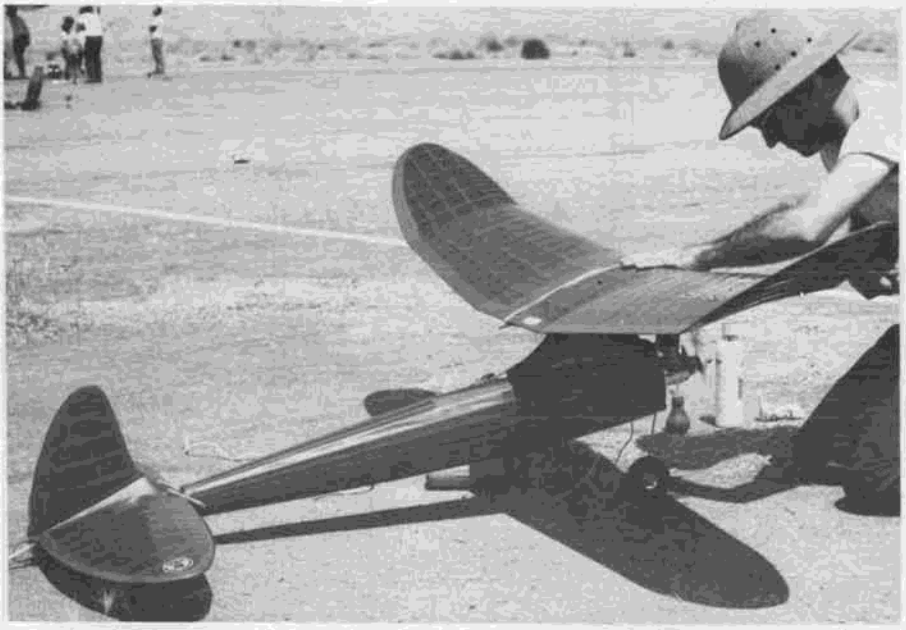


Photo taken during the "good old days" at Taft's Gardner Field shows Doc Markham firing up the Anderson Spitfire in his beautiful Monokoted Goldberg Sailplane.

Another Gardner Field shot, this one of Al Vela launching one of his mid-'60s FAI designs. Al is still a top FAI flier.

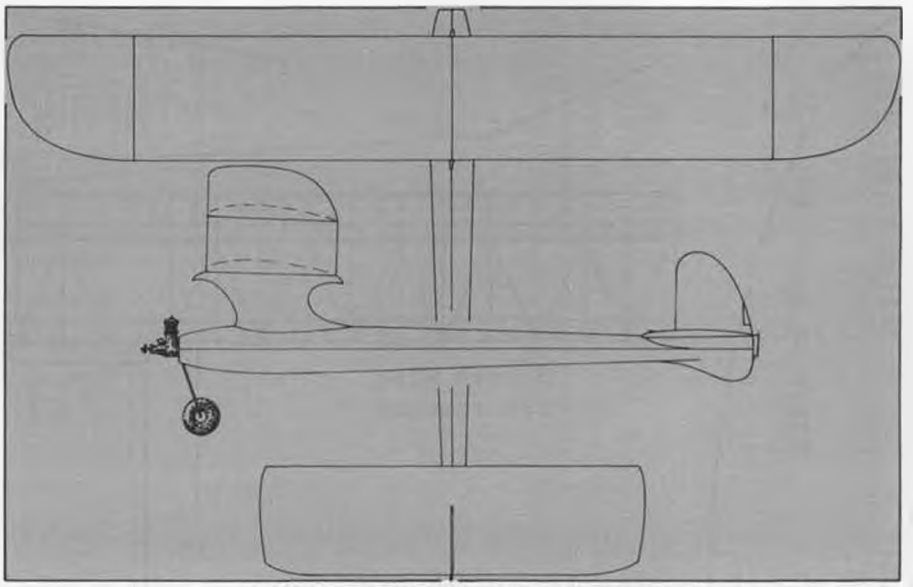
would be a good choice for the "new concept" FAI Power model proposed by Bob Stalick. The Gottingen 134 was one of a series of airfoils tested in the Gottingen wind tunnel during WW-I (this one was done in 1917), at a time when there wasn't much difference in size and velocity between wind tunnel test airfoils and those used on our free flights. The chord length on this tested airfoil was about that of a Wakefield or A/1.

While I've got your attention, here's a little item by Bob Klipp (from the *Turbulator* newsletter) that should help you use this series of DGA's more effectively:

Have you plotted any airfoils lately? I don't know about you, but it's always given me a bit of eye strain, and as the years have passed by, things have gotten worse, not better. I lay out the airfoils approximately twice the chord length I need and bring them down to actual size on a Xerox machine which has the capacity to reduce copy. I say "approximately" double the size, because while our office machine offers four different reductions, the percentages are keyed in to paper sizes, and none are exactly 50%. But the information is noted on the machine, so you can figure out the percentages and lay out your original with a compatible chord size. A reducing Xerox can also be of help when you need some tapered rib templates.

Bob's got a good idea that should save you some work. The larger you draw the original rib shape, the greater your accuracy will be. I usually draw out the originals for this column on a ten-inch chord (which saves a lot of multiplication, since 1% of the chord is then .1 inches, allowing me to use a 1/100 inch scale to get the tenths of a percent. If you build smaller models, it might take a few reductions to get down to your chord length from ten inches, however. In this case, you might be better off making your reductions from the drawing in the magazine, which comes out about 6-1/4 inches (160mm) when published.

You should also note that most Xerox "same size" copiers usually turn out about 1 or 2% larger in size than the original. So, if the airfoil in the 3-view doesn't match the stated chord length, it's because I made a copy of it before sending it to the **RCMB** office for tracing and inking for the column. (You can usually compensate for this by chopping off the trailing edge portion of the airfoil to match the chord length.) Another word of caution (from Chris Matsuno) is to try to place your drawing in the center of the Xerox, since most machines have distortion around the edges.



DECEMBER'S MYSTERY MODEL

MYSTERY MODEL

Just before moving, I made a hasty search through some old magazines to get a backlog of Mystery Models prepared, in case the magazines ended up in boxes among the last to be unpacked. I discovered this MM in the truest sense of the word, since I never had seen it before. The designer was commissioned by his magazine to come up with an FAI ship, so he surveyed the field of prominent designers and came up with a "consensus" design for the magazine. The looks and structure appeal to my taste, so it may make a good Nostalgia model, too. This might be a tough one, but the wing tip shape and general layout should give you a clue as to the designer . . . a prolific magazine contributor. If you think you can identify it, send your guess to the **RCMB** office. Earliest identification (using the mail/delay handicap) wins a free subscription.

MODEL OF THE MONTH:

Dave Salguero's "Hook-em 700"

I've always liked the looks of squared-off no-nonsense gas models. The Ramrod, Starduster, Tartar, or Pearl style of gas model has the look of "functional ugliness" that seems necessary for good-flying, easy-to-maintain AMA gas models. When I saw this 3-view in *Plane Talk* (published by the Ft. Worth Planesmen), I knew it was going to grace this column eventually.

Dave didn't furnish any write-up to accompany the 3-view, but the essentials for reproducing it are there. Should make a nice size B-C ship, conservatively sized, to use any good .29 or .35. The list of contest placings is evidence of the potential in this design. The structural design looks light and strong, with the built-up sheet T.E. being a nice weight-saving feature not usually incorporated into F/F gas designs (wonder if Dave has some C/L Combat flying in his background?).

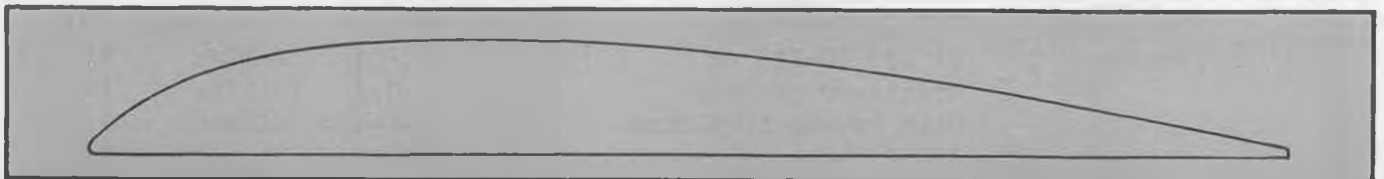
ONE MAN'S BEGINNER'S PROGRAM

Bill Mathews, AMA District V Vice-President, is one person who doesn't just talk about a beginner's program, he's trying to develop one in his district. Here are his comments, from a recent issue of the *FFFliar*:

I am trying to develop a District V Junior (maybe Beginner would be a better title. TH) *program. It would include a building and flying achievement plan, with awards at different levels or steps. It would also include or involve a notebook with instruction pages (yet to be written). Anybody want to help me flesh all this out? It needs to be the kind of program that is simple enough for a youngster to do pretty much on his own (in case he doesn't live in or near a modeling family), but challenging enough to keep interest alive. It should be somewhat flexible, with various options to accommodate different interests.*

As I envision it now, the first level would involve building a Delta Dart; learning some basic terminology; learning some basic building techniques and

DARNED GOOD AIRFOIL – GOTTINGEN 134



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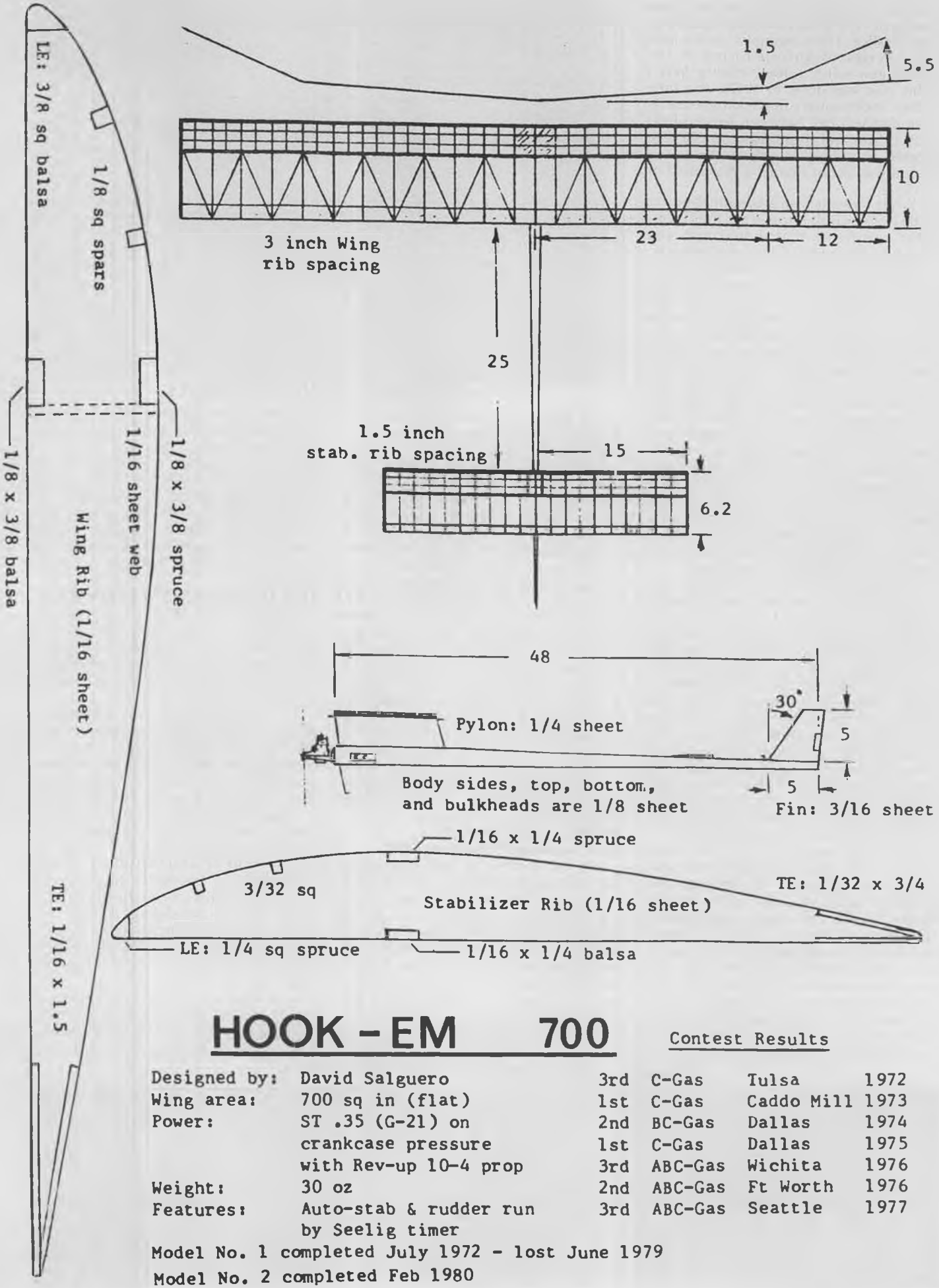

HOOK - EM 700

Contest Results

Designed by:	David Salguero	3rd	C-Gas	Tulsa	1972
Wing area:	700 sq in (flat)	1st	C-Gas	Caddo Mill	1973
Power:	ST .35 (G-21) on	2nd	BC-Gas	Dallas	1974
	crankcase pressure	1st	C-Gas	Dallas	1975
	with Rev-up 10-4 prop	3rd	ABC-Gas	Wichita	1976
Weight:	30 oz	2nd	ABC-Gas	Ft Worth	1976
Features:	Auto-stab & rudder run	3rd	ABC-Gas	Seattle	1977
	by Seelig timer				

Model No. 1 completed July 1972 - lost June 1979

Model No. 2 completed Feb 1980

Steen Agner launches at 1973 World Champs at Wiener Neustadt. Tom Koster at right.

flying techniques; building possibly a second Delta Dart; building one of several optional models from scratch or from kits; and then building the Sig Cub and achieving a realistic flight time (say, 45 seconds). At the completion of this sequence the first level award would be earned. (Maybe a patch for a jacket; as new levels are mastered, new patches could be added to the jacket.)

The second level could require construction of simple cabin type models, possibly three models to be built and flown, but with more building and flying lessons.

The third level might involve towline gliders.

The fourth level might involve HLG (admittedly a difficult task for Juniors).

The fifth level might involve P-30 or competition rubber models.

The sixth level might involve 1/2A gas.

This is a very simple and sketchy outline. If we can get something going in District V, it might be adaptable by other districts and eventually by AMA . . . or maybe someone can come up with a much better program.

As a challenge, I invite someone or everyone to design a simple model using exactly the same materials in the Delta Dart kit. It could be the next model after the Delta Dart. We could provide a plan and a Delta Dart kit, and the Junior would have all the material needed for his next model, but he would have to build from a plan. Any takers?

Bill's program looks like a good start. Maybe the first level could be broken into a few steps, with patches awarded along the way. His idea for developing a design based on the AMA Cub/Delta Dart kit is a good one. Those of you looking for a follow-on design to the Delta Dart should consider Clarence Mather's "Twiggy" design (July, 1976 *Model Aviation*). This is a good-performing model that requires little trimming for beginners to put in successful flights. I had some junior high kids put in 40-45 second flights in our school cafeteria (12 ft. ceiling) with a Twiggy, and one-minute flights outdoors were common. It's also rugged enough to withstand bashing around on cafeteria tables, even better than a Delta Dart because it has a large enough wing to fly slowly, along with a natural tight circle.

Another addition to such a beginner's program would be a step for flying 1/2A control line. These are ideal for teaching building and repairing skills, and the beginner can see his progress (number of laps flown, unassisted take-off, right-side landings) very easily and has the incentive to progress. They can also be flown from smaller spaces, while the more advanced free flight models need increasingly larger, more remote flying sites. The building and engine handling skills learned with control line models will help any beginner, so I'd suggest this be one of the early steps in any beginner program.

Our Mystery Modeler for the month VTO's a Class A ship at Taft's Gardner Field. Know who it is? See end of column for answer.

ONE MAN'S TROUBLES GETTING TO THE CONTEST

Not everybody can make his excuse for missing a contest sound interesting, but Bill Matthews (again) tries:

I had set aside the weekend of the Pensacola meet and seriously intended going . . . until my son got sick the weekend before and it looked as if we might have to put him in the hospital. By Thursday, he was relatively well, so I went to the basement to check out the models I had patched up and rebuilt, etc. Alas, some stray cat had managed to get into the basement and had broken three wings, a fuselage, and one tail section. I still had a HLG and I still planned to go. Friday afternoon after work my car wouldn't start (I had planned to leave Friday evening). A mechanic said he could fix it first thing Saturday. By 1:30 Saturday afternoon, he had been unable to locate a module needed to fix the electronic ignition. By that time he gave up, and so did I (my wife's car was at her family reunion).

Sounds like Red Johnson is alive in Birmingham. I wonder how Bill did at the Nats?

SOME SCHLACTA COMMENTS ABOUT ALTITUDE MEASUREMENTS

You may recall that earlier I published some NFFS measurements of altitude gains by Power models at the 1979 World Champs. Frank Schlacta's ship was one of the highest climbers I personally noticed, but the measured altitude was a little sub-par. A recent letter from him clarifies the measurement:

The reason for the low altitude readings on the first round at the WC was pranging my No. 1 ship before the round began. The rubber band that pulls the VIT back broke . . . and that was after I had replaced the bands with new ones earlier that morning! I guess fate was against me that day. I used to use springs, but they all broke, so I reverted to rubber bands.

My No. 1 ship had no pull-out problems; it also had my best engine in it. That engine is something special, does 27,000 to 27,500 (static) on Doc Anderson's 7x2-3/4 prop and surges a couple of thousand more in the air. Our retrieval crew was claiming my No. 2 ship was well over 100 feet higher than anyone else's on the field, but after recovery I was 20 feet below everyone else. (Doc Anderson reworked that engine, as well as designed the props. He has done extensive work on props and engines, and I strongly recommend him to anyone else who has a worn-out or sick engine . . . just send them to Doc and he'll fix them up.)

I've tentatively solved my recovery problems. Three of the four ships I had at Taft had recovery problems. If everything was exactly on, they recovered OK, but a slight "off" launch or a little turbulence on the way up was enough to

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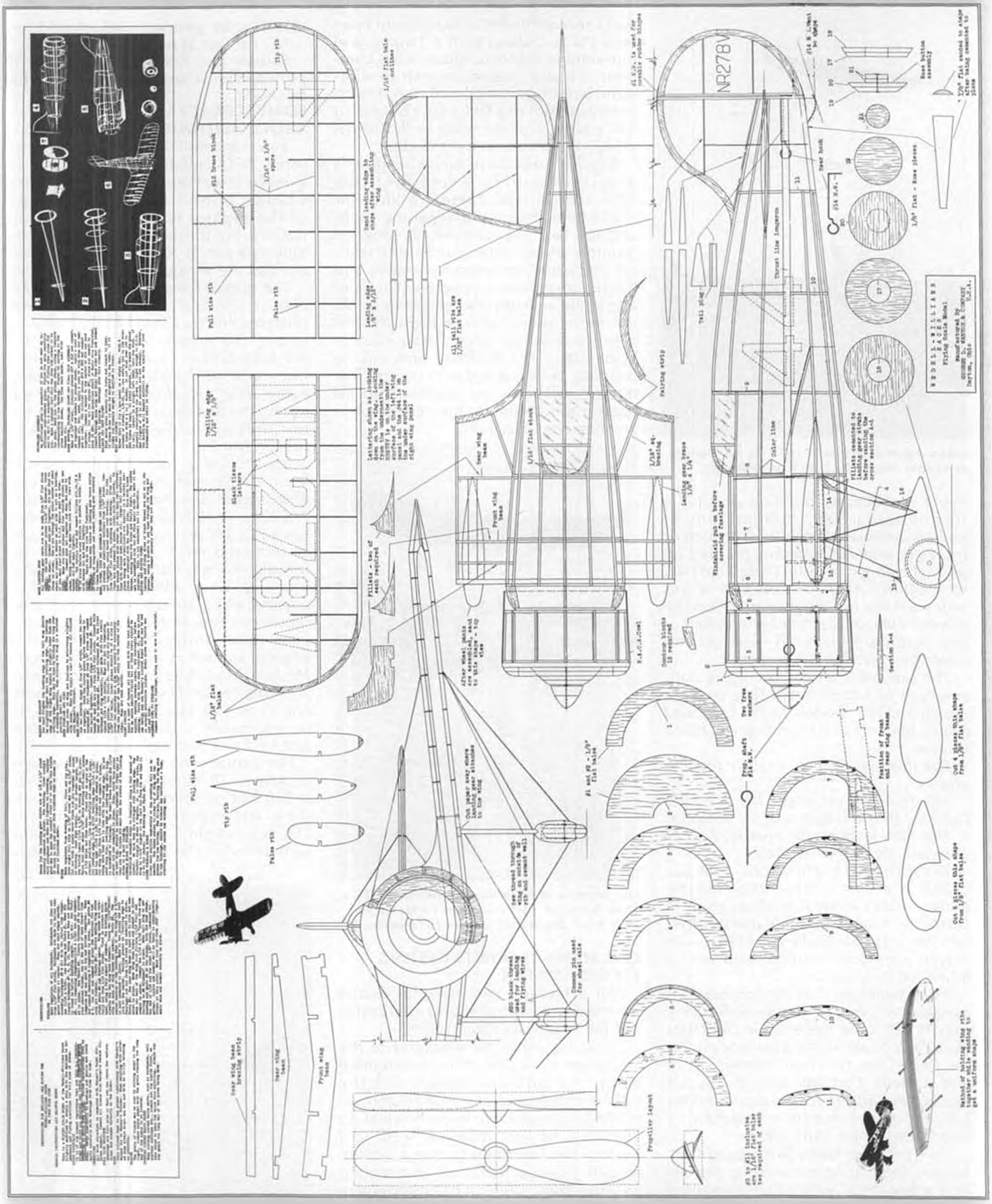
Toronto's Peter Allnutt rigs DT on his all-sheeted Nordic at Canadian FAI Team Finals, where he qualified for the 1979 W/C. Note wing repair on inner right panel.



FULL SIZE PLANS AVAILABLE – SEE PAGE 100

"ENJOY THE THRILLS OF FLYING WHILE YOU STUDY THE PRINCIPLES OF AVIATION." So says the printed box cover on the George D. Wanner and Co. kit for this rubber-powered Wedell-Williams racer. The complete kit for this 30" span model was sent to us by Bob Sylvester, Howell, Michigan. It includes printwood, strips, a machined balsa flying prop, several colors of tissue, a piece of music wire, a package of brass washers, and a tube of blue "Model Aircraft Lacquer". 'Wanner' bet it will fly?

Winner of Stunt, Les McDonald, relaxes in the pit area with S. Rossi, one of the Italian fliers. Americans placed 1-2-3 in Aerobatics.

China's Wu Dazhong with his 16th place F2B stunter. "Lifting" tip plates are intended to help maintain line tension during overhead maneuvers, seems to work. China was 5th in team standings.

C/L WORLD CHAMPS

By JACK HUMPHREYS . . . Contrary to popular rumors, Control Line is *not* dying, as evidenced by the turnout at the 1980 World Champs. It was the biggest ever, 304 participants representing 27 countries.

• The 1980 Control Line World Championships were held in Czestochowa, Poland, during the week of July 12-18. This was by far the biggest C/L World Champs ever, with 304 competitors from 27 countries. Mainland China made its first appearance at these champs and the participation of the eastern bloc countries, so conspicuously absent from Woodvale in 1978, made winning this contest truly symbolic of world supremacy.

The facilities provided in Czestochowa were excellent. The Team Race and Speed circles were built expressly for the purpose, with excellent fencing, entrance and exit lanes, and stands for the spectators. The Stunt circle was located in front of the sports stadium and was also the site of the Combat event. The only complaint was a lack of practice sites, but by the time the contest started there were unofficial sites all over town, to the consternation of some of the local officials who were unprepared to deal with people flying in just about every open space in town and not speaking a word of Polish!

Speed was dominated by the French and the Italians, who took the first four places between them. Constant of France won the event with a blistering 274.8 kph (172 mph). This is a remarkable speed for a .15 engine using no nitro and lugging an oversized model on two lines. Most motors in Speed were Rossi variants. The French are using aluminum pistons and cylinders, controlling the expansion coefficients by the amount of silicon in the aluminum alloy; 18% for the piston and 8% for the cylinder were the most repeated numbers from the rumor mill surrounding the Speed circle. The asymmetry of the airplanes continues to increase. The theory is that of the long wings being a method of shortening the lines. The wing could be considered a fairing for the last four feet of the lines.

Stunt is still owned by the Americans. McDonald, Hunt, and Werwage simply outclassed all comers. The old master, Compostella of Italy, challenged the Americans but had to settle for fourth. The Japanese continue to improve, placing all members in the finals (top 15) and taking second in team. The Chinese, in their first appearance, were very

Peter Coates of England flew this typical British-style model to 21st place.

Tenth place in F2B Aerobatics went to the USA's Wynn Paul and his Pampawagon.

The Hungarian team racers, l to r (standing): T. Ratkai and J. Nyarady; L. Lerf and S. Zajak. Kneeling, J. Balogh and V. Dorant turned a sizzling 3:36.5 on their first flight but were disqualified in both semifinal flights, ending up in 5th place.

Team race action: K. Parent of Canada gets teammate D. Kelly off before the other two have picked up their handles. All for naught, though . . . a collision wiped out their No. 1 airplane and the spare was not good enough to make the semifinal.

When they hit, they hit HARD!! The result of the Kelly/Parent collision.

The winners! H. Geschwendtner and J. Mau of Denmark had an easy final when the Brits and Yanks ran into each other and were disqualified at about 35 laps.

Walt Perkins, USA, preparing for the disastrous final. Note the tailless model, generally favored by the U.S. and British fliers but not used by most Europeans.

Defending World Champ R. Metkemeyer, Holland, turned in an incredible 3:29.2 qualifying time but was unable to repeat it in the semi, his 3:44.6 giving him 4th place.

strong, placing their three competitors in the top 16 and reaching fifth in team position. It would appear that the only serious challenge to the Yanks will come from the Far East.

Team Race saw some outstanding performances, but the number of disqualifications in the semifinals and final races left everyone feeling cheated of what should have been a spectacular finish after four days of racing. In the first elimination heat there were 12 teams disqualified out of 64 competitors (18%!), and in the second heat there were ten disqualified, for a rate of 15%. These are fairly good numbers when one considers that each pilot is going to take at least one warning light and there may be as many as 25-30% of the pilots inexperienced in world class competition. It is inexcusable that of 21 participants in the semifinal and final races, fully 12 were disqualified or returned a zero score. This is a 57% disqualification rate and is even more unbelievable given the fact that these are the best teams in the world.

J.C. Malheiro Pinho, Brazil, came to learn, recorded 200.333 km/hr in F2A Speed.

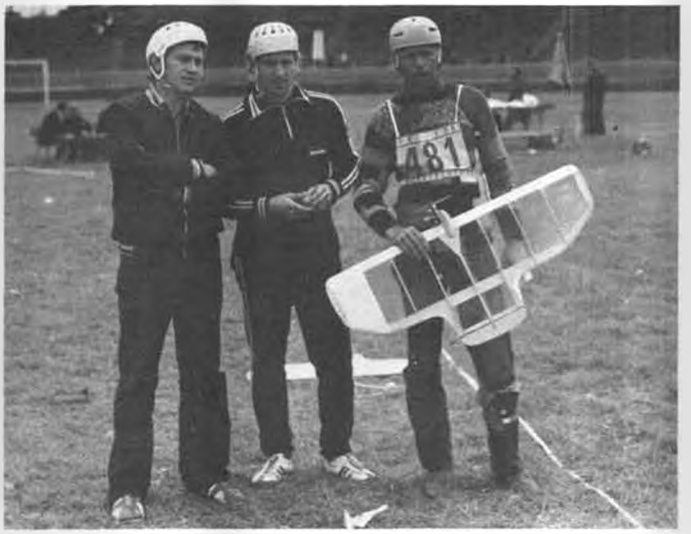
Last time at Woodvale, a time under four minutes would get you into the final in Team Race. This time it would get you 20th place. Perkins and Albritton of the USA turned 3:33 early in the first heat and looked to be unbeatable, when the Metkemeyer brothers showed they were not going to give up their World Champ status easily by turning an incredible 3:29 for the best heat time. Alas, they could not repeat this and did not make the final.

The final was between Geschwendtner and Mau of Denmark, Albritton and

Continued on page 68

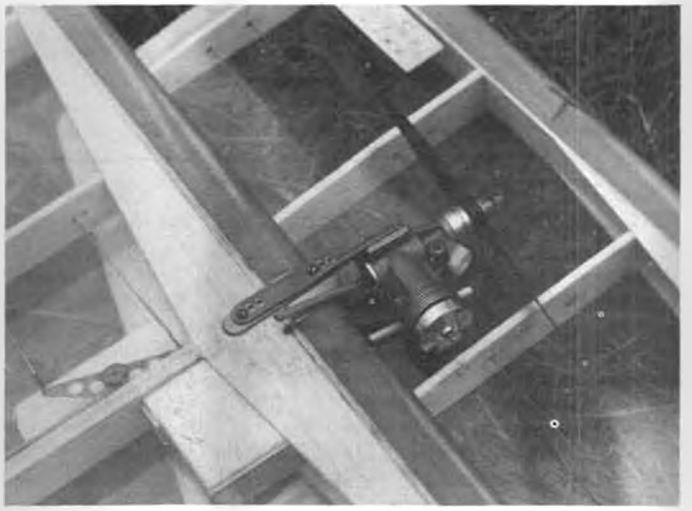
WOW!! Look at that wing! S. Szegedi of Hungary flew this very radical Speed ship to 5th place with a flight of 261.437 km/hr. The theory is that the long 2-meter wing creates less drag than the lines it replaces. Think it'll catch on?

The Chinese have gone in for Combat in a big way. From left: Meng Ximing, Huang Yung Liang (Manager), Zhi Yongnian, and Mu Gang. Beautifully built models are covered with Japanese tissue, equipped with rear-rotor Rossis and *hand-carved props.*



The victorious Russian Combat team, l to r: O. Titow (7th), S. Nikiforov (31st), and O. Doroszienko, the new World Champion. See text for the fascinating account of the final match, between Doroszienko and Gysbertsen of Holland.

Phil Granderson was the USA's best in Combat at the World Champs, wound up in 3rd place overall. All-foam model is powered by a Super Tigre X15, weighs about 18 oz.



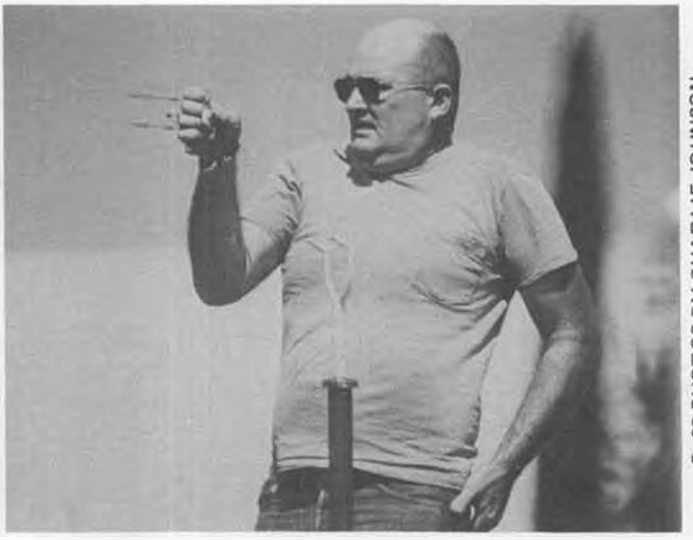
Close-up of the engine details on Doroszienko's models. Very light built-up construction, homemade engines, and homemade carbon fiber props distinguished his models from the rest. Holes in motor mount allow C.G. adjustment by moving the engine fore or aft.

Gysbertsen of Holland gets airborne for his semifinal bout with Phil Granderson (center), already in the air.

WHAM! Granderson is going down with a folded wing while Gysbertsen has completely lost his streamer and some of his outboard wing. The latter model will continue for a few seconds before losing its right wing and biting the dust also. Built-ups seemed to withstand collisions better than the foam jobs.

Rumken Dimitrov, Bulgaria, with his swept-forward eastern style Combat model.

Top U.S. FAI Speed flier, Luke Roy, doing some pipe changing at the Merced Speed contest.



Luke Roy was on the U.S. FAI Speed team, placed 12th in F2A Speed at the World Champs (see Jack Humphreys' report on p. 59).

P. 62 PHOTOS BY CHARLIE JOHNSON
P. 63 PHOTOS BY JACK HUMPHREYS

Control line

By "DIRTY DAN" RUTHERFORD

BADYEAR TO GET BIGGER AND BADDER!?

In last month's column there was a pitch for a rumored rules change allowing 3.5cc (.21c.i.) motors to be used in Bad(Good)year racing. And thanks to George Lieb, there is now just such a rules proposal in the works; refer to proposal CL-82-5, published in the AMA News section of *Model Aviation*.

George elected to word his proposal such that we would basically not only have larger powerplants, but would also be flying larger models. Previously, the word was that "old" 2.5cc models could be used as is, to compete with the larger models with 3.5cc motors.

Now that I have thought about it further, this is the approach that sounds best to me. Sure, it will obsolete older models, as they have been built to 1/8 scale, where the proposed scale is 1/7, but in the long run all should work out for the best. Of course, computing model dimensions for plans and so on will be a unique experience, but with the small electronic calculators around, this will be much less of a problem than it would have been several years ago.

So I say let's go for it. Goodyear racing is suffering right now and will continue to do so, just because one motor, the Rossi 2.5cc, is so dominant and so difficult to find lately. A switch to 3.5cc motors could bring Goodyear back in a very big way, and I for one would like that very much, as Goodyear used to be my favorite of all the C/L racing events. Anyway, if you have comments, contact your representative on the CLCB or Joe Klause, 23512 Via Breve, Mission Viejo, CA 92627. Joe is the chairman of the Racing Advisory Committe and so is in a position to push on any proposals that he gets positive feedback about.

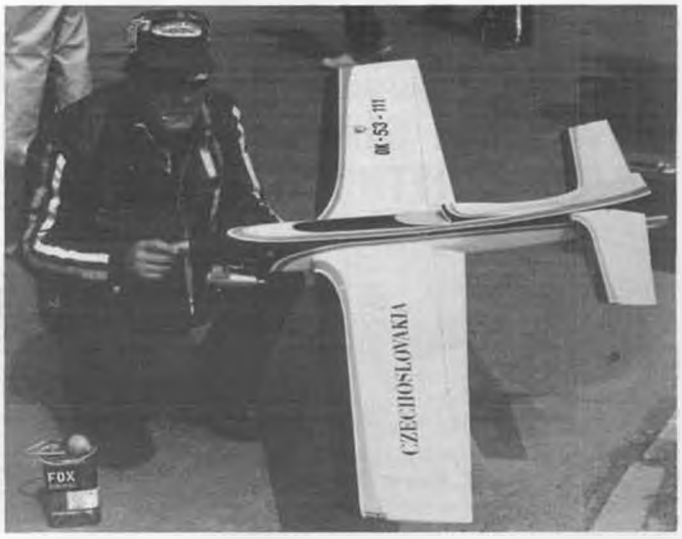
SAFETY

Even though C/L flying has to be regarded as very safe, it seems as if everybody who has flown for any length of time has seen at least one close call. And it doesn't seem to make a whole lot of difference how scary the event seems to be, when watching the action, at least. For instance, in Rat, a very scary event (Gawd, just think what would happen if the lines broke), I can only recall one close call in all of my Rat flying . . . at least as far as potential bodily injury is concerned. Mike Hazel and a buddy of his had a Rat get free several years ago and it punched into a tire on a VW bus. Just bounced off the tire. Didn't go the model any good at all, but nobody got

Mike Tallman looks on as Marvin Denny launches an FAI Combat job for Greg Hissem at the Nats.

John Jo tunes it up as wife Debbie holds. This photo (and the one at left) taken at the 1979 Nats.

Canadian Combat flier Danny Sigouin placed 17th in Combat at the World Champs, model being launched here by his father, Pierre.



Classic style stunter flown to 13th place at the W/C by Ivan Cani of Czechoslovakia. Event was dominated by Americans.

creamed, either. In Goodyear I can't recall any accidents or bad situations at all. Same thing with Slow Rat.

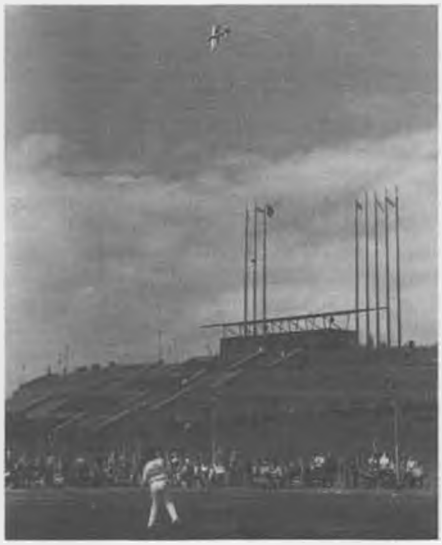
I suppose that this is due in very large part to the fact that a lot of the competitors (actually, all of them, most likely) realize the potential danger and so are just a bit more careful. And I back this up with the fact that I have seen quite a few *really* close calls in the very laidback semi-racing event we call Northwest Sport Race. In fact, it wasn't too long ago that my racing partner Gary Stevens was actually hit by a NWSR model. Didn't do much damage to Gary, couple of cuts and a sore spot and I can't even recall if Gary was partly responsible for the accident. What I *do* know is that many approach a racing event like NWSR with a very relaxed attitude, and that does seem to be the base of the problem, not the fact that a number of the racers in this event are inexperienced fliers.

Also to mind comes an incident at a Portland Combat meet. We were flying AMA (Fast) Combat and the circle was laid out quite close to the only logical area for spectators to park themselves. A couple of my R/C flying friends, Steve Ellison and Jerry Holcomb, had come over to spend most of the day watching some for-real toy airplane type competition. Several times I pointed out to them that whenever a match was on it would be an excellent idea to stay standing and be ready to move quickly. (Of course, getting an R/C guy to move quickly is a problem in itself, but that would be a low blow not worth mentioning. . . so I won't.) Anyway, they both did in fact avoid any flying parts and engines for most of the day. Until the next to the last match of the day, that is. I was flying somebody for 3rd and 4th and the other guy was having a lot of trouble just getting the motor lit. I had tons of airtime, running out two full bladders, so had won without a fight. But I hate to win this way, so we filled the bladder for the third time, hoping that the other flier would get the fire lit and we could get it on. Sure enough, with only 15 or 20 seconds left in the match, his motor fired and we started mine right back up again. And Steve sat down in Jerry's chair. . .

By the time I was at the handle and the plane was launched, the C.D. signaled that the match was over. But what the hell? We were there to fly Combat, after all. So we did. After a minute or so I made a bad mistake, left myself wide

A repeat team member from the Woodvale W/C in '78 was Eduardo De Mello Affonso, age 16, from Brazil. Engine troubles in Poland knocked him down to 52nd place.

Bulgarian aerobatic flier, J. Kalev, with the S.T. .46 powered stunter he flew to 42nd place. All those intricate trim lines appear to be done with a drafting pen . . . whew!



Peter Coates of England flying in front of the stadium in Czestochowa, Poland.

Sam Burke, Canada, always takes the time to put a nice finish on his Speed models, turned 231.4 km/hr with this asymmetric design.

open for a kill and the other flier also went the wrong way slightly, neatly center-punching my model. That sucker just blew apart (foam model) and the motor went zinging, still running, straight to Steve and before he could say, "Damn, wish I were standing up instead of sitting down," the motor hit him on the left shoulder, the prop slapping him several good whacks.

Turned out that Steve bruises very easily and even though he wasn't hurt badly at all, it looked terrible, all manner of interesting black and blue patches covering the upper part of his arm. What was really bad was that there was a whole pile of people right there, many of them non-modelers and some pretty young at that, any of whom could have been hit and hurt much more seriously than Steve was.

Again, we had relaxed too much. Steve by sitting down (can't tell them R/C guys anything), the club by not relocating the circle (there was room enough to do this), and the fliers, myself included, by agreeing to fly at a site that was obviously potentially dangerous.

At a contest in Spokane we once flew Combat in a circle that was very close to some power lines. Looking back, I can't believe we actually did it. But the circle could not be moved, the lines were plain ol' power lines, not high tension, and it was likely that they weren't in use anyway, as the contest site was an unused portion of an airport. It was really stupid, but we had come down to Combat as the last event of a two-day contest and wanted to fly and get home. Besides, the guys practicing at the circle hadn't had any trouble. So we flew. And we didn't have any problems. But what is really scary is that we will never know how close we might have come to being crispy critters, all for the sake of a few Combat matches and a two-bit trophy. Dumb, really dumb.

Then there was the time we were at the N.W. Regionals, and the big meet was winding down. Not a whole lot going on, just a few flights at the Speed circle, the Snyder Speed Team trying to get Becky up for a good run. My boy, Joshua, only five years old at the time, brought me something and I figured it was OK for him to stay on the field with me. Next time I saw Josh, Sam Snyder was running onto the Speed circle, grabbing him and yanking him back. Wouldn't have been a big deal, except for the fact that Becky was whirling away with a B Speed ship. Sam, thanks again, and the words don't even come close to being adequate.

One more. The thing at Portland had slipped back into the memory banks and we were again flying Combat, this time in Redmond, Washington. When sitting up the circle it was convenient to put it here, instead of over there . . . where it would have been safer. Howard Rush was in a match and with the model headed straight down after a straight-pass wingover (that means the model was not maneuvering and so was flat going fast, for all you non-Combative types out there), he got cut loose. A super-clean cut on the lines, the model didn't even wobble.

Putt-putting down the (very) nearby road was a lady in a VW bug. The model smashed into the hood and literally disintergrated. It happened so quickly that there were several versions to the story. The model hit the hood. It hit on the road beside the car. It hit in back of the car, on the road. It blew up before hitting anything. And so on. Compounding this multiple-theory situation was the fact that it was experienced Combat fliers, people who can diagnose any kind of Combat crash with superb accuracy, coming up with widely varying versions of what happened this time.

The poor lady driving the car was in even worse shape. She was just driving along, presumably looking out the windshield and so directly over the hood, and she didn't even know what had happened. She did hear a loud THUNK! but thought somebody had hit her car with a water balloon, which I though was actually fairly appropriate, the model being one of Rush's. But the thing was that the model had hit so hard and so fast and the pieces had shattered so completely that there wasn't a thing left on the hood only a millisecond after the impact. Except for a strange dent, of course.

We had to get some fliers to get in a car and chase her down, as she just kept on going, presumably to avoid any of those nasty people throwing water balloons and such at her car. And she

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Don't Let Silkspun's economical price fool you. Like all of our coverings, it's made of 100% polyester fibres. But instead of being woven like our Super and Permagloss, it's spun like cotton candy, then squashed as flat as this piece of paper. It's tough enough for any plane including the largest monsters, *yet extremely light, weighing a mere ¼ ounce per square foot.*

TRULY AMAZING ON SHEETED SURFACES.

Because of its unique construction, Silkspun goes on solid surfaces like no other covering. When heated it seems to almost "melt" into the epidermis of the wood. The result is an uncommonly thin skin, permanently bonded, which can then be painted with great ease.

Or not painted at all, since it comes fuelproof and perfectly air-worthy, right out of the wrapper.

DITTO ON SHEETED FOAM.

Some modelers think Silkspun (and other Coverite coverings) can't be used on sheeted foam. "Too much heat required", they say. Not so. The proper way to apply any Coverite covering to sheeted surfaces is to lower the temperature of the iron way down to 250° to 275° F. This is hot enough to liquify the adhesive, but not hot enough to disturb the foam. At this temperature you will be able to adhere Coverite to the wood without air bubbles, and it will stick like the skin on a ballpark hotdog. Another tip for sheeted surfaces is always work from the center out to the edges. Don't start by tacking down the edges, as this will trap air. Finally always allow the fabric to cool before going on to the next area. The best way to do this is lightly press a cold wet rag onto the just heated surface. This will force the adhesive into the wood and hasten its curing process. Balsarite also helps—one coat, lightly brushed on, then apply covering in 45 minutes or so.

SPECIAL TECHNIQUE FOR WRAPPING WOOD AROUND FOAM.

Iron a strip of Silkspun Coverite on top of the sheeting at the wrap around point. If severe curve, wet wood first. The wood will not split and will be held in place quite nicely. Silkspun can be left in place, or removed if sanding is necessary.

DANG THOSE DINGS.

While we're talking about sheeted surfaces, keep this in mind. Anytime you get a ding—just use your heat gun (being careful not to get too close), and good ol' Coverite will snap out, flat as a pancake. Goodbye ding!

LIKE TO SHOW OFF YOUR WOODWORK?

Silkspun is translucent. With no paint, or a coat or two of clear dope, it allows the wood understructure to be seen and admired. In the air, with the sunlight shining through, this type of plane looks like some of the beautiful old-timers.

THE WORLD'S FASTEST PAINT JOB.

Since Silkspun does not have a weave, it takes only a few coats of paint to achieve a solid, non-fabric look, like a sheet of metal. One word of caution: Silkspun has a natural tendancy to fuzz during the first 2 coats. Not to worry. A quick light sanding in between knocks off the fuzz, and by the third coat, you usually obtain a very smooth finish. Now add one coat of our Glaskote, brushed on (yes, brushed!) and you've got a super durable finish with a "best-in-show" shine, as good as most spray jobs that require 8 or 9 coats.

JUMBO 25-FOOT ROLLS AVAILABLE.

Silkspun comes in two sizes: 38" x 54" and 38" x 25 feet. Working within these unique dimensions cuts down much of the waste, making Silkspun even more economical. Both sizes are available in 5 colors: white, red, blue, yellow and orange.

COVERITE

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THE COVERITE LINE—**Permagloss Coverite**. 100% polyester iron on covering. Prepainted. 38" x 43" / 43" x 15 feet / 5" x 35". Red, white, blue, yellow, orange, aluminum, olive, dayglow orange, dayglow yellow, black. **Super Coverite**. Same material as Permagloss, but not painted. 38" x 47" / 47" x 15 feet. Red, white, blue, yellow, orange, hi viz red and antique fabric. **Quickstik**. 1/2 pint & full pint cans of iron on adhesive. **Silkspun Coverite**. 100% spun polyester that looks like tissue. Unpainted. 38" x 54" / 38" x 25 feet. Red, white, blue, yellow, orange. **Balsarite**. 1/2 pint & full pint cans of wood conditioner. **Glaskote**. 1/2 pint cans of clear, fuelproof, final coat. Pint cans of thinner. **Trimit**. Micro sharp knives for cutting all coverings. **Graphics**. The only letters & numbers made of micro thin vinyl. Die cut, pressure sensitive, totally fuelproof. 1", 2" or 3". Red, white or black.

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was very indignant at what a toy airplane (literally, to her, most likely) had done to her car. We, the fliers in the crowd, just silently thought to ourselves what could have happened. The impact evident from the ruptured sheet metal told us that a portion of a human body would have been in a bad way, had it been struck in the same manner.

Hey, look, I'm not trying to throw a scare into anybody. Our C/L flying activities are indeed very safe. The worst thing that will ever happen to any one of us is to get a cut from flipping a prop. But you do have to be aware of the *potential* dangers. You can best do this by recognizing the situations that create a "place for an accident to happen" and whenever necessary, eliminate these situations. If I had done this in all of the examples just mentioned, none of the close calls could have possibly taken place.

And, again, notice that these close calls happened when we had let our guard down a bit. Safe flying really is something that you have to *work for*, as dangerous flying can sometimes just come automatically. . . •

Omac . . . . . *Continued from page 19*

wouldn't fly because there was not enough exposed lifting surface in the forward canard.

Meanwhile, back at the ranch in Reno, Nevada, the big Omac 1 was undergoing tests. The designers had swept the wing, so we built a new wing with the authorized sweep and new winglets. We also enlarged the forward tailplane by what the fuselage was covering up, effectively moving that area outside the fuselage. So, in essence, we really had three completely new flight surfaces for the aircraft. The final configuration, or next to last configuration, is the one that you see in most of the photos, with the winglets and the enlarged forward canard and the sweep.

Now, to give you a little bit more information on the setup that gave us our first successful flight. The forward canard was set at plus four degrees. The wing was set at zero, but each wing tip is washed out 1/2 inch. The winglets are toed in two degrees, the thrust line is set at two degrees nose down, and the C.G. is as briefed . . . *DON'T CHANGE IT!!* Lo and behold, we finally got the airplane to take off!!! It took 250 paces for liftoff and then began a very slight drift to the left. A little aileron cranked in, no response. It was still drifting to the left. A little more right aileron, no response. Full right aileron and no response, so we touched a little bit of rudder and *wow*, it really took effect! Sure enough, the ailerons are most ineffective and the rudder is very effective. The model also had a very severe Dutch roll on the first flight. Now, we're not exactly sure *why* we have a Dutch roll, but there is one sure way to correct it: start adding more lateral area aft of the C.G.

Our thanks to Sitting Bull who said, "If your arrow flies poorly, just add bigger tail feathers." What are we talking about when we talk about this center of lateral area? If it is so all-important, how do you figure it out so that you will stay out of trouble? Rather than give any formulas, let's use the same pin-through-the-plan technique as before. Shove a piece of cardboard under the plans, take a pin and go all the way around the lateral area (side view) of your aircraft, and cut it out. If you are running two rudders, as on the Omac, cut another rudder and glue it right over the first rudder. Balance the little airplane two ways and draw lines through it where those two balance points meet. That is your center of lateral area. *The further aft on a canard that you can get your lateral area, the more stability you are going to have.* It must be aft of the C.G. and very close to the aircraft's center of lift. To get rid of the Dutch roll we increased the lateral area aft of the C.G. and lowered the center of lateral area by going under the wing with a larger sub-rudder. We took the little .020 and put big sub-rudders underneath the wing; immediately the Dutch roll of the .020 model was gone. Then we started cutting off the sub-rudders with a big pair of scissors until the Dutch roll came back. Picked up the balsa wood we just cut off the winglet, glued them back on with Jet, and flew the model again . . . no Dutch roll. So, we enlarged the Omac winglets the same percentage beneath the wing as on the .020. We are flying the Omac on rudder, elevator, throttle, and flaps. It flies beautifully. Nice and smooth. No problem. It flies just like any normal airplane . . . with the C.G. shown. *DON'T CHANGE IT!!*

Let's look at that aileron control problem. A delta wing and swept to boot means great dihedral effect, which means little if any aileron reaction. So, if we were doing it again, we'd use ailerons but *up only*, no down, and coupled to the rudders.

We are extremely pleased with the airplane and hope this article excites you enough to take on a project just a little bit different. We would be most happy to answer any questions we possibly can if you are having troubles with your canard. Happy landings. •

F/F . . . . . *Continued from page 57*

throw the ship off on recovery. Strangely enough, they have all got a beautiful recovery to the LEFT. For years now, Jack McGillivray has been after me to fly it left, but with built-in washin on the right wing, that wasn't practical. However, I did try, on the one that always had the worst recovery, to power it up to the right, 1/8 of a turn under power, with a right glide, but recovery to the left. Problem solved! No matter how I launched, or what happened, it recovered beautifully. A little more gimmicks, but well worth the effort. I've installed the mechanism on the other

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two, hope it works as well.

SOME THOUGHTS ON THERMAL DETECTORS AND SUCH

Former World Champ Lars Olofsson wrote to decry the emphasis on fancy electronic thermal detectors at the recent World Champs. Lars regards model flying as a sport, where the flier is the most important part of the results. He feels that a good flier with a bad model can always beat a bad flier with a good model. The best flier should win, not the best equipment for detecting thermals. To wind up a Wake or start an engine (upon command of a team manager reading a thermal detector) doesn't require a skilled model builder, according to Lars.

He feels that such fancy new thermal detectors have nothing to do with flying. (But he does feel that physical devices like mylar, bubbles, and fluffies, since they require the human element to interpret, are allowable.) Neither do such tactics as flapping wildly under models, trying to break loose a bubble. They're just a cheap way to get good results from a mistake made by the flier. They're even cheaper when cars and motorbikes are used, according to Lars.

Lars sums up his feelings (and those of many Swedish fliers) by saying, ". . .at Taft, it seems to me that the best equipped flier and teams won."

Any comments out there?

PHOTOS NEEDED FOR THIS SPACE!!!

It's going to be a while before I get my darkroom set up in the new location, so no new photos will be available until then. If you don't want a steady diet of old photos from my Southern California days, or reprints of the same old Pacific Northwest faces, you'll have to contribute some pictures. Send me any good black-and-white photos (3-1/2x5 are OK, but 5x7 or larger would be better) of any free flight activity you happened to record on film this year. Don't let it hang around undeveloped in your camera all winter!!!

Send to my new address: Tom Hutchinson, 20518 S.W. Leeds Court, Aloha, OR 97007. ● Mystery Modeler is Bob White.

C/L Champs . . *Continued from page 60*

Perkins of the USA, and Smith and Brown of England. At about the 30th lap Perkins was pulling his airplane out to the refueling station when the U.K. airplane hit the lines while gliding in for a pit stop. The result was that both the USA and U.K. teams were disqualified and the Danes coasted on to an easy win.

Airplanes in Team Race seem to be tending to the tailless style popularized by the British. Improvements have been in details rather than startling breakthroughs.

Combat is one of the most interesting events in World Champs control line competition because, being the most recent to achieve World Champs status, the airplanes and engines have not yet evolved to a set formula. The British dominated the event last time with their foam ships, which are extremely tight turning. Most of the planes from those who competed at Woodvale showed some influence by the British style. All the American and Canadian ships were foamies. By contrast, the eastern Europeans used built-up wings of wide chord and very blunt leading edges. They also used metal motor mounts. The Chinese came with rather small, elegant models covered with doped tissue and powered by rear intake Rossis and sporting hand-carved wooden props! They were very fast but could not turn with the larger models.

The winner was Doroszienko of Russia with a typical eastern style model powered by an engine of his own design and make. The general consensus was that he is a superb flier who won despite, rather than because of, his model. There is no doubt, however, that the eastern models survived collisions better than the western foamies, a fact that may have cost the U.S.'s Phil Granderson his chance at the final.

The final match in Combat was one of the finest I have ever witnessed. Doroszienko of Russia fought Gysbertsen of Holland. The Russian got off to a quick start with four quick cuts before taking the Dutchman's streamer. Up 500 points over his opponent, Doroszienko went into evasive action, consistently flying a pattern which had him flying in the opposite direction to Gysbertsen and very low to the ground. When Gysbertsen finally figured out the pattern of Doroszienko's evasions, he moved in for

a cut but in one of the slickest moves I have ever seen, Doroszienko fed him the whole streamer and there was no way for Gysbertsen to recover the other 400 points! Doroszienko was a popular winner and it was a pleasure to see the champion determined by such an excellent match.

The 1982 World Control Line Champs will be held by Sweden. If the present rate of improvement continues, can we expect 290 kph in speed and 3:15 in Team Race? •

C/L WORLD CHAMPS RESULTS

CLASS F2A SPEED	km/hr
1) P. Constant (France)	274.809
2) P. Fontana (Italy)	265.878
3) G. Ricci (Italy)	264.317
4) D. Enfroy (France)	263.543
5) S. Szegedi (Hungary)	261.437
6) W. Maslenkin (USSR)	261.248
7) R. Spahr (USA)	260.492
8) A. Rachwal (Poland)	257.879
9) L.P. Sarrate (Spain)	257.695
10) C. Lieber (USA)	257.326
12) L. Roy (USA)	255.138
F2A TEAM STANDINGS	
1) France	789.924
2) Italy	778.470
3) USA	772.956
4) Hungary	760.163
5) Yugoslavia	748.261
CLASS F2B AEROBATICS	**total pts.**
1) L. McDonald (USA)	5802
2) R. Hunt (USA)	5767
3) W. Werwage (USA)	5657
4) L. Compostella (Italy)	5625
5) T. Hara (Japan)	5588
6) Y. Suemoto (Japan)	5557
7) S. Cech (Czechoslovakia)	5394
8) Z. Xiangdong (China)	5362
9) M. Lavalette (France)	5320
10) W. Paul (USA)	5308
F2B TEAM STANDINGS	
1) USA	16797
2) Japan	16331
3) Italy	16131
4) Czechoslovakia	15543
5) China	15309

CLASS F2C TEAM RACE

1) Geschwendtner/Mau (Denmark)
2-3) Albritton/Perkins (USA)
2-3) Smith/Brown (UK)
4) B. & R. Metkemeyer (Holland)
5) Balogh/Dorant (Hungary)
6) Heaton/Ross (UK)
7) Visser/Buys (Holland)
8) A. & P. Cipolla (Italy)
9) Fischer/Straniak (Austria)
10) Peracchi/Rossi (Italy)
11) Jackson/Nelson (USA)
50) McCollum/Kusik (USA)

F2C TEAM STANDINGS

1) United Kingdom
2) Denmark
3) Hungary
4) Austria
5) USA

CLASS F2D COMBAT

1) O. Doroszienko (USSR)
2) B. Gysbertson (Holland)
3) P. Granderson (USA)
4) M. Vegetti (Italy)
5) S. Borer (Switzerland)
6) N. Figus (W. Germany)
7) O. Titow (USSR)
8) R. Tribe (UK)
9) T. Van Mourik (Holland)
10) R. Monge (Mexico)
11) G. Cleveland (USA)
50) P. Curtis (USA)

F2D TEAM STANDINGS

1) USSR
2) Holland
3) Italy
4) USA
5) W. Germany

1000 Words . . *Continued from page 42*

selves. And they do a first-rate job of it, too . . . especially after they're relieved of the burden of servos and pushrods and ni-cds. They respond then to every wave, every eddy in the ocean of air. They float then in soft curves and arcs, like a ballerina, like the rolling-steady flight of hawks and vultures. (Soaring birds are pretty heavy, actually, even by R/C standards, but their wings, if you watch closely, bounce and tweak constantly, as if the air were slightly electric.)

So I've returned once more to sport free flight, to see what it can teach me. It's important, I think, to go back sometimes to the basics of any hobby, sport, vocation, romance . . . to see what's been gained and what's been lost along the way. It's particularly important to do so in my own first love, R/C soaring, because soaring is just now in the throes of permanent change. European influence is driving it towards heavier, faster, cleaner airplanes, airplanes not easily produced in the home workshop, better suited to the factory production line . . . all in the interests of faster speeds, higher L/D's, etc.

Sound familiar?

Exactly the same revolution took place among full-scale gliders, right after the war. Those prewar soaring pilots who came back, came back changed forever. In order to fight a war, those open-cockpit, wire-and-fabric birdmen wrapped sheet plexiglas over their heads and stuffed oxygen hoses into their mouths and acquired thereby a taste for latex and plastic and speed. They were no longer birdmen, sons of Daedalus, the creators and moving spirits of their own flying machines. Their new tastes demanded sophistication beyond their own abilities to create.

So they began to queue up in front of the factories: Schempp-Hirth, Slingsby, Schweizer. The men who went to war as aviators came home as mere consumers. And the factories gladly ground out the machines they demanded: first in wood, then metal, then fiberglass, finally plastic. This new breed of sailplane was not a creation; it was merely a product. It came to the pilot ready-to-fly, built entirely by strangers. It could only be fussed over, polished, custom painted . . . like the postwar teenager did his car. It was too complex, too expensive, too critical for the pilot to design and build and fly himself. And so the spirit of the individual went out of the machine, and it became not an airplane but a mere piece of "equipment." And that's what the sailplane is called today, by many of the soaring buffs: "You gotta have the latest equipment. . ."

And it's true. If you fly to win, in model or full-scale FAI soaring, you've got to go fast, and if you want to go fast you've got to fly a rocket, not a floater. Don't get me wrong: I applaud speed as loudly as anyone. I'd like to see nothing but 8 and 9-second airplanes on our next R/C soaring team. But when the speed runs are over, when the dust and adrenalin have settled, when the crowd has wandered off and twilight begins to fall, then I want time to go back to the basics, back to the gentle, natural forms of flight that first attracted me to this crazy hobby.

When you go back to the basics, back to the realm of simple sport free flight, you begin to rediscover the curved grace and beauty of natural flight. Your straight line, your 90° turn . . . these aren't natural phenomena, they're man-made. Free flying models, like the soaring birds, travel not in straight lines

but in spirals, in circles, in rude ellipses. A free flight will never fly perfectly straight unless aimed at a tall, unclimbable tree. The spiraling path of a well-trimmed free flight on a calm evening is invariably more natural, more graceful, more pleasing than that of any other type of model.

And the simplest sort of free flight, in my experience, is the 1/2A profile gas model. I could sing the praises of rubber power, of 79¢ Sleek Streeks with Star Flyer props and 18-inch fuselages. Or sheet-balsa electrics with Superstar (Monogram) motors. But rubber and electric are too specialized for the average hacker, too dependent upon hard-to-find accessories. Cox reed-valve engines are everywhere. Sheet balsa is practically a drugstore item. And patience? Well, it's at a premium these days, but your average profile free flight takes only a couple of evenings to build.

Lately my preference has run toward profiles of the quarter midgets: the Midget Mustang, the Cassutt, the T-tail Rivets, the Long John. The Long John? Well, it isn't exactly scale (too much tail moment, too much dihedral) but still it captures the lines of the race planes. And it flies great. I've also gone through a Golden Age period, where nothing would do but Staggerwing Beeches, Ryan STA's, Tiger Moths, etc. And (this really dates me) as a kid I used to fly 36-inch profile Rudderbugs, C.Q.'s, and Trixter Beams . . . because I couldn't afford the R/C equipment for the real things.

Four things make sport free flight special, set it apart from any other type of modeling. Those things are the R.O.G., the Chase, the Hunt, and the Recovery. Omit any one of them, and you've had something less than a perfect flight. Observe:

I fire up the Pee Wee .020 on the nose of the Long John, and tweak the needle valve down to a slightly rich two-cycle, about 75% of full power. At this setting, I know it will run just over two minutes on the full tank of gas I gave it, so I hold the plane and count to sixty, slowly. Then I set her down on the tarmac, nose pointed just to the left of the wind, and release her. She moves forward, begins to bounce, tail comes up, left wheel lifts off, right wingtip nearly touches . . . and she's airborne! Feel the adrenalin rush; that was a close one!

She begins to climb slowly, in large right circles. No streak in the sky like an FAI free flight, she rises spiraling with thoughtful dignity, like the bats leaving Carlsbad Caverns. She begins moving off downwind. The chase has begun!

I'm flying from a piece of land cleared for a housing development. Few trees, and the wind is light and variable . . . think I'll chase her on foot. I begin at a fast walk, change to a trot as she bores up through the wind gradient, finally (after what seems like a ten-minute engine run) break out into a full gallop. Should have used the car! Is that bloody engine

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going to run forever? Ah . . . it quits, and the Long John settles into a steeper glide turn. It's not too late in the evening for lift, so I keep her trimmed for a tight pattern; if she hits lift she'll spin in. Hopefully.

Look, isn't it going back up? Damn and double damn . . . a thermal has got me! There goes a ten dollar engine, plus my favorite plane! No, wait . . . it's tightening up . . . it's spinning! Going down behind that treeline. Stop and take a careful sighting . . . yes. Right behind that biggest oak tree. An easy find. Maybe.

Ten minutes later I'm still looking, beating the tall grass for anything that looks like a yellow and black model. My mind is inventing all kinds of lightweight signal devices to prevent this happening: *a smoke bomb that goes off after 20 minutes, a timer with a loud tick, a miniature buzzer that runs off a solar cell. . .*

Suppose I don't find it? Suppose somebody saw it land and ran off with it before I got here? Suppose it's actually up in that tree, hidden among the leaves?

. . .a very low power transmitter glued beneath the wing, that puts out just enough signal to trace with a walkie talkie, a long crepe streamer that releases just before it hits, a firecracker that goes off and blows the miserable, no-good model all to hell and gone. . .

Wait! That looks like . . . yes! There she is sitting right there in the clearing, waiting for me! Landed on her wheels, too. Ain't she a lovely one, now! Look, it's early yet. We've still got time for one more flight before dark. . . •

Fuel Lines . . . *Continued from page 23*

now well-known Magnum fuel. The secret ingredient was the lubricant. Naturally, George wouldn't tell me what the lubricant was, but about two years ago, he did admit to me that 3% of it was castor oil. My guess, and I emphasize that it's a *guess*, is that the lubrication in his fuel is 3% castor oil and 5% marine two-cycle engine oil . . . one of the so-called two percent "super" lubricants.

OK, what's the least percentage you can use? It's inversely proportional to your guts. If you're not concerned about ruining an engine, and if you want to maximize fuel performance, mix up several batches of fuel, each with progressively less lubricant. Then go to the test stand and try them out. Remember, though, don't blame the engine manufacturer if you end up with junk parts. If, however, you're not concerned with getting the absolute ultimate out of your fuel, and if you want a little more margin for error, then stick with 18% to 20% lubricant. •

Boats . . . . . . *Continued from page 32*

Jensen, and Maren Dunlap.

The R/C Unlimited Class and Sport 40 Class were featured on the first day of racing. This is a departure from many past NAMBA Nationals that commenced with the Deep-Vee Classic. It was felt by the planning committee that spectator interest is much higher in the heat racing events, as compared to enduro events. The forty-one R/C Unlimiteds that participated in the winner-take-all race format marked the largest turnout of this class ever assembled. The winner-take-all format with a first and second consolation race marked the first time this method of determining the winner of an event has been tried at a NAMBA Nationals. All other classes in heat racing use total points accumulated in four heats to determine the winners.

The miniature unlimiteds had three qualifying heats to accumulate points. During the qualifying heats, three boats were most impressive. Ed Fisher was driving the conventional round-nose Coral Reef, Les Ruggles was piloting one of the newer round-nose designs, the Notre Dame; and Ron Erickson has his 1978 version of the Circus Circus running very well. These three boats were the top qualifiers. They were joined in the final heat by Ken Reilly and his beautiful Natural Light that was judged Best of Scale, Butch Melewski with the Miss Bardahl, and Joline Fridell running the Miss Esquire Products. Unfortunately, the final proved to be rather anticlimactic when the Coral Reef and Bardahl tangled at the start and were eliminated, and the Notre Dame spun a driveshaft and never entered the race. This allowed Ron Erickson to pilot his record holding Circus Circus to a rather easy win. The Natural Light and Miss

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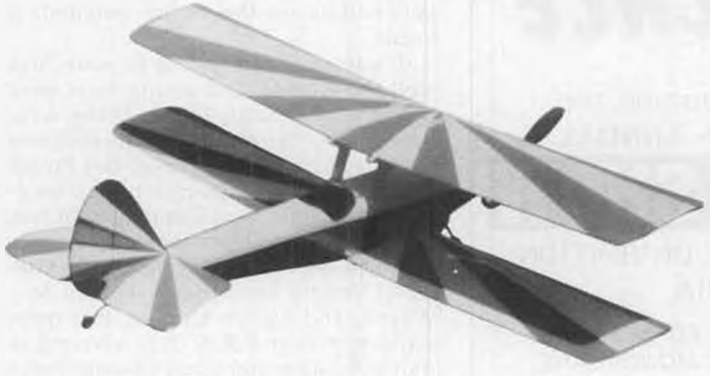

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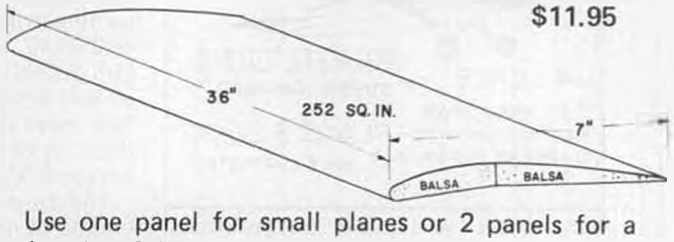

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Esquire Products were the only other boats able to make the start and finished in that order.

The Sport 40 Class produced some good racing using models based on unlimited hydroplanes but not necessarily duplicating the same scale appearance as required in the R/C Unlimited Class. Most of these boats used K&B 7.5 engines with tuned pipes. However, Joe Monohan's Miss Van's PX was very competitive with his front-rotor K&B .40 Marine with a muffler. It was only some bad luck with a needle valve setting that kept Joe from placing very high in the event. The two most popular hulls in this event were the Dumas U-76 wooden kit and the fiberglass hull made by Vic Drew's R/C Glass company in Medford, Oregon. It now appears that Sport 40 will be a recognized class in NAMBA, beginning in 1981, with two engine divisions. The two engine divisions will allow individual districts to decide which way their model boaters wish to go regarding engine type.

The Outboard classes were of special interest to me because I was entered in two of the three events being offered exclusively for outboard power hulls. In the Outboard Monoplane Class, The West Coast Marine Deep-Vee seemed to be very popular and a good runner. Even though I jumped the start in my final heat, your old columnist managed to win a national championship in this class. An interesting thing happened in the Outboard Hydroplane Class, in that it was dominated by tunnels. There were some outrigger outboards entered, but they just couldn't get it all together and the tunnels walked off with all the awards. In the A OPC Tunnel Class, Jack Garcia showed his transom to everyone by winning all four of his heats and turning in the day's best time in that class of 2:05.40. There was not a dominating hull design in the tunnel event. A variety of hull designs ran very well. This class had more different designs competing than any of the other heat racing classes except R/C Unlimited.

The Dumas Deep-Vee Classic had a couple of new wrinkles this year, as the course reflected what District 8 has been doing for its deep-vee events. The standard five-lap heat racing course was used with a dog-leg in the front and back stretches going around straightaway buoys. There was some concern about the course from those from other districts. However, once the racing got underway, the course seemed to prove satisfactory. To do well in this event, it is necessary to run for the entire 40 minutes of racing, which is broken into four ten-minute sections. Stalled boats cannot be recovered with the chaseboat, so a premium is placed on reliability as well as speed. There were some excellent heats in this event when two or three fast boats would link up going in and out on the course. The event calls for extra attention on the driver's part. Many felt that ten minutes is a long time to have to concentrate on this rather demanding event.

It was most interesting to note how well the women and young boys were doing in the competition. There were thirteen women entered in the different events. The achievements of Bev Power and Diane Semler deserve special mention, since both won first places. In fact, Bev won two. Other women winning trophies were Joline Fridell, Ricki Stewart, Sandra Lenninger, Teresa McWayne, and Maren Dunlap. It is quite apparent that E.R.A. has arrived in model boat racing! Chris Christenson, a junior from Vancouver, Canada, did very well in the 1/2-Hour Enduro and in the A OPC Tunnel event by placing third in each. Two very fine junior racers, Steve Jeffries and David Jensen, had problems with engine quits or they certainly would have placed high in the standings. And my eight-year-old son, Paul, was the youngest contestant. He did a real good job in the A Mono Class, and had I not neglected to completely fill the fuel tank in his boat for one heat, he would have placed in that class. There were around two dozen family racing units entered in the 1980 NAMBA Nationals, which I think speaks highly of this activity as something the family can do together. In many cases, wives and children helped in cleaning and preparing boats for future heats.

One of the things I enjoy most about a national boat race is meeting with old friends and making new acquaintances. Russ Kominitsky and I keep telling each other the same old stories and they just seem to get better each time. I first met Jim Whitlatch at the 1967 IMPBA Internationals in San Francisco, and he can can still drive a model race boat as well as anyone I know. I had to give Art Hammond a bad time about the stock outboard on his beautiful Mongoose. Art dearly loves to modify the .21 engines and can really get his hydro engine to sing. After having reviewed their two deep-vees, it was most enjoyable to meet and talk with Al and Terry Prather. Prather Products is planning to release George Campbell's new outboard tunnel hull in the near future. George used this hull to place fourth in the A OPC Tunnel event. Discussing boats with Herb and Ricki Stewart, George Campbell, and Frank Ward is always

interesting. Talking about engines with John Brodbeck and Jack Garcia makes for an enlightening conversation. Discussing NAMBA with Myrtle and Don Coad and our NAMBA president, Stuart Russell, can provide some thought-provoking dialog. The list of people and topics could go on and on. It is my belief that this activity is as much about people as it is about racing model boats.

I guess that puts a wrap on this report. As the director of the 1980 NAMBA Nationals, I want to say "thank you" to everyone who attended, all the event directors, judges, lap counters, event sponsors, contributors to our drawing, and anyone who had anything to do with the event. It was because of the support of everyone that it turned out to be a fine event.

1981 NAMBA NATIONALS TO BE HELD IN AMARILLO, TEXAS

The Muddy Rudders R/C Boat Club of Amarillo, Texas will be the host club, along with NAMBA District 7, for the 1981 NAMBA Nationals. Although the exact dates were not available at the time this article was prepared, it appears that the first part of August is favored. It is hoped that Amarillo's central location will allow for boaters from both the east and west coast to join the model boaters in the central part of the country for this big event.

1980 NAMBA NATIONALS RACE RESULTS

R/C UNLIMITED
Winner-Take-All Final Heat
1) Ron Erickson ('78 Circus Circus)
2) Ken Reilly (Natural Light)
3) Joline Fridell (Miss Esquire Products)
4) Butch Melewski (Miss Bardahl)
5) Ed Fisher (Coral Reef)
6) Les Ruggles (Notre Dame)

First Consolation
1) Jack Haugen (Notre Dame)
2) Bill Smiley (Pay N' Pak)
3) Gale Whitestine (Circus Circus)
4) Rocky Fridell (Squire Shop)

Second Consolation
1) Howard Power (Miss Budweiser)
2) John Brodbeck (Circus Circus)
3) Doug Schultes (Miss Supertest)

Best of Scale: Ken Reilly's Natural Light
Fastest Heat Time: Ed Fisher, 1:34.39

SPORT 40
1) Vic Roberts (R/C Glass Hydro)
2) Bud White (Dumas U-76 Kit)
3) Mike Gruol (R/C Glass Hydro)
4) Steve Compton (Dumas U-76 Kit)
5) Jerry Dunlap (Muck Sport 40)

Fastest Heat Time: Dave Blacksten, 1:49.77, R/C Glass Hydro

A (.21 C.I.) OUTBOARD HYDRO
1) Bev Power (Hammel Tunnel)
2) Ricki Stewart (Stewart Tunnel)
3) Jack Garcia (Stewart Tunnel)
4) John Havens (Excaliber Tunnel)
5) Rich Hazlewood (Lil Lightning Tunnel)

Fastest Heat Time: Jack Garcia, 2:11.68

A (.21 C.I.) OUTBOARD MONOPLANE
1) Jerry Dunlap (Ward 33.5 Vee)
2) Jack Garcia (Westcoast Marine Vee)
3) Ken Theimer (Dumas CF-20)
4) Rich Hazlewood (Westcoast Marine Vee)
5) John Brodbeck (Westcoast Marine Vee)

Fastest Heat Time:
Rich Hazlewood, 2:16.39

A (.21 C.I.) OPC TUNNEL
1) Jack Garcia (Hammel Tunnel)
2) Rich Hazlewood (Lil Lightning)
3) Chris Christenson (Original Tunnel)
4) George Campbell (Prather Tunnel)
5) Harold Yamagata (Mongoose Tunnel)

Fastest Heat Time: Jack Garcia, 2:05.40

A (.21 C.I.) MONOPLANE
1) Diane Semler (Prather 31 Vee)
2) Bev Power (Prather 31 Vee)
3) Ken Reilly (Prather 31 Vee)
4) Jerry Dunlap (Prather 31 Vee)
5) Herb Stewart (Stewart Vee)

Fastest Heat Time: Jerry Dunlap, 1:56.12

B (.45 C.I.) MONOPLANE
1) Bill Hornell (Wardcraft Vee)
2) Bev Power (Wardcraft Vee)
3) George Campbell (Prather Vee)
4) Larry Lund (Muck Streaker)
5) Ron Erickson (Wardcraft Vee)

Fastest Heat Time: Dick Aubert, 1:42.43

C (.65 C.I.) MONOPLANE
1) Bev Power (Muck Streaker)
2) D. Reutlinger (Dumas Deep-Vee 60)
3) Gary Frank (Muck Streaker)
4) Cecil Reynolds (Wardcraft Vee)
5) Frank Ward (Ward Marine)

Fastest Heat Time: Bev Power, 1:40.12

X (.68-1.5 C.I.) MONOPLANE
1) Howard Power (Wardcraft Vee)
2) Jim Whitlatch (Muck Streaker)
3) Frank Ward (Ward Marine Vee)

A HYDROPLANE
1) Chuck Rudorfer (Crapshooter)
2) Wally Stewart (Wing Ding)
3) Jack Oxley (Wing Ding)
4) Dick Aubert (Crapshooter)
5) Art Hammond (Wing Ding)

Fast Heat Time: Jack Oxley, 1:40.13

B HYDROPLANE
1) Howard Power (Octura Wing Ding)
2) Bruce Lenninger (Octura Wing Ding)
3) Randy Seiser (Pinkert Gator)
4) Tom Topping (Octura Wing Ding)
5) Dick Aubert (Crapshooter)

Fast Heat Time: Jack Oxley, 1:25.89

C HYDROPLANE
1) Jim Whitlatch (Octura Wing Ding)
2) Don Nauditt (Octura Wing Ding)
3) Howard Power (Octura Wing Ding)
4) Jack Oxley (Octura Wing Ding)
5) Cecil Reynolds (Crapshooter)

Fast Heat Time: Jim Whitlatch, 1:17.34

X HYDROPLANE
1) Howard Power (Octura Wing Ding)
2) Jim Whitlatch (Octura Wing Ding)
3) Frank Ward (Ward Hydro)

Fast Heat Time: Jim Whitlatch, 1:29.76

1/2 HOUR ENDURO — CLASS A
1) Charles Delasantos (Ward 33.5)
2) Bev Power (Prather 31 Vee)
3) Chris Christensen (Hull not identified)
4) Al Prather (Prather 31 Vee)
5) Steve Lenninger (Prather 31 Vee)

100-LAP TEAM MARATHON
1) McStew Racing Team (Richard and Teresa McWayne, and Herb and Ricki Stewart)
2) Hobbytown Racing Team (Bill Brazzle, Jerry Dunlap, Leo Dreith, and Mike Wight)
3) ReyAubFraJeff Racing Team (Cecil Reynolds, Dick Aubert, Gary Frank, and Steve Jefferies)

DEEP-VEE CLASSIC
CLASS A
1) Wally Stewart (Stewart SSV)
2) Howard Power (Prather 31 Vee)
3) Diane Semler (Prather 31 Vee)
4) Steve Lenninger (Prather 31 Vee)
5) Art Hammond (Prather 31 Vee)
CLASS B
1) Ron Erickson (Wardcraft Vee)
2) Cecil Reynolds (Wardcraft Vee)
3) Diane Semler (Prather Vee)
4) George Campbell (Prather Vee)
5) Frank Ward (Ward Marine Vee)
CLASS C
1) Don Reutlinger (Dumas Deep-Vee 60)
2) Gary Frank (Muck Streaker)
3) Bev Power (Wardcraft Vee)
4) Jim Whitlatch (Muck Streaker)
5) Cecil Reynolds (Wardcraft Vee)
TEAM SCORING
1) Gold Coast Model Boaters: 4300
2) Seattle Model Yacht Club: 2636
3) Marine Modelers of Santa Clara Valley: 2389
4) Model Mariners: 1915
5) Puget Sound Model Boat Club: 1342

Electric . . . . . *Continued from page 41*

The problem was more of how to cut power, not raise it, which leads us to another topic, motor control.

Woody Woodward sent some excellent photos of the system he uses to control the Astro 05 in his scale Astro 05 Monocoupe. The system was suggested to him by Tony and Addie Naccarato. The micro switch is Hot Stuffed to the servo in a suitable position so that it is turned on by full throttle plus full trim. This way it cannot be accidentally turned on by the throttle stick alone. Sometimes the instant start characteristic of electrics is not such an advantage! I have also used this system and I like it. It is the way I run the Astro 15 in my floatplane, and the system is simple, reliable and cheap . . . all great virtues! I even went one more step and rigged two switches, one to give reverse thrust on the Electric Tern, an Astro 020 seaplane (April 80 *FM*). I used this for very short pond landings at the Seattle Pacific Science Center as part of a Boeing Hawks model show. Reverse thrust did *not* make the plane fall out of the air! Instead the glide angle steepened to about double that with no power, with no increase in speed. It was like having good spoilers, and certainly did help in getting the plane into the small landing area.

Another simple system is the push-push switch (Astro Flight part 4021), activated by full down elevator or full rudder. This is simple to install but takes some adjusting to work just right. The critical part is the positioning of the switch. I usually mount both the switch and the servo with servo tape, which leaves little clearance between the switch button and the fuselage side. The button is easily trimmed to a smaller diameter with a razor blade, since there is an inner and outer skirt on the button. Just trim away the outer skirt; the small button that is left is just right. The fore-and-aft positioning is quite critical. If the button is too close to the servo arm, the push switch cannot return to its fully extended position and it will not reset. This means it will not turn the motor off on the next servo push. On the other hand, if the switch is too far away, the servo cannot operate it. The best position seems to be when the switch button almost touches the servo arm, with a gap of about 1/32 to 1/16 inch. It also helps to give full opposite command just after operating the switch. This gives the switch room to spring back (the servo arm is out of the way) and it neutralizes any "jump" the plane may have made in response to the full rudder or elevator.

This action is fast enough so that my planes hardly react at all.

The ideal speed control, of course, is the solid state type. These are too heavy for my Astro 02 planes, so I use the two ways I have just described, but for Astro 05 planes on up, the solid state controllers are ideal. The Astro Flight electronic on-off switch weighs two ounces (part no. 4023) and simply plugs into the radio and power system. The solid state speed control (part no. 4016) is just as easy to install and also weighs two ounces. Both of these are very well made and designed to handle heavy use.

Well, till next time, enjoy the electrics. And try them indoors! •

Sport Scene . . *Continued from page 33*

wheels, rubber tail wheel and a good paint job. Also reinforced landing gears.

Again, the G-Mark .06 is the closest you will come, but there are a number of lightweight .09 size engines such as the Medallion .09 and Cipolla .09 which would work well too. You can always put the prop on backwards or run the engine rich if you have too much power. Then your only concern is weight, and the two engines I mentioned in the .09 class are the lightest ones I know.

Then I got some information and commentaries from a couple of other readers. Phil DeLong of Atlanta, Georgia, sent me his Holland Hornet to photograph and has this to say about it.

The other day I was going through some old boxes of model equipment at my parent's home (I've been married nearly 10 years and am just finally getting all my stuff out of their house . . . you know, college, job changes). Anyway, I ran across a 1/2A engine I've had for many years now and I really know very little about it. It's a Holland Hornet .049. I don't know if it's particularly rare, but if you feel that it would merit a photo in your column, I would gladly have a photo taken and send it to you, but it would be up to you to dig out the historical data on it. I don't have a tach so I don't know how fast it is, but I'm sure it isn't as fast as my T.D., rpm-wise.

Phil sent me the engine and I shot the photo in this column. He asks in a second letter where he can get replacement glow heads, and mentions that he would like to put it in an R/C high-thrust Goldberg Viking and wants to know if it would qualify as an Old Timer. I suspect that replacement glow heads could be found, but it would be simpler to drill and tap one of the standard plugs into the head when the original burns out. Typically you will get somewhat less rpm, but if it is the only game in town. . .

The Holland Hornet was the hottest engine available when it came out, and when the Tee Dee was released the two engines were about equal. The Tee Dee won out because of better consistency from engine to engine. As a peculiarity of the model industry, I have heard that, for a while, Roy Cox was doing the screw machining and grinding on Bob Holland's Hornet in the same plant with his own engines. Naturally, when the competition got too close, that had to stop. As I recall, the Holland would not pull fuel as well as the Tee Dee does, and in the intervening years the Tee Dee has gained significantly in power as better fits and porting and piston skirt tapers were discovered. The Viking came out in the late fifties, or early sixties, so it does not qualify as an Old Timer. I always perferred the Starduster series to the Viking, primarily because of the structural design. The Viking was, however, a very much prettier airplane.

Next letter is from George Lieb:

In the October 1980 issue of **RCMB** *you asked if 1/2A is fading from the modeling scene. Well, it certainly isn't fading at control line contests around here. 1/2A Mouse Race Class I (reed valve) is the most popular C/L event around here. Usually we have 10 to 15 Mouse Racers entered, including many Jr.'s and Sr.'s. Most other events draw 1/3 to 1/2 as many and few Jr.'s or Sr.'s. Occasionally Class II Mouse Race or 1/2A Goodyear are also flown. Two years ago I bought a KK (Kustom Kraftsmanship) Black Widow Mouse Race engine. A lot of people thought it was foolish to spend so much on a 1/2A. I told them that it was my cheapest racing engine and the prizes are the same as for the other events. Now Mouse Racing is very popular and others are buying the KK and Chop's racing engines. The fuel*

is also very cheap, and besides, it's a ball!

Presently I have two Class I's, a Class II, and a Class I Goodyear, all scratch built. I had contacted Gene Hempel before you wrote about him and have planned to send my reed valve and T.D. to him to have the shafts chromed as soon as the contest season is over. A lot of people still haven't figured out how to make 1/2A's fly steady and how to hold the lines well in windy weather. It's actually quite simple, but sometimes a big problem for a lot of people.

Unfortunately, with that tantalizing hint the letter ends. Perhaps George will write again and pass along some of his tricks for others to learn from.

You may have noticed a slight change in the heading of this column, to the "1/2A Sport Scene." Little by little I want to expand my coverage to deal with *all* phases of sport flying, in addition to the 1/2A Scene. I will still be very interested in competition event photographs, information, hints, and products in the 1/2A size, but if you have sport models which are larger, I think they fit within the spirit of the kind of flying I like to write about. I subscribe to the KISS principle (Keep it Simple, Stupid!) in living, and most of the large engine competition events seem much too much like work!

Toward that end, the next photograph for this month's column is a .19. Duke Fox makes good, long-lasting engines and most of them are aimed right at the sport modeler. The .19 is a comparitively inexpensive engine, but it runs quite fast and idles well. Size and weight are economized, so the overall efficiency is good. I would suggest that it could be substituted in a Quarter Midget kit such as the "Miss Dara" by House of Balsa to make a hot sport model, or any of a multitude of kits aimed at the .19 size engine. By the way, don't be put off by that weird looking carburetor. If you set it according to the instructions, you will find that no other works better.

I finally got my Cannon Super Micro radio, and so I shot a photo of it. You can see that all four servos would fit nicely into that 35mm film box! I think the receiver almost would go in with them. The transmitter is very small, but that is something I like. I had an Orbit for a while with a very small transmitter and I hated to have to give it back.

By the way, the two engine photos and the one of the radio were shot with a new flash setup I bought, the "Soffbox" made by Reflectasol. It takes the output from an electronic flash and spreads it into a smooth, broad light source two feet across. For those of you who aren't funny in the head about photo gear, you can get the same effect by stretching white tissue paper over a frame and shooting your flash through it. Have an assistant hold the flash and frame to avoid the expense of a light stand. The only excuse for the expensive stuff is that I need to be able to set up and shoot frequently, and with guaranteed results. Scheduled publication waits for no man except Bill Northrop.

The first photo from a reader this month comes from Del Ogren (565 B Lynn Ct., Glendale Hts., IL 60637). He has sent a photo of his first R/C model, the P.A.T.H., which stands for "Prang About To Happen." He has a Golden Bee in the nose. He had to put the prop on backwards and run the engine rich to get it slow enough for his abilities. He had thirty flights on it when he wrote. Del says that he now can handle the model with the engine leaned out and does loops, rolls, immelmann turns, and split "S" turns. Wingspan is 40 inches, chord 6 inches, and it is "aimed" with a two-channel Ace radio on ailerons and elevator. Del says:

One of my goals was to produce an airplane as cheaply as possible, so instead of running to the hobby shop to buy all those expensive accessories, I built them myself. The aileron and elevator hinges are made from the plastic holder which holds 6-packs together. It is strong, flexible, fuel proof, and free. (I dunno, a 6-pack was a couple of bucks the last time I looked, and what are you going to do with all that beer? L.R.) *I used braided fishing line for control cable. In a small model like this, the little bit of stretch in the fishing line seems no problem. It is covered with silkspan and dope. The new covering materials are fine but I learned to build models 15 years or more ago and don't think silkspan and dope can can be beaten for strength to weight . . . and if one thing is true of 1/2A's, it's that they must be light.*

Keep up the good work in your column. I have long been a 1/2A fan and in these times it seems more important than ever to have access to something that is inexpensive and fun.

Del makes a good point with the use of aileron and elevator control for a trainer. The only reason I know for avoiding ailerons in favor of rudder control is that the ailerons are a more complex building job. Flying is much more positive with ailerons. Set them to be insensitive and the model becomes a glass-smooth flier which won't fight you in holding the heading or bank you

select. You can still use enough dihedral to have a stable model. All the rudder does is use the entire wing as an aileron anyway. The added yaw seems to me to be a problem rather than an asset to the beginner. When I was first learning to fly, I designed, built, flew, and published a design called "Lil Snort," which was an aileron-only trainer model. It had a V-tail because it was pretty and would cause me no trouble, and the airfoil was semi-symmetrical. The model would fly easily despite a total lack of dihedral and I could do loops and rolls with it. Orientation was what finally got to the model, as I kept trying to get it out of a left spiral with left aileron input. Didn't work.

Final bit for the month is a letter from David Unruh (Route One, Box 1334, Kenai, AK 99611), who says:

I'm still smarting over the letter from the angry modeler last year who criticized the R/C dominance of the hobby and more or less said that free flight was the only real modeling. I took it as a challenge and built the model shown in the enclosed photo. It's called "Little Sport," it was designed by Robert Miller and it was published in the September 1952 Air Trails. *The span is 48 inches x 7 inch chord and it weighs 14 ounces.*

I'll tell you, I had never flown a free flight model successfully. Our field is about 1200 x 800 feet, bounded on two sides by trees, with a fenced-in chemical plant to the north and the ocean to the west, behind a single row of trees.

When I got to the field, the wind was about 5-10 mph from the northeast, so I went to the northeast corner to crank up. The model is powered by a Golden Bee .049. I used a 6x3 black prop put on backwards. I performed many, many test glides and was so enchanted by the way it would float in and bounce gently on its skis that I almost didn't have the courage to use power.

I ran one tank of gas through the engine on the ground and decided to measure in about two cc's of Cox blue can. The engine has no down or side thrust and the rudder, which was hinged on copper wire, was slightly deflected for a right turn.

The Little Sport was hand launched and went into a climbing left turn to about 300 feet before it ran out of gas. Then it descended in a right turn and landed within fifty feet of the bluff overlooking the ocean at the southwest corner of the field. I have seldom had a thrill like that first flight in my years of R/C.

Since that first flight, I have added over twenty-five more. I've had to climb a few trees but I always get it back. I pick my weather a lot more closely, now.

Anyway, I hope the photo is usable. Regardless of what the magazine is called, it's the most interesting one on the stands; I read it from cover to cover every month. Pass the word to the rest of the staff that from one modeler's viewpoint, they aren't doing anything less than great, all of them.

I would like to thank all of those of you who have written in and sent your thoughts, comments, and photos to share with the other readers. I dislike magazine columns which are an ego trip for the columnist, and much prefer to present the material which shows what you, the 1/2A sport modeler, are doing. Please keep that material coming so I won't be boring you with what little I am doing! •

Peanut . . . . . *Continued from page 51*

to the workboard, except for the root ribs which should lean out at the top towards the wing tips, enough so that when the dihedral is added they will then be vertical.

Let these structures dry while rough cutting the nose block, cowl bottom, cowl sides and cockpit top.

Now remove the fuselage sides from the plan. They will come off the waxed paper easily but will be stuck together by the excess cement used in their assembly. Now is the time to perform a sanding operation on the frames. Get a sanding block wide enough to easily reach across the frames at their widest point. Using No. 300 or finer sandpaper, lightly sand both sides of the stuck-together frames. Use a razor blade to separate the sides. A thin double-edged blade, or better yet, half of one, makes a better separation tool than a thicker single-edge blade. If all you have is a single-edge blade, at least remove the backing stiffener. Slide the point of the

blade between the longerons where they are not cemented together and slide it gently towards an upright location. Then angle the blade so its end slips between the uprights where they are also not cemented together. Now move the blade towards the excess cement at the joint and separate the sides by continuing this process all the way around the two fuselage side frames.

Cement a length of 1/16 square balsa on the inside of one of the frames at the aft upright. (The inside is the side that hasn't been sanded because it has just been separated from its mate.) When dry, sand it flush with the top and bottom of the frame. Then cement the other side frame to the first at the aft end. Check to see that the frames splay apart at the correct angle by placing them over the top view to dry.

Now, remove the wing from the plan and proceed to put in the dihedral. Cut the leading and trailing edges at the inside of the root ribs. Pin the center section of these parts to the plan once again. Now get a couple of blocks about a half inch thick and block up the wing tips to exactly the right dihedral angle. Carefully taper the center parts to a good fit and cement the leading and trailing edges back together. Now select a firm piece of balsa for the wing spar. Crack it in the appropriate places and cement it in place in the rib notches. It will have to be tapered at each tip to match the slant of the wing tip pieces.

Now the fuselage crosspieces can be cut and cemented between the side frames. All the crossbraces between the sides from A to D are the same length. The front one is wider than the others, which are made from the same size sticks as the longerons. Because the fuselage must be a good fit between the wing root extensions, it's a good idea to check the length of these forward crossbraces and adjust their length as necessary. It's tough to make the fuselage just a little wider or narrower after the crosspieces are cemented in place. Cement the crosspieces in place from A to D. Then, working from the rear, cement the crosspieces in place from H to F. Finally, cement the crosspieces at E.

Now add the formers to the top crosspieces at the proper places. The

three top stringers are cemented in the notches of E, F, G, and H.

Cement the side cowl pieces in place on the outside of the fuselage frames between A and B. They should be an exact fit over the longerons and the uprights but must not extend beyond. Use a sharp razor blade to trim off any excess.

Now cement the bottom cowl block in place. Then add the top cowling, made of thin sheet balsa, from A to D. Select a piece of soft, flexible A-grain wood for this application. This cowl is essentially flat on top, but has rounded corners which will have to be bent into the sheet. Make the cowl sheet a little oversize all around. Cement it in place over only the flat portion of the formers and let it dry. Then carefully bend it around the corners and trim it to fit. Finally, cement it to the former corners and to the top of the longerons.

Cut a backing block for the rough noseblock, to fit snugly into the front of the fuselage frame at A. Cement it to the noseblock. Trim the top cowl sheeting to be flush with A and D. Put the noseblock in place and, with a very sharp blade, proceed to carve the nose to the correct, final shape. This can also be accomplished using a sandpaper block, using medium and then fine sandpaper, if carving with a blade is not to your liking. It takes a little longer, but is not so easily overdone.

Sandpaper all the structures to nice, smooth contours. The leading edges of the wing and the tail are rounded for a good airfoil. The trailing edges are tapered to a near knife-edge for streamlining.

Now bend the landing gear wire. It should be a good fit into the fuselage at C. Cement it securely in place.

Now cover the model with Japanese tissue. The prototype Impanema was white all over with a medium blue trim color. I used white glue (Elmer's or equivalent will do), thinned with an equal part of water, to attach the tissue to the framework. When covering, make sure that the grain of the tissue is aligned with the long dimension of the part. Cover as large a section as you can without getting excess wrinkling. The wing, for instance, can be covered with three pieces of tissue: a single piece can be used to cover the entire lower surface from tip to tip and a single piece can be used to cover each of the upper wing surfaces from root to tip. Using a small paint brush, put a thin coat of thinned white glue only on the extreme outline of the part to be covered. (In other words, do not put glue on the wing spar or the inner ribs.) It is put on the leading and trailing edges and on the extreme tip rib and the root rib. Lay the tissue carefully on the part and then gently stretch the tissue across the part. It usually works better if you work from the center towards each end. Get the tissue as smooth and wrinkle-free as possible, but don't get it so tight that it warps the structure. When the bottom surface has been covered, set it aside to dry. Then cover one side of the rest of the parts and let dry. After the first side is dry, use a sharp razor blade to trim the tissue to the exact outline of the part. (Wet tissue cannot be trimmed worth a hoot; all it will generally do is rip, tear, or pull loose from the part.)

After the second side is covered and the glue is dry, use a razor blade to trim the tissue about 1/8 of an inch outside of the structure. This is then wrapped around the edges and, using white glue, is cemented to the first layer of covering. Completely covering the edges is not real important with a white airplane, but if the airplane is covered with colored tissue and you don't overlap the paper you get white outlines that you probably didn't want.

When covering the sheeted part of the fuselage, use the same technique. Put the glue only around the extreme outline.

After the model has been completely covered, the tissue should be shrunk tight by lightly wetting it with water. This means just fogging the water on so the tissue is slightly damp. For years I used a Mennen spray deodorant bottle (plastic) to get the fog, but it finally wore out. The best sprayer I've found to replace it is the one that comes with X-14 Instant Mildew Stain Remover. After you've removed the mildew around your shower stall, this sprayer can be filled with water and adjusted to give a very fine fog. Do not

spray directly on the part, but rather across the part, about a foot above it. All the heavier, higher speed fog particles will go beyond the part and the light, gentle ones will fall onto your tissue like snowflakes into the Volga. Stand the parts on edge against a bottle or similar support to dry. This will prevent the tissue from attaching itself to a flat surface, and if any of the white glue is dissolved it will minimize the chances of it sticking to something.

Give all the tissue-covered parts a light coat of thin dope after the water has thoroughly dried. After the first coat of dope, make the details for the model and attach them. These include the inlets, the exhausts, and the cabin. Cut and fit the cabin framing. Use model railroad basswood or hard 1/32x1/16 balsa sticks for the frames. Make a dummy tail wheel. It doesn't have to revolve, just has to look right.

The spinner for the propeller can be carved out of balsa, or you can do as I did. I found a blue plastic cap for a ballpoint pen which had the right shape and cut it off to length, then notched it to fit over the prop. No freewheeler is used on this propeller installation. The model is quite capable of doing about a minute, so the drag of a static propeller will help keep from losing the model in a thermal.

The landing gear leg spring simulations are made from soft white plastic sheet taken from a pocket protector. This can be cemented to the wire and will flex with the wire so that it will last in spite of ground impacts that would destroy a rigid simulation.

Finally, you can add the color trim and registration letters. Unfortunately, type 52 Polaroid film doesn't distinguish very well between blue and white tissue, so the trim shows poorly in the pictures. The registration is PP-ZIP on both sides of the aft fuselage, on the top of the right wing, and bottom of the left wing. There are two blue stripes on the fuselage above the lettering and the wing tips are blue with a thin blue strip inside the tip. Tires, exhausts, the backside of the prop blades, and control surface outlines are black. The front side of the prop blades is silver. The tips of the propeller blades should be red or yellow. The vertical tail has a blue tissue speedbird on each side.

The windshield and cabin windows are made from thin clear plastic. Carefully cut and trim each piece to fit before cementing it in place.

Now cement the horizontal tail in place, then the vertical tail. Make sure they are in exactly the right position. Carefully fit the wing in place and check to see that it has the proper relationship to the tails. It should not lean but should make a symmetrical image when observed from the nose or the tail.

Each wing should be twisted to give about 1/8 inch of washout, measured at the trailing edge of the tip rib relative to the root ribs.

A single loop of 3/32 rubber a foot

long was used to test fly the Peanut Impanema and provided adequate power for outdoor flight. The model flies in wide left circles under power and in right circles once the propeller has stopped.

What can you do if your model refuses to fly like the original? The most likely problem is that the airplane is tail heavy. Make sure your model will balance in a level flight position when held by the fingertip at each wing tip in line with CG (center of gravity) arrow on the plan. Ballast it if necessary, using modeling clay or other suitable weight. The next most probable problem is an unwanted warp. Applying a little heat to the surface while twisting it to oppose the warp will help here. Try gliding the model power off. If necessary, remove the propeller and nose block and ballast the nose with modeling clay to replace their weight and adjust the surfaces until you get a straight, smooth glide. Now try the model again. The next most likely problem is a thrust line that needs adjusting, and the most likely required adjustment is downthrust. Put a thin shim of balsa between the nose and the top of the noseblock so the propeller shaft points down a little and prevents a power-on stall. If the glide is good, use thrustline adjustments to get the power pattern you want. •

Soaring . . . . . *Continued from page 27*

about merely light nod movements. Besides, this model has eminent high take-off qualities." The very thin foam wings come covered with veneer.

Unfortunately, I did not have an opportunity to visit other large manufacturers, such as Robbe (P.O. Box 1108, D-6424 Grebenhain 1, West Germany), Multiplex (Neuer Weg 15, 7532 Neifern, West Germany), and Carrera (36 Waldstrasse, 851 Surth/Bayern, West Germany). Robbe offers the Finikofi, a pod-and-boom 1600 mm span, easy-to-build sailplane that recently received very good notice in the French model press. Their larger models, the Roja (3110 mm span) and the Dura-TF (2800 mm span) are beautiful and are well worth noting. The kits include balsa-covered foam wings and all the required hardware. From my point of view, the Robbe D-36 Circe has exquisite sylized lines, while their DG-100-45 looks almost real. There again, the kit is well thought-out.

Multiplex offers all kinds of radio gear. You can change the mode of operation data to the point of changing the control deflection as a function of control stick position. Their trainer planes include the Filius, a conventional 1800 mm span rudder/elevator craft; the Alpha at 2800 mm span, and the Hobby at 2520 mm. The Flamingo is specifically designed to perform well in F3B events and is currently quite popular on the European contest circuit. I photographed this bird putting in a perfect flight during a contest near Zurich, Switzerland. The ailerons ensure coordinated turns. It moves fast and re-

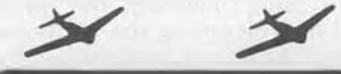
sembles the Sitar brothers' entry into the last Internats. Here's a clean machine for those who like competition.

Multiplex also offers an aerobatic sailplane, called the Akro, a high-wing aileron/rudder/elevator ship of 1800 mm span, with a servo controlled canopy airbrake. A larger scale sailplane is the ASW-20 (3620 mm span) with the laminar flow Wortmann FX-62-K-131/17 airfoil in built-up form. Their Alpina spans 4000 mm and must be seen to be appreciated.

Carrera also offers an extensive line, ranging from their 90-inch span Favorite and ASW-17 to the larger Nimbus (123 inches) and SB-10 (126 inches), available with or without ailerons and spoilers. Their 12-foot Kestrel and 16-foot SB-10 complete the larger scale sailplanes and feature fuselages made of Ferran plastic (similar to ABS). I have watched the 126-inch SB-10 perform well in a contest . . . in the hands of a pilot new to that plane, no less. These planes are available in California through Wilshire Model Center, 3006 Wilshire Boulevard, Santa Monica, CA 90403. Call Hans Weiss at (213) 828-9362 to get further details.

There's a lot more to say. I'll cover the more specialized planes offered in Germany in the next issue. In the meantime, you might want to catch up on two worthwhile items: *How To Build and Fly Radio Controlled Gliders*, a new book by Jack Schroder ($3.50, from Kalmbach Books, 1027 North Seventh Street, Milwaukee, WI 63233); and the *Super Wings Instructional Catalog* offered by Hi Johnson. Schroder's book covers all you need to know to get started. It shows you how to build and fly a sailplane and outlines some possible aerobatics. *Super Wings* tells you how to generate your own design by selecting ready-made components, using some of the newer techniques and materials. Here is a worthwhile investment of $2.00. This booklet is a great trigger for your imagination.

See you next month. •



J. Allen . . . . . *Continued from page 49*

tempt was abandoned after the untimely death of Russel Comer. A short time later, Bing Crosby Productions showed interest and made preliminary arrangements with Mrs. Comer to produce the show. Alas, this endeavor was also dropped and never progressed beyond the pilot film.

Nearly twenty years had then passed since the first broadcast that affected millions of youngsters, many of whom were implanted into aviation careers. Jimmie, Speed and Flash are now just memories with a few articles of memora-

bilia and tape recordings of several broadcasts. Tapes of some of the episodes can be obtained from Golden Age Radio, Box 25215, Portland, OR 97225. For those interested in building any of the Jimmie Allen models, the plans for the Blue Bird and the others are available from John Pond's Old Time Plan Service, P.O. Box 3215, San Jose, CA 95156. After building one of these classic models, you may want to enter the Jimmie Allen model meets, recently revived by Bryan Wheeler and the Kansas City Old Timers group.

Could our hero make a comeback? The possibility seems to be there with all of the privately owned jets, warbirds and racers that are now available. So take notice NBC, CBS, and ABC. Those 650 scripts are still intact and waiting for another generation of young would-be aviators.

(I would like to thank Mrs. Russell C. Comer and Bill L. Godden for the information that filled in the many details and missing links of the story. All photographs except those otherwise credited were furnished through the efforts of Michelle Beale and Bob Jacob of the Getty [formerly Skelly] Oil Company. Richfield Oil Company information was furnished by Bob Royce of Atlantic Richfield Company.) •

Plug Sparks . . *Continued from page 38*

publish the complete contest schedule in the Midwest, should write to Harry S. Murphy, 3824 Oakwood Blvd., Anderson, IN 46011.

As can be seen in the photo, Harry is posing with a Leon Shulman design known as the "Banshee." Although published during the war years in *Air Trails,* hence regarded as not an Old Timer, Leon Shulman produced photos and newspaper clippings showing and describing the model in 1941 contests. This model has since been declared an Old Timer.

Our last photo, No. 18, is a rubber model design that was very successfully flown by Roy Nelder of Toronto, Canada in the American Nats, winning the Moffett International Trophy. Published in *Air Trails,* this model has demonstrated flying prowess that proves the winning flights were no flukes.

Ken Groves demonstrates the classic launch of those days. Later on, you were required to hold only the wing tip to prevent pushing the model on takeoff. A tricky launch on windy days!

SAM ACTIVITIES

We have been talking about the SAM Champs only up to this point, but we should take time to mention the other things that go on at the Champs.

Annual SAM "Bean Feed"

This year it truly was a bean feed, as the main entree was pork and beans. Held in the faculty dining room at Wright State University, this opening ritual of welcoming the contestants attracted over 200 people! We ran out of beans twice!

This great way of meeting all the fellows you haven't seen in a long time is extremely popular with the modelers. This tradition was actually started by the Model Museum Club during the first SAM Champs at Denver. The feed was actually staged on the flying field after all preliminary test flying was done. What a great way to end the day!

As usual, the Bean Feed also acted as a forum for late announcements on field rules, conditions, and in general, most of the stuff not covered in the contestant's kit. Nothing like getting things straight before we fly!

Annual SAM Business Meeting

Once a year, SAM has a meeting to air out the pressing items requiring immediate attention. Being primarily a mail order organization, not all items can be covered at the business meeting, but quite a bit is acted upon.

According to the minutes received from the Secretary-Treasurer, Tim Banaszak, a proposal to revise the present procedure for flying rule changes from a one-year cycle to a two-year cycle was approved. Actually, there are rules to be voted on in 1980, hence the two-year cycle would have to begin in 1981 with final vote in 1982. There appears to be an error in the minutes or else an EX POST FACTO law has been passed.

A bid to hold the 1981 SAM Champs at Taft, California, was approved by the membership. Al Hellman, the new incoming West Coast Vice-President, then outlined the general conditions under which the meet would be held. (Latest info now indicates the Champs will be staged the last week of June.)

Victory Banquet

The most amazing thing about this 1980 SAM Victory Banquet was the array of trophies as provided by Tom Sutor, Rt. 2, Box X438A, Avon Park, FL 33825. The trophies were so good, the fifth place trophy was as large as any normal first place trophy. Tom has been the biggest contributor to SAM and responsible for the excellent trophies. In addition, Tom also awards plaques to deserving officers of SAM in recognition of their unselfish work.

Directly after the dinner was completed and introductions made, Bill Mathews, District V Vice-President, made a presentation of a Meritorious Service Award to Tom Sutor for his long and many contributions to model aviation. Couldn't have happened to a better fellow!

The floor was turned over to Bob Larsh & Co. for the next two hours to award all the trophies and merchandise. Here's what the results looked like:

FREE FLIGHT

CLASS A PYLON (43 entries)
1) Larry Willis (Kerswap/O&R .19) 480
2) Sal Taibi (O.O.S./O&R .19) 340
3) Harry Murphy (Banshee/Arden .19) 337
4) Charley Bokros (Playboy Jr./Arden .19) 331
5) Bill Hale (Ranger/Arden .19) 329

CLASS B PYLON (43 entries)
1) Jerry Fowler (Zipper/Torp .29) 559
2) Harry Murphy (Zipper/Torp .29) 534
3) Jim Robinson (Playboy Jr./O&R .23) 340
4) Jim Adams (Zipper/Forster .29) 329
5) Bruno Markiewicz (Alert/O.S. .25) 324

CLASS C PYLON (37 entries)
1) Bruno Markiewicz (Sailplane/O&R .60) 675
2) Woody Bartelt (Zipper/Torp .32) 590
3) Bill Hale (Playboy Sr./O&R .60) 491
4) Harry Murphy (Zipper/Torp .32) 472
5) Bruce Norman (Zipper/O.S. 35) 352

CLASS A CABIN (21 entries)
1) Larry Boyer (Rocketeer/O.S. .15) 303
2) Jim Robinson (So Long/Bantam .19) 282
3) Larry Willis (So Long/Arden .19) 272
4) Woody Bartelt (Viking/Arden .19) 252
5) Bruno Markiewicz (Cabin Ruler/Arden .19) 239

CLASS B CABIN (25 entries)
1) Larry Boyer (Clipper/Torp .29) 346
2) Mike Poorman (Dodger/Forster .29) 329
3) Bill Hale (Dodger/Forster .29) 325
4) Bruno Markiewicz (Boomerang/O.S. .20) ... 308
5) Sal Taibi (Dodger/Ohlsson .29) 296

CLASS C CABIN (34 entries)
1) Larry Willis (Playboy Cabin/Cyke) 358
2) Bruno Markiewicz (Playboy Cabin/O&R .60) 354
3) Bill Hale (Dodger/Forster .305) 300
4) Larry Boyer (Clipper/Bunch) 274
5) Ted Dock (Gladiator/O&R .60) 246

ANTIQUE (30 entries)
1) Herb Wahl (Clipper/Hurleman) 360
2) Bruno Markiewicz (Gas Bird/Torp .29) 326
3) Bob Bisset (Rambler/O&R .60) 319
4) Larry Boyer (Clipper/Bunch) 304
5) Tim Banaszak (Powerhouse/OK Twin) 283

RUBBER STICK (25 entries)
1) Bill Baker (Lanzo) 730
2) G.R. Nolin (Lanzo) 515
3) George Perryman (Lanzo) 509
4) Jim Witte (Lanzo) 432
5) Frank Heeb (Hi-Ho) 360
George Batiuk (Climber) 360

RUBBER CABIN (39 entries)
1) G.R. Nolin (Lanzo) 485
2) Otto Curth (Super Stuff) 472
3) Paul Nelson (Cleveland Gull) 461
4) George Perryman (Cal. Champ) 439
5) Ken Groves (Nelder) 424

TWIN PUSHER (11 entries)
1) Bill Baker (Burnham) ..... Last Man Down
2) Joe Scuro (Scuro)
3) John Stott (Schmaedig)
4) Larry Fair (Burnham)
5) Otto Curth (Simmers)

SCALE (16 entries)
1) Bill Baker (Puss Moth/Cox Bee) 167
2) Bill Bell (Interstate Cadet/TD .020) 132
3) Curt Sanford (Cub/TD .020) 130
4) Charley Roth (Rearwin/Rubber) 60
5) John Martin (Cub/Rubber) 60

.020 REPLICA (72 entries)
1) Frank Hub (Comet Mercury) 578
2) Sal Taibi (Playboy Sr.) 471

3) Howard Hill (Interceptor) 453
4) Elmer Jordan (So Long) 434
5) Wayne Cain (Interceptor) 358

HAND LAUNCHED GLIDER (31 entries)
1) Bill Abbot (Javelin) 232
2) Bob Boyer (Hervat) 221
3) Terry Rimert (Hervat) 214
4) Bill Baker (Zoomer) 206
5) Rudy Kluiber (Hugelot) 204

COMPRESSED AIR (7 entries)
1) Danny Sheelds (Kingburd) 187
2) John Stott (Original) 168
3) Tony Italiano (Original) 125
4) Karl Spielmaker (Hobart) 123
5) Tim Banaszak (Hobart) 121

NOSTALGIA
1) Rudy Kluiber (Ramrod 250/TD .049) 540
2) Bill Reuter (Ramrod 250/TD .049) 349
3) Elmer Jordan (Ramrod 600/Fox .25) 330
4) Bob Edelstein (Spacer 600/Fox .35) 322
5) Jerry Kaye (Zeek/O.S. .15) 319

SLAG ENGINE (14 entries)
1) Art Suhr (Ranger/Buzz) 156
2) Tim Banaszak (Twin Cyclone/Thor) 142
3) Jim Root (Mercury/Genie) 135

TWO-MINUTE PRECISION (20 entries)
1) Jim Adams (Twin Pusher Rubber) 119.6
2) Ed Konefes (Cloud Snooper Gas) ..... 118+115
3) John Kaiser (Strato Streak) ..... 118+84
4) Bob Boyer (Hervat Glider) ..... 115+88
5) Ted Katsanis (Boomer Bus) ..... 115+82

ELECTRIC .020 (7 entries)
1) Arnie Hernandez (Bombshell) 335
2) Bob Edelstrom (Strato Streak) 318
3) Fred Koval (Bombshell) 249
4) Tom Wroblesky (Bombshell) 200
5) Larry Fair (Albatross) 195

RADIO CONTROL

CLASS C GLOW
1) Richard Huang (Playboy) 1260
2) Jack Ross (Bombshell) 1096
3) Ralph Turner (Bombshell) 1072
4) J.H. Percy (Playboy) 1053
5) Mike Lachowski (MG-2) 1050

CLASS A GLOW
1) George Haley (MG-2) 1125
2) J.H. Percy (Playboy) 1046
3) Tom Acciavatti (Playboy) 982
4) Mark Patriola (Sailplane) 980
5) Bruce Norman (Challenger) 813

CLASS C IGNITION
1) Ted Katsanis (Playboy) 1025
2) Bruce Norman (Playboy Cabin) 970
3) John Pond (Swoose) 878
4) Arnie Hernandez (Playboy) 722
5) Art White (Spook) 703

CLASS B GLOW
1) Richard Huang (Playboy) 1025
2) George Haley (MG-2) 963
3) Mike Lachowski (MG-2) 862
4) Bruce Norman (Playboy) 832
5) Mark Patriola (Playboy) 789

ANTIQUE
1) Bruce Norman (Cumulus) 1798
2) J.H. Percy (Riser Rider) 1789
3) Ray Swain (Buccaneer) 1763
4) Richard Huang (Cumulus) 1744
5) Mike Lachowski (MG-2) 1694

CLASS AB IGNITION
1) Bruce Norman (Playboy Cabin) 572
2) Larry Fair (Playboy) 431
3) Ken Hinton (Zipper) 391
4) Edgar Smith (Simplex) 347
5) Tom Acciavatti (Playboy) 335

1/2A TEXACO
1) Andy Anderson (Lanzo) 800
2) Mike Lachowski (MG-2) 700
3) Tom Laurie (Twin Cyclone) 566
4) Larry Fair (Coronet) 528
5) Edgar Smith (Playboy Jr.) 522

TEXACO
1) Ivan Tarbert (PB-2) 1188
2) Mike Granieri (MG-2) 1132
3) George Haley (MG-2) 1052
4) Chet Lanzo (Bomber) 1041
5) Bruce Norman (Dallaire) 1038

ELECTRIC
1) Bruce Norman (Playboy) ..... Last Man Down
2) John Pond (Turner)
3) Fred Koval (Brigadier)

Free Flight Grand Champion: Bruno Markiewicz
R/C Grand Champion: Bruce Norman
R/C Texaco: Ivan Tarbert
Ernie Shailor Class B: Jerry Fowler
Richard White Class C: Larry Willis
Compressed Air: Danny Sheelds
Twin Pusher Trophy: Bill Baker

THE WRAP-UP

Contests are great and all that sort of stuff, but we can miss the real thing . . . fun! Bill Baker didn't, as he relates, "I was building a special model for the Flying Scale event but ran out of time and had to make up an 'okie' lashup consisting of a firewall with a Cox engine on the front of my Lanzo Puss Moth.

"The rules called for landing on the field so when the model flew out, I figured I was all through. However, the model hit some lift which brought it back just inside the fence! Talk about luck! Two of my first places were pure luck. This part of free flight . . . FUN!"

That's what I keep telling you guys!●

1 to 1 Scale . . *Continued from page 11*

ping a set of retracts in a model with dummy struts and mechanism where it shows in a Sport Scale model is much different than finishing off a scale mechanism and wheel wells. Chopping off the legs of a dummy pilot and placing

him in a cockpit whose floor is at his knees is a lot different than figuring out where you're going to put everything and keep a scale floor line. Plopping glue spots on the finish next to taped panel lines is a lot different than the process necessary on a Precision model. And lastly, the most important feature is what happens when you apply that ruler. A significant number of excellent Sport Scale models would be severely downgraded at this point.

Basically, what I am saying is that these beautifully done Sport Scale models do not necessarily belong in Precision, but rather, what some are looking for is a way to come up with a leveler to perpetuate mediocrity. You can't do it because someone will always find a way to improve the breed. Competition is just that . . . competition.

The winners at the Nats were:

SPORTSMAN SPORT SCALE

1)	Keith (Cessna 182)	154.50
2)	Kretz (Beechcraft)	153.84
3)	Bronowski (J-3 Cub)	148.51
4)	Maki (Chipmunk)	145.83
5)	Drew (P-40)	145.00
6)	Hauft (Smith Miniplane)	143.00
7)	Knight (T-28)	142.83
8)	Arro (A-4)	140.17

EXPERT SPORT SCALE

1)	Brennon (Black Widow)	175.11
2)	Parenti (Bearcat)	174.11
3)	Mast (C-130)	171.01
4)	Cook (F-4)	170.00
5)	Czikk (P-47D)	168.34
6)	Underwood (DH-88)	168.01

PRECISION SCALE

1)	Wischer (Piel Beryl)	685
2)	Underwood (Bonzo)	666
3)	McCullough (Shinn)	506
4)	Williams (Gee Bee R-1)	451

GIANT SCALE

1)	Graham (Pawnee)	210.34
2)	Mottin (Spinks Akro)	208.34
3)	Anderson (Kraft Super Fli)	204.00
4)	Facie (Citabria)	202.00
5)	Winter (Tiger Moth)	199.50

Special awards were given to the following:

F/F Outdoor: Bill Warner
F/F Indoor: Don Srull
C/L Precision: Ed Rhoeds
C/L Sport Scale: Ed Schwerkolt
R/C Precision: Bob Underwood
R/C Sport Scale: Skip Mast

Special Recognition: Art Johnson
Sterling Award: Granger Williams
Best Military: Bill Boss (C/L)
Ducted Fan: Tom Cook

I must offer my apologies for not providing a more accurate flying account. However, when one is competing and there are two sites with four flight lines, one gets spread very thin. Daughter Cathy did her best to provide some photo coverage of the second line, but since she was also number one pit crew member as well, it became quite impossible to do an accurate, complete job.

In addition, some comment should be made concerning the tabulation of the scores. Computers were used for much of the work this year in many of the events. A number of contestants were most unhappy with the results of the job in keeping scale up to date. Several factors contributed to this problem. The program for the computations was developed the day (or night) before the flying of the event. The scores, both static and flying, became then a combination of hand computation and computer operation back at headquarters, with the net result being virtually a complete absence of scores posted at the flight lines where they were really needed. I, too, must admit to a high level of frustration in not knowing where I stood at my own flight line, let alone in the competition overall. In order to alleviate this type of frustration, it would be well to incorporate some system that will give the results quicker and at both sites. This is especially true in the case of scale, since it is the last event and everything is in a state of "getting ready to go" and "on with the airshow." As a result, officials are often hard put to find help and to get the contestants on their way as quickly as possible with the results.

I realize that it is darn easy to be a Monday morning quarterback and not have to cope with the field problems, the emotion of the moment, and the making of advance decisions. A suggestion would be to make two sets of the type of scoreboards Dale Arvin has used at the Mint Julep for years. The plastic surface and grease pencil with all the necessary lines is easy to read and

photograph. These are self-contained units that could be stored with the other Nats equipment. They could be used for other events such as the World Championships, etc. By placing a tabulation tent between the flight sites, the information could be fed to it and then back to each line for posting. Four tabulators with one person to precheck the sheets should be able to handle the flow with one or two "runners" (on bikes?) to move between the sites, collect sheets, post scores, and leave the completed sheets for the contestants.

NASA NOTES

During the Nats, a most well-attended NASA meeting was held. Some 78 members and guests were present for a combination business meeting and slide presentation by John Preston of Scale '80 at Ottawa. Seventeen new members were signed up during the evening.

The new Secretary/Treasurer, John Preston, was introduced and he reported on the healthy state of the organization. It was noted, however, that some problems exist concerning member status on the roster from the former Secretary/Treasurer. If you have joined the organization in the past two years and have never received a membership card, newsletter, Source Guide, etc., *please* contact John Preston, 7012 Elvira Ct., Falls Church, VA 22042 *at once*. We are making a determined effort to straighten out the membership records.

One important piece of action taken during the meeting was to make the following recommendations concerning next year's (1981) team selection.

1) That future team selections have a minimum requirement that the models must meet FAI specifications for weight, engine size, and wing loading (6 kg., 10 cc, and 100 grams/sq. decimeter for F4C Precision . . . same for Stand-Off with the exception that in Ottawa the proposed engine size of 15 cc for twins, and 20 cc for more than two engines was allowed).

2) That the Stand-Off Scale team be selected from the AMA Expert competition.

3) That two alternates be appointed officially to each team roster.

4) That prior to the competition, the team be brought together at a site to critique presentations, check specifications, and practice flying using FAI type judging.

These items would affect *only* those persons interested in trying for a berth on the F4C Precision or Stand-Off teams. Other contestants would need only meet regular AMA specifications.

These recommendations were passed unanimously and have been forwarded to AMA for action. It must be noted that the Executive Council of AMA had several days previously discussed such

action during their council meeting at the suggestion of President Earl Witt. Notification of any intent to use these recommendations will be published, hopefully, as soon as possible. (Late note: The 1980 U.S. team manager, Monty Groves, has volunteered to make his services available during the 1981 Nats to do whatever processing and computation is required for the team selection program.)

The meeting concluded with a slide presentation of Scale '80 by John Preston.

Good heavens, this narrative has wandered on like a ten-year-old's description of the movie he just saw!!! •

Pattern . . . . . . *Continued from page 14*

up right, they aren't necessary.

We have, as we mentioned earlier, been trying new radio systems to see what real differences exist. Our test model was set up with good ball-bearing servos and solid linkages, then flown and adjusted for optimum performance with a very accurate dual rate transmitter. Everything worked well, except this transmitter was so sensitive at neutral that it was difficult to make minor corrections when used in the high rate mode.

We then changed transmitters to a different brand, after a month of flying the plane this way. The new transmitter was every bit as accurate as the first but was much less sensitive at neutral. After a month of this we changed transmitters again to the one which we are now using. Our new radio has a very slight exponential throw on the ailerons and elevators, plus dual rates. The rudder has a wide exponential throw but no dual rate, although it could be easily added. Typically, we leave the elevator dual rate in low for everything except landings. The ailerons go to high rate for maneuvers requiring a rapid roll rate. The Cuban eight, rolling eight, double immelman, 8-point roll, etc. are typical examples.

I know that exponential setups are not new, but electronics have improved considerably in the last few years and the exponential setups presently available can be tailored to give very smooth transition between low and high gain.

If you decide to try an exponential setup, we offer this advice. Do not adjust it for a very soft center and a fast shift to extreme stick travel *except for the rudder control.* A very small gain on the other controls (aileron and elevator) makes a decided change in control response.

The upshot of all this was to realize that for years we have been equating accuracy with sensitivity. It just isn't so.

Try some of the new electronics on the market. You may be doing yourself a favor. •

Pylon . . . . . *Continued from page 22*

"When Brother Gager asked me to cover Form I at the Nats for him, as he had to go back to his job, indicating work was more important than racing, I was slightly apprehensive thinking of adequacy and such. However, I said, 'what the hey' and plunged in.

"I took some notes and some pictures, sat down to write and was saddled with a choice of whether to just report the facts on who did what and leave my personal impressions out of it, or to go ahead and describe my own involvement and observations. I settled for fact, wrote a report, read it to myself, and threw it in the trash. It was dull!

"This is what happened at Wilmington. First off, AMA treated pylon pretty shabbily, as far as site selection and time slot was concerned. However, 71 entries made the best of it and should be commended for keeping their gripes to a minimum.

"I went to the Nats prepared. Had two ships all trimmed, fuel, tools, and a full box of carved props. I didn't have any super engines but I figured that with some smooth flying and a decent needle, I'd win some races. Hoo boy, was I mistaken!! I started off by racing Jimmy Moorehead and some other guy who didn't know the meaning of the word slow, got lapped by both, and from then on it was all downhill!! I raced Ron Schorr and Wallace . . . got smoked! Raced Keats . . . got smoked! Pete Reed . . . smoked again! Castellano . . . somewhat close but no cigars. Man, was I getting snakebit. We went through six rounds, and me with no wins. In fact, I had only one second place and the rest were thirds. You talk about being humbled! My last race was against Gail Jacobson and Art Arro, so I figured 'Here's another third.' However, Jake had trouble starting, was very late and did not quite get the needle setting he wanted. After two laps we were still close as I kept waiting for him to turn on the afterburner and disappear. But, nothing. After six laps I thought, 'If I tighten up some, maybe we can make a race of it.' So tight we went, caught him on lap eight, and finally, after all the abuse I'd been taking, WON ONE! I tell ya, I was ecstatic! The sad thing is, now that I was high and really ready to go, Event Director Gerling said, 'THAT'S ALL. We only have enough time left for flyoffs.' Talk about pins in balloons! Phooey! Bring on your Shadels and McDermotts, give me your Christophers and Richmonds. Man, I was ready! What a letdown. Oh, well, maybe next year.

"I'm sure there were a lot of personal highs for the many fliers who were doing well and there also had to be several lows, especially when people were doing themselves in. Take poor Bob Reuther, who cooked an engine on the line by screwing his needle valve in, seeking a decent reading on his tach and finding out too late that his tach was turned off!! Or Dan Kane, who couldn't get started because he simply forgot to turn his glow plug battery switch on!!

"Funny how you prepare, and prepare. However, there were several people who did have their you-know-what together, although space doesn't permit describing every good race at the Nats, because there were many!

"There was incentive for finishing in the top ten because those who did were automatically qualified for the NMPRA Championships in Florida this fall.

"Day One closed with 2-1/2 rounds flown and an 11-way tie for first place, not counting times. Day Two saw three rounds flown and the first place ties reduced to three: Tom Christopher, Phil Bussell, and Brian Richmond. Day Three dawned bleak, raining, bleary, anything you want to call it, and after a slight delay racing continued. Christopher and Bussell promptly went out and lost, knocking themselves out of the top spot.

When Gerling cried 'STOP!' there was Brian Richmond all alone with no required flyoff. How sweet it is, indeed!! Brian flew flawless for seven rounds and is the Nats Form I Champ.

"There were flyoffs for several other positions that were outstanding in this writer's eyes. Strictly the nip-and-tuck variety. The first pitted Tom Christopher against Jim Moorehead for second and third places. Both got off OK and were very close to the sticks with Christopher slightly ahead. Halfway through, Moorehead cut the No. 1 pylon, putting himself a lap down until Tom took mercy on him and cut No. 1 himself, evening things up again. It stayed this way until Moorehead cut No. 1 again and it was over. Christopher was second and Moorehead third.

"The second flyoff involved Pete Reed, Phil Bussell, and Dave Pearce for fourth, fifth, and sixth places. Bussell went off with a sick engine run but the other two were really whacking at each other until Reed cut a pylon on lap six. Pearce only had to finish cleanly, which he did, with Reed second after Bussell, in trying to fly close, hit the No. 3 flag, knocking himself out of the race.

"Flyoff No. three pitted Dave Keats against Ron Schorr for seventh and eighth places. Kinda like 'The Hulk' flying against 'Tattoo,' considering their sizes. This race ended up the slowest because both of them figured if one tweak of the needle is good, two tweaks must be twice as good, and nearly did themselves in. However, both did get off and Keats, with some smooth, close flying, forced Schorr into a cut and it was over.

"The last flyoff was between Dave Shadel, Bill Hager, Glenn Sicatte, and Norm Johnson for tenth through thirteenth places. Everyone was off smoothly but it soon turned into a two-man race after Sicatte cut and Hager was getting his doors blown off! Shadel finally won with Johnson second, Hager third, and Sicatte last.

"That ended it. Racing was finished, so Event Director Gerling gathered everyone together, thanked his workers, and passed out the awards. Dave Shadel took home the fast time award for a 1:16.28. Eric Ristrim was the best Senior with a fifteenth place finish and a time of 1:23.14. The Best Finish award went to Jim Maki with a very colorful flawless Polecat."

Q-M TOP TEN FINISHERS
1) Gail Jacobson
2) George Parks
3) Bob Brogden
4) Jimmy Bartels
5) Doug Brushaber
6) Richard Stine
7) Tom Christopher
8) Paul Schattauer
9) John Wolff
10) Wayne Yeager

F-1 TOP TEN FINISHERS
1) Brian Richmond
2) Tom Christopher
3) Jim Moorehead
4) Dave Pearce
5) Pete Reed
6) Phil Bussell
7) David Keats
8) Ron Schorr

9) Bob Brogden
10) Dave Shadel

Thanks Wayne, the check's in the mail!

Well, I've sat on this column seven days now and have reread my copy many times. If it sounds like I'm bitter and disappointed over the Nats, then I've conveyed my feelings and those of the majority of the contestants, as those feelings were expressed to me.

In closing, though, I don't want to leave with the impression that Event Director Rick Gerling and his work crews were lacking. On the contrary, they did a real professional job of running the race and only lacked cooperation and help from a higher level Nats administration.

Congratulations on a job well done, you guys can run a race for me anytime.•

Indoor . . . . . *Continued from page 45*

thread to wood just below each loop.

It is necessary to have the other side of the fuselage facing the opposite direction, when applying the thread bracing, so that the thread will be on the outside of each fuselage side when the halves are put together.

NOTE: Be careful when removing the pins from the loops of thread. Twisting the pins as you pull them out will keep the loops intact. Put the two fuselage sides together, cementing in the cross pieces, top and bottom.

Thread a small needle (I use beading needles) with the fishing thread and run the thread through the loops. Form the same X-pattern on the top of the fuselage and glue the loops closed as you go. Repeat the procedure on the bottom of the fuselage. Remember to cement the thread where it crosses the center of each X. Hold a slight tension on the thread as you work with it. There you have a scale-looking open fuselage.

THE HAWTHORNE INDOOR FLYING WING

This new fun event is the brainchild of the Blacksheep Model Club of Burbank, California. With the help of hobby shoppers Tony and Addie Naccarato, this group flies a variety of indoor and outdoor events.

Rules for Hawthorne Flying Wing are as follows:

1) The model must be a flying wing. No horizontal stab or canard surface at the front.

2) It must fit inside a box 18 inches square. And no folding wings.

3) Minimum airframe weight is 14 grams, less rubber motor.

4) Cover with tissue or wood only. No condenser paper.

5) Multi-wings are OK (if identical and no stagger).

6) Plastic propellers only. No geared or multi-extension motors.

Here's the kicker! You can fly a SCALE flying wing in this event. With scale, there's no minimum weight, no size restriction, and no mandatory plastic prop. Next column will feature a Dyke Delta scale flying wing plan for this event.

At the last Burbank Hawthorne meet, Tony Naccarato's model turned in the winning time of 48 seconds. The model weight was 28 grams.

STRUTS FOR PEANUT BIPLANES

Is there anything as frustrating as putting up that first test flight on your brand spankin' new SE-5 Peanut and brushing the wall? Pow! Off goes the top wing. Bet the culprit was those balsa wing struts.

Solution: Plywood struts. Try stripping 1/8-inch wide lengths of 1/32 ply for struts. These could be about 6 in. long to start and trimmed to fit after painting with brown dope or permanent marker. The corners can be rounded with your sandblock.

MODIFYING THE WILSON OR MICRO-X INDOOR WINDER

There are several indoor winders available in different price ranges. You can pay as little as $4 or as much as $40 for a geared winder. One 5-to-1 model sells for $3.98 and features a ratchet arrangement that only allows it to turn one direction. The problem with this winder is that you can't back-wind the hook so that the rubber loop can be removed from the winder without putting undue strain on the fully-wound motor.

The old Wilson winder sold for $3.50 and has a 16-to-1 ratio. A few of these are still around. The Micro-X model is very similar to this and is the one being

modified in the sketch.

The shaft with the hook on it is too long. I cut the shaft and reshaped the hook so that it now measures 2-3/4 inches long.

The winding handle was changed by soldering a 1/4-in. brass washer on near the right angle bend, then adding a 1/2-in. wood dowel (with a 1/8-in. hole drilled in the center) then soldering another 1/4-in. washer on the outside.

Since I like to wind with the winder held between my knees (seems I can never find a friend to help me wind), I needed a long handle on it. Two holes were drilled below the winding hook and a 6-in. x 5/8-in. steel handle support was bolted on the winder. A 4-in. x 1-in. x 3/4-in. balsa block was glued onto the metal support. Finally, the handle was wrapped with cloth Mystic tape. Periodically I disassemble the winder and pack the gears with cup grease.

DATELINE: SANTA ANA

At the July 23 flying session at the Santa Ana Blimp Hangar, Californian Earl Hoffman flew an Easy B model for 26+ minutes. The aircraft was covered with microfilm. The airframe weight was .017, without the rubber motor. The prop was built-up and covered with super-thin sheet wood. At a later session the same model logged flights of 22 and 23 minutes. Easy B*eautiful*, Earl!

Have you decided to try some of the indoor events yet? Next time we'll talk about how to make your models lighter, and how to make them fly longer. Let me know what you're having fun with (or trouble with). Write to Ken Johnson, 16052 Tulsa St., Granada Hills, CA 91344. See ya next time. •

Hannan . . . . . *Continued from page 50*

need for slow, "safe" trainers for beginning control line fliers. But Frank Scott tells us of watching two fellows teaching a charming young lady to fly with a 100-mph Combat ukie! It seems it was the only thing they had handy, and they didn't want to miss the chance to recruit a new enthusiast . . . especially this one. And get this, she learned!

FLYING ACES NATS

Frank Scott was also the driving force behind the recent Flying Aces Nationals, and he passed along a few interesting comments relating to this unusually popular event:

The FAC Nats was indeed a glorious success, and I think unique in several respects: First, there have not been many three-day Class "A" meets around here, nor any Class "A" with over 100 entries! Finally, when it may cost $15.00 to enter a single C/L event at some large meet, we financed this meet with $1.00 per event, $10 maximum; kids free, and turned a most satisfactory profit, too. More importantly, I think that everyone had a fine and most memorable time.

Was very surprised, though, to learn that most of the fliers went home immediately after our meet, and did not stay for the AMA Nats! I had though that these two meets would greatly reinforce each other, but it simply didn't happen. Indeed, some Nats F/F Scale contestants were overheard to say that "Our meet was a lot more fun"!

We think there is a clear and important message here, if anyone is interested enough to read and understand it. Model contests should be conducted for the pleasure and convenience of contestants. Overregulation, excessive fees, and illogical judging/flying site locations are almost guaranteed to reduce participation, in our opinion. Are we wrong?

SOMETHING FISHY HERE

A few Hangars ago we featured a photo showing a plastic fish being used for a pitot tube cover. Captain Ed Toner responded with this account, which he swears is true:

While I was in VF152 flying Banshees (F2H-3's) from the USS Wasp, I normally flew wingman for Lt. Ed Hofstra USN (I was Ltjg). Ed was a real tiger. His specialty was wave-hopping and normally his plane was wet underneath, which made it very difficult to fly formation on him in normal "stepped-down" position, so I learned to fly "stepped-up."

One beautiful day in the western Pacific we were doing our thing when Ed radioed me that he had lost his airspeed indicator. He climbed a bit (maybe to 100 feet) and I looked him over. Sure enough, a flying fish had flown directly into the end of his pitot tube, mouth open, and was impaled there.

We headed back to the ship and I assumed the lead until the landing pattern and then gave it back to Hofstra. I called out airspeeds to him until the LSO (landing Signal Officer) picked him up. He landed uneventfully, and had a bit of explaining to do to the skipper, CDR Nestor. (We were known as "Nestor's Jesters.") Flying fish rarely go more than three feet above the surface!

INSPIRATIONAL THOUGHT

High point of the day here at the Hangar is mail call, with letters frequently received from several parts of the U.S. and many other countries. Almost without exception they are fascinating, informative, and often philosophical. We like to think that model builders as a group may be just a bit more concerned for their fellow man than the average bear. Witness this inspired closing line by Herb Kelley: "Hope you are only as busy as you want to be."

AMEN

And while on the subject of philosophy, how about this profound message abstracted from an editorial written by Carl F. Schmidt, Editor-in-Chief for the *Journal of Aircraft* during 1968: ". . .it is our hope that the day is not too far distant when, instead of 'beating our swords into plowshares,' we will build 'plowshares' in the first place. It will save a lot of beating."

R/C TO THE RESCUE

Bill Kee sent in a clipping which described the clever solution to a prob-

lem encountered by the Long Island Lighting Company. They wanted to string a high voltage electrical line across an 800-foot-wide cranberry bog without risking damage to the plants. Crew Foreman Ed Gandorf provided the answer by flying a monofilament fishing line across the distance with his R/C model aircraft. Increasingly larger diameter lines were then pulled across by ground crews, concluding with the 138,000 volt cable!

A MODEL BUILDER IS A MODEL BUILDER

Many, if not most, modelers tend to specialize. This has certain advantages, especially if rapid accumulation of skill is the objective. However, variety can truly be the spice of life, and we all should take at least a casual interest in models outside our immediate area of interest. An appreciation for other hobbies may be gained, and frequently materials or techniques with application to your pet specialty may be gleaned. A case in point: Ken Hamilton has long been known for his work in both full-scale and model aircraft circles, but somehow he has found time to participate actively in railroading. Again, his interests run the gamut from history, modeling, and even to operation of full-size examples in a museum collection.

From a recent letter, we have abstracted these items which we feel underline the advantages of spreading interests:

My current modeling campaign is to

complete the wooden bodied box motor before starting anything else! And the desire to do an airplane is an incentive to keep finishing this! (Ken included photos of his magnificent model streetcars, which are highly detailed and constructed from drawings of his own research and production.) . . .*they do not fly worth a darn, but as compensation you seldom bring them home in pieces!*

I have been having a few decal experiences of late I will comment on. I bought, at the urging of a model railroad shop owner, trial bottles of Krasel "Micro Set" and "Micro Sol." I have found that these are great with commercial decals. Probably the acid test was the application to decals long ago applied, and the solutions still permitted salvage of them after they were thoroughly brittle and the film yellowed. (Ken had applied decals over the corrugations of a model Ford Trimotor years previously and they had not followed the serrations closely.) *When dried, it mostly attached to the tops of the corrugations of the skin, air being visible in the grooves. As the clear film yellowed with age, it looked still worse. I carefully trimmed all the clear film away right at the edge of the letters and numbers, and applied the Micro Sol. The markings are now pulled into the corrugations and look as though painted on, there being no apparent thickness to them. Great stuff!*

One interesting thing about modeling; it seems that you never learn everything to the point of the next job being entirely routine; there is always something new to solve or discover.

SIGN-OFF

Motto overheard from Matty Matlock, Escondido, California: "It is difficult to soar like an eagle when you are working with a bunch of turkeys!" •

R/C Cars . . . . *Continued from page 25*

kinda like the ancient thing, but it hasn't been made for a couple of years, MRP switching over to production of the Pro-180, so parts are getting harder to come by. Several years of racing haven't been able to kill it, but parts availability might.

In 1/12 racing the DRT is almost exclusively racing Associated RC12E's. My car is on its second season, it suits my driving style very well, is quite predictable as to chassis adjustments, and just seems to always work well. No complaints at all about this car that, when first introduced, simply put everything else on the trailer and is still the standard of comparison for all new 1/12 cars. Cheri and Josh also race RC12E's, although their cars are presently in various states of disrepair, getting overhauled for the next season. Billie Lee races a Leisure Electronics Super Sport, a car that sees limited production and seems to be a bit underrated in many areas of the country. The car has always worked well for us. In fact, last winter I "borrowed" it for a couple of indoor race serious and it worked really well for me.

OK, SO WHAT?

So now you know a bit about the turkey writing this column and my background. From this introduction, the column can only get better, right? Stay tuned, it's gonna be fun. . . •

Choppers . . . . *Continued from page 13*

rpm is 1500, while the tail rotor speed is a high 6000 rpm. These rpm combinations are undoubtedly contributing to the excellent stability, and especially the directional control. The main rotor blades are precision machined out of Philippine gelutong wood, a low-density, high-strength wood used extensively by pattern makers. The stabilizer paddles and tail rotor blades are deliberately carved from wood, rather than molded in plastic, to provide low inertial forces in the control systems. A high tail rotor minimizes the conventional roll characteristic so common on other choppers, and a very wide landing gear eliminates the need for a special training gear for beginners. All ball bearings are double shielded to keep out the dirt, and thrust races and thrust bearings are appropriately included. The standard muffler for your particular engine will work just fine. Engine cooling is handled by the solid mounting blocks and thick main structural plate; fans and blowers are eliminated to provide more power to the rotor blades. Of course, heat sinks are available for most engines and are highly recommended for a cool running engine.

As far as the flight testing and adjustment goes, the Cricket kit contains a special instruction booklet which is more than adequate. My model needed only three or four minutes of tail rotor adjustment before we lifted off and flew around the pattern. No further adjust-

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NEW INVENTION by an aeronautical engineer: Pendulum stabilization, makes the "Free Wind" (F/F) virtually crashproof! Utilizes the latest styrofoam construction technique, 2-hour build time, material cost/plane of $1.75! All materials available locally For "Free Wind" design booklet and plans (includes pendulum, styrofoam, and free-flight information) send $7 to Flight Research, 206 S. Gregory St. Urbana, IL 61801

ments have been necessary in the 15 flights I've put on it the first few days. It was a real joy to maneuver and I was very surprised at its stability! For the past ten years I've been using a Kavan gyro in all my choppers because it really calms down the tail yawing and permits me to relax while flying. (I'm not much of an aerobatic pilot in helicopters.) The Cricket is the first model helicopter I've flown that gave the same directional stability without the gyro as any model *with* the gyro installed. I was really impressed.

Now, it's not much of an aerobatic machine. It could maybe do a simple loop but I doubt that it could do a roll. It is, however, very maneuverable and can be comfortably flown in a small area. I've flown mine in the garage and John has hovered his many times in his shop display lobby! He also participated in a major movie sequence where he had to maneuver the Cricket over and around the cashier's stand in a crowded supermarket! Responses from all over the world indicate that the Cricket is an all-out trainer for the beginner and the best bet for close quarter sport flying. It has, on numerous occasions, flown at altitudes in excess of 7000 feet, and once at 10,200 feet in New Mexico! How 'bout that for performance? A .19 engine should do well at sea level.

If you haven't already heard, John has offered the first 500 kits at an introductory price of $175; after that the price goes up, but will still be under $200! Last week he had sold 475 kits and by the time you read this article, it will probably be somewhere around 600-700 kits sold. But don't despair, he hinted that he might keep the price at $175 for a little bit longer if you get your orders in soon.

FINAL APPROACH

Gotta go now. Sorry I haven't been able to provide a column every month, but the airline is growing so fast I just don't have the time to devote to my favorite hobby. I'll do what I can, though, in the future. As a last-minute

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Class 'C' streamline gassie from Jan. '40 Flying Aces, span 62". By Larry Eisinger.

No. 4801 BRUSHFIRE $6.00
Contemporary design being used by several top pattern fliers. By Ken Bonnema.

No. 4802 SUNBIRD $3.50
For the latest challenge, a 54" span hand launch R/C glider. By Dave Thornburg.

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High aspect ratio hand launch glider for lower altitude roll-outs. Larry Sargent.

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Scale gassie from Feb. '42 Air Trails for Ohlsson .23. Span is 48". Ronnie Albert.

No. 3801 LES LONG'S "WIMPY" $10.00
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This compact R/C scale twin spans 52" and flies on .19 power. D. G. Prentice.

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An .020 mini-pattern ship for 2 or 3-ch radio. Span only 22". Bengt Lundstrom.

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No. 5761 ALBATROS $5.50
R/C sport scale post-war German lightplane. Span 74", .36 eng. By Jeff Breece.

No. 176-O.T. KORDA WAKEFIELD $2.50
The classic of all rubber powered competition free flights. By Phil Bernhardt.

item, I just received a three-page bulletin from John which is filled with hints and kinks applicable to the Cricket; write for it if you Cricket owners haven't received your copy, it's a great help. BCNU later. •

Counter . . . . *Continued from page 8*

rently on the market and should be especially good in scale models with cowled engines.

None of the RPM mufflers use straps for attachment, relying instead on machine screws and even these are arranged differently to suit various engines, so you can see that each muffler is truly a custom piece. Our sample muffler was for the "old" K&B .40 (not the new one with the K&B muffler) and was supplied with exhaust baffle plugs, which were drilled and tapped for the 4-40 mounting bolts. Thus, the plugs do double duty by closing up the holes and serving as nuts for the bolts. Pretty clever, eh?

At first glance the muffler itself appears to be machined from a single piece of aluminum, but close inspection reveals that it is actually *four* pieces; when holding it under a strong light just so, you can just barely make out the separation lines. Each section is evidently milled and otherwise machined as necessary, then all four are joined with two machine screws from the back side and the whole assembly is finished to the final streamlined shape, then polished.

These mufflers are admittedly louder than most conventional units, being designed mainly to take the sharp edge off the exhaust sound. However, test data supplied to us showed a K&B .40 to have a maximum rating of 82 dB at 50 feet . . . well within the maximum allowable level of 85 dB. Power loss is claimed to be very minimal.

Going price on the RPM mufflers is $20 plus $1.50 postage and handling. You can get more information from Robert Paul Mufflers, 1462 Orchard Grove, OH 44107.

* * *

Still more new mufflers are the ones being released by Tatone, intended mostly for scale models such as the Pitts, Cessna 150, Skybolt, etc. They are designed for side-mounted engines and have two angled exhaust tubes to exit out the bottom of the cowl. Two sizes are available, to fit most currently popular engines. An adjustable screw strap clamp (like a radiator hose clamp) makes for easy and positive attachment to the engine, and two neoprene exhaust extension tubes are also included.

Muffler No. TT-40 is designed for .29 to .40 size engines and sells for $15.50, while No. TT-60 fits .45's to .80's and costs $16.50. Both are now available at your favorite hobby shop or direct from Tatone Products, 1209 Geneva Ave., San Francisco, CA 94112. If ordering direct be sure to add $1.25 for postage and handling; California residents add 6% sales tax.

* * *

Seems like most all the major R/C kit manufacturers are offering at least one glider in their kit lines these days, and now House of Balsa is also jumping on the glider bandwagon with its new two-meter ship, the "2x2" (2 meters, 2 channels). It's a pod-and-boomer of balsa and ply construction, with a flat center section/tip dihedral wing. A novel feature is the use of cedar arrow-shafts for the wing leading edges, providing a perfect l.e. radius and much better ding resistance than a piece of balsa. Also included in the kit is a canopy and illustrated instruction booklet. Advertised building time is eight to ten hours.

The "2x2" spans 78-3/4 inches, has 630 sq. in. of wing area, and will weigh anywhere from 30 to 36 oz., for a wing loading of 6.85 to 8.23 oz./sq. ft. respectively. Suggested retail price is $21.95, but for a little while the kit will be sold at a special introductory price of $19.81.

From House of Balsa, 20134 State Rd., Cerritos, CA 90701.

* * *

In case you haven't been reading the classifieds in **RCMB** . . . and you really should, you know . . . Dan Parsons, of R/C Consultants, is offering 0.6 oz./sq. yd. fiberglass cloth in five and ten-yard continuous length pieces, 38 inches wide. This high-quality cloth will accept both polyester and epoxy resins, or even dope or lacquer. The continuous length is not only handy for covering those large models but also allows more efficient and economical use on any size model.

Five yards sell for $16.65; ten yards are $29.70. These prices include first class postage for the U.S. and Canada; airmail overseas is slightly higher. From R/C Consultants, 11809 Fulmer Dr. N.E., Albuquerque, NM 87111.

* * *

Active Southern California O.T. free flighter, Al Heinrich, is selling several different types of fuels under his company name of Aero Dyne. Included in the line are High and Low Octane ignition fuels, FAI glow fuel (80% methanol, 20% castor), Aero Dyno Mite (a potent glow fuel with 65% nitro content, specially brewed for 1/2A's), Standard Diesel, and Break-In Diesel (same as Standard but with more oil). Al can also custom mix just about any type of fuel to your specifications and has all the necessary ingredients in stock.

Although fuels are Al's main products, he also carries nitrate dope (both regular and non-tautening) and several other goodies, mostly related to Old Timers and model ignition engines. If you're interested, send him an SASE and ask for his product information sheet and price list. Write to Aero Dyne, 3154 Falcon, Pomona, CA 91767, or call (714) 593-5789.

* * *

While perhaps straying a bit from the subject of model aircraft, we thought you might like to see one of the pics sent to us by Volmer Jensen, who is probably best known for the homebuilt amphibian he designed and built some 20 years ago and which is still flying. Volmer is currently exploring a relatively new field of man-carrying aircraft called "ultralights," or as some of those involved like to call them, "microlights." Usually these are little more than hang gliders with engines and landing gears added, and what Volmer did was take his basic VJ-24 Sunfun all-metal hang glider and redesign the pilot cage, add a pair of spoke wheels, and fit a ten-horsepower McCulloch go-kart engine up front, belt-driving a 54-inch prop. What he ended up with is a true airplane in every sense of the word, albeit a very light one (165 lbs. empty). Useful load is 180 lbs., for a gross of 345 lbs.

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The Sunfun differs from most microlights in a couple of ways. First, it is not foot-launchable, the saving grace that keeps the other micros exempt from FAA certification, and so it needs an experimental license (costs $5.00). Also, the pilot needs at least a student pilot's ticket, which consists of passing a physical exam by an FAA-approved physician. Second, the Sunfun has full three-axis aerodynamic controls, whereas the vast majority of micros rely on pilot weight shift for one or more of their flight controls. Jensen maintains that the three-axis route is the only way to go for safe, positive control, especially at low speeds near the ground.

The VJ-24W is of all-metal contruction, except for the fabric covering, and almost all of that metal is aluminum tubing, including the wing spars. Pop rivets hold most of the structure together. Construction time is close to what you would expect to put into a good Giant Scale model, and the $1200 estimated cost of materials doesn't make it all that much more expensive than the model, either. In fact, you could think of the Sunfun as a sort of *Giant* Giant Scale model, with the one fine difference of being able to go along for the ride instead of just watching from the ground.

The Sunfun has a span of 36-1/2 feet, wing area of 163 square feet, and a length of 18 feet. Cruising speed is a blazing 28 mph, while the stall occurs at 17 mph. Dead-stick glide angle is about 9:1.

If you'd like to learn more about the Sunfun, you can get an information package with color photos for $3.00 from Volmer Aircraft, P.O. Box 5222, Glendale, CA 91201. And for those who are interested in finding out more about the microlight movement in general, may I suggest you send $1.50 to *Glider Rider Magazine* for a sample issue. This is generally considered to be the best hang glider publication available, and a good chunk of it is devoted strictly to microlight aircraft. Write to Glider Rider, P.O. Box 6009, Chattanooga, TN 37401. •

Workbench . . *Continued from page 7*

longer available.

We'll get on it right away. . .

FOKKER NIEU-SPAD

About that photo on our lead page. A very interesting model aircraft, and we'll let its builder, Bill Hadley, of Detroit, Michigan, explain.

The pictures are of my Fokker Nieu-Spad which flies very nicely and has an interesting design history. I came across the picture of the real thing in a magazine of very long ago vintage. It seems like this was the prototype of the Fokker D-9. The caption under the photo says Fokker's designer Rheinhold Platz got the idea of combining the fuselage of a Nieuport 28 with the wings of a Fokker D-8 and the stabilizer of the same. A Nieuport and Spad had crashed near the factory and the only thing left from the Spad worth using was the rudder. So he combined these parts into a racy looking finished product. The war ended before it could be put into production and it was found by a young GI named Steve Wittman, who put the finishing touches on it with his one-piece landing gear. . . .

Makes a good story, and I had my club almost believing it until I got to the landing gear part. Hope you like it enough to print it. I'll now pull my tongue out of my cheek.

Guess that's enough for this month. Happy Thanksgiving! •

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