

rc Modeler

DECEMBER 1969 75c



*The
Leading Magazine
For
Radio Control*



- **Dick Sonheim and
Cliff Love's Beatnik:
A Special Breed of Cat**
- **Bryce Petersen's
Nieuport II**
- **A certain Nostalgia:
The PD Parasol
by Johnny Johnson**
- **Profile of Three
Champions**



THIS MONTH

VOLUME 6, NUMBER 12

VIEWPOINT	Don Dewey	4
CUNNINGHAM ON R/C	Chuck Cunningham	10
ENGINE CLINIC	Clarence Lee	12
P. D. PARASOL	Johnny Johnson	16
THE BEATNIK	Dick Sonheim/Cliff Love	22
BACK PAGE HEADLINES	Jim McNeill	26
PROFILE OF 3 CHAMPIONS	Bud Anders	28
NIEUPORT II	Bryce Petersen	29
CAM-AERO	Roman Bukolt	38
FOR WHAT IT'S WORTH		43
DON'T BURN IT - REPAIR IT!	Ron Van Putte	46
ESTABLISHING THE MAC	Nick Linardos	47
YOU'LL HAVE TO TALK LOUDER	C. T. Williams	48
SCALE IN HAND	Dave Platt	49
SUNDAY FLIER	Ken Willard	51
WAGGER	Loren Dietrich	53
KITS & PIECES	Dick Sonheim	54
TOP OUT	Jerry Kleinburg	58

R/C MODELER Magazine is published monthly by R/C Modeler Corporation, Don Dewey, President. Editorial and Advertising Offices at 171 W. Sierra Madre Blvd., Sierra Madre, California 91024. (213) 356-1066. Entered as second class matter at Sierra Madre, California and additional offices. Subscriptions \$7.50 per year, \$14.00 two years. Single copies 75 cents each. Add \$1.00 for postage outside U. S. and Canada. (Except APO's.) Change of address notices, undelivered copies and orders for subscriptions are to be sent to P. O. Box 487, Sierra Madre, California 91024. Not Responsible for unsolicited manuscripts, which must be accompanied by return postage. Copyright 1969 R/C Modeler Corporation. All rights reserved. Reproductions in whole or part without permission is prohibited.





DON DEWEY / Editor and Publisher
PATRICIA CREWS / Executive Editor
KATHLEEN ACTON / Senior Editor
DICK KIDD / Technical Art Editor
ED THOMPSON / Technical Editor

KEN WILLARD / **JERRY KLEINBURG**
BERNIE MURPHY / **CLARENCE LEE**
CHUCK CUNNINGHAM / **DAVE PLATT**
LOREN DIETRICH / **J. ALEXANDER**
JERRY NELSON / Associate Editors

JOE BRIDI / **DICK SONHEIM**
BILL O'BRIEN / **BEN HERMAN**
JACK ALBRECHT / Contributing Editors

CAROL LUDDEN / Circulation
BILL NEWBERRY / Plan Service
JEAN O'BRIEN / Customer Service
GERARDO FLORES / Drafting

COVER: Upper left: Johnny Johnson's 'P.D. Parasol' is reminiscent of 1940 vintage homebuilt aircraft. See page 16. Upper right: Dick Sonheim poses with the 'Beatnik', one of the most sought after Class C designs in the country. See page 22. Ektachrome transparencies by Don Dewey. Lower right: A Profile of 3 Champions, as RCM visits the Valley Flyers. By Bud Anders. **FRONTSPICE:** Bill Antoine's Nieuport 28 C1, 2" scale. Photo by Bill Coons taken at Mitchell Field.





BY DON DEWEY

VIEWPOINT

The viewpoint expressed in the following editorial by RCM Contributing Editor J. Alexander, reflects the opinion of the editorial staff of RCM, and is, therefore, presented in this column.

National Don't-Give-A-Damn-Society.

The last engine sputters, barks and lives with a burst of exhaust. Racers, splashes of color on the runway, quiver with churning props, dance against restraining hands.

The flag!

They're off! Leaping, clawing, snarling they rocket around the first pylon, straighten, flash toward the next. Below, all eyes strain to track their favorite.

All but two.

And these two belong to an RC newcomer who plops his plane, gear and carcass in the middle of the field. Other RC'ers, stunned by this incredible sight and understandably disturbed, yell for the guy to get out of there. The inevitable happens.

When the wild melee of yells, sizzling planes, screaming engines and shocked hearts ended with an exploding cloud of racer six inches from the intruder's heel, the RC fraternity again had a preprive.

National Don't-Give-A-Damn-Society.

A beautiful day. Mid-sixties temperature and no wind. Just right for easy, relaxed flying. The usual crowd, ten or fifteen fliers and a few spectators, loiter around the pit area. A pilot taxis down the strip, turns, checks controls and takes off. Another plane enters the pattern, turns, sinks gracefully to a touch-down. A soft murmur of approval as the ship slows, then idles softly

toward the pits.

Enter another plane, a sleek low-wing job sporting a .60 mill. Proven contest winner - because it was designed to be - it compliments the latest proportional gear beside it. Set-up is made, engine started, and the ship taxied out.

Following two quarter-throttle runs down the field, the ship returns to one end, swings, the engine roars and take off starts. Lift-off is ragged, and an erratic climb begins.

The first hint of trouble is an increasing left wing drop as the speed builds up. Pilot correction to right - left drop - another correction - to the left!

A rolling left turn from about fifty feet brings a 45-50 mph inverted crash through the pits which totals two aircraft, damages a transmitter, and ends with the fuselage boring through the fence to hang, arrow-like, directly in front of a four year old girl.

Accident, sure. But why?

The owner of the plane had **never flown before**. He'd visited the field, was interested, and as he could afford them, bought plane, gear, and all the trimmings. He'd spurned the slower easier handling 'trainers' because the contest ship was slicker. And, as the hobby dealer pointed out; "The contest job was at a special reduced price."

National Don't-Give-A-Damn Society.

A typical Saturday. Fliers have been showing up steadily until over half the members are present. It's nearly noon and a number of spectators have settled in to watch the fun.

The stage is set for 'Buzzin' Bob'. He's an average flier - that is he usually takes his ships home in one piece. He's helpful, tells jokes, attends all the meetings and gets along with just about everybody. The ideal RC'er - until he thinks he has an audience.

He's been here since 6 am and should go home - chores to do - but the ship ought to be good for one more flight. An elevator hinge is broken but the other three should hold. One aileron droops a bit - there's a small crack in the prop - got a couple of glitches last time up. Nothing to worry about though. He's flown ships in worse condition than that.

The decision is made! He'll show 'em what an RC plane can do! Fuel up, start up, and away we go. Take-off straight from the pits across the field because there's no one up now so it's okay.

Listen to that engine! Look at 'er climb! Come around for a low rolling pass - glitch? - nah, rough air - here we go - low inverted pass this time - pull ou what's wrong? - lost it! - Jeeezzzz. !

That flight sure wowed 'em. Lots of oooooing and aaaaaing. But one spectator isn't oooooing and aaaing. She's moaning and groaning through blood-stained fingers from a glass-slashed face caused by 'Buzzin' Bob's' runaway exploding through the car window.

NDGDS. The National-Don't-Give-A-Damn Society.

Though membership qualifications for this group have never been defined, probably 95% of the RC fraternity belong. Considering the atmosphere and circumstance in which the title was coined, two requisites seem necessary.

First, you must be a

non-competitive flier - that oddity known as a 'Sport Flier'. And as that term has never been defined either - he must be the nut who flies and builds for enjoyment instead of hardware or notoriety.

If you're a racing, pattern, scale, or anything-else-man and lack time and money for the practice required of a serious contender; don't manufacture or distribute RC gear or equipment; don't belong to the Executive Council or related cliques; if you buy your own gear as opposed to having it donated for 'testing'; if your mug isn't sought after for display or endorsement of merchandise - then you're a 'Sport Flier'.

Now, who and why would anyone label this group the 'don't-give-a-damn's'? More important, is the name justified? The answer, unfortunately, must be yes. With qualification. The name was coined at a meeting of the AMA's R/C Investigating Committee and the following quotes are from the transcript of the MINUTES OF RC INVESTIGATION COMMITTEE created by JOHN PATTON, PRESIDENT, AMA March 1 & 2, 1969. Maurice Wood, in his opening address, hit pretty well on the root cause of the average RC'er's unhappiness with the Academy in these words:

"I think Sunday Fliers need to be sought after and their ideas and opinions carefully gone over so that we can come up with a well-rounded organization. If we just build this organization toward competition only, I think we're going to miss a big bet."

Many pages later in the meeting, the following exchange took place:

Tony Bonetti: "How about the sport flier?"

Ralph Brooke: "He's got a separate organization."

Tony Bonetti: "What's his organization?"

Ralph Brooke: "All right, here we go. We've got the National League of Pylon Racing Association, the National RC Soaring Society, the NCPFS which is the National Competition Pattern Flying Society, the National Scale Association, or Society, and then, what do you want to call the other? I'm beginning

PRO-LINE Digital Proportionals

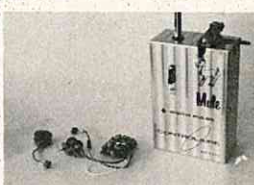
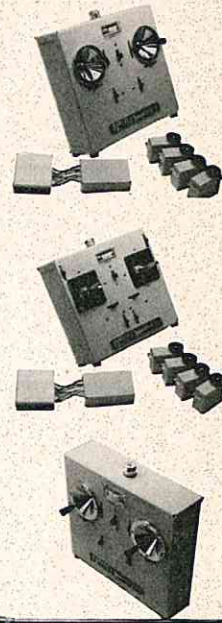
Late this summer we watched a phenomenal new digital proportional start to monopolize the winners' circles at contests in the East and Southeast. Top fliers like Jim Kirkland, Ron Chidgey, Dr. Don Coleman, Dr. Jim Edwards, Jim Whitley, Ed Izzo, Ed Keck, Lou Penrod have been winning with their Pro-Line dig'tals:

Atlanta, Ga. MASTERS
Nashville, MID SOUTH CHAMPIONSHIPS
Pensacola, FIESTA OF FIVE FLAGS
Clarksdale, Miss. STATE
CHAMPIONSHIPS
Greenville, Miss.
Memphis, Tenn.
New York STATE CHAMPIONSHIPS
New England CHAMPIONSHIPS
Decatur, Ala.
Jacksonville, Fla.

Three out of the top five fliers at the NATIONALS flew the Pro-Line. Two of the top 10 at the BREMEN INTERNATS, and FOUR of the seven finalists at the Atlanta MASTERS tournament flew Pro-Line. And the transmitter impound areas at Southeastern contests usually have more PRO-LINES than all other brands combined.

These contest fliers are very critical customers for digital proportionals. They are impressed ONLY by a digital that offers proven reliability, PERFECT servo centering, exceptional power output and range, and nearly infinite resolution between the control stick movement and the motion of the servo. They chose PRO-LINE.

We have available three versions of the Pro-Line Digital proportional: 2 stick version with OPEN gimbals, 2 stick version with CLOSED gimbals, and single stick version. All outfits fits are 6 channel. The price of these outfits is in line with our prices for other good six channel digitals. Please write us for a price quotation on these outfits. We can also offer excellent prices to dealers.



MICRO-PROPO 1 \$69.95

The superb little rudder-only pulse proportional that weighs in at the ridiculous figure of 2 1/2 ounces!

- Smallest, lightest superhet proportional RC system
- COMPLETELY hooked up and ready to fly
- Includes rechargeable airborne battery pack

SYSTEM CONSISTS OF THE FOLLOWING COMPONENTS:

1. Controilaire Mule Pulse width transmitter
2. Special superhet, relayless receiver
3. Adams Baby magnetic actuator
4. 2 cell special high capacity, low weight airborne battery pack
5. Wiring harness, switch, connectors

SPECIAL OFFERING UNTIL JAN 31, 1970

--We will include a FREE CHARGER for the airborne battery pack, AND we will AIRMAIL the outfits to you AT NO EXTRA CHARGE (in USA, APO's and FPO's)

NEW

SKY GLASS KITS

\$39.50

I wish I could give you a better idea of the quality of these kits than this description and our photos can convey. The kits contain: Pre-finished fiberglass fuselage with hard maple engine mounts installed, integral fin, lightweight foam wing cores with dihedral braces and landing gear blocks (if called for), and foam stab.

The fuselage is so perfectly finished that you need only sand and paint the seam to have a magnificent finish.

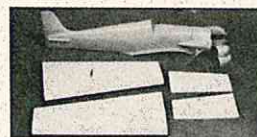
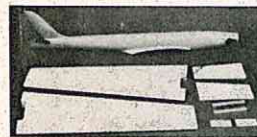
The price of \$39.50 is at least \$20 less than what you would ordinarily expect to pay for this type of kit. AND to make these kits even a better deal for you we will ship them to you via AIRMAIL (in the U.S.) (We pay the postage costs as usual.)

CITRON
\$39.50



QUICK
FLY III
\$39.50

TWISTER
\$39.50



LONG
MIDGET
\$39.50

(Goodyear racer form. 1)

HÖBBY

LOBBY

INTERNATIONAL

2604 FRANKLIN ROAD, NASHVILLE, TENN. 37204

DROP YOUR ORDER IN THE MAIL BOX, THEN JUMP BACK BECAUSE WE SHIP FAST!

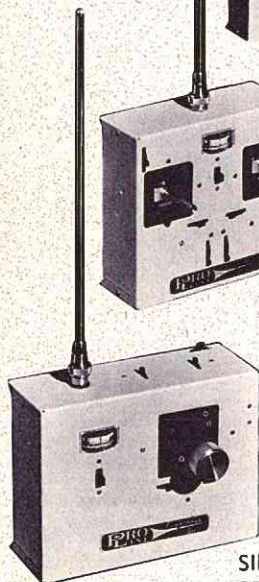
We pay postage on all orders accompanied by check or money order. The United States Post Office demands that we use your ZIP CODE on all shipments, so be sure to use your ZIP Code. Satisfaction guaranteed or money refunded. Phone 615-297-6361 store hours 10 A.M.-5 P.M. except Sunday.

The BIG 3

PRO *Competition*
LINE *Six*

TWO STICK ENCLOSED
(KRAFT-HAYES TYPE)
\$469.95

TWO STICK
OPEN GIMBAL
\$499.95



SINGLE STICK
OPEN GIMBAL
\$499.95

Now that you've watched Pro-Line in '69 — the following are some of the victories recorded:

Atlanta, Georgia, Masters Championship; Atlanta, Georgia, 1st Place; Nashville, Tennessee, 1st Place; Pensacola, Florida, 1st Place; Clarksdale, Mississippi, 1st Place; Memphis, Tennessee, 1st Place; Decatur, Alabama, 1st Place; Jacksonville, Florida, 1st Place; New York State Championships, 1st Place; New England Championships, 1st Place; Greenville, Mississippi, 1st Place.

Seeing is believing — so write for complete details.

PRO *Electronics*
LINE *Incorporated*

P. O. Box 1791, Phone 205/353-3017
Decatur, Alabama 35601
Dealer Inquiries Invited

to think we've got a whole pile of alphabets here. I'm not sure what this is here. Oh, the RC Sports Fliers."

Maurice Wood: "Sunday Fliers, Inc."

Tony Bonetti: "Formed for what purpose? These others have a purpose, they are setting up a national competitive standard and the sport flier, he's the National don't-give-a-damn society."

Now let's return to the three 'accidents'. 'Idiocies' might be a better word. Why did they happen? Any number of reasons can be given - any number of people blamed. But all dodge the real cause - our 'model airplane' image.

An RC pylon racer is not a model airplane. The modern high-powered contest ship is not a model airplane. 'Buzzin' Bob's' overpowered guided missile was not a model airplane. They are aircraft in every sense of the word. Barring radio malfunction they are, or should be, completely controllable sophisticated flying machines. As such, some degree of physical skill and aeronautical knowledge is required to fly them. And above all, they must be respected.

The kook who plumped himself in the middle of a pylon course to fly his trainer obviously failed to respect the racers. It could have killed him.

The salesman who sold the contest plane as well as the beginner who bought and attempted to fly it, did not respect it. Their disrespect could have maimed or killed a child.

'Buzzin' Bob' did not respect his plane and nearly blinded a spectator.

So, who's guilty? We - you and I - are collectively guilty because our failure to insist on effective national representation and public relations efforts has lumped us, to the public from which RC'ers come, with the stick-and-tissue set and all that that image implies. We've sat back, heads buried in the sands of complacency, and allowed problems to be ignored.

Like it or not we do have problems and they will not go away if we continue ignoring them. On the contrary they will, and

are, growing. Like the man said, "We ain't seen nothin' yet!"

RC aviation is coming of an age in the market place. This is evident by a growing trend of discount houses to stock radio control equipment.

Two top name radio manufacturers have been purchased by a major electronics firm. Such things are not done in that field without intensive market analysis. It's unlikely the transaction took place with an eye to the juvenile market!

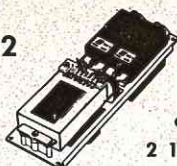
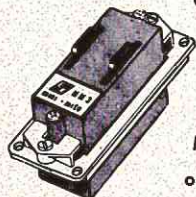
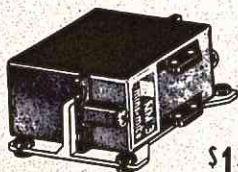
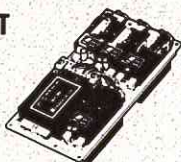
We've all wanted - and RC aviation needed - price reductions. We're going to get them. We could have had them sooner had we done more than gripe. We've wanted and needed newcomers to RC. They'll come - in floods. And the RC world is totally unprepared for them.

You think we've noise and field problems now? Though field losses have received little publicity lately, they're being lost everyday. The increasing accident ratio - a certainty if our 'model airplane' image remains, will extract the least penalty of exorbitant insurance rates. Assuming we can find fields to fly from or carriers to insure us.

How many times will an RC plane collide with a private or commercial aircraft before the FAA steps in? Who's going to come out second-best in an RC commercial aviation battle - AMA lobbyists or no? Ask the commercial pilot or FAA man! There are places in this world where you have to get a permit to fly a kite. Think it couldn't happen here? You gotta' be kidding!

How about radio service? Manufacturers, already loaded by current demands, will be faced with an avalanche of service requirements when this discount thing really takes off. There's not been, or likely to be, much interest in radio repair by already swamped TV-Radio shops. Technicians are at a premium. Why waste them on 'model airplanes'? We must have publicity now, on a national scale, to make these people aware of their opportunities in this field.

(continued on page 74)

NEW**UM-2****\$3.95**only
2 1/8"
wide!Mounts 3 servos
receiver and switch**NEW****AM-2****\$1.25**Mounts
one servo vertically**UM-3 \$1.95****NEW**Mounts 3 servos
side by side**NEW****HINGES**18 in. **\$1.50**One piece hinge that
will outlast your plane**PLUG CLIPS**5 in. **\$1.00****NEW**Prevents plugs from
vibrating loose, yet will
not damage it in a crash**UNI-MOUNT****UM-1 \$4.95**Mounts 4 servos
and receiver**AIL-ROD
MOUNT****\$1.25****AM-1**

Mounts one servo horizontally

CUNNINGHAM ON R/C



How To Save Money In R/C

Coming from a long line of slightly Scotch ancestors, it's only natural that I should be interested in pinching pennies while indulging in our favorite hobby/sport. Several times I've been asked to present programs to R/C clubs, and the topic that seems to have been met with the most enthusiasm has been saving money.

No doubt about it, this is a reasonably expensive sport. It is, however, economical in comparison to such things as auto racing, private flying, et al, but much more costly than playing tennis, shooting pool, snapping tiddly-winks, or shuffling chessmen about a board. There really isn't any reason not to investigate ways of saving a buck and, although many hobby shop owners get upset with me because I have recommended things to use other than those found in the hobby shop, the buck saved on an item such as paint usually comes back to the hobby shop in other ways. A new engine for example, or a new radio. Men who have been in this hobby for any length of time have built up a pretty good stock of engines, wheels, hardware, pieces of this-and-that, and can, and do, save money by not having to buy these items each time they build a new aircraft. The beginner, however, doesn't have these resources upon which to draw. We'll look at this problem from the standpoint of both the beginning flier, as well as the experienced R/C'er.

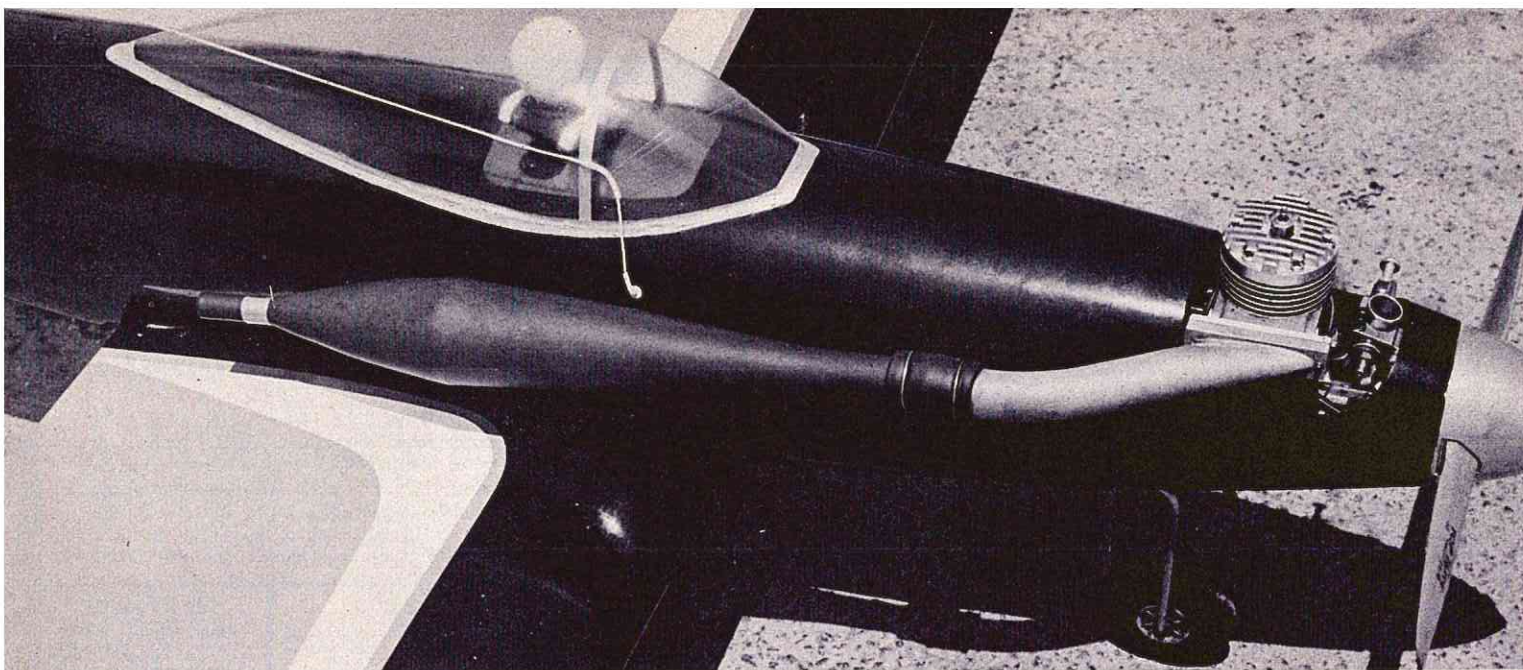
The first step along the path of retaining your cash in your wallet is in the selection of the proper type of radio gear to do the job that you want done. You may be a flash in the pan type R/C'er who will move on to something else very shortly. For you, the best selection is one of the simple, single channel ready-to-fly rigs. If you're very serious about this business, then invest in a new, full-house

digital proportional system. If you want a reasonable entry into this sport, then look around for one of the very many good used rigs that are for sale. Many modelers continually upgrade their equipment by buying the very latest gear, and therefore make available their slightly used radio rigs at far less than the original cost.

Perhaps the best place to save money is in the selection of the aircraft you build. Suit the aircraft to YOUR level of skill, not to what the experts are using to win contests. Sure, a super sleek low wing ship looks great in pictures, parked in the pit area, or in the hands of an expert, but if you're not a good pilot yet, save the really high performance aircraft until you BECOME good. I've seen the same thing happen over and over again. A beginning R/C flier will have a ball learning with a simple high wing or shoulder wing model. He thinks that he has the world by the tail so graduates himself to a fast low wing, complete with super paint job. In record time this aircraft has been returned to kit form, and the embryo pilot has just cost himself about sixty or seventy dollars and a lot of time learning that he over-stepped his ability level. Come on now, do you jump from a Piper Cub to an F-111? Be careful in your selection of aircraft, both at the beginning of your romance with the sky, and later during your learning phase.

Get help in learning to fly. This is an obvious way to save money at the very beginning, by not going out to demolish your first aircraft all by yourself. Get help from those with EXPERIENCE. They will be glad to give it, so don't be afraid to ask.

If you have selected a kit, or a well known ship from a magazine plan to construct, and something in the structure doesn't look quite right to you, or
(continued on page 83)



ENGINE CLINIC

In the July article on mufflers I made mention of a tuned pipe that was under development for R/C use. For the last six weeks I have been using one of these 'pipes' on my engine and can now give you a report.

Tuned pipes have been in use on motorcycles and racing cars for many years in one form or another. To my knowledge the first person to use one successfully on a model engine was Bill Wisniewski, head engine honcho at K & B. This was on a special .15 size engine Bill had designed and built for U-control speed called the 'Wart'. Following Bill's success the 'pipe' has pretty well become standard equipment for the U-control speed fliers.

Tuned pipes are very critical to engine rpm, air temperature and density, as well as many other variables. The engines that they are to be used on should also have completely different sleeve timing than those used with conventional stunt engines. Mainly, a longer exhaust duration with more differential between the opening of the exhaust and bypass ports. When a 'pipe' came on the market that was intended for regular R/C engines with

no modifications, I was looking forward to giving one a try. Especially as this 'pipe' was also intended for use as a muffler. A muffler that would also give a large horsepower increase would be almost too much to hope for.

Electronic Developments, in merry old England, manufactures a line of tuned length exhaust silencers for free flight, control line, and R/C, developed by Kevin Lindsey. They kindly sent me one of their number 3 E. D. Power Pipes which is a broad range 'pipe' intended for the .40 to .61 size engines used in R/C.

Before we go any further, let's explain the theory and principle behind the operation of a tuned pipe. I make no pretense of being an authority on tuned pipes. My knowledge has come from reading articles and asking questions of friends that have had more experience with the 'pipes' than myself. The instruction sheets that come with the E. D. Power Pipe contain a bit of theory that pretty well explains the operation of the 'pipe'. We will quote loosely from this.

When your engine's exhaust port opens after the combustion process, the hot, high-pressure gases rushing out set up a shock wave in the exhaust manifold. To a shock wave an expanding pipe is a 'negative mirror', that is, it reflects back a low pressure wave image, and a contracting pipe acts as a 'positive mirror'. Tuned length

exhaust pipes use these principles by first reflecting a low pressure wave back to the exhaust port just after the exhaust port opens to suck out old exhaust gases and continues sucking so that some fresh fuel/air mixture is drawn into the exhaust manifold. Then, before the exhaust port closes and preferably after the bypass port has closed, the fresh mixture is pushed back into the cylinder by a high pressure wave reflected from the rear section of the pipe. In this way the engine is super-charged by the exhaust pipe. For the best power increase, the pressure waves must arrive back at the exhaust port at the right time. If the pipe is too long the super-charging wave gets back to the exhaust too late after it has closed. If it arrives too soon, it will push the old exhaust gases back into the motor with no increase in power. This is the reason we need a longer exhaust opening period, and more differential between the opening of the exhaust port and the bypass port. This is also the reason the length of the 'pipe' is critical and must be matched to the intended rpm of the engine.

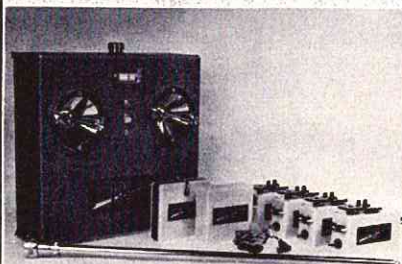
So much for the theory behind the operation of the 'pipe'. The instruction sheets that accompany the Power Pipe gave an example of the power increase one could expect using a Merco .61 R/C. The Merco turned 11,700 rpm on the ground and 13,700

A Sweetheart of a Radio by **PROPORTIONAL CONTROL SYSTEMS**



THE LEADER IN:

- ✓ **PERFORMANCE**
- ✓ **RELIABILITY**
- ✓ **ECONOMY**



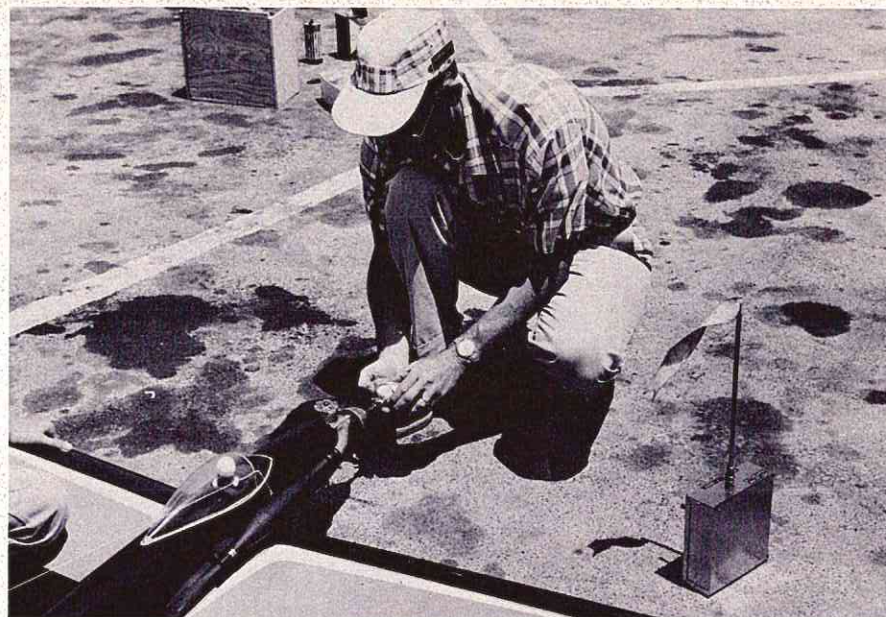
**AVAILABLE AS A COMPLETE
SYSTEM WITH 4 SERVOS
OR START WITH A PARTIAL
SYSTEM AT LOWER COST
AND ADD ON LATER.**



for details write

**PROPORTIONAL
CONTROL SYSTEMS**

A Division of KRAFT SYSTEMS, Inc.
450 W. California St.
Vista, California 92083

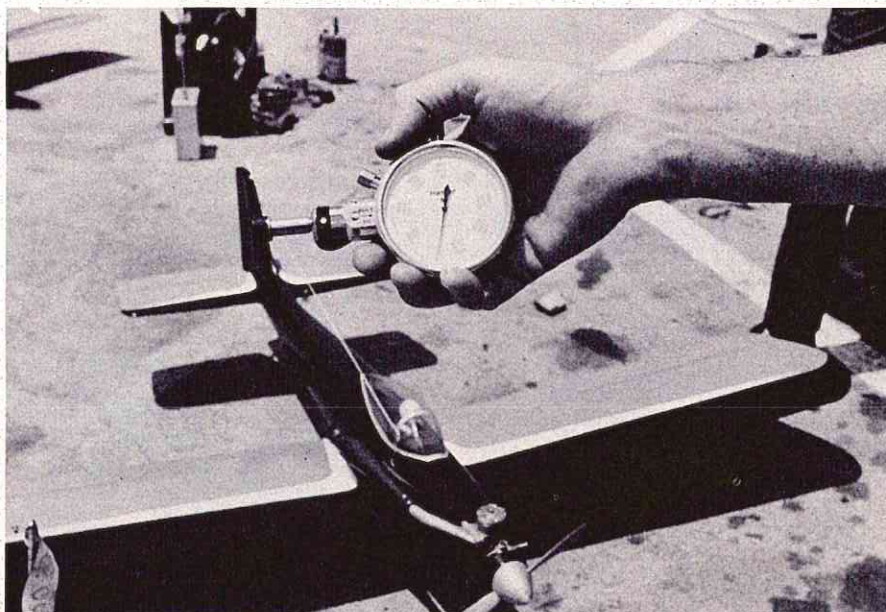


rpm in the air with the No. 3 Power Pipe. This compares with 10,400 rpm on the ground and 11,300 rpm in the air using a commercial muffler of a different make. A more accurate comparison could have been made had the Merco been tested without the commercial muffler of another make. If you were to check the Merco without the commercial muffler you would probably get a 600 to 1,000 rpm increase to begin with. If the stock Merco muffler were used, and I am assuming it was, the increase would be very close to the 1,000 rpm figure. This would leave an actual gain of 300 to 400 rpm that could be attributed to the Power Pipe on the ground. I do not place too much confidence in rpm readings taken in the air. These readings are taken with an audio tachometer, and I have yet to

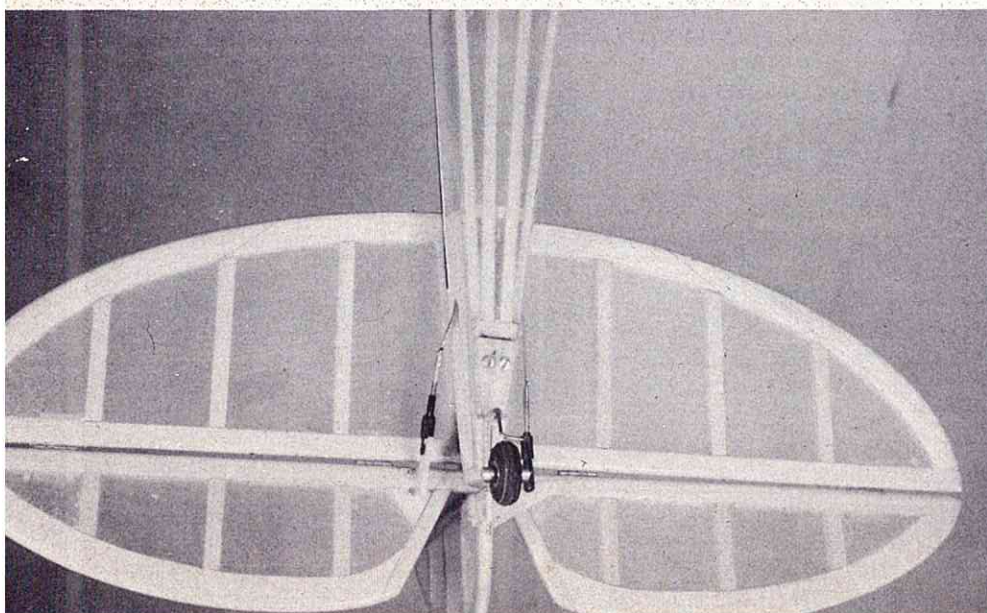
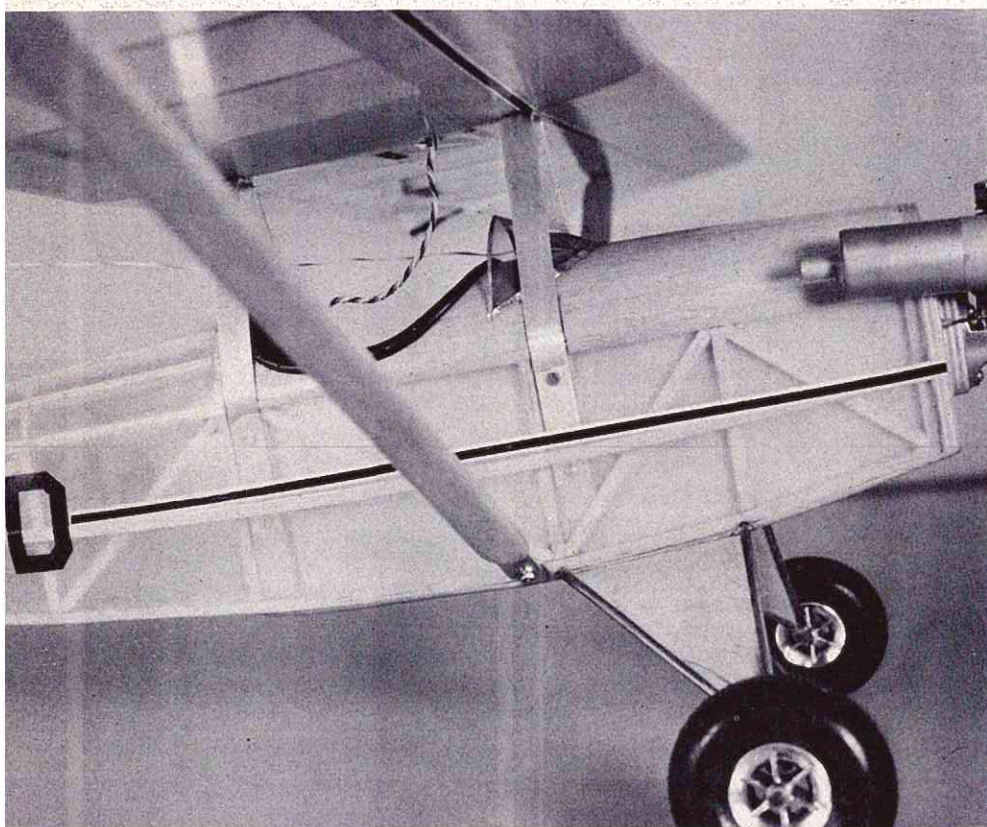
see one that will give an accurate reading in the air. Audio tachs work on the principle of tuning a beat from the tach in one ear with the exhaust beat from the engine in the other ear. The same principle as synchronizing the propellers on full size twin engine aircraft. Trying to synchronize these beats as the model flies past is not easy to do. In fact if three modelers were to take readings with three tachs, the chances are their readings would vary considerably. Even with a U-control model where you can sit in the middle of the circle and get a constant beat it is very difficult. So all of my testing was based strictly on ground rpm.

A chart comes with the Power Pipe that gives the necessary 'pipe' lengths for the intended rpm of the engine. I know my Veco .61 turns between

CONTINUED ON PAGE 75



BY JOHNNY JOHNSON



I started by writing down everything I wanted in my next model and it came out like this — it has to be lightweight, so build with sticks and cover it with silk. It has to be strong, so use some real engineering in the design. In fact, strong isn't good enough, it has to be super strong, so use external bracing. It has to look like a full scale airplane, but not a scale model of anything, so I can have any proportions and innovations I want without worrying about deviating from scale. Other items included — at least a 60" wing span - a small engine - no nose gear - steerable tail wheel - absolute minimum ten minute tank - no wing through the fuselage - and it has to be different.

Well, this airplane isn't exactly what I originally pictured in my mind, but it has met all the above objectives and my friends, who at first sight of the model were not too impressed, have since been converted, especially when they saw the strenuous flight loads the model will take.

Although the PD Parasol is not a competition or pattern model, it is definitely an aerobatic airplane. It is designed for 50G's positive and 25G's negative and it has the wing area, the light weight and strength to do the most violent aerobatic maneuvers. And yet, with restricted control movements, it is a very gentle and docile airplane. As a beginner's airplane, it is excellent at reduced power, due to the light wing loading.

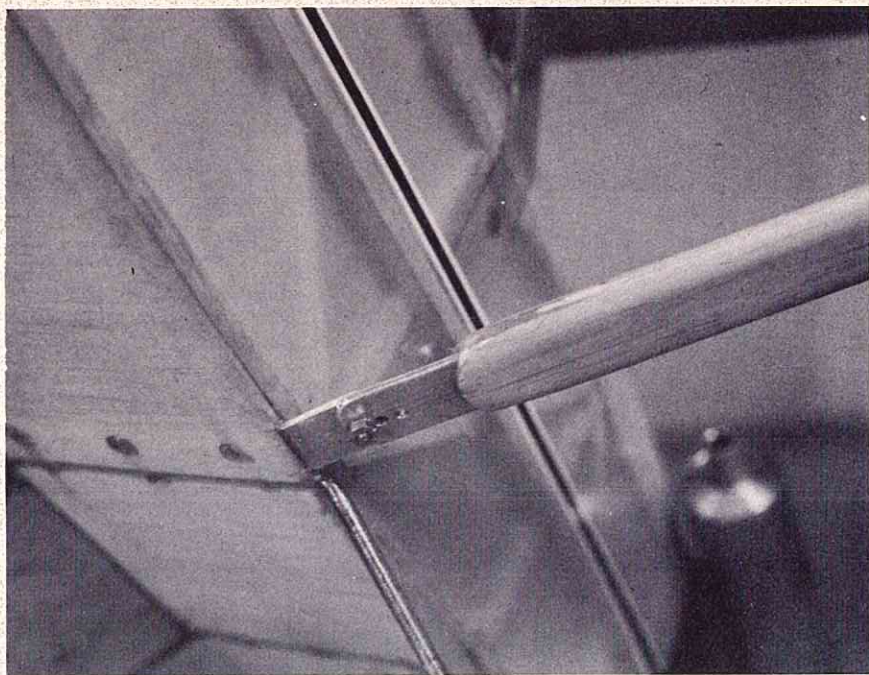
For the effort it takes to build this model, here is what it will do for you in return: Short take off - good climb - very good glide - gentle stall - not too good aileron rolls (too wide) - smooth easy aileron turns - also very tight turns - snap rolls, inside and outside - slow rolls - spins - loops, inside and out and, naturally, any combination of the above, such as Immelmans - split esses - snap roll on top of a loop, etc. This plane really excels in snap maneuvers and spins, depending upon the skill of the pilot.

The first twenty or more flights with this model were made with a Super Tigre .15 diesel which proved quite satisfactory. The last thirty or so flights have been with a Super Tigre 23 Glow which is perfect. I use a 10-4 Tornado Propeller on both engines. With the .15 diesel I obtained 22 minutes of flight on the 4 oz. clank tank and very reliable idling, although it had a slightly higher idle rpm than its glow counterpart.

P. D. PARASOL

REMINISCENT OF AN EARLIER DAY IN AVIATION, THIS .15 TO .19 POWERED PARASOL WING MODEL IS ONE OF THE FINEST SMALL-FIELD SPORT AIRCRAFT YOU'LL EVER FLY.





Detail of adjustable lower strut fitting.

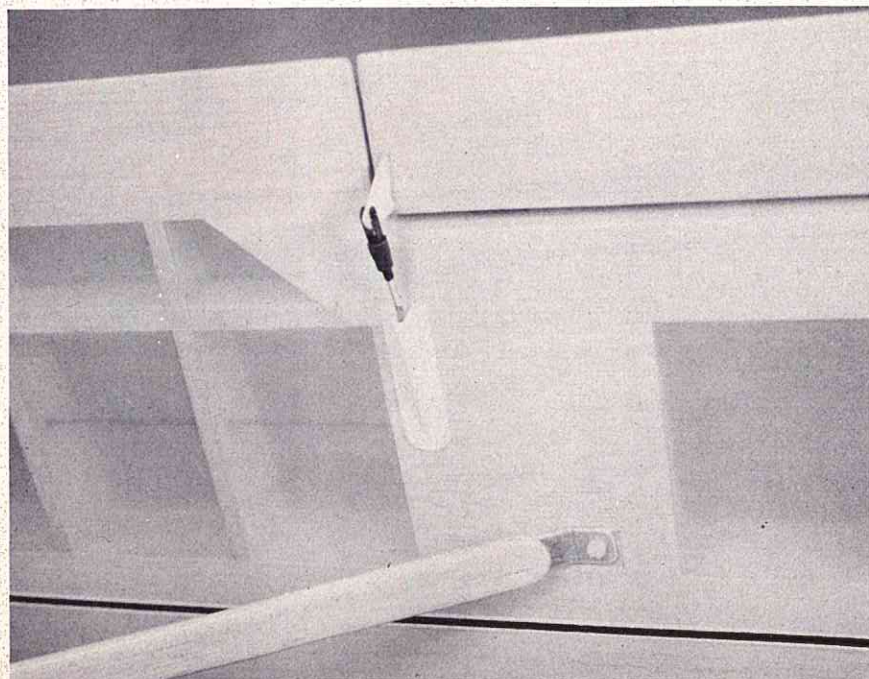
Fuselage

Build the two sides first and cement 1/16" extra hard balsa or 1/16" plywood on the inside of the fuselage sides as shown on the plans. Draw a good straight centerline on a suitable working surface and pin the sides to the surface, upside down, as you cement in cross-section sticks numbers 3 and 4 first, then cross section numbers 2 and 1. Then cement the tail ends together and cement in cross sections number 5, number 6, number 7 and number 8 - all the time,

using the centerline to keep the fuselage sides true and equally curved on both sides. Let dry over night. Always use Handi-Wrap on your working surface when cementing pinned down parts. Do not use waxed paper or other types of wraps.

Remove the fuselage and cement in the 1/16" plywood cockpit reinforcing, the 1/8" plywood cabane strut mounts, the 1/8" plywood cross member at cross section number 4, and the 1/8" plywood (landing gear and wing strut bracket) mount. Add

Upper strut fitting and aileron linkage.



the fuselage formers and aft cockpit stringers. Bind the landing gear and lower wing strut bracket to the 1/8" plywood landing gear mount, using soft copper wire, and then solder the landing gear wire and soft copper wire. Then on the opposite side of the 1/8" plywood landing gear mount, generously epoxy the soft copper wire to the plywood. Permanently install the 4 oz. clank tank and seal off the tank from the radio compartment with 1/8" sheet balsa. Fuel proof this area well and plank or cover the fuselage top with 1/8" balsa from cross section number 4, forward. Then cut out the cockpit hole. Cover the bottom of the fuselage from cross section 4, forward with 1/8" balsa with the grain running lengthwise. Cement in two equally spaced stringers from cross section number 4 aft to the plywood tail wheel mount. Use flush screws and blind nuts to fasten the cabane struts to the plywood mounts. You will have to notch the top fuselage longerons 1/16" deep so that the struts will be even with the outside of the fuselage sides. Measuring from the top of the longerons, the top of the front cabane strut must be 1/16" lower than the rear one. If it does not come out this way, then use flat washers between the wing and cabane struts to get this measurement.

The original plane has a single 3/16" x 3/16" stringer down the fuselage sides, equally spaced between the top and bottom longerons. The plane I'm building now will not have this, so it's not shown on the plans. The plywood firewall can be either 1/8" or 1/4" 5-ply plywood depending on whether you desire to use wood screws or machine screws and blind mounting nuts to fasten the firewall type engine mounts.

Wing

This is the conventional 'D' spar and 1/16" balsa trailing edge and cap-stripped ribs. Build right and left side separately. Pin down the bottom piece of 1/16" trailing edge, then the bottom 1/4" x 1/4" front spar, only support this 1/4" above your working surface to allow rib clearance. Note - Do not cut the trailing edge for ailerons, yet. Cement in all the main wing ribs, the top rear 1/8" x 1/4" spar, the top piece trailing edge and the top front spar. Cement in the 1/16" sheet spar webs as shown on the plans, with the grain going span-wise.

At this time install the tip rib and bend the top and bottom spar tips together and cement well. Cement in

the two outermost front spar webs with the grain vertical. Cut out the wing tip, taper it and cement in place. Cut the top leading edge to approximate size, wet the outside with water and cement it in place while still wet. Add the top capstrips. Remove the wing panel and cement in the bottom rear spar, rear spar webs, and cement in the 1/16" sheet balsa reinforcing in front of the aileron, leaving a 3/16" gap between the top piece and the trailing edge which will become the aileron. Leave a 5/16" gap on the bottom side. Cut out and trim the aileron, cement in the 3/16" hinge reinforcing blocks. Epoxy in the control horn and cap off the front with 1/16" sheet balsa and likewise do the wing in front of the aileron. Cement on the 1/4" x 1/2" leading edge balsa and cement in all the 1/8" plywood reinforcements, joining the two wing halves as you cement in the center spar splices. Install all the aluminum wing attach fittings and cover the bottom wing leading edge with 1/16" sheet balsa with the outside wet as before.

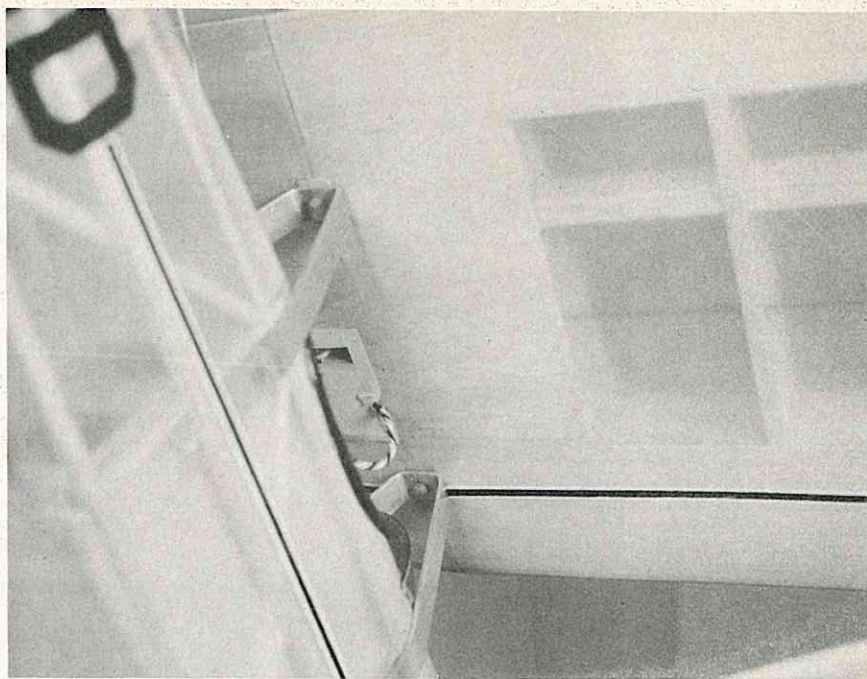
Empennage

The vertical fin, rudder, stabilizer and elevators are built right on the plans. (With Handi-Wrap, that is.) The vertical fin and rudder spars are extra hard 1/4" x 1/4" balsa and the stabilizer and elevator spars are 1/4" x 5/16" extra hard balsa. If extra hard balsa is not available to you, I would suggest 1/8" x 1/4" pine or spruce external tail braces from the bottom of the fuselage up and out to about halfway on the stabilizer spar and then on top of the stabilizer to about the halfway point on the vertical fin spar.

Wing Struts

The exact length cannot be drawn on the plans so this measurement must be taken during the final assembly of the plane. The struts are 1/4" x 3/4" hard balsa. I sliced the ends on a table saw, epoxied in the aluminum fittings and filled in the openings with balsa. If you do not have a table saw available, I would suggest making the struts with three laminations of balsa, the center one being 1/16" and the outer ones being 3/32". Be sure the aluminum strut ends are really in to stay, as each of these struts actually supports about a third of the model's weight and at 50G's that's 50 pounds each. I have pull tested mine at 58 pounds each.

Note: Drill all the holes in the strut ends before cutting them out of the sheet aluminum. The eccentric washers are made from the same aluminum as the strut ends and then



Cabane detail showing nylon bolts.

just drill the proper size screw hole as close to the edge as possible and be sure to use a large flat washer under the screw heads.

General Notes

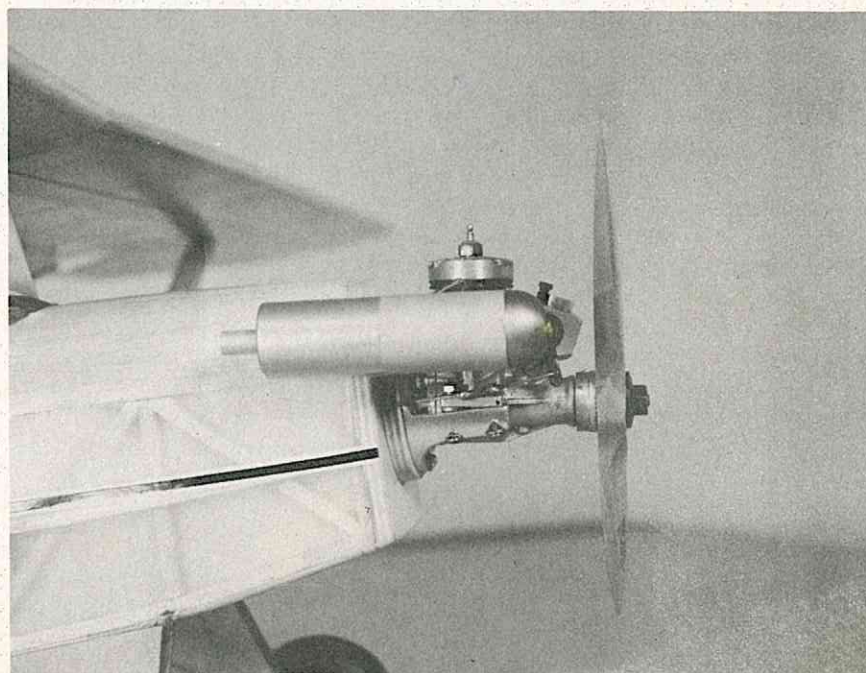
Since two of the prime objectives of this plane were super strength and light weight, good joints and fits of the various parts are of utmost importance in order to retain these features.

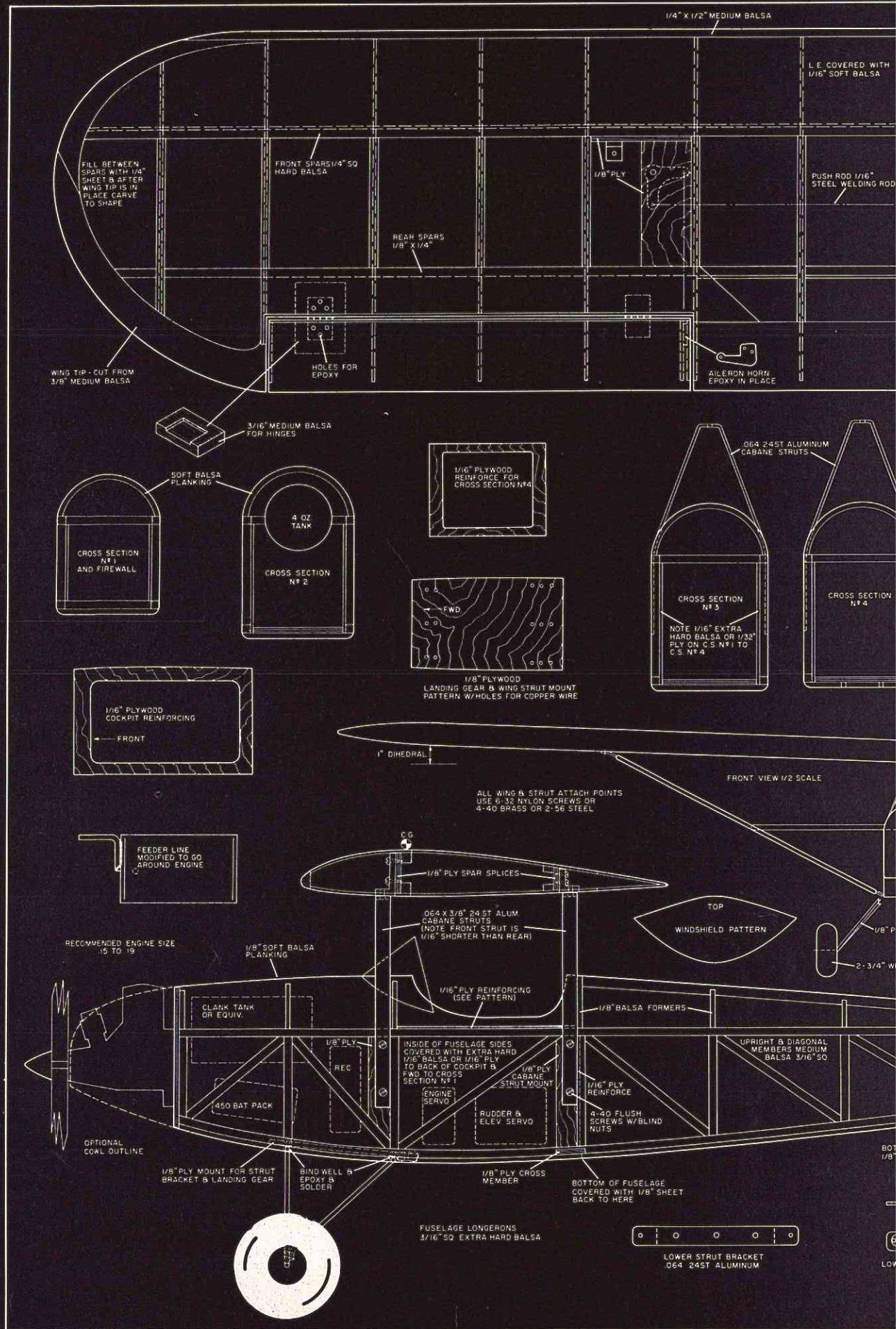
As a means of communication, I have five grades of balsa: very soft, soft, medium hard, extra hard and the balsa grade not specified on the plans

is meant to be medium balsa, as compared to these four grades. For sticking things together, I used epoxy, (where specified on the plans) Duco Household Cement, Ambroid Cement, and White Glue. The first model was covered with silk with three coats of clear dope on the frame and five coats clear dope on the silk, but I can't see any reason why medium silkspan or some of the newer covering materials couldn't be used. For controls I used NyRod on the

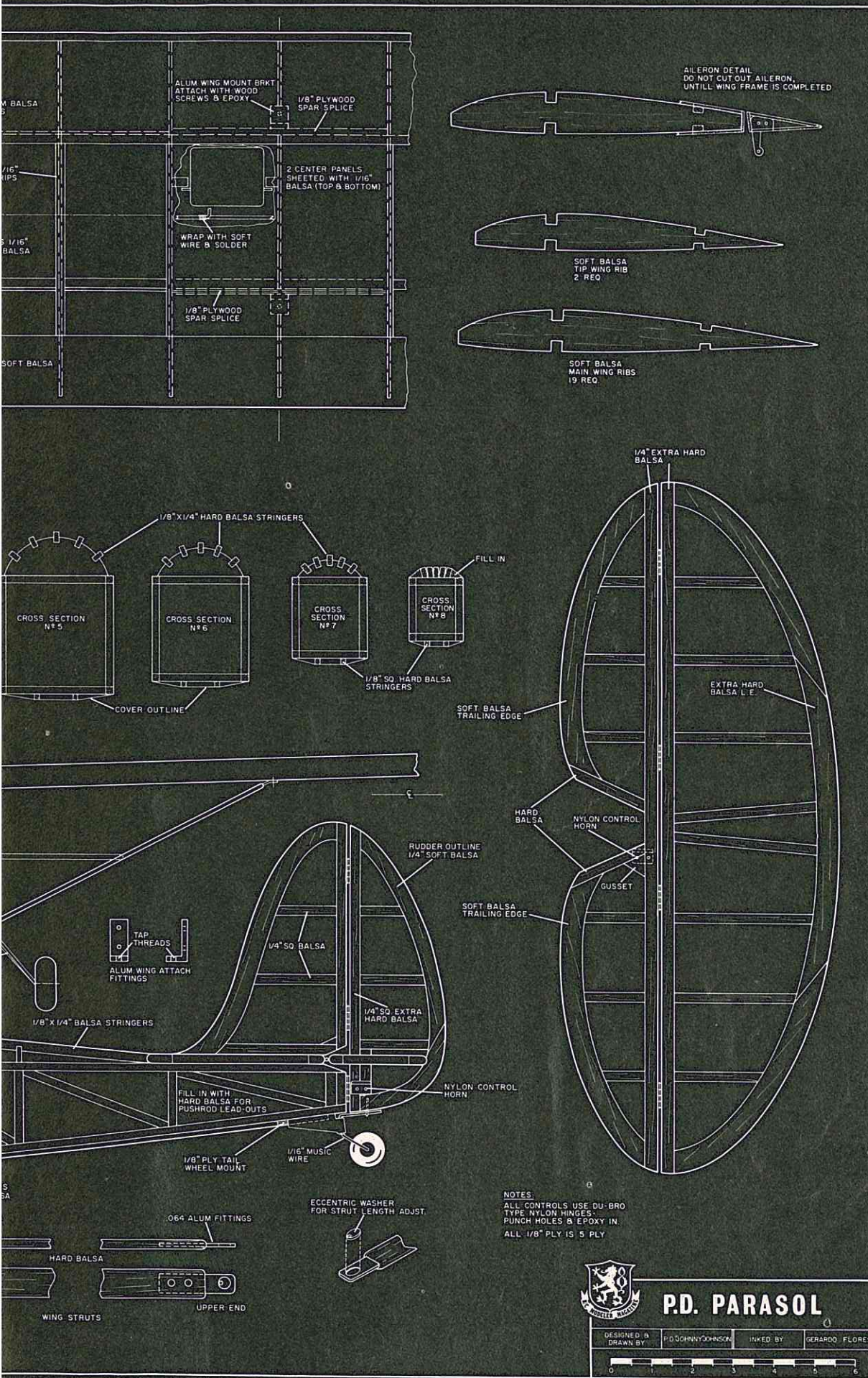
(continued on page 71)

O.S. Max .19, 9-4 prop. Muffler from Jerry Nelson.





FULL SIZE PLANS AVAILABLE - SEE PAGE 71



P.D. PARASOL

DESIGNED & DRAWN BY P.D. JOHNSON

INKED BY GERARDO FLORES

0 1 2 3 4 5 6



Dick Sonheim and Cliff Love's 'Beatnik' has been one of the most sought after designs in the country. Here is the latest configuration of a highly successful competition aircraft whose history and victories span several years.

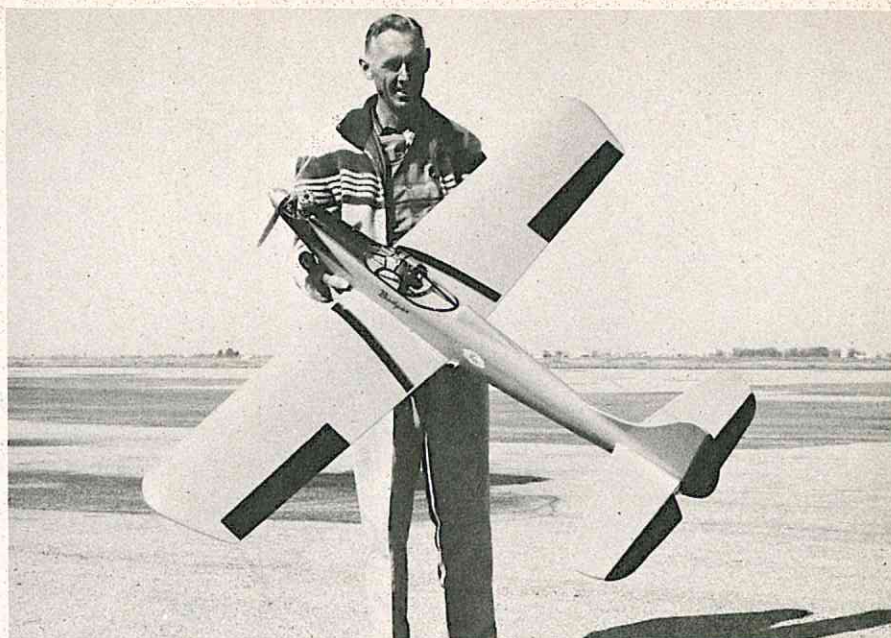
THE BEATNIK

The Beatnik has never been published in any magazine prior to this and yet is one of those models that has, over the years, become very popular. During that period, Foamcrafts in Campbell, California, has sold several hundred foam wings for the Beatnik, and a number of people have been producing fiberglass fuselages for this model. To top it off, Don Dewey has a file folder full of letters from modelers asking when and where they can get their Beatnik plans. Up until now the only set of drawings available for this airplane has been a set of outline drawings with very little detail drawn by the designer Cliff Love. Cliff made a few copies and passed them out to his friends and these modelers in turn made copies and passed them on to other RC'ers.

The original design of this airplane goes back a number of years and the Beatnik that I fly every week was built five years ago and originally flew on reeds. One of the most important features of this design is the double tapered wings that Cliff designed and their inherent ability to penetrate smooth and true in windy and bumpy weather conditions. It is for these very same reasons that both Joe Bridi's Sun Fli 4 and Phil Kraft's Kwik Fli 4 have gone from the straight wing to the taper wing. The straight type planform with a constant chord allows your plane to fly well on a calm day, however, in windy weather or bumpy air, those big wing tips hanging out there will cause the airplane to bounce around considerably more than a tapered wing aircraft.

Another important feature of the Beatnik wing is its ease of construction. The bottom of the rib, between the two spars, is flat, which makes it very easy to build a perfectly straight wing on any flat surface. If you use the hollow core door type of wing jig shown in last month's Kits and Pieces column, it is possible to build the entire Beatnik wing in one evening with the exception of the leading edge bottom sheeting and bottom capstrips. For those of you who want foam wings for the Beatnik, they are available from Foamcrafts in Campbell, Calif., and most likely will also be available from International Models in Ft. Worth, Texas. We also understand that Bob Palmer, 9161 Morehart Ave., Arleta, Calif., who produces those beautiful Sun Fli and Kwik Fli fiberglass fuselages, is planning to produce units for the Beatnik.

Wing Construction



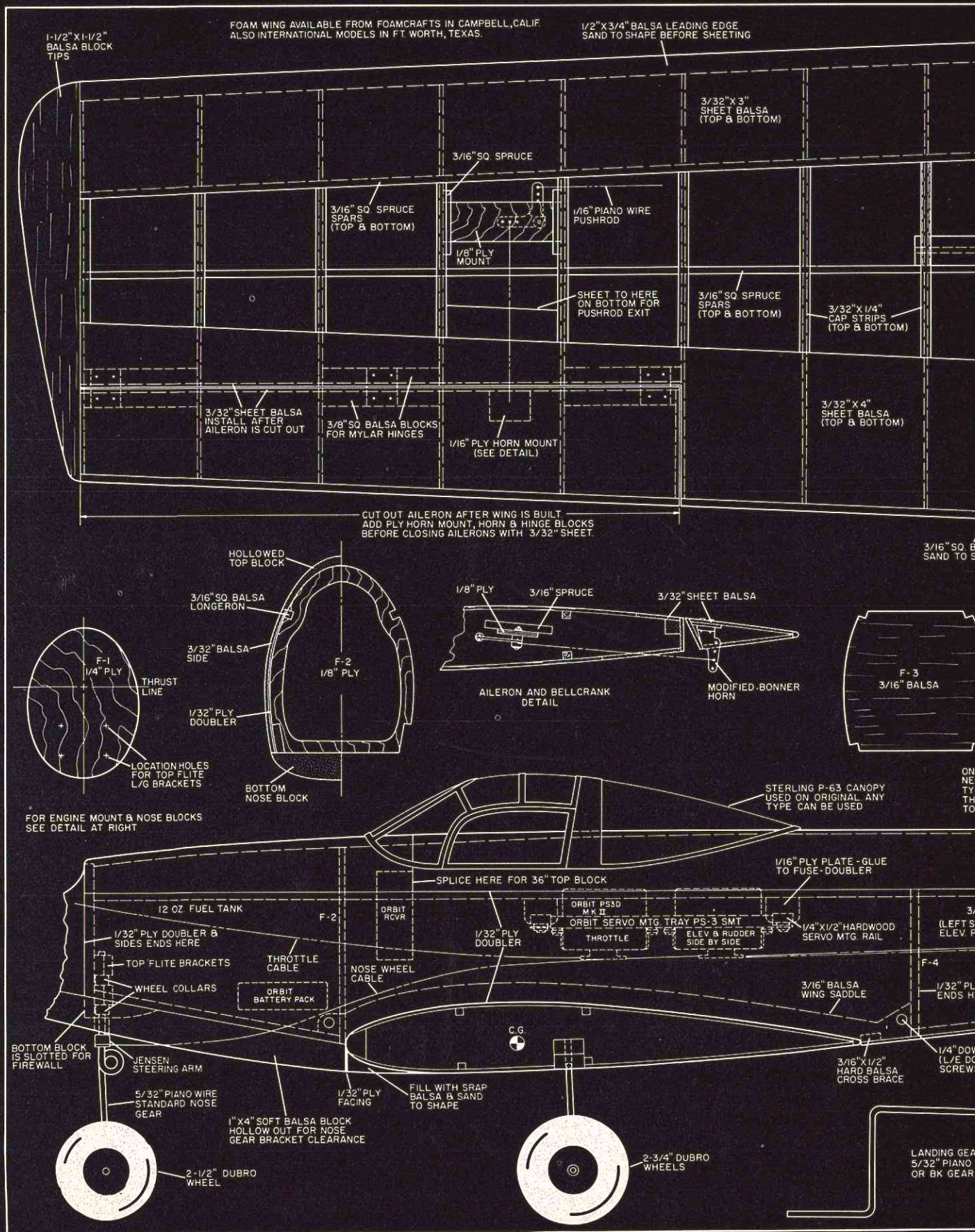
Top: Cliff Love with one of original Beatnik's. Above: Dick Sonheim, RCM Contributing Editor, with latest in long line of prototypes.

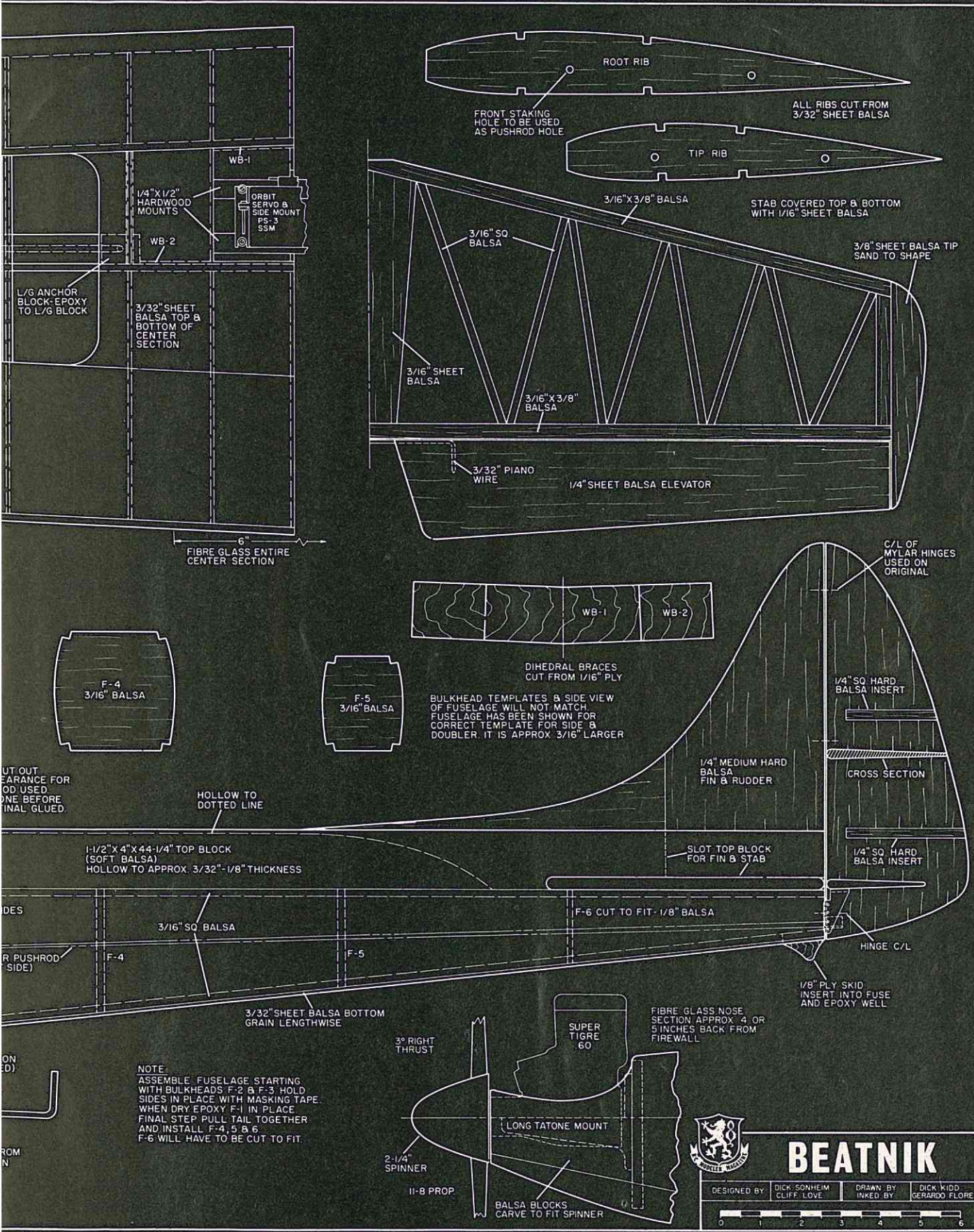
The wing ribs are made by the sandwich method, using the templates shown on the plans. Cut a tip and root template from a piece of aluminum or plywood. Sandwich 12 pieces of 3/32" sheet between the templates and bolt together with two 8/32 bolts. The ribs are then shaped with a carving knife or sandpaper block. After the ribs are separated, carefully sand away the sharp edge, taking care not to destroy the correct wing profile. Working over the plans or on your wing jig, glue the ribs in their proper position on the spruce bottom spars. After the glue has set, glue on the two top spars and the leading edge, and if you are building the wing in one piece on a jig, you can also glue in the plywood dihedral braces. The sheeting

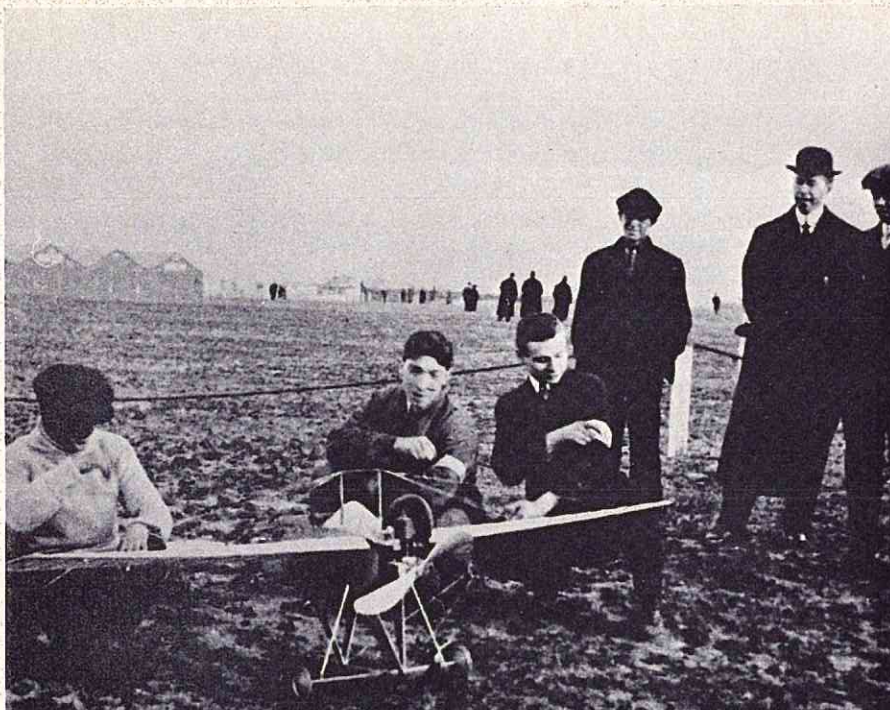
and capstrips can then be glued in position. The ailerons should now be cut as shown on the plans and finished off. Be sure to glue small balsa blocks to the top sheeting of the aileron for mounting your hinges before closing off the aileron. At the same time glue a small plywood plate in the bottom of the top sheeting of the aileron and mount the control horn as shown on the plans.

Run a 1/16" piano wire pushrod through one of the screw holes, left from making the wing ribs, from the servo location out to the bellcrank. You can complete the pushrod hook up to the ailerons by using Kwik Links with the long shaft. Glue the tip blocks in place and sand to shape.

(continued on page 69)







A photo reprinted from an early newspaper of the first model airplane gas meet held in the U.S. and, perhaps, the world. Mineola Flying Field, Long Island, N.Y. Meet sponsored by Baby Engine Company. Sitting behind model, L to R: William Piceller, a pioneer pilot; John Carisi, Henry Ragot. Man on right wearing arm band is Russell Holderman.

BACK PAGE HEADLINES

BY JIM McNEILL

Photos courtesy Capt. R. S. Barnaby, U.S.N. (Ret.) Ferrel-Cox

Have you noticed how it seems to rain and blow and is cold every weekend when you want to go out to your field and fly your toy airplanes?? Cheer up . . . With your permission, I would like to take you on a trip to show you that things could be worse - much worse . . .

We are going to flap our gossamer wings and sail back into the past, back in time for a moment or two. Now some of the old-timers around town will tell you that they can remember the first gas models around, and that the Brown Junior started it all back in 1935, or thereabouts. Don't you believe it! We are sailing together right on past 1935 and we are going back another quarter of a century behind that. Back, in fact, to the year 1911!

Well, here we are in 1911. Archduke Ferdinand hasn't gone to Serbia to be assassinated so nobody's heard

of World War I as yet. The Wright Brothers made their first flight only 8 years ago in 1903. Louis Bleriot has just flown the English Channel - you remember about it. It was in all the papers. Of course we brought our hobby with us, that is what this is all about, so why don't you build a model airplane.

What? you don't have an engine? Yes, I remember last year in 1910 when you sent your 6 pounds sterling to W. A. Gamage of London, England, for his great single-cylinder, internal combustion, model airplane engine weighing 7 pounds and guaranteed to develop 1/4 H.P. I remember telling you not to. Now here is one we might try from a full page ad in the July 1911 issue of AIRCRAFT for a Baby Engine. It's advertised to develop 1/2 horsepower, run for 15 minutes, 2300 R.P.M., swings an 18 inch aluminum propeller, and costs only \$35.00, complete!

It took you 3 days to get it started? Well, be careful of the open pan carburetor or you will set yourself on fire! It runs, anyway, and it weighs only 3 1/2 pounds. Only half as much as that garbage you ordered from London! Now that you have an engine why not build a nice model for it? We left all of our know-how and aerodynamics back in 1969, but it doesn't matter. There are plenty of good solid designs flying around in real form so we'll just copy one of them. Take your pick . . . A nice Bleriot, a Wright flyer, an Antoinette . . . a Henry or Mariece Farman. Perhaps a nice Dunn tailless will do. Don't start that mickey mouse about BALSA wood - what's that? Got it all built? You are the one that was crabbing about conditions in 1969!

Now that you have your little jewel all built, I notice it is rather large. 8 feet? Oh, you have to carry 5 pounds of engine gear. You bought your sparkle coil and new plug from the Connecticut Telephone and Electric Company? That's the place to get them. Heavy, isn't it? I see you have trouble getting it in your Maxwell, so you are strapping it on the outside. Who is that lady over there laughing at you? Is that your wife?

Nobody's perfect! Now that you have a model all built I am going to enter you in a contest. Oh, thank you . . . I am going to enter you in America's first gas model airplane meet. We are going to drop on down to Mineola Flying Field, Mineola, Long Island, New York. This is truly Ameri-

The BABY ENGINE



3 1/2 lbs.
1/2 H.P.

"A Bird in the Hand"

From the 18 in. diameter 1 1/2 in. pitch propeller shown as set at 1000 R.P.M. develops a full 1/2 H.P. 18 in. dia. of propeller includes the engine, commutator, spark plug, aluminum carburetor, governor tank and 18 in. aluminum propeller. The engine is delivered and has only three moving parts.

\$35.00

Send for complete illustrated catalogue

THE BABY ENGINE COMPANY, STAMFORD, CONN.

Baby Engine, shown left, was America's first successful internal combustion reciprocating model airplane engine. Mass produced for several years, it weighed 3 1/2 lbs., developed 1/2 h.p. at 2300 rpm. using an 18" metal prop with 13" pitch. 2-67 C.I. displacement, 3-ring cast iron piston, cast iron cylinder, commutator timer, spark coil. This ad is reproduced from a full page ad that appeared in a 1911 model airplane meet program.

ca's first gas meet and is also, without a doubt, one of the strangest model airplane meets of all time.

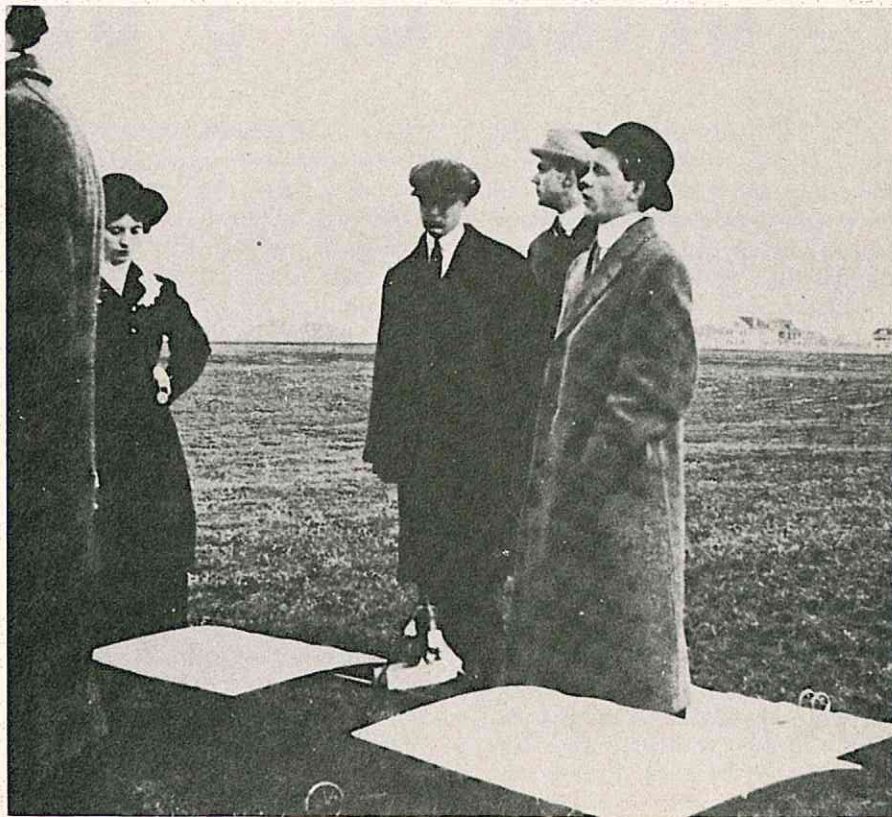
Here we are at Mineola Flying Field, and it's now the fall of 1913. In all fairness to you, since I've got you entered, I would like to bring you up to date on this meet and explain to you how lucky you are!! You are the only one here who showed up with an engine already in your plane and I will explain. This meet is being sponsored by the Echert Brothers of Stamford, Connecticut, who manufacture the Baby Engine. They have been enjoying an enormous sales lag, and to bolster the business, they are promoting this venture. In a last ditch effort to enhance sales, Whitney Echert has written to the New York Model Aero Club and offered the following proposals: Knowing that absolutely no one in the club can afford or has a gas engine, Whitney has enclosed the exact mounting specifications of his Baby Engines; the club members are to build and show up with their engine-less gas jobs on a certain day and the engines will be installed in the planes at the meet, on the site. The best flight, if it comes up to a pre-destined performance, will be declared the winner of the meet and the prize shall be the privilege of **KEEPING** the Baby Engine!

I can assure you that all of these contestants, except you, were here at the crack of dawn, in order to avail themselves of this unique contest.

Please don't laugh at these unusually dressed people. We are in good company. You see that guy over there wearing the billed cap? That is Vincent J. Burnelli. He will migrate into real aircraft and make a name for himself as one the world's foremost design pioneers. That man standing next to him is Jean A. Roche. You've never heard of him? You've heard of the Aeronca, haven't you? Mr. Roche will create the Aeronca - a classic light plane. Do not overlook that gentleman over there talking to that lady. He is William Piceller. Next year, 1912, Mr. Piceller will earn pioneer pilot's license No. 116 and on Oct. 2, 1914, he will die when he crashes his Wright Model B at Hamstead, New York entertaining people. Wait! There's John Carisi talking to - yes, there he is - Cecil Pioli. Cecil Pioli, the creator of the "A" frame twin pusher, is a father of modeling known around the world. Now that Escadrille 4 years from now, and when his soul makes its last flight from this earth, he will leave his body



Above: This photo shows the same model pictured on page 26, but with the Baby Engine running. Left to right: Henry Ragot, William Piceller, and John Carisi. One year later, Piceller earned pioneer pilot's license No. 116, then was killed in the crash of his Wright Model B in 1914 at Hamstead, N.Y. Below: A canard type plane photographed at the same contest.



in a French grave. Don't say anything to Escadrille 4 years from now, and when his soul makes its last flight from this earth, he will leave his body in a French grave. Don't say anything to them if they come over here. They probably can't see us anyway.

How did your plane fly in the contest? I notice that Cecil Pioli, John Carisi, and Percy Pierce all made flights of several hundred feet. You didn't win anything? Well, cheer up! Let me tell you something - neither did anybody else. No, it is a recorded historical fact that nobody won anything in that contest. And, nobody won a Baby Engine that day. When darkness fell, the Echert Brothers unbolted and gathered up all of their precious BABIES, took them all home with them to 52 Pulaski St., Stamford, Connecticut, and quietly went out of business soon after.

And there is our trip to 1911.

Three known Baby Engines survive today. One is in the Smithsonian Institute, not on display. John G. Steenken up in the East has one and describes it as well-made and quite reliable. Victor G. Didelot possesses one and states that his father owned it before him and was going to propel a canoe with it before his death.

Stand by, for in a future issue of RCM, we're going to take you on another, even more exciting trip into modeldom's past . . .



RCM VISITS THE VALLEY FLIERS

BY BUD ANDERS

PROFILE OF 3 CHAMPIONS

The Valley Flyers is just about the proudest R/C club in the country these days, and I can assure you, it has every right to be. Three of its members journeyed back east to Willow Grove for the 1969 NATS and returned to the Valley with just about all the hardware except the kitchen sink. Would you believe they brought back not one, not two, not three, but FOUR National Championships plus the Grand National Championship R/C trophy? A clean sweep in Pattern Flying winning Jr., Sr. and Open, plus 1st, 3rd, and 11th in Formula I racing.

Let me introduce you to the fantastic Valley Flyers: In order to give you a picture of what happens to a guy before he becomes National Champion, I will start with Larry. Larry Leonard, 27, started flying R/C in 1958 with single channel. From 1958 through 1963 he went through the usual stages with many other aspiring

R/Cers; single channel, then reeds, and finally proportional gear. In 1963 he opened a hobby shop in Northridge, California, calling it Larry's Hobby Center. It was then that Kraft came out with his KP-4 unit, which Larry promptly purchased. He had many, many flights with a Senior Falcon before graduating to a Candy with a Rossi .60 engine. In 1964 he entered his first contest and finished 12 in C-Novice. After several contests, and moving up to C-Expert, he entered his first NATS (1967) finishing 7th in C-Expert. With a few more contests under his belt, he entered the 1968 NATS, finishing 5th in C-Expert and also 5th in Formula I Racing. Then, in 1969, he finished in the top three in almost every contest he entered. His biggest win came at the Washington State International Contest, besting the then current National & International Champion, Phil Kraft. Two

weeks later he won another local Pattern contest at Whittier Narrows and headed for Willow Grove, Pennsylvania, confident, determined, and feeling really ready for the 1969 NATS. The rest is history. He not only won Open Pattern, competing against the finest in the country, but he also won Formula I Pylon Racing with 8 heat wins and one second. Along the way he topped Sam Fly in a tremendous head-to-head duel for all ten laps, winning by just a few feet in the blistering time of 1.50.6, which, I think, was low race time for the NATS. And, would you believe, both of his planes were the same ones he had flown in the previous year's NATS finishing 5th with each of them? The unprecedented double win earned for Larry the Trophy and title of Grand National R/C Champion.

Bob Smith, 16, finds it hard to
(continued on page 66)

BRYCE PETERSEN'S NIEUPORT II

"Without any signs of emotion Slater climbed into the little Nieuport and seemed to leave the ground like a bird. All eyes were on him. What followed was the most consummate exhibition of aerial acrobatics I have ever seen, performed a few yards off the ground and back and forth between hedges of the tall trees, where a single false move would have meant a ghastly smash. He zoomed almost vertically over the poplars at the far end of the field, turned in a beautiful immelman - half a loop, upside down, and half a barrel, came roaring back, nose down just over our heads and did a loop from which he emerged with his wheels brushing the grass. His two spins one right and one left, were done so close to the earth that they brought even the languid instructor to his feet and each time when he straightened out, the landing gear of the plane was no higher than a man's head. Marvelous flying, but he's mad - a lunatic."

Falcons of France by Nordhoff & Hall.

From the eyes of a witness at a French training school in 1916.

Designed as a French answer to the Fokker E-1, the Nieuport 11 was officially designated as Nie. 11C-1. The first in a series of highly successful

single seat fighters used up to the end of WWI.

How can the true modeler resist the glamour and cuteness of this famous old design?

FLYING SCALE

... is a title listed on the program at most major contests, but often at the bottom of the list. If time allows, a few brave souls risk hundreds of hours of super detail with nervous thumbs and, much too often, the result is a controlled crash. One might say that the **Flying** is not matching the **Scaling**!

Most scale buffs that I know will cringe at the idea of deviating from scale in the slightest to improve performance. In their minds it must be exact or it's not scale. For a model that is to rest on a shelf in the living room, I would agree, but one must remember that this is **Flying Scale** and the **Flying** is as important as the **Scale**. If a ship is unstable in the air, is it **Flying Scale**? I think not. Common sense will tell you that if you don't match the stability of its big brother it's **Flying out-of-Scale**! Some designs will scale down and retain proper proportion for stable flight and the Nieuport 11 is one of these designs. However, slight changes, barely noticeable, will improve its performance 100 percent. Such changes have

been made with this model but only the best trained eye can find them. In the air the ship is as stable as a rock and easy to fly. Even the most critical will admit it looks real. Technically, I will have to call my model a semi-scale design but I would rather use the word **Flying Scale** where the **Flying** matches the **Scale**.

CONSTRUCTION

An all out effort was made to prove to myself that just because it IS a scale design it **DOESN'T** have to be difficult to build. Usually, a scale bi-plane takes a whole building season to complete when you consider the problem areas like the wing struts, stringers, etc. A quick look at the plans and you will see how simple this can be with pleasing final results.

If I could claim any breakthrough





with this airplane it would surely be the continuity of construction. You will find that keeping track of the tools represents a bigger problem than the construction itself. To bear this out, the fuselage and wing were completed in one day and the model in eleven days.

FUSELAGE

First, make a trip to the local building supply for a slab of styrofoam, (the type used for wall insulation) 12 inches wide, 4 inches thick, 8 feet long and white in color. One slab is more than enough. Next, a few scraps of 1/8 inch masonite are necessary for cutting patterns. Two wooden yardsticks are drilled to fit toothpicks and these are used to make the straight cuts for your oversized stock.

Step 1.

Cut from stock a rectangular block of foam slightly larger than the side

view of the plane, 28 inches long, six inches deep, and four inches wide. Lay the masonite top inside pattern on the top and bottom, making sure it is centered exactly and HOT WIRE cut the inside cut. Be sure to save the inside piece for later use.

Step 2.

With the inside back in place, lay the side pattern in position and make the bottom cut.

Step 3.

Replace all cuts with toothpicks for squareness and make the top cuts, one side at a time, using one of the top patterns on the bottom.

Step 4.

Cut four 1/4 inch fiberglass tubes (sometimes used for pushrods) to length and epoxy to the foam. Using 3M contact cement, spray the inside of the fuselage, then sheet with 1/32 inch balsa. This adds stiffness to the foam.

Step 5.

With contact cement, sheet the outside of the fuselage and trim the nose and tail. Spread slightly and epoxy the precut firewall and nose-block in place and allow to dry (the

warm air of a hair dryer will set Hobbypoxy No. 1 in 20 minutes).

Step 6.

From 1/16 inch plywood cut two F1 patterns and hot wire the top front portion. Using F1 and F2, hot wire the top rear portion and contact cement in place.

Step 7.

With 1/32 inch plywood, cut and secure the cockpit pattern and sheet the fuselage top. Trim and round the noseblock to shape. The bottom portion of the fuselage is left open for equipment and pushrod detail later on.

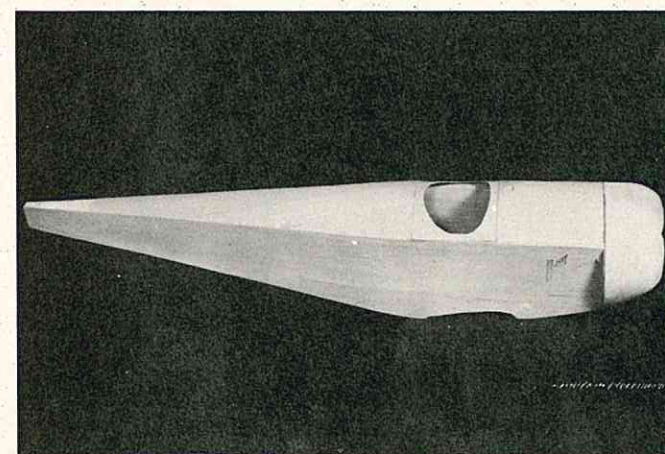
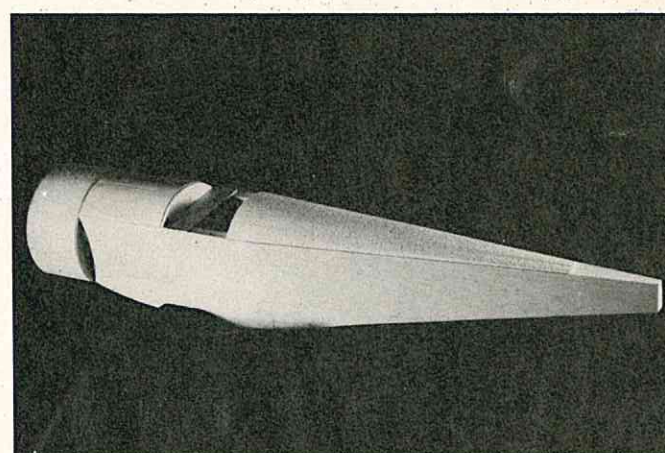
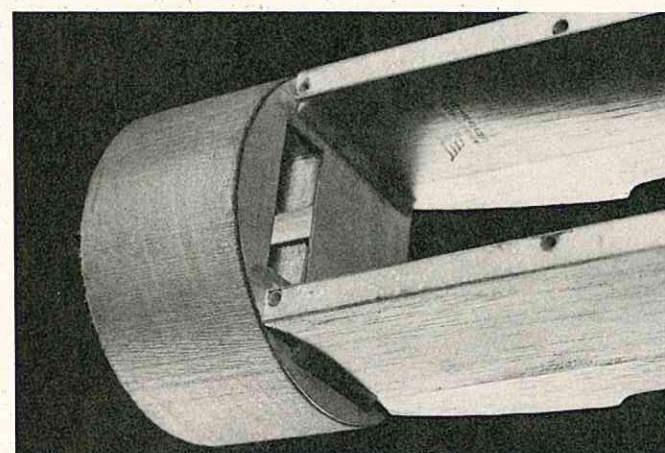
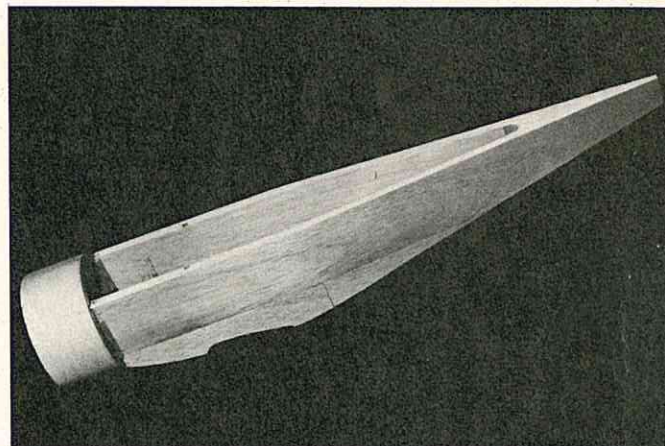
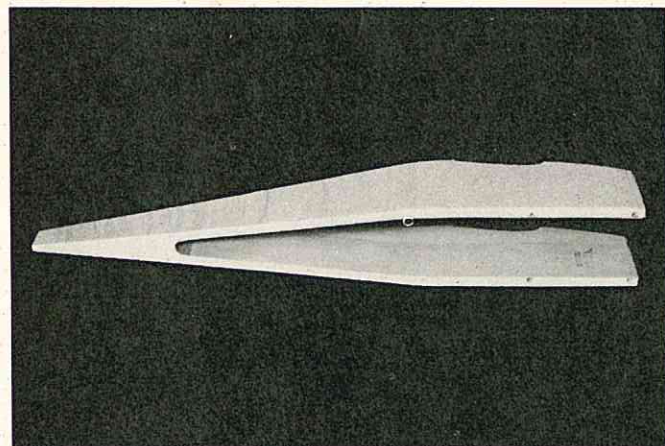
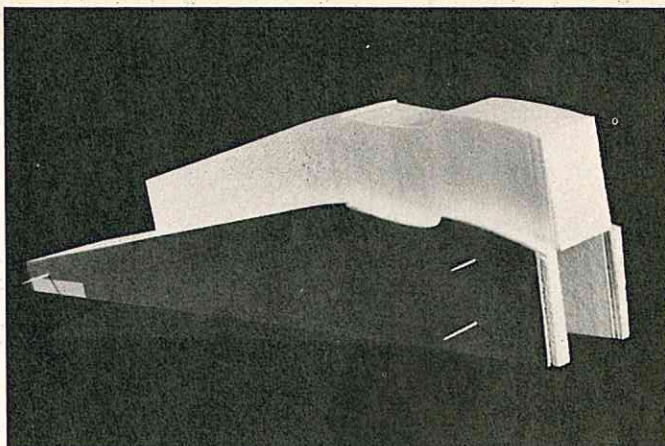
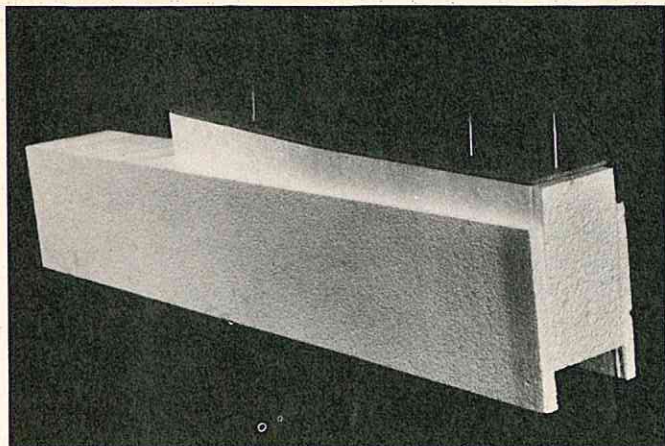
TAIL

How can 1/8 inch balsa be used for this size tail surface? The answer is that when Coverite covering material is used on both sides, it stiffens the wood like a piece of plywood and is found to be warp free. Coverite was used throughout the model and I highly recommend it. Select a good grade of 1/8 inch balsa and cut to shape. Be sure the grain of the wood is according to plan and add 1/32 inch plywood doublers where noted. Stitch with elastic thread (See Wing-Rib Detail) and cover both sides with Coverite. Add the wire connector to the elevator and finish with mylar hinges. The tail is secured to the fuselage with epoxy at this time.

WINGS

Step 1.

For the top wing cut two blocks of foam 23" by 7" by 1". For the bottom wing cut two blocks 4" by 20" by 1". Use a yardstick for these cuts and make sure the panels are perfect. If a



Top row, left: First cut on fuselage. Right: Second fuselage cut. Second row, left: Third fuselage cut. Right: Fuselage ready for top cuts. Third row, left: View of fuselage with cowl in place. Right: Fuselage top cuts. Left: Completed fuselage.

warped panel is cut here it will be transferred into the finished wing.

Step 2.

With contact cement, sheet the bottom of all four panels with 1/32 inch balsa, leaving a 1/4 inch overhang. Contact cement the 1/4 inch square leading edge on the front and secure the rib patterns at both ends for hot wire cutting. (All four wings are cut square on both ends at this time. The center and tip cuts are made later.)

Step 3.

Hot wire cut the airfoil on all four panels starting at the trailing edge and advancing to the leading edge. The bottom wing is joined at the center section and 1 inch dihedral is added to each wing tip. The top of the bottom wing is covered with 1/32 inch balsa at this time. Use a small ribbon of glass cloth around the center joint. With a

razor blade, shave the foam at the wing tip, then sheet.

Top wing - Cut the aileron and center section on each panel separately. Be sure to reverse the pattern for the second cut. Add the tips and join together at the center section on a **FLAT TABLE**. With a razor blade, groove out the foam for the center spar and aileron tubing. Add the aileron detail as well as the center spar at this time using epoxy. Add the wood center section and sheet the top of the wing. Sand to shape.

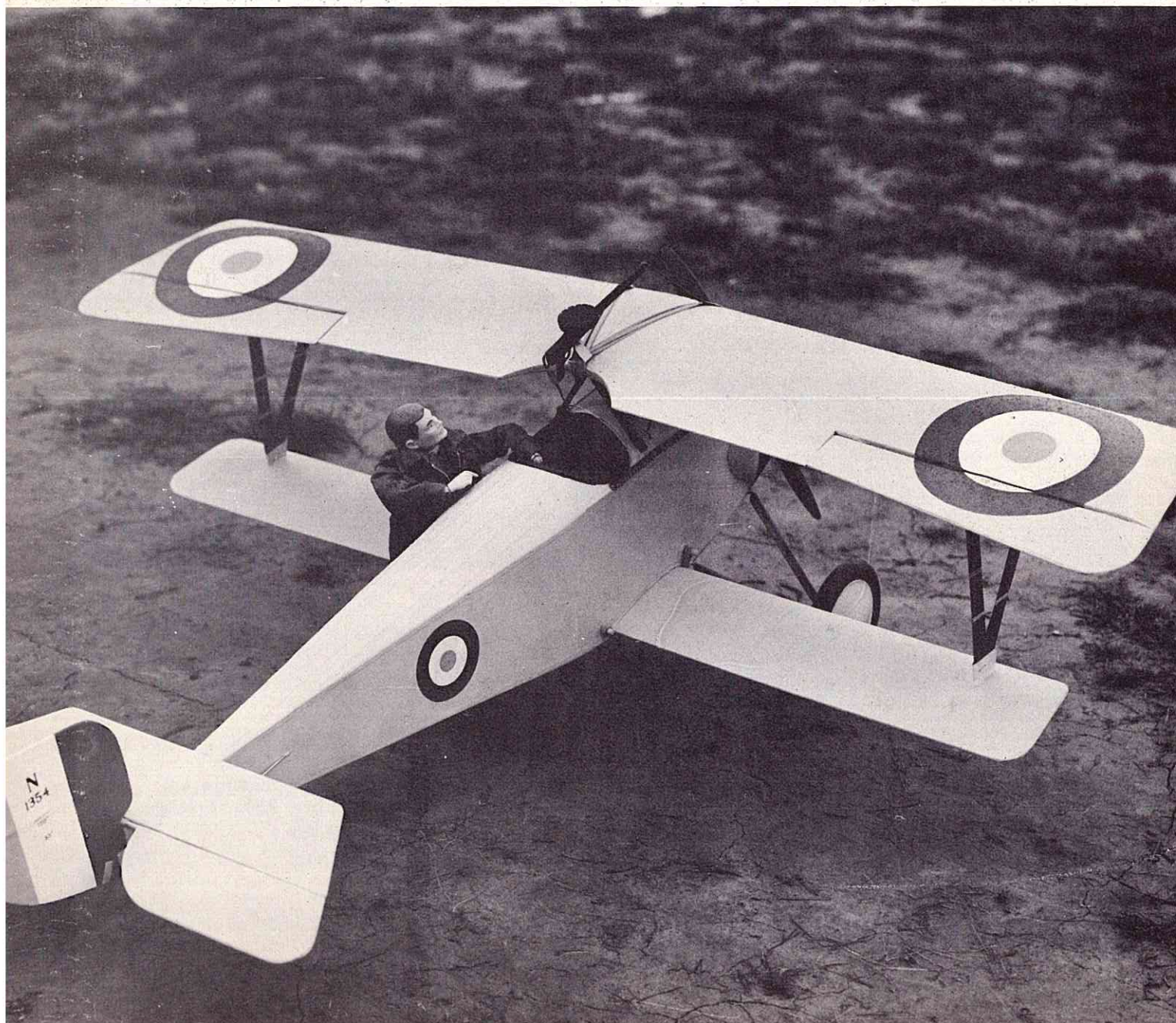
RIB STITCHING

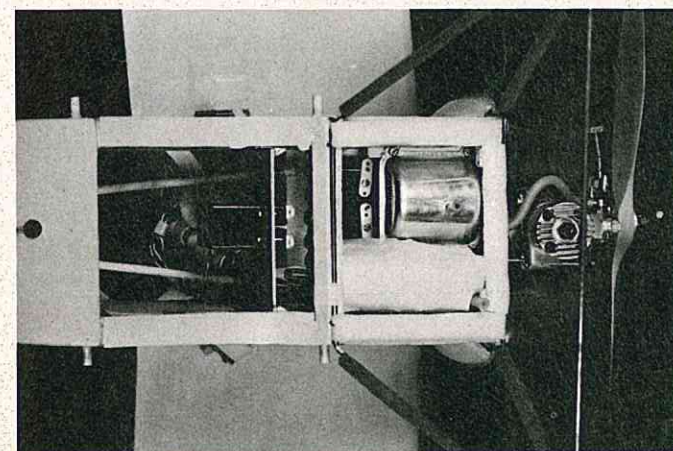
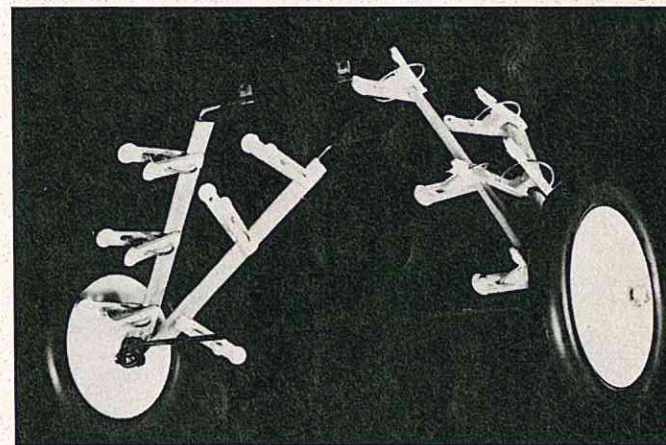
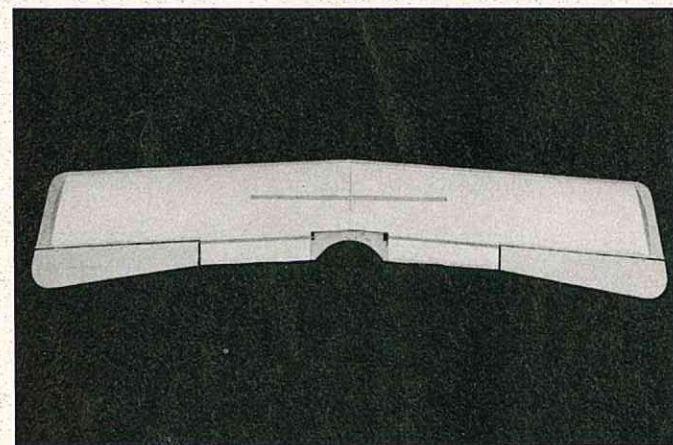
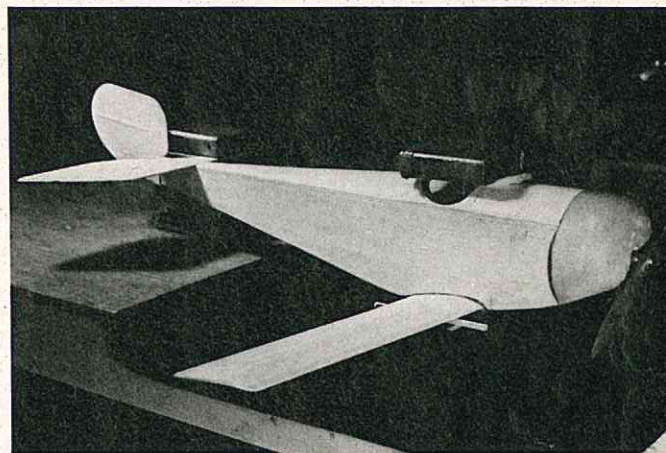
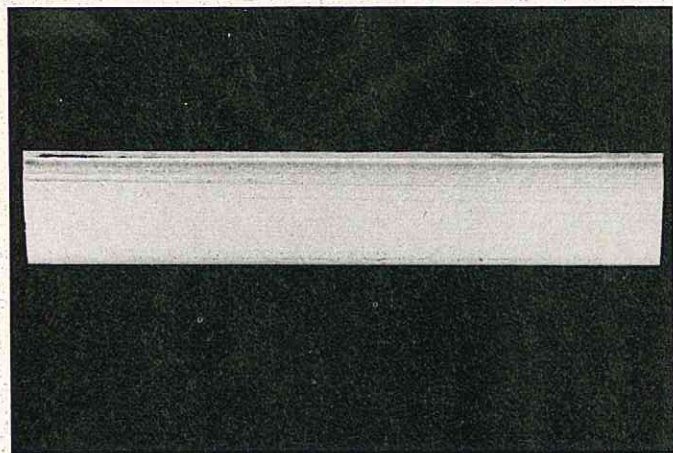
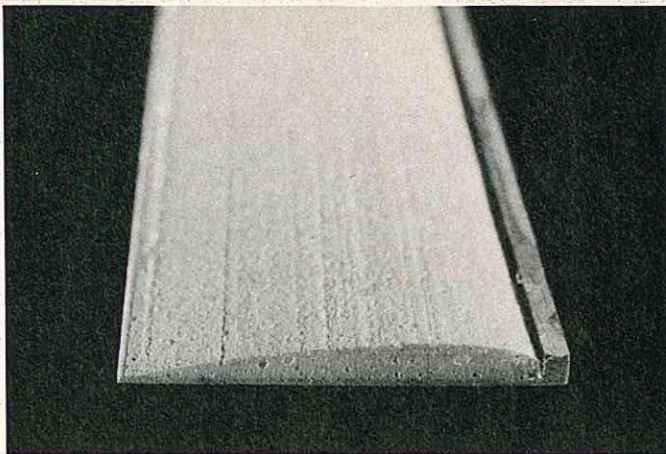
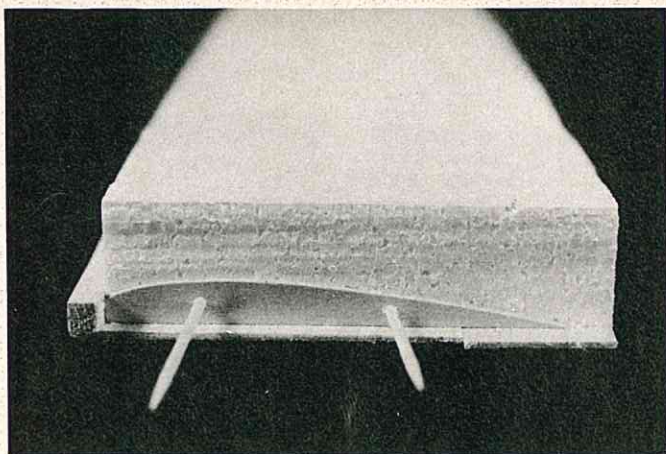
Using elastic thread and a large needle, start from the top leading edge down through and back to the trailing edge. Go up through and back to the top hole. Go back through and around the leading edge and pull tight and tie in a knot. Tack glue on both sides and leave to dry. Cut off all excess at the

leading edge and you are left with a stitched and glued rib. After covering with Coverite and heat is applied, the fabric pulls down around the string and a scale-like rib appears. (I have actually argued with friends that they were not built up wings.)

WING STRUTS

Remember the four fiberglass tubes in the fuselage? They have probably been covered over on top so, with a piece of piano wire, shove up through the bottom and through the top and, with a rat tail file, file out the holes on top. Using 3/32" inch piano wire, bend the wire struts to shape and solder together at the rear connection to form a frame with four legs. Set the fuselage on a flat table and jig the stabilizer exactly horizontal to the table by measuring from the leading and trailing edge to the table. Prepare two cardboard templates to match the





Top row, left: Lower wing stock ready for cutting. Right: Lower wing airfoil cut. Second row, left: One lower wing panel. Right: Alignment of lower wing. Third row, left: Upper wing ready for sheeting. Right: Landing gear assembly. Left: Bottom view of completed landing gear.

FUSELAGE

STEP 1
CUT A FOAM BLOCK FROM MASTER STOCK
28" LONG, 6" DEEP AND 4" WIDE

STYRA FOAM IS SUPPLIED
FOR INSULATION IN HOMES AND COMES
4" WIDE AFTER THE INSIDE SHEETING IS
COMPLETED THE FOAM IS WIDENED TO FIT PLAN

MASONITE (HARD BOARD)

1/8" MASONITE
SIDE PATTERN
2 REQ

1/8" MASONITE
INSIDE PATTERN
2 REQ

STEP 2
MAKE INSIDE CUT FIRST
AND LEAVE INSIDE IN PLACE
FOR SIDE CUT PLACE SIDE PATTERN
ON AND CUT BOTTOM ROUND CUT

STEP 3
SHEET SIDES WITH 1/32" BALSA AND
EPOXY FIRE WALL AND NOSEBLOCK IN PLACE
(SIDES ARE WIDENED 1/2" AT THIS POINT)

STEP 4
USING 1/32" BALSA SHEET EXPOSED FOAM
FIRST LEAVING 1/8" EXPOSED TO FIT
COCKPIT FARING - SAND NOSEBLOCK TO SHAPE

1/8" MASONITE
TOP PATTERN
2 REQ

F2
F1
2 REQ

CUT OUT

1/8" PLY

REAR L.G. MOUNT HARDWOOD

CUT OUT

COCKPIT PATTERN
1/32" HARD BALSA

CUT OUT

WINDSHIELD
(STOVE VENT PIPE ALUMINUM)

HARDWOOD
MOTOR MOUNT

STEP 3
PLACE BOTTOM ROUND CUT BACK IN
PLACE AND MAKE TOP CUTS
THIS COMPLETES THE FOAM CORE
OF YOUR FUSELAGE

FIBERGLASS TUBES 1/8" O.D.
(SOMETIMES USED FOR PUSHRODS)

STEP 4
CUT 2 LENGTHS OF FIBERGLASS
PUSHRODS AND EPOXY IN GROOVES
AND USING 3M CONTACT GLUE SHEET
THE INSIDE WITH 1/32" BALSA

STEP 5
USING PATTERN F1 CUT FOAM FOR
TOP FRONT AND TOP BACK (F1 & F2)
FASTEN WITH CONTACT CEMENT

PIANO WIRE GUN
BRACE HELD BY WING
HOLD DOWN RUBBER

ALUMINUM

1/32" BRASS

POWER PACK

ORBIT SERVOS

RCVR

DEBOLT TANK

ANTENNA

1/32" PLY
THIS PANEL IS
REMOVABLE WITH
4 WOOD SCREWS

WHEEL SHAFT
12-3/4" LONG

O RING

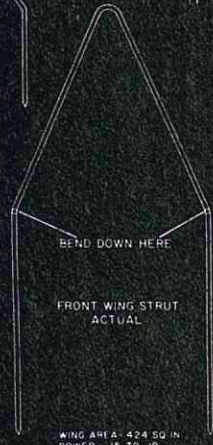
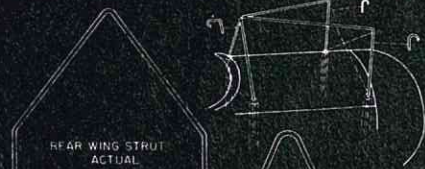
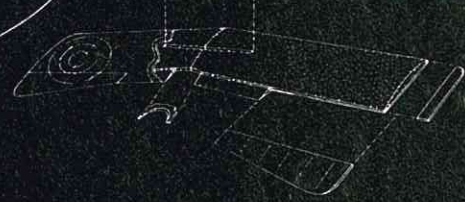
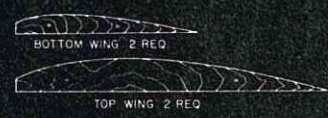
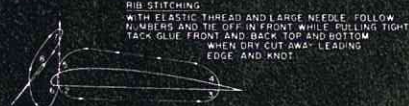
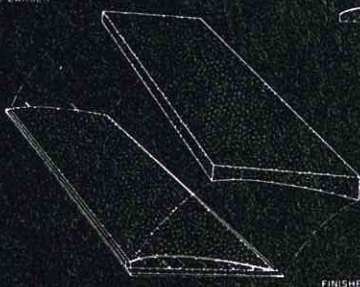
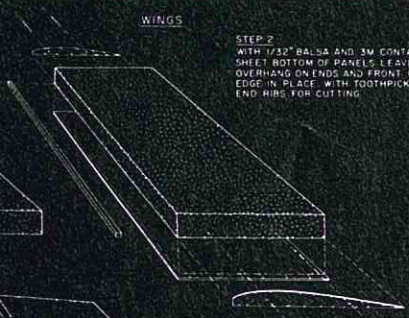
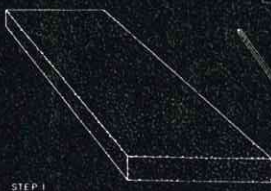
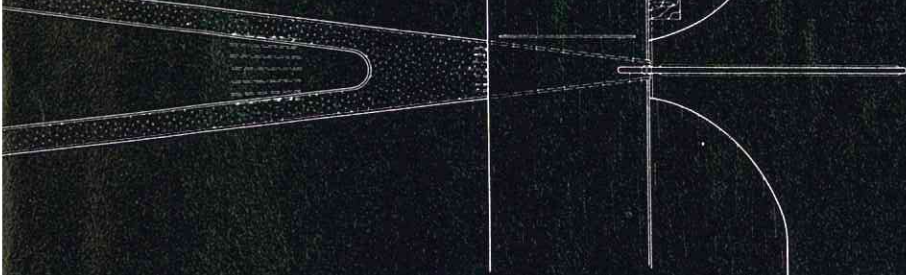
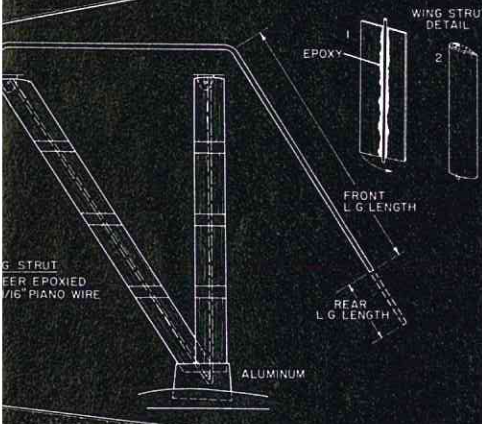
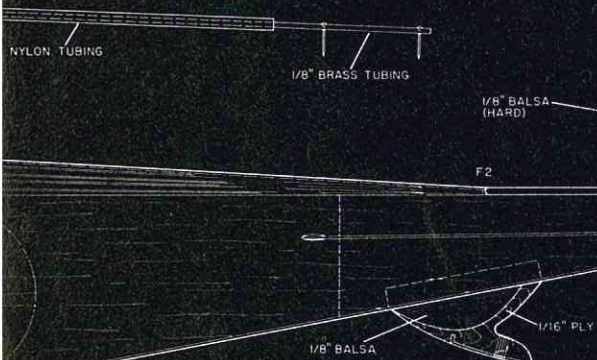
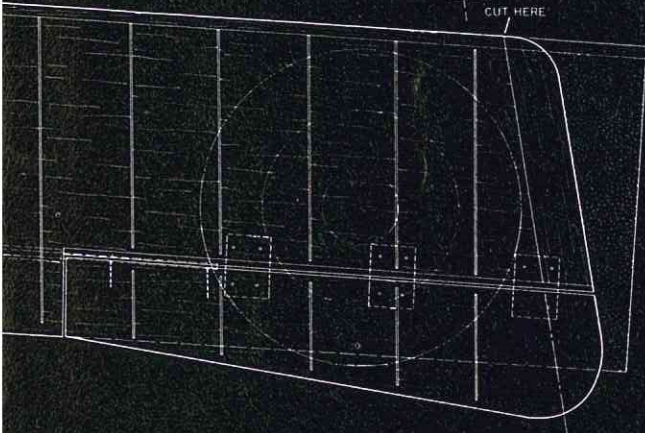
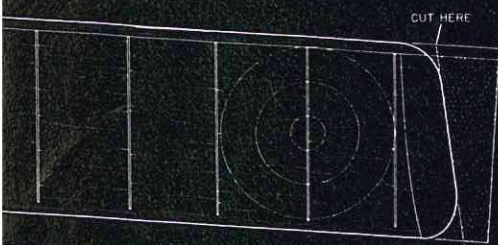
ALUMINUM GUN MOUNT

ELEVATOR

MOTOR

RUDDER

ING OUTLINE FROM PLAN AND
ER FOAM PANELS FOR FINAL
REVERSE FOR LEFT PANEL



NIEUPORT 11

DESIGNED BY	BRANT PETERSON	INKEO BY	CLAUDIO FLORES
-------------	----------------	----------	----------------

FULL SIZE PLANS AVAILABLE - SEE PAGE 71



exact height and wing incidence to the table (see photo). Tape these to the fuselage sides. Set the wing on the templates and check to be sure everything is square and true. Fill the tubes with epoxy and lower the four wire legs down into the tubes until the top matches the cardboard (see photo). When dry, you have perfect wing alignment that is there to stay.

The landing gear and V-struts, with a natural wood finish, will add greatly to the looks of your airplane. This system is simple and strong and one of the best features of the project. From your lumber company obtain a few scraps of wood veneer about 1/64 inch thick that has a paper backing. Cut to length for the different struts with a little extra width. Smear a glob of epoxy in the center and bend around the piano wire to form an airfoil and clamp about 1 inch apart with spring loaded clothes pins. Jiggle around until in good alignment. After the epoxy sets, sand the trailing edge straight and lightly sand the entire area. A little wood stain is added and, presto, a natural wood strut!

LANDING GEAR and SHOCK ABSORPTION

Careful planning went into the design of this landing gear. Correct landing procedure is a semi-stall attitude. A flexible landing gear is desirable, especially in the vertical mode. If both wheels turn on a common shaft the take off run is more stable. One inch OD hard rubber ('O' Rings) are used for this purpose. The horizontal shaft will seem stiff until oil from the engine lubricates the 'O' Rings. Sitting on the ground you should be able to hold down on one

wing tip and when released the ship should oscillate two times due to the flex in the landing gear. When this is achieved both landing and taxiing is improved.

SELECTION OF POWER

My Nieuport is powered with an Enya .19 RC which provides sufficient power plus a little to spare. A good healthy .15 should fly the little model in a scale-like manner. After the engine is selected, prepare a hardwood mount according to plan, and cut out the noseblock to fit and epoxy in place.

RADIO GEAR

My eyeballs were bulging when I picked up the little Orbit servo at Toledo last winter. I thought to myself, "Open the door, Richard," to a new age of construction, size, etc. Then the people at the Orbit booth showed me an even smaller servo that would easily fit in my watch pocket, but they said I would have to wait a while for this one. I certainly admire these people that work so hard and even gamble their future to give us a better product. After the Orbit gear was installed, the total weight of the ship came to 3 pounds, nine ounces, full house.

FINISH

Acrylic lacquer was chosen because of its wide range of colors and its coverability. Two coats with a brush will do the job nicely because the Coverite doesn't need to be sealed. I brushed it on at full strength after heating lukewarm. The final result is a canvas-like appearance and most realistic.

ROUNDELS (Insignia)

For that finishing touch the quali-

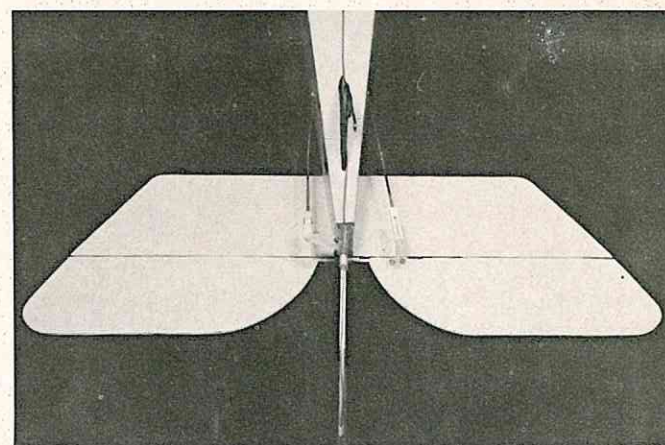
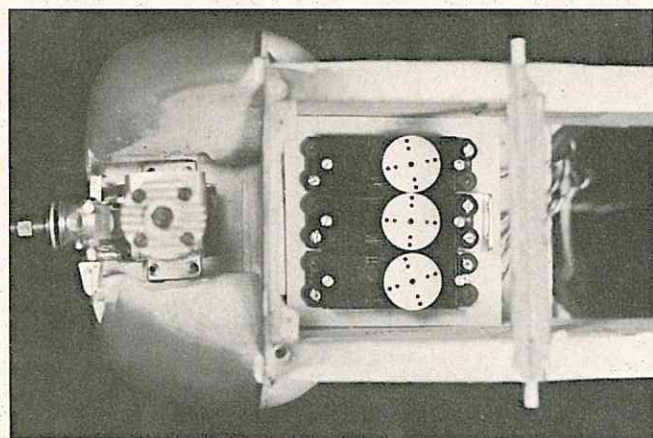
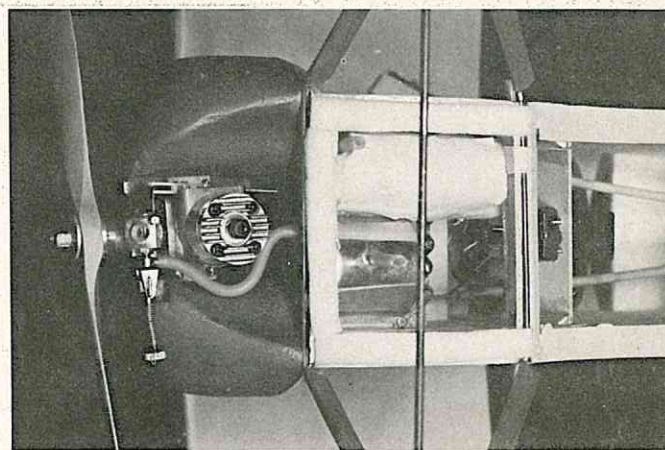
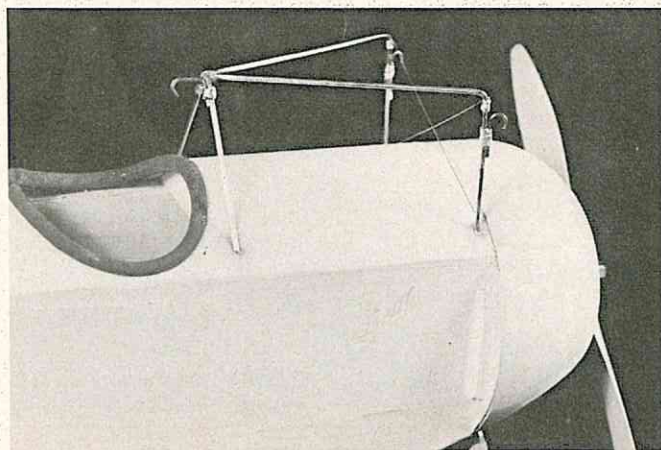
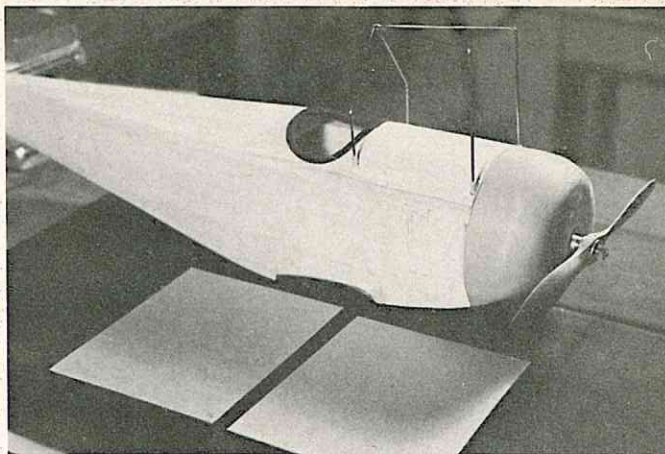
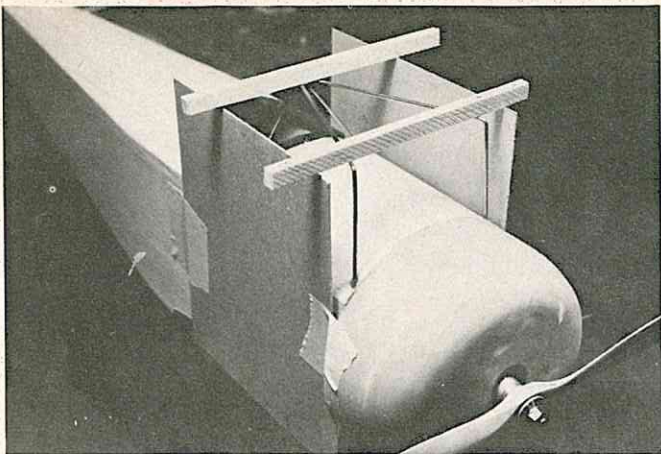
ty of your roundels will add the color and appeal you are hoping for. First, you pre-paint lightweight silkspan red, white and blue. Attach a piece of razor blade to a compass and cut out the different circles. Locate the center of the circles by the little hole the compass made and dope to the surface. After drying add a few brush strokes in a circular motion and you have a beautiful scale-like insignia. It will also look like they were painted on.

FLYING

Take off - Apply power and hold a little right rudder. This will cause a slight right turn. Ease off of the rudder and the ship will straighten itself with torque. By this time the tail should be up and it will lift itself into the air. If you are one of those that cannot help holding back on the elevator, I suggest you feed in down trim in advance and then a little back pressure will be required for normal flight. The flight characteristics are of the self-neutralizing nature and should trim out hands off. A slow glide is desirable on the final approach since no wing drop off tendencies have been experienced due to the high center of lift which gives a pendulum effect.

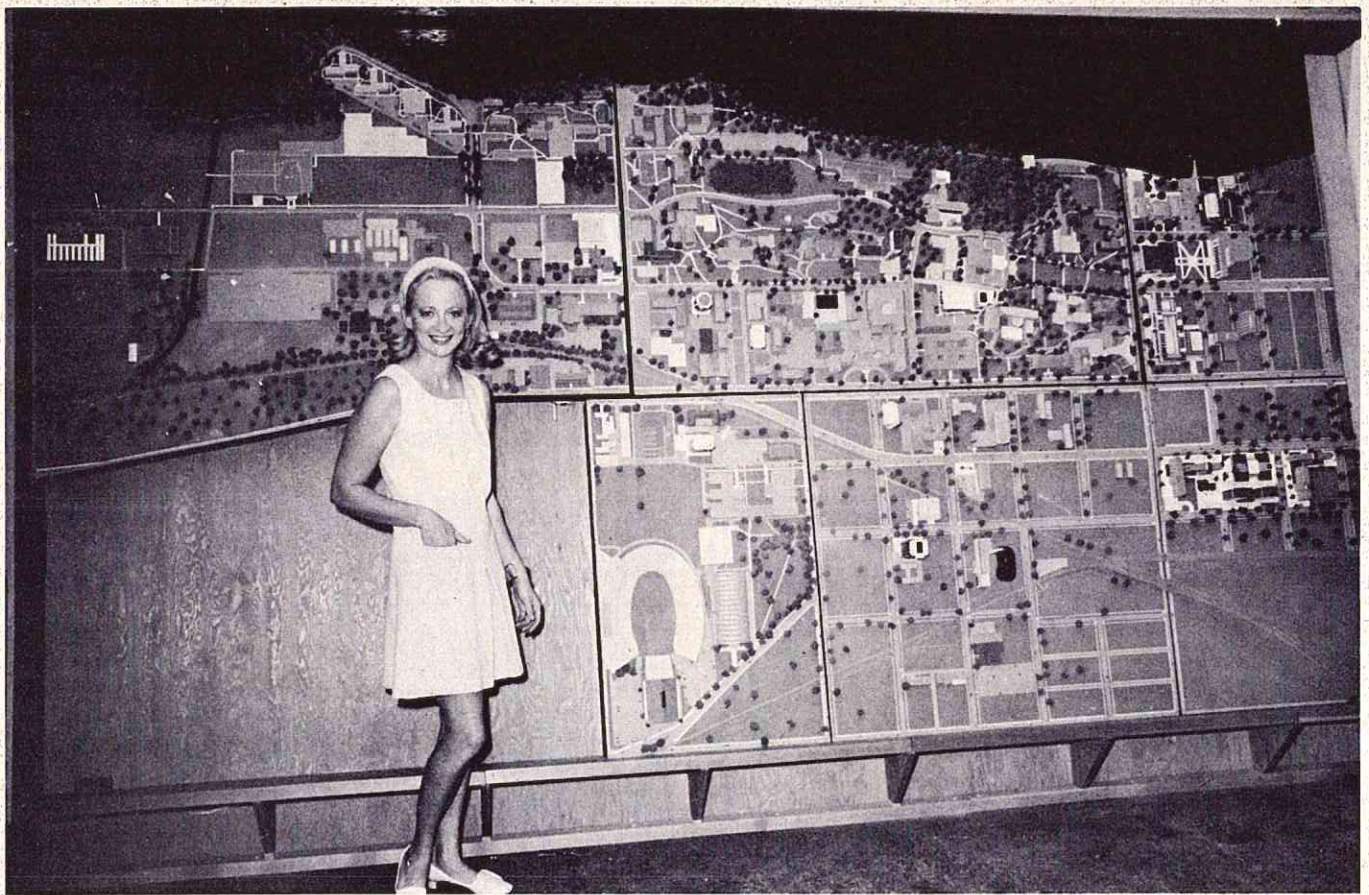
A Word of Thanks

First, to my dear wife, who flies co-pilot with the budget and typewriter. Second, to those at RCM for a constant atmosphere of adventure with contests and heads-up leadership for the modeler and his future. Next, my brother, Joe, for his slip-stick and helpful suggestions. Last, the Orbit organization that produces for us the reliable radio gear that makes it all possible.



Top, left: Wing bracing being jugged for epoxy set.
 Right: Ready for top wing brace placement, showing cardboard jigs. Second row, left: Finished cabane brace. Right: Underside of fuselage showing fuel tank, battery. Third row, left: Orbit servos in place. Right: View of tail linkages. Left: The Nieuport, ready for take-off.





Author's completed architectural model of the University of Wisconsin campus, built to a scale of 1/50" - 1'-0". Overall size of the model is 7' x 13'.

UNIVERSITY MODEL BUILT FROM R/C AERIAL PHOTOS

R/C MODEL USED AS A FLYING CAMERA PLATFORM AIDS IN CONSTRUCTION OF UNIVERSITY OF WISCONSIN ARCHITECTURAL MODEL.

BY ROMAN BUKOLT

Aerial photography using a radio controlled model as a camera platform is not new. As a matter of fact, I saw a photo of an airport apron taken from a model in a 1956 model magazine. My experiments in the use of a camera plane, however, may be somewhat unique in that they were the most logical means to an end.

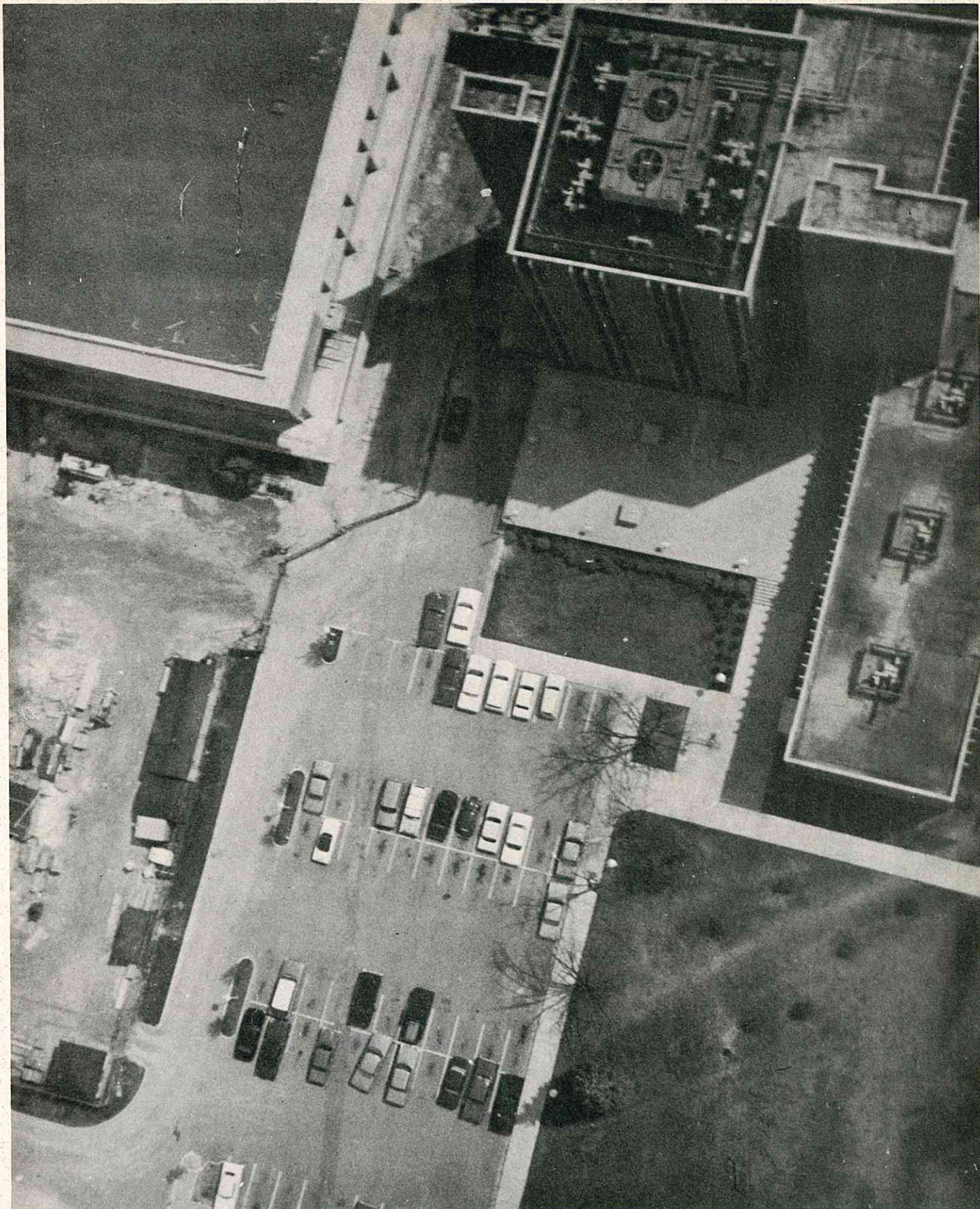
I am an architectural model builder by profession. Two years ago I was commissioned to build a 1/50" scale model of the University of Wisconsin campus which would include 750 acres of developed land and 250 buildings. The model was to include color, texture, window, door and building fenestration details of each University building, all trees, sidewalks, drives, roads, stairs, retaining walls, parking lots, etc., all in their proper scale, location and detail. The physical model size is 7' by 13' and is built in seven sections.

Most of the campus buildings are over twenty years old, many more than 50. Available data included blueprints of about 1/3 of the buildings, many not updated after building expansions or renovations, and most useful, a 1/50" scale map of the campus showing the majority of the building and road locations and most important, the land contours.

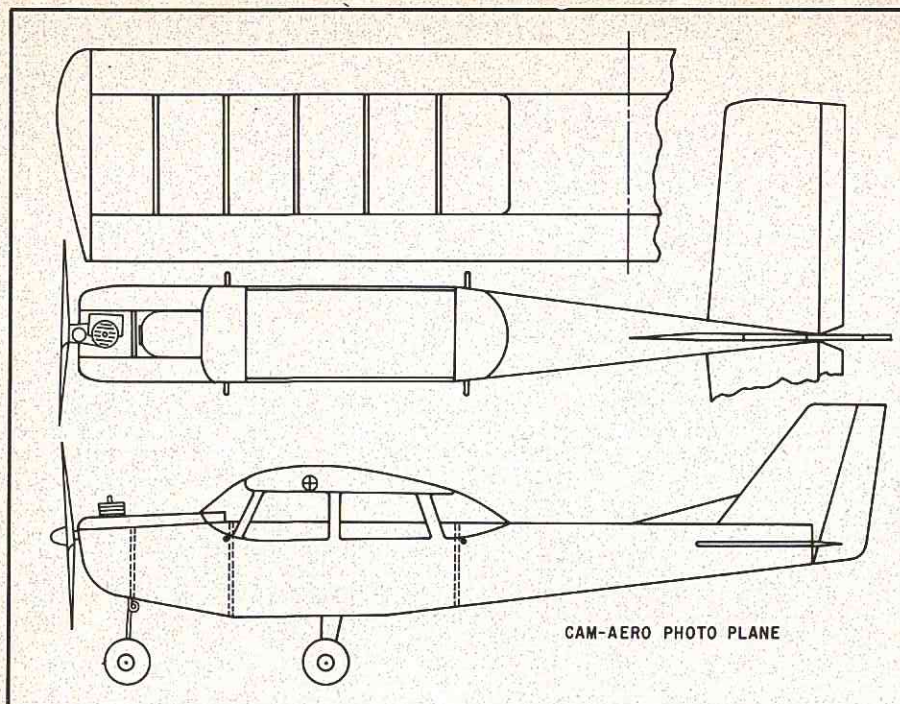
A great deal of information remained to be gathered. A camera with a wide angle lens provided me with a means of obtaining building elevations (side views of buildings). Then, knowing a few large dimensions such as door sizes and window spacing and allowing for distortion, I was able to secure vital accurate dimensional information by scaling from the photos (about 800 of them taken at ground level). The tedious task of gathering accurate dimensional data on building roof plans, sidewalks,

parking lots and landscape still remained. I'm no surveyor, so measuring was out. The obvious solution was aerial photography. After deciding I'd need a couple dozen shots, I called a local commercial photographer and he quoted a multi hundred dollar figure! So, chalk it up as expense, but, wait a minute! Why not? I figured it would be fun to try it anyway, and so I started designing the CAM-AERO, a flying camera platform.

What made this feasible was, 1) I had a "Kodak Instamatic" Model 154 camera, and 2) I had acquired a 4 channel digital radio. The camera features an instant loading 12 or 20 exposure drop-in cartridge and has a spring wound motor driven film advance, which means that once the camera is wound and the film dropped in, one can take 20 photos by simply pressing the trigger. The camera is compact, only 4" by 2 3/4" by 2" over-



This enlargement of the original aerial photograph of the Russell Laboratories on the University of Wisconsin campus is to a scale of approximately $1/40'' = 1'-0''$. Taken from an altitude of 485', the photograph proved quite useful for identifying trees and shrubs and their locations.



DESIGN NOTES: CAM-AERO PHOTO PLANE

WING	
Wing Span	48"
Wing Chord	9"
Wing Area	432 sq. in.
Aspect Ratio	5.3/1
Airfoil	15% Clark Y
Center of Gravity	30%
Wing Construction	1/4" L.E. w/ 1/16 x 2" L.E. caps 1/16" x 2" T.E. Top & Bottom 1/8" Full Depth Spar

FUSELAGE	
Fuselage Length O.A.	31"
Nose Moment (Prop to C.G.)	9 1/2"
Tail Moment (C.G. to rudder hinge)	22"
Cross Section at Cabin	4" W x 5" H
Fuselage Construction	1/8" sides w/ 1/32" ply Dbr. 1/4" top, 1/16" bottom 1/8" ply firewall 1/8" balsa formers

EMPENNAGE	
Stabilizer Span	20"
Stabilizer Chord	5 1/2"
Elev. Chord	1" T.E. Stock
Stab Construction	1/16" Sheet + 1/8 x 1/4 Sandwich
Rudder-Fin Height	5 1/2"
Rudder Area	27 1/2 sq. in.
Rudder Construction	1/4" Balsa Sheet

ACCESSORIES	
Engine OS Max .15 R/C	
Tank 4 oz. Sullivan	
Wheels 2 1/2" DuBro	
L.G. 1/8" MusicWire	
Pushrods - NyRod	
Horns Rocket City	
Prop. 8"-4" Cox	
RADIO	
4 ch. Bonner 4RS	
Rudder-Elev. Rt. Stick	
Engine-Camera Lft. Stick	
CAMERA	
Kodak Instamatic	
Model 154	

all, and weighs 12 oz. fully loaded. It is triggered by an aileron servo mounted adjacent to the camera on a common plywood mount suspended in foam rubber, so taking pictures simply required shoving the aileron stick hard to the right and allowing it to neutralize, ready for the next shot.

The plane was a 432 sq. in. wing area, 48" span high-wing, powered by an OS Max 15 and utilizing rudder, elevator and throttle controls.

Two problems hung over my head during the construction of this project. First, would engine vibration, aerial instability or wind impact cause too much motion to the camera for adequate photo sharpness, and secondly, would the plane be steady, stable and reliable enough for me, a novice multi flyer? The only available flying site was a parking lot or baseball diamond bordered by trees, and the flying would have to be over a rather

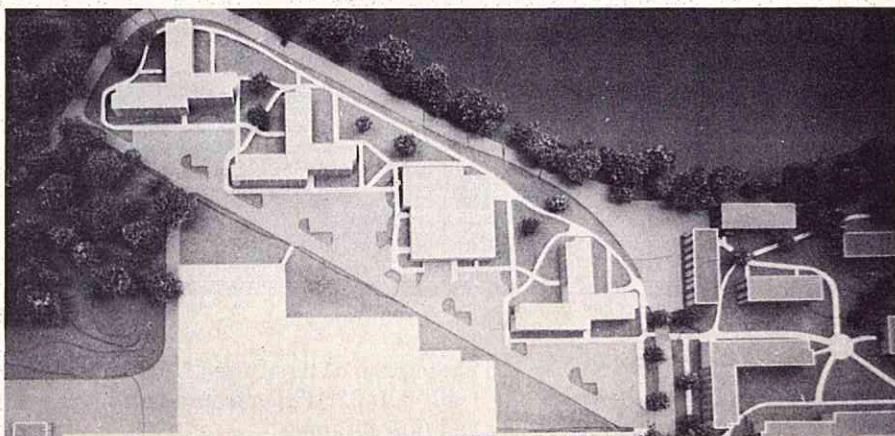
congested area. Up until then, my R/C experience had been limited to a year of flying a single channel Whiz Kid on weekends and about a dozen REM training flights with my then new digital system, in an Enya .09 powered home-built job with a plywood fuse and the Midwest foam wing and stab. Any one of these reasons was enough to give me second thoughts about the whole photo project, but I plunged onward!

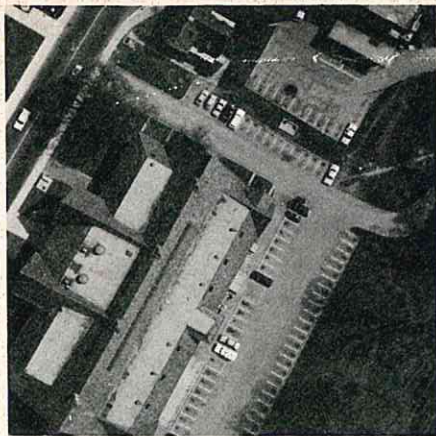
The plane was finished and ready to test early in April 1968. A few days later I had a clear, warm (40 degrees F.), sunny day with "light and variable" winds. To coin a phrase, "It flew off the board!" It seemed very stable and after a couple of minor horn adjustments, it flew very easily slowly, (35 mph) and smoothly. These first two test flights were made in a new development near my home where there were streets and sidewalks, and a

few new homes separated by large empty areas with tall weeds. On the second flight, after making trim adjustments, I tried the camera. I shot a twelve exposure roll and felt like frosting was added to the cake when I removed the wing after the flight and saw that all 12 frames were exposed. I don't know why I didn't expect it to work, but fortunately, it did. After 2 days of anxiety, I picked up the prints at the drug store and lo and behold, I had six sharp photos and six slightly blurred photos of the area!

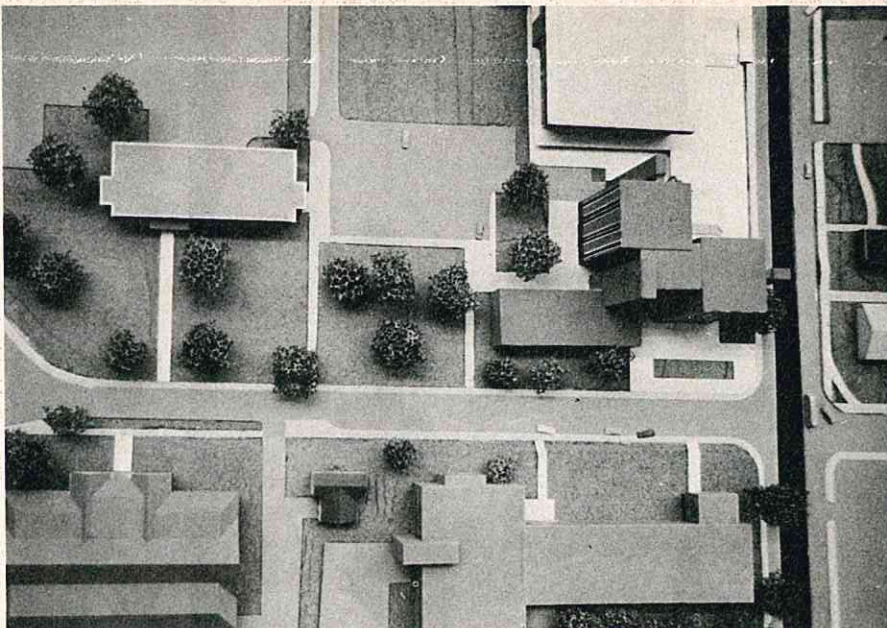
Knowing the camera focal length, degree of enlargement of the prints over the frame width, and the street width, I was able to calculate the plane's altitude by measuring the street width in the photo. This resulted in two interesting discoveries. The plane was flying much higher than I had estimated, 850-900 feet and much farther (2 city blocks) away than any

Below, left: R/C aerial photograph of University of Wisconsin Men's Dormitory on shore of Lake Mendota. Photo taken at 900 ft. altitude. Below, right: Close-up of model for comparison to aerial photo.





Above: R/C aerial photo of U.W. Stock Pavilion from 480' altitude. Note sharpness from inexpensive Kodak Instamatic camera. **Right:** Architectural model showing Pavilion in lower left corner.



visual observations had led me to believe. As near as I could tell, the blurred photos were all taken while the plane was turning. With this knowledge, I was ready to go to work!

To minimize the risk, I again waited for a sunny, mild day with light and variable winds. April 13 was just such a day. All the way to the campus I concentrated on blanking out such thoughts as "what if I lose it over one of the tall buildings, or over the lake or over busy University Avenue, or in the top of a 60 foot elm?" Very near to the center of the area that I wished to photograph was a row of intramural football fields, giving me an airstrip of approximately 100 yards by 200 yards, enclosed by tall elms on one long end and a six story building on the other.

With all the preflight checks behind, I glanced at my watch as the engine started, knowing that my 4 oz. tank would give me 10 minutes of air time if I backed off full throttle after reaching altitude. Final control checks were made at high and low throttle. I chose to hand launch, giving me the added safety of precious distance.

The flight, the plane's third, began with a roller coaster ride ranging between 10 feet and 6 inches off the ground while I attempted to steady the 3½ pound plane in level flight at about 10 feet altitude. I held it there, mustering up all the speed I could, until, when it seemed to be too late, I began a gentle right turn with a slight climb. Not knowing my plane at all, I didn't want to chance a stall. The climb out downwind was gradual, but it did clear those 60 foot elms by a safe 10-15 foot margin, so I exhaled that

breath I took in sometime before the launch, and collected my frazzled nerves. Flying in large circles, the plane climbed until it looked so small that I could barely distinguish its movements and responses to my commands. Hoping to return it in one piece, I didn't concern myself with any orderly pattern as I began shooting pictures. I simply flew over buildings and triggered every 5 or 10 seconds.

By the time I had taken the third exposure, the plane seemed to have slowed down and was gradually losing altitude. Because I was about 900 feet up, and approximately two blocks away, I could not hear my muffler equipped engine over the noise of the traffic on the street bordering the field, some 50 feet from me. I therefore, quickly assumed my engine had died. Judging by my glide angle, I thought I had time to make one large 360 degree turn before lining up for a landing, so I quickly snapped off the remaining 9 exposures so that I could concentrate on saving the plane. After all, I might not make it, and this might be my only chance to get pictures.

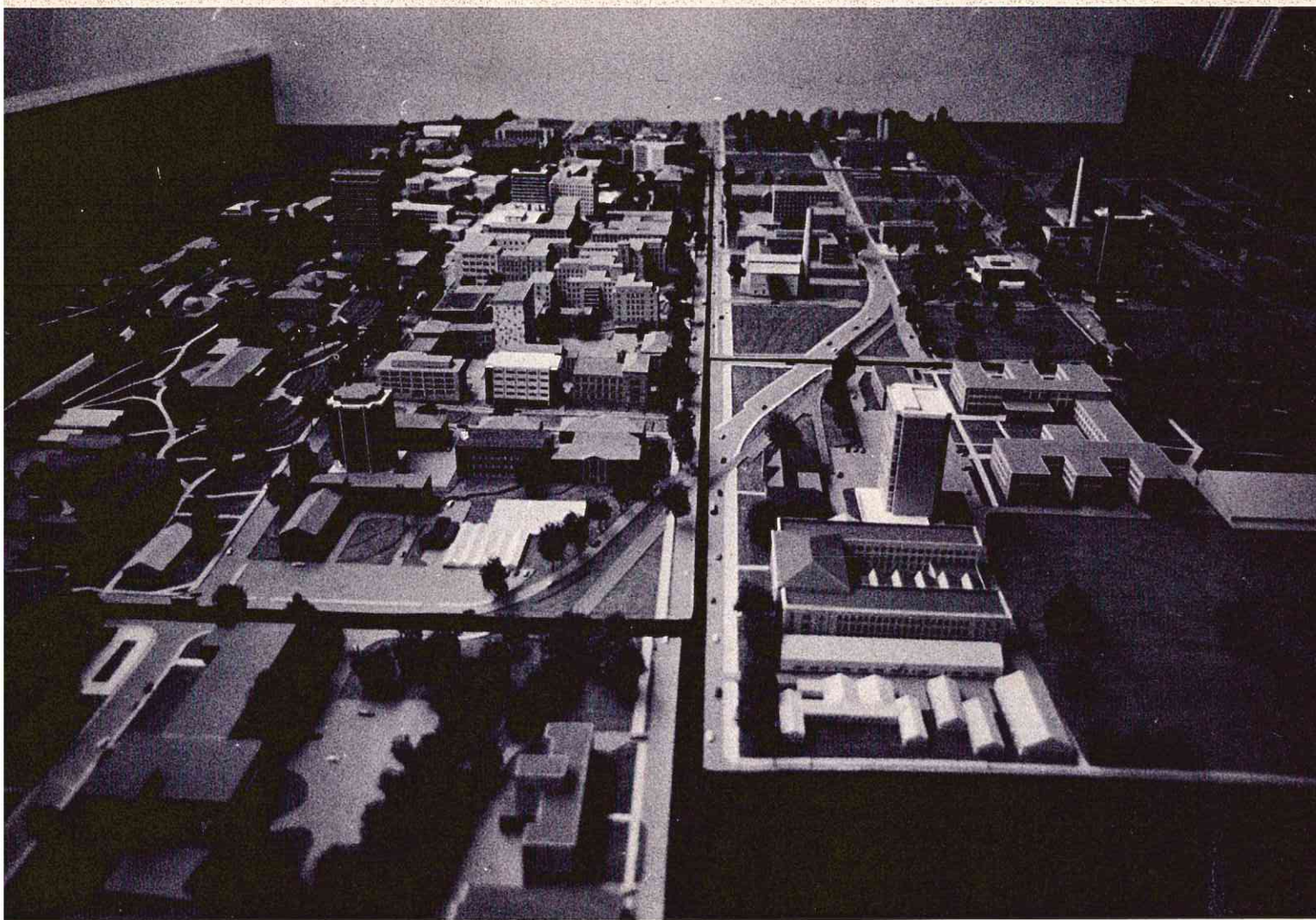
I felt a little relief when I saw that the glide path was flat and slow and was in good position for my final approach. I came down to about 40 or 50 feet altitude over some single story buildings in the next block and aimed the plane right at me, bringing it below the power lines as it crossed the street bordering the far edge of the field. The glide path was centered between the large elm trees and in an instant later I was in the clear, entering the field at about 6 or 7 feet altitude. Suddenly, as I relaxed and began to think, it

occurred to me that the glide path was more like that of a sailplane. The plane was going to fly right past if I didn't do something quickly. It was then that I noticed the engine was still running at a rather fast idle. Each time I moved the stick to the right to take a picture I must have slowed the throttle, which is controlled by the vertical motions of the same stick. All this time I had thought I was without power. I quickly chopped the throttle as the plane flew by me right in the middle of the strike zone, and once again roller coastered as I fiddled with the elevator stick in an attempt to touch down before reaching the end of the field. A perfect three point landing, nose wheel, spinner and top of the rudder, caused a mild fracture in the fin and sent me home as excited as a little kid on Christmas morning.

My second trip to the drug store netted me 10 out of 12 good photos.

U. W. barns, pasture, cows, railroad, and miscellaneous homes bordering campus. R/C photo taken from 500' altitude.





Low angle shot of portion of University of Wisconsin architectural model.

However, in my haste to shoot off all the film, most of the pictures were considerably overlapped. Again, I was a whole block farther away than I had thought I was. A quick calculation showed I flew at 900 feet and again my camera frame included a larger field than I had anticipated, but, I had tasted success!

The next day, I flew two 8 minute flights from the same field, again hand launched, but this time I used some care in lining up the flight path parallel to the street and shot my exposures less frequently and in a somewhat systematic fashion. Both flights worked without a hitch and I was rapidly developing a cocky sort of self confidence.

Processing revealed 23 out of 24 good clear shots, however, I was still missing data on several buildings and felt a bit delighted to think that I "had" to go back for more flights.

It was Saturday morning this time, and as I arrived at the "Intramural Air

Patch", I discovered a new handicap. A soccer game was in progress! "My" field was covered with frat rats and screamin' co-eds! What to do?

What the heck! There was still about 25 feet between the goal lines and the sidewalk, so I thought I'd just fire it down the "tube". Away she went past the gawking heads of disbelieving student athletes.

On this flight I had my pics in about 6 minutes, and it was a good thing too, because I had to make three passes before I was lined up on the center of my 25 foot strip. I made one more flight that morning. By this time I had gathered quite an audience which I could have done just as well without.

One observer was a long, skinny, straggly haired "hippie" girl with granny glasses, loud shirt and bell-bottom trousers who sat down on the grass Indian fashion, right by my tool box and never moved or said, "ah, yes or boo" the whole time. She seemed

to be either meditating or in a trance.

As I was making the landing, a city bus passing my "landing strip" stopped in the traffic lane and the driver stared - hypnotized - throughout the whole approach and touchdown. The confused passengers tried to figure out what was happening. It WAS a day to remember!

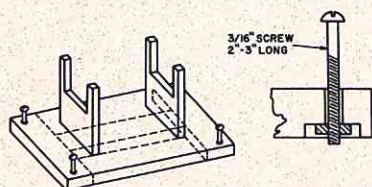
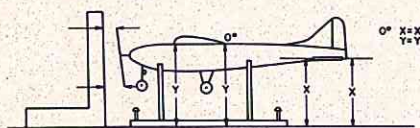
All in all, seven flights were made and almost 100 photos taken. The missions were a complete success and my idea was justified. I had lucked out.

Now that I had the pictures, converting them to useful data was simple. Knowing the width of the streets in the pictures, enlargements were made of such size that the street widths in the photos were exactly 1/50 the actual dimension. The photos then became aerial maps from which I could duplicate all the landscape characteristics. The scale model was completed over a period of nine

(continued on page 86)

FOR WHAT IT'S WORTH

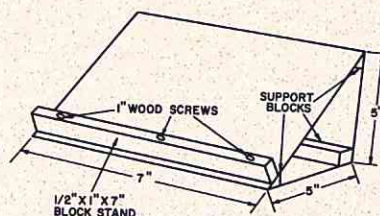
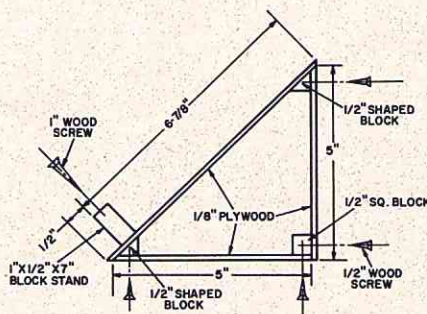
V. P. Monden, writing from Melbourne, Australia, says that model trimming and incidence measuring has, for a long time, been a source of packing up the model on scrap packing, balsa packing, etc., none of which has proved to be very satisfactory. However, the following method seems to work for him and will probably help other RC'ers in just such a predicament. The sketch shows a baseboard that can be made out of 8" wide material, or any size you find in your scrap box. In each corner, a 3/16" nut is glued to the bottom of the board, with a clearance hole above to take a screw. The screw should be between two and three inches long to allow for adjustment. The model is placed in a cradle, which can be made of hardboard or similar material, approximately 1/2" thick, and mounted on the baseboard. From here on in the idea is self-explanatory, with this word of caution: Any trimming or measuring of incidences depends first on a flat and level table or bench top, so if the bench top is warped don't expect the trimming to be correct! Measuring the incidences is usually a bit haphazard, too, but if you use a wooden block, with a piece of 1/8" material glued to the side and approximately 6" long, which can be extended by clipping a piece of old flexible steel tape to it, this can be easily adjusted to any height. The clip is the old fashioned spring type used to hold papers together.



MODEL TRIMMING CRADLE

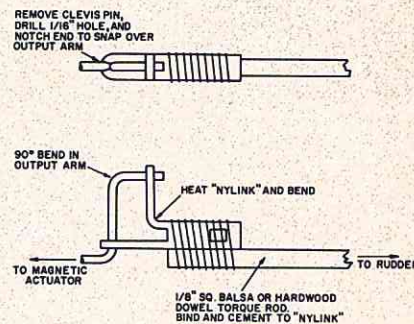
Here is a simple and inexpensive one-night project that is sure to say you a few bucks, and provide a well needed piece of field equipment. The enclosed diagram of the transmitter

stand from Leo J. Borrello of St. Clair Shores, Michigan, is self-explanatory, although it should be remembered that all dimensions should be modified to meet the requirements of a specific transmitter. The one presented in the sketch is for Leo's Kraft KP-4. The economy of this unit lies in the fact that scrap plywood may be used, either 1/8" or 1/4", whatever you may have accumulated in your work area. For added strength, the blocks and touching edges (cut at 45 degree angles) should be glued with Elmer's White Glue before securing with wood screws. For added appearance's sake, all edges and exposed screw heads may be covered with 1" black tape and the entire stand covered with a coat of enamel.



For single channel fans, Roger Carignan of Wilmington, Mass., suggests this method of coupling an Adams magnetic actuator, used in small models, to the rudder torque rod. A common NyLink fitting is used, after modification, to make this coupling. A large degree of misalignment can be tolerated due to the universal joint type of action it provides. An additional bearing at the actuator end of the torque rod is not needed due to the freedom at the coupling. Installing or removing the unit is very simple due to the snap-in feature. The bend in the NyLink clevis

is easily accomplished by heating the section to be bent with a soldering iron, being careful not to overheat and subsequently melt through. Most magnetic actuators have just a single bend in the output arm. The latter will have to be bent to form a crank as shown in the sketch. This bend should be located so that with the NyLink coupling attached, the torque rod is approximately centered on the output shaft of the actuator. The notch cut in the end of the unbent arm of the NyLink is tapered so that the end can be pushed onto the shaft and snapped in place. The bent-over 'crank-handle' section of the output arm fits into the existing hole of the NyLink clevis arm. Roger has used this coupling in Ken Willard's 'Good Neighbor' (.020 powered) published in RCM a few years back. The model is still flying and there have been no problems with the coupling.



Since no RC model, especially a scale model, looks well with the kinky antenna wire draped along the fuselage like a piece of baling wire and then rubber banded to the tail, most modelers hide this eyesore before taking pictures of their models. E. E. Milliron, Jr., solves this problem by feeding the antenna wire through the fuselage via a spare length of NyRod glued inside the framework. If the antenna is longer than the fuselage, have the NyRod terminate at the tail post and allow the excess wire to trail out behind the aircraft. A soft balsa wedge shoved into the NyRod at the receiver end will secure the antenna wire from sliding forward into the receiver compartment in the event of a sudden stop.

How often have you observed the following scene? A modeler's airplane crashes, the pieces are carried back to the pit area, the verdict of "unrepairable" is reached, reusable parts are removed from the wreckage and the model is burned on the spot. This happens far too often. Many of those "unrepairable" airplanes can be made to fly as good as new.

I won't try to argue with those who will say, "You can't get the thing back together the way it was and besides a repair job always looks lousy." I will say that NONE of my airplanes has experienced less than one crash and it takes a good search to discover where they suffered damage. If my airplanes don't fly perfectly, most of the time it's ME and NOT the airplane.

I can't tell you how to make every conceivable repair, but I can give you some guidelines to follow in making a good looking repair job after almost any crash. The important thing to have in doing such a job is — PATIENCE. I imagine that some people who started reading this article have already gone on to something else because they don't have the patience to learn how to do a good job and also because they just "can't" repair an airplane.

The first thing that should be done following a crash is to clean the remains. Even the small pieces can be fitted together like a jig saw puzzle if you save them, so clean them, too. Do the best job you can right at the flying field because the castor oil can go a long way into raw wood during a trip home. I always clean my airplanes after normal flying with Dow Bathroom Cleaner, and after a crash, I also use it. Each piece should be cleaned as well as possible since the major enemy of a good repair job is the oil. If there is a trace left on any surface, I guarantee that the dope will bubble up or not dry properly. If you use enamel or one of the epoxy paints, the oil will hinder their proper adhesion and drying. When you get the airplane home clean it thoroughly again with alcohol. I use ordinary rubbing alcohol. After the two cleanings, the surfaces should be dry and oil-free.

Trim back the silk or tissue in the vicinity of a break so that a good joint can be made. Where there are breaks with lots of little jagged edges, trim off the ends of the edges because they will tend to bend when the two pieces are joined together and leave a gap between the pieces. If there are some fuel soaked edges of raw wood, cut

these out because the adhesive won't do any good on an oily surface. If the damage is extensive, think of the order in which you must replace the pieces; it's embarrassing to discover that you left out the firewall bulkhead or another such piece after the fuselage is back together.

Glue the pieces back together using makeshift jigs to keep parts in line if necessary. I use a lot of C clamps, pins, rubber bands and scraps of wood to do this. Since most repair jobs do require some jiggling I use a slow drying or slow curing adhesive. The "one minute" adhesives are great for field repairs, but they don't give you suffi-

Don't Burn It — REPAIR IT!

YOU CAN SAVE THAT
NEXT "UNREPAIRABLE"
AIRCRAFT AND HAVE IT
FLYING IN A WEEK.

BY RON VAN PUTTE

(Reprinted from the "WORKSHEET")

cient time to align pieces when you're making an extensive repair. After the adhesive is dry, observe the job that's ahead of you. Invariably there will be pieces missing. You must decide whether to replace them with pieces of balsa, plywood, etc., or with glue. I use a lot of epoxy in this stage. Wherever there is a joint between two pieces I put on epoxy with a spatula so that I'm reasonably sure that the epoxy is higher than the original surface. When the epoxy has cured, you must sand the surface smooth. Since the length of the sanding job depends on the kind of epoxy that's used, use an epoxy that is strong, tough and relatively easy to sand. The two best

epoxy glues I've found are the Sears' Filled Epoxy and Black Magic (or Black Knight) epoxy. The Sears epoxy is an overnight epoxy which sands very well. The Black Magic epoxy cures in 7-10 minutes, but tends to load up the sandpaper. Both are tough and strong.

I tack my sandpaper to various sizes of wood and use the size that's compatible with the job. Sand with both straight and circular motions to keep the surface smooth. When the surface is smooth put on two or three coats of clear dope with light sanding between coats and then put on patches of silk or tissue (depending on what the original covering was). Make the patches slightly oversize and stick them down by smoothing the patch on the surface, lightly spray with water, resmooth the patch and put on a coat of half dope and half thinner. When the surface has dried, put on a coat of ordinary thinner followed by a couple of coats of clear dope. After a light sanding finish the surface with the original color scheme. My airplanes have rather simple decorations which are relatively easy to replace.

After repairing the outside of the fuselage you must decide whether it has sufficient strength. If you decide it doesn't, pieces of 1/32 inch plywood and bulkhead fillets (using epoxy) will add amazing strength without taking up much space.

Foam wings can be repaired if they aren't too badly mashed. If a wing is broken near the tip, the tip can be glued back on and the edges repaired with epoxy since the area near the tip doesn't carry much load. If the wing is broken at the center section, you may often glue it back together and put a patch of celastic around the center. You may consider adding a full depth spar by cutting right through the wing for four to eight inches on either side of the center and sliding in a plywood spar (using a generous coat of epoxy on the spar and the foam). If a piece of foam is missing you can make up a replacement piece, stick it in and recover the area. Rebalance the wing by adding weight to one wing tip.

All of the above sounds like a lot of work, but I've found that I can have a repaired airplane back in the air a lot faster than building a new one from scratch. For those of you who still aren't convinced, don't chuck out your next bashed airplane, give it to me and I'll have it flying in a week or so.

Maybe I'll even sell it back to you!

ESTABLISHING THE MAC

NICK LINARDOS DESCRIBES A SIMPLE GEOMETRIC METHOD FOR ESTABLISHING THE MEAN AERODYNAMIC CHORD ON ANY WING PLATFORM

In discussing model airplane design with many model enthusiasts it is apparent that only a few persons understand the procedure for balancing a model. The Aerodynamic Center of a wing is a point located on the Mean Aerodynamic Chord (MAC) through which the major forces and moments operating on the airplane can be thought of as acting. Figure 1 illustrates this condition. This short article will describe a simple geometric method for establishing the MAC on any common wing platform.

In most airfoils the Aerodynamic Center through which the wing forces act, is located somewhere between 25% and 30% of the MAC measured from the leading edge. This is the range within which the model should

be balanced. Do not confuse the MAC with the average chord which is only, as the name implies, the average of the tip and root chord lengths.

Figure 2 illustrates the geometric construction required to arrive at the MAC. Draw the planform of your wing to any scale desired. Divide the root and tip chord in half and connect a line from the midpoint of the root to the midpoint of the tip, A to B. Now extend the root chord forward the length of the tip chord to point C and extend the tip chord aft the length of the root chord to point D. Connect a line between points C and D. The point at which this line CD intersects line AB is the location of the MAC. Scale the length of the MAC, multiply by .25, lay out this distance measuring

aft from the leading edge and you have located the approximate Aerodynamic Center of the wing. Project this point inboard to the center line and balance your model by locating the center of gravity at or just forward of this point. This method will work for all tapered wings with straight planforms with, or without, sweep. Slightly curved wing tips can be treated as straight tips. Highly curved tips can be treated as shown in Figure 3, locating the tip chord at a point where the area A_1 and A_2 are approximately equal to A_3 . For those who are mathematically inclined the equations for determining the MAC are presented in Figure 4.

The lift due to the horizontal tail has been purposely neglected because on the usual R/C model it has only a very slight effect. The lift on the horizontal tail surface tends to move the combined wing and tail Aerodynamic Center aft of the Aerodynamic Center of the wing only. This factor will add a slight amount of stability to a model balanced forward of the wing 25% MAC location. Investigation of the better flying R/C gliders indicate that most of them are balanced at or near the 30% MAC point.

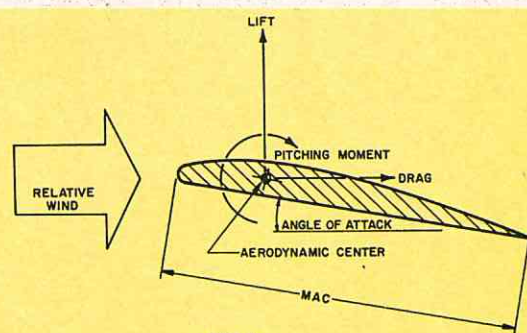


FIG. 1

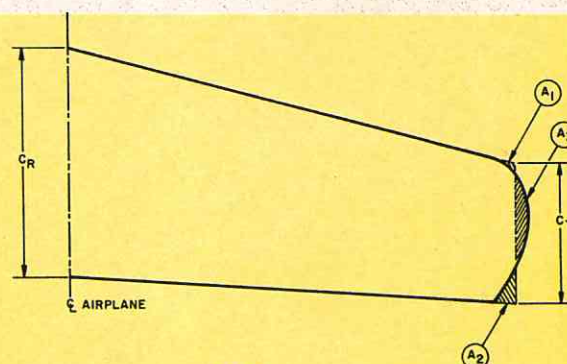


FIG. 3

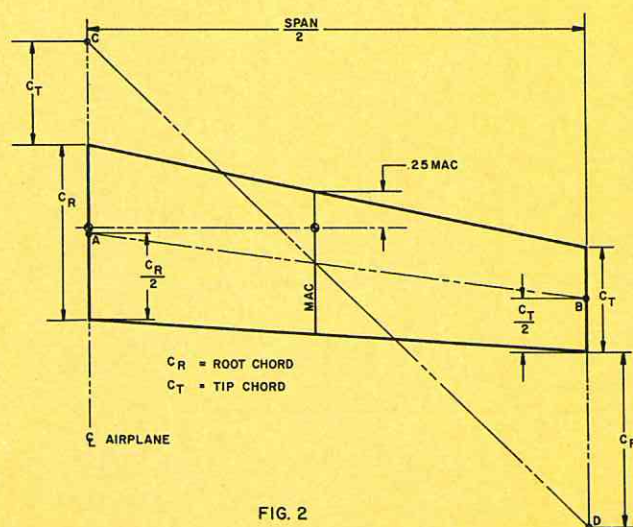


FIG. 2

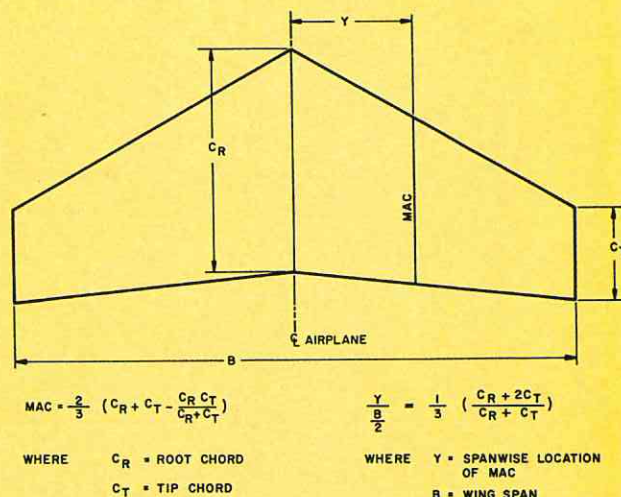


FIG. 4

YOU'LL HAVE TO TALK LOUDER — I CAN'T HEAR YOU

BY C. T. (Torrey) WILLIAMS

(Reprinted From The MRCC Memphis Monitor)

The fact that continued exposure to high noise levels can cause permanent hearing loss has been known for over a century. Only recently, however, has advancing technology in both medicine and electronics given researchers the tools to measure both noise levels and ear damage accurately. As a result, there is now a growing awareness in medicine, in the safety engineering profession, in government, and in industry that high noise situations must be identified and that, in one way or another, individuals exposed to them must be protected. By combining data published in several different sources, I hope I can convince you, my fellow club members, that whirling propellers are not the only danger you face when you spend long hours breaking in a new engine, or trying for that last 100 rpm, with your ears only inches from that screaming '.60'.

First, I hope we all appreciate just how remarkable our ears serve as transducers - converting, as they do, sound energy into electrical nerve impulses. They not only serve efficiently over a frequency range of from 20 to 20,000 cycles per second, they are also usually capable of handling an input sound power range of ten million times between the lowest threshold of hearing the upper limit where they give up and start to cause actual pain. However, like any sensitive instrument, if they are overloaded too many times, they become less and less sensitive to stimuli.

Because of this widespread, sound pressure levels are measured in decibels (db.) - a logarithmic system in which a 6 db. increase equals a doubling of the actual dynamic pressures. The chart below shows some typical sound levels:

db.	Example
0	Threshold of hearing
30	Soft Whisper (5 feet)
40	Quiet office
50	Average residence
60	Conversational speech (3 ft.)

70	Freight train (100 feet)
80	Average factory
90	Subway
100	Looms in textile mill
	Electric furnace area
110	Power Saw
	Threshold of feeling
118	Threshold of discomfort
120	Boiler factory (drop hammers)
140	Jet aircraft
142	Threshold of pain

There is no currently established standard in the United States specifying what level of sound should be considered hazardous and what levels should be considered safe. The U.S. Department of Labor says protection should be used above 85 db., while the American Conference of Governmental Industrial Hygienists propose the following be considered the maximum permissible:

db.	Exposure per day
92	4 to 8 hours
97	2 to 4 hours
102	1 to 2 hours
107	less than 1 hour

In this short article we are glossing over the complications that the frequency (pitch) of the noise plays in the whole matter, but for our purposes, I believe the numbers quoted are indicative of the general problem. I am sorry that published noise measurement data for actual model aircraft engines is limited. The only source I could find is an article by Wm. F. Netzeband in American Modeler for Jan/Feb 1965 (p.38) called 'Quiet Down or Quit'. This article was written mainly to discuss the usefulness of mufflers in making model aircraft flying less of a nuisance to the surrounding populace (a subject in itself) but in it he published some measurements taken with a sound level meter which I believe are useful as a comparison with the figures quoted above. They are (all measurements taken 5 feet from the engine):

db.	Engine
128	McCoy 60 (unmuffled)
107	O.S. Max II 15 (unmuffled)

102	Fox 40 BB (with muffler)
96	O.S. Max II (with muffler)
92	T.D. .049 (unmuffled)

A comparison of the figures in the three tables shows that even at 5 feet, the noise levels of our larger engines are clearly in the danger zone. Since sound radiates outwards equally in all directions, its intensity is inversely proportional to the distance (squared) between the source and the ear. This, as one moves in to 2½ feet from the engine one should add 6 db. to the figures above and at 20 inches distance one should add 10 db. Mr. Netzeband realized the problem, for in his article he stated, "(strictly as an aside, constant exposure to our engine exhaust at close range can lead to permanent damage to the ear . . . so watch it.)".

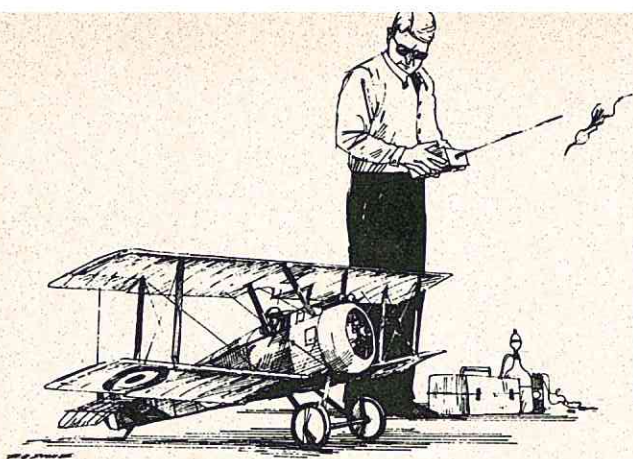
Assuming that the problem is now accepted as such, what is the solution? Actually, there are three main solutions . . . one is to muffle the engine, the second is to minimize the time of exposure, and the third is to protect the ears. Ear plugs, or acoustical ear muffs are the commonest ways of accomplishing this latter task. Soft rubber ear plugs will provide about 25-30 db. of protection if properly fitted, while acoustical ear muffs will provide about 35 to 40 db. If 35 db. is subtracted from the 128 db. quoted for the McCoy 60 the resultant 93 db. lies well within the A.C.G.I.H.'s accepted limit for short duration exposures.

From my own personal experiences near the starting line during the club pylon races, when three unmuffled .40's were being revved up, I actually found that without earmuffs I was in the 'discomfort zone' and that with them I was able to function much more efficiently.

I hope the above material will be heeded . . . particularly by our younger members who are not nearly as likely to have already suffered some hearing loss. One last point . . . in over 25 years association with the Army, I never met an old artillery-man who wasn't deaf!

References:

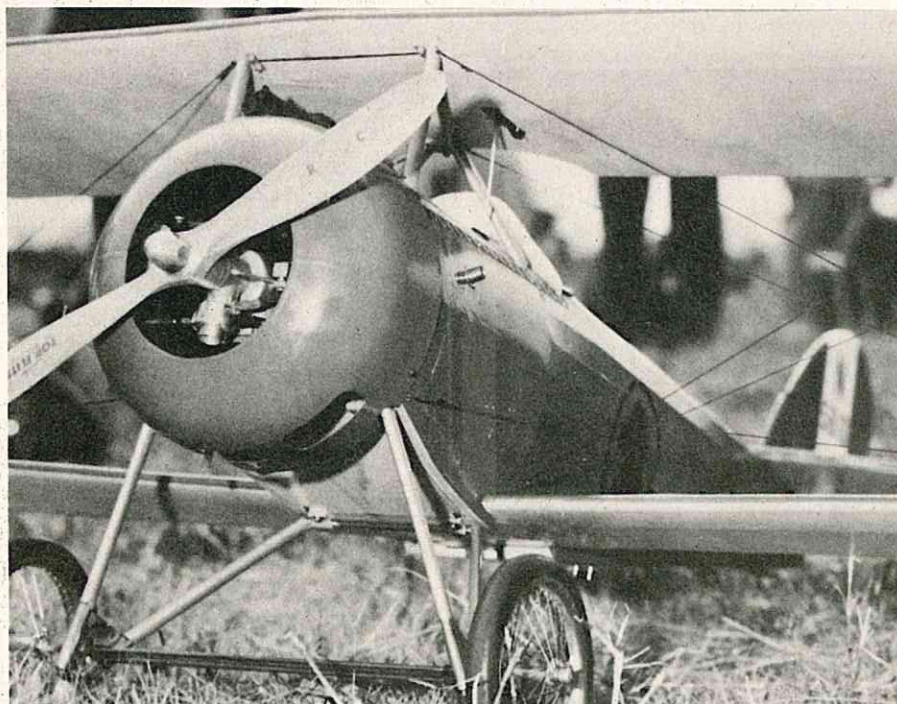
- "Ear Anatomy and the Effect of Noise on Man", E. R. Hermann, Nat'l. Safety News, Feb. 1969
- "Personal Ear Protection", E. W. Broken, Nat'l. Safety News, March 1969
- "Physics of Sound", J. B. Olshifski, Nat'l. Safety News, Nov. 1968
- "Industrial Noise", H. T. Walworth, Nat'l. Safety News, Nov. 1967
- "Quiet Down or Quit", Wm. F. Netzeband, Am. Modeler, Jan/Feb 1965



by DAVE PLATT

(Designer — Top Flite Models)

SCALE IN HAND...



hours by late starting.

The weather was good, too. Rather hot; in the 90's, which played havoc with engines (including your scribe's!) but a very light wind, and overall conditions were ideal for scale R/C, as long as you knew your needle-valve well! One act of downright good sportsmanship, which particularly impressed us, was the way Bud Atkinson, having flown first and discovering the air to be somewhat heavy, went around to all his rivals advising them to take a longer ground run than usual to be sure of having sufficient air speed for a clean lift-off. A small, but memorable, act by a real sportsman and gentleman.

In sharp contrast to this, two young competitors flew models which they didn't build, and while several people knew this, nobody would sink to the same level of poor sportsmanship by protesting. Anyone who can do this in the Nats and not feel like a worm is a lost soul! Whether a rule is good or not (we think this one is) is not the issue; it's there. And when a man signs the Nats entry form and thereby agrees to abide by the AMA rules, then goes against one that doesn't happen to suit *him*, he commits *perjury*.

What of the mistakes? Any meet makes them, and the Nats is no exception. If we recognize mistakes, we are on the road to correcting them.

First, and most important, everyone agrees that the time allotted (two 3 hour sessions) was *nowhere near* enough. Six hours of flight-line time hasn't any hope with an entry of 20 or more - and we had 40! It is inevitable in Scale that a competitor needs more time to get ready, start his engine, etc., than in Pattern. It's simply the nature of the beast that scale models (and modelers) are more fussy and need patience. Everyone needs more time.

It would seem appropriate at this time to hold a Nats *post-mortem*. The following observations are made from a competitor's point of view - but will attempt to give a spectator's eye view of the proceedings as well.

As we have stated previously, in our regular column, this writer is firmly pro-AMA and is not given to needless criticism of those stalwarts who give of their time and energy so that we might have fun for a week. Nevertheless, we can learn only from an honest evaluation - and if some things were less than perfect, let's say so and see if we can apply this experience to the event in future years.

OK. What was *right* with the Nat's?

First, Nat's Scale Director Don Linley was *right* to hold an eve-of-the-contest 'query session' for the competitors. Not every flyer bothered to attend - but those who didn't have no one to blame but themselves if

there was some point of rule that they didn't understand on the day of the meet. The worth of this meeting was proven by the lively pace of the meeting; with Don patiently answering hosts of questions from the 20 or so attendees, who no doubt left the meeting feeling much easier in their minds than when they entered it. This is an idea worth repeating *every year*. There will always be an influx of new entrants each time, and the rule book is not always absolutely clear. Anomalies and ambiguities exist, and Don's session showed that he had an understanding of, and sympathy with, the competitor, who on the following day, would put all his work to the test.

Another good item was the way the contest flying started right on (or even a few minutes before) the stated starting time of 8 AM. Burdened by a truly impossible short flying-time, Don wasted none of his precious six

Pattern, with 24 hours in the week, cannot afford to give any time away. Neither can Formula I or II. We can't rob Peter to pay Paul - this would only improve one event at the expense of ruining another. It isn't too difficult to predict that next year's Scale event will have 50-60 entries, the way things are going.

What in Heaven's name is going to happen? If Willow Grove was a mild fiasco (time-wise), what are Glenview's chances? Somehow, something has *got* to be done. But what?

As we see things, there are only three possible solutions. Let's discuss them . . .

1) Add more time.

At Willow Grove we started at 8 AM. All flying ceased at 5 PM. If the Navy would agree, we could easily get double time for Scale by having two 6 hour sessions without robbing Pattern, by starting at 7 AM and ending the day at 7 PM. This was done last year at Olathe and worked well. True; it gives the judges a longer duty, which is bad - but this is unavoidable unless we go to Idea No. 2.

2) Limited entry.

Under this scheme, the AMA would take only the first, say, 30 entries. Anyone who was too late would be *out*, unless they wanted to hang about at the Nats, model in hand, for a space caused by a no-show entrant.

This idea has little merit unless *all* R/C classes were so treated. Can you imagine the arguments? Ugh!

3) Allocate frequencies.

This may be the most practical solution. Under this scheme, Scale would be given, say, 2 frequencies. Let's say they were Brown and Red/White. If you enter Scale you *must* have your rig on one of these. These frequencies would be barred to any but scale models, and would remain the same for subsequent years.

What happens? The most obvious effect is that most of us scale fans are going to have to switch frequency. BUT - note that for this slight trouble we obtain a better contest as a result. Anyone who does not enter the Nats can stay as he is, of course. This idea affects only the Nats competitor, and for him, is a benefit. Now Scale (and Pattern) could have flying time as required, not as available. A small percentage of the Pattern fliers would have to change too; those on the 'Scale frequencies'. We're sure that any good sport won't moan at this - especially if he realizes that Pattern *also* will get

more time as a result of not having to clear the runway for Scale.

OK; if this is such a bright idea, why isn't it already in use? The answer is that circumstances didn't force it before. Realize this, also - the longer we leave it before making this rule *if* we're going to do it, the worse things will get. More rigs to alter, and more frustrating Nats. What we are saying is this: If we decide this is the way to go, let's do it NOW!

This writer believes that this is the only solution which will solve the problem on a permanent basis. It seems to us that unless we are going to use Idea No. 2 above, we are going to be forced to Frequency Allocation sooner or later. In which case, let's make it sooner. The fact is that Willow Grove showed us that we are already one year late.

We urge Scale and Pattern fliers to review the idea in open club discussion and let us, and the AMA, know how you feel about it.

Turning now to other things, another mistake was made which, in a way, compounded the time problem. The flight-line organization decided to try to give everyone a bit more flying by adding a third round. F.A.I. rules specify 2 attempts at each of 2 official flights. Though made with the best motives, the alteration to 3 flights backfired, since only *one* attempt at each official could be allowed in the time available. This, actually had a bad, rather than a good effect. To their great credit, the organizers did realize this mistake in time, and on the second day did allow 2 attempts. Unhappily, the damage was already done in that the guys with one first-round failure could not get a flight in on Day 1, while some other competitors had 2 official flights.

The obvious lesson here is 'Stick to the Rules' and don't try to give everyone a better chance by using schemes that haven't been proven in practice.

Anyway, as we say, there simply wasn't time for the idea to work out well. As a result of this, the Nats' results possibly are unrepresentative of what they may have been if everyone had had the chance of two flights instead of some fliers having three and others only one. And while we think of it, how come one entrant waited for a second flight from 10:45 until 11:00 (cut-off time) and thus missed his flight while the Snoopy's Dog-House made a *demonstration flight* for the spectators?

All in all, the flying section of the

Nats could be reasonably described as 'fair'. There is improvement to be made - but not all of it by the actual flight-line officials. The impression remains with us that the planning committees still regard Scale R/C as the Cinderella event and leave it to grab whatever time is left after all the 'important' events are well satisfied.

But don't let's end on a sour note. Critical evaluation is necessary, but let's remember, too, the *good* things and see if we can repeat those in future . . .

* * *

What of the static judging? Compared to last year, when each model was 'scanned' for ten minutes or so, this year's judging was excellent. The judges were careful and did the job to the level best of their ability, which is all that anyone can do. We witnessed models on the examination table for periods ranging up to 1½ hours. The marking was exceedingly 'high', that is, the models all got far more points than they were really worth, but it was consistent and that's what really counts in the end.

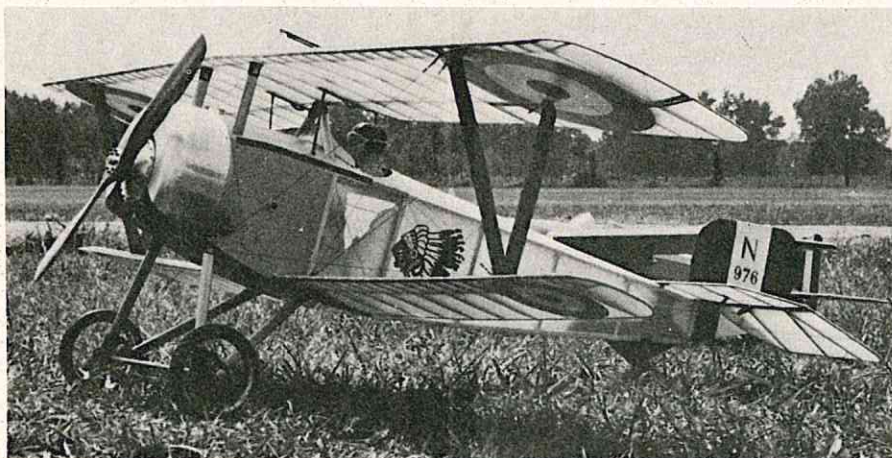
Let's take a case in point (and since I don't want to criticize other people's models, I'll choose my own): My FW 190 received 231 out of 250 for Fidelity marking. This is 92.6%, meaning my *average* mark was over 9. These points are plain ridiculous. The model is worth no more than an *average* mark of 6½ or so. At some future time we may publish some thoughts on the enormous benefits of harsh judging, but for right now we will be content only to point out that one of the things the Judge should do is INFORM the competitor. If he gets 90%, what is he to learn from this? If there is any one single reason for the lead England has in Scale R/C, it is that, for many years now, the judges there have been happy to give a 1 or a 2 for a bad job. *Then* the entrant knows where his weaknesses are.

* * *

It is customary for your columnist to get a few letters of complaint whenever mention is made of National or International competitions. We went ahead with this report for three good reasons. First, there are many who *do* want this news; second, it is this columnist's hope that some day The United States will win the World Scale Champs and we will use space whenever helpful to this end; and third, this column is the right and proper place for this type of report - not buried in clubroom grouches. ●

SUNDAY FLIER

KEN WILLARD



A beautiful Proctor Nieuport by Bob Cooper of Savannah and a first in Scale.

Seems like every time I pick up one of the model magazines these days I come across an article on the problem of flying sites and how to convince the local officials that our sport is clean, healthy, good for the juniors, educational, recreational, great for spectators, and NOT a nuisance to the community.

So, it really is a pleasure when you can report that there are still some officials who recognize that all sports—including the sport of model airplane flying—are entitled to consideration when public funds for recreation are going to be spent. It becomes an even greater pleasure when you know that they are doing it even though some of the participants in the sport have not been—well, very nice about it, to tell the truth.

Let me tell you about a case out here in California. For the past two or three years or so, slope soaring enthusiasts have been going to Sunset State Beach, where the hills rise from the shores of the Pacific Ocean and provide one of the best slope soaring sites in the whole country.

However, the road leading past the site where the soaring occurs is pretty narrow, and if anyone stops on it, it

creates a traffic problem.

Yet when a beautiful soaring glider slides gracefully along the hill, people want to stop and watch. So they do. And a traffic jam develops, because there just isn't any place where you can pull over to the side of the road.

This has been going on for some time, and although the park rangers have tried to be lenient, it became necessary for them to insist that no parking could be permitted at the top of the hill; you had to drive down the hill to the beach parking site, some two hundred feet below, and then walk back up.

For the spectators, this was inconvenient, but for the fellows who wanted to fly, with their big eight to twelve foot soarers, it was a real chore. So, some of them disregarded the rules, and this led to some heated discussions.

This past year, with slope soaring becoming increasingly popular, the problem became acute. During the R/C Modeler Magazine Trophy Races, staged by the R/C Bees of Santa Cruz, the California Department of Parks and Recreation gave special permission for contestants parking in a designated area of the campsite park-

ing zone. Members of the Santa Cruz R/C Bees worked closely with the park officials, and they, in turn, were impressed with the number of people who participate, as well as the sense of responsibility which was demonstrated in working out the parking problem. By and large, it was a very successful undertaking.

Some time following the R/C Modeler Trophy Races, I had the opportunity to talk with Chuck Mehler, Assistant Superintendent of the Monterey District of the California Department of Parks and Recreation, and he told me they were considering some permanent improvements for the soaring site in the way of parking facilities.

So I wrote him the following letter:

Dear Mr. Mehler:

This letter is in follow-up to our recent telephone conversation pertaining to the development of the site at Sunset Beach State Park where R/C Modeler Magazine sponsors the annual radio controlled slope soaring pylon races.

As I mentioned to you, the site is, in my opinion, one of the best, if not the best, from the standpoint of topography, on the entire west coast for this type of event, and we were very pleased to hear that plans are being made to improve the accessibility of the site with the addition of a parking facility for the soaring enthusiasts somewhere at the top of the hill to eliminate the necessity of climbing up from the bottom, which gets to be quite a chore when you're lugging a ten foot model.

The date for our 1970 contest has not yet been set, although it will be sometime around Easter. Meanwhile, we are considering the possibility of another 'fly-in' later on this year, perhaps in late October.

For the benefit of our readers, I would like to keep them informed of the progress at Sunset Beach. I understand the priority which you have to set on the safety items, and if you can give me a rough time table, and possibly a plan of the layout of the parking facility and the flying site, I would like to publish it, together with some photos.

Please send the information to me at my home address, since I work at home when preparing copy for the magazine...

Many thanks for your cooperation.

In reply, I received this letter from Chuck:

Dear Ken:

I was quite pleased to get your letter and to learn that the site used at Sunset State Beach for the radio control slope soaring races is one of the best, if not the best, on the entire west coast, for this type of event.

The knowledge that we have this type of resource, so necessary for your sport, will spur us on to provide you and your fellow soaring enthusiasts as fine a facility as we can, within the means we have at our disposal.



Mel Richardson's Kwik-Fli about to teach the photographer how to dig a fox hole fast!

Our motorized equipment is now finishing up clearing fire breaks. As soon as our fire protection program has been completed, we will begin work on our public use projects. Barring unforeseen emergencies, the facility should be completed by October 1st.

I will send up a sketch of what we propose, as well as some photos of the area at a later date.

Sincerely,
Charles Mehlert
Asst. Superintendent

At the time of this writing, I have not yet received the sketch which he mentions, but I am confident that by the time this column appears, work will either be completed or at least well along towards completion, and slope soaring enthusiasts in Northern California will have a truly first class location to pursue the sport, thanks to the good offices of the California Department of Parks and Recreation - and the excellent presentation of the cause of slope soaring which was presented to the department by the R/C Bees of Santa Cruz. As soon as I get the plans and photos of the layout, I'll publish them, and perhaps they may help some of you in other parts of the country to get some help from your state or county or city recreation departments.

Since the site of the 1970 R/C Modeler Trophy Soaring Races is in for improvements, I've been thinking about the planes for the races - and for races anywhere that the sport of slope soaring is pursued. And I've got an idea, but I don't know whether it has enough appeal to make it worth while. So, between now and next March, I'm going to see how much interest is shown.

Here's the idea: At present, all slope soaring racers race against each other, regardless of size (except in



A little body English applied at the right time helps the Kwik-Fli under the limbo pole.

some cases where a 'standard' class of 100" wingspan or less has been established), so, if you want to win, you'd better have a big model - nine to twelve foot wingspan or so. A six footer just can't compete with one of Nelson's KA-6 jobs. So, I propose that a new class of racing glider be established - the 75" class. Why 75"? Because it is an easily transportable size, and the wing can be built using standard 36" balsa stock from your dealer's shelf (with 1½" tips) and you don't have to break the bank to buy the material for it. Finally, you can make one that really scoots along for its size, yet if it crashes into the side of the hill, it can take the impact without sustaining major damage, so you have less repair work.

The Cliffmaster qualifies for this proposed class, together with several kits that are available - the Halfback, Snipe, and the racing version of the Clou, to name but a few. I think the idea might bring some more enthusiasts into slope racing, if the newcomer didn't feel that he had to build, buy, or compete against some of the big monsters. Sure they're beautiful - but for the guy with the Volkswagen, and budget to match, they present a real problem - one that the 75" class would go a long way towards solving. Yet there would be just as many thrills, and just as much excitement, in racing these little jobs as there is in racing the big ones. Perhaps more - the little ones actually are faster, from the standpoint of scale speed, and can be wrapped around a pylon a lot closer, so the skill of the pilot could do a lot to even up any differences in speed which, in any event, would not be as great as the speed difference which develops as you get bigger models.

What do you think? I'd like to get some more opinions, and if there is enough interest, perhaps sponsor some races for the 75's. Drop me a line, and I'll see if the response is big enough to really get the class off to a good start. OK?

Now let's get away from soaring for a bit, and look at some of the items on power planes.

One of the things we're always looking for are good action shots of models - and, boy, did I get a couple from Ken Gulliford of the Charleston Radio Control Society, taken during their first sanctioned contest last July.

Mel Richardson, of Greenville, South Carolina, really put his Kwik-Fli in the photographer's lens in picture number 1. If you look closely, you can see Mel, behind the plane, holding the transmitter while a couple of friends stand nonchalantly alongside. Now that's what I call supreme confidence - especially on the part of the photographer!

In picture number two, Mel does it again, only this time as he goes under the limbo, he makes Alan Wehman do a quick adagio dance to the side! I can almost hear that engine snarling at Alan.

In addition to those two action shots, Ken sent along a beautifully posed shot of the scale Proctor Nieuport, built by Bob Cooper of Savannah, which placed first in scale. It looks for all the world just like the full scale version must have looked, sitting out on a field somewhere in France, waiting for the ground crew to pull the prop through so the dawn patrol can begin. Note the scale prop, with hub bolts - and the rigging, with turnbuckles drawn to just the right tension. Beautiful!

Like I said, we're always looking for good photos. In general, a good, sharp 5x7 gloss print, black and white, or even an 8x10, like these from the Charleston club, are best. But if you do happen to get a particularly good shot with your Polaroid, they reproduce well also. Anyway, keep the pictures and letters coming. They're the real life and blood of the Sunday Flier column.

So how's about sending the old Chief Sunday Flier a transfusion? Photo donors always welcome!

Next month, the Showmaster, for those of you with a big back yard. Now you'll be able to show your neighbors just what you do with your big jobs - and do it right at home! ●

WAGGER

A dog's EYE VIEW . . .

"Wagger!" Walt hollered, in a voice better suited to gathering porkers than summoning Bassetts, "there's a couple of young fellows out here to see you!"

From out of the dilapidated red outbuilding came an answering growl which sounded something like: "Send 'em out here . . . mmpf paw in epoxy . . . whiskers stuck to mmpf tail . . ."

Walt puckered his brows unbelievably and then, casting his eyes to heaven, motioned the two modelers toward the shack. "If you guys have the courage, go see him. I can't get along with him when he's normal, much less when he's all 'poxied up in his hobby. Rotsa ruck, and here: take this sampler of imported cheeses with you to soothe his ruffled feathers and gummy hide." So saying, Walt exited stage-left while shaking his head and muttering how sweet life must be without talking dogs with a passion for R/C.

The two young men approached the shack and gingerly opened the door. There, stuck fast to the bench, was one mad Bassett. The ensuing details of how the dog was freed from his first encounter with 5-Minute Epoxy are too gruesome to relate; suffice to say, order was eventually restored and the gentlemen were seated slightly to the upwind side of the fragrant dog while the fumes of butyrate thinner evaporated. While the cheese sampler was distributed all around, introductions were performed.

"My name is Steve Crandall from Great Falls, Montana, Mr. Wagger," said the first. "The other fella over here tells me he is Ron Kubacki from Chicago, Illinois; we just happened to meet at your front door a few minutes ago. I guess we both have some things we wanted to talk over with you."

Wagger smiled with a groan, which involved a facial contortion even less beautiful than his usual wrinkled grillwork. "Don't call me 'Mister', pulleeze! Just call me at **Milkbone** time; seriously, it's nice to meet you both. Ron, you look like you just got out of the hospital. What's on your

mind?"

Ron grimaced and replied, "Ah, a truck and semi-trailer took a short-cut over my car. Since that gave me about 6 months away from the grind, I've been doing some thinking. Let me list 3 thoughts for you:

1. How about designing some planes that are fairly large, fly slow, have a wide track gear for easy landing and are semi-scale so you can take some time out to watch them in flight? Why is it that GG ships have to be microscopic or scaled down Kwik-Fli's to create any interest?
2. How about a contest for beginners with simple equipment? The idea of the contest would be to show the modeler's pride and enjoyment in his model. I'd like to show the public what an R/C model is capable of and what it can provide to the younger generation in the way of pure self-gratification and enjoyment.
3. How about a flying Milk-Bone for demonstration flights at kennels?"

Wagger snorted and peered over his shades at the lad from Chicago. "I think you're pulling my tail on that third one, Ron, but the first two are very valid. Let's see what Montana Steve has to add to that."

"Well, I don't disagree with Ron, Mister . . . er, Wagger, although I have managed to save up for a PCS-4 and I've had a wonderful time with it. My complaint centers around the propulsion system of the aircraft; the progression just hasn't kept up with the radio gear. It certainly must be possible to build twins that would eliminate the vibration problems that rattle our radio gear to bits. The Wankel engine might be a terrific step in this direction, but where is it? Also, I'd like to see an engine evolved that would burn something cheaper than \$6 a gallon fuel. All our engine manufacturers do (with a few exceptions) is refine present designs. That's important, but they should be probing into new areas."

Having thus spoken their respective minds, Ron and Steve looked expectantly at Wagger. The dog in turn snorted and rubbed one blood-shot eye with a sticky paw.

"Excellent points, boys," he agreed. "You're aware, of course, that if the big men in the industry don't have the answers then there is little

chance that a humble Bassett would. However, let me give you some of the answers I've heard at the flying fields.

"First, I'm sure Ron would agree that such designs as Goldberg's 'Skylane' and Owen Kampen's ships are good fliers for GG. However, I would agree that we could use a large and easy to fly aircraft for the guy who would like to sit back and enjoy slightly-guided flight. If you remember, our old 'Randwagon' was modified from an ancient 'Esquire'; with tricycle gear and a Max .10 or .15, it was unbeatable for sport. Maybe we can give our old GG'ers a kick in the slats so they'll get back to the boards and produce some docile floaters with a 20-foot scale appearance.

"Secondly, Ron, contests have to be judged and judged fairly. Thereby, (as mother used to say), hangs a tale. It's just darned hard to judge a sport exhibition! For a long time I've been barking about getting some R/C back to our football fields where people can see what we do, but I haven't been able to come up with a gimmick to put some spark into it!

"Third, Steve, everybody's griping about fuel costs at this time. I think we should appreciate the facts that we don't have to carry an ignition system anymore and that the reliability of all this equipment is what makes it possible for us to burn up so much fuel in one week! However, I'm equally curious about the delay in the development of the Wankel and the twins. Maybe John Maloney and some of the others will drop in one of these days and give us the answers."

Ron and Steve exchanged troubled looks, then Ron blurted out: "Hey, we need some answers soon, Wagger, before we turn into pouchy old men like Walt! Can't we speed it up?"

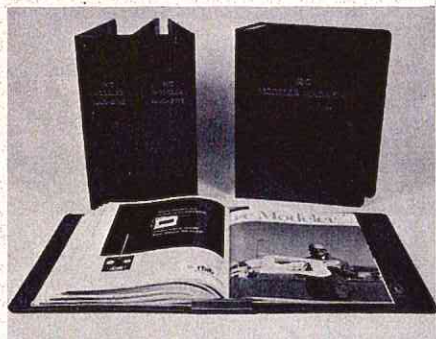
Wagger chuckled, then clawed his way down from the stool. "Sure, we'll get some action for you. Just let me open this window that faces the flying field. Ugh . . . mmpf . . . there. Now, I'll just give a loud holler:

"Hey, you modelers, manufacturers, and importers! The juniors want to know three things. One: How about some larger and docile semi-scalers? Two: How can they put on a sport exhibition with some zip to it with simple equipment? Three: When do we get some economical twins and Wankels?"

"Now, Steve and Ron," he grunted, "let's see if there's anybody awake out there." ●

CUSTOM BINDERS FOR RCM READERS

Now you can keep all of your issues of R/C Modeler magazine together and in perfect condition for easy reference.



Designed to hold all of the back issues you now have or for future issues of R/C MODELER MAGAZINE as you acquire them.

Designed in beautiful green vinyl with gold letters, each binder has metal spines for holding twelve issues of RCM. Copies may be easily inserted or removed.

\$3⁹⁵ EACH

OR

3 FOR \$10⁹⁵

R/C Modeler Magazine
P.O. Box 487
Sierra Madre, Calif. 91024

Please send me _____ RCM
binders. I enclose payment of \$_____.

Name _____

Address _____

City _____

State _____ Zip _____

California Residents add 5% tax.

KITS & PIECES

DICK SONHEIM

If you have been paying attention to the advertising in the magazine during the past few months, you will notice that the kit manufacturers have not had much to offer in the way of new products. Several of the newest kits you see advertised, such as Midwest's Flea Fli +10, are not yet available. Just as soon as the manufacturers send their production prototypes to us, we will give you a complete run-down on them.

Since he sold his cabinet shop, Joe Bridi tells me he is now considering going into the kit manufacturing business. Along with his Sun Fli 4, Joe has several new designs, and being a

one of the most often asked questions, "How do I fasten the 1/16" pushrod to one of these hollow tubes?" The Pylon Brand fiberglass tube has an inside diameter of 1/4". You simply take a piece of 1/4" dowel, about an inch long, and drill a 1/16" hole through the center. Slip the 1/16" wire through the dowel and bend the end over so it can't be removed. Coat the dowel, including the end of your 1/16" pushrod wire, with epoxy and slide it into the fiberglass pushrod. Under the Sullivan Pylon Brand label, pushrods are made of a new plastic material that is 75% more stable than the nylon type of flexible pushrods.

GLASS PUSH ROD

1/4" DOWEL

1/16" PUSH ROD

EPOXY

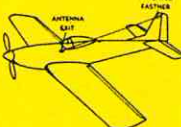
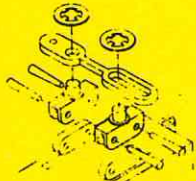
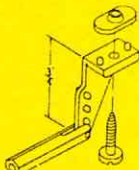

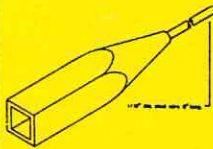




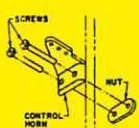
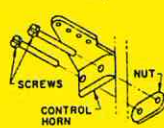
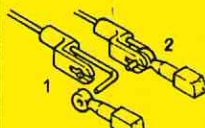



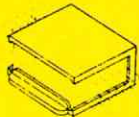



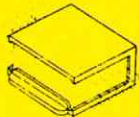
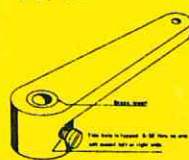

top-notch craftsman, we should see some excellent kits coming out of his shop.

We may not have any kits to review this month, however, we do have a few new 'goodies' that should be arriving at your hobby shop just about the time you read this. Technisales is distributing a short nylon quick link that fits on a threaded brass tube which can be soldered to a 1/16" pushrod wire. This is an excellent linkage for tight places such as the throttle control or nose wheel steering. Besides being physically small, these links do hold quite tightly. Also from Technisales are some new nylon hinges that do not have to be pinned. That part of the hinge that is inserted into the balsa has a series of holes that may be filled with epoxy. When the nylon hinge is inserted into the slot in the balsa the epoxy will form a lock that prevents the hinge from pulling out.

For a number of years, Sam Crawford has been selling arrow shafts for pushrods. Sam had a good idea, and now Pylon Brand is producing a lightweight fiberglass tube for the same purpose. Here is an easy solution to

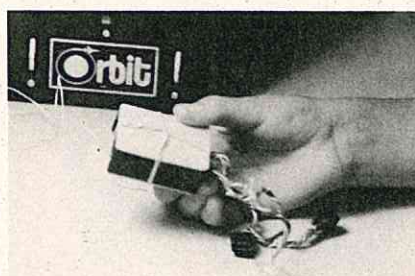
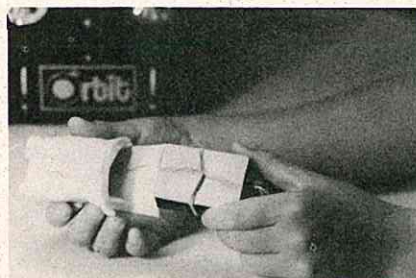
Last month I mentioned that I was trying out different types of building boards. I was looking for a material that you could push a pin into without breaking your fingers, and once in, would hold tightly and yet be easily removed. I built two building boards using a material that has been around for a long time that fills all of these requirements. Now, I'm sure that there are some modelers out there who have been using this same thing, and are going to say "so what's new about that?" Well for us guys who have been breaking our fingers pushing pins over the years, it's new! The material that will make your building life a little easier is cork! However, cork, by itself, is very flexible and must be mounted on a good flat surface. You can purchase a 24" x 36" sheet of cork 1/4" thick from your local hardware supply dealer. For a good base, I also purchased two sheets of the pressed hardboard measuring 12" x 48" x 3/4". Cut your sheet of cork in half along the 24" dimension and glue to the hardboard base using Pliebond.

Hardly a weekend goes by at any busy flying field that a flier doesn't

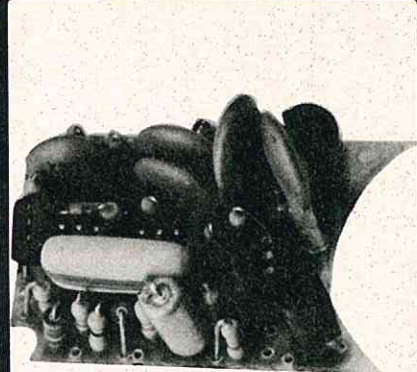
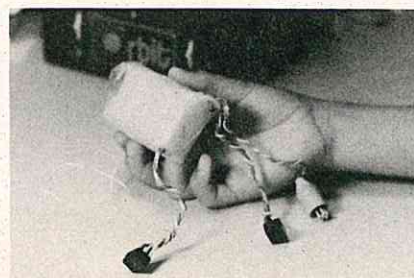
ANTENNA EXIT with VELCRO FASTNER .59¢ 	THROTTLE DEVICE LOG III SERVO .59¢ ea. 	MINI CONTROL HORN & CLEVIS .79¢ Pr. 	OVERRIDE DEVICE FOR THROTTLE .59¢ each 	INSTANT PUSH ROD ENDS .59¢ pair 	BELLCRANK for ORBIT SERVO .98¢ each 
EASY ACTION WHEEL BRAKES \$2.00 pair 	QUICK MOUNT SERVO TAPE .79¢ yrd. 	AILERON LINKS .79¢ pair 	STANDARD CONTROL HORNS .59¢ pair 	EXTRA LONG CONTROL HORNS .79¢ pair 	PUSH ROD RETAINER .59¢ 4/pcs. 
SUPER-FLEX NYLON HINGE .59¢ 5/pcs. 	THROTTLE-EZE .98¢ each 	CUSTOM NYLON WING MOUNT BOLTS .59¢ pair 	CONNECTOR LOCK 79¢ 4/pcs. 	DUAL HOOKUP SERVO SCREW .59¢ 3/pcs. 	"THE MISSING LINK" .79¢ each 
<div style="text-align: center;">  <h1>ROCKET CITY</h1> <h2>SPECIALTIES</h2> <p>1901 POLK DR N.E., HUNTSVILLE, ALA 35891</p> </div>			NEW FUEL TUBING 3/32" I.D. 3/16" O.D. This tubing will be available at your dealers ONLY on 30 foot spools, the price will be 30¢ per foot. 	E-X-T-E-N-D-E-D STEERING ARM .59¢ each 	"MISSING LINK" W/O HARDWARE .79¢ pr. PUSH ROD EXITS .59¢ 4/pcs. These push rod exits will accept any wire size from 1/16" to .075 in diam. 



crash and end up with a receiver that is almost unrepairable. If you take a little care in 'packaging' you may save yourself a big repair bill! The accompanying photos show you an excellent way of protecting your receiver. Start by cutting two pieces of 1/16" plywood a little larger than overall size of the receiver. Lay this on the top and the bottom of your receiver and keep it in place with a rubber band. Using 1/4" latex foam and masking tape,



form a box that will fit snugly around the unit. Then put the foam-wrapped receiver into a small plastic bag and completely seal with Scotch Transparent Tape. The plastic bag and tape is a little added insurance to keep any fuel and oil from getting into your receiver. Your battery pack should be wrapped in a similar fashion. Even if your receiver should be thrown out of the plane it would be very unlikely that it would sustain any damage. ●



Now a *Quality* "Miniature Servo Kit" is Available—The Classic 10 Servo Kit—Single PC Board Amplifier uses Submin. Transistors and 1/8 watt Metal Film Resistors/Kraft KPS-10 Mechanics Travel 90° with 1MS Signal Change.

CLASSIC 10 SERVO KIT \$25.95
HK-10 SERVO KIT 25.95
(Use with Heath GD19 or GD47 Limited quantity available)
10 AMPLIFIER KIT ONLY 12.95
(Specify Classic or Heath)

Dealer inquiries invited—Modelers write direct if not available locally.

royal

Electronics Corp.
5310 E. Pacific Pl.
Box 22204
Denver, Colo. 80222

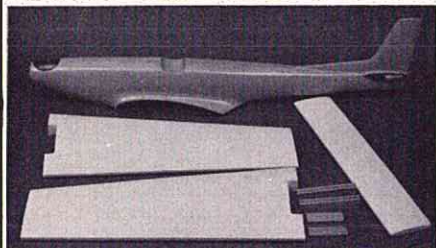
NEW

SKY GLASS KITS

I wish I could give you a better idea of the quality of these kits than this description and our photos can convey. The kits contain: Pre-finished fiberglass fuselage with hard maple engine mounts installed, integral fin, Lightweight foam wing cores with dihedral braces and landing gear blocks (if called for), and foam stab.

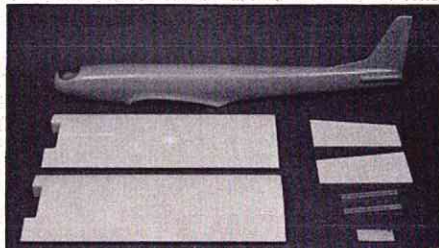
The fuselage is so perfectly finished that you need only sand and paint the seam to have a magnificent finish.

The price of \$39.50 is at least \$20 less than what you would ordinarily expect to pay for this type of kit. AND to make these kits even a better deal for you we will ship them to you via AIRMAIL (in the U.S.) (We pay the postage costs as usual.)



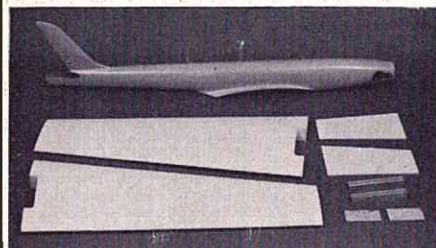
CITRON

\$39.50



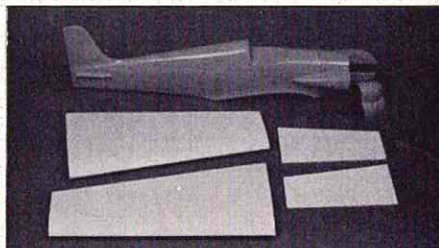
QUICK FLI

\$39.50



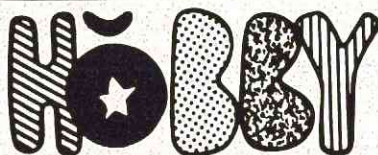
TWISTER

\$39.50



LONG MIDGET

\$39.50



2604 FRANKLIN ROAD, NASHVILLE, TENN. 37204

DROP YOUR ORDER IN THE MAIL BOX, THEN JUMP BACK BECAUSE WE SHIP FAST!

We pay postage on all orders accompanied by check or money order. The United States Post Office demands that we use your ZIP CODE on all shipments, so be sure to use your ZIP Code. Satisfaction guaranteed or money refunded. Phone 615-297-6361 store hours 10 A.M.-5 P.M. except Sunday.

SHOP & FIELD PRODUCT NEWS

Sig Manufacturing Co., Inc., Route 1, Box 1, Montezuma, Iowa 50171, is now shipping the latest in their line of kits, the YAK 18. This is a highly detailed scale model of the Russian trainer and aerobatic airplane that has frequently competed in international aerobatic championships. Several months were spent in research by the

designer, Claude McCullough, who is recognized as one of America's leading scale designers and builders. The span of the model is 72". The kit features a massive spun aluminum engine cowl-



ing, molded cockpit canopy, detailed scale nose gear, plenty of balsa and plywood, and all necessary hardware.

The KURWI 33 radio control glider has established a reputation as the best all-round radio controlled glider for both slope and thermal soaring over the past five years in contests and sport flying throughout the United States. With a KURWI 33, Dr. Walter Good and Howard McEntee placed first and second at a recent DC/RC Club Soaring Contest in Virginia. Now Willoughby Enterprises, 14695 Candada Place, Tustin, California 92680, announces the availability of the KURWI 68 R/C glider kit at \$50.00. This kit contains a fiberglass fuselage weighing only ten ounces, die cut plywood and balsa wing, stab and rudder ribs, a machined dural tongue with lightening holes which is pre-bent for correct dihedral, and the hardware for an 'all flying-stabilizer'. The KURWI 68 airfoil, the Eppler E-385 for thermal soaring, the Eppler E-387 for slope soaring, are shown on full size plans. Two separate wing spans are given (115" and 139"), so there is a choice of six types of wings possible for this beautifully engineered sailplane. The KURWI 68 kit is a dry kit, with no covering furnished, but numerous flight tests have shown the most efficiency can be gained by using Super MonoKote for covering the built-up surfaces.

In addition to the KURWI 68, Willoughby Enterprises (who is the exclusive distributor for KURWI kits) offers the BABY KURWI. This is a smaller edition of the KURWI 33, designed for using the smaller servos for thermal soaring, and with a 10 ounce flight pack, flies as well as, if not better than the KURWI 33 models. This kit includes a fiberglass fuselage, and almost all the features of the high quality KURWI 33 and 68 kits, except the wings are joined to the fuselage with wires rather than the dural wing tongue.

Dale Willoughby, known as the 'Father of Slope Soaring' in America, recently resigned his position with the State of California to devote all his energies full time to the design and production of radio controlled sailplanes.

G Products Company, Gleasondale Industrial Park, Stow, Mass. 01749, announces the purchase of the Lazott Plastics Company's line of ARF planes as of January 1969. G Products

Company felt that the Solo MK 1 and the Tango, manufactured by Lazott, were good aircraft, but that they had experienced difficulties keeping the plastic bonded to the foam, as well as feeling that an overall better level of workmanship was needed. The Solo designate is now MK-2 and both the Solo and Tango now have white fuselages instead of gray, with red wings and stabs. The price of the skis, formerly manufactured by the Lazott Company, has been reduced from \$5.95 to \$4.98, and they now include all necessary hardware required for the installation. Another product soon to be released from G Products is their Red Knight beginner's aircraft which is designed to fly with rudder only control for RC; free flight; or U-control. This aircraft is made completely of ABS and can take many crashes before you have to use the repair kit that comes with it. This aircraft is designed explicitly for the beginner and is completely assembled on jigs, and is ready to fly out of the box, except for fuel and battery. For \$25.00 the kit is designed for U-control and/or free flight. For \$69.00 the MRC F-66 rudder only radio system is included but not installed. Either way it comes complete with all necessary controls, .049 Cox engine, stars and bars, 20 page instruction manual, and repair kit. The Red Knight features a 32" span, 175 square inches of wing area, with a fuselage length of 25" and an all-up flying weight of 16 ounces. For further information contact G Products Company.



One of two new products from A/L Specialties, 16443 Vanowen St., Van Nuys, California 91406, is their new Lo-Profile portable fuel can which holds five quarts of your favorite fuel. This is an excellent product, featuring a plastic flip-up vent hole cover, and a reversible pouring spout which fits many of the gallon cans of R/C fuel (including the popular Tiger R/C Fuel, distributed by A/L Specialties). Once the fuel has



Our 3rd* AIRCRAFT MACHINE GUN ...the SPANDAU

\$125
2" SCALE

...Favorite Weapon of the RED BARON

NOW YOU CAN COMPLETE YOUR GERMAN MODELS!

The SPANDAU was used on all German fighter and reconnaissance aircraft during World War I. It was this gun that also made the Red Baron the Ace of Germany's Air Corps. They were most often used in pairs. On inline engines they were mounted one on each side, while on radial engines they were mounted on top, side by side.

The SPANDAU scale model is molded of high-impact styrene, has a movable cocking lever, is accurate in every detail and includes easy-to-follow assembly instructions. Later to be available in 1½" and 1" scale.

Next and 4th in our series of Aircraft Machine Guns, is the Parabellum.

*Other models include the LEWIS and the VICKERS

For the MIDGET and MINNOW

WHEELPANTS

\$3.10 a set

8" long 2½" high 1¼" wide



The addition of wheel pants not only enhances the appearance of plane but streamlines it for increased speed. Accommodates 2¼" diameter wheels. Made of high impact paintable styrene. Alignment pin assures accurate assembly.

CHEEK COWLS

\$3.49 a pair

12" long



Cowlings mounted on your favorite plane are like a frame on a picture—they give it that finishing touch. Paint to suit. Molded of durable high impact styrene. Easy to install. Complete instructions included.

6719 SALT LAKE



**WILLIAMS
BROS.**

BELL, CA. 90201

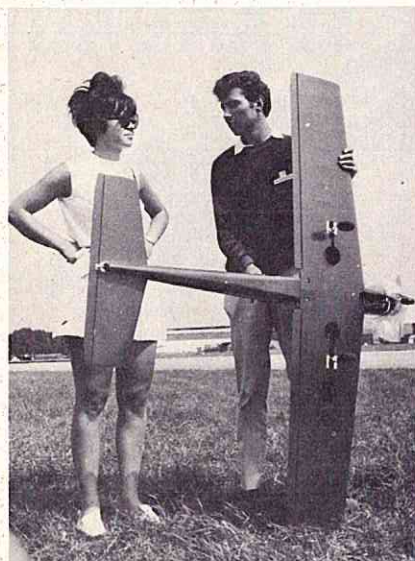
been poured into the Lo-Profile fuel can, the pouring spout is simply inverted and screwed back into the fuel can, where it remains until refilling is necessary. Your electric fuel pump can be mounted to the side of the fuel can by using double backed adhesive tape, providing you with a completely self-contained, easy-to-handle fueling system. The price, available at your local hobby distributor or from A/L Specialties, is \$2.49. Tested, approved and recommended by RCM.

Ace R/C Incorporated, Higgins-

ville, Missouri 64037, has sent us a Preview Edition of their 1970 Radio Control Handbook-Catalog. Priced at \$1.00, this most recent edition of the popular catalog and reference book, is another example of a 'must' item from Ace. This is not only a pictorial and text catalog, of virtually every item conceivable for the RC enthusiast, but is also a sketchbook of ideas and hints and kinks with an emphasis on the single channel sports enthusiast. This catalog will be invaluable to the serious RC'er, as it has been in years past. Tested, approved and recommended by RCM. ●

TOP OUT

BY JERRY KLEINBURG



Monica Nelson, US Internats visitor, years Marabu details from 1969 World Champion, Bruno Giezendanner. Note retracting gear, strip ailerons, Swiss Digi-Fly radio, Webra 61. Perfect pattern.

WHAT ARE YOU FLYING?

Send your photos and Club activity news to:

TOP OUT, R/C MODELER MAGAZINE,
P.O. BOX 487, SIERRA MADRE,
CALIF. 91024.

INTERNATS '69 - A second look . . .

There's been a lot of speculation about what happened in Bremen this year - a look or two at the statistics may help bring results of the World Championship into focus a bit more.

First though, our heartiest congratulations go to Bruno Giezendanner of Switzerland whose 3rd and 4th flights were reported to be miracles of RC flight perfection and therefore made his sweep of the 1969 World Aerobatic crown a conclusive victory. He edged Phil Kraft, the 1967 Champ, by a big 191 points with his Merco 61 powered Marabu, a Digi-Fly controlled ship with KDH retracting gear that he used in Corsica in 1967 which is somewhat on the order of the New Orleanian. Bruno's performance was

indeed outstanding and provides pattern fliers everywhere with a new high performance standard, one that will be hard to match.

Back to the statistics and speculating what could have been if Bruno hadn't been there to decisively settle things. With everyone else finishing as they did, it would have ended in a virtual tie for 1st place, since a scant 75 points separated the next four highest scoring fliers! Under past procedures, all four contestants would have been declared co-champions, and Germany would have still been the top team. It was indeed a tight race, so perhaps it was best that Bruno Giezendanner did compete to give the RC world an exciting champion to admire as well as to inspire new effort among pattern troops everywhere.

And the results also gave U.S. fliers a chance to think about our own AMA pattern rules. More on that subject in a moment.

The 64 pilots that scored flights in Bremen (actually at nearby Lemwerder) registered a total of 26 different brands of radios for the contest. Only eight of these were U.S. products. Most popular of all brands was the German made Simprop that, together with the other German radios, accounted for almost half of all the radios used. U.S. radios (Kraft, Logictrol, Pro-Line, PCS, Orbit, Heath, Controaire, and Bonner) made up 30% of the radio equipment picture, a low point for use of American radios in Internats competition. Radios from Japan, France, England, Canada, Austria, Norway, and Switzerland made up the remaining 20% of the propo radios seen at the 1969 World Championships.

Engines used by the Bremen competitors - made by 10 manufacturers in all - showed strong reliance on Italian products; fully 50% of the pilots elected Super Tigres and Rossi's for the vital power task. Super Tigres appeared on 20 entries alone. Only a small 8% of the total engines used in the hot humid conditions during July 23 - 27 were U.S. products of two brands; VECO and an ancient Fox 59.

This affirms the recent low level of participation by U.S. manufacturers in the large engine market. (It may also indicate the lowest point in this regard since there's been an awakening to the growing engine market vacuum in American production. Duke Fox is now preparing a new version of the well known 59, and other U.S. engine entrepreneurs are looking to break into the market at what appears to be an opportune time.) Japanese engines also appeared in strength at Bremen showing the continued power of Enya and O.S. in the RC market. English and West German products also showed well, accounting for 20% of the total. HP 61's (used by Poju Stephenson of Norway in 12th place and Franz Schachinger of Austria in 30th place) also appeared. Performances by all major brands appeared fairly satisfactory and resulted in a record number of flights being logged in this latest Internats.

In the propeller field, U.S. products continued their dominance with fully 50% of the fliers relying on them. Top Flite was the principal brand. The most widely used size was 11x8, with many 11x7's and 11x7½'s seeing use. The lightest planes (about 2700 grams, or 6 lbs.) found 11x6's effective on their 60 size mills. Incidentally, Fred Buick of the North Ireland team, registered his Swinger in at 5½ lbs. for the lightest plane of the meet, and Willie Schoenfeldt of West Germany placed 5th with the heaviest ship, his 9 lb. Prestige powered by a Super Tigre 60.

There were no major aircraft developments; the most significant being



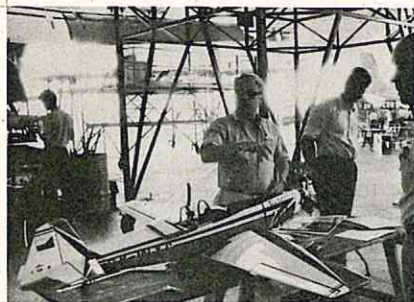
Top Italian RC pilot, Graziano Pagni, and well done Morris HF. Logictrol and ST 60. Team of Graziano (20th), Reda (31st), and Reineri (41st) were 11th in 1969 Internats.



Internats pause . . . Dr. Alex Elizondo, top Mexican scaler, joins Monica Nelson, Mexican team manager Feliciano Prat, and Maynard Hill in relaxing moment in Bremen.

the conclusive demonstration once again that retracting landing gears are a distinct factor in refined aerobatics. With the advent of really lightweight radios, the added retracting hardware is feasible where every flight smoothing advantage is sought. Small planes were not favored. It also appears the 'humpback' look of many models, to add lateral area for knife-edge flight, has reached its maximum and may even recede somewhat due to the success of Gienzendanner's Marabu and the difficulty of executing crosswind landings. Powerful 60's will continue to be a must and the throttle control was once again shown to be an important tool in creating symmetrical maneuvers and keeping them where the judges could fully appreciate the aerial figures.

All the foregoing strongly indicates U.S. fliers can expect Internats' competition to become tougher, although it can't be said previous World Aerobatic Championships have ever been cheap triumphs for U.S. RC pilots. For years it's been axiomatic



Maxey Hester's 4th place Zlin gets calipre treatment from scale judge Capt. Cesar Milani during first International Scale Contest held in conjunction with Aerobatic Internats.

DU-BRO *almost ready-to-fly* *semi-scale R/C kits*



Cherokee Arrow

.29 to .45 Engines
Full House R/C gear . . .

only **\$39⁹⁵***

Aero Commander 100

.19 to .35 Engines. Galloping Ghost to small Full House R/C gear . . .

only **\$34⁹⁵***
including pants

Fast assembly . . . excellent performers designed for trainees and advanced flyers. Rugged construction—all parts are pre-formed. Wings and stabilizers have foam cores. R/C gear mounts easily in roomy semi-scale, high impact, reinforced fuselage.

Cherokee Arrow Specifications

Wing span—49". Wing chord—9 1/2". Wing area 447 sq. in. Length 35 1/2". Flying wt. 4 to 4 1/2 lbs.
Steerable Nose Gear NG1—Motor Mount MM1
Aileron linkages AH79 and LB89 included.

Aero Commander Specifications

Wing span—49". Wing chord—8". Wing area—388 sq. in. Length—36". Flying wt.—3 lbs. 12 oz.
Installed fuel tank mount. Motor Mount MM1 included.

*Does not include engine, wheels or R/C gear

Other New Du-Bro Items Now Available...

Du-Bro NY-STEEL KWIK-ROD ASSEMBLY KR30® No Shrink, No Stretch. Free-running, micro-adjustable at control horn. Great strength, simple and easy to install. Hot, wet or cold days won't affect trim setting. Best available. Complete 31" assembly with Kwik-Links.

STEEL PUSH ROD NYLON ROD SLEEVE ONLY **\$1.49**

WING BOLT SET

Nylon bolts and threaded blocks.
22 PIECES

WB2 . . \$1.25

NO NOISE

GEAR STRAPS

LANDING GEAR FASTENERS
12 PIECES

GS25 ONLY 25¢

LONG WRENCHES

6 INCH REACH

Allen-type for those hard-to-reach places. Fits all Du-Bro socket head cap screws. Fine for bench and field box

LW98, pair . . 98¢

Strip Aileron Horn Wire CONNECTORS

Natural nylon fittings simplify servo link hook-ups

AH79 . . 79¢

AILERON HORN WIRES

Set of 2 horn wires and 2 mounted nylon bearings

LB89 . . 89¢



Send Stamped, Self Addressed Business Envelope for Catalog

DU-BRO PRODUCTS, Inc.

480 Bonner Road, Wauconda, Illinois 60084

Even if you don't think there's a Santa Claus, ask him for an X-acto gift set. Someone will get the message.



#82

Make sure your Christmas list includes one or more of these great X-acto gift sets.

#86 X-acto knife and tool chest. Contains Nos. 1, 2, 5 knives and complete asst. of blades, gouges, routers, punches. Has X-acto planer, sander, spokeshave, balsa stripper, steel rule. In handsome fitted wood chest. \$14.50

#82 X-acto Knife Chest. Three knives and nine extra blades in a rugged, natural finish wooden case, \$4.95

#373 X-acto Customizing Kit. Includes eight tools needed to engineer and streamline your own model cars, \$6.00

#88N X-acto Hobby Den Tool Cabinet. Assorted hobby tools, knives and blades in a sturdy wooden cabinet with sliding door, \$29.50

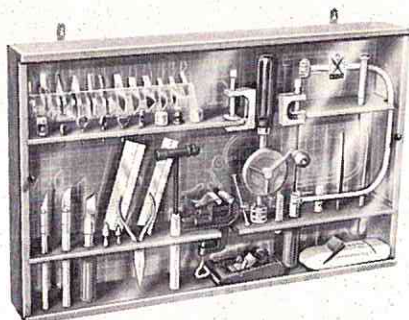
These and many other exciting X-acto sets are available at better hobby stores everywhere, or write:

x-acto, inc.

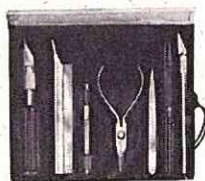
48-41 Van Dam St., Dept. 64
Long Island City, N.Y. 11101



#86



#88N

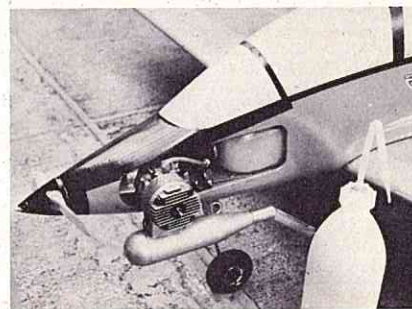


#373



Joe Bridi's Nieuport makes with a WW I scrabble for 5th place in Bremen. Proctor kit model was 6th in scale fidelity judging. Claude McCullough's Fletcher (7th place) was 3rd in fidelity category.

that successful competitive modeling requires a good equipment support base: it's been found true in free flight and control line, and it's truer still in RC. The obvious equipment growth reflected in this year's international gathering forecasts that European strength will continue to rise. With the apparent leveling of the equipment advantage previously enjoyed by U.S. RC'ers, future American efforts will have to rely upon other means to achieve higher flight performances. Through a better understanding of flight requirements of international competition under FAI rules (U.S. fliers did not receive background info on FAI judging criteria despite U.S. attendance at all FAI judging schools - this single factor could have cost the U.S. team the 1969 contest) and purposeful strengthening of the AMA pattern, U.S. fliers may meet the sustained and rising challenge of West Germany, Switzerland, and France along with the emergence of other European talent (not to deny the tremendous effort of the South African fliers as well as our brother N.



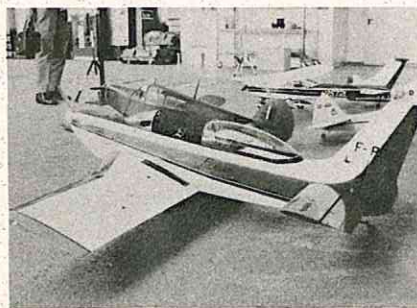
Poju Stephansen's Maximum 9 used HP 61 to advantage during pattern maneuvers in Bremen Internats. Placed 12th, up from 19th in 1967. Note muffler extension. Throttle important flight element.



Malaysian, T.S. Sthipan, joins Leopoldo Pergher in a salute to all the Internats mechanics who worked hard to make the 1969 show exciting and memorable. Mechanics, unite!

Americans, the Canadians).

To say the AMA RC Contest Board has a difficult job facing them is to grossly undershoot the task to which they now must address themselves. The problem, of course, is to avoid overshooting the target since, by far, U.S. contest activity - which currently, although precariously, supports Internats hopefuls - is not oriented toward international FAI-style competition. The call that has understandably been made to immediately adopt the FAI pattern as a consequence of the results of Bremen, has once again brought on examination of the familiar limitations to the idea, as well as adverse reactions to the activity entirely. Nevertheless, AMA's pattern - often called 'mickey mouse' by the more serious competitors due to its grab-bag feature and unpro-



Top scale craftsmanship points went to Sirocco replica of England's Mike Charles. Reduced to splinters on 2nd flight, placed 2nd anyway. Teammate, Dick Yates, won Scale Contest, cinched team win for England.



NIEUPORT'S WIN AT RHINEBECK

FRANK KNOWLES
ONTARIO, CANADA

1st Scale
2nd Maneuvers
3rd Combat

VERN KREHBIEL
1st Maneuvers

BERNIE MURPHY
2nd Combat

SEND STAMP
FOR LITERATURE

Nieuport Spare Cows \$4.95

Untrimmed - you trim for Camel,
Fokker Triplane, DVIII, etc. \$3.95

SCALE NIEUPORT 17...\$44.95

SCALE 2" 1"
WINGSPAN 54"

DESIGNED FOR
.49 - .60 ENGINES

VK MODEL AIRCRAFT CO.

12072 MAIN RD.
AKRON, N. Y. 14001



Oldest producer of digital systems.

Welcome to our *Anniversary*
5th

SELL-A-BRATION!

EK Logitrol

Two stick,
5 channel
digital systems

\$369.95

Hurry, limited
time only!

Similar savings on
all Logitrol systems

See your dealer Tell him to write
for attractive new dealer plan!

EK PRODUCTS INC.
3231 W. ELLIS BLVD. - HURST, TEXAS 76053 (817) 343-4827

SALES and SERVICE CENTERS

...to serve you and our dealers better FACTORY TRAINED SERVICE PERSONNEL

Los Angeles Area
EK WEST (213) 326-7733
23625 Pineforest Lane
Harbor City, Calif. 90710

San Francisco Area
NELSON MODEL PRODUCTS, INC.
1414 W. Winton (415) 782-9320
Hayward, Calif. 94545

Kansas City Area
KEN'S RC (913) 631-3158
10915 W. 59th Terrace
Shawnee, Kansas 66203

New England Area
NORTHEAST AREA R/C, INC.
340 Broad St., P.O. Box 437 343-4827
Fitchburg, Mass. 01420
(617) 343-4827

In Mexico
AEROMODELISMO
Calz. Guadalupe 602-A
Mexico 14, D. F.

Chicago Area
RADIO CONTROL CENTRAL
Box 449, Elmhurst, Ill. 60126
Service (312) 641-1192
Sales (312) 832-4908

Southeast Area
TATES MODEL ELECTRONICS
6225 So. Expressway, Box 23
Jonesboro, Ga. 30236
(404) 361-8098

THE LEARJET

The Ultimate In Sport Scale

Ken Willard — "The Learjet is a show stopper — fast, exciting and realistic; yet surprisingly easy for the experienced modeler to fly."

Bill O'Brien, RCM Special Projects Editor — "An exciting scale model; yet very easy to fly and maintain."

Jerry Nelson (after flying it in the Air Show at the 1969 Nationals) — "A scale model for all-around sport flying — realistic, exciting, yet easy to fly; makes you feel you are flying the full scale Learjet."

SHERLOCK
AIRCRAFT
MODELS

1275 Dana Avenue
Palo Alto, California 94301



Fuselage fully assembled, vacuum formed from the toughest plastic ever used in model aircraft. Plastic covered foam wings. All specialized hardware. Length 57", wingspan 55". Flying weight 7½-8 lbs. For .60 engine and 4 channel proportional.

\$79.50 check or money order

F.O.B. Palo Alto, Calif.

(Calif. residents add 5% tax.)

Write Dept. N for new brochure

Dealer inquiries invited.

YOU WON'T WANT TO MISS THE JANUARY ISSUE OF R/C MODELER MAGAZINE ON SALE DEC. 10, 1969

CHARLES LITZAU'S MAGNIFICENT FULL SCALE PT-17 • KEN WILLARD'S "BACKYARD R/C" SHOWMASTER • BILL THOMAS'S III PERFECTION • COLOR COVERAGE OF RHINEBECK '69 • PROFILE OF A FORMULA RACE PLUS MUCH, MUCH MORE.

ductive maneuvers - needs serious review to make it a viable tool in building pattern competence to meet the challenge that has now become unavoidably obvious and compelling. A frank evaluation of the Contest Board's past performances cannot help but show a measure of indecision and reactionary appeal to emotional factors that swayed judgements and handcuffed positive developments. "Any GOOD pilot oughta' be able to fly ANY maneuver cold..." was the selling point for the grab-bag procedure that rendered the current pattern ineffectual for development of 'second nature' pattern poise and failed in its intent to magically bring about the 'spectator appeal' its advocates sought. For too many more years than it is cared to recount, the advice of Harold 'Pappy' deBolt has been ignored in establishing our aerobatic pattern. He has continued to advocate a 'total' pattern made up of a set of maneuvers a level or so above the FAI difficulty. This approach, coupled with the current practice of selecting a team a year in advance of the Internats tourney, provides the chance to bring maximum strength to future U.S. teams. The desire to

initiate separate FAI competition is good if this 'ideal' solution is really supportable over the long haul required to produce teams at least for 1971 and 1973 as a starter. Certainly, the Nationals is NOT the best place to select a team, but so far it has the advantage of being the most practical solution despite being a recognized minimal answer. Perhaps though, the RCIA invitational meet you'll read about in these pages next month, where contestants are selected for participation on the basis of points 'earned' in contests during the preceding season, offers a more satisfactory solution to the pressing need of producing flying talent best suited to international competition. In any case, the next few months will be critical for the RC Contest Board and U.S. pilots, as it will be as an indicator of the outcome of events set for Austria a short two years from now.

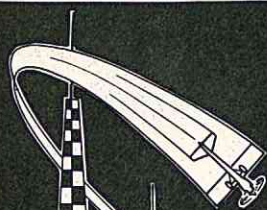
HERE 'N THERE

● Club promotion - or building from 9 members to 20 overnight. That was the name of the game for the R-MAC's or the Reno RC Club. Working with officials of the Reno Air Races, club members staged an opening day demonstration and brought their club

to the attention of many new fliers needing the advice and help that club association offers. The club flying site problem was also licked in a unique way - all the club members joined the local CAP! In this way the club has the use of a remote portion of the CAP airport. It also makes it possible for the R-MAC's to act as advisors in the CAP's youth modeling program - a real 'back scratching' arrangement! Malcolm Douglass and Neil Shaw are current officers in the enterprising



Reno Air Races - and Reno RC Club members give flying show to 8000 viewers. Membership swelled from publicity. Kraft Radio reps, Geo. Killen and Jim Witt join R. Baker, M. Douglass, J. Freshman, and N. Shaw for RC show.



24 HOUR

SERVICE

DAY

(615) 356-1225

NITE

(615) 352-1450

AMA 144
NMPRA 445

INSTANT SERVICE
on all
R/C products

HOBBY WORLD INC.

6602 HY. 100

Nashville, Tenn. 37205

SKY GLASS FIBERGLASS & FOAM KITS
TWISTER, KWIK FL III, CITRON

\$36.90

SPECIFY UPRIGHT
OR SIDE ENG. MT.

FUSELAGE
ONLY \$29.95

FOR THE PROFESSIONAL FINISH
K. J. MILLER COMPRESSOR,
SPRAY GUN & ACCESSORIES
REG. \$34.95 XMAS SPECIAL **\$28.90**

**We meet or beat
anybody's prices**

BOB REUTHER

**WELCOME
TO
BOB
REUTHER'S
HOBBY
WORLD**

WE PAY POSTAGE ON ALL PREPAID ORDERS!

TOO COLD TO FLY? WANT TO RACE THIS SPRING?
STAFFORD MINNOW KIT & K&B .40 RR ENGINE
REGULARLY \$69.90 SPECIAL: **\$49.90**

**LOG III 5 CHANNEL 2-STICK
COMPLETE: \$285.00**
WE TAKE TRADES

CALL US FOR PRICES ON
KRAFT, ORBIT, MICRO-AVIONICS
PROPOTIONAL SYSTEMS

HOBBYPOXY QUICK-FIX
4 MIN- FORMULA 4
EPOXY GLUE
NEW! NOW IN STOCK!

**DEALER
INQUIRIES INVITED**

club.
From Pittsfield, Mass., Bob Yarmey writes:

Ever since my first plane ride I've always had my eyes upstairs and thinking someday I'd be buzzing around up there. But since it was out of my range both financially and age-wise, I turned to the next best thing - model planes.

I've been building them since I was 10. First it was strictly free flight. These were a blast but I wanted to have a little bit of control over them because they would often end up in a tree or get lost. So I decided to look into RC. I built my first and flew it at 13, three years ago. It was a Skylane which gave me quite a few good flights. Then I flew Midwest's Cessna 150 - what a charm that was! A good rugged bird - one time I crashed it into a big solid elm without getting a single scratch!

I've mainly stuck to scale jobs. Since I joined the CAP three years ago I've had a special liking for our squadron's L-16 Bird Dog. I thought if a scale ship could fly as slow as the L-16 it would be great (and give me more time to avoid the trees . . .). So I decided to build one that would handle a couple of servos. My first free flight model happened to be an Aeronca Champ (by Guillow) and because I couldn't find any plans for a bigger ship, I scaled the Champ plans up twice size to give me the L-16 at 48" span and 31" length. It was done in 6 weeks.

For radio equipment I'm using an O.S. rudder and motor servo wired up for the

quick blip motor arrangement to a Control-air SH-112 relay receiver. For power I use the O.S. Pet II .09 RC engine mounted on two maple mounts. The landing gear needed at least 1/8" plywood former to anchor the 3/32" piano wire. The cowl is balsa covered with celastic. Regular butyrate dope was used for the paint job. Done, the plane and radio ready to go, came to 2 lbs. and 6 oz. I'm sure this bird is going to make a great flier.

● 1969 saw the Australian sailplane endurance record jump from 3½ hours to 11 hours and 8 minutes at a new soaring site 80 miles south of Sydney. Bill Marden is the new record holder who lives in Punchbowl, N.S.W. and is a member of the Sydney RC Society. A 5 year veteran of RC, Bill used a 10 foot span slope soarer fitted with a 4 amp. hour battery pack weighing 1 lb. 6 oz. He used the Australian made Silvertone DJP Mark II propo radio with the new small servos, and that had the transmitter specially fitted for the record flight with a switching arrangement that allowed use of an external battery pack that could extend battery power duration to at least 18 hours. Ivor Stone was the FAI observer and witnesses were Paul Travers, Pete Schuster, and Bob Young, an RC pioneer in Australia

who makes and markets Silvertone radios. Bob describes the exciting record flight in his newsetter:

We left Sydney at 2 AM Sunday morning, arriving at the slope at 4 AM as planned. Weather forecast was for a 10-15 knot NE wind with gusts to 25 knots around midday. By 4:30 it was almost impossible to stand on the edge of the ridge. We were all worried about taking off, as a storm was operating off the Queensland coast and wind velocity always increases about midday. It was not too difficult to imagine conditions deteriorating to an unmanageable level. Daybreak brought no relief and by 5:30 it became clear conditions would not improve. We decided to investigate a point halfway down the NE face in hopes that the wind velocity would be lower. This proved correct and Bill was faced with the decision to take off, knowing that if the wind velocity increased much further the flight would have to be terminated in impossible landing conditions.

Bill decided to give it a go and as a safety precaution, I was left at the top of the ridge (about 1500 feet) with the standby transmitter in order to land the model should it be blown back behind the ridge out of Bill's sight from the point a half mile down the slope face. As a further precaution, extra ballast was added to the nose of the model and more down trim placed on the elevator. At 6:31, the model was launched and from my position I had no way of knowing how bad the conditions were, however, I guessed they were not as bad as we thought when

THE FINEST PRECISION CUT FOAM WING CORES

★ All low wing aircraft complete with landing gear trunion blocks,
All wings complete with 4" fiberglass tape and instruction sheet.

***BEATNIK**
(RCM PLAN)
\$9.95

***MISS BIKINI**
(RCM PLAN)
\$6.95

PROFESSOR
(RCM PLAN)
\$8.95

INSTRUCTOR
(RCM PLAN)
\$7.95

***NEW ERA**
(RCM PLAN)
\$5.95

SHOW OFF
(RCM PLAN) (2 wings)
\$10.95

SUN-FLY IV*
(RCM PLAN)
\$9.95

KWIK-FLI III*
(MAN PLAN)
\$9.95

LI'L SWINGER
(RCM PLAN)
\$5.95

450 FORMULA I*
(Flat Bottom Airfoil)
\$8.95

600 FORMULA II*
(Semi-symmetrical)
\$9.95

UGLY-STIK
\$8.95

Cut 'em yourself Foam Wing Kit, two blocks of 1# foam, 2 1/2" x 12" x 32" plus 2' fiberglass tape & trunion blocks **\$5.95**

Saw 'em yourself Balsa Logs, A grade, 3" x 4" x 48" **\$6.95**

Wing Accessory Kit: 2' fiberglass tape, 2 trunion blocks, and 2 1/4" x 1" nylon bolts **\$1.50**

Cardboard Shelf Bins, 4" high, 4" wide and 12" deep. 10 for **\$2.50**

INTERNATIONAL MODELS

All orders shipped postage pre-paid.
All orders must be accompanied by cash, check,
or money order.
No COD orders.
Texas residents add 4% sales tax to order.

P. O. BOX 16154 • FORT WORTH • TEXAS 76133

Bill started doing loops about 30 seconds after take off! It appeared the wind velocity dropped off more than expected up and away from the slope face, and the first 4 hours proved smooth and uneventful.

By 12 o'clock however, conditions had become so boisterous that changing of transmitters as originally planned became impossible. By 1 PM the model was hard pressed to make any headway whatever and it looked as if the flight would terminate at any moment. Gusts of over 45 mph were recorded almost continuously and the model was being slammed around by extreme turbulence. Considering that the model was always in a high speed dive when it was hit by turbulence, it is amazing that it held together. Several times the 2' long ailerons were seen to flutter alarmingly, and the 10' wing was flexing quite visibly. John Morgan had spent quite a lot of time and effort on the foam cores for this wing and as it turned out, it was well worth it. Several times the model was flicked almost onto its back; luckily this only happened at reasonably safe altitudes. At this time a lot of the flying was taking place only 20 to 50 feet above the slope face, and any sudden roll could have been a disaster.

Time after time, the situation looked hopeless. The model was being forced down and back into the slope face, but each time the wind dropped enough to allow Bill to penetrate the model a little and he would get a breather for a few minutes. This went on until 3 PM at which time the wind steadied a little and the next 2 1/2 hours were a little more relaxing. At 4:30, the 10 hour mark had safely passed and we began to

look toward a flight of 12 hours minimum and, with luck, even a 12 1/2 hour record. At 5 PM ominous black clouds began to roll in and at 5:39 the flight was terminated in still air and pouring rain. For the witnesses, it was a long tiring day. We were all edgy, hot and sunburned. How Bill felt after 11 hours of flying - 5 of them under extreme strain - is anybody's guess. However, he said he felt he could have gone on for hours. To prove it, he's now preparing for a 24 hour flight which in Australia means some night flying.



Bill Marden and Australian endurance record slope soarer. 11 hour, 8 min. flight ended in douepour. 10' span, Silvertone Mark II propo radio. Bill member of Sydney RC Society.

● 'Shades of Death Road' - that's the place where a new RC club operates. It's the Top O' New Jersey RC Club

whose members come mainly from Sussex County and have a club membership of 21 currently. Planes range from .010 powered single channel and GG to the standard 60 powered propo multi's. Kwik-Fli, Henschman, Ugly Stik, Cherokee, and some Laniers are club favorites. Most popular radio gear is Logictrol, while Enya's dominate



Carl Hallet launches Falcon 56 for Bob Bodine. Ship has Enya 35, Logictrol. Scene is Top O' New Jersey RC Club field at Shades of Death Road (true name) in Sussex Co. in NW N.J. A new, growing club.

MESSERSCHMITT ME 109

PROFILE R/C AND IT'S ALMOST READY TO FLY

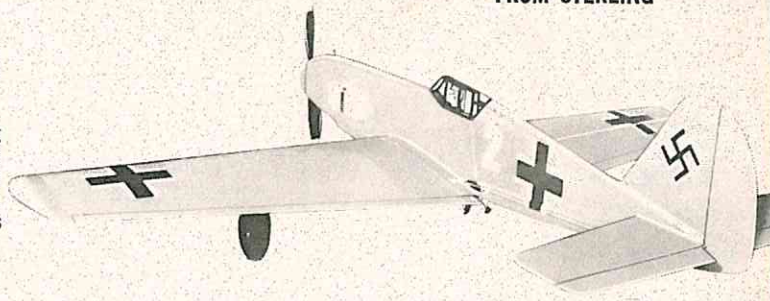
Pride of the Luftwaffe in World War II! Now Sterling recreates the ME 109 in profile R/C that's almost ready to fly. Get the ME 109 this Friday, fly it on Sunday!

Kit features brilliantly high gloss red plastic covered foam wing panels, ready to join; assembled ready-to-go factory-built fuselage in which the maple motor mounts, maple nut blocks, birch plywood sides, birch wing saddle, etc., have been factory installed. Two sheets of giant authentic decals; plastic canopy, wing tips and hatch; formed wire gear, a Sullivan fuel tank, all required hardware, nylon horns, nylon push rods; etc.

\$34.95

Kit FS-24 Wing span: 55"
Length: 43" For engines: .45 and up

IT'S NEW!
FROM STERLING



S.E. 5a REMARKABLE SCALE REALISM!

Kit FS-22 For engines: .19 to .29
Wing span: 40 3/8" Length: 30 1/2"

Britain's most devastating World War I fighting plane. A superb 1 1/2" scale super detail model . . . and its size is perfect for the new proportional radio gear!

Finest quality balsa, plywood, maple, etc., diecut and accurately shaped. Formed wire landing gear and center struts; detailed scale plastic machine guns, lower hinged cowl, etc.; giant authentic decals, metal radiator-shutters, nylon tube pushrods. All hardware, screws and nuts, nylon control horns, nylon bell cranks, etc. Complete plans, full-size layouts and step-by-step instructions.

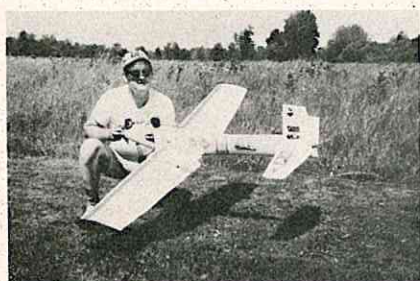
If no dealer available, direct orders accepted — with 10% additional charge for handling and shipping. (60c minimum in U.S., \$1.25 minimum outside U.S.) Send 10c for complete catalog.

\$21.95



IT'S NEW!
FROM STERLING

the engine department. The club employs a muffler rule to avoid noise complaints. Charley O'Donnell is the club spark plug and anyone wanting added information on this NW New Jersey club can contact him at 102 W. Mountain Rd., in Sparta, New Jersey.



Harry Cassimore and well-decorated VIP. Enya 60 and Logictrol in fiberglass fuselage. Decals show Harry's in auto parts business, also member of Top O' New Jersey RC Club.

● Carburetor tip - The Perry carburetor has proven to be what amounts to a breakthrough in throttle design for glow plug engines. More and more RC'ers are using it all the time. This wider use results in the usual adaptations by ingenious modelers. Also to

the discovery of some limitations. Here are Call Scully's comments about a no-no with the Perry carburetor:

After a 'dork' I had a throttle full of mud and rocks in the Perry; a good clean out seemed definitely to be in order. Like all us modern RC'ers, I no longer use those plain cleaners like kerosene or gasoline. Not me - I have to be fancy - I use the best commercial cleaners such as Penetone or Dowclene EC. Did you ever see a soggy throttle? Or a study in molten plastic? That's right, that beautiful black body of the Perry is perfectly soluble in both of the above solvents!

Cal's clubmate, Bob Talley, found what appears to be an improvement in the new carburetor, and also offers some maintenance advice. Here's his comment from the Squawk Sheet, newsletter of the Port Arthur, Texas Oily Boids:

Last weekend, I noticed the needle valve, or high speed adjustment screw, was vibrating while I was getting ready to take off. Like a fool, I figured it would stay in place in the air. It didn't. So what could I find in the tool box that would work? A 2-56 screw. It made do for the rest of the day, but adjustments were extremely critical and difficult due to the necessity of having to stick a long screwdriver so close to the prop. This week I hit upon what appears to be a definite improvement over the

critical to adjust than the original! The next problem was to adapt the coupler to stay put. This is how I solved it: First, two 2-56 nuts were threaded all the way to the end of the threaded portion of the coupler. These were jammed together to prevent moving. A small washer was slipped on, followed by a fresh piece of medium size CLEAR fuel tubing about 3/8" long. This was screwed into the Perry carburetor body. The tubing acted as a retainer, only better. Then I bent an adjusting 'handle' about midway up the unthreaded portion which also serves as a good reference point for valve setting. So far, I like this thing even better than the original and don't think I'll change back. original Perry adjusting screw. Since the original had a 2-56 thread and about a 45 degree bevel on the end, I looked for something similar. I found the DuBro No. TC-25 Threaded Coupler for Kwik-Links fills the bill perfectly. The end is rounded rather than beveled, and this seems to make it less

Here's Bob's other tip for Perry users:

One other thing was pointed out to me in Baton Rouge by the contestants having Perry carbs that should probably be good for other carburetors as well. This was to 'flush' out the carburetor at the end of the day's flying by firing up the engine, and with a high speed run, pull off the feed line and let it run till dry. This will pull all the fuel from the reservoir which the Perry features and will leave no fuel to evaporate and leave an oil residue that may mess up the idle on future flights. Now, why didn't I think of that?

DEALERS

WRITE TODAY
ON YOUR
LETTERHEAD
FREE
HOBBY
BULLETINS



CLEVELAND HOBBY SUPPLY
7619 BROOKPARK RD., CLEVELAND, OHIO 44129

PROFILE OF THREE CHAMPIONS

(continued from page 28)

remember a time when he wasn't interested in airplanes, running the gauntlet from plastics, free flight, U-control, to R/C. Bob also started with single channel, then an Orbit Analog installed in a deBolt Acrobat

with a Veco 61. (An obvious mistake to the more experienced R/C flier who could almost predict the end result - the plane meeting terra firma quite suddenly!) And the inevitable happened, although some witnesses said he did some beautiful loops and a roll before the uncalculated impact! Upon the advice of Larry, he purchased a deBolt Jenny and Veco 45 which proved a much more suitable trainer. In 1967 he purchased a new Kraft (which is the one he used at the NATS) and borrowed a Lanier Pursuit. He flew several other planes, totaling up about 300 flights, and winning a first and second in Class B, which really hooked him on contest flying. Bob built a Kwik Fli III, finishing it only three days before leaving for the 1968 NATS. With only 8 practice flights on the Kwik Fli, he placed 3rd in Jr.-Sr. Pattern and gave the best performance in Pattern by a Jr. The K&K Ballerina was Bob's first pylon racer, which in its first race at the Sepulveda Basin, placed 7th. Bob flew a new Kwik Fli III in 1969. Some of the highlights are 2nd in Class C-Novice at Phoenix, Feb. 1969; 2nd in Class C-Novice in March 1969 at Sepulveda Basin; 1st in Class C-Novice at Madera, California; and 1st in Class C-Novice at Whittier Narrows in June. This led him to the Sr. National Championship at Willow Grove and 13th in overall pattern (watch out, Hot Shots!). In March of 1969, Jeff Bertken and Bob formed the B/S Racing Team. Their first race was the Las Vegas Air Races in April, where they finished a remarkable 3rd in Formula I. At the NATS they placed 11th, overall, and received the trophy for the best performance by a Senior in Formula I. Then, right after the NATS, they won their first Formula I race at the Sepulveda Basin against top competitors like Granger Williams, Cliff Weirick, George Killeen, Mike Bridges (who they beat in a fly-off for first) to name but a few. A fantastic performance for anyone, let alone a 16 year old.

Whit Stockwell (15 years old) has, like Bob, gone through all the modeling stages. While flying free flight at the L. A. Model Airport, he spotted the R/C guys standing still flying their birds and thought (as he had just returned from a jaunt through the corn, water and ditches), "Maybe this is a better stick." He HAD to try it. During Christmas 1966, he bought a Taurus kit and built his first R/C plane. It came out pretty well so he

a stunt performer

FOR BEATING THE COMPETITION



Specifically designed by Jim Kirkland and engineered by Dumas as the only really new full house competition R/C plane to come along in recent years, the Triton was built to meet the demands of today's R/C contest flying. From its fiber glass nose and cowl, providing a neat, clean, light and rugged engine enclosure, through its durable foam wing for ease of maintenance and long life, the Triton is a competition plane for winners.

Its advanced aerodynamic capabilities allow it to fly the complete stunt pattern with unbelievable reliability and precision, including those tough maneuvers.

The true R/C competitor will find no match for its silky smooth and reliable maneuverability.

Suggested engine .45-.60. Get the Triton . . . another new high performer by Dumas, only **\$49.95**

dumas
planes

A DIVISION OF DUMAS PRODUCTS, INC.

DUMAS PRODUCTS, INC. P.O. BOX 6093 TUCSON, ARIZONA 85716

bought a Kraft proportional from Larry. The plan was that Larry would teach Whit's dad to fly, who would then teach Whit. (Can't you just see what's coming?) Once again the same old mistake - a beginner trying to learn on a fast, low wing competition ship. Larry came to the rescue, and advised Whit and his dad to get a Lanier Comet and save the dignified old Taurus the trauma of their learning stages. They did, and dad promptly wiped it out! Dad gave up, and Whit started learning on the Taurus. With a lot of assistance from Larry, and a local R/Cer named Bob Barron (who has long since disappeared somewhere out there in the Pacific curl - for you guys who don't know nothin' about nothin' but modeling, he became a surfer!). Whit made his first solo the day after the Los Alamitos NATS in 1967. From then on he has made very rapid progress, as you can see by some of his contest highlights. His first contest in 1967 earned him a 10th in C-Novice. The 2nd contest brought home a 3rd in C-Novice at the Pioneers meet in November 1967, and his first trophy. Since then, in Stunt, he has placed 2nd or 3rd eight times, winning his first contest at the Valley Flyers' 1968 contest. Whit started racing Pylon in 1968, flying in Formula I and II throughout the season. Although never winning in 1968, his many high standings accumulated enough points for him to finish 3rd in the NMPRA Season Championships. Whit started the 1969 season with a tremendous 2nd place finish at Las Vegas and continued to do well until his pylon racer met a pylon at the Santa Barbara races. He promptly built a new Minnow and only had time for one flight before leaving for the Willow Grove NATS. After all the qualifying fumes and smoke settled, Whit was the No. 1 qualifier. (Bob Smith No. 3 and Larry No. 10). Whit received four trophies this year. First as Junior Stunt Champ; a third as Overall Formula I flier; first as low qualifier in Formula I; and Top Junior in Formula I and II Racing. A remarkable performance for anyone at a National Championship, let alone a Junior!

Some interesting sidelights are that Larry taught and advised both Bob and Whit during their beginnings in R/C and well into their advanced stages. Whit and Bob are very close friends and constantly help each other, sometimes even using each other's planes. All three are flying Kraft Proportional Systems. All three



HOBBYLAND

**Ace-Kraft
Franchised
Dealer**

15 Years of Service to the Entire Northwest

**— NOW A ONE STOP SHOPPING CENTER
FOR ALL YOUR R/C NEEDS.**

Let us recommend a system for you!

**SATISFACTION GUARANTEED
PROMPT MAIL ORDER SERVICE**

**AVAILABLE NOW!
New Kraft KP4-B
\$399.95**

Can be converted to 6 channel when you are ready.
Merco Twin Plug 61's: \$44.95
Still Best Prices on CitizenShip



4503 N. Interstate Avenue

Phone (503) 287-4090

PORTLAND, OREGON

Zip 97217

A Christmas Gift Subscription To R/C Modeler Magazine

The world's most widely read, quoted, and imitated Model Aviation Publication is a gift that will be received and appreciated every month of the year!

**ORDER YOUR CHRISTMAS 1969 GIFT SUBSCRIPTIONS NOW.
USE THE CONVENIENT ORDER COUPON BELOW.**

R/C MODELER MAGAZINE	AMOUNT ENCLOSED
P.O. BOX 487	\$ _____
SIERRA MADRE, CALIF. 91024	

Please enter the following CHRISTMAS GIFT SUBSCRIPTIONS for:

NAME _____	<input type="checkbox"/> 1 Year @ \$7.50
ADDRESS _____	<input type="checkbox"/> 2 Years @ \$14.00
CITY _____ STATE _____ ZIP _____	

NAME _____	<input type="checkbox"/> 1 Year @ \$7.50
ADDRESS _____	<input type="checkbox"/> 2 Years @ \$14.00
CITY _____ STATE _____ ZIP _____	

NAME _____	<input type="checkbox"/> 1 Year @ \$7.50
ADDRESS _____	<input type="checkbox"/> 2 Years @ \$14.00
CITY _____ STATE _____ ZIP _____	

NAME _____	<input type="checkbox"/> 1 Year @ \$7.50
ADDRESS _____	<input type="checkbox"/> 2 Years @ \$14.00
CITY _____ STATE _____ ZIP _____	

NAME _____	<input type="checkbox"/> 1 Year @ \$7.50
ADDRESS _____	<input type="checkbox"/> 2 Years @ \$14.00
CITY _____ STATE _____ ZIP _____	

NAME _____	<input type="checkbox"/> 1 Year @ \$7.50
ADDRESS _____	<input type="checkbox"/> 2 Years @ \$14.00
CITY _____ STATE _____ ZIP _____	

Send Gift Cards to each of the following as gifts from:

NAME _____	STATE _____
ADDRESS _____	ZIP _____
CITY _____	

Look for the **NYROD**® trademark on every Push Rod!

NYROD®

**NOW BETTER
THAN EVER!**

**SU-PR-LINE
PRODUCTS**

"THE Flexible PUSH ROD"

PLAINFIELD, ILL. 60544

SLIM PAK - packaged straight - & COIL PAK AVAILABLE

use Lee-Veco 61 engines in their pattern ships. All three use K&B 40 RR engines that were modified by Clarence Lee (also a Valley Flyers member). I would like to mention the fantastic job Jeff Bertken did calling for Larry in Formula I Racing at the NATS. He called 360 pylon turns without one cut. (Try that some time!) There are many people, too numerous to mention, who have played a part in helping to bring those four National Championships to the Valley Flyers. I am sure they feel some sort of inner glow for having done so. So you can see why each and every one of the 110 Valley Flyers are the proudest R/C fliers in the country these days.

L to R: Whit Stockwell, Larry Leonard, Bob Smith with 1st place trophies in Pattern flying.



World's Finest Unit is backed by the World's Finest Service

**AUTHORIZED
SERVICE
STATIONS:**

RCS Engineering (Jerry Pullen)
11015 Fenway,
SunValley, California 91352
Phone (213) 768-1519

Kraft Southeast (Bill Johnston)
P.O. Box 2572
Montgomery, Alabama 36105
Phone (205) 288-9726

Cinedisc (Marcel Van Gompel)
35, Rue Neuve
Huy, Belgium

Kraft Northeast (Tony Bonetti)
161-175 Linden Street
Hackensack, New Jersey 07601
Phone (201) 343-5008

Kohlman Co. (Dennis Kohlman)
8213 N. 29th Ave.,
Phoenix, Ariz. 85021
Phone (602) 997-0656

Geoff Franklin
98 Gosmere Street
Leicester, England

Crown R/C (Bill Kempton)
9207 E. 118th St.,
Puyallup, Wash. 98371
Phone (206) 845-0376

Midwest Model Supply Co.
6929 W. 59th St.,
Chicago, Ill. 60638
Phone (312) 586-7101

Top Flite Toys & Hobbies (Barry Angus)
126 Ryrie Street
Geelong, Australia

Neal's R/C Service (Neal Strutzenburg)
Manson, Iowa 50563
Phone (712) 463-3011

Gary's Hobby Service (Gary Pannell)
2013 Melissa Street
Arlington, Texas 76010
Phone (817) 277-8333



write for free catalog

KRAFT
SYSTEMS INC.

450 W. CALIFORNIA STREET, VISTA, CALIFORNIA 92083



THE BEATNIK

(continued from page 23)

Rudder and Elevator

The stab is built up on a flat surface. The elevator and rudder are cut from sheet balsa and sanded to shape.

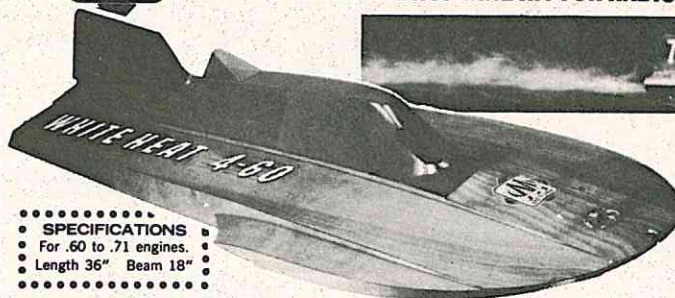
Fuselage

The fuselage sides are cut from 3/32" balsa with 1/32" plywood doublers from the firewall to the trailing edge of the wing. Glue together using Pliobond contact cement. The firewall is oval in shape and it may be necessary to wet the outside of the fuselage sides in order to wrap them around the firewall. Use masking tape to hold the sides in position. The remaining formers may be held in position using the same method. When this framework is dry, glue the bottom sheeting in place. To form the turtledeck and cowling, tack glue a balsa block in place on the top of the fuselage. Using a carving knife and sanding block, shape the turtledeck to the proper contour. Remove the top block from the fuselage and, with your Dremel saw, cut out a slot in the back of the block to hold the rudder. Cut another slot at the bottom of the block to fit the stabilizer. Forming your turtledeck in this same manner, will provide you with preformed tail



WHITE HEAT 4-60

4 POINT HYDROPLANE KIT FOR RADIO CONTROLLED RACING



- SPECIFICATIONS •
- For .60 to .71 engines.
- Length 36" Beam 18"

If dealer cannot supply you send stamped self-addressed envelope for literature and prices.

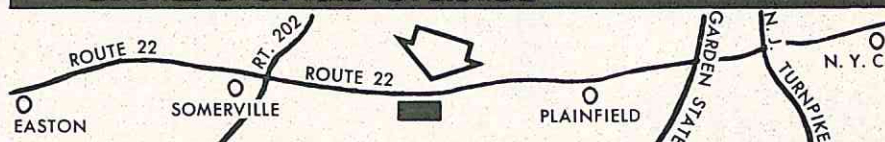
OCTURA MODELS 8148 MILWAUKEE AVE.
NILES, ILL. 60648

Designed for multi-boat racing... pre-tested... competition proven... as are all Octura hulls and fittings. Kit, duplicating the construction of the sturdy Octura trophy-winning hull, builds easily. Complete with full-size plan, step-by-step instructions, precision-cut plywood formers and planking PLUS fiberglass front cowling and distinctive decals. Motor mount, universal, Kool Klamp, steering strut, shaft and propeller, fin, fiberglass rear cowling, etc. available.

TINY TOTS

PLAY & RECREATION ITEMS FOR EVERYONE

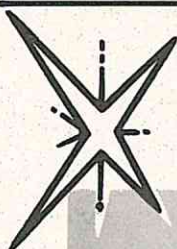
ONE OF THE EAST'S
LARGEST HOBBY CENTERS
DISCOUNT PRICES



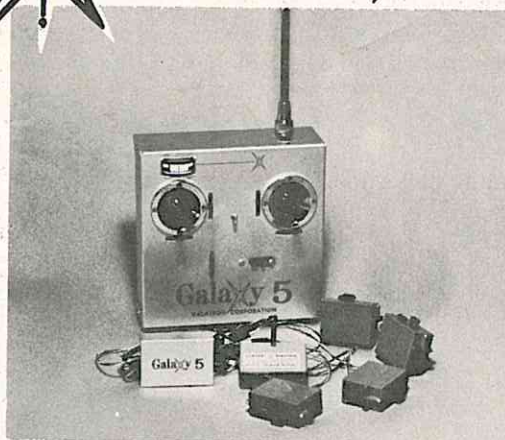
- World Engines
- Sig Products
- Octura
- Kraft
- Ace R/C

Plus all other
top brands of
R/C and U/C
planes and
equipment

U. S. ROUTE 22
GREEN BROOK N. J.
A few miles West of
North Plainfield
Phone (201) 968-0440



ALL NEW! Galaxy 5 Systems



Each System
Hand Crafted
Flight Tested
Before Shipment
COMPLETE
\$399.50

Dealer
Inquiries
Invited

TRANSMITTER
Closed Stick Assemblies
Output .8 watt
Size: 7 x 7 x 2.25

RECEIVER
Completely new circuitry
Size: 1.7 x 2.5 x .7
Weight: 2.25 oz.

SERVO
Completely New and
Reduced
Size: .85 x 1.7 x 2.3
Wt.: 2.5 oz. Thrust: 4 lbs.

GALATRON CORPORATION

Albuquerque, New Mexico 87102

703 Slate N.W.

Phone (505) 842-1457



Build models like a pro - with a Dremel Moto-Shop

Building flying models is an exacting hobby. That's why modelers who get professional results use a Dremel Moto-Shop. They find this 5-in-1 power-shop gives them an extra edge of skill and craftsmanship — in practically every step of construction.

With a Moto-Shop and its attachments, you can saw fuselage sections, sand or form components, rout engine mounts, grind metal parts, custom modify engines, cut wires and rods, bevel wing edges and tips. And you can work faster, too — with greater precision.

Basically, the Dremel Moto-Shop is a 15" jig saw — slip-on attachments convert it into a disc sander, bench grinder, buffing wheel or flexible shaft unit. It has a powerful, ball-bearing rotary motor and cuts up to 1 3/4" wood; light metal, plastics, etc. And it weighs only 10 lbs. Model 571 with sander attachment, \$37.95. Model 572 with all attachments, \$54.95.

See your hardware or hobby dealer — ask for a demonstration

DREMEL MFG. CO.

Dept. 699F Racine, Wis. 53401

☐ Please send book. I enclose \$1.45

☐ Send free power tool literature

Name _____

Address _____

City _____

State _____

Zip _____

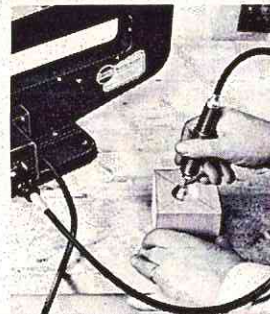
Saw out fuselage panels; light metal or plastic parts



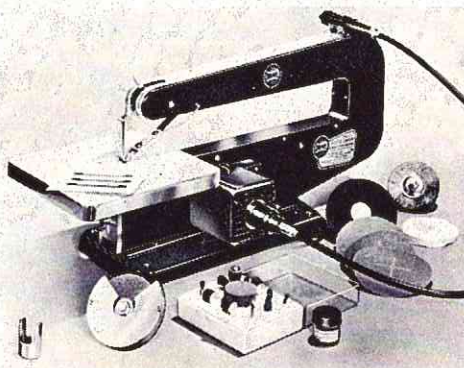
Grind, buff or trim parts — sharpen tools



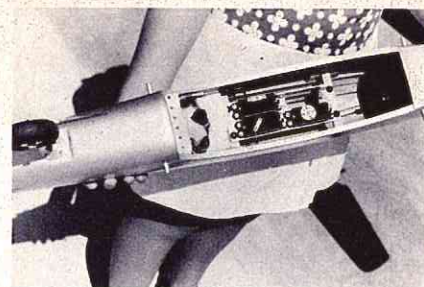
Sand, finish trim or contour structural members



Rout motor mounts — grind or polish engine components



160-page "Dremel Handbook of Hobbies, Crafts and Projects" tells how to work with wood, metal, plastics, glass, ceramics. Covers complete hobby field. Fully illustrated. Only \$1.45



Orbit installation in Beatnik.

fillets. The block can then be hollowed out on the inside leaving about a 3/32" shell which is then glued back in position on the top of the fuselage. Those who wish to save the cost of a balsa block can plank the top of the fuselage. Simply add a rounded section to the top of each former.

Finishing

The entire nose of the airplane should be fiberglassed, and a good coat of resin applied to the engine compartment, in order to make it completely fuelproof. The entire airplane is covered with Silron, with several coats of filler and several coats of AeroGloss color dope. If you have taken a little care in selecting your wood, and in finishing, your Beatnik will weigh less than 6 pounds, ready to fly.

Flying

Unless you are an expert flier, I suggest you set the Kwik Link on the last hole on your elevator horn until you get the feel of the airplane. This will also make it easier to flare out your landings for a smoother touchdown. You will find that it is almost impossible to stall the Beatnik, which is quite the opposite of what most people think will happen with a tapered wing.

The Beatnik is an attractive looking model with a very realistic appearance, and you are sure to receive many compliments from the spectators at the field.

So don't let the name fool you! ●



(continued from page 19)

elevator and rudder, 1/16" steel welding rod on the ailerons, 1/32" piano wire through an inside piece of NyRod on the throttle. (My model, less 4 oz. of fuel, weighs exactly three pounds.)

The aileron control horn shown on the plans is really a Williams Bros. aileron hinge. If this isn't available to you, then cut the flange off a regular nylon control horn. The aluminum wing attach fittings were simply sliced off of an extruded 1/8" aluminum angle I got at the local hardware store. The .064-24st aluminum came from the local airport; it is a very common thickness.

The balance point shown on the plans is an absolute most rearward balance point. If your plane comes out tail heavy, add one or two 1/4" plywood spacers between the firewall and the engine mounts. I'm using a Kraft KP4S at 13.5 oz. airborne weight. A heavier system should not affect the balance noticeably. My present plane is trimmed with 1/8" down elevator and 3/16" right rudder. (Exactly where I wanted it, as it smooths out the power on-off transition.) For you less experienced pilots, use 3/8 inch up and 3/8 inch down on your elevator and 1/2 inch right and left on the rudder and 1/2 inch up and down on each aileron.

After a few flights you will be able to go to 7/8" up and 7/8" down on the elevators, one inch right and left on the rudder, and 3/4" up and down on each aileron. (This measurement is taken at the trailing edge of each control surface, from the neutral position.)

As a matter of interest, I dove this plane at full throttle from five hundred feet to one hundred feet (absolutely straight down) and then jerked in full up elevator into a loop and the recording 'G' meter registered 20G's. If anybody wants to put a .29 or .35 in this plane, I suppose it would be all right, the plane is strong enough, but boy, when it comes to flying it, you're on your own!

R/C MODELER MAGAZINE

FULL SIZE PLANS SERVICE

P. D. PARASOL

By Johnny Johnson

Scale-like parasol wing model reminiscent of a 1940 Home Built.

Full-house, for .15 to .19

#413 \$2.50

NIEUPORT II

By Bruce Petersen

.19 powered scale Nieuport with an all-new construction technique.

#415 \$2.50

BEATNIK

By Dick Sonheim & Cliff Love

Top West Coast competition model for high performance pattern flying.

#414 \$2.50

DID YOU MISS THIS ONE?

MISS BIKINI

Chuck Cunningham's .19-.23 powered sport design with competition calibre performance.

Featured in the OCTOBER '69 ISSUE

#407 \$2.50

DO YOU HAVE A NEW AIRCRAFT DESIGN? DON'T MISS R/C MODELER MAGAZINE'S 1970 DESIGN CONTEST. YOU COULD WIN ONE OF MANY VALUABLE PRIZES, INCLUDING A NEW PROPORTIONAL SYSTEM, OR, YOUR DESIGN MAY BE PURCHASED FOR PUBLICATION IN RCM EVEN IF YOU'RE NOT A WINNER. SEE PAGE 87 IN THIS ISSUE FOR COMPLETE DETAILS.

SEND TODAY FOR YOUR FREE
CATALOG OF R/C MODELER
MAGAZINES FULL SIZE PLANS LISTING

INSTRUCTIONS FOR ORDERING PLANS

Plans for each construction article featured in R/C Modeler Magazine are just as close as your mailbox. Your order is given individual attention and processed by our own Plans Department. Each plan is a full-size, individual blueprint print of the highest quality, reproduced from the master Cronaflex which was made from the original drawing.

All plans sent 3rd or 4th Class Mail. For Air Mail service, add 50 cents or 25% of your total order, whichever is greater. Any overpayment will be refunded. Overseas orders (except APO and FPO) add 25% additional to your order and remit by International Money Order. Make all checks payable to R/C Modeler Magazine, Calif. residents add 5% sales tax.

R/C MODELER MAGAZINE
Plans Service, P. O. Box 487,
Sierra Madre, Calif. 91024

- ☐ 3rd or 4th Class Mail
☐ Air Mail
☐ Overseas Order

Name _____

Address _____

City _____ State _____ Zip _____

Please send the following plans:

_____ # _____ # _____

☐ PLEASE SEND FOR FREE CATALOG
OF COMPLETE PLANS LISTING

Amount for plans \$ _____
25% additional for airmail \$ _____
25% additional for overseas \$ _____
Calif. res. 5% tax \$ _____
Total amount enclosed \$ _____



13400-26 Satcoy Street
North Hollywood, Calif. 91605
(213) 764-1488

DIGITAL PROPORTIONAL EQUIPMENT

FACTORY ASSEMBLED SYSTEMS

CANNON PROPORTIONAL EQUIPMENT WILL EQUAL OR
BETTER IN SIZE, QUALITY AND PERFORMANCE ANY OTHER
PROPORTIONAL SYSTEM YOU CAN BUY,
REGARDLESS OF PRICE!

WRITE FOR COMPLETE PRICE SHEET
AND ADDITIONAL INFORMATION.

MINI-3 SYSTEM

MODEL D526-M3A
Includes
D525-T3A TRANSMITTER
D526-MR3A RECEIVER
3 SERVOS (YOUR CHOICE)
2 CHARGING CORDS
*D526-P250A POWER PAK
(Airborne Wt. - 10 oz.)

\$234.95

MINI-5 SYSTEM

MODEL D526-M5A
Includes
D525-T5A TRANSMITTER
D526-MR5A RECEIVER
4 SERVOS (YOUR CHOICE)
2 CHARGING CORDS
*D526-P250A POWER PAK
(Airborne Wt. - 11.9 oz.)

\$309.95

STANDARD-5 SYSTEM

MODEL D525-S5A
Includes
D525-T5A TRANSMITTER
D525-SR5A RECEIVER
4 D525-EA SERVOS
2 CHARGING CORDS
*D525-P500A POWER PAK
(Airborne Wt. - 14.9 oz.)

\$299.95

*WEIGHT SHOWN WITH 250 MA POWER PAK. ADD 1.5 OZ. FOR 500 MA PAK. *EITHER POWER
PAK OPTIONAL. 250 MA PAK GIVES 1.5 HRS. OPERATION, 500 MA PAK GIVES 3 HRS.

DIGITAL SYSTEM KITS AND HALF-KITS

KITS AVAILABLE FOR ALL SYSTEMS AND ITEMS WE MAKE. KITS ARE COMPLETE, INCLUDING
BATTERIES, ASSEMBLED KRAFT-HAYES STICKS, AND ASSEMBLED AND TUNED R.F. SECTION (TX).
HALF-KITS CONTAIN FACTORY-ASSEMBLED AND TESTED PRINTED CIRCUIT BOARDS. WIRING
AND MECHANICAL ASSEMBLY ARE TO BE COMPLETED BY BUILDER.

SYSTEM	STANDARD-5	MINI-3	MINI-5
KIT	D525-S5K \$204.95	D526-M3K \$179.95	D526-M5K \$214.95
HALF-KIT	D525-S5H \$254.95	D526-M3H \$207.95	D526-M5H \$264.95

ALL ITEMS AVAILABLE SEPARATELY IN KIT, HALF-KIT, OR BUILT-UP FORM.

DEALER DISCOUNTS AVAILABLE - WRITE FOR
TERMS. THIS EQUIPMENT AVAILABLE ONLY FROM CANNON
ELECTRONICS - NOT THRU LOCAL DISTRIBUTORS.

RETAIL CUSTOMERS

IF YOUR DEALER DOES NOT STOCK CANNON EQUIPMENT, ORDER DIRECT
FROM FACTORY. CASH ORDERS SHIPPED POSTPAID. C.O.D. ORDERS MUST INCLUDE 20% DEPOSIT. ORDERS
FILLED IN ROTATION. PLEASE SPECIFY MODEL AND FREQUENCY. CALIFORNIA RESIDENTS ADD SALES TAX.

RECEIVERS

STD-5: SINGLE DECK, 3/4 x 1-3/4
x 2-1/2 INCHES. WT. 2.4 OZ.
MINI 3&5: 2 DECKS, 1-3/16 x 1-3/8
x 1-13/16 INCHES. WT. 2.2 OZ.

SERVOS

D525-EA - **\$37.50** (KP5-9 TYPE)
LINEAR, ROTARY OUTPUT-2.5 OZ.
D526-EA - **\$40.00** (KP5-10 TYPE)
ROTARY OUTPUT-1.8 OZ.
D527-EA - **\$39.00** (KEK TYPE)
LINEAR OUTPUT-1.8 OZ.

IT'S NEW!

MODEL D528-E SERVO (ORBIT PS-4D)
KIT - \$25.00, HALF-KIT \$33.00,
ASSEMBLED - \$40.00, WT. 1.4 OZ.

TRANSMITTERS

D525-T TRANSMITTER-KRAFT-HAYES
DUAL STICKS. BUILT-IN CHARGER
AND NICADS. 750 MW OUTPUT.

NEW SINGLE STICK

MODEL D525-T(S) (5-CHANNEL)
TRANSMITTER WITH ABOVE FEATURES
HAS KRAFT-HAYES SINGLE STICK.
ADD \$20.00 TO SYSTEM PRICES FOR
THIS SINGLE STICK TRANSMITTER.

FLITE PAKS (Receiver, Servos, Battery)

ITEM	MINI-3	MINI-5	STANDARD-5
KIT	FP-M3K \$114.00	FP-M5K \$135.00	FP-S5K \$125.00
HALF-KIT	FP-M3H \$128.00	FP-M5H \$175.00	FP-S5H \$165.00
BUILT-UP	FP-M3A \$140.00	FP-M5A \$205.00	FP-S5A \$195.00

FREQUENCIES
AVAILABLE
26.995, 27.045, 27.095,
27.145, 27.195, 53.1,
53.2, 53.3, 53.4 AND
53.5 MHZ.
(ADD \$5.00 TO SYSTEM
PRICES FOR 53 MHZ)

**CANADIAN
SALES AND SERVICE**
H & W ENTERPRISES
BOX 972
REGINA, SASK.

**IMMEDIATE
DELIVERY
ON ALL ITEMS!**
**SERVICE AVAILABLE
FOR EVERYTHING
WE MAKE OR SELL!**

VIEWPOINT

(continued from page 8)

These are but three of myriad problems facing us. How do we - 'the don't-give-a-damns' - go about solving them? Can we? If we're 'don't-give-a-damns' in all respects - no. If we're 'don't-give-a-damns' because of not besieging the AMA with torrents of mail for rule changes, or sundry other contest matters - yes we can.

"The sport fliers - they care only for themselves. We never hear from them. We don't know what they want because they don't tell us." This statement, or one similar, has been heard over and over.

Is it apathy - do we really not care? Or do we not say anything because we

have - too often in the past - been ignored when we did?

Communication is a two-way street. When one talks to a rock and receives no answer, one eventually stops talking to said rock. If you're being driven sixty miles an hour toward a wall and the driver ignores your advice to stop or go around the wall, the prudent person removes the ignition key.

We've reached this stage: Our (?) vehicle, the national organization is being driven head-long down the competition-only road. Our (?) drivers, the officials, are so busy concentrating on its twists and turns while pointedly ignoring the wall of problems such ignorance has fostered, that we're fast approaching a collision with chaos. We must demand attention to, and action on, the problems. If heed is not paid us, we must remove our dues and support - the ignition keys - from such a vehicle.

At this point it may be well to clarify the writer's opinion, for what it's worth, on AMA/RC relations. It has not changed. That opinion is that the academy is so tradition-bound - so occupied with its preservation as an

institution as opposed to the welfare of RC - that it has not, cannot, and will not change.

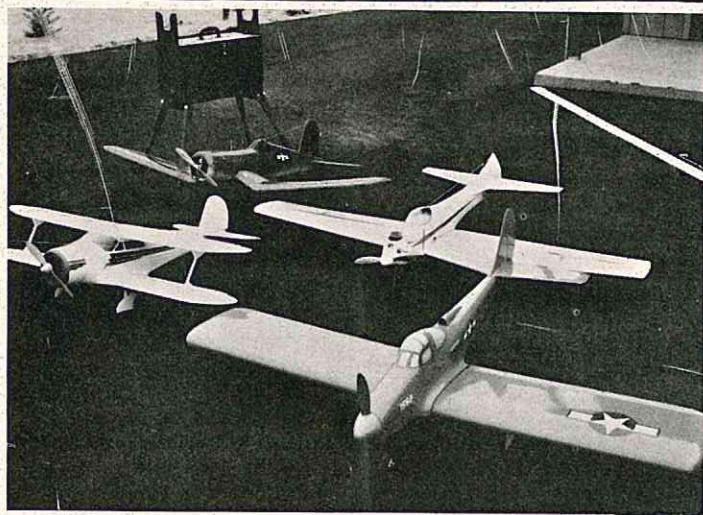
But in all fairness, its action in launching an investigation into its RC problems does provide a tiny ray of hope. Who represents us on a national scale - AMA or Peter Pan's Purple Puppets, is immaterial. What they do and how well RC aviation is served is important.

Effective representation cannot be effected by 'Letting George do it'. George is probably hoping we'll do it so nobody does anything and the status quo remains. The pity is a six cent stamp and a few moments of our time could correct an incredible situation.

Are we truly the 'don't-give-a-damn-society'? Do we really not care for anything but ourselves and our own little individual worlds?

Let's find out.

Right now, before reading further, get some paper. If you're home in the easy chair yell for somebody to bring it to you. Oh yes, don't forget the pen or pencil. If you're in a plane, bus, or train terminal trot over to the counter and get a post card. If you're flying or



In the picture above are Four Models of Kits we produce:

Left Front: Staggerwing Beechcraft, scale multi 610 sq. in. stunter. Kit includes fiberglass fuselage with all stringer details. All other parts pre-cut. Complete kit includes: plans, step by step picture instructions. Left rear: Chance Vought Corsair, fiberglass fuselage and gull wing center section, and foam wing cores only, plans and picture instructions. Right rear: Cobia, fiberglass fuselage, foam wing cores with covering, spar & landing gear, all balsa stab & rudder, all hardware & plans. Front right: Airacobia, fiberglass fuselage, foam wing cores with covering, balsa stab & fin, all hardware and step by step picture instructions. All of the above ships will fly the AMA pattern and will perform exceptionally well.

Beechcraft, \$57.50 — Corsair, \$57.50 — Cobia, \$49.95 — Airacobia, \$39.95
45 in. — .40—.60 54 in. — .40—.60 64 in. — .51—.60 55 in. — .40—.60

Phone: (408) 384-7666
391 Reservation Road

Calif. residents add 5% sales tax on all items

G&K MANUFACTURING, Inc.

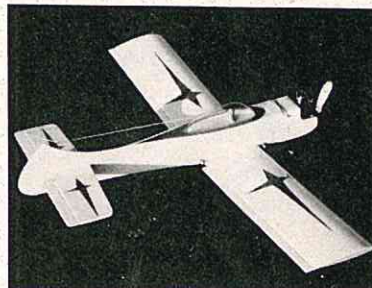
Dealer Inquiries Invited
Marina, California 93933

All items approved and recommended by RCM

At the top center is our G&K FLIGHT BOX. This unit will hold just about everything you need. 4 sturdy legs that fold out of the way, airplane holders that slide up and lock, two position adjustment, battery compartment, holds 2 square batteries, one gal-fuel-transmitter compartment, Plus a high gloss fuel proof finish. \$32.95 complete.

Also available in:

Assembled & Unpainted \$27.95
Kit Form (All parts pre-cut) \$22.95
Finished Folding Wing Holders(pair) \$3.50



"MICROBIA"

The trainer and sport stunt ship for 3 or 4 small to medium servos and radio equipment. A balsa and foam construction kit. Two evenings on the card table in front of the TV set and it is ready to fly. Complete kit includes: Foam wing and covering, all other parts pre-cut, landing gear and spar assembly, elevator and Aileron controls, steerable nose gear, main gear and all hinges. Complete step by step picture instructions. 44" span — .15 to .23 eng. — 320 sq.in. — \$16.95

driving you're not supposed to be reading this anyway so wait until you land or stop. Don't cheat, get the writing stuff now! We'll wait for you! Go!

A'rite, a'redy. Now the object of this game is to see how many letters and cards we get. If we get lots and lots, we'll know the guy's wrong about us with his 'don't-give-a-damn' title. If we get none - the guy's right and neither the AMA or any RC association in or out of it will work. It's up to you!

So that's the question.

"DO YOU CARE?"

Write 'yes' or 'no' on the paper, card, matchbook or what-have-you and mail to:

NDGDS
c/o R/C Modeler Magazine
P. O. Box 487
Sierra Madre, Ca. 91024

Every reply is important! Your answer is needed! The future of R/C depends on your willingness to perform this simple task that separates you from 'George'. The staff of RCM wants to know if you, and how many of you really care about the future of R/C; and we'll pass the word . . .

We are faced with serious problems and we've decisions to make. We, collectively, have a voice. We'll be heard - but only if we want to be heard. We can force changes - but only if we want to. We can have a hand in placing RC aviation in its proper niche in human endeavor - if we truly want to.

NDGDS. The National Don't Give A Damn Society. Frustration or apathy - order or chaos.

Let's find out. ●

ENGINE CLINIC

(continued from page 14)

10,800 and 11,000 rpm depending on the day. In the air it unloads and picks up another 1,000 rpm. The pipe was initially cut to 17.4 inches which is the recommended length for this rpm (12,000). The Power Pipe was mounted on the engine and airplane, and with hopeful expectations of vertical four point rolls from take off, I headed for the flying field. I might say here, that if you wish to become the center of attraction at your flying

field, install a Power Pipe on your aircraft. However, be ready to answer "what the h— is that?" the rest of the day.

The first thing I noticed after firing up the engine was the needle setting. I had to back it out several turns over the regular setting. This indicated to me that possibly the 'pipe' was too long and too much fuel was being sucked through the engine into the 'pipe'.

I also discovered that the needle setting had to be made gradually, allowing time for the 'pipe' to come up to temperature. If you leaned the engine in too quickly, as the 'pipe' got hot, you had to richen the setting up again. Once the 'pipe' got really hot you could not get the engine back into a four cycle. At the point where it would normally break back into a four cycle it would start running rough and just shut off. The engine also seemed to be running considerably hotter than normal. A temperature check of the cylinder head showed it to be running about 390 degrees which was 30 degrees above normal. An rpm check showed about a 300 to 400 increase. I could get brief surges where

AERO COMMANDER 100 BY DU-BRO

FROM GALLOPING GHOST TO FULL HOUSE
AT HOME EQUALLY

ON WATER



FOR .19 TO .40
ENGINES

\$43.90

FLOATS
SEPARATE \$8.95

ON LAND



FOR .15 TO .19
ENGINES

\$34.95

ACCESSORY PACKAGE FOR AERO COMMANDER 100

Includes glue, wheels, collars, hinges, horns, Tank, Mtg. Bolts, Nyrods & Clevises.
\$15.00.

AERO COMMANDER 100 SPARE PARTS

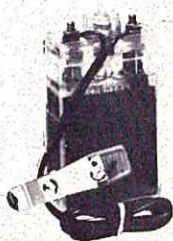
Complete Wing Kit at \$14.95, Fuse less Cowl \$16.95, Cowl \$1.25, Fin 95¢, Rudder 50¢, Stab \$1.50, Elevator 50¢, Wheel Pants set of 3 \$1.50.

<input type="checkbox"/> STAFFORD COMMANDER.....	\$38.95
<input type="checkbox"/> ARISTO STAGGAR WING BEECH.....	29.95
<input type="checkbox"/> VK NIEUPORT 17.....	44.95
<input type="checkbox"/> VK CHEROKEE.....	32.50
<input type="checkbox"/> SIG J-3 CUB.....	21.95
<input type="checkbox"/> SIG CITABRIA.....	29.95
<input type="checkbox"/> GOLDBERG SR. FALCON.....	29.95
<input type="checkbox"/> STERLING PT-17.....	44.95
<input type="checkbox"/> JETCO NAVIGATOR.....	12.95
<input type="checkbox"/> JETCO REARWIN SPEEDSTER.....	7.95
<input type="checkbox"/> WING WILDCAT (F.O.B.).....	74.95
<input type="checkbox"/> FOKA GLIDER (F.O.B.).....	34.95
<input type="checkbox"/> PCM SNIPE GLIDER.....	20.00
<input type="checkbox"/> PCM FOAM GLIDE I.....	19.95
<input type="checkbox"/> NY-ROD SLIM PAK.....	1.35
<input type="checkbox"/> RAND STARTER.....	29.95
<input type="checkbox"/> 3/16" COIL BENDER.....	7.20
<input type="checkbox"/> SULLIVAN SS-6 TANK.....	1.75
<input type="checkbox"/> TATONE ENGINE TEST STAND.....	4.50
<input type="checkbox"/> HOBBYPOXY I GLUE.....	1.00
<input type="checkbox"/> HOBBYPOXY II GLUE.....	3.00
<input type="checkbox"/> DU BRO HINGES.....	15/ 2.49
<input type="checkbox"/> BREITEN NOSE GEAR.....	6.95
<input type="checkbox"/> ROCKET CITY LONG HORNS.....	2/ .79

7 AMP. STARTING CELL

**\$3 NICKLE-
CAD. RECHARGE-
ABLE CELL WITH
GLO PLUG CLIP**

**\$5.55 ONLY
VALUE \$4.95**



We buy, sell and trade used engines and R/C gear. Just box up your excess engines and R/C gear and shoot them in to us for an exact appraisal. Turn that excess equipment into ready cash or new merchandise.

**INCLUDE 50¢ FOR ORDERS UNDER \$2.00
USED R/C AND ENGINE LIST 25¢**

**Stanton
Hobby Shop Inc.**

**4734 North Milwaukee Avenue, Chicago, Illinois 60630
Telephone 283-6446 area code 312**

the rpm would jump several hundred more, as though the 'pipe' were trying to 'come in' as the U-control speed pipes do, but the engine would not hold the higher rpm. I made quite a few flights and could notice a small improvement in performance, but nothing spectacular. I started flying in the morning and as the day warmed up, the needle had to be richened. In the late afternoon as the day cooled off, I had to lean the needle back in. More so than you would have to do if a 'pipe' were not used. The Power Pipe does work well as a muffler in the air. On the ground it is rather noisy, probably because of the very thin aluminum shell. It is quieter than an un-muffled engine, but louder than most of your regular mufflers. The sound at idle is quite different. It has the tinny pap-pap-pap similar to some of your two cycle motorcycles. There is nothing objectionable about the sound, it is just different than any that you might have been used to in the past.

The following day I called Bill Wisniewski for some suggestions. The Power Pipe comes from the factory with a polished aluminum finish. Bill suggested painting it black with a high temperature paint which would retain the heat in the pipe and broaden its range. He also suggested using a gasket between the manifold and exhaust stack of the engine to keep the heat from transferring back to the engine. These things were done, and resulted in the needle being much easier to set. The engine could now be richened up into a four cycle without shutting off and the cylinder head temperature was running about 370 degrees which was only slightly above normal. However, there was no additional power increase over the original 300 to 400 rpm. The engine would still surge as if it were trying to 'come in', but wouldn't. So, to shorten up a long story, I shortened the 'pipe' and lengthened it in quarter inch increments. I tried raising the compression and lowering it. My old friend from my U-control days, George Aldrich, suggested shimming the sleeve higher in the case. I tried raising it .015" and .030". A special head was used to keep the compression ratio the same. No improvement, and it was miserable to start! In fact, I wore out my arm and the arms of several of my friends trying to get the engine started with the .030" shim. (No electric starter along that day.)

After six weeks of testing every

weekend, I finally came to the conclusion that 300 to 400 rpm extra was all that I was going to get. I did discover a very interesting fact. The engine would gain 100 to 150 rpm using just the exhaust manifold that bolted to the engine without the 'pipe'. So evidently, the manifold itself was contributing to some of the 'tuning'. On some days I did get as high as a 500 to 600 rpm increase with the 'pipe'. The highest reading was on a very hot dry day. However, for all practical purposes, I would say that the average increase was in the 300 to 400 rpm range. I am very sure that by making a new sleeve for my engine ported and timed for the 'pipe' I could have obtained a much larger power gain. However, this was not the purpose of this test. The Power Pipe is a broad range 'pipe' intended to be used with stock engines.

I would be very interested in hearing from any of you fliers that may have tried the Power Pipe, as well as a record of your findings. As it stands now, I do not feel that the extra 300 to 400 rpm is worth the added 'hardware' you have to hang on the airplane.

Credit must be given to Electronic Developments and Kevin Lindsey for being the first manufacturer to put a 'pipe' on the market that is available to everyone. Up to now your 'pipes' had to be handmade. Several European engine manufacturers are introducing 'pipe' equipped racing engines, but E. D. is the first with a broad range 'pipe' for general use that gives the modeler in the field something to experiment and start with. 'Pipes' are still in the experimental stage. Who knows, maybe a year or two from now they can be developed to a smaller size and give us that spectacular power increase that the U-control speed fliers are now experiencing without special modifications to the engine.

I have received several letters from RC'ers really chewing me out because they had used an SOS pad to clean up their aluminum pistons as I recommended, and scratched the heck out of them. For you clowns out there who have never helped your wife or mother with the dishes, you are supposed to use the SOS pad WITH WATER!! Sometimes, I wonder!

While on the subject of goofs, I have also received quite a few letters asking if the nitro methane percentages in the fuel formulas I gave in



COMPARE HEATHKIT® R/C features and value

Check The New Heath GD-19 System ... It Has Everything You Need

Compare
the
others

<input checked="" type="checkbox"/>	5 channels	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Available on 3 bands	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Kraft sticks	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Collapsible antenna	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Metered RF output	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Compact receiver	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Ceramic IF Filters	<input type="checkbox"/>
<input checked="" type="checkbox"/>	SCS logic	<input type="checkbox"/>
<input checked="" type="checkbox"/>	All Ni-Cad battery packs	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Complete with 4 servos	<input type="checkbox"/>
<input checked="" type="checkbox"/>	High resolution capacitor servos	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Exclusive Heath plugs	<input type="checkbox"/>
<input checked="" type="checkbox"/>	System includes soldering iron	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Famous Heathkit manual	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Detailed self-service section	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Complete schematic	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Complete circuit description	<input type="checkbox"/>
<input checked="" type="checkbox"/>	Complete theory of operation	<input type="checkbox"/>
<input checked="" type="checkbox"/>	At \$219.95*, the best value available in R/C	<input type="checkbox"/>

The new Heathkit GD-19 ... compare it against any other system at any price ... and see why the winners are all flying Heath. For top performance and money-saving value, it all checks out — order your Heathkit GD-19 System now.

Kit GD-19, all system parts, 11 lbs.	\$219.95*
Kit GDA-19-1, transmitter, battery, charging cord, 5 lbs.	\$86.50*
Kit GDA-19-2, receiver only, 1 lb.	\$49.95*
Kit GDA-19-3, receiver battery only, 1 lb.	\$9.95*
Kit GDA-19-4, one servo only, 1 lb.	\$21.50*



New Heathkit GD-69 "Thumb Tach"™ Tachometer

Now there's an accurate, inexpensive way to measure RPM's on any model engine ... the new GD-69. No engine loading ... uses reflected light pulses from the prop or flywheel. Easy to use ... just set range (0-5000 & 0-25,000 RPM), aim at prop and read RPM directly off the meter. Great for needle valve adjustments, choosing glow plugs, checking fuels etc. Raise your engine performance ... order your "Thumb Tach" now.

Kit GD-69, 1 lb. \$19.95*

NEW FREE 1970 CATALOG!



hobby. Mail coupon or write Heath Company, Benton Harbor, Michigan 49022.

Now with more kits, more color. Fully describes these along with over 300 kits for stereo/hi-fi, color TV, electronic organs, guitar amplifiers, amateur radio, marine, educational, CB, home &

HEATH COMPANY, Dept. 83-12
Benton Harbor, Michigan 49022

☐ Enclosed is \$ _____ plus shipping costs.

Please send model (s) _____

☐ Please send FREE Catalog.

Name _____

Address _____

City _____ State _____ Zip _____

Prices & specifications subject to change without notice. GX-188

*Mail order prices: F.O.B. factory.



Who can afford a \$259.50 glider?

**Not everyone!
Only those discriminating
modelers who know
the true value of
quality equipment**

Look up to the Nelson KA6E, the ultimate in R/C gliders. You have a world—and sky—of soaring enjoyment waiting with this FAI world speed record setter. Authentic styling and master handcrafting are exclusively yours with the only ready-to-fly glider on the market. Aileron and spoiler controls are included; automatic wing disconnect type linkages are in. Simply install the radio (assembles in less than an hour) and you're ready to soar on extended cross country or explore distant slope lift areas. You get full scale performance from a professionally finished model that is 10 times stronger than any balsa product available. Write for detailed specifications and complete performance features.

SPECIAL INTRODUCTORY OFFER

For a limited time you can have a complete, professionally packaged, ready-to-fly glider with linkages and radio installed. Save \$70 by ordering now!



EK PRODUCTS
XL-3 Digital &
Proportional System

NELSON KAGE
Complete package
as described herein

\$439.50
plus handling
and shipping

your soaring headquarters:

NELSON MODEL PRODUCTS, INC.

1414 W. Winton Avenue • Hayward CA 94544 • (415) 782-9320

KAGE SPECIFICATIONS

Wing Span 144"
Length 55"
Weight 10.75 lbs. gross
Airfoil NACA 6412
Aspect Ratio 19 to 1

CONSTRUCTION

Hollow shell structure, laminated of isophthalic polyester resin reinforced fiberglass cloth on both sides of thin PVC foam plastic layer. Full-scale type aileron, spoiler, rudder and elevator controls.

SILENCE-AIRE ...THE EXPERTS CHOICE

THE PROVEN WAY TO PRESERVE YOUR MOST CRITICAL FLIGHTS, YOUR VALUABLE ENGINE, AND YOUR PRECIOUS FLYING SITE.

Tested and acclaimed by U.S.A., Canadian and Mexican 1969 R/C Internats Teams. Used, endorsed and highly recommended by such experts as Clarence Lee (see Engine Clinic in July "R/C MODELER"), Phil Kraft, Cliff Weirick, Jim Kirkland, Jim Whitley, Chuck Cunningham and dozens of others who will not settle for less than the best!

Known in Europe as the "MINI-VOX," these unique mufflers are already the most widely used in both R/C and C/L competitions. Over 60% of the contestants at the last R/C Internats chose to use them although mufflers were NOT REQUIRED! CAN YOU AFFORD NOT TO TRY ONE?

Winner Larry Leonard used Silence-Aire muffler at '69 Nats!



► SILENCE-AIRE SUPER

\$12.95

Specs: Body = 6" long, 1-3/16" dia. Manifold length = 1" for all normal upright or inverted installations. Weight = 2 1/4 oz. Constructed of light steel, silver-soldered and nickel-plated.

Features: The VENTURI PRINCIPLE as utilized in this muffler is a true design breakthrough, making obsolete almost every other muffler on the market. ■ At speed, it actually INCREASES engine power! ■ At idle, it virtually eliminates engine stalling in the air! ■ A unique built-in prime tube makes starting, hot or cold, a cinch! ■ The angled design deflects exhaust and reduces messy fuel deposits on your aircraft. ■ Easy to install; just slip on, bend strap around cylinder and secure with bolt and lock-washer.

► SILENCE-AIRE SUPER-LONG

\$12.95

Specs: Body = 6" long, 1-3/16" dia. Manifold length = 1 1/2" for all side-mounted engine installations or extra-wide fuselages. Weight = 3 oz. Constructed same as Super.

Features: Same outstanding design and advantages as the Super.

► NEW! SILENCE-AIRE TWIN

\$11.95

Specs: Body = 3-5/8" long, 1-3/16" dia. Manifold length = 1" for normal upright installations. Weight = 2 1/4 oz. Constructed of light steel, silver-soldered and nickel-plated.

Features: Dual Stacks (1" long) and compact shape especially designed for scale models, high-wing and shoulder-wing models and deltas. ■ Angled stacks deflect messy exhaust. ■ Same unique built-in prime tube as the Super and Super-Long.

All three types now available for: Enya 60; K&B 40/45; Merco II 49/61; OS Max 40/50/58; OS Max 60; Rossi 60; Super Tigre G.21/40-46; ST 51/56/60; G.60/71; Veco 61; Webra 61. Please specify type and engine when ordering.

ORDERING INFORMATION

Send check or M.O. (Calif. res. add 5%).
Sorry, no COD's. Dealer inquiries invited.

Another "only the best" from:

Technisales
P.O. BOX 2232, ALHAMBRA, CA. 91803

this article on fuels was for 70/30 or pure (98%) nitro. The formulas were based on the 98% which is available at most of your hot rod fuel suppliers. However, I would suggest purchasing the 70/30 mix if you are going to do your own fuel mixing. 98% nitro is very dangerous to have around. It is very unstable and can explode if allowed to get too hot. It is also dangerous when near other chemicals, especially chlorine such as used in swimming pools. Play it safe and buy the 70/30 mix. You can just substitute the 70/30 for the 98% in the sport formula and will not notice enough difference to matter. You will still have a hair over 7%. The difference in performance between 7% and 10% nitro will be less than a hundred rpm. The speed fuel should have a true 40%. If you use the 70/30 mix, then use 73 ounces of nitro and 27 ounces of methanol. Your brew will then contain 51 ounces of straight nitro or 40%.

Let's get to some of the letters. Bill Bone and Francis Reynolds conducted some sound level tests that you might find interesting. These are the kind of letters I like to get, as they take some of the writing load off of my back.

Bill Bone and I conducted some muffled and unmuffled engine sound level tests the other night, which might interest you. You are welcome to use any or all of the following data and opinions in your engine column in R/C Modeler. Please mention the source.

MUFFLER TESTS

Two Veco .61's and a Webra .61, all mounted on fuselages, wings removed, were run on flight boxes, at full throttle, in a field, with and without various mufflers. Sound level was measured with a General Radio Type 1565-A Sound Level Meter, using the 'A' weighting scale. All readings were taken at a measured 50 feet from the engine. At this distance four readings were taken for each run: Behind the model, in front, from the exhaust side, and from the opposite side. Experimental errors due to calibration, error from variations in rpm, prop, wind, reading error, position, reflections, distance error, etc., probably totaled less than 2 db.

*The Webra was side mounted with exhaust down.

Remember that the decibel or db. is a logarithmic function and that 3 db. change represents a two to one change in sound level. For instance, if an unmuffled engine putting out 87 db. at a given point is muffled to 75 db., the db. reduction is 12, but the sound energy has been reduced to only 1/16th of its former value. However, the 'loudness' we experience with our ears more nearly follows the db. scale than the linear sound-energy scale, therefore, you may have trouble convincing your neighbors that your R/C muffler reduces the

Sound level in db. ('A' scale) at 50 ft.

Test Configuration	Front	Rear	Exh. Side	Opp. Side	Average
Bare Veco					
.61 with prop	90	82	93	85	87.5
Bare Webra					
.61 with prop	90	79	86	87	85.5
KO Silencer on the Webra	81	78	84	78	80.2
SilenceAire on Veco	80	77	79	78	78.5
Extended Peace Pipe on Veco	82	80	79	78	79.7
B&N Muffler on Veco	78	74	74	74	75.0

Average for each position 83.5 78.3 82.5 80.0

sound by 16 times. Sound level also varies inversely as the square of the distance from the source.

In addition I made some sound level measurements in a residential area about three quarters of a mile from the R/C field, while several unmuffled .60-powered planes were in the air. The total sound level under these conditions averaged about 45 db., but the sound from the models was hardly as loud as local sounds such as birds chirping and water running in a gutter from a fellow washing his car. When a light plane flew over and when a truck passed on the highway a couple hundred yards away, the sound jumped to 70 db. The arithmetic says that the sound level there, due to the models ONLY, would have been less than 33 db., had the models been muffled, which means they could hardly have been heard and couldn't be measured on the meter, because the neighborhood noises from other sources never got below 40 db. (and that is a pretty quiet neighborhood).

Measurements in my yard showed 60 to 75 db. for the next door neighbors' power mowers. So, our models, even unmuffled, are not louder than other neighborhood noises, when we are a few hundred feet away, but we are ANOTHER source of noise, and an unnecessary source in the opinion of the unsympathetic. The whining rising and falling doppler characteristic of a flying model's sound contributes to the annoyance factor. It therefore behooves us to muffle and to be as cooperative as we can regarding our audio pollution of the environment.

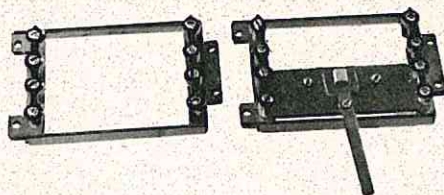
I observe that a throttled down engine, with or without a muffler, is very quiet compared to the same engine at full throttle. We can further reduce our noise, therefore, by overpowering our models and then flying at half throttle, rather than a just-adequate engine and always flying with it wide open.

With warm regards,
F. D. (Francis) Reynolds
3060 W. Lake Sammamish
Parkway No.
Redmond, Washington 98052

The next letter was sent in by my old friend Darrell Yonker who hangs out up in Anchorage, Alaska. I'm running a picture of Darrell so you guys can see what the well dressed R/C flier wears on a cool day in Alaska. Darrell is wearing long johns, quilted underwear, pants, flannel shirt, coveralls, down-filled jacket, 4 pairs of socks,

NEW FOR KRAFT KPS 9; ORBIT PS 3. HEATHKIT GDA 19-4 SERVOS

Dealers write for details



New Address
27635 Forbes Road
Laguna Niguel, Calif.
92677

D & R Slim Line Twin Pack Servo and Switch Mounting Trays

- ✓ Completely Shock Mounted Molded From 100% Virgin Nylon
- ✓ Includes All Hardware For Mounting 3 Servos and Receiver Switch (Or Four Servos)

Price 2.95 ea.

- ✓ Half Pack For Mounting Two Servos 1.95 ea.

Also Available—One Piece Slim Line 2 + 2 Servo and Switch Mounting Trays for—Orbit PS4—Micro XLICMPS4—Kraft KPS10—EK M M3—Micro 1-6 (Bracket Mount Type) Price 2.95ea.

Calif. Residents Add 5% Sales Tax. All cash orders shipped same day — Postage Paid.

Attention, dealers and servicemen outside the U.S.A.!

Our new "MODELLING INDUSTRY BUYERS' GUIDE" is now available without charge to overseas dealers, wholesalers, manufacturers, PX's, military personnel and clubs. This extremely complete listing of all the best in R/C for planes, boats and autos is ideal for reference and as an inventory checklist; shows special export trade discounts and export net prices! Use it to centralize your purchasing; receive consolidated shipments at the greatest possible savings.

Airmailed without obligation to qualified buyers . . . ask for your copy today!

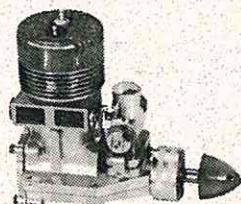


EXPORTATIONS

Export Specialists in Aeromodeling and Radio Control
3055 W. Valley Blvd., Alhambra, Calif. 91803 (213) 289-0634 Cable: "Extronic"



"By golly, Hank, you are persistent about getting off to fly your model today, aren't you?"



Bore 1.000
Stroke937
Disp.74
Wt. 19 oz.

\$49.95

FOX 74 R/C

The Fox 74 R/C — the finest big motor of them all. No vibration — no worry. This big willing horse does just what you want it to. The 74 features: Ball Bearing — Piston Ring. Needle Bearing Con Rod. Allen Screws. 3-Jet Carburation. Anodized Head. Dual Glo-Plugs.

Fox 74 R/C...the powerful one.



MFG CO
5305 TOWSON AVENUE
FORT SMITH, ARK. 72901



FRESHMAN A.R.F.

Span: 56", L. 38"
W. Area: 500 Sq."
Eng.: .19 to .40
Clark Y Air Foil

Moulded A B S Fuselage, (assembled) Foam Wings, Moulded Tips, Covering Materials, Illust. Inst. (Rapidly growing in popularity for its inherent STABILITY and its EXCEPTIONALLY impact resistant construction. STANDARD KIT: \$19.95 DELUXE KIT: with factory covered wings, \$22.95

Aerovac Products

DER "MIDDLE" STICK

Fuselage: Moulded A B S (assembled) Foam Wings Moulded Tips, Covering Materials. Illustrated Instructions. Span: 54" L. 40", Wing Area, 480 Sq." (Its rather HOMELY but a great performer at a MODERATE price) STANDARD KIT: \$22.95 DELUXE KIT: with factory covered wings. \$25.95

ORDER INFORMATION

Send--Cash, Check or Money Order. 50% deposit on C.O.D.'S. All orders shipped postage collect. Specify, Bus, Parcel Post or Air Mail.

DEALERS

Regular discounts on Pre-paid Orders. All orders shipped POSTAGE COLLECT.

AVAILABLE SOON BY AEROVAC--two LIVELY ones: (1) The QUICK FLY 3-T an A.R.F. 'dream plane' and (2) the EL AVION, a hot competitive model. These will be offered in various stages of construction.

MAIL TO: AEROVAC
1845 East Yale Street
Phoenix, Ariz. 85006

overshoes with 3 felt insoles, insulated cap, and leather gloves. If he ever falls down it takes three men to get him on his feet again. The temperature was near zero the day the picture was taken. You should see what he wears on a really cold day.



An unsolicited testimonial prompted by my re-reading of your article on the Perry carb.

How many times have I had my engine quit because of dirt in the carb? In the last two years of flying I cannot recall one time that I have had this problem, as long as I stuck to my own system. The problem has occurred when I borrowed fuel and when my epoxy fuel tank dissolved, but those were exceptions.

The fuel tank in the plane must be absolutely tight to start with. I normally use a commercial fuel tank of the plastic bottle type but instead of using the regular stopper I use a No. 2 rubber stopper from the hobby shop. Drill two holes in it with a 1/8 inch drill and install the pickup and vent as required. After washing out the bottle with hot soapy water the stopper should be inserted until it is flush with the end of the neck and the two lines from the tank connected together. This absolutely seals the tank so that no foreign matter can enter.

You may want to trim the end off the stopper before final assembly so as to have it flush with the neck end. And don't try to dry the inside of the bottle after you wash it. You will only get lint in the bottle and the few drops of water will be washed out of the tank with the first filling of fuel. The engine won't know they were even in there.

OK, we've got it installed and kept it clean. Now it must be KEPT CLEAN.

Obtain some sort of can to use as your permanent flying field can. I use a regular gallon can obtained from the local auto supply. Before filling it, install a line through which all fuel will be drawn from the can and put a filter on this line inside the can. I strongly recommend that you arrange to pressurize the can so that you can avoid using a fuel bulb, a notorious source of dirt. After washing the can out with hot soapy water it may be filled with fuel. I strain every drop of fuel that goes into my can through a paper towel. And be sure that your funnel is clean. Under no circumstances put any fuel in the can without straining it, whether it is commercial fuel, or whether you strained it some time previously, or even if it's priming fuel from your fuel bulb.

When you go to fuel the plane, let a few drops of fuel from the can run out on the ground just in case the tip of the line got dirty and fill the tank through the line which goes to the needle valve. The inside of that line will be clean and when the tank gets filled the clean fuel will wash out the vent line. Just be sure that you don't get dirt in the needle valve line when you hook up to it.

When you are finished flying for the day the fuel tank need not be drained. Remember, it's sealed tight and if the fuel and vent lines are connected together the fuel in the tank will stay fresh and clean until the next flying session.

All the above may seem a lot of trouble, but if you have ever spent a day battling a dirty fuel tank instead of flying, I am sure you will agree that most any cure is worth the trouble.

Darrell

The next letter was sent in by a

modeler in Mexico.

I have two questions for you; first, is it necessary in the Mercos with 2 glow plugs to light up both, I mean after you started the engine, is it necessary to hook your battery to the other plug?

Second, I live at sea level, but the contests in Mexico are always in very high altitude cities, 6000 ft. average. Would you recommend using 50's here and 60's over there, or change of fuel, or anything else? Your help will be much appreciated.

Thanks very much.

Fructuoso Elizondo
San Lorenzo 304 Ote.,
Col. del Valle, N.L., Mexico

Yes, it is very important that you do light both plugs. You should notice the engine pick up slightly when you do connect the other plug.

If you have an airplane in which you can interchange a .50 and .60, then this might be the way to go. Especially if you are happy with the performance of the .50 at your elevation. However, most of the fellows that go the contest route want all the power that they can get and use the larger engines to begin with. In this case you should have a spare high compression head to use at the higher elevation. Machining .015" from the head where it seats on the sleeve will considerably improve performance at the higher elevation. Make sure the head does not bottom on the top of the crankcase. If it does, remove material here, also. A higher nitro fuel will also be an advantage. Both Fox Missile Mist and Supersonic 1000 contain 25% nitro which will improve performance at the high elevation.

The writer of the following letter had previously sent in a question regarding cold weather starting which

Graupner

The World's Finest RC Gas Model Kits

IMMEDIATE AVAILABILITY



Distributors — write to
AHM—621 E. Cayuga St., Phila., Pa. 19120
MAIL ORDERS: Try your AHM dealer first. If he cannot
supply items, send his name and address
with your order. Add 5% for handling
and shipping charges. Add 10% outside
U.S.A. Write Dept. 187
CS 1366



DISCOVER BUYING POWER...

RADIOMODELS sells proportional sets
for LESS and beats ALL competition on
ANY set —

HI-REL 5 ch. 2 stick @ \$260.00
U.S. Scale Team Choice

RADIOMODELS stocks ALL your R-C
needs. So why buy from a mfg. when
you can get it from us for LESS?
Flea Fil plus 10 for \$17.00

RADIOMODELS ships fast direct to
your door. Insured delivery for LESS.
Sealactor Iron for \$8.00

RADIOMODELS has a good stock of
Super Tigre & OS engines, plus parts
always available. ANY engine yours
FOR LESS.

Enya .19 R-C for \$12.00

RADIOMODELS is minutes away from
four giant distributors in Chicago and
stocks from all major R-C suppliers:
World Engines, Royal Products, Sig &
Ace. No wonder we have what you want
for LESS.

Fox R-C glo plug for 55c

ALL WE CAN DO
IS SAVE YOU MONEY!

Discount Catalog 10c
RADIOMODELS

Box 73, New Lenox, Illinois 60451
Phone: (815) 485-8702

we answered in an earlier column.

Many thanks for the very complete reply to my question concerning cold weather starting of engines. It is difficult to imagine a more authoritative answer.

One other question I would appreciate your comment on occurs to me. I usually keep engine break in time to a minimum because I do it at home and it is noisy, attracts kids, is cold in the garage in winter. I have seen break in using a drill press suggested but I have never tried it. If the back plate and cylinder head were removed to prevent hydraulic lock, could an equivalent break-in be done using a drill press, possibly with the engine submerged in oil with a fine lapping compound additive? What is your opinion on such a break-in procedure?

Very truly yours,
R. M. Smith

Trying to break an engine in on a drill press is a big waste of time. This may have been of some benefit many years ago with some of your tightly fit lapped engines where the piston and sleeve could stand some 'lapping in', but with engine technology as it is today, most of your engines can be flown 'out of the box'. Trying to break an engine in on a drill press does not simulate actual running conditions. The engine is not at operating temperature. When hot, the parts often take a different shape than when cold. Also the loads are not the same. On the drill press the piston is pushed up and pulled down. Under actual running conditions the piston is pushed down by combustion pressure and pushed up by rotation of the crankshaft.

Submerging the engine in a lapping compound would loosen the tight parts, but would also wear out the ones that were already loose. This is one of the reasons why you should never try to bring an engine in sooner by running some lapping compound through it. While loosening up the tight parts, you are wearing out the correctly fit ones.

In your fuel article (May 1969) you mention 'Lubricin N-1' as an additive for the first few gallons. Would it be to my benefit to add one ounce to Duke's Fuel (Fox) every gallon from here on out to keep my engine clean? (Is there a limited usage?)

Also, on your fuel formula (pg. 74) the 13 ounces of nitro methane, is that the 70/30 or 100% nitro? If 70/30 is used, how does this affect other ingredients? When mixing ingredients, should I avoid exposure to air, or is this critical only after mix is 'aged'?

What, in your opinion, is the best frequency to be on to keep from getting hit?
Mike Delfino
Taft Condor Club

Lubricin N-1 will benefit any

castor oil based fuel. An ounce to a gallon will improve lubrication and provide a slight detergent action. Duke's Fuel is on the 'dry' side and Lubricin would be very beneficial. There is no limited usage.

We already covered the 70/30 nitro bit earlier in this column.

Always avoid exposure to air when mixing fuel because it is the alcohol that attracts the water. It does this whether mixed with other ingredients or not.

I'm afraid there is no BEST frequency. If there was, everyone would be using it. The frequency that might be better in one area might be the worst one in another. Best to ask the local fliers in your area.

I noted your recent article and would like to know your thoughts on running the .61 for best output during pylon racing only. I noted your comments on the smaller engine using K & B 1000 or Cox plus the 'Short' plug. Would this be desirable on the .61? I would use this combination only during racing and then revert to the standard K & B 100 for contest flying. Still flying an Interceptor with enclosed cowling-inverted.

Frank J. Madl
Chicago, Ill. 60635

Frank, you are making the same mistake that many other R/C'ers are making - trying to use their stunt engines for racing. You use a hotter fuel, lean it in a little more than normal, and end up 'cooking it'. Then when it does not want to idle too well anymore, or put out like it used to, you will wonder why! If you are going to fly open pylon, then you should have an engine or engines that you use just for this purpose. Open pylon, in this part of the country, has become a wide open event. An ordinary stunt ship and engine does not have a chance. R/C'ers are building special airplanes and putting big carburetors on their engines just for this event. The top guys are using the big G series Super Tigre and turning times just as fast as the Formula I racers.

I have an Enya 19 R. E. Engine. It runs good and idles fine, but if I idle too long she cuts out when the throttle is suddenly opened or runs rough for a short time if the throttle is opened slowly.

A friend of mine said the engine is loading up. He couldn't explain what that meant. My question is: What is loading up and where and how in the engine does it occur? Also what can I do about it?

George Werber
Huntington Station, New York 11746

Loading simply means the engine is idling too rich and excessive fuel is

accumulating in the crankcase. When you open the throttle this extra fuel passes into the combustion chamber and puts out the glow plug. The idle mixture needs to be set leaner by opening the airbleed.

We'll close the column this month with a letter from a modeler in Tripoli, Libya. I recently shipped an engine to Mr. Sembiane, and thought his description of the first flight rather amusing.

I have highly appreciated your solicitude in forwarding the Veco 61 and much indebted for the personal service you have been granting me with.

Best day in the life of a modeler (age 44 and 30 years of modeling) has been yesterday when for the first time I have flown my Navajo with your engine on. As a matter of fact, when I read your letter, then the instructions, I was really scared, even to start the engine. This looked too sophisticated to be the property of an average minded Sunday flier. I have found out later that I wouldn't even have needed the instructions! Anyhow, I filled the tank, opened the high speed screw 5 turns, plugged the battery and choked once; one flick and the engine started. I then leaned it to the point of breaking back and forth between two and four cycles and checked the idle. This was just right and did not require correction.

There were quite a few around and all were of the unique and crazy world of modelers (you'd find samples of many nations among us, here . . .). Their mouths opened, they looked like stone age men facing an automobile. So, with a feeling of being a god from the Olympus among poor earthmen, I took off. After that I had 4 or 5 flights which have been the best in my ten years of RC activity. Then the receiver failed to operate and the model crashed onto the ground. That's the end of the story and the beginning of a new one.

Therefore, I'm dispatching to you the engine still in the same condition as I found it on (I'd rather say in) the ground. Not even cleaned because I did not dare to. As you may see the Perry carburetor is broken in two and must be replaced. I hope, however, that all damage is there. . . .

Luciano Sembiane
Tripoli, Libya

CUNNINGHAM ON R/C

(continued from page 10)

some of the balsa in the kit seems a little soft, don't be hesitant about replacing it. Nor should you be hesitant about beefing up a structure that looks weak to you. With experience, you can spot the weak points, but with good common sense, you can also see spots that look weak and beef them up. Several of the popular kit aircraft had structural weaknesses when the kit lines were first introduced, and many wing failures

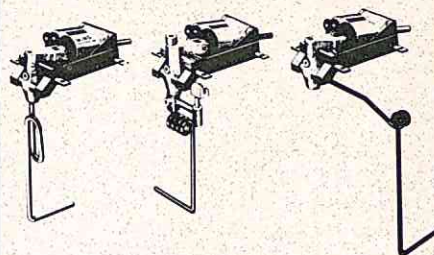
occurred. Even a well designed aircraft may develop a failure simply because the builder didn't follow the directions when putting it together. Beef up the structures and, if in doubt, add a bit of weight to the aircraft in the form of extra strength rather than in extra coats of paint. Wrap a band of fiberglass tape around the center section of your wing for that extra bit of strength, and beef up the nose section of your aircraft around the nose gear to take the extra hard knocks of inexperienced landings. It's a matter of truth that almost all successful kits and magazine aircraft have been designed by men who have become good fliers. Thus, when they design an aircraft they often overlook the fact that a rank newcomer may have problems in some areas that they themselves haven't had for a long time. So, add strength to the structure.

Here is, perhaps, the best word of advice that I can pass along to the more experienced pilots on the subject of saving money: Resist the influence of fads! You may be perfectly happy with your place in the sport. Suddenly a new fad comes along and causes you to try all sorts of new things. Perhaps you're really NOT interested, but feel that you should try it just to keep up with the gang. Maybe the fad this year is pylon racing, and you give the race game a whirl. If you like to race, and enjoy the competition, then fine, there is nothing more fun, but if you really don't like the fast pace of this type of flying, then stick to your own 'thing' and let the racing go. It IS expensive, time consuming, and requires a certain amount of dedication. Another type fad might be in going to small radio gear. If you like to build large .60 powered aircraft to fly, and are not worried about the weight, or don't intend to try the small ships, then resist the fad to move to the smaller radio equipment. Think it over.

Perhaps one of the best ways to save dough in this hobby is to build from 'scratch' rather than from kits. If you are new at the hobby, then build from kits, but if you have several aircraft under your belt, build from magazine plans, or from your own ideas. Naturally, the producer of the kit has had to go to a lot of work die cutting the parts, perhaps making full size side pieces, and selecting the wood for the kit, to say nothing of the time involved in packaging it. All of this means that he has done something for you, and therefore, he expects to

POSI-TRACT OLYMPIC

The contest winning "OLYMPIC" retract units greatly improve the performance of your aircraft. They are made for the R/C competition flyer who demands continuous trouble-free operation from his equipment.



STANDARD
\$18.00 ea.

NOSE GEAR
\$18.00 ea.

CONTEST LEG
\$36.00 pair

New sophisticated electronics eliminate the necessity for a special actuator and also fully suppress radio interference. The new two wire system saves half the battery weight previously carried and makes installation a breeze. Heavy duty limit switches, versatile strut arrangements and stronger housing material are some of the features found in the "OLYMPIC"

Also NICAD "POWER-PUNCH" battery packs are available, which will operate up to three gears simultaneously thirty to fifty times between charges. \$9.95

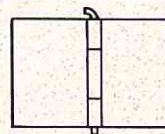
WING

WING MFG. BOX 265
ELMWOOD PARK, ILL. 60635
HOT LINE PHONE 312-283-3246
SEND 25¢ FOR LITERATURE

MICRO-MOLDING DOES IT AGAIN!

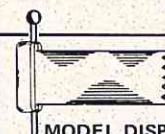
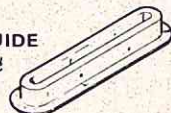
Micro-Molding does it again ... NOTHING!

Nothing new that is! Were still trying to make OUR components worthy of YOUR EFFORTS.



PRECISION HINGES
Pkg. 6 for \$1.10
Pkg. 15 for \$2.50

PUSHROD EXIT GUIDE
Pkg. 2 for .50¢



**FREQUENCY
FLAG HOLDER**
Pkg. 2 for .45¢

MODEL DISPLAY CHOCKBLOCKS
Pkg. 4 for .75¢

SEE YOUR LOCAL HOBBY DEALER

MICRO-MOLDING CO., INC.
2917 EDITH LANE
FORT WORTH, TEXAS 76117

DEALERS INQUIRIES INVITED

MICRO-MOLDING DOES IT AGAIN!

SUPER SOLARFILM

Now Nine beautiful High-gloss colours for a perfect finish every time . . . RED, WHITE, BLUE, GREEN, BLACK, YELLOW, ORANGE, SILVER . . . and NEW GLITTER-GOLD!!

Solarfilm may be used directly over foam wings etc. . . . Overlapped edges really STICK!!! Fuel Proof too.

Available at all leading Hobby Stores, or direct from:—

Canadian Solarfilm Distributors

Box 3412 Station C, . . . only \$1.08
Hamilton, Ontario per foot 26" wide
CANADA GOLD . . . \$1.28/ft.

CANADIANS

Triple N Glow Fuel per imp. Gallon	\$4.95
Triple N Glow Fuel, 5 Imp. Gallons	19.00
Enya 60 R.C.	48.95
Enya 35 R.C.	25.50
Enya 19V R.C.	17.50
Enya 15 R.C.	15.00
Enya 09 R.C.	12.50

Still the aristocrat of the propo sets
Kraft Gold Medal KP6, your choice of KP59 or
KPS10 servos, complete and ready to go 450.00
P.C.S. with KP9 servos
complete \$360.00

New items now in stock, DuBro Cherokee, 1969
Webra .61, Tatone Dual Strut Nose Gear Motor
Mount, Top Flite SE 5A Sterlings SE 5A. Sig's Yak.
Send 25 cents for new catalogue. Largest selection
of goodies in Canada.

Canadian dealer inquiries invited on the following:
Merco, Franklins, Tatone, Swanson Fireball
Plugs, Fox, Rocket City, DuBro.

CALGARY HOBBY SUPPLIES

Box 3173 Stn. B., Calgary, Alberta, Canada

Ace RC -- Pulse Propo Hq.

SIMPLE — FUN — ECONOMICAL!



Get an R/C Plane in the air for LESS than
\$100.00 with Pulse Rudder-Only — EXPAND
to more controls as you gain experience!

Full details in our latest catalog. Only \$1.00.
Refundable on your first order.

Ace R/C, Higginsville, Mo. 64037

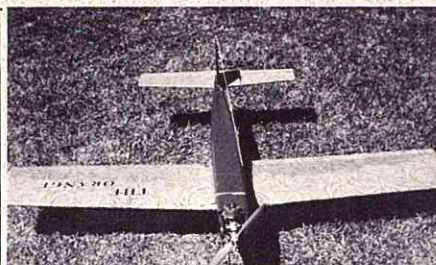
() Enclosed is my buck. Send your catalog as
soon as possible. I understand I get a certificate
worth \$1.00 for my first order.

Name.....

Address.....

City.....

State.....Zip.....



Jim Stocke covered the wings of his Sun Fli with plastic shelf paper.
Instant letters were covered with a transparent strip of shelf paper.



get paid for his work. Well, if you have more time than money, you can take on this work yourself. Cut out your own wing ribs, bulkheads, etc. Of course, don't charge off and build your first aircraft from that image floating around in the back of your mind. Chances are very great that it will crash on its first flight, thus costing you a bundle of money right then. Stick with a proven design if you are scratch building for your first attempt.

Perhaps this idea should have been expressed back a paragraph or two when I was discussing beefing up the structure. This thought is to build strength into your aircraft. Use good adhesives, Devcon Epoxy, or Hobby-Poxy, or Titebond glue rather than some of the old style model airplane cements. If you have weak glue joints you are sure to have a weak aircraft. Nothing is more guaranteed to give you a red face than to have the firewall, complete with engine and nose gear drop off your aircraft while in flight! Old style model aircraft cements just WON'T do the job here. Add gusset pieces, strips of fiberglass cloth, and other methods of adding strength to the structure.

Save the parts from wrecked airplanes to use over again. At our field we have several large 55 gallon metal drums that are trash bins. Every now and then you will see a disgruntled flier take the wreckage of his ship over to the trash barrel and cram it in. About five minutes later if you watch closely, you can see several fliers picking over the pieces of the wreck, salvaging items such as nose gear mounting blocks, control horns, Kwik Links, hinges, etc. It's foolish to toss away these things. They are rarely hurt in a crash, and can be used over and over again. Even entire sections of the aircraft may be usable. The complete rudder assembly is often undamaged, as is the horizontal stab. How about strip ailerons on the wing? The shaped balsa costs about forty

cents each for strip ailerons, as well as the hardware, so why not save it? It's really amazing what you can find in some of these old trash barrels!

This next thought has long been dear to my old Scotch heart. Be on the lookout for new products that can be used in R/C aircraft that have been developed for other commercial uses. Most of the really great things that have come along in the past few years are items that some modeler diverted from its original use to use on miniature aircraft. With an open eye toward the shelves of the hardware store you can find all kinds of 'goodies' that can be used. A lot of fliers are trying simple and obvious things such as contact paper, or shelf paper as a covering material, complete with flowers or wood grain, or solid colors. Paints for home or industry are a fertile field for experimentation, and generally are much more economical than are items that have been developed strictly for use on models. Derusto Paint Company has a new product out that I haven't tried yet but it looks promising. It is an all-mixed-in-one-can-epoxy-paint that dries to the touch in 15 minutes, and is hard for recoating in 3 hours. Comes in primary colors and can be mixed to obtain other colors. The next aircraft that I build will have this type of paint on it. Did you know that the very popular threaded metal clevis type of pushrod end actually began life on the inside of an electric typewriter? Someone had his eyes open, and his mind at work then. Of course, the poor old typewriter hasn't been the same since.

Take up new ideas that some other modeler has presented in the For What It's Worth section of this magazine, or a new method of construction that is presented in a construction article. The best way that I know of to save money in building wings is to build them of styrofoam covered with cardboard. If you cut the wings yourself you can really turn out a wing quite inexpensively. Even if you purchase a

RADIO MODELLER

Britain's leading r/c magazine for the everyday enthusiast.

Written and compiled by practical modellers.

Available from leading U.S. model shops or send International Reply Coupon (six coupons for air mail) for free sample copy and details of preferential subscription rates.

RADIO MODELLER

64 WELLINGTON ROAD, HAMPTON HILL,
MIDDLESEX, GREAT BRITAIN

RADIOMODELISME

The French "technical leisure review" brings you, monthly, details of the most exciting up-to-the-minute hobby — electronics — and its application in models of all types.

When ordering your free specimen and subscription details, add four International reply coupons for Air Mail postage charges in writing to:

Radiomodélisme

21 rue des Jeuneurs,
75 — PARIS (2), France

RC CUE—N.E.W.S.

Where The Action Is!

First—With the Nats Results!

First—With A.M.A. Election Results!

First—With Equipment Analysis Survey!

First—With A.M.A. Insurance Report!

First—With New Rules Proposals!

Subscribe Now — \$3.00 a year.

RC Cue —

Newsletter Editors
and Writers Society

2558 Las Casas Way
Rancho Cordova, Ca. 95670

MFG.—JOIN NOW!

The Radio Control Industry Association is an association of manufacturers endeavoring to promote radio controlled model aviation as a sport. We are working with the AMA and other trade associations to try to promote radio controlled aircraft competition as well as a sport and fun-time utilization of our products. We also are mindful of the race car and marine applications of our equipment. Dealers, jobbers, and friends of the sport may join as associate members at the rate of \$10.00 per year. For further information write to John Maloney, c/o R.C.I.A., 8960 Rossash Avenue, Cincinnati, Ohio 45236.



RADIO CONTROL INDUSTRY ASSOCIATION

commercial foam wing, you can, by using cardboard covering, or Chrome-coat, which is a form of cardboard, still save money. Look for substitute materials for balsa wood. If this product continues to jump in price as it has done during the past year it will soon be more costly than gold, per ounce of material that is. Several good ideas have been advanced in the past year, such as using corrugated box material for the structure, or plywood, or even thin sheets of redwood. Looking at an ad for a new method of constructing a space age fighter aircraft, I found that they were planning to wrap layers of thin metal around a mandrell to give the finished form. Perhaps we can use the same idea to wrap a fuselage from some type of material.

As Clarence Lee has been talking about in his Engine Clinic, a lot of money can be saved by the active flier by brewing his own fuel. Care has to be taken to get the mixture right, and sometimes it is a problem to locate the ingredients, but when you brew your own, you can often get the job done for less than two bucks a gallon.

If your aircraft has a lot of open structure, such as an open wing framework, you can cover with silkspan rather than silk. Double cover if you have many weeds in your flying site for extra strength. By using silkspan rather than silk you can cover for pennies rather than dollars, and if you are using dope as a finishing material, you can complete the job with about five or six coats of dope rather than 10 to 15 coats of dope over silk. You gain a saving in both money and time.

The last thought to present is to really READ the magazines that you buy. DON'T just read the items that appeal to you on the surface, real ALL of the articles and construction articles. A real gem may be hidden within some column that you normally don't read. Start a file of information, and cut out items that catch your eye and stick them in the file. Who knows, a year from now your file may just contain the one thought that will be just what you are looking for. An investment in a magazine each month is really a small amount of the money spent on this hobby, but even then, get your money's worth by really READING.

That's it for this month. If you come up with any good money saving ideas, send them in and we'll pass them along. Good luck and good flying.

OAKLAND BAY AREA R/C

OFFERING THE FINEST OF
NEW RADIO CONTROL EQUIPMENT
SINCE 1946

SAVE MONEY

USED R/C LATE MODEL
TRADE-INS

ROOT'S HOBBY HUT

6036 TELEGRAPH AVE. OAKLAND, CALIF.
NOON TO 5, EYES. 7-9 SAT. 10-5

IMPORTED SILK — LIGHTWEIGHT NYLON

FOR
Model Covering

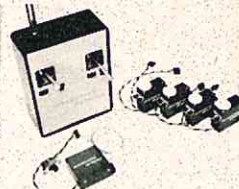
SILK	White, Red, Yellow, Orange, Blue, Green, Purple, Navy, Black, Pink	ONLY \$1.45 per yard
NYLON	White, Yellow	ONLY \$1.00 per yard
NYLON	Red, Orange Blue, Gold	ONLY \$1.10 per yard
PACKAGING — ONE YARD OR TWO YARDS TO AN ENVELOPE OR ANY OTHER LENGTH DESIRED		
CHECKERBOARD SILK	Red & White Black & White	ONLY \$1.50 per yard
One yard squares only		

IF NOT AVAILABLE AT YOUR HOBBY DEALER SEND DIRECT
MODEL COVERING CO.
2320 OCEAN PARKWAY, BROOKLYN, N.Y. 11223

INTEGRATED DESIGNS

FOUR CHANNEL
DIGITAL PROPORTIONAL
CHECK THESE FEATURES

FOUR FEEDBACK SERVOS
ONE WATT OUTPUT
NICKEL CADMIUM
BATTERIES
FET RECEIVER
INTEGRATED CIRCUITS
COMPLETE! NOT A KIT
FLIGHT TESTED
AIRBORNE WT. 13 OZ.



ONLY
\$199.95

WRITE

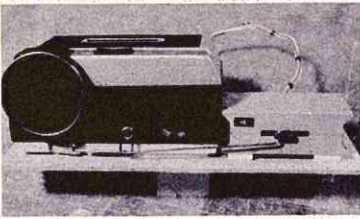
8722 E. CAMELBACK ROAD
SCOTTSDALE, ARIZONA
602 947-7924 85251

A MODEL
IS JUST A
MODEL
UNTIL YOU
ADD THE

Fi TOUCH

FLYING MODEL DECALS
PLASTIC KIT DECALS

5740 EAST PAISANO • EL PASO, TEXAS 79925



Kodak Instamatic connected to servo via music wire with 'safety pin' bend to allow for limited stroke of camera trigger. Both are mounted on a 1/16" ply panel using 1/8" foam tape.

CAM-AERO

(continued from page 42)

months, and is currently being displayed in the University of Wisconsin Department of Planning and Construction.

Some of you might be interested in knowing a little about the mechanics of this project. Designing the plane was no great mystery. Thumbing through a couple dozen model magazines, reading some of the articles, and even from reading the kit ads, anyone could conclude that a high-wing model with a roomy, boxy fuselage along Cessna lines would be the most stable and easiest to fly type of aircraft.

I gathered what seemed to be the most important basic dimensions from forty model plans published in the magazines, figured out their ratios, and arrived at a set of average dimensions. It was interesting for me to note that my figures were surprisingly similar to Chuck Cunningham's published in R/C Modeler in his article "Designing Your Own Model". These para-

meters included wing span, wing chord, wing area, aspect ratio, balancing point, airfoil shape and thickness, stabilizer span, chord and area, fuselage length, and moments.

The camera plane was designed to fit a known weight of equipment. Beginning with a loaded camera and a 4 channel radio on a scale, three 2 inch wheels, a 4 oz. tank, a Max 15 engine, prop, and 3 feet of 1/8 inch landing gear wire were added. This all came to 2 pounds. A shot-gun estimate of probable empty airplane weight raised the total estimated all-up flying weight of 3½ to 4 pounds. Needless to say, for picture taking, I felt I needed a slow, floating type airplane, so I figured my wing loading should stay below 18 oz./1 sq. ft. wing area. Too much lower wing loading might result in poor wind penetration and perhaps excessive bouncing around if there was any gusty wind. Quick calculations resulted in a requirement of 3 sq. ft. or 432 sq. in. wing area. This was my starting point. With this known fact, all the other dimensions fell into place, based on the ratios arrived at by all that data collected from the magazines. The result was 3 sq. ft. of wing area and an aspect ratio of 5 to 5.5:1. Using a stabilizer to wing area ratio of 25% and a stabilizer to wing span ratio of 40%, I arrived at the stabilizer dimensions. The vertical fin was calculated at 1/3 the area of the stabilizer. Fuselage length was 70% of wingspan, with a nose moment (prop to C.G.) of 22% of fuselage length, and a C.G. located 35% back from the wing leading edge. The fuselage cross section was arrived at by arranging the camera, servos and receiver in a pile on the bench in a fashion that seemed like it would work in the plane. The overall dimensions of this pile, allowing for

padding, were, then, the cabin dimensions. So that the plane would have a little sex appeal rather than look like an orange crate, I drew the fuselage profile to resemble the general lines of a Cessna. The structural design of the airplane followed the routine techniques seen in the magazines.

The camera and trigger servo were mounted on 1/16" plywood using Rocket City foam tape. This platform rested on two soft 1" thick foam rubber blocks glued to the bottom of the cabin. The camera pointed out a 1½ inch diameter hole in the floor of the fuselage, just aft of the main landing gear. The airplane also included a steerable nose gear and wheel brakes.

Later this spring, after the University model was finished, I tried a roll of Kodacolor film above my house. The results were amazing. So much more could be seen because of color; just like the comparison of color to black and white television. I, then, wished I had done the University work in color.

Anyway, I spent an enjoyable summer learning to fly multi with the plane, 14 oz. lighter without the camera and servo. I think before I do any more photo work with the plane, I'm going to switch to a .19 engine, and perhaps landing flaps, so that I can land in tighter spaces.

Incidentally, in case you're wondering, this project wasn't precipitated from aerodynamic genius, but just a lot of luck. I've designed several models since and none has lasted more than six flights. But beginner's luck or not, I now have a ready answer to that ever present question from well meaning friends - "Your little toy airplanes are cute, but what good are they?"

Simplicity is the key to successful, reliable operation. Top of cabin, removable for ease of camera loading, is simply sandwiched between wing and lower fuselage and held in place with rubber bands. The film cartridge, or camera, is removed by disconnecting elevator and rudder NyRods and sliding them clear. Camera servo is below REM servos.

