

APRIL 1971

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RC MODELER

THE WORLDS LEADING MAGAZINE FOR RADIO CONTROL ENTHUSIASTS



The Frantique Too . . . one of the finest sport aircraft ever presented by RCM. See page 16.
John Camp's glider winch is an excellent do-it-yourself project. Page 34.

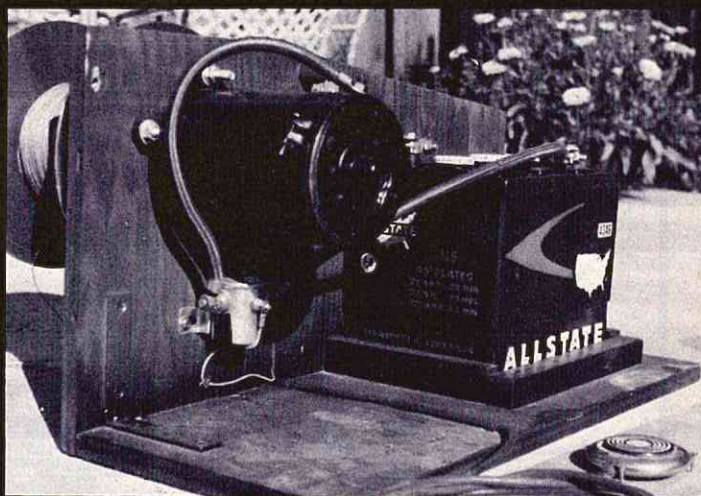
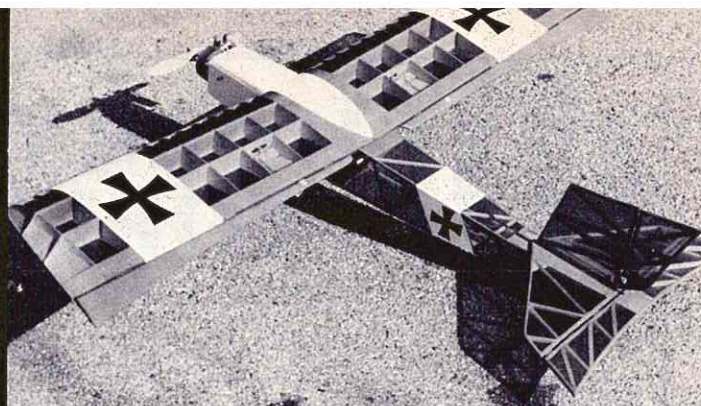
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THIS MONTHS COVER

Gene Wooley, owner of a Cypress Gardens Hobby Shop, built the very patriotic Ugly Stik held by lovely Rita Ladner. The Stik is completely finished with Super MonoKote. Ektachrome transparency by Ed Okie.

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VOLUME 8 NUMBER 4
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VIEWPOINT

Don Dewey



Help a kid to learn to fly.

The title of this column is Viewpoint. It means exactly that. Whether it be the regular wanderings of RCM's Editor and Publisher, Don Dewey, a guest editorial, or letters from our readers, it is expressing an individual, or individuals, personal viewpoint on a given subject. The viewpoint of RCM's Editor, for example, does not necessarily reflect a unified view of the entire staff of R/C Modeler Magazine. Neither does a guest editorial necessarily reflect the viewpoint of RCM's Editor or his staff members. But, this column is, in effect, an open forum for the discussion of a variety of subjects that affect you and I as participants in this sport and hobby. Opposing viewpoints from our readers are certainly invited although it will be impossible to publish all that are received.

The following is an Open Letter to Mr. John Worth, Executive Director of the Academy of Model Aeronautics from the Los Angeles Model Hobby Association:

Dear Mr. Worth:

That loud plaintive sound you hear is the modelers of this country yelling for help! Modeling is in serious trouble and if we do not act now it may not exist tomorrow. The trouble I speak of is our public image. Or lack of it. The following information will explain what I mean by that statement. Of necessity I will use Los Angeles as an example but I'm sure that these problems are not exclusive to this area:

In the early part of this year I was elected President of the Los Angeles Model Hobby Association. This organization is the modelers voice and advisory board to the Los Angeles Department of Recreation and Parks. When I took over as President I also took over a long and involved effort to secure a permanent flying site in the, soon to be developed, Sepulveda Dam

The a.m.a. Is Our Only Hope

Recreation Area in Van Nuys, California. Modelers have been using this area to fly for some twenty years and for the past three years LAMHA has been trying to obtain a decent flying site on the Master Plan.

The culmination of those years of work by many people came when, on December 9, 1970, the LAMHA people met with City Councilman Donald Lorenzen, Commissioner William Fredrickson, Jr., and Parks Engineer Charles Paioni. During these meetings we were given the first really encouraging news we have ever had. We were told that our reasons were good, our arguments were valid, and that in three weeks we would be shown a revised Master Plan showing our new site.

On December 10, 1970, the now famous article headlined "Model Planes Growing Peril to the Airways" appeared on the front page of the Los Angeles Times and was picked up by other newspapers across the country. As you know, many letters of protest were sent regarding the irresponsibility of the writer of this article and of the Times in printing it. As you also know, by using half truths, omissions, and out of context quotations, Mr. Steve Emmons, the writer, painted a biased and degrading picture of us. The timing of the article was as unfortunate in this area as what was said, since it appeared the morning after the LAMHA meetings with city officials as described above. Coincidence? Hard to believe! The Dept. of Recreation and Parks has since called to ask the LAMHA people to take a look at another site, far removed from the ideal Sepulveda Basin, as a possible Model Airport location. Maybe the Times article did not influence them? I doubt it! While all of the above was taking place, I was also asked to attend a public hearing in Ventura County, California, regarding the developing by the State Department of Recreation and Parks; an area known as the Point Mugu Recreation Area.

Mr. William P. Mott, Jr., Director of that organization, made the presentation of the proposed development. Mr. Mott went over each project on the Master Plan in detail, describing its location and function and also its proposed usage. He spent a great deal of time trying to convince the

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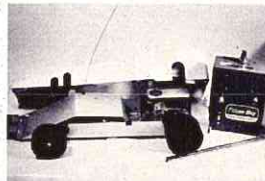
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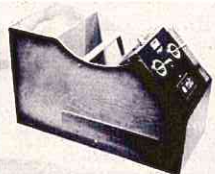
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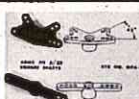
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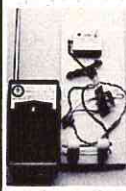
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R. H., Asheville, N. C.

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VIEWPOINT

(continued from page 3)

people at the meeting that the Mini-Bike, Motorcycle and Jeep trails would not create any noise problem, that the Golf course would be good as a green belt in case of fire, and that the shooting range would be good too; he went on to describe and praise the fact that there would be something for everyone in this recreation area, including: Equestrian Center, Camping Sites, Picnic Areas, Hosteling Center, Cabins, Archery Range, Educational Center, Swimming Pool, Beach Front, etc.

When Mr. Mott got to the point on the Master Plan map where the Model Airport was located, he brushed it aside with a wave of his hand saying that although it was shown on the Master Plan it would be moved over out of the way because of the noise factor. And that the Parks and Recreation people had been considering that since it was such a small hobby, limited to so few people, that perhaps it should not be included in the plan. He said perhaps the modelers themselves should have to buy their land rather than have it paid for with public money. This statement received applause from the audience!

At this same meeting, a gentleman who was introduced as a conservation expert from one of our Universities, referred to model airplanes as "infamous," and the main speaker and an officer of the Sierra Club complained that he would certainly not want those little model planes buzzing over his head when he visited the park. Mr. Motts assured him that "you don't have to worry about that, we moved them for you." More applause!

Mr. Worth, if the people who run our recreation areas in this state and in this country can dismiss the Aeromodeling Sport with a wave of their hand and be applauded for it and if one

irresponsible reporter can cost a city the size of Los Angeles the only flying site left to them, then something is drastically wrong. It seems to me that our National Organization has certainly failed in their obligation to the modelers of this country. Our public image is bad only because nothing has been done to improve it.

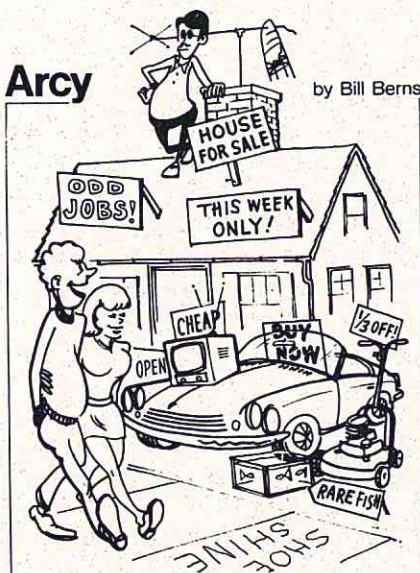
It takes a national organization to educate people to any sport. Our national organization is the AMA just as golf has the PGA. Now it's time that the AMA did something about it. We are not asking for miracles. We are, however, asking that you meet with some responsible modeling people from across the country and exchange ideas and set forth a plan of action that will do what must be done. People must be made to realize just how much good aeromodeling does in this country, what kind of young people it produces, what kind of parent child relationship it fosters, what kind of foundation it lays for future education. You, of all people, don't have to be told these things. We just have to urge you to see to it that other people are told.

The AMA is our only hope.

Loretta G. Hall
President

Arcy

by Bill Berns



"Wow! Arcy must really want that new modeling equipment he was telling me about."

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G. J., San Diego

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HALF TRUTHS...

... A Disservice To Everyone

jerry kleinburg

When was the last time you flew your RC model at an altitude above 27,000 feet, at speeds over 200 mph and covered more than 200 miles in range? And kept it up there for some 11½ hours while doing so? Sounds ridiculous, doesn't it? But it's not to many readers of the Los Angeles Times and other newspapers across the country who now have the idea that's just what we do regularly with our planes while we fly willy-nilly through the airways of commercial airlines and private planes!

This erroneous impression came from an article written by Steve Emmons that appeared in the December 10, 1970 issue of the L.A. Times. It was widely repeated in other newspapers throughout the country which echoed the theme of a "growing peril to the airways" coming from RC model flying. The article stressed FAI record performances and cited a couple of alleged near-misses with full size aircraft while intimating the risk was so immediate that the FAA was considering a crack down on all RC flying. It also told of a cross-country RC race where the models were flown through several airways at 3000 feet — an unlikely height for X-C flying unless it was 3000 feet ABOVE SEA LEVEL, in which case would have been no higher than 800 feet above the ground in Idaho where the race was supposed to have taken place and well under any airway...

With every RC'er knowing the facts of safety, reaction was wide-spread and immediate. It wasn't long before the writer and the editor, Nick Williams, received phone calls and letters denouncing the slanted attack and calling for a public retraction. The safety record of RC flying was made clear to them, a factor that wasn't fully understood — or ignored — in preparing the Times story. The FAA was also alerted to the shortcomings of the 'facts' presented. AMA's John Worth quickly responded to the charges with hard-hitting and comprehensive letters to the Times and the FAA pointing up the outstanding

results of the Academy's safety standards which are regularly observed by thousands of responsible and mature model fliers as individuals or as members of the more than 600 clubs chartered within AMA. The existence of AMA's extensive rule book each member possesses, with its safety provisions which are augmented by the safety programs of the chartered clubs, was pointed out by the Executive Director as evidence of the continual process followed in assuring a universal understanding of the need for safety — a process that has resulted in a record that is not surpassed by any sport/hobby of comparable nature. Unfortunately, such 'details' were not stressed in the Times story...

Unfortunate also is the fact that an unfavorable, lurid story can always be made from any isolated incident despite the best of records and efforts. It's also true that with increasing air traffic, accident risks also increase. Because of these situations the Times story cannot be allowed to interfere with an orderly development of our safety and flying programs by stampeding us into unrealistic and repressive regulations, or to the other extreme of doing nothing because of the belief that any improvement action might be construed as an admission of having weak or ineffective rules in the first place...

In regard to these considerations, it's good to note that AMA is going ahead with the adoption of the Four Star Safety Code devised by Ed Henry of St. Louis and the McDonnell RC Club, which was formulated at the direction of AMA past-President John Patton, who set up the Safety Committee last year. The Code is slated for adoption at the Toledo meeting of the Executive Council — possibly already held as you read this. Other discussions regarding increased coordination of the safety programs of all chartered clubs will also take place to assure continued action and possible improvements of a national safety program.

Readers will recall the concern expressed in this column with regard to safety and the subject of sharing airspace with the real 'birds.' While not much may be immediately done about the wrong impressions non-modelers received from the unfavorable Times story, modelers on a local level should guard against being coerced as a consequence of this single article into hasty acts that could weaken the hobby. Instead, it's time for efforts to be re-doubled to present more flight demonstrations and for other educational projects to be aggressively pursued to show what RC is all about — the recreational side as well as the safety being observed. It's also appropriate for AMA to

(continued on page 47)

CLARENCE LEE

Before getting to the letters this month I would like to bring to your attention a line of specialized propellers manufactured by Bob Lewis in Big Rapids, Michigan.

I receive many letters from modelers wanting to know where they can obtain left hand propellers for pusher designs or multi engine ships where they want to use counter rotating engines. A few columns back I asked if anyone knew of such a source to let us know so we could pass on the information. I received a letter and brochure from Bob who has left hand props available in all sizes as well as a line of laminated wood units for the scale builder whose thing is the WW I type of aircraft. These props are hand carved and a thing of real beauty. Those that have seen Bob's workmanship at various trade shows know what I mean. Don't think for a minute that 'hand carved' means roughly hacked out of a piece of wood. The workmanship is superior to the machine carved propellers that you are all familiar with. Propellers can be carved to your specifications, and you can even have a choice of wood. If you want a left and right hand prop, Bob will supply a matched set. If you are interested in a special application design, drop a line to Bob Lewis - Woodcraft Model Products, P.O. Box 119, Big Rapids, Michigan 49307, and get one of his brochures. Right now Bob is pretty well loaded with orders so do not expect over night delivery unless it is a size that he has in stock.

After making our request for a source of left hand props in sizes larger than 10-6, I received many letters from foreign countries telling me that Graupner made both an 11-6 and 11-7 left hand propellers. One hobby shop owner in South Africa - Jack Immelman, was even kind enough to send me a sample. However, upon checking with Jerry Nelson the U.S. Graupner importer, Jerry tells me that the 11-7 has been discontinued and only the 11-6 is still available. The 11-6 is just right for the .50 size engines, but not enough prop for the .60's.

Incidentally Graupner makes a complete line of conventional propellers in all the standard sizes. These props have not received much play in this country, but are an excellent unit.

While on the subject of twin engine airplanes and counter rotating props, my old buddy Darrell (Eskimo) Yonker up in Anchorage, Alaska, sent in

a letter that any of you modelers contemplating building a twin engined ship, might find interesting.

Dear Clarence,

In the October '70 RCM you printed a letter from Mr. Curt Voyles in which he inquires about reversing the rotation of engines for a model he plans to build. Since I've already built such a model, and, so far have put 25 or so flights on it, I thought maybe you and he might be interested in my adventures. The enclosed pics aren't the best but they may be usable.

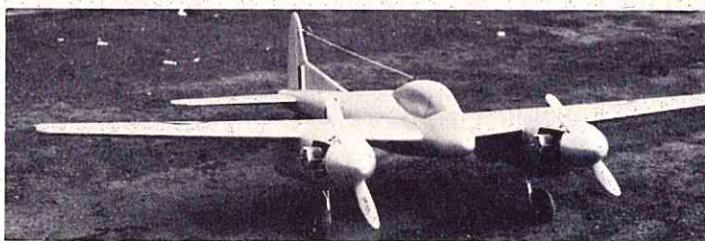
My model is a "sorta scale" De Havilland "Hornet." I only built the thing as a feasibility study and, besides, I'm too lazy to build a truly scale airplane. The wingspan of the beast is 62 inches with a wing area (scale) of 658 sq. in. It weighs 6 lbs. 7 oz., without its usual 24 ounces of fuel. This works out to a wing loading of over 40 oz. per sq. ft. with fuel. It's powered with 2 Veco .61's, naturally. I worried about the torque problem, too, as does Mr. Voyles but that isn't the problem. As a matter of fact, the thing wanted to turn right quite strongly after the first takeoff. This we eventually traced to the fact that it was right wing heavy due to both engines being on the right side of the nacelle. After we balanced the ship laterally with a tip weight on the left wing it flew quite straight. Still does for that matter.

The wing is foam sheeted with balsa and is strong as hell but I've still been plagued with vibration problems. Matter of fact, I'm glad you can't see it run, Clarence, but making the mounts more rigid and some work on the spinners has helped the problem a lot.

About single engine performance. Well, it flies on one engine OK provided you pay attention but, if you mess around and let the speed get too low, it spins into the dead engine, and I mean RIGHT NOW. Recovering from a spin with both or neither engine running is no sweat, but with one idling and the other dead it takes some room. That's how I found out the wing was so strong. I took the top out of a tree trying to recover and the only damage to the plane was to the outboard panel right where it broke the tree off. OK, so it was a small tree.

It's been tough to get the engines to run at exactly the same speed at all throttle settings but I solved that by just running flat out or full idle.

I'd suggest that Mr. Voyle just go ahead and build his ship,



Darrel Yonkers "Sorta Scale" De Havilland twin

trying to keep it as light as possible, and I think he'll find that engine torque is the least of his worries.

Darrell Yonker
Anchorage, Alaska

Dear Clarence,

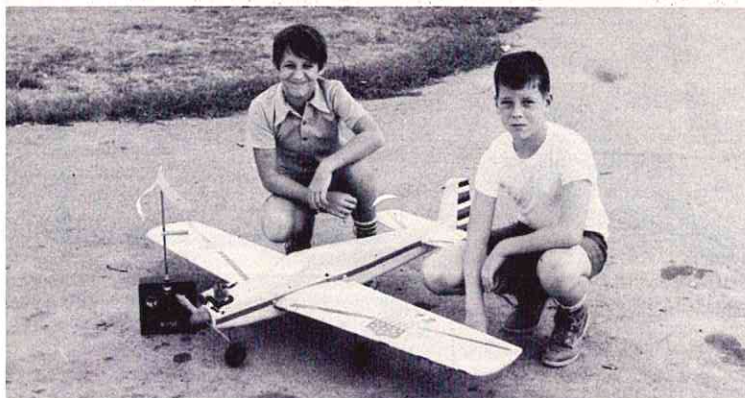
A couple of years ago I bought one of your custom Veco .50's (006) with the Veco carburetor. It has given me good service and survived more than its share of crashes. It's last encounter with the ground sheared the carburetor off the crankcase. I ordered a Perry carburetor for replacement and after three months it finally arrived. It doesn't fit. The plastic box it came in says Veco .50, but the neck is too large to fit into the crankcase. I have made the following measurements with a steel rule to give you an idea of what I have. Carburetor neck outside diameter - .45 inches. Crankcase carburetor neck inside bore - .39 inches. Did I get the wrong Perry carburetor?

Edward Tinoco
Bellevue, Washington

Quite a few fellows have run into this problem Ed, so let's try and set things straight. The first run of Veco .50's used the standard Veco carburetor. The second run changed over to the Perry carburetor. The Perry carburetor, being plastic, required a heavier neck, so the crankcase
(continued on page 47)

CHUCK CUNNINGHAM

Hang on guys, relief is in sight. How many times have you told a friend what you did in your spare time (R/C, that is), and had him look at you with that unstated feeling of "what is a grown man doing playing with toys?" You and I know that it isn't so. We know that our hobby/sport is probably the most fulfilling and rewarding of all of the leisure activities. As a matter of fact, it even keeps us healthy; just think of all the exercise our thumbs get in the course of a day's flying! But, to return to the track. In the January 2, 1971 issue of *Business Week*, appeared this lead article, "A Robot Air Force Flutters Its Wings." The gist of the article stated that the the Air Force was strongly considering moving into the realm of remote guided fighter and bomber aircraft. The argument was that they could be more economical to build, outperform manned aircraft and, in general, be the great weapon of the future. A name has been hung on this type of aircraft, the RPV (Remotely Piloted Vehicles). The article further states that: "RPV's could be built from inexpen-



Chuck Cunningham and friend, Brad Rhodes, guard big Chuck's Eyeball ARF....

sive materials, such as fiberglass, molded plastics, and perhaps even inflatable materials. Builders could use some of the simplified design and manufacturing techniques used in producing model airplanes and sailplanes." So, sometime in the future when the military is flying their "toy" airplanes at Mach 2.5 you can say with justifiable pride, "I fly RPV's, you know, like the ones the Air Force are flying."

The 2nd National Fun Fly Championships, sponsored by R/C Modeler Magazine and the Fort Worth Thunderbirds, has been scheduled for June

19 and 20, 1971. It will be held at Thunderbird Field on the shores of Lake Benbrook, just southwest of Fort Worth, Texas. This year, in addition to the normal Fun Fly competition, AMA Scale has been added. With the interest in scale model aircraft growing so rapidly it was felt that a major scale meet should be held in the Southwest to give this type of builder/flier a good place to show off his handiwork. Scale Judges will be headed up by Johnnie Casburn who, for many years, has handled the scale judging at the Nats. Normally, scale aircraft are shunted to the poorest spot on the flying schedule, but not so at the National Fun Fly. The Scale flying will be held on Sunday afternoon, at the prime spectator time. Nobody gets a bigger thrill watching a scale ship operate than does the Sunday driver out for an afternoon with his family, so why not expose him to it? The trophies for Scale will be in keeping with the high standards of the NFF trophies awarded last year. It is up to the scale contestants to make this an annual part of the NFF. So pack up your scale ship and come to the National Fun Fly.

The flying set up for the National Fun Fly will remain as it was last year with one large exception. All of the rules will remain the same except for the spin rules. Last year the contestant was allowed to climb his aircraft for thirty seconds, then to spin down for as long as he could. The top spin times were about 100 turns, and the time taken to spin down was about two and one half minutes. This year, to equalize this portion of the event and make it easier for a standard model to compete, the spin rules have been changed to allow a maximum time, including climb out and spin down, of 90 seconds. You may climb your aircraft for as long as you like, then spin down. If you have a fast spinning aircraft, you can climb up, spin down, climb up again and spin down. In fact, you may climb and spin as many times as you wish, but at the end of 90 seconds you will have to stop. The light floating spinners will probably climb up and spin down only one time, but even so, with a 90 second limit, the number of spins will be something less than 100, and will give the Kwik-Fli's, Kaos', and Dart Carts an equal chance.

We feel that this rule change, along with the inclusion of AMA Scale, will, again, make this one of the outstanding contests of 1971. And again, the aim will be upon flying and giving the contestant a good time. Write to me: Chuck Cunningham, 5333 Wooten Drive, Fort Worth, Texas 76133, to secure your 1971 entry blank and rules. If you're tired of pattern, and can't afford racing, or you're a Sunday/Sport flier, then the National Fun Fly is your type of event.

For many years I have been writing about safety at the flying field. I believe in flying safely,

(continued on page 50)

KEN WILLARD

I have been building and flying model airplanes a little over forty five years. During that time I have seen many things, some funny, some sad, some exciting, some bad. But in all that time, by far the very worst example of scurrilous sensationalism based almost entirely upon exaggeration, omissions and half truths, is the article which appeared in the Los Angeles Times last December. The author, whose byline was prominent on the front page — knew absolutely nothing about the sport, and chose to use it as a whipping boy. I won't dignify his moniker by mentioning it here — many of you saw the article and know the name, unfortunately. But the headline was "Model Planes Peril Airways."

The rest of the article was just as distorting of the facts. I have known many modelers to stretch the truth — mostly in fun — but the innuendos in that article were the most vicious I have ever seen in all the years I've been modeling. I'm glad to report that after the initial reaction (many newspapers picked up the story and without checking the facts, reprinted it), I have been informed that many responsible people have gone to great efforts to try and overcome the bad effects which the article had in some areas.

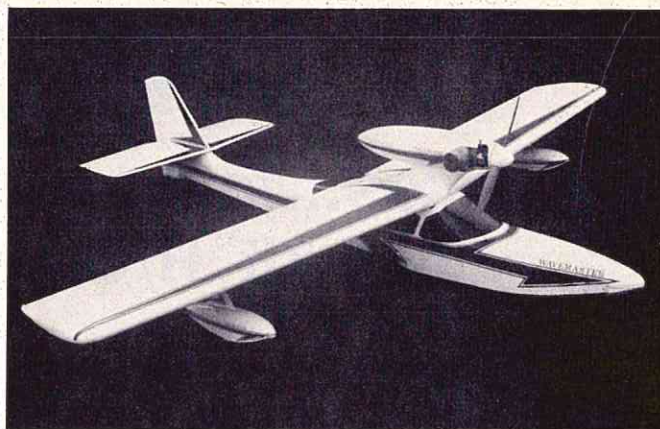
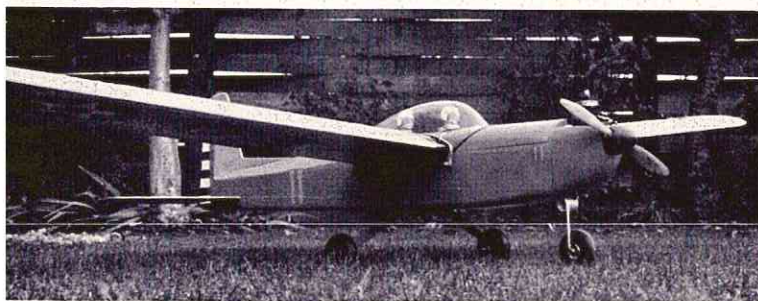
I won't discuss the article any further. Many people have written rebuttals much more detailed and less emotional. But I just couldn't let an attack like that on the hobby and sport which means so much to me, and to millions of others, go without an answer.

★ ★ ★ ★

Let's get on with some modeling activities.

This past month has been a period of pretty intensive testing for me. One program was the final proving out of the BT-70, which will be appearing

Ken Willard's BT-70... a May RCM feature.



The Wavemaster as a flying boat.

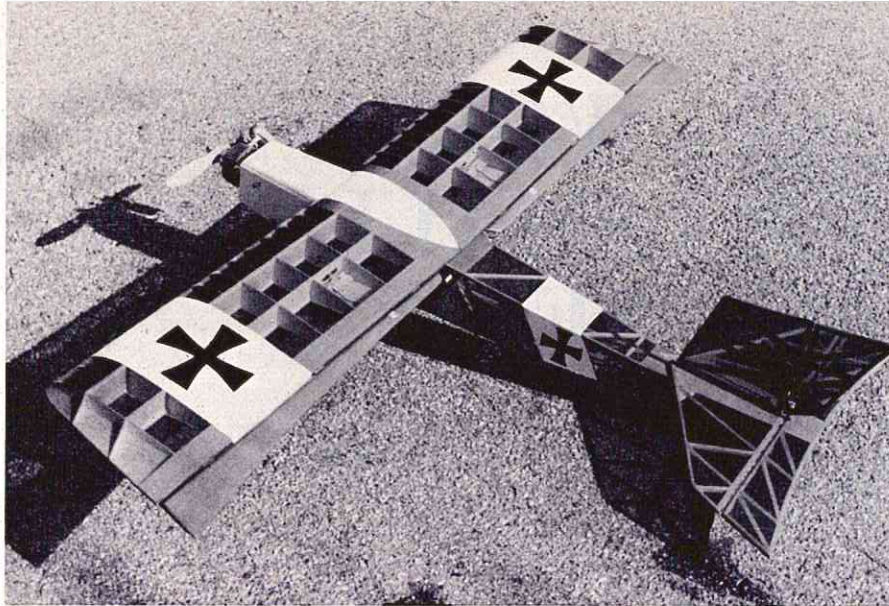
next month, and about which I will be writing at greater length at that time. But the tests were successful, and several beginners flew it, and I think those of you who are relatively new to R/C will find it fulfills the specification which your letters told me you wanted in the way of performance, structure and appearance.

The other test program, which is still in process, is the culmination of almost a year spent in development of a plastic amphibian, which will be available to you shortly after this article appears. I had planned to say, "When this article appears," but just this morning, in one of the final tests, we had a failure of a component, so we're re-designing it and beefing it up to be sure and be able to take the punishment that water can mete out to the careless flier. I can tell you this; I was purposely abusing the model, skittering it around at various throttle settings to make it waterloop, dig in the wingtip floats, throw maximum spray patterns, and everything I could think of short of a vertical dive (which it finally took anyway from about fifty feet high when I got into tight quarters at low speed, pulled up elevator and hard rudder and aileron, and snapped it into the lake. That's the second time I've done that! And it's embarrassing. But it did no serious damage to the plane — just my pride.)

This plastic model, which I have named the Wavemaster, is scheduled to be produced by Sherlock Aircraft Models. Paul Sherlock and his production manager, Ron DeMadeiras, are real masters in the molded plastic field. We have a perfect working arrangement; I have final say on the aerodynamics and hydrodynamics in the design, and they are doing all the structural plastic design.

One thing we all agreed upon early in the program. The model should be fully amphibious. Not with retracting gear, but with interchangeable gear so the tip floats can be removed, the tricycle gear attached, and the model becomes a highly attractive land plane for sport flying at any field.

(continued on page 85)



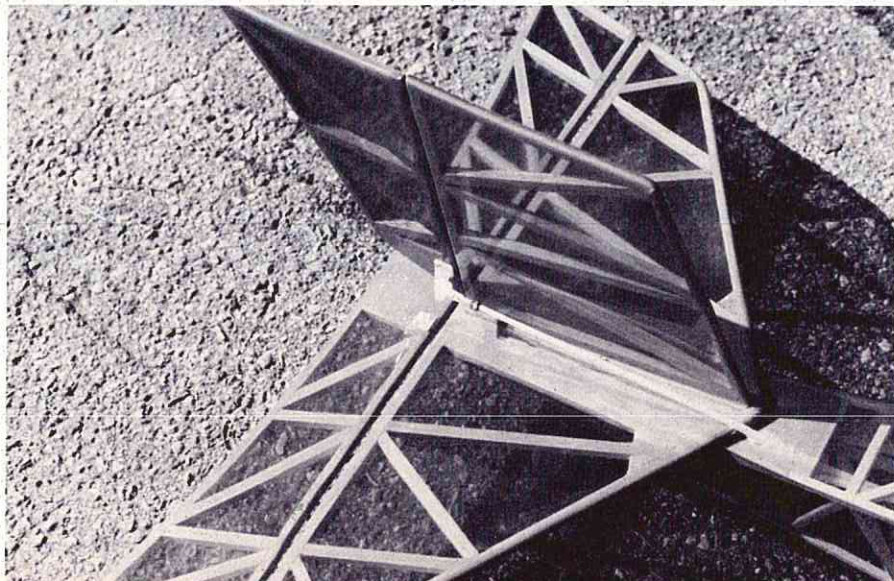
Completely covered with transparent orange Solarfilm, the Frantique Too exhibits its strong but light built-up structure.

FRANTIQUE TOO

by J. Harmon

FOR .19 TO .30 POWER, THE F-2 IS TRULY AN OUTSTANDING MACHINE. THE PROTOTYPE IN THE PHOTOS, BUILT BY DON DEWEY, SERVED AS RCM'S TEST BED FOR THE GRAUPNER-O.S. WANKEL ENGINE. AT 500 SQ. IN., IT'S DOCILE ON A .19... FANTASTIC WITH A .30.

A close-up of the empennage shows the spruce and balsa framework. NyRods used with Goldberg control horns.

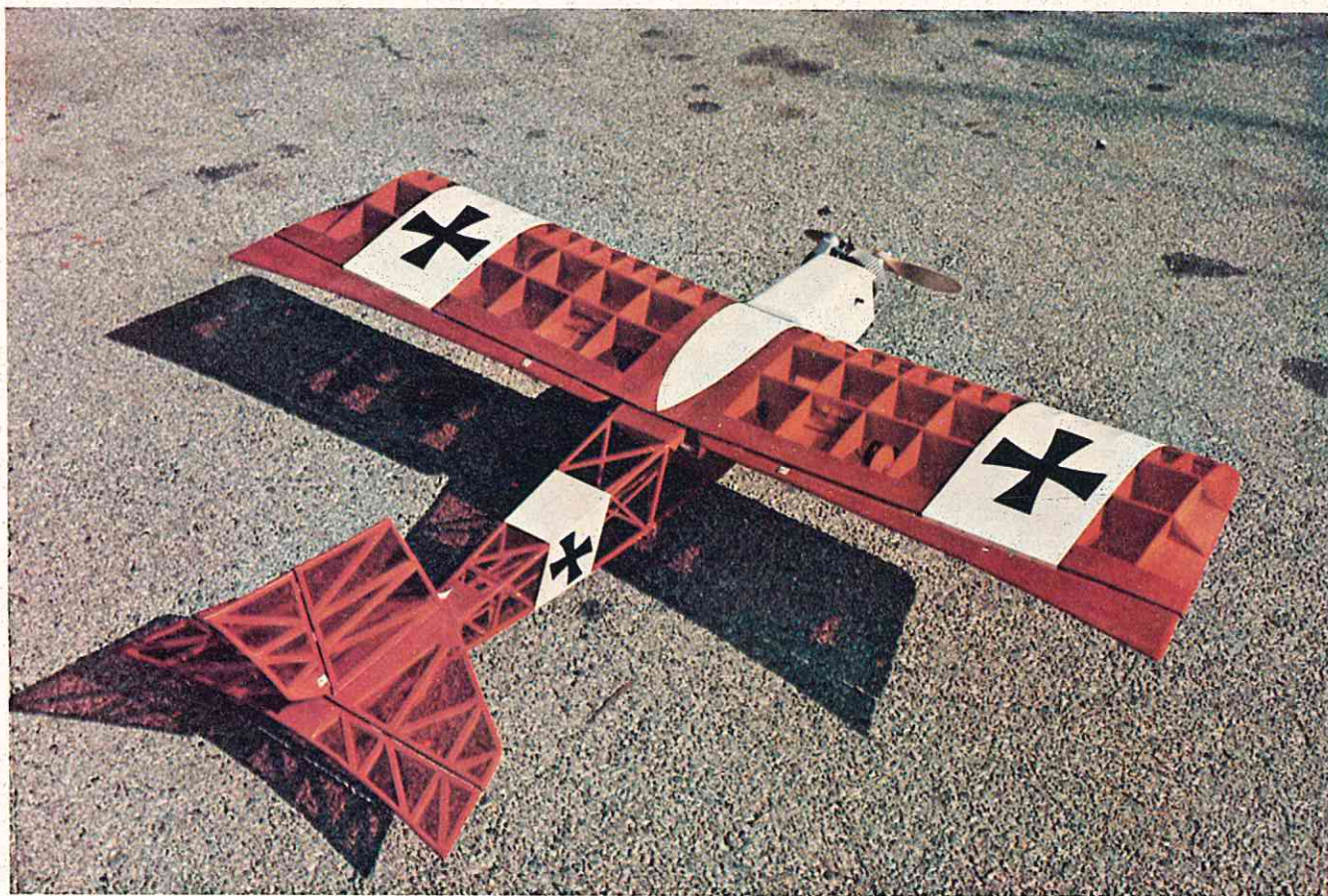


The "FRANTIQUE TOO" was designed and engineered by the infamous and somewhat old-fashioned "Baron Von Drafty-bottom," with all the hard and dirty work done by his faithful helper, Assistant Second Grade J. Harmon.

Well the old codger looks like he's done it again. In fact, I hope that one of his misfit designs falls right out of the sky. Let me tell you the "Baron" is a NUT to say the least. Like, last summer he decided to take up flying. No instructor or anything and in a "Little Splinters;" at least that's what it was when he got through with it! He finally conceded that it was not suited to his ability. After spending a week in his favorite Kneipe he came staggering in with some childish looking scribbblings and calculations on the back of an old Haufbrau label. After mumbling something about his Max .19 and 700 square inches he promptly expired. What culminated from all this was one of the most under-powered but beautiful flying planes ever. After putting many uneventful hours of nothing but flying on her he decides he wants a new plane, something with a little more performance. Being the cheapskate that he is he still wanted to use his economical .19, so a smaller plane was in store. Remembering his unhappy experience with a plane that was just on the borderline of being too small, a little over 500 inches of area was decided upon.

Having started building 23 years ago, I still remembered what it was to actually build an airplane instead of making a semblance of one from something they use to make floral arrangements and toothpick trees. Half of the fun of modeling is the building, and the design of the "F-2" makes it easy as anything you have ever built and about as cheap. All of the "Baron's" flying in it has been done from a dirt strip and other assorted unpaved surfaces and has proven itself as tough as you could want.

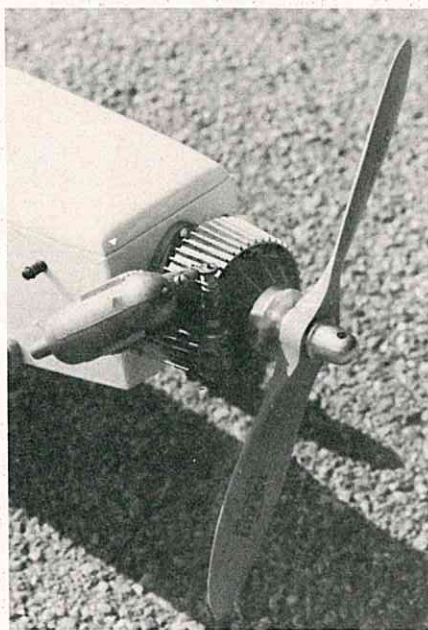
Do not change any wood



Transparent orange, almost amber in color, gives woodgrain effect over sheeted areas. Used with white and black Solarfilm trim, visibility is almost unbelievable.

thicknesses or substitute any balsa for the spruce that is called for. The structure as shown is adequately strong for any engine from a .15 to a .23, if you want to go all out and strap a .29 on it, add a sheet of 1/32" plywood beneath the side sheeting on the forward part of the fuselage and change the webbing on the main spar to 1/8" and add 1/16" webbing to the rear spar. Use only Titebond, white resin, or epoxy for assembly.

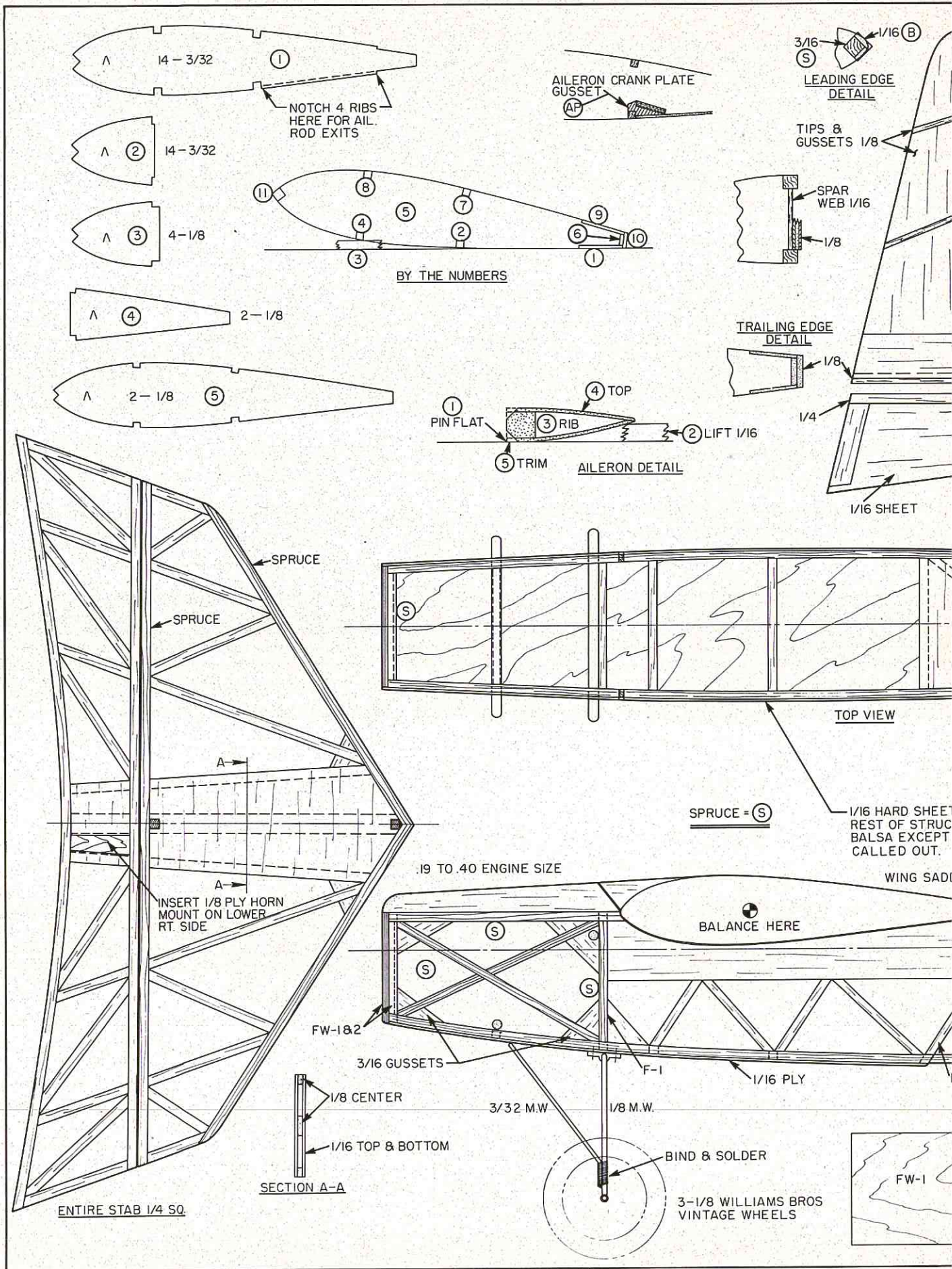
Begin the fuselage assembly with the side frames using the 3/16" spruce. Pin the top longeron in place securely from front to back (the section at the wing will be removed later), cut and install the verticals at the firewall, the F-1 and F-2 positions, as well as the fillet at the rear, and install the lower longeron. Cut and install the wing saddle and the one for the stabilizer. Add the remainder of the bracing and fit the gussets to the

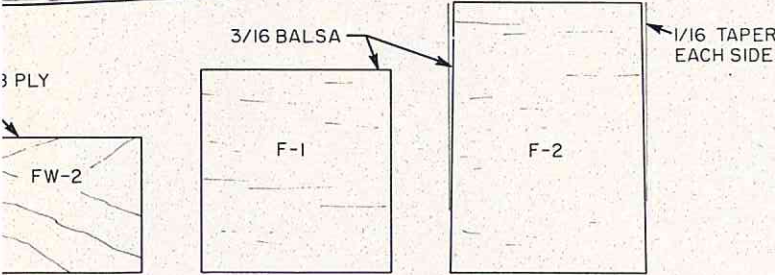
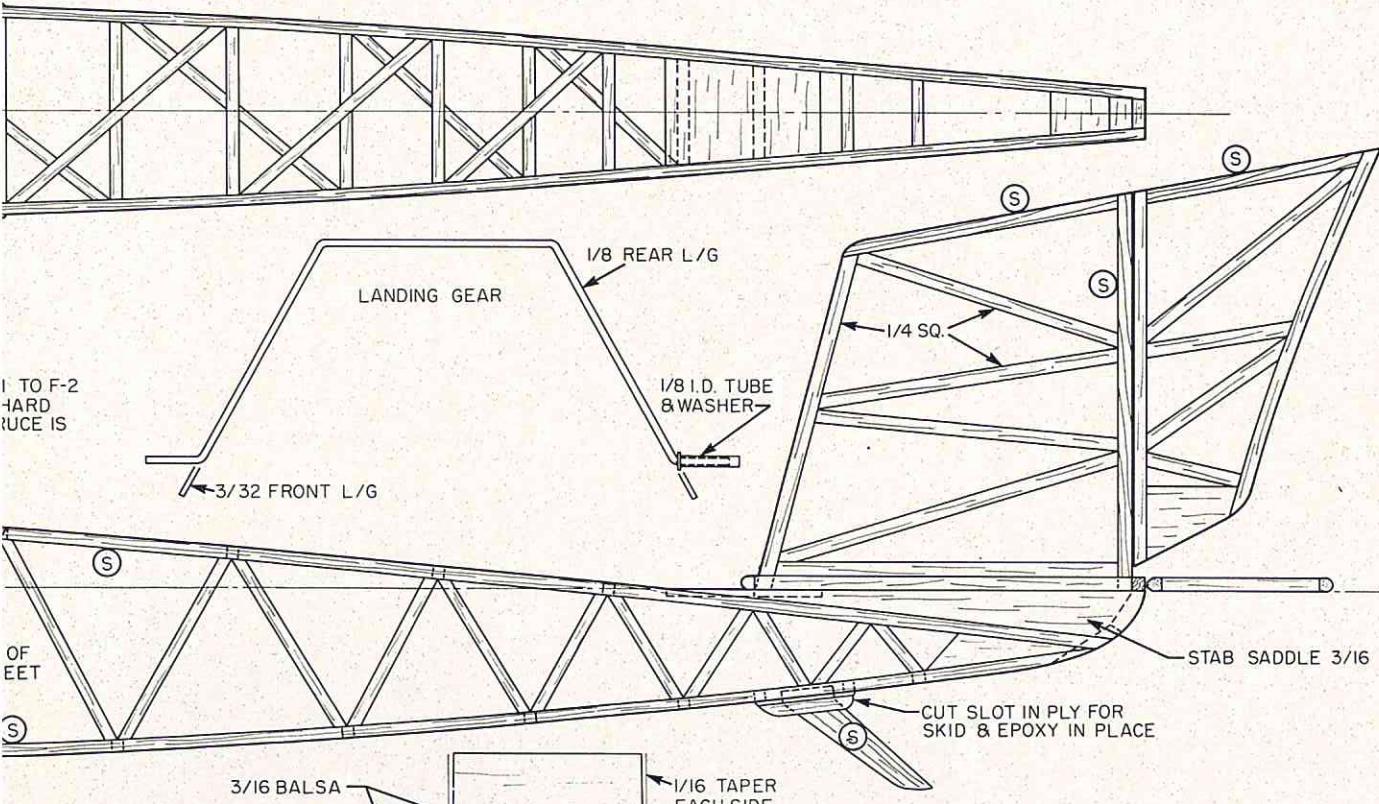
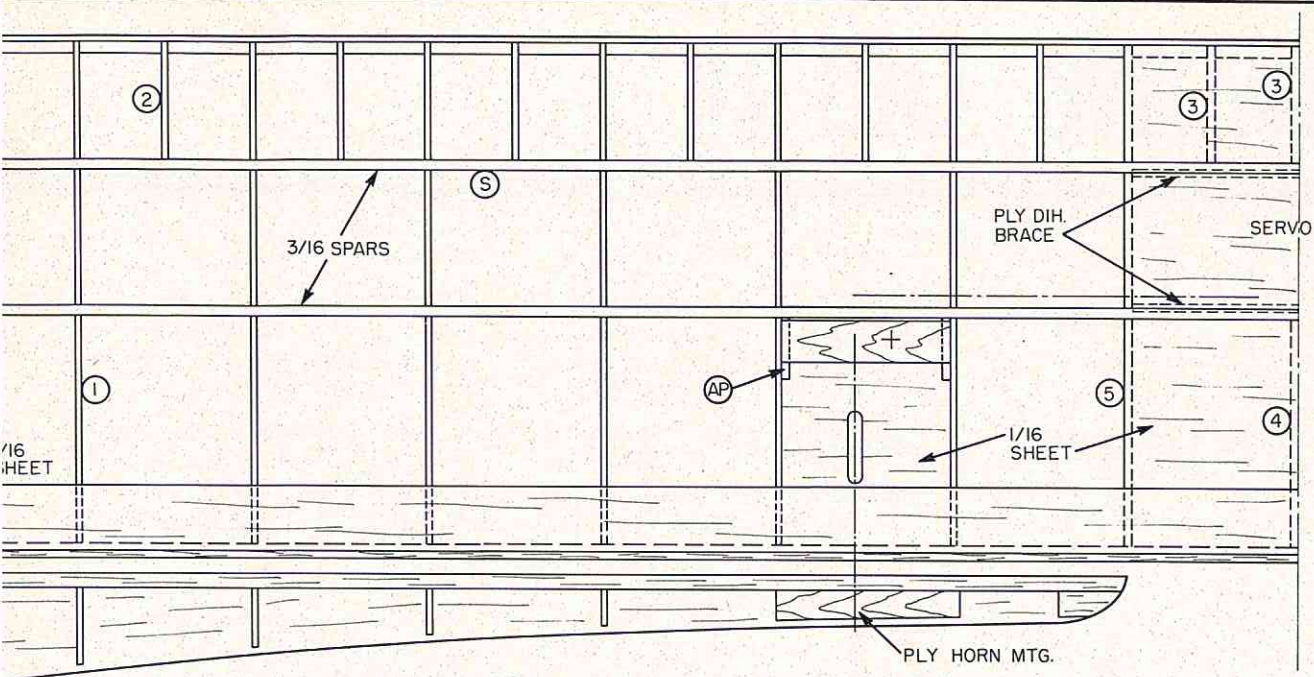


The Graupner-O.S. Wankel delivers power equivalent to a .45. Silencer is so effective that the engine virtually cannot be heard in the air. When flooded, Wankel gives 'first flip' starts. 10-6 prop.

forward section noting the grain direction. Allow to dry thoroughly. The second side may be built directly over the other side for greater accuracy. (If you do, don't forget to put something between them. If not be very careful to build two like sides!) Assemble fuselage sides to FW-2, F-1, F-2 noting that F-2 is tapered at the top end. Block up the fuselage at the front and rear and securely bind or clamp at the former locations, carefully checking center line and firewall relationships. Cut the rear cross braces from the dimensions on the plans, pulling the rear of the fuselage together. Install the braces and trim and fit the filler at the rear. Add the 1/8" filler toward the rear for the front of the stab to rest on. The filler at the front and rear top of the fuselage at the wing location is cut from 3/16". Add F-1, the bottom plywood sheeting, then

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FRANTIQUE TOO

DESIGNED BY B. HARMON	INKED BY DICK KIDD
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How We Did It

BY LEON SHULMAN

PHOTOS BY CHUCK GILL AND
NICK SAMAROG

With the tremendous growth of interest in R/C and the increasing number of contests being held around the country, and for that matter, around the World, contests are getting larger! Larger meets result in more competition and more competitors. Because of the limited hours in a day (or days, in the case of meets with 2 or more days). Contest directors have resorted to various means to sift out the winners. The result has been that the average flier who is not yet proficient enough to be in the Top Five winners is either weeded out in 'elimination' type meets — or as in the case of the 'shortened flight pattern' type of event, gets only 2, or possibly 3 flights in a long day of sitting out on an airfield. It truly is quite sad when one participates in this hobby/sport in order to 'fly' and goes to a contest to fly for approximately 12-24 minutes in a 9-10 hour day. The ratio of flying-to-waiting is way out of proportion and has discouraged many would-be contest fliers and converted them back to 'Sport' or 'Sunday Fliers.'

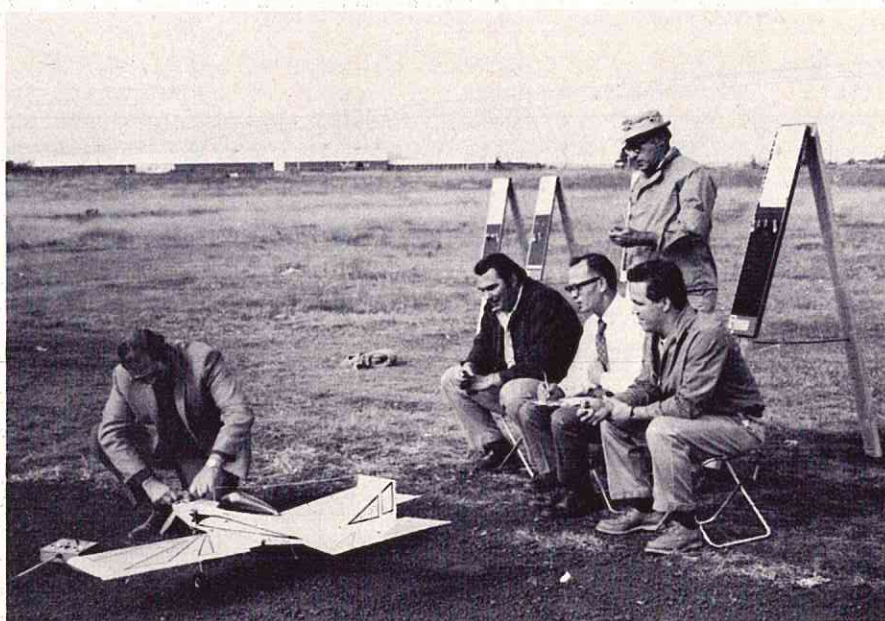
Having competed in Contests for a good number of years, from the real early days of Free Flight, thru the U-Control (Control-Line) era, and on to Radio Control, we gained experience on both sides — as a competitor and as a Contest Director and directed many large club meets up to the National and International Championships. Recently, we have seen the point reached where something had to be done to streamline and

mechanize the procedures and systems for Contest Management and Direction. The Central Jersey R/C Club, of which we are a member, has been running the Eastern States R/C Championships for over a decade now, and for a one day meet we have peaked out at 122 contestants, with each contestant getting in a total of 5 flights, 3 in Pattern and 2 in Scale (our contests have traditionally been Pattern and Scale events). In 1969, when we had 122 contestants, we put in 5 flights for each contestant with a shortened pattern of 6-8 minutes depending upon event type. Our club members who are 70 strong, of which 50 actually show up to work — typical of most clubs — worked throughout the day in order to do this, however, at one point our Flight Line Director 'broke-down' and walked off the field mumbling to himself. It was then we decided that something had to be done to simplify procedures, method of frequency management, circle assignments,

balance between circle, complete control of frequencies to prevent interference, etc., etc. We just can't lose good modelers and contest workers this way. As the Contest Director, we were in a position to see these problems associated with overall management and went to work to overcome them.

With the competent help of our Contest Co-Directors, Keith Finkenbiner and Herb Foster, we were relatively free to study these problems and listed several possible solutions. After months of thought and discussions we came up with a System which seemed to solve the problems we faced. We made notes and outlined the basic system, then, over a period of several more months, we discussed this with several prominent modelers and Meet

Typical personel set-up at meet, Flier, 2 Judges and 1 Recorder.



*It's time we
organized contest
procedures
for more fun
and less work.*

Directors around the country to try and 'punch holes' in this system. It appeared to be fool-proof and we set to work rounding up the necessary materials. It was then suggested we name it the 'Shulman System.'

Ideally, making use of commercially available materials would be the easiest route to go. We researched this and came up with relatively inexpensive materials which are readily obtainable. We tried the 'Shulman System' at one of our Intra-Club meets to prove it out before using it at our Annual Eastern States R/C Championships and found that each of our contestants got in more flights, with less confusion, in a shorter period of time. Using it at the 1970 Eastern States R/C Championships proved its value thoroughly. For a one day meet, and with a total of 72 contestants, we put in a total of 5 flights per contestant who entered in both Pattern and Scale events. All this was done in an overall period of 6½ hrs. allowing shut-downs on each flight line of approximately ½ hour for 'reliefs,' coffee-breaks, etc. At 3 P.M. we started to award prizes, and run off a 'Demonstration R/C Race Car event,' and some Demonstration Flying. We could have easily completed 2 more rounds if we desired but, because of the high winds and unseasonal cold weather of this particular meet, the consensus was to terminate at 3 rounds in Pattern and 2 in Scale. This tremendous improvement in Contest Management, etc., established a record and proved out the System under actual conditions.

The materials required are easily obtained and not too ex-

pensive for a club investment. Preparation is minimal and, with 2 or 3 people, this can be done in one evening. Following the procedure is extremely simple and automatic. We show several photos of the Master Score Board, Flight Cards & Flight Board which is the basis of the 'Shulman System.' We will outline the procedure in sequence first and then elaborate further on each.

- 1) As the Contestant registers, his name, address, Zip Code, FCC License number, AMA License number are all entered upon the Master Score Board in the appropriate 'event' column and he is given a Contestant number. Each Class of event is

(continued on page 64)

CENTRAL JERSEY RADIO CONTROL CLUB extends a
WELCOME TO OUR 1970 EASTERN STATES R/C CHAMPIONSHIPS

As usual, we want you to enjoy yourself and have a real good day of flying fun!

To accomplish this — we ask your cooperation and to follow these simple procedures designed to make your day a good one.

We planned this meet to allow you at least THREE Official Flights in pattern event. Follow these instructions and you'll get them — PLUS one or more of the many awards we are giving!

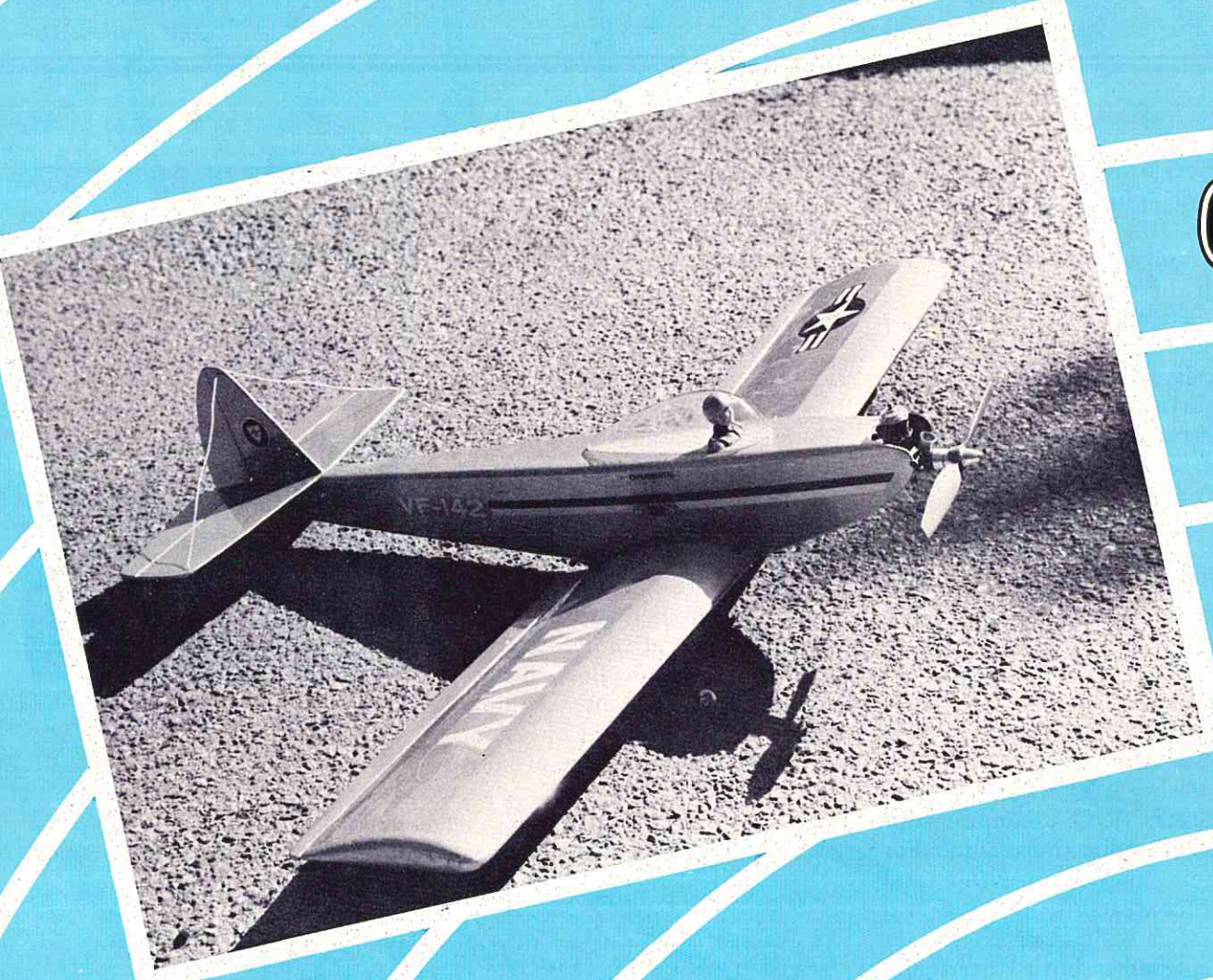
- 1) Register at 'Registration Table' and obtain your Contestant number and Flight Card.
- 2) Pick-up 3 Flight Score sheets plus one for yourself to acquaint you with the flight pattern.
- 3) Take 'Flight Card' to flying area assigned your frequency. Assignments are posted at the Registration table. Put 'Flight Card' in first vacant slot on top of Flight Board.
- 4) Turn your Transmitter into Impound Section at assigned area. Remove antenna — keep until ready to fly.
- 5) Set up your equipment in the pit area closest to your flight circle.
- 6) Get ready to fly.
- 7) Flight order is determined by location of 'Flight Card' in Flight Board.
- 8) Flight in progress is indicated by colored marker.
- 9) It is your responsibility to be ready when your turn comes — you will not be called.
- 10) At your turn, give filled-in flight sheet to judges at assigned circle.
- 11) When the flier before you lands his plane and is on the side of the circle, your flight time begins — start your engine and start your flight.
- 12) Follow flight plan and upon landing to complete your flight, have your assistant retrieve your plane before the next flier runs into it. That means f a s t.
- 13) Bring your plane, etc., back to pit area, impound your transmitter, re-fuel, re-lax, re-coupe, re-cess, re-lieve yourself, then get ready for your next flight.
- 14) Live by this credo —
 - 1) Enjoy yourself!
 - 2) Fly to win!
 - 3) Make a new friend!
 - 4) Survive!

Any Questions ?? Don't b-u-g the judge See Leon!



'Shulman System — Master Score Board.

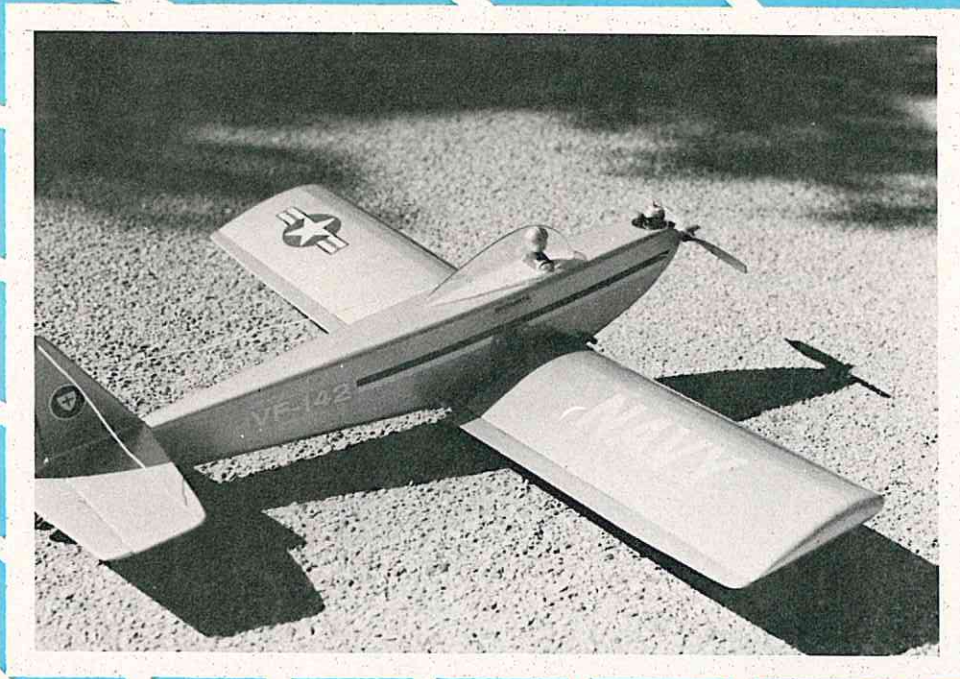
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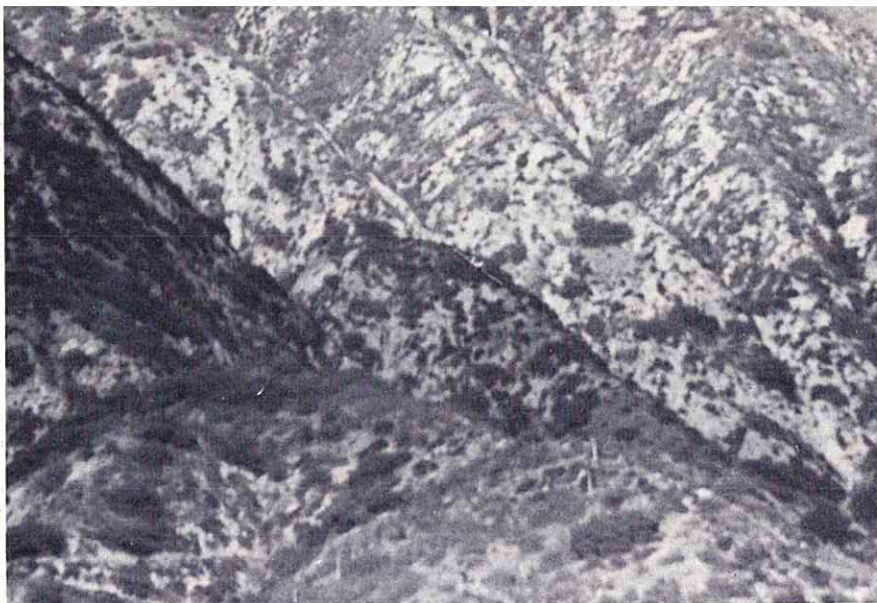


ENTER FIRE

THE WORLD'S SMALLEST
FULL-HOUSE MULTI

BY DON DEWEY





You'll have to look carefully. Almost dead center in the photo, the Centerfire is making a close pass by the Sierra Madre foothills.

Several years ago I became intrigued with the idea of a truly small, full-house low wing multi and began toying with various design ideas. In December of 1968, RCM presented Jan Sakert's "Rimfire," a thirty inch span RC aircraft designed to accommodate the ultra small digital proportional systems that were then currently under research and development by several manufacturers.

With the encouragement of the lightweight digital systems, we experimented with various shoulder and low wing designs attempting to eliminate, insofar as aerodynamically possible, many of the problems associated with the small, lightweight

models. After building and flying the Rimfire, we decided that it would be necessary to eliminate another 6 ounces from the 28 ounce weight of that model, as well as to provide a semi-symmetrical or symmetrical airfoil in place of the flat bottom section used by Jan Sakert. Both of these objectives were accomplished with the Centerfire since its all up weight, ready-to-fly, was 22 ounces, and it employs a semi-symmetrical airfoil section.

The design is very reminiscent of the Orion with the same type of nose configuration and conventional landing gear. Our design was not intended to be aesthetic, but functional, in order to check out some of our

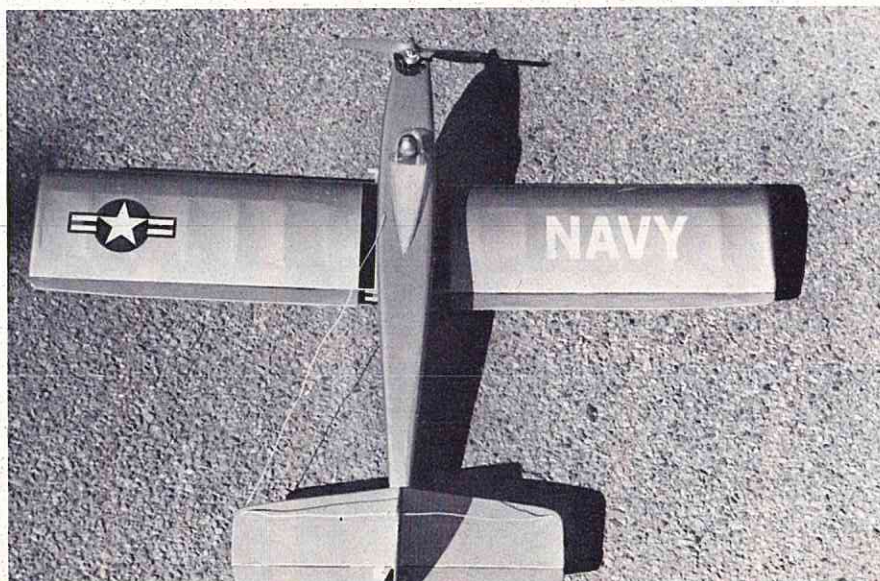
own particular ideas concerning the smaller model. A semi-symmetrical airfoil section was used with 0-0 settings. The only drawback to our prototype was a slipping throttle ring on the Cox .049. The model, itself, is quite rapid and performs most maneuvers with ease. Its roll rate is extremely fast due to the amount of area used on the strip ailerons and, in fact, handles very much like its larger counterparts. In the air it appears to be much faster than it actually is due to its relatively small size. If you are intrigued by the vest-pocket sized aircraft, this model can be built very quickly and with a minimum of expense, and will be a show stopper at your local field due to its performance capabilities.

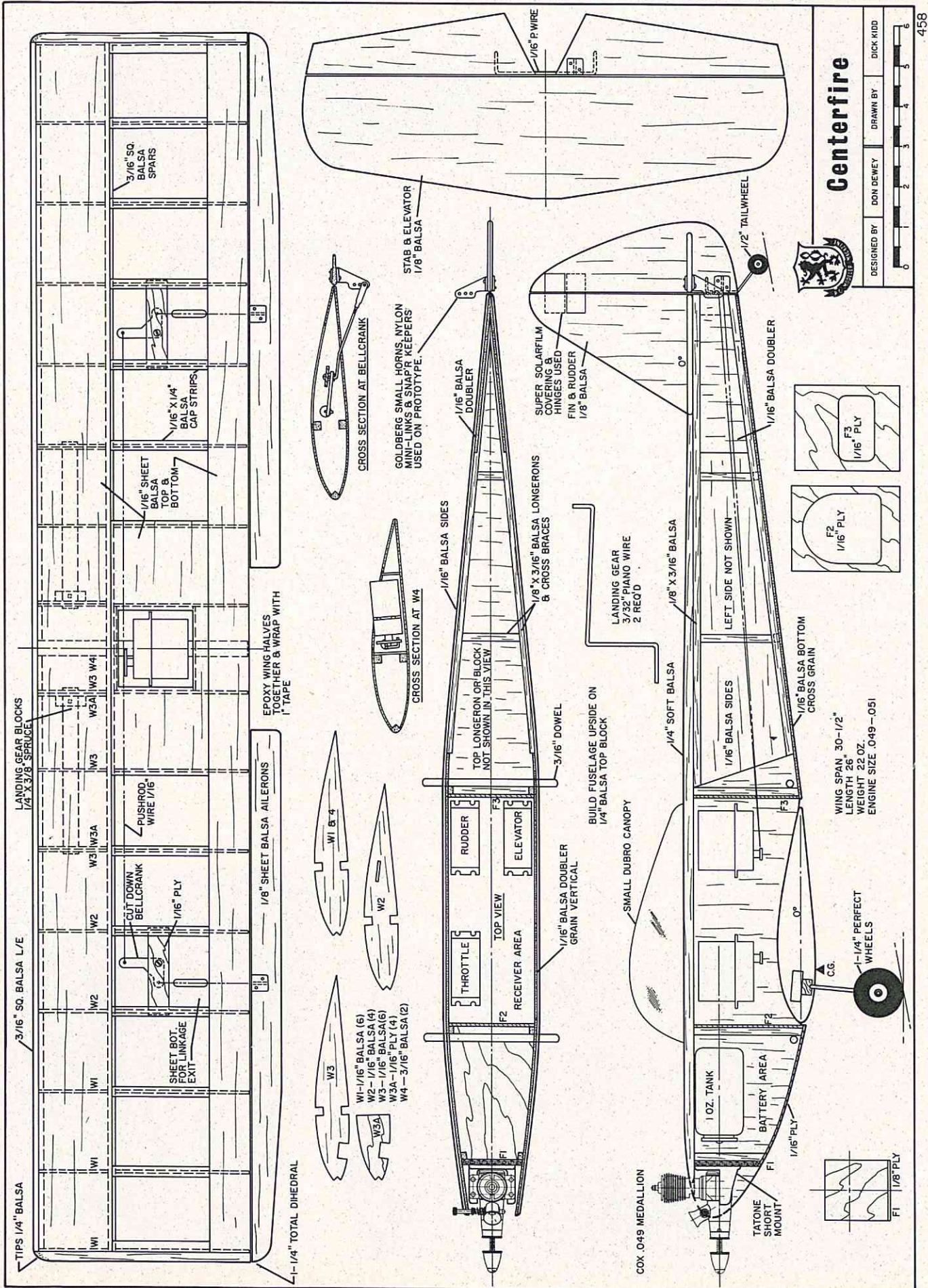
Detailed construction notes are simply not necessary in this model and we definitely do not recommend it to the beginner but only to the experienced flyer. We would definitely suggest using a Cox T.D. .051 with, or without, throttle. Although the Cox Medallion will pull the Centerfire through the air at a rather quick pace, vertical maneuvers did suffer from the loss of the slight margin of power the T.D. .049 or .051 can provide. An added advantage to the small lightweight model is its ability to withstand rough treatment—it is very much like throwing a feather against a brick wall—the feather sustains little or no damage due to its own light weight.

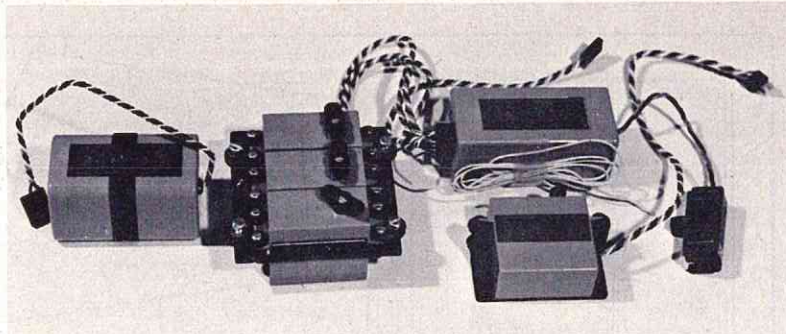
The fuselage sides are constructed of 1/16" balsa with 1/16" vertical grain doublers from the nose to the trailing edge of the wing. The firewall is 1/8" ply and the two bulkheads are 1/16" plywood. The top block is a sheet of soft 1/4" balsa while the bottom planking is crossed grained 1/16" balsa sheet. 1/16" plywood is used to sheet the bottom of the fuselage forward of the wing. Tail surfaces are constructed from 1/8" soft sheet. A Tatone short mount for

(continued on page 77)

The Centerfire is covered with silver Super MonoKote and finished off with Finishing Touch Decals to keep weight to a minimum.







Kraft Series 71 6-channel single stick. Frequency switching, fast charge batteries.

RCM PRODUCT REPORT

KRAFT SYSTEMS SERIES SEVENTY-ONE

From a small, part-time business that began in October 1962, Phil Kraft has piloted the present Kraft Systems, Inc. into the enviable position of being the largest manufacturer of proportional radio control equipment in the world. With a roster of employees that reads like a "Who's Who" in R/C, the Kraft team is comprised of active RC'ers who are dedicated to the product they help produce — a consumer line that is keynoted by proven performance and backed by an almost unparalleled dedication to customer service.

The Kraft Series 71 line of proportional radio control equipment features many new innova-

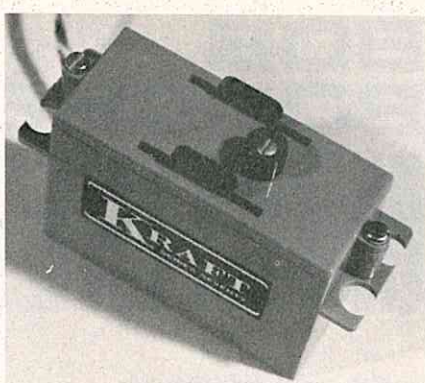
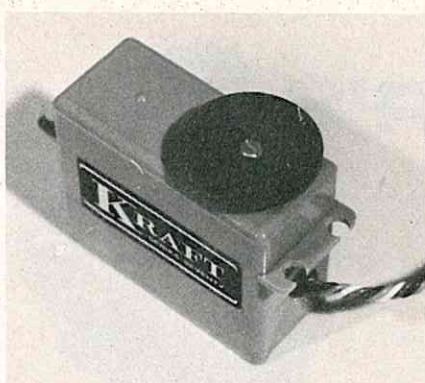
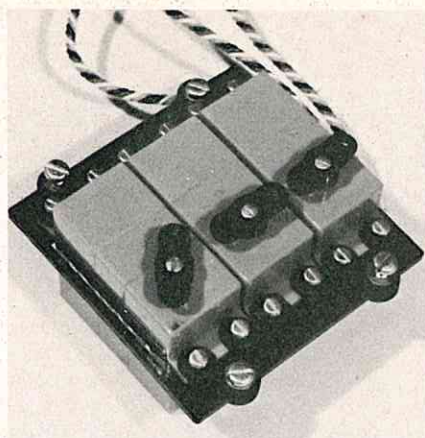
tions and could truly be called the most versatile line of R/C equipment available to the sport and competition flyer alike. R/C Modeler Magazine purchased a Kraft KP-2B two channel and two Series 71 six channel single stick systems for this test report. What is immediately apparent is the three new features that Kraft Systems has incorporated for their 1971 line.

The first is the remote electronic frequency switching which permits either of two adjacent frequency channels to be selected without the necessity of removing the receiver from the installation in order to change crystals. This is optionally avail-

able with all systems. On the two stick systems the transmitter dual frequency switch is located on the top left of the transmitter and protected by a switch guard to prevent accidental operation of that switch. On the single stick version such as the ones purchased by RCM for its tests and evaluation, the dual frequency switch is located in a recess in the bottom of the transmitter case. In the airborne portion of the system a separate on-off type switch, identical to the battery switch, allows the frequency to be switched from one to the other. We highly recommend that this airborne dual frequency switch be mounted

BELOW: Base of Kraft Series Seventy-One single stick transmitter showing transmitter frequency switch. **RIGHT:** Side of transmitter with throttle lever at top, followed by flight training actuating switch. Toggle switch is two-position auxiliary channel for retract gear, etc. Additional auxiliary underneath.





A variety of servo trays and numerous servo configurations add up to a "custom" system for the consumer.

inside the aircraft rather than in the side of the model so that the possibility of accidentally operating this switch would be reduced to a minimum.

The second new feature is a versatile dual output transformer isolated charger which charges the transmitter and receiver packs simultaneously or independently. It is designed for the new fast charge batteries and charge rates are easily changed to suit a variety of battery pack requirements simply by changing the pilot light inside. This is the first truly safe charger available for charging R/C systems and has an added advantage for overseas consumers in that it operates on either 110 volt or 220 volt AC current. The Kraft fast charge batteries were obtained for one of our systems and enables the entire proportional system to be charged in three hours rather than an overnight charge as has

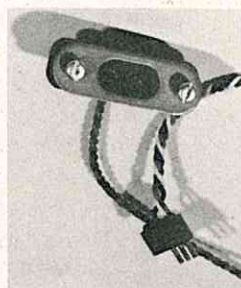
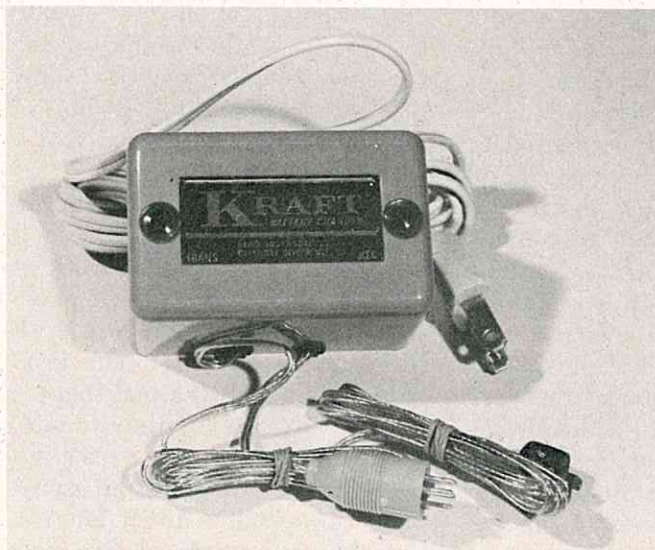
been standard during the past few years. Leaving the fast charge batteries on the transformer charger for a longer period will not injure the nickel cadmium cells, however. The use of fast charge batteries is an innovation that is extremely desirable and convenient for the contest and sport flyer alike.

Another innovation for 1971 is an auxiliary switch on all six channel Kraft systems which facilitates two position control operation such as for operating retractable landing gears, etc., where a two position operation would be more desirable than the normal auxiliary trim-type lever.

Also new to the Kraft line is the KP-2B two channel system, which is identical in quality and performance to the other Series 71 systems but is priced complete at \$99.95.—a major breakthrough in the pricing structure of digital proportional systems.

Designed for a multitude of sport flying uses, the transmitter incorporates two sticks and a dry nine volt battery while the airborne package consists of a unit that is 2-31/32" long, 1-21/32" wide, and 1-15/16" high. This unit contains the two servos and the receiver in a single rectangular unit that is mounted in the same fashion as a servo. A Kraft battery case and switch is plugged into this airborne unit, the batteries consisting of four alkaline energizers which will give an estimated life of approximately ten hours. The total airborne weight of the system is 8 3/4 ounces. This is an ideal unit for the new Half-A-Pylon Racing Event, or for use in gliders. With regard to the latter, the dry battery operation is actually preferable to the rechargeable nickel cadmium cells since glider flyers often find themselves with

(continued on page 80)



FAR LEFT: New Kraft isolated transformer charger is a variable rate unit designed to charge both transmitter and airborne pack together or separately. **BELOW, LEFT:** External charging plug and coupled aileron-rudder harness are among accessories that add to the versatility and convenience of Seventy One system.



BOB BOUCHER'S MONTEREY



by Bob and Ronald Boucher

I INTRODUCTION

The design of the Monterey started out in the Fall of 1969, when Bob built a set of 100" span 1/32" plywood wings for his Malibu. This super Malibu included ailerons which were later removed since they were rather ineffective. Although the sheet plywood wing proved much too heavy for general flying, the glide ratio was great and many times he had the ship climbing during consecutive loops at Hughes Hill in Culver City, California.

Variations of this design using all balsa sheet construction, ala Malibu, were built and successfully flown in various contests in Southern California. With the advent of the AMA provisional rules, and the very successful LSF Contest in August 1970, it was proven that a 100" span aircraft could compete with the monsters in thermal contest. The successful 76" Malibu's and Peregrine's had already shown that smaller models could be extremely successful in pylon racing. Further design refinements were made to maximize the ship's performance in thermal Class A events.

In all, about 8 variations of the Monterey were built by members of the Soaring Associates AMA Club at Culver City, California. Those contributing to the design include Tom Mead, Eddie Phillips and Dan Horwood, as well as the authors.

The general specifications were:

1. Total wing and stabilizer area — less than 750 sq. in.
2. Wing span — 100", two piece

wing (to fit in small automobiles).

3. Fuselage length — no more than 44" for same reason.
4. Weight — to be minimized, and a goal of 32" looked reasonable.
5. Two channel radio gear.
6. A minimum sink speed of 1 ft./sec. to achieve a 3 min. still air time.
7. A L/D as close to the "Cirrus" as possible.
8. All balsa sheet — easy construction at modest cost.

In summation, we wanted a competitive model under LSF and AMA Class A rules that was easy to build, easy to fly, and would fit in a Porsche 912!

II WING DESIGN

The Monterey wing is constructed with a tapered D spar supporting bending loads for most of the span and a transition to a fully sheeted wing at the center section to take out launch and landing axial loads. The transition in the center sheet was designed to keep skin stress at a maximum of 60% of the bulking limit at a wing loading of 17 pounds (1/4" dia. Hi-start max. tension). The method of fuselage attachment is by a single 0.190 dia. steel rod at 25% chord with a 3/32" dia. aft pin to provide incidence alignment. Bending stress in the steel pin is 31,000 RSI at the 17 lb. load: A mild steel was chosen for the pin to prevent wing damage on hard tows. The pin will yield and pick up a permanent set before wing fracture occurs. If this occurs, it can be easily removed from the aircraft and straightened in a vice

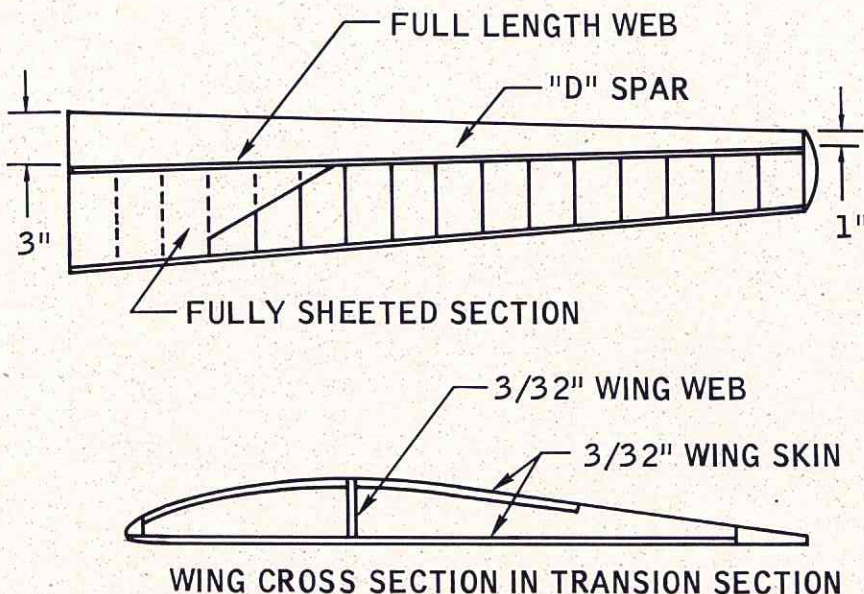
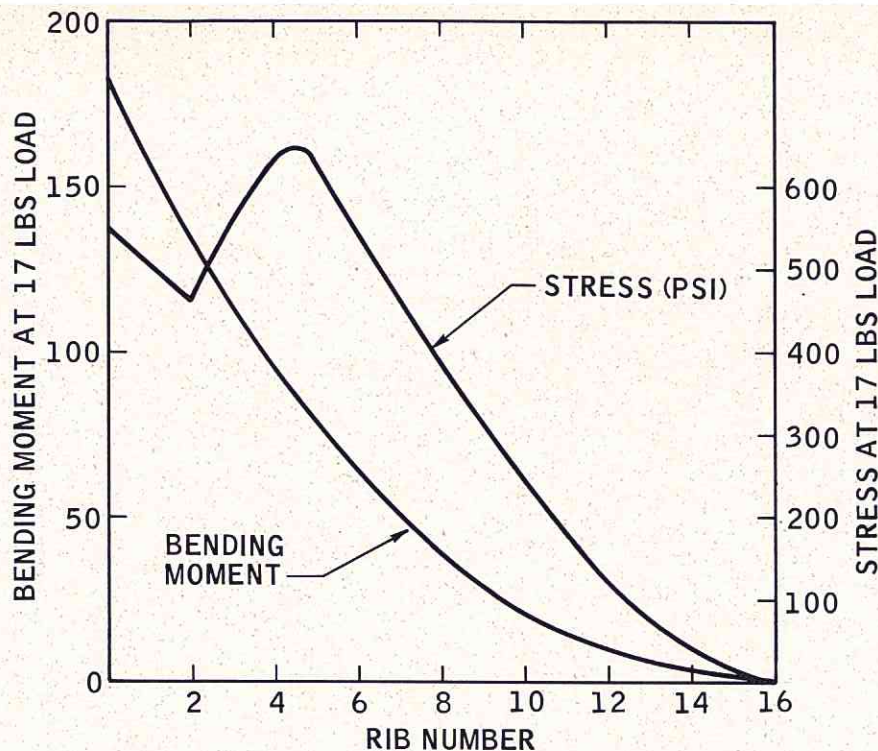
to re-establish the proper dihedral. Maximum stress in the balsa skin occurs at Rib #5 reaching a peak of 650 psi at the 17 lb. load level. Figure stress — show the stress along the wing and the bending moment which produces it.

Wing Profile

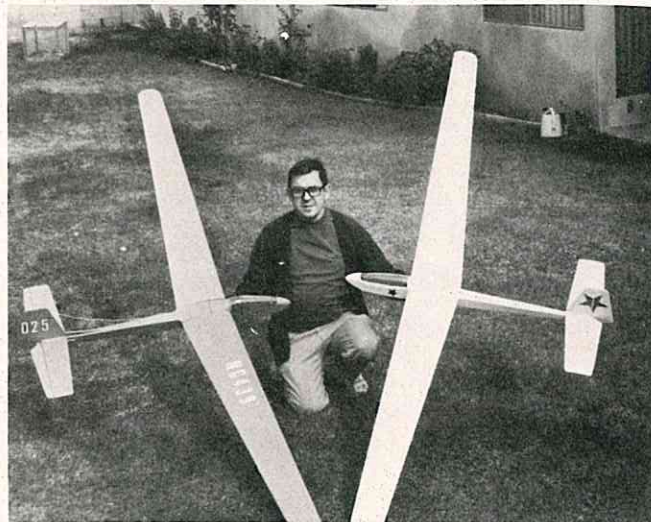
The Monterey wing was designed to meet AMA Class A R/C Glider area requirements of 750 sq. " and to use 4 foot plug-in wing panels, resulting in a total span of 100 ". This span permits building each wing panel without splicing spars or sheet. This length wing is near the maximum that can be transported in the trunk of many compact cars. A total area of 725 sq." was chosen to leave a margin for measurement error at contest check-in and, with a 16% stabilizer area, the wing comes out at 625 sq. in. and 16:1 aspect ratio. A 50% tapered platform was chosen to improve aerodynamic efficiency and strength. This taper permits the wing to operate at a Reynolds number of 47,000 at the tip to the 98,000 at the root, well above the critical value of 40,000 where the L/D ratio of most airfoils degrade rapidly.

Airfoil Selection

The airfoil used in the Monterey was selected on the basis of providing low sink speed while in thermal flight and the good penetration required for LSF speed/distance events. The Reynolds number in thermal flight is 69,000 at the minimum sink speed of 14 mph (CL = 0.9) and 147,000 at a penetration speed of 30 mph (CL = .196). The airfoil choices considered and their



Roland Boucher with two of the Monterey prototypes.



performance are shown in Table 1.

TABLE 1

Section	L/D	Thermal	Penetration 30mph	
		h fps	L/D	h fps
6412	20.3	0.97	6.2	7.1
4409	23.8	0.93	8.8	5.0
E387	20.5	0.96	10.7	4.1

While any of these airfoils will give good thermal characteristics the E387 is significantly better than the others in penetration capability. The Eppler 387 was chosen for the Monterey wing section. Its performance as a function of flight speed is shown in Figure 2.

III CONSTRUCTION

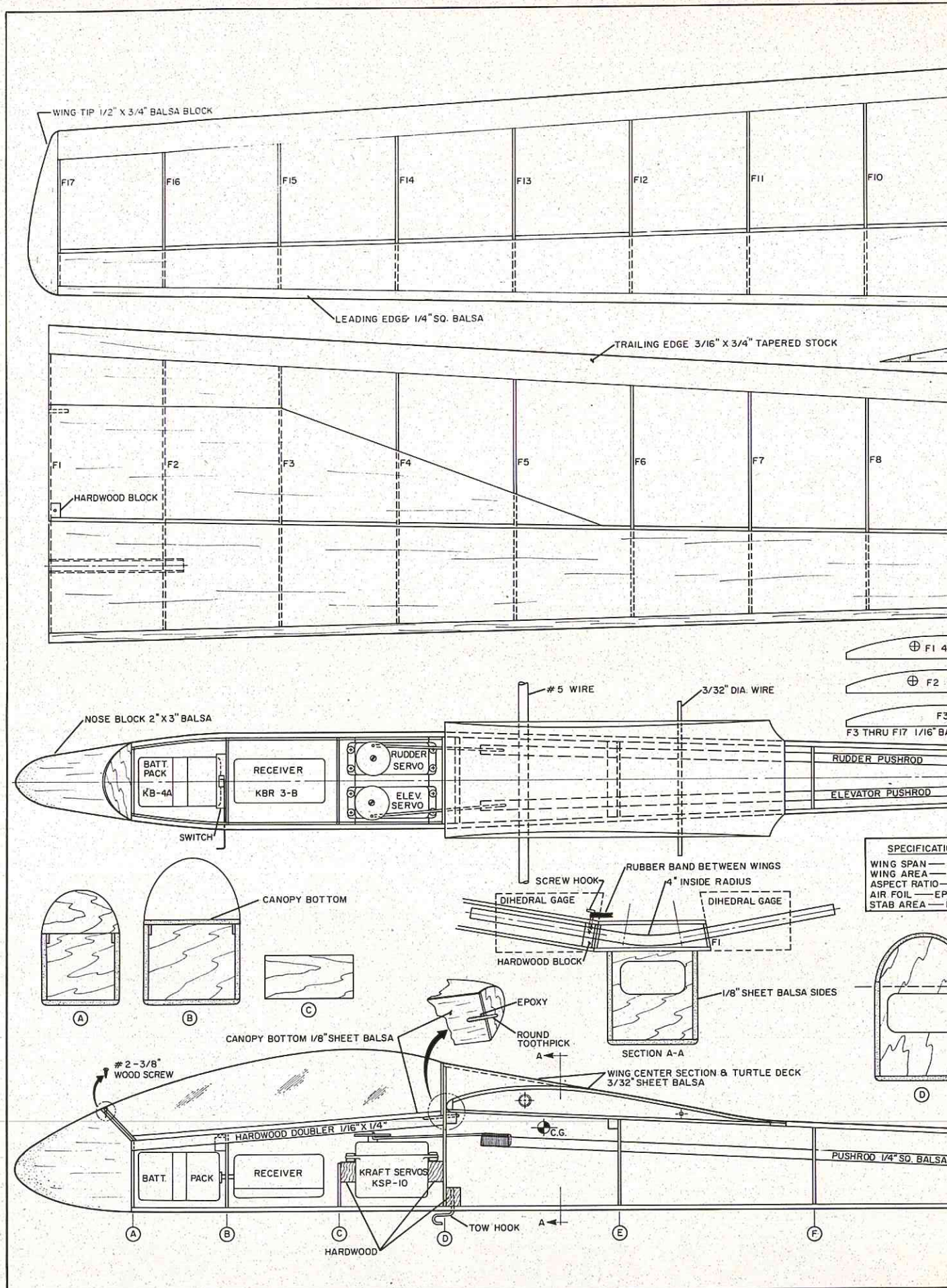
Step 1: Tape plan to building board with masking tape and cover with one layer of wax paper. Waxed paper is used to prevent gluing model to the plan. Lay all balsa wood parts on the plan in appropriate locations.

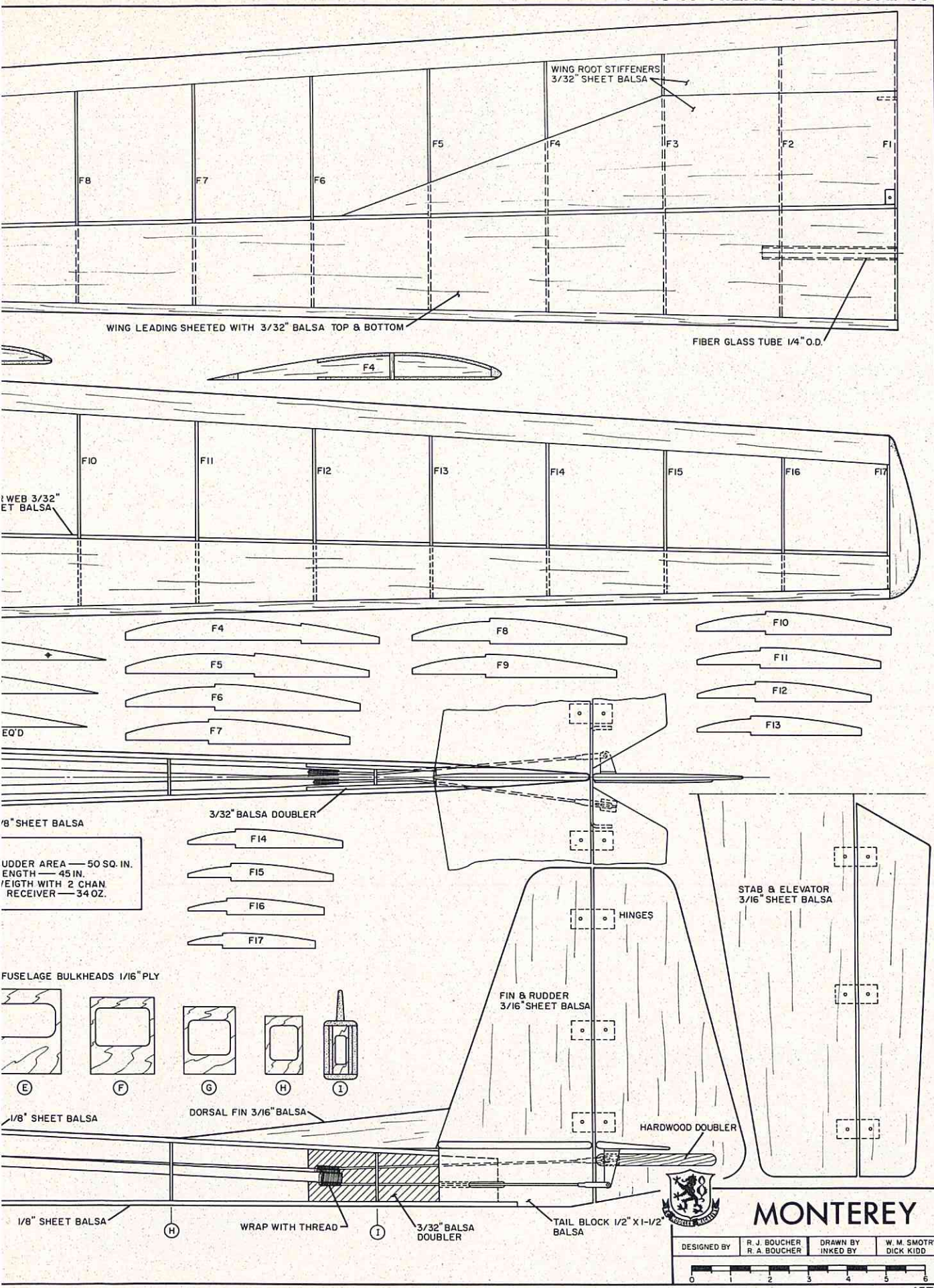
Step 2: Construction of the wing frame. Pin the 3/32" balsa wood sheet which will form the bottom wing skin to the plan directly over the wing outline. Glue the 1/4" square leading edge spar down on top of the sheet. Use liberal amounts of glue. Some glue will run out of the

(continued on page 56)

Bob and Roland Boucher prepare to launch the Monterey during an invitational RCM soaring session.



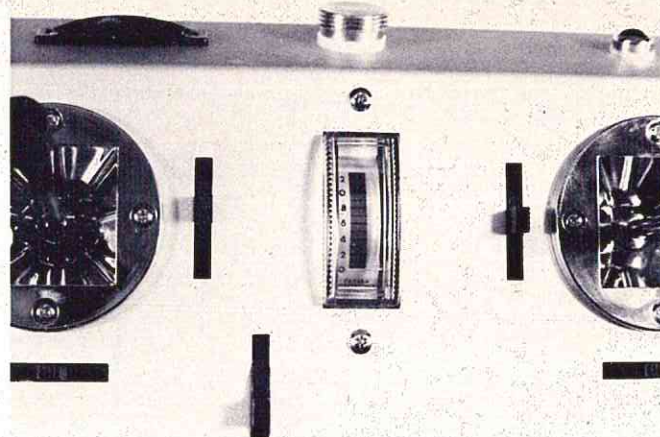




UNDER AREA — 50 SQ. IN.
LENGTH — 45 IN.
WEIGHT WITH 2 CHANNEL
RECEIVER — 34 OZ.

MONTEREY

DESIGNED BY R. J. BOUCHER	DRAWN BY R. A. BOUCHER	INKED BY W. M. SMOTRY	DICK KIDD
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The F-710 features a true RF indicator, improved stick action.

RCM PRODUCT REPORT

MRC F-710 DIGITAL PROPORTIONAL SYSTEM

Several months ago, R/C Modeler Magazine, after concluding many months of testing the original MRC F-700 Digital Proportional System from Model Rectifier Corporation, 2500 Woodbridge Avenue, Edison, New Jersey 08817, concluded that it equaled or surpassed the manufacturer's specifications in each and every respect and we rated it as one of the finest proportional systems currently available. However, we did recommend a few minor changes that would improve the overall handling and performance of the system. MRC's latest system, the new F-710, incorporates all of the changes that we had suggested plus some technical and operational design advances that

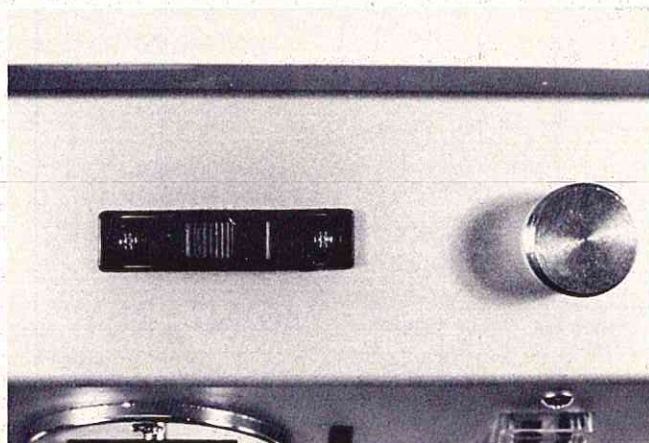
go far in improving system performance, flexibility and ease of operation.

Perhaps the most spectacular of these changes is the new interchangeable crystal feature. I don't know about you, but it seems that no matter what frequency I select for a new system, within two weeks, everyone else at the field has also selected it. What is more frustrating than to spend Sunday afternoon waiting for your turn up when you can only fly one plane at a time? MRC's new F-710 eliminates the problem. Plug-in crystals are used to provide a fast at-the-field frequency change capability that can be accomplished by even the most ham handed in less than two minutes. If your system is

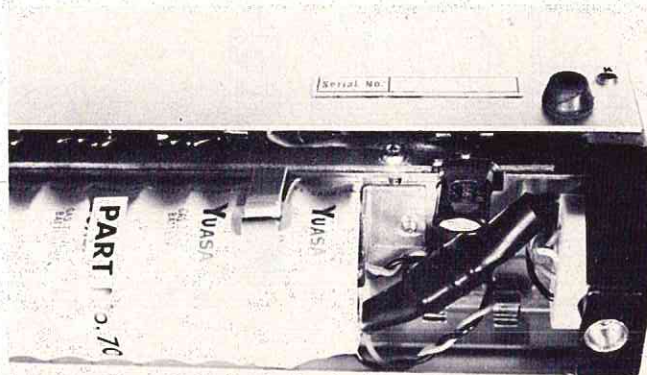
on 27 mHz, you can select any of the five RC channels by simply plugging in a new set of transmitter and receiver crystals. On 72 mHz, you can select from any of the lower three frequencies. Specially designed matched pairs of crystals, one for the transmitter and one for the receiver, are available from MRC for \$9.95 per pair including an appropriate frequency flag.

Speaking of 72 mHz, you people who must fly on the crowded East and West Coasts will be happy to hear that the new F-710 system is now available on all five 72 mHz frequencies and, as mentioned before, can be changed from frequency to frequency on the lower three channels by just substituting dif-

Switch guard on transmitter incorporated as a result of prior RCM review.

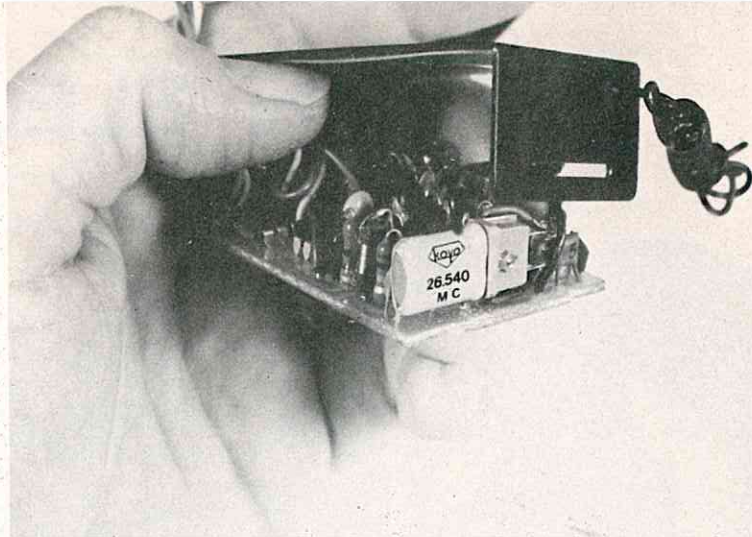


Close-up of plug-in crystal in base of transmitter.





Small size of F-710 receiver is evident in this photo.



Receiver case removed to illustrate plug-in crystal feature.

ferent crystals.

MRC tells us that a number of not-so-apparent technical design changes have been incorporated in these new systems to increase reliability and improve performance. The entire RF amplifier section of the transmitter has been completely redesigned to increase circuit efficiency which results in more power output at less battery drain.

Integrated circuit modules are now used for the receiver decoder, reducing size and weight while eliminating a large number of individual components and solder joints for increased reliability. Another new innovation is in the construction of the system itself. All printed circuit boards are now wave-soldered for consistent and predictable solder joints. Solder flux is vapor-solvent removed for long term

corrosion resistance.

One of the original MRC F-700 features that we had mentioned that, in our opinion, required changing, was the stick action. The new F-710 sticks have been redesigned to meet this criteria; are extremely smooth and are designed to complement the uniquely designed transmitter case. While on the subject of the transmitter, the front panel meter is now a true indicator of RF output. Another one of our recommendations was that a switch guard on the on-off switch be incorporated to preclude the accidental operation of the switch. This is now standard equipment on the F-710 system.

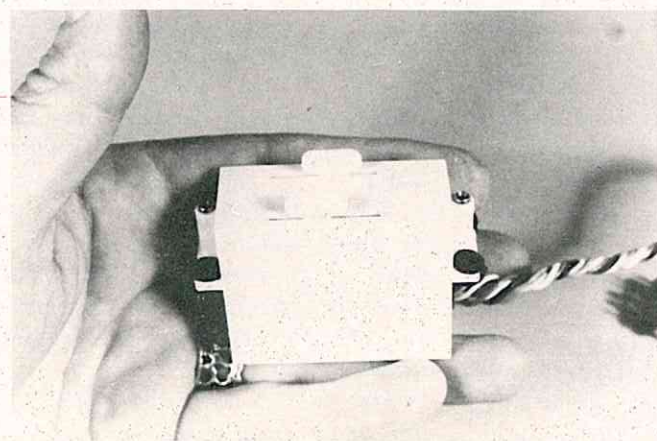
The servos utilized in the new F-710 system are of the same linear output rectangular configuration as the original F-700 units and fall in the mid-range

insofar as size is concerned. However, the servo is now housed in a polycarbonate case for improved shock resistance. A new nine-transistor amplifier with an additional stage of transistor amplification has been added and greatly reduces neutral "dead band" while improving overall resolution. A new and improved motor is also incorporated in these servos and utilizes a double brush design for increased power and reliability. Servo trays are now supplied as standard equipment with each F-710 system at no extra charge.

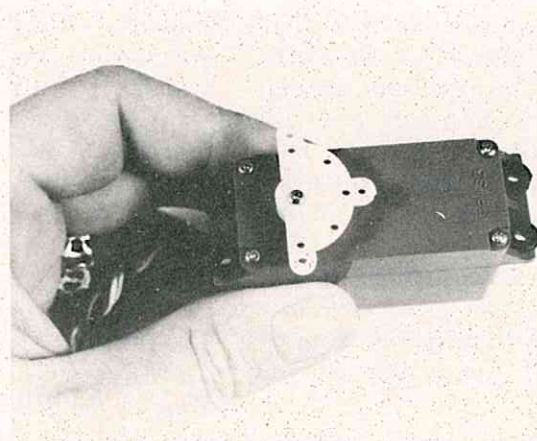
In addition to the standard F-710 servo, an optional high output servo has been added to the line. This servo is designed for use in cars and boats or large planes where power rather than size is the most important

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Standard linear output Model No. 2 servo provides ample muscle for any aircraft.

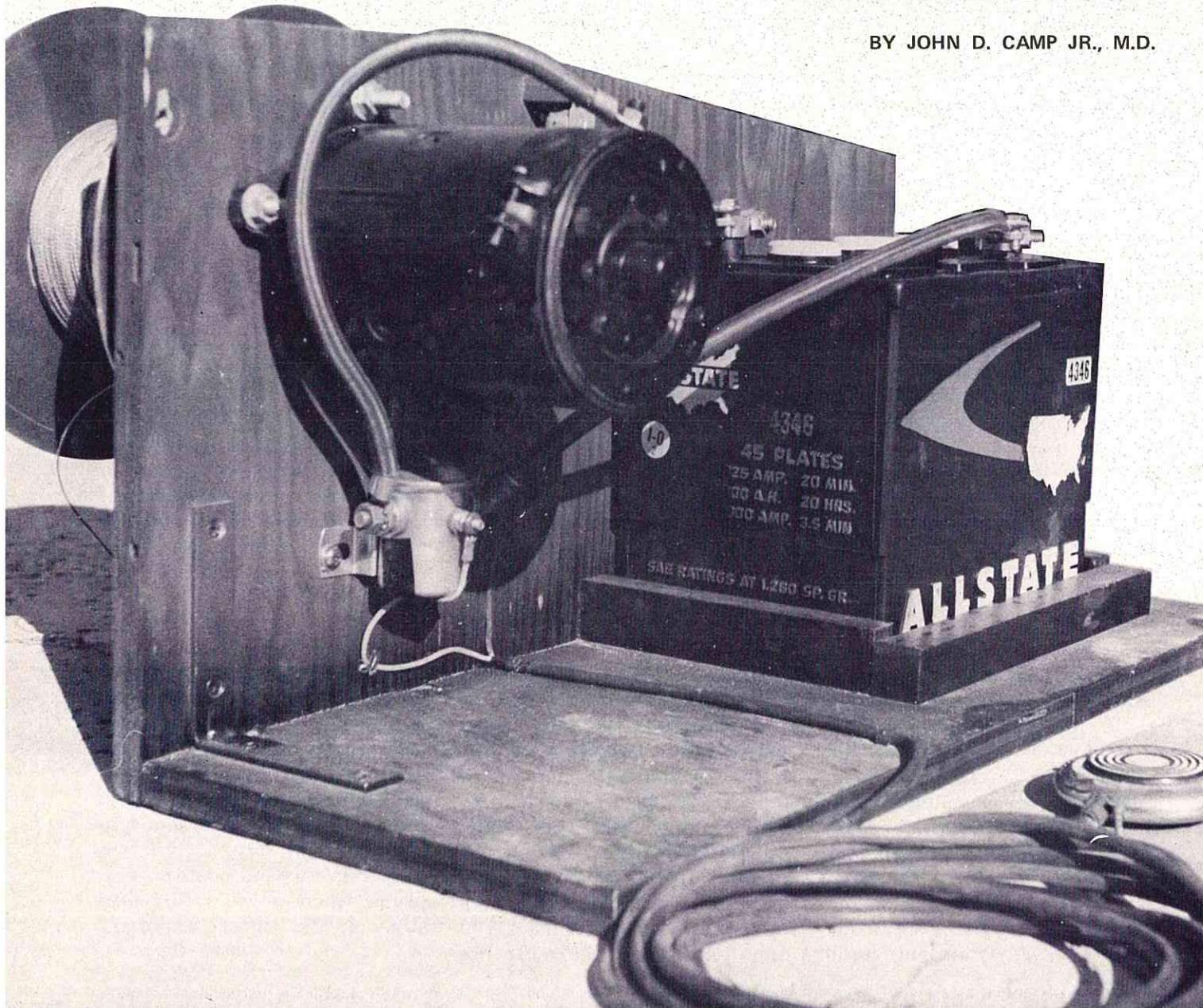


Larger Model No. 3 servo weighs .3 oz. more, designed for cars and boats.



AN ELECTRIC WINCH FOR GLIDERS

BY JOHN D. CAMP JR., M.D.



Soaring gliders require altitude before the search for the elusive thermal. This can be accomplished through power pods, hi-start, winch tow, or even hand tow. The winch tow is the nicest of these and is limited in line length only by the available field size. The electric winch presented here is not new, the ideas have all been stolen primarily from the North and South Bay Soaring Societies.

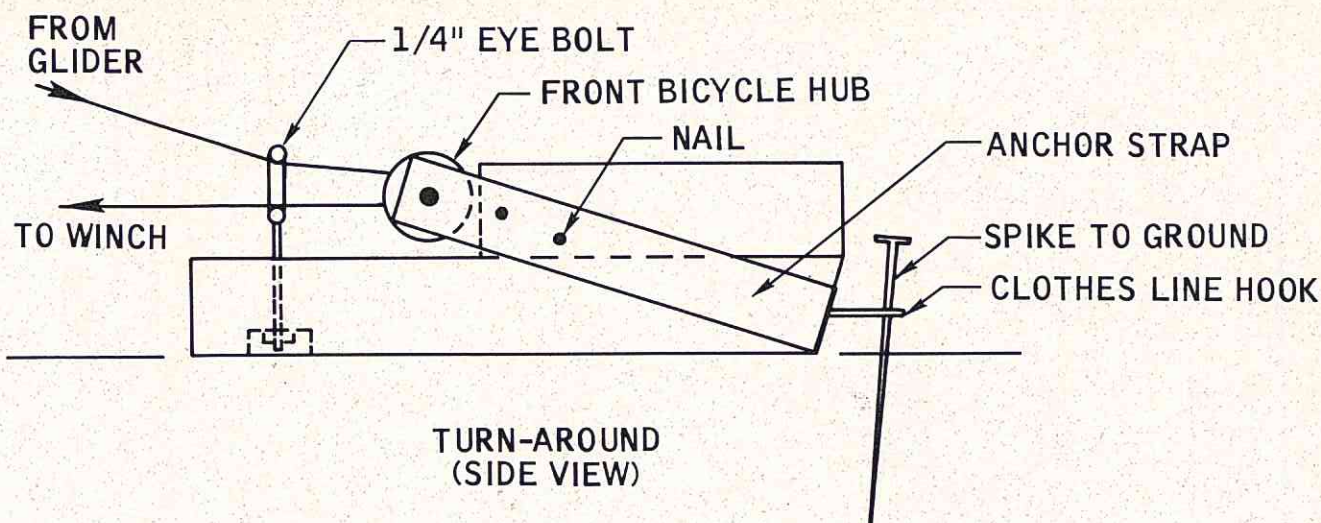
An electric winch does not

have the drawbacks of size and weight, or clutches, of gasoline winches. A gas winch has more power and can loft the big (10 feet) birds, however, most of us are soaring with gliders 10 feet or less in span, easily handled by the electric winch. If a Ka-6 or "King Kong" is your thing, go gasoline; a construction article for such was recently published in the model aircraft literature. Hi-start launches are great and will get you to a good height

until the rubber fatigues. On a hi-start you cannot cut the power if the glider gets in trouble, and a fouled line at release point will drag the glider down.

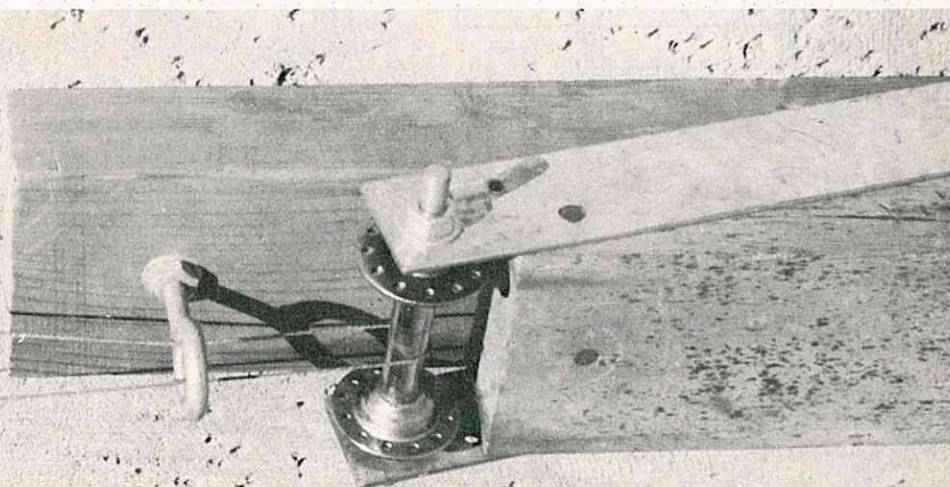
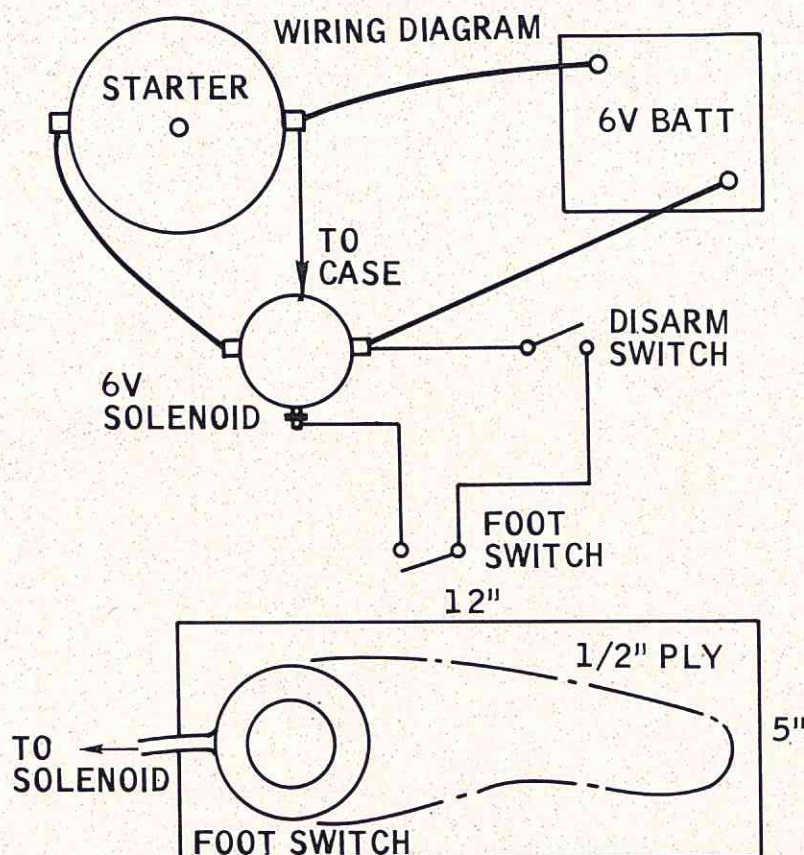
You will find this winch easy to build and requiring only the care of battery charging. The parts list should get you started and the pictures help where the drawings fail.

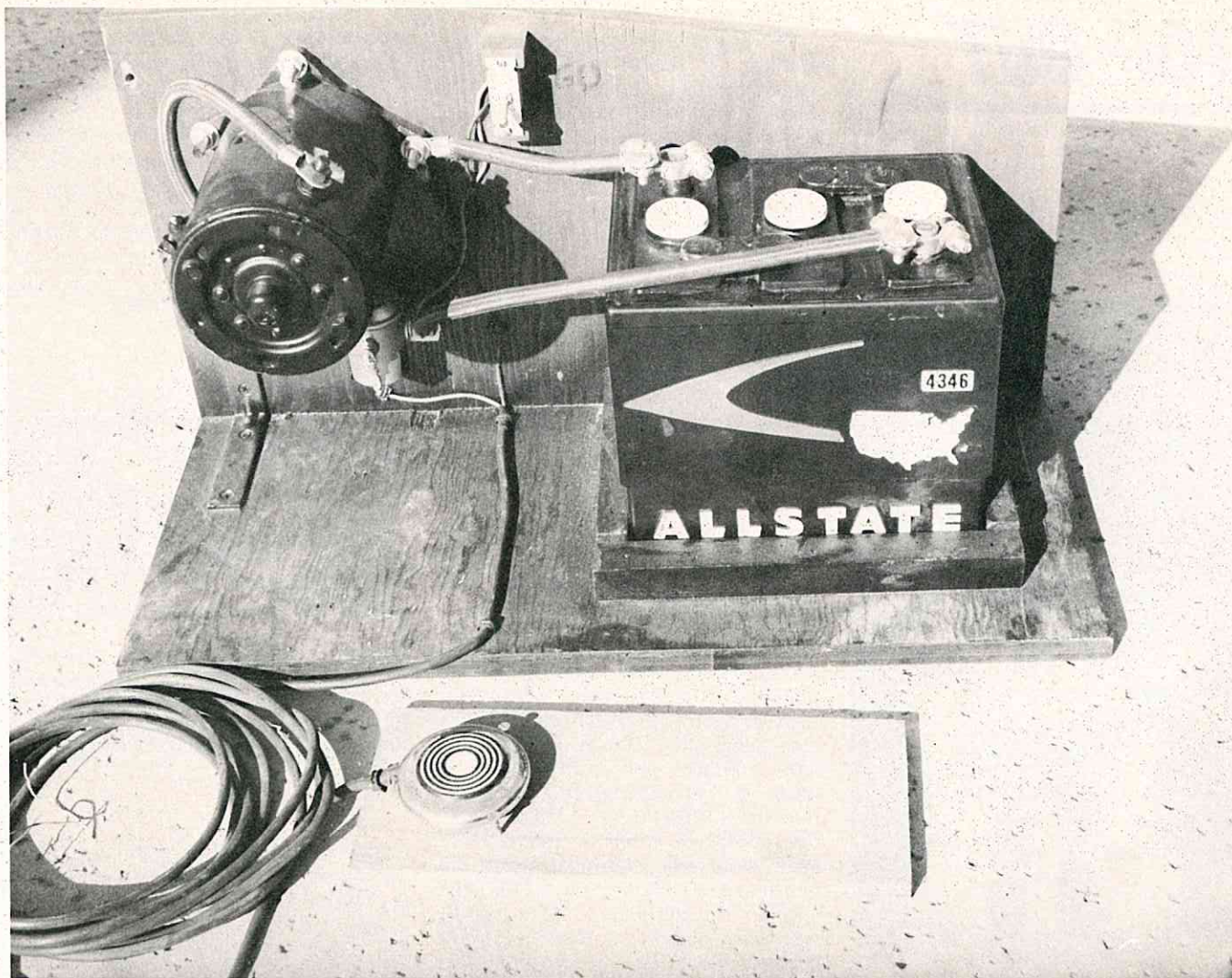
The starter motor is a rebuilt unit from an auto supply store, I



think it is basically a Ford. The long shaft is necessary and the hole in the end fits a taper pin to drive the winch drum. Get a 12 volt starter motor although it will be driven by only a 6 volt battery. The starter, solenoid and battery can also be obtained from a auto junk yard. Be sure to use battery cable or comparable stranded cable from the battery through the solenoid to the starter, since this is a high ampere current. The solenoid, foot switch, and disarm switch can all be wired with household extension cord. The disarm switch is very comforting as untimely energizing of the foot switch can be troublesome.

The drum was the hardest to build as I could not find a suitable surplus one. The core is cut from a 2" (approx.) wooden kitchen rolling pin. The sides are 1/16" sheet aluminum screwed and epoxied to the core. The





enables one man to run the whole rig. The heart of the turn-around is the hub of a front bicycle wheel complete with axle. I used a metal U-strap to hold the hub to the wood 2 x 4's. The strap is normally used in construction to secure 2 x 4's or 4 x 4's. The eyebolt keeps the lines centered to the hub, so be sure to fill in the circle of the eyebolt with solder to make it smooth. Run both lines through the eyebolt. Use a solid metal rod to stake the turn-around to the ground.

Various cords have been used for launch line. I found some surplus nylon cord of unknown strength and minimum stretch. Nylon cord used for lacing wiring harness is good, if you can get it. Don't use too heavy a line as the plane must lift the cord weight.

I prefer the ROG launch, and a length of carpet will protect

the planes underbelly. Line up the winch with the turn-around up wind to launch into the wind. The glider can be launched from beside the winch. Take the slack out of the line, hold the wing level by the tip, stomp on the foot switch, and the glider will move out smoothly and into a climb. The climb angle is then adjusted by tow-hook position and/or the elevator. Abrupt up-elevator at takeoff can result in too steep a climb where upon the tow-ring pops off resulting in a messy incomplete loop. Winch speed can be slowed by pulsing the foot switch off and on. This also takes up less tow line thus enabling higher tows. A few launches and you will have the hang of the launching technique and the line release point. A tap of down-elevator may help here to fly off the line.

Good luck with your winch.

PARTS LIST

- 12 Volt auto starter (Long Shaft)
- 6 Volt auto starter solenoid
- 6 Volt auto battery
- Battery cable with clamps
- Footswitch
- Disarm switch (hi-amp tolerance)
- Wood rolling pin (2" dia.)
- 1/16" aluminum sheet (drum sides)
- 3/4" plywood (frame)
- 4" angle iron
- Front bicycle wheel hub (Schwinn)
- Metal anchor strap (for 4x4" or 2x4")
- 2x4" wood for turn-around
- 1/4" dia. eyebolt (turn-around) fill in loop
- Taper pin (drum to starter shaft)
- Carriage bolts 1/4-20 for starter mount
- Clothesline hook 1/4" dia. (screw into turn-around for anchor)

□

TOP OUT

Jerry Kleinburg

*De nobis fabula narratur . . .
(of ourselves this
story is told . . .)*



Doesn't everyone? Walt "Country Gentleman" Mitchell shows latest wedding garb for the RC'er who has everything... Except "churlish" remarks, Walt advises. Question: Can a wedding ruin a good weekend for flying?

The MAIL BAGGE

Lately the mail bag has overflowed with gems and other sparkling missives telling of the charms and fascination of RC. To the extent that time and space allows, here is a veritable smorgasbord of RC goings-on across these United States....

Atlanta, Ga. (In response to a query for added details of his RC creations, the following compendium was gleaned from Walt Mitchell who will be remembered for his "Southern Gentleman" detailed in the February 1970 RCM. For Walt's many fans, this will be a welcomed encore of his engaging commentary . . .)

Dear Jerry,

You asked for a photo of me — frankly, I don't know you well enough! Besides, how do I know how many other guys' pictures you carry around in your wallet? But here's a description: Picture... a daring Bulldog Drummond, living ever on the thin edge of danger. A man whose hobbies include auto racing, bull fighting, sky-diving and... What? Model Airplanes?

Yes, that's right. I quickly tire of the international jet set, of the idle chatter of Raquel Welch and other hangers-on. Generally, I contrive to spend most of my waking hours ensconced in my workshop, whistling difficult Bach fugues and modeling heavily... (As for the picture) while it was taken 12 years ago at my wedding, it's really the only suitable one I have. I haven't changed much, except lately I have affected a pencil-thin moustache and a monocle. Sometimes I carry a swagger stick, which looks real keen...

You'll note that I had one of my planes at the wedding. You won't believe it, but this really caused a flap. One lady said, "Did you ever...?" and another one said, "Well, I never..." and there were all kinds of remarks whose kindly intent carried the curdle of insult. I managed to stand aloof from the furor, but it did bug me. It's not like I STARTED the engine or anything... there wasn't even any gas in it. Nicads weren't charged either. You would think that after I had requested an RC motif in the alter flowers and had been REFUSED, they could have given a LITTLE. After all, when you get married, it pretty well shoots that weekend for flying... but they don't ever think of THAT!

Went to Niagra Falls on my honeymoon but was unable to get in ANY flying because of the terrain and because my wife kept bothering me. Whew! However, I did get a neat idea for a radio-controlled barrel to send over the falls. I'll send it in to TOP OUT when it's finished...

(As for my biplane), "Checkers" is modeled after Sammy Mason's aerobatic PT-17 which was famous at air shows throughout the late 1940's. Sammy bought the Stearman from Tex Rankin's flight refresher school, replaced the engine with a 450 hp Wasp, added ailerons in the top wing and a JATO bottle to better suit his madcap purposes. The model reproduced "Checkers" faithfully enough to win 1st in Scale in the 5th Annual Atlanta Open which drew competitors from as far away as Texas. It weighs 10 lbs., is powered by a ST 71 and controlled by a Champion radio manufactured by Neal Kilby here in Atlanta. I have perhaps 50 flights with

it... Construction is my own, using the outline of the Sterling kit plans with reference to an article in Sport Flying which also had pictures and drawings of "Checkers." It is covered with MonoKote and is a pretty good advertisement for the product. As a matter of fact, I managed to run it through a pylon 3 weeks before the contest, but with the aid of MonoKote and Devcon's 5-Minute Epoxy, I was able to repair extensive crash damage in time for the Atlanta meet.



"Checkers" by Walt Mitchell won Scale in 5th Annual Atlanta Open after quick repair job. ST 71 hauls 10 lb. gem. MonoKote and Devcon epoxy house Champion radio gear. Original construction using Sterling plans.

Speaking of Devcon's Epoxy, this is the greatest thing since girls! I told this to Hobby Lobby in Nashville and they threatened to stop serving me until I got myself straightened out. But it IS the greatest thing since girls. To prove my point, I promised to send Hobby Lobby this girl I know in exchange for a lifetime supply of the 5-Minute Epoxy. I have NOT HEARD FROM THEM. And this is a pretty good girl, too, with strong teeth and is a speedy worker. My question is: Who needs straightening out — me or Hobby Lobby, eh?

Best Regards,
Walt M. Mitchell, Jr.

Walt's "Southern Gentleman" continues to be popular with sport fliers; latest we heard from was Wilson Chambers of Cooper Springs, N.J., who was attracted by the simplicity of construction as well as the familiar high-wing layout reminiscent of the Bellanca-Curtis Robin tradition. MonoKote covered, Wilson's rendition is equipped with a Royal Classic radio he put together from the popular kit. Power is an Enya .60 purchased in Japan which made its way to the U.S. via Bangkok, Saigon and Alaska, before coming to rest in Wilson's "Southern

Gentleman." A member of the Burlington Co. RC Club, Wilson cut his aviation eye teeth at the Moorestown Airport in the mid-30's where his predilection for RC models of that period probably started. Wilson recalls flying an OX-5 powered Robin and logged time in others such as a Waco 10, a Buehl Pup, Stinsons, a Travel-aire biplane, E-2 Taylor Cubs, Aeronca C-2 and 3's, and others. This led to pilot's wings in WW-II and afterwards to thinking that all those flying hours would make RC a snap right off. He learned differently (Paul Sutphen tested the "Country Gentleman" on its maiden test hops...) but has now graduated to other ships including an Me. 109 and other vintage scale ships.



Wilson Chambers' "Southern Gentleman" has Enya 60, Royal Classic radio. Sedate takeoff characteristics and large wheels are just right for grass fields.

Interesting quote — From the Boeing Aircraft Co., and their Plane Talk publication comes the question, "How Near Is Perfection?" Keeping in mind the talk about radio dependability, here is a brief rundown on what's been achieved in the Saturn V program. (Keep in mind also what it all cost...)

"Just how good does a rocket have to be? The Saturn V moon rocket which provided the power to send three astronauts to the moon in the Apollo 8 mission, had 5,600,000 parts. NASA points out that if the Saturn V had a 99.9 percent reliability for a flight, there would still be 5,600 defective parts.

"The three Saturn V's that flew before the Apollo 9 mission were almost perfect, and Apollo 9 was declared afterward as flawless. The

second one did have two "anomalies" demonstrating a reliability of 99.9999+ percent.

"If the average automobile with 13,000 parts were to have this same reliability, it would have its first defective part in about 100 years. In fact, its life would be determined by rust and wear, not by mechanical failure."

BONE-HEAD Award for 1970, in our books, has to go to the announcement by the CIAM that rule making has been suspended for the next four years! (In case you're interested, the CIAM is the modeling body within the FAI...) Whatever merits such a move might have were not made clear when the announcement was made at the last meeting of the CIAM in Paris last December. The arbitrary ruling, coming right after AMA had finally adopted FAI rules completely for the top RC aerobatic competition event, appears to be bad timing — and appalling poor public relations — at its worst. In 1969, when strong elements within U.S. RC ranks urged avoiding "foreign entanglements" at the time revenge-seeking internats oriented fliers were strong-arming the RC Contest Board to vote in the FAI rules, they were pooh-poohed for their attitude. Now that we're stuck with an admitted set of pabulum maneuvers for FAI pattern, and we have a classic example of what too close an affiliation with FAI rules can mean, there's egg on the faces of those who stampeded the RC Contest Board into its reactionary move. Perhaps though, we'll now see a drift back to use of AMA maneuvers, especially so now that the "Mickey Mouse" grab bag features have been eliminated. It'll mean a possible weakening of our World Championship performances starting in 1973, but in view of the disenchantment resulting from this latest CIAM imbroglio, perhaps it would have come about anyway.

In all fairness to Sandy Pimenoff, who is the President of the CIAM and is one of Finland's

best and most dedicated modelers, it's necessary to point out that he was carrying out instructions of the main FAI body who had directed the sudden rules moratorium. This bit of international bureaucratic strong-arming was reportedly hatched in India (of all places) during a conference of FAI officials where — we assume — there was no modeling representation. All that may be concluded from this unhappy performance is that it's apparent the main body of FAI doesn't know much about modeling matters. Now that Sandy "had done his duty," we'll be watching with interest his reclamation action back to the FAI to obtain relief from this rules muzzeling. Or at least a darn good explanation why it's necessary...

ARESTI KEY — more views...

The FAI rules moratorium may have untracked the move toward adoption of the Aresti Key method for pattern contests. We've mentioned this system before which is a universally recognized method used in describing aerobatic maneuvers and in their presentation in competition. It's used in all aerobatic competition of full sized aircraft today. Mention here of the Aresti Key for RC use after it was brought to our attention by Ted White, brought the following letter from a pilot in Texas who now is using the system in his work. Here's what he had to say: Dear Jerry,

Art Brock gave me your home address so that I could write you about Aresti.

I am new to RC models, but built the others way back. I doubt I have 30 solo flights in RC and just did my first square loops today. However, I've flown a taperwing Waco in akro and air shows for a few years now so I understand aerobatics. I judged a little too.

When I started taking an interest in RC I naturally thought of akro competition. Model akro hasn't much to offer. I know I'll probably soon learn it and it will get boring. Now, under the Aresti Key system you can fly different type akro for each different model. Also, competition may be made more interesting by

being able to have mandatory and free style maneuvers in an organized way. It'll certainly make it all more interesting to watch. Also, the free style is a real challenge. It allows you to do the best maneuvers that you and the plane can do.

When I first heard of the system it seemed hard to do and I wasn't interested. Then it became mandatory for akro competition so I learned it some. Now I won't fly an aerobatic show without using it! The old list of maneuvers were too hard to read and too confining.

Anyway, my point is — if model akro went to the Aresti System completely, there would be a whole new world of akro to fly in . . . I just would like to see the world of Aerobatics advanced as much as possible. It is a real challenge.

Sincerely,
Charlie Leidal
Rebel Field, Mercedes, Texas



Charlie Leidal and his 225 hp. 1929 Waco Taperwing. "Akro" is his business, RC is added dimension. N21R was Gladys O'Donnell's NC 21M, won 1930 Long Beach-Chicago XC race.

Charlie's point about getting bored with pattern flying once the maneuvers are 'learned' has to be examined a bit in order not to generalize too broadly. Simply learning a maneuver doesn't mean it will be flown perfectly every time it's tried. Stringing together a set of perfectly done maneuvers is very difficult and its achievement — or even coming close — is hardly a boring chase . . . But a better method of presentation, meaning a clearer idea of what's to be done along with a definite snappy rhythm of doing maneuvers, can do much to avoid the doldrums many fliers reach in doing "akro." And when a method such as the Aresti system can liven the performance for those watching, it warrants adoption at the first opportunity. Equally

important is the effect of the Aresti Key on judging which will benefit by the standardization features of the system.

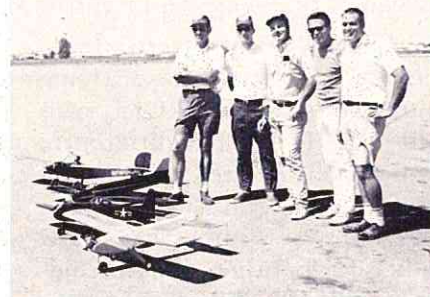
As for the Waco Taperwing Charlie mentions, it's number 151 that was built in 1929 for racing pilot Gladys O'Donnell and was originally licensed as NC 21M. It was used by Gladys to win the 1930 Womens' XC (cross-country) race from Long Beach to Chicago. With a 225 hp. engine, it still can cruise at 130 and reach 150 at the top end due to modifications which gave the ship a cleaned-up configuration that adds about 20 mph over stock ships of the same Waco line. In RC, Charlie gets a flying change-of-pace with a ST .60 powered Lancer equipped with a Heath radio. Modifications include a tail skid instead of the nose wheel and shortened ailerons instead of the full strips in order to de-sensitize the ship somewhat. Scale ships with akro capabilities are part of Charlie's future RC goals.



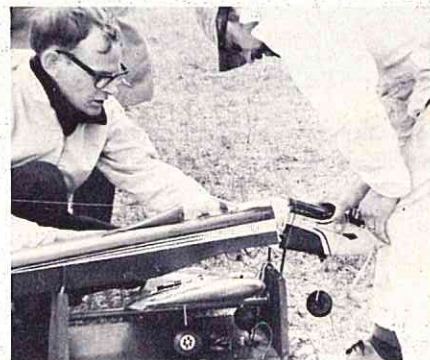
Tail-dragger Lancer is RC change-of-pace for Charlie Leidal, aerobatic pilot of Mercedes, Texas. Charlie prefers "Aresti Key" system for pattern flying in both aerial mediums.

NVRC-WEST — at least that's what former Feedback editor Jim Deckert calls the group that recently got together at Mile Square in Los Angeles. NVRC stands for the Northern Virginia RC Club and each of the group — Joe Tschirgi, Ron Clem,

Dick La Barre, Pete Rawlings and Jim Deckert — have migrated to California for a variety of reasons. All used to be key members in the NVRC and worked together to help make it the popular club it was. Now, in California they're once again able to get together to continue their RC adventures. Our good wishes to "NVRC-West."



Five former members of the N. Va. RC Club now enjoy California flying. Joe Tschirgi, Jim Deckert, Ron Clem, Dick La Barre and Pete Rawlings — NVRC West — at Mile Square get together.

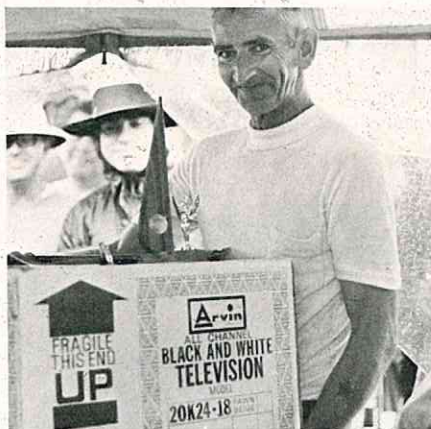


RC vignette . . . "Now, this is what I mean by enough down-thrust!" Grahame Attree positioning the nose section of Ed Bell's Kwik-Fli at Y.O.R.K.S. meet. Ship flew after quick epoxy treatment. Brent Reusch pic.

FORKS Annual. Rain didn't stop the determined pattern fliers who came to Lancaster, Ohio for the Fairfield Co. Ohio Radio Kontrol Society's 1970 annual sanctioned contest. Precision performances were turned in despite the drizzle-to-down-pour conditions, inspired no doubt by the TV sets that were to be awarded winners of the four pattern events. Bob Wallin reports that plastic bags over the

transmitters were found to be an effective means of avoiding signal loss due to rain shorting out the antenna. Bob Campbell lost one of his "Hunter" pattern ships in a sudden heavy rain because he didn't have his plastic radio shield in place. It didn't stop him from placing 2nd in DX, and the ship was later replaced from one of those excellent kits Bob puts out of the "Hunter." Miles Reed, who often used to top the rudder-only lists, took 1st honors in the Expert category while another former rudder bug, Gary Villard, did the same in the D Novice event. Here's the complete rundown of winners in the 1970 meet:

A — J. Marshall, F. Johanson, C. Wagoner
B — K. Fisher, J. Koontz, D. Penry; DN — G. Villard, W. Dunbar; DX — M. Reed, R. Campbell, A. Dupler.



Rainy scene from 1970 FORKS annual. J. Marshall (l) and K. Fisher, who won A and B respectively, tend their birds. Note plastic cover on Marshall's transmitter, a must in wet weatehr.

Jersey Doings. In the wilds of New Jersey, George Peterson of the Monmouth MAC and the Jersey Coast RC Club has initiated George Jr. into the joys and by-ways of RC after letting him



ABOVE: Bob Campbell's "Hunter" got admiring attention at FORKS meet. Ship had a Webra B/H for power, Ko muffler, Royal radio. Attractive pattern ship kitted by Bob. LEFT: Veteran rudder flier, Miles Reed took top honors in D Expert pattern in the FORKS annual contest. TV sets as 1st prizes brought inspired performance during Ohio meet.

serve an apprenticeship as his pitman for the last two seasons. A Thermic 50 glider powered by a Cox TD .020 was George Jr.'s initial venture. The Jetco kit went together easily for the new flier who used MonoKote covering for the extra strength and durability — a good idea despite the small added weight. An ACE single channel superhet receiver is used to drive an Adams actuator for rudder control of the glider. A Mule transmitter fitted with a C & S Pulsetran pulser completes the equipment picture. It's all a pretty good way for a beginner to get started in RC since it's economical and is a forgiving setup in flight where

Gary Villard hauls away top award for D Novice at FORKS meet in Lancaster, Ohio. Gary is a veteran competitor in pattern events.

newcomers require time and experience to sort out and develop the responses needed in RC flying... As for George Sr., 1970 was another good year in the trophy department. Scale competition was emphasized and George added more notches to his win string, which now totals 10 in the last two years. It might have been more except for a frequency mixup in Lakehurst that left his Stafford Piper Comanche 250 in sub-kit form. The Jersey flier is now looking for help in locating 2½" scale plans for another Piper Comanche so that a larger replacement can be made. George also goes heavily for pattern flying but of late this has been limited because George succumbed to an attractive cash offer for his slick Contest Avenger which was sold to an enthused RC'er. However, 1971



A Thermic 50 is starting point for George Peterson Jr., of Monmouth MAC. Cox TD .020 is ample power for MonoKoted glider. ACE receiver drives Adams actuator. Mule xmtr with C & S pulser gives rudder control.

(continued on page 46)

is to be another ball game for the father-and-son team and another RC fleet is expected to come from their Jackson, N.J. workshop after the snows and wet fields retreat back into the Winter from which they emerged.

with a silver and black paint job, a very credible copy resulted. The ship uses a ST .56 with a Perry carburetor and has a Logictrol radio. The ship flies very well and required no trim from its first flight. 1971 President of the San Antonio club is

Capt. Bud Wrenn who reports the club will continue its active roll in local affairs as in the past.

A Goldberg Sr. Falcon becomes a Spirit of St. Louis... Dick Valentine of the San Antonio ARCS shows Ed Messic of the Confederate AF his scale creation. Occasion was air show to dedicate new airport at Devine, Texas.



Texas. The San Antonio ARCS added another chapter to their civic service record when they helped the city of Devine dedicate a new airport. Headed by the 1970 President, Bill Morgan, club members thronged to Devine, 30 miles south of San Antonio, to stage a flying show and to otherwise help city officials and the Lions Club to make the occasion a memorable affair. The ARCS were part of an air show that included full sized planes led by Ed Messick, a member of the famous Confederate Air Force who flew his sturdy Texan T-6D trainer in an aerobatic display that brought cheers from the spectators. The outing was an opportunity for retired AF'er, Dick Valentine of the ARCS to put some flying time on his new replica of the Spirit of St. Louis. Unusual aspect of the ship is that it was evolved from a regular Sr. Falcon kit, a product Carl Goldberg has been marketing for some time now. This new idea for the kit employs the same moments of the Sr. Falcon, uses the wing with no dihedral, requires raising the wing 2" and supporting it with a cabin to give the famous silhouette of the Spirit of St. Louis. Tail surfaces were changed to the scale configuration and

ABOVE, LEFT: Two years of Scale competition netted George Peterson 10 trophies with his well detailed Stafford Piper Comanche 250. George also did well in Pattern, expects to replace his Comanche—lost to interference—with another winner. BELOW: Another scale original... Bill Hollenbach of the ARCS produced miniature of a BF 110D to 1" to 1 foot scale. Ship is powered with 2 ST (GA) 23's and weighed out at 5 lbs. 9 oz. A Kraft radio went into Bill's latest.



TAKE A LOOK AT THIS..



Joy Products Company, P.O. Box 173, Menominee, Michigan 49858, has released their twin tailed Mars, a 52" span low wing multi aircraft for .29 to .49 engines with an all up-weight of 3½ pounds less radio. Designed with the builder in mind, the precision kit includes full size drawings, one piece cast aluminum motor mount; pinned hinges; all lengths including threaded rod; completely adjustable aileron linkage; complete nose gear assembly; all control horns; self-tapping engine mounting bolts; all nuts, bolts, and washers; vacuum formed canopy and cowl; all parts pre-shaped; all critical parts are sawed, not die cut; and only the finest materials used throughout. A combination of looks, and flying performance never before in an R/C pattern ship, according to the manufacturer, the Mars is an aerodynamically clean design with functional twin tails and elliptical wing tips which makes it exceptionally stable in turbulence yet highly maneuverable. The Mars is so stable in fact that it can be flown by anyone who can fly unassisted. Priced at

\$39.95, the Mars is available direct from Joy Products Company, or from Sig Manufacturing Company.



Rand Sales Company, Box 20059, Columbus, Ohio 43220, announces their Digiace-4 Proportional Control System for 1971. Priced at \$189.00 for four channels with four servos, the Digiace-4 has an airborne weight of 13 ozs. But \$189.00 is not the whole story. Digiace is a high quality set equal to the finest world famous digital proportional systems, and the system is backed by their own factory authorized service department. The small, thin, lightweight transmitter case is designed for ease of handling. The three stage transmitter has utmost stability, clean modulation and a high RF output. The compact receiver offers maximum reliability, featuring all silicone circuitry with a double-tuned RF stage and complete AGC. Servos are smooth, responsive and powerful. These highly reliable servos are built with the highly accepted Mitsumi motor designed specifically for radio control application. Also available is the Digiace DP-4 which is the same four channel system but complete with nickel cadmium batteries and chargers. This unit is priced at \$239.00 — the combination that can't be beat — price advantage and quality workmanship and prompt expert repair service.

Ray Davis, of Model Engineering, 3655 Calumet Road,

Decatur, Georgia 30034, has produced what is, in our opinion, the finest fuel caddy we have seen or used. This is an all metal unit that looks very much like a carpenter's carry-all, and contains a ½ gallon fuel bottle, Penford Electric Starter, Electric Fuel Pump, and a 12 volt motorcycle battery. Also included is a plug-on glow plug connector with leads and dropping resistor. All of the items — the electric fuel pump, the glow plug connector, and the electric starter work from the single 12 volt battery. All that is necessary is to charge that single unit in order to have all functions in operation. The fuel box is available with or without starter and electric fuel pump. For further information, contact Model Engineering. Tested, approved and recommended by R/C Modeler Magazine.



Dremel Mfg. Company, 4915 21st. Street, Racine, Wisconsin 53401, offers a fully illustrated, eight page bound catalog describing the firm's complete line of power tools and accessories. The catalog, printed in two colors, contains detailed information, product photographs and specifications on Dremel Moto-Tools, Moto-Tool Kits, Moto-Shop and Moto-Shop Accessories, Electric Engraver, and Scroll Saw. Also included is a section on Dremel
(continued on page 46)

(continued from page 43)

Moto-Tool Attachments — items that include a Universal Stand, Router Attachment, Drill Press, and a Speed Control. In addition, there is a comprehensive layout on the complete Dremel accessory line showing 137 different items. Featured in this section are six new accessory kits, all packed in vinyl, fold up storage pouches. The Dremel Creative Power Tool Catalog is available free from Dremel Manufacturing Company direct.

Hobbypoxy Products, division of the Pettit Paint Company, 507 Main Street, Belleville, New Jersey 07109, announces that their Formula 4 Quick-Fix is now available in tubes. With a working time of four minutes, Formula 4 cures in ten minutes and is available in tubes as well as a double-pocket four packets. This is the same formula, same exceptional strength material. Easy to mix, it is non-critical when it comes to getting the right proportions of Part A and Part B. Don't worry if you don't get an exact 50/50 ratio — Quick-Fix will cure but never turn to brittle glass. Test it yourself. Mix a portion on a piece of paper and let it cure. Formula 4 will retain flexibility forever. Available in a two tube set (2 ounces net weight) for \$2.00, or in five double-pocket packets for \$1.00. Tested, Approved and Recommended by RCM.

Southern R/C Products, 527 Pecan Street, Citronelle, Alabama 36522, has produced a new product called Skyloft. This is a continuous filament spun-bonded nylon. It is light, tough, and unaffected by common solvents or finishing materials. It has been especially treated to fill completely with just a few coats of dope. Skyloft has one property that is a big advantage in covering models, and that is it is moisture sensitive. In other

words, Skyloft expands when you wet it, then contracts back to its original size as it dries out. This material doesn't shrink as we think of cotton or silk shrinking, it simply changes dimension with changes in moisture content. So, Skyloft must be applied by the wet method. Then, when it dries out, you have a nice smooth covering. This material is available in three yard packages which sell for \$2.50. It is less expensive than most of the synthetic blend covering materials, stronger than silk, and lighter than silkspan! Also available from Southern R/C Products is a material called Flex-All which is the answer for obtaining an acrylic lacquer finish without the paint cracking and flaking off. This plasticizer sells for \$1.69 for a four ounce bottle which requires only two tablespoons per pint of lacquer. RCM has extensively tested both of these products and find them to be equal to or superior to any product of its kind which we have previously tested. □

MRC F-710

(continued from page 33)

criteria. The larger Model No. 3 servo has a rotary output and weighs 2.4 ounces compared to the standard Model No. 2 servo weight of 2.1 ounces.

In all of our tests with the original MRC system, we have been unable to fault the performance of the unit under any and all conditions over a period of 18 months of testing. Quite apparently, the new F-710 offers the same reliability factor. But what is even more impressive about MRC's digital systems is the company's concentration on "human engineering." The unique transmitter is extremely attractive and designed for ease of operation. It's no accident that the center of gravity of the transmitter is right on the sticks for a natural feel and ease of control... the "peculiar" angle of the antenna is also no accident since vertical

antennas have a very definite lack of signal radiation right off the tip. With the MRC tilted antenna, full-signal strength is always there since the antenna is always broadside to the airplane. While on the subject of "human engineering," each flyer has a preference as to short or long sticks depending upon the size of his hand. Each F-710 system is shipped with a pair of both short and long sticks so you can choose the length that fits you best.

According to the manufacturer, the anodized aluminum case also has a purpose since it provides a better ground than vinyl and makes possible a little extra signal strength that could prevent a fly-away.

During our tests of the new digital system from Model Rectifier Corp., we were quite interested to find out what type of service was offered with regard to this system. While it has been continuously evident that quality is all-important to Model Rectifier Corporation in their production of these units, a properly equipped and efficient service center is equally important to the flyer who must send his system in for occasional repair. For this reason, we deliberately "sabotaged" one of our servos and sent it to Model Rectifier Corporation's West Coast service representative, Mr. Colby Evett, 1636 Ocean Park Blvd., Santa Monica, California 90505. Since we did not want the name of any RCM staff member or the publication itself to influence the service rendered by the service center, this servo was sent in under an individual's name who could not be identified as associated with the publication. A hand-written letter accompanied the servo with a description of its apparent malfunction. Four days later, the servo was returned by mail in perfect working condition, with a covering letter explaining exactly what had gone wrong with the servo and the necessary repairs that had been effected. The price of the repair

was \$5.00. A similar servo was sent to the N.J. office of Model Rectifier Corporation and repairs were effected completely satisfactorily and returned to us within seven days from date of mailing. We contacted several individuals who had had service effected on their proportional systems due to aircraft crashes, and in each case the owners were extremely happy with the repair service and the charges rendered for that service.

The price of the 27 mHz MRC F-710 five-channel digital proportional system with 4 Model

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EDITORIAL

(continued from page 6)

continue to implement a planned program of safety on an orderly basis...

About that "Four Star Safety Code" mentioned earlier — here's what the Executive Council will be considering:

PROPOSED FOUR STAR SAFETY CODE

A. ALL CATEGORIES

1. I will not fly my model aircraft in competition or in the presence of spectators until it has been proven to be air-worthy by having been previously flight tested.
2. I will not fly my model higher than 400 feet within 5 miles of an airport, without permission of the airport operator. I will give my right of way to, and avoid flying in the proximity of full scale aircraft.
3. I will abide by the safety rules for the flying site I use, and will not willfully and deliberately fly my models in a careless, reckless and/or dangerous manner.

D. RADIO CONTROL

1. I will have completed a successful radio equipment ground range check before the first flight of a new or repaired model.

2. I will not fly my model aircraft in the presence of spectators until I become a qualified flyer unless assisted by an experienced helper.
3. I will perform my first turn after takeoff away from the pit, spectators, and parking areas, and will not perform maneuvers, flights of any sort, or landing approaches over a pit, spectator, or parking area. □

CLARENCE LEE

(continued from page 10)

in the later models was enlarged accordingly. In order to install a Perry carburetor on the early model .50, the venturi will have to be drilled out larger. The Perry carburetor you purchased was intended for the later model Veco .50 that came with the Perry carburetor. The Kavan carburetor for the old Veco .45 will fit the first run of Veco .50's that came with the Veco carburetor should you want a replacement that will fit without altering.

While on the subject of the Perry carburetor, a problem has shown up in a few carburetors that may be giving some of you a lot of trouble. If you have had any trouble getting your engine to run rich enough at the top end, unscrew the aluminum fuel nipple (where you stick on the fuel line, dad) and make sure the small hole goes all the way through. Some bodies did get out before being caught in which the drill used for this operation did not go quite deep enough. The result being that only the tip of the drill broke through into the fuel reservoir. Fuel does get through, but not enough. Check and make sure the hole is open all the way through. This is one of those production problems that spring up from time to time that give a manufacturer ulcers.

Dear Mr. Lee,

I purchased a K & B .40 R/C, series 70, #8011, which is a front rotor with a Perry carburetor and an exhaust baffle. The pro-

blem is the idle which, at the best, is marginal and is better without the baffle.

The baffle is set so that at wide open on the carburetor the baffle is also full open and at 1/3rd carburetor area opening the baffle is just about closed. At this 1/3rd opening there is an excessive amount of fuel spitting from the carburetor venturi, in fact so much I wonder what the engine is running on.

I suspect that the idle disc reference slot should be between the marks on the carburetor body. It is actually counter-clockwise to 1/16" from the front of the carburetor body. Any more movement clockwise or leaner will cause the motor to stop as soon as the throttle is moved to a more open or faster position.

Per the Perry instructions, this spitting should not happen, especially if the baffle has a 1/16" hole in it which mine is or slightly smaller.

It seems to me the baffle is too tight or the hole is too small.

Since this motor is new I don't want to damage it by drilling and filing.

Sincerely,
Richard Sobizak
Waterford, Wisconsin

The relationship between the carburetor opening and exhaust baffle is incorrectly set. The spitting at the carburetor is caused by the exhaust baffle closing too soon. Back pressure builds up and results in the excessive spitting at the carburetor. The exhaust baffle should not close ahead of the carburetor. With the carburetor barrel cracked open just slightly, the exhaust baffle should be straight up and down. At full throttle the exhaust baffle should be horizontal. You may have to bend the actuating arms slightly to increase or decrease the throw as the case may be. I am sure this will cure your problem.

Dear Clarence,

I've just finished prancing my new beautiful Spitfire. I suppose it was my own fault, but being a typically neurotic modeler, I blame it on the engine, or rather the carb that came with it. A total of four hours was spent trying to adjust that thing to keep running when the throttle was opened. Well at the end of my patience and being what I mentioned earlier, I decided to go ahead and try to fly. Just as I was getting airborne, the engine coughed and sputtered with blue smoke belching out and before full power could be applied, I tried to horse the plane into the air and it snap-rolled into the ground.

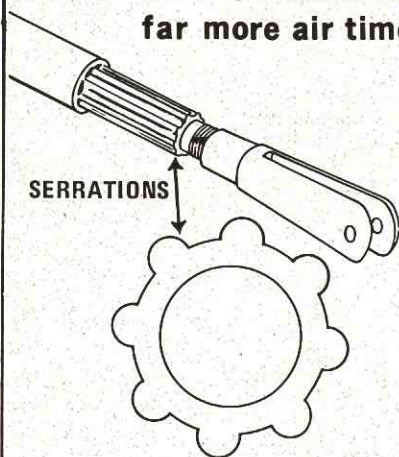
Now to the carb. It was a Webra Black-head engine with their automix carb. According to the instructions the high speed is set with the throttle in high and the main needle valve. The low speed is set with the throttle in low and the screw which goes into the sliding barrel. Well, when I did get a good idle with this screw, and it was good, I couldn't get the engine to keep running when I tried advancing the throttle. If the elevator was advanced very slowly the engine would cough great gobs of smoke and

(continued on page 48)



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Basically for Push & Tork Rods, Wing Spars & Struts

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CLARENCE LEE

(continued from page 47)

slowly pick up revs and finally break into high speed. I tried the engine rich and lean and although when lean the low to high was smoother, I still couldn't get the engine to respond to a quick advance of the throttle. Any hoo, have you had any experience with this throttle or engine? In your column dealing with the Perry carb, I could swear that the pictures show a Webra .60. Reading your article, I am prompted to get one for this Webra. What I'm after is a carb that will allow you to crack open the throttle without killing the engine and giving you immediate engine power in minimum time. I would go to a Kavan as I've had excellent success with one in an OS .40. When I had that carb adjusted to my satisfaction I could slam open the throttle after a full five minutes of the slowest idling you ever saw and the engine would blow out a great blue exhaust in one big blast without faltering in rpm and I'd be off down the runway like a shot. Can I get the Perry to do this? Your article dealt with the fuel draw and the fuel reservoir advantages but I don't think much was said about this aspect.

In summary, two questions. What have I done wrong regarding adjusting the Webra carb? Will the Perry give me the performance of the previously mentioned Kavan along with its advertised advantages?

Thanks Very Much,
Andy Wojtowicz
Timmins, Ont.

You did not say what you are using for fuel or a glow plug, Andy. For some reason the Webra comes equipped with a non-idle bar glow plug. The first thing to do is get rid of this and stick in a Fox or K & B idle bar glow plug. Next, be sure you are using a mild nitro content fuel. Supersonic 100, Cox blue can, Duke's mix, etc. Many times problems such as yours can be traced to home brew fuels that do not contain enough nitro-methane. If you are already using an idle bar glow plug and one of the mentioned fuels and still have a lot of smoke on acceleration, the carburetor idle mixture is too rich. Lean the idle mixture adjusting screw in slightly. Only 1/8 turn at a time. I have seen fellows turn this mixture adjustment a half turn at a time and wonder why they could not get a proper setting. If the problem still persists, then it is most likely caused by the exhaust baffle being too loose. File a little material from the bushing that the baffle rotates on so that it fits the exhaust stack a little closer. One or all of the above

mentioned solutions should cure most of your problem. The Webra does have a tendency to go rich through the intermediate throttle settings and you may not be able to cure this completely. Generally the Perry or Kavan carburetor will improve performance, but this depends on the individual engine. Many fellows are using the stock carburetor with no problem at all.

Dear Mr. Lee,

I am fairly new to radio control and have built and flown (with considerable help) an H-ray powered by a Webra .20. I am currently building a Dumas 'Swamp Buggy' to be powered by the same engine. The plans recommend an engine of this power range to be used as a pusher. I have some knowledge of internal combustion engine mechanics (4 years diesel experience gratis U.S.N.), and am extremely hesitant to use what I consider to be a fine engine in a manner other than what was intended by the manufacturer. I feel that at best I might have a short-lived, hot running engine, and the worst might be a ruined engine since most ball bearings are not designed to replace thrust surfaces.

I would appreciate any information you have about this subject and thank you in advance for your consideration.

Before I close I would like to add that I have installed the Webra as a puller and have altered the design of the airboat from a single rudder design to a twin rudder design with about 50% more rudder surface area to compensate for the additional prop to rudder distance.

Best Regards,
John Harris
Endwell, New York

Running the engine in the pusher configuration as Dumas recommended will not hurt the engine in any way. Ball bearings used in our model engines are designed to take thrust loads from either direction. In the case of most engines, the thrust load is taken by the front bearing. Some fellows are worried about running an engine as a pusher because the propeller is no longer blowing air over the fins while standing still. This is true, but you must remember that the propeller is only moving the air. In the case of a pusher it is being pulled from behind the fins rather than being pushed from the front. The engine will run slightly hotter, but not enough to matter. It is still receiving air circulation. Once the air boat is

(continued on page 50)



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CLARENCE LEE

(continued from page 48)

in motion it will receive adequate cooling.

Dear Clarence,

I am having a problem with my K & B .40's. I put a new ring and new sleeve in and run them like a new motor when breaking in. I can't seem to get any compression after this. I have to start them with a starter and my rpm's have gone down also. I am running these engines in Goodyear and Rat Racing. I would appreciate it if you could help me find out what is wrong. They were going like bombs when I got them new. I have one of the new ABC Tigres which is a going piece of iron, but like the man said I'd rather fight than switch. By the way I am using K & B-100 fuel to break in motor.

Sincerely Yours,
James Tyndall
Richmond, Virginia

Correctly fitting the ring in the K & B .40 is a bit tricky and you are most likely bending it during installation on the piston. Unlike your conventional spring tempered rings, the K & B 'no tension' ring is soft and easily bent. Any time a K & B .40 is in need of a ring job I recommend you return it to the factory for

servicing. This way you can be sure of 'like new' performance again. If you do want to have a go at it again, yourself, then here is how to go about it: Slip the ring into the sleeve and square it in the sleeve by pushing it with the bottom of the piston. Hold the sleeve up to a bright light and see if you can see any light showing around the edges anywhere. Chances are you will. This may be caused by fuzzy edges on the ring. Knock these off with some 360 grit emory paper. Gently - do not round off any edges. If light shows through badly on any side you will have to bend the ring with your fingers until it does fit. This takes a lot of patience. Then, when installing the ring on the piston take great care not to bend the ring. This is difficult to do and for this reason I recommend returning the engine to the factory where a special installation tool is used. You can do it yourself, but you do have to be careful. I would guess this is

where your problem has arisen in the past. There is also the possibility that the piston is worn as you did not mention replacing it. It is very important that the ring seat on the bottom of the ring groove as well as against the cylinder wall. Few fellows realize this, but compression can leak through under the ring as well as past the surface that seats against the cylinder wall.

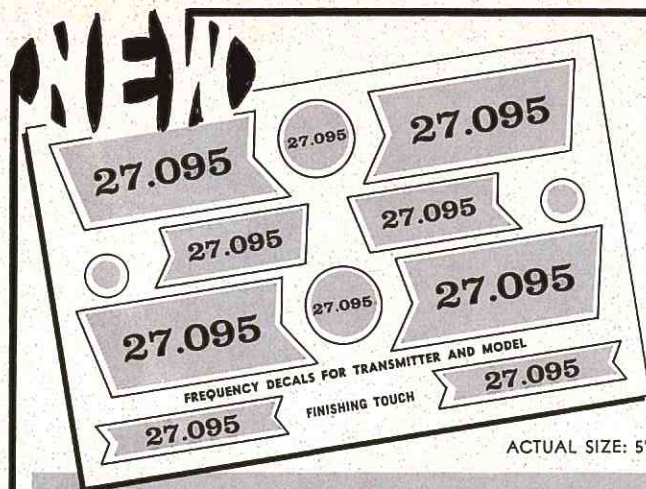
That does it for another month, gang. Keep the letters and ideas coming in. If you want a personal answer, be sure and enclose a self addressed, stamped envelope. □

CUNNINGHAM ON R/C

(continued from page 12)

and in keeping spectators and pit areas in a controlled location. Even so, and although all types of safety measure are taken, the occasional accident can and does happen. Recently, I was on the

(continued on page 52)



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CUNNINGHAM ON R/C

(continued from page 50)

receiving end of an accident. We were having a club contest to try out a proposed set of rules for fun fly events. I was acting as Contest Director/Judge and we were running the contest for just a couple of rounds. The object was a race against the clock, the first event being to climb up to an altitude of your own choosing and spin down for a required ten spins. I was parked in an aluminum lawn chair at the side of the runway, next to the contestant. One of the contestants climbed his aircraft up, kicked it into a spin and came down. He was right above himself and me. His spin down carried him lower than good judgement should allow. He pulled out his Kaos in a fast recovery and the aircraft snapped out of the spin and came right at me from an altitude of four feet. The pull-out was right in front of my face. I

was lucky, I threw my arms over my face and head and fell backwards in my chair. The aircraft hit me on the arms and head, and left a piece of the wing embedded under my wedding ring! The rest of the airplane missed me, bounced on the ground behind my chair, glided over the pit area and the parked cars, and came to rest in the parking lot. With a snarling .60 engine boring down upon you, you're lucky if it misses. I was lucky, and it did.

The point of this story is this: All of the rules, all of the physical field layout, and all precautions are still no substitute for good pilot judgement. It is something that each one of us must always strive to keep in mind when flying our aircraft. It is similar to driving a car, flying a private plane, or any other occupation that has any danger attached to it. It is up to the pilot to be careful with his loaded .45. Have someone with you when flying on a crowded and busy field to keep on the lookout for

other aircraft that may be landing and taking off when you are doing one or the other. Keep good frequency control at your flying field and, above all, keep your head and cool when you are flying. Insurance is great, but it won't replace a smashed up friend or spectator! The man that was flying the aircraft that tried to re-part my hair was, and still is, a good friend, but when he flies from now on, I think I will go rest in the car

This past year has been a pretty busy one for me, one that did not allow much time for designing, building and flying many of my own aircraft. As most designers, I like to fly my own creations. We always feel just a little better flying our own airplanes. But, not having much time to get into the air with my own, I again tried the ranks of the ARF aircraft, this time with a great deal of help from Don Brown at Dee Bee Models. Don

(continued on page 54)

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CUNNINGHAM ON R/C

(continued from page 52)

very kindly answered my request to try one of his ships by providing an Eyeball and a

Lance. These aircraft have been pretty well explored in other publications, so I won't go into their assembly. What is of interest to me is that they are easy to put together, building time is

at an almost absolute minimum, and when completed, look good and fly well. What more can you ask of an ARF? The Eyeball, as you know, is a replica of Art Schroeder's MAN design. It has a fast symmetrical airfoil, and pretty short tail moment. With Don's version of the Eyeball a little care must be taken in the placement of the radio equipment to keep from coming out nose heavy. If you mount your radio at the very rear of the wing cavity, then balance will not be a problem. The first test flights of mine were made with an Enya .60 Mark II in the nose. Then, after a few flights, a brand new Enya III was installed. This engine is several ounces heavier than the II. A slight nose heavy condition resulted in making it a little harder to rotate and hold the nose up on landing. Then a Silence-Aire muffler was added to the Enya and wow, every landing was a nose bender. I had installed my Orbit mini system in the usual place and balanced the

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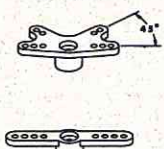


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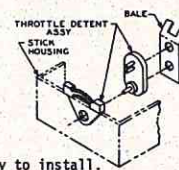


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aircraft with the lighter Enya II. The aircraft was the same aircraft, but I had screwed up the balance point by adding too much weight to the nose without compensating for this addition. If you are planning to assemble an Eyeball, and use a muffler, be sure and move the radio to the rear. Locating the batteries behind the servo will help. This is a common problem with any installation in any airplane, be it kit or magazine plan. If you are putting in different equipment, or adding mufflers, etc., then be sure and check the balance point to see that your model balances at its design point. A couple of other notes on both the Eyeball and the Lance. The tank compartment seems to be a bit on the small side due to the engine mounts sticking back into this compartment. A simple way to solve this is to mold a tank to fit this area. This can be done by taking a twelve ounce tank, re-

(continued on page 56)

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CUNNINGHAM ON R/C

(continued from page 55)

moving the stopper, and boiling it in water. Be sure that the tank is full of water while you are boiling it. When it is good and soft, pick it up with a holder, dump the water out and then force the tank into the front compartment. With a little luck and hard work you will be able to force the tank into this front compartment, and it will re-mold itself around the engine bearers. If you botch it the first time, stick the tank back in the boiling water and try again. These are good flying aircraft, and if you want to save a lot of time, then by all means, investigate the Dec Bee line of models. They are good!

As I mentioned earlier, I used a new Enya III in the nose of the Eyeball. The Enya has long been a great engine, one that you can take out of the box, bolt in the nose of your airplane, and start right in flying. No break-in needed other than a rich setting. The III retains this ability but boosts the output of the engine up to the newer level of .60 power. Great engines!

'Nuff of this stuff for this month, let's all get our RPV's and go out and fly. □

MONTEREY

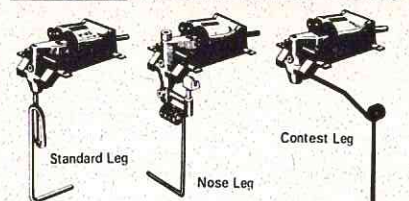
(continued from page 29)

seam on the outside. Wipe it off with a damp sponge now. It is much more difficult to remove when it is dry. Glue wing ribs and trailing edge in place and let dry overnight.

Apply liberal amounts of glue to the leading edge and forward parts of the ribs, and glue the tapered 3/32" forward wing skin in place. Place pins along the leading edge and in each rib. NOTE: It is important that the wing skin touches the ribs every-

(continued on page 58)

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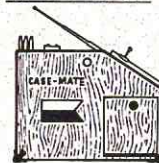


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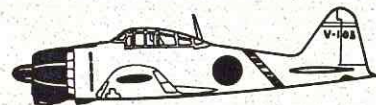
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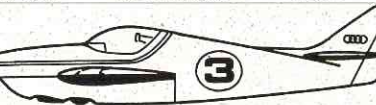
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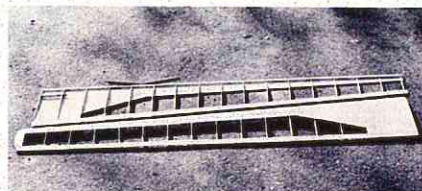
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MONTEREY

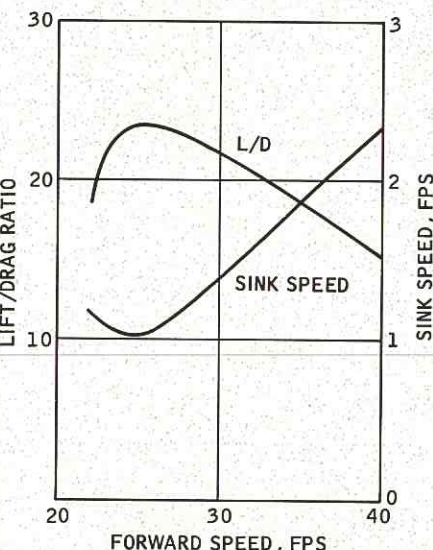
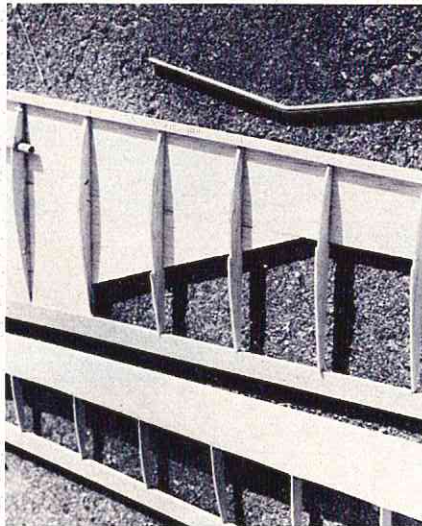
(continued from page 56)

where. If the skin has any bubbles in it, these should be taken out NOW by driving in enough pins to hold the skin down! If the skin seems a bit difficult to bend, brush a little water to the top side. This will cause the sheet



The Monterey wing panels.

Close-up of wing framing.



(continued on page 60)

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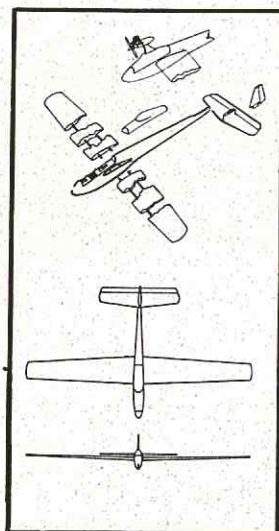
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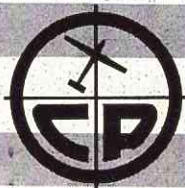
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MONTEREY

(continued from page 58)

to curl concave side down. Sponge off any excess glue that comes out of the seams. Epoxy the 1/4" OD fiberglass wing spar to plywood formers F1, and F2. Cut shear web from 3" sheet and glue in place. Complete wing structure by attaching the upper triangular-shaped wing skins.

Step 3: Completing the wing. The wing panels should be removed from the plan and sanded to the approximate airfoil and shape down on the plan. This can be done using a sanding block and placing the wing section against the edge of the building board. To form the center section, join the three 3" by 4" sheets of balsa forming the lower wing skin center section on the board. Glue the center section leading edge and wing formers in place as shown using dihedral gauge for proper angle and let dry. When dry, glue the center section upper wing skins in place.

Step 4: Construction of the fuselage frame. Place the 1/8" balsa fuselage bottom sheet over the plan and pin it down. Make certain it is centered over the plan at the nose and tail. Glue the fuselage formers in place vertically on the bottom sheet. The formers are 1/4" narrower than the bottom sheet to accommodate the 1/8" sheet fuselage sides. Make sure that the formers are centered to leave 1/8" of bottom sheet on each side. Glue the 1/4" x 3/8" servo mounting blocks to formers C and D before mounting these formers on the bottom sheet. The position of former C as shown on the plan is designed to accommodate a KPS-10 servo. If other servos are used, move former C to suit. Glue the nose block against former A now, also notch tail block and glue in place. Let glue dry for 1 hour. Glue the 1/8" sheet fuselage sides to the fuselage frame. Wipe off excess glue that seeps outside of the fuselage with

a damp sponge. It is a lot easier to sponge it off now than to sand it off later. When dry, trim tail block to shape.

Step 5: Construction of the tail section. These are of simple all-sheet design and need only be sanded to approximate airfoil shape, and the corners rounded. Leave the elevator in one piece and drill two 3/32" diameter holes for the torsion bar. Glue the torsion bar in place and slit both elevator and horizontal stabilizer for nylon hinges. Assemble the stabilizer and elevator and make certain that the elevator moves freely without binding. When properly aligned, drill 1/16" holes through the balsa and hinge as shown on the plan, and glue in a round toothpick rivet. Cut the elevators free and sand smooth. Repeat the above process for the rudder and vertical stabilizer assembly.

Prepare the pushrod assembly by cutting the 1/4" square balsa strips to length, and secure the wire ends to them with glue and thread. The forward ends are left straight and are to be trimmed to match the particular servo installation used. Drill pushrod exit guides in the fuselage sides and then install the pushrods. Glue the tail surfaces in place and check for proper alignment of the surfaces and for proper positioning of the pushrods and free movement. If all isn't right, fix it now—it's much more difficult when the top of the fuselage is in place.

Step 6: Completing the fuselage. Glue the wing center section in place (use plenty of glue). Remove all pins from inside the fuselage, then install the fuselage top sheet, trimming it in length to just fit between the wing center section and the horizontal stabilizer. Next, glue the turtledeck skin against the wing center section and former D and install the hardwood doubler in the cockpit area.

The canopy can now be constructed by placing the canopy

(continued on page 62)

ACE R/C Features of the Month!

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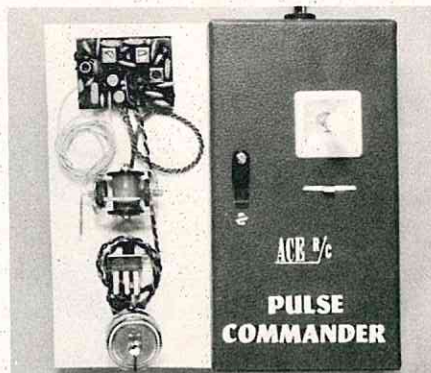
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MONTEREY

(continued from page 61)

fore and aft formers against the nose block and former D respectively. Use 1/8" balsa sheet for the canopy bottom. Use some wax paper between this assembly and the fuselage to prevent gluing them together. When assembly has completely dried, remove from fuselage. Next, trim the plastic canopy supplied to fit over the canopy frame. The

plastic canopy fits small end forward. It should be trimmed with scissors to approximate shape and glued to the frame.

Hold completed canopy in fuselage with masking tape and carve nose block round fairing it into the canopy and fuselage outline. The masking tape will protect the canopy during sanding.

Step 7: Covering the model.

We recommend Super Mono-Kote on the wings and dope or HobbyPox on the fuselage and

tail group. Be sure to warp in 3/16" wash out in each wing tip after covering. This can be done by holding wing at each end, twisting it, and while twisted, passing it over a stove to shrink out wrinkles.

Step 8: Installing the radio control system. The radio control system consists of five items: a battery box, a switch, a receiver, and two servos. The battery should be wrapped with sponge rubber or paper towel till it fits snugly into the compart-

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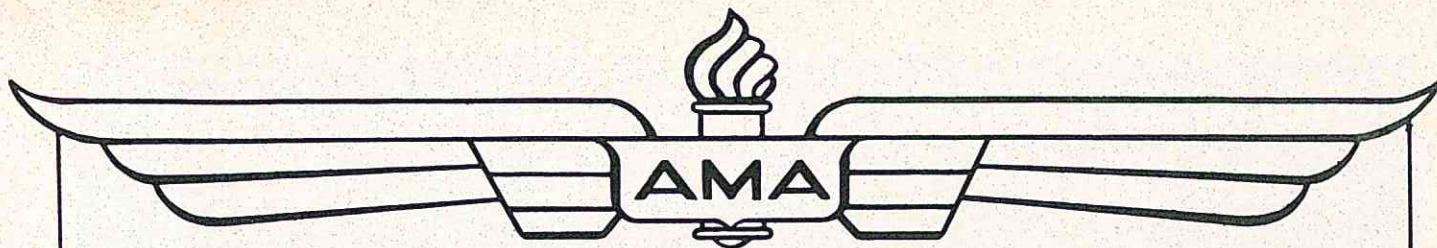
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ment between former A and B. The switch can be installed on former B in the same compartment. The receiver is also wrapped with sponge rubber or paper towel and installed in the compartment between B and C. The servos are mounted with four screws and grommets on the servo rails in the compartment between formers C and D. The cutout in former C is to allow the servo cables to be connected to the receiver in the second

compartment.

IV FLYING

Before test gliding the model, check for proper CG location, and check to see that the wing panels have proper washout (approximately ¼" per panel). See that neutral trim corresponds to neutral rudder and elevator position. The rudder should be adjusted to give maximum travel (inside hole on rudder horn, and elevator to give minimum

travel — outside hole on elevator horn.) Try a couple of hand glides. Then if everything is okay get a hand tow or a hi-start.

We prefer a hi-start to a hand tow — even if you don't get quite as much altitude. On a calm day it saves a lot of running and on a gusty day it can save a set of wings, especially if you use 125 lb. test towline. Remember that, in a steep climb, the model will travel three and even four times

(continued on page 64)

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MONTEREY

(continued from page 63)

the speed of the tow, and if full back stick is applied indiscriminately, aerodynamically the wing can pull 16G. Something is bound to give, usually the wing, but sometimes you're lucky and only rip out the tow hook. The photo shows what the wings look like at the maximum structural design limit, try to keep the bending below this level. We recommend a towline hi-start set-up sold by Ray Smith, 811 Brantford Avenue, Silver Spring, Md. 20904. It consists of 160 ft. of 1/4" dia. shock cord and 600 feet of heavy nylon line, and it works great. Get the feel of the model at altitude. Stalls are abrupt, but not much altitude is lost in recovery. If you have proper washout and no warps, the stalls will be straight ahead with no tendency to fall off on one wing or the other. With the minimum elevator travel loops can easily be performed, with the model losing only a few feet altitude in each succeeding loop. Many times on the slope, the Monterey has steadily gained altitude while doing consecutive loops!

Spot Landings

The Monterey has a 23:1 glide

ratio so it floats a long way and it takes some practice to get a good spot landing. We find that the best method is to adjust the ship so that full up trim is used during thermal flight. In this way neutral trim gives a good but fast glide which helps wind penetration and you can use full down trim just before reaching the spot and the Monterey will descend smoothly and will usually stick without bouncing.

Distance and Speed Events and Pylon Racing

This design can help you win distance and speed events using LSF rules, but can be outflown by the super speed machines such as the Malibu and Peregrine in a pylon race. Nonetheless, one of our prototypes won 3rd place at the "Marks" San Bernardino pylon race against a field of 16 contestants. Both first and second place winners used special racing machines. For these speed and distance events add about 16 to 30 oz. of ballast to the belly. The easiest method is to use pieces of 1/16" x 2" x 16" sheet iron screwed to the fuselage bottom. Each such piece will weigh about 1 lb. If you align the trailing edge of the iron with the trailing edge of the wing the CG will move forward about the right amount for a fast trim setting.

Power Pod

The best method is to buy a plastic power pod from D & R Plastics and use a TD 049 or 051, a 6-3 prop and Red Can fuel. To fasten the pod, glue a hardwood block across the top center wing section at the high point and screw the pod down. This setup should give about 1000' climb on a full tank and add only about 2 oz. to the ship's weight.

HAPPY LANDINGS!

HOW WE DO IT

(continued from page 21)

given a series of Numbers: Class A: 101-199; Class B: 201-299; Class C/Novice: 301-399; Class C Expert: 401-499; Scale: 501-599. You can substitute Class 'D' for 'C' depending on the choice of pattern that the fliers in your particular area prefer. This basic breakdown of numbers is sufficient for almost any meet presently held, and can be altered for more or less contestants. The Contestant is then given 3 pre-numbered tags, 1 for himself, 1 for his transmitter and the 3rd (optional) for his mechanic. He then specifies the frequency he will be flying and is then given a pre-printed and color-coded

(continued on page 66)

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HOW WE DO IT

(continued from page 64)

Flight Card for that specific frequency — which then has his Contestant number and name written upon it. If he enters two events, he then receives 2 numbers, 1 for each event.

2) The Contestant then goes to his assigned Flight Area and inserts his colored Flight Card into the uppermost slot in the Flight Board. He then puts his numbered tag on his transmitter for positive identification and impounds it right in the impound area alongside the Flight Board. Each succeeding Contestant does the same and puts his card in the next lower slot in the circle that his frequency is assigned to.

3) He puts his plane and support equipment in the Pit Area nearby and awaits his turn to fly. That is all there is to it, as far as the Contestant is concerned. By the way, you will note that we have the impound area alongside the Flight Board so the flier does not have to carry his transmitter nor handle it any more than absolutely necessary, thereby preventing any accidental 'shoot-downs.' This system does not require any frequency checking since only that frequency will fly from that particular area at that time. All that monitoring of frequencies ever seemed to do is 'confirm' the fact that someone or something 'shot you down' — afterwards when it is too late to do anything about it!

Now for the mechanics of the 'Shulman System.' Depending upon the size of the meet, each flight circle has 2 flight lines. In our meet we use 2 circles and, therefore, 4 flight lines because of the large number of contestants. Since the Contest Director never knows beforehand how many fliers will be on each fre-



• **Super Driver MD-3 \$49.95**

The Super Driver is an electronic motor speed control which plugs directly into a servo connector on your digital receiver. It allows smooth power to proportionally vary both forward and reverse speed of any model. Check these features;

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• **Super Charger \$19.95**

The automatic charger with regulated cutoff for battery protection.

DEALERS, DIST. INVITED

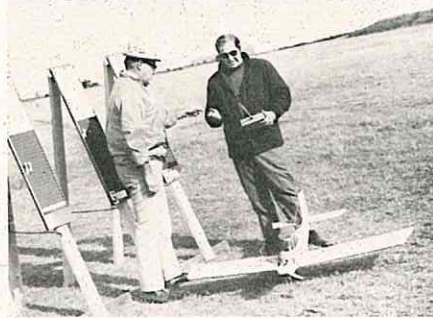


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quency (unless it is a pre-registered meet where frequencies are specified) we arbitrarily start the day with Flight Line #1 having the first 4 frequencies on the 27 mHz. band. Flight Line #2 has the remaining 27 mHz. band (27.195) and the first 2 on the 72 mHz. band. Flight Line #3 has the remaining 3 on the 72 band. Flight Line #4 has all the 53 mHz. band. Normally, for our part of the country (East Coast), this gives a good even distribution of frequencies to start the day off. This breakdown can vary, however, in each part of the country, as can the number of circles being used.

The procedure for flying is: the first card in the top slot of the Flight Board is the name and number of the Contestant who flies first, and so on down the board. On each Flight Board we have one brightly colored clothespin marker which is clipped to the card of the flier 'on deck' (flying at the time). We also clip the proper colored frequency clothespins onto this Flight Board. The Contestant 'on deck' takes the proper frequency clothespin, moves the 'marker' pin to his card, takes his transmitter from the impound area alongside the Flight Board, and is then cleared to fly. Normally, he is



Leon Shulman handing Frequency Pin to flier as he prepares to fly.

given his score sheets as he registers, to insert his name, number, etc., and then hands these to the judges prior to starting his engine. By the way, we keep this period of time to an absolute

(continued on page 68)

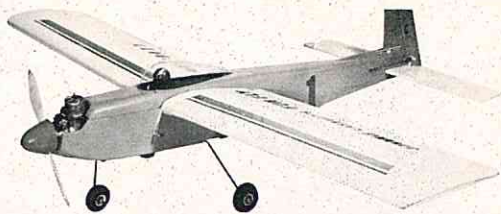
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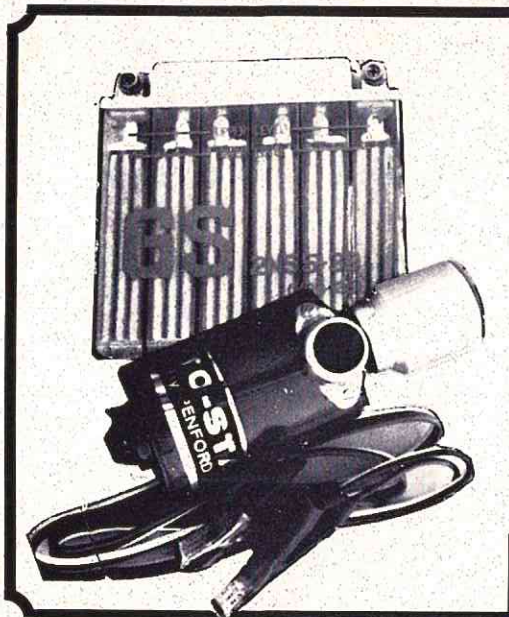
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HOW WE DO IT

(continued from page 67)

minimum, since it is at this period, between flights, that considerable time is wasted at a meet. We also have one Flight Line Director at each circle who monitors the procedures, moves the 'markers' as necessary, makes sure other fliers are in the ready boxes, has their sheets ready, etc. At this point every contestant, at any time during the day, knows who is flying and when his own turn comes up. It is each fliers responsibility to be in the ready box alongside the Flight Board

when his turn comes. From the Contest Directors point of view, he can easily scan each Flight Board to determine if the distri-

Leon Shulman moving 'Marker' Pin to next flier on deck to fly.



bution of frequencies and contestants at each area is balanced. If not, it is easily determined by sight because of the Color Coded Flight Cards. He can then shift the lesser number of fliers on other frequencies to an adjoining Flight Line to obtain a balance. In this manner the fewest numbers of contestants have to be moved, making the task easier. When such a move is made, we spaced the 'moved' cards into the new Flight Board as close to their original spots as possible, and also tried to space the frequencies so that 2 cards on the same frequency were not
(continued on page 70)



Most famous German sailing — and oldtimer — model airplanes, such as

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HOW WE DO IT

(continued from page 68)

next to each other — which would allow a further safety margin. After the first couple of hours of a meet, when most of the entries are processed — this normally becomes stabilized — and no more 'shifts' to other lines are required. However let's assume that several fliers withdraw or have problems and can no longer fly as the rounds progress. Their cards are removed from their slot on the Flight Board, and put down into the bottom slots — and remain there in the event they may want to fly again later, or simply stay there as a matter of record. At this point more shifting can easily be made to obtain a further balance. As each Contestant flies a round — the round number (1,2,3, etc.) is written in the right hand side of the card by the Flight Line Director — also as a matter of record.

Now — for the scoring of flights. Several methods, mainly the Score Sheet method, have been used, and they all seem to work satisfactorily. We recently used the 'Tally-Counter' system which works out fine except for Class 'D' or FAI scoring where 'K' factors are involved. FAI scoring should be done by having the judges signalling his recorder the number of points for each maneuver. This is then totaled and multiplied where necessary to get the full point score. With the 'Tally-Counter', however, the judges simply punches out the points for each maneuver and writes the total score on the score sheet. The score sheet is then relayed to the Tabulation Area where it is entered upon the Master Score sheet. At the end of the contest these scores are totaled to determine the winners — the best 2 flights, or whatever method is used for the particular meet. The place standing is then filled in with a bright marker so one can easily see who

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won which event, etc. This Master Score Board then becomes a permanent record for the meet. We usually insert the total number of entrants on the top, with a breakdown of the number of entries in each class, kind of weather we had, and facts we may want to refer to for the next meet. We also use this Master Score Board for our mailing lists for future Contest Announcements. With this procedure, we have been able to build up our Contestant following each year. The fact that we usually give prizes down to last possible place — has appealed to contestants, who keep coming back each year — and bring their friends.

A few comments on prizes are in order. Everybody likes to win something, and although there can be only 1 top winner, each man wants to win, so our policy has been to award Trophies to 10th place, and in the larger events — to 15th place, with merchandise awards all the way to the last place — if a person gets in an Official Flight — he gets a prize! The record to date was an award down to 51st place for Class 'A'. Our feeling is that running a club meet should not be a fund-raising affair — all monies charged as Entry Fees should be returned in the form of trophies, plaques, merchandise, or whatever might appeal to the fliers. If your club wants to raise money, you should consider a raffle — we find that the fliers themselves, as well as their friends and spectators like this arrangement. The Central Jersey R/C Club awards a complete R/C model all ready-to-fly, with engine, less radio. We purchase these custom-built planes from Little Green Elves in the forests of Pennsylvania and have no trouble selling hundreds of tickets before and during our meets — with the award being made prior to the awarding of our own contest prizes. This money goes into our club treasury for our club flying field and

(continued on page 72)

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7 mm	Enya 35 to 60	2.35	2.65
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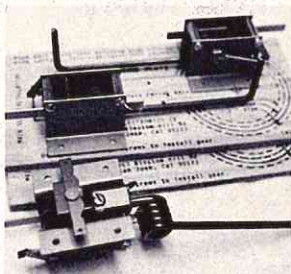
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HOW WE DO IT

(continued from page 71)

other club activities, expenses, etc.

Now for the specific materials used in the 'Shulman System.'

MASTER SCORE BOARD — made of regular Bristol Board, which is marked off with a ballpoint pen or marker as shown in our pictures. This is usually taped (with scotch tape) to a table or easel board at the Registration and Tabulation Area.

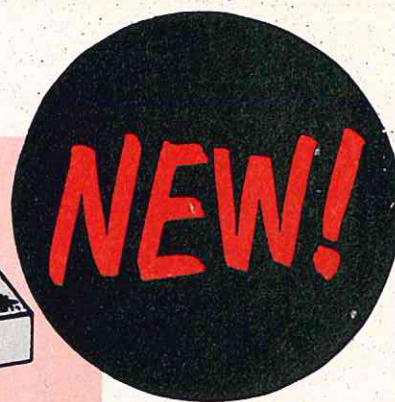
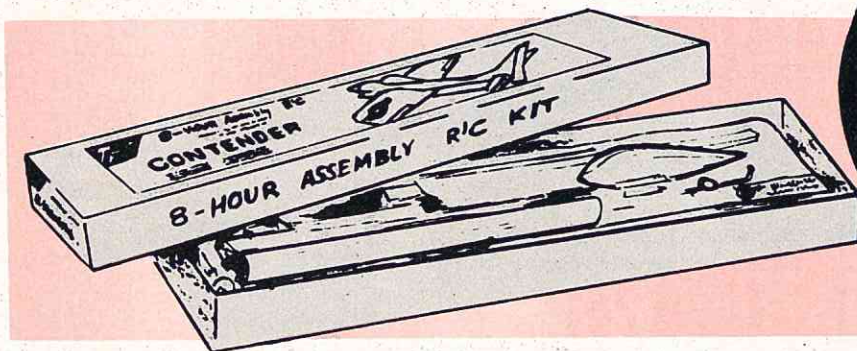
CLASS B				CLASS C/N			
201	78.5	41.5	39.5	101	13.0	25.0	11.5
202	78.5	41.5	80	302	6.5	12.0	12
203	78.5	41.5	114	303	7.0	12.0	114
204	78.5	41.5	32.5	304	3.0	12.0	76
205	78.5	41.5	95	305			
206	78.5	41.5	1127	306			
207	78.5	41.5	12	307			
208	78.5	41.5	654	308			
209	78.5	41.5	124	309			
210	78.5	41.5	11034	310			
211	78.5	41.5	994	311			
212	78.5	41.5	154	312			
213	78.5	41.5	1115	313			

Master Score Board showing contestant information including winning place standings.

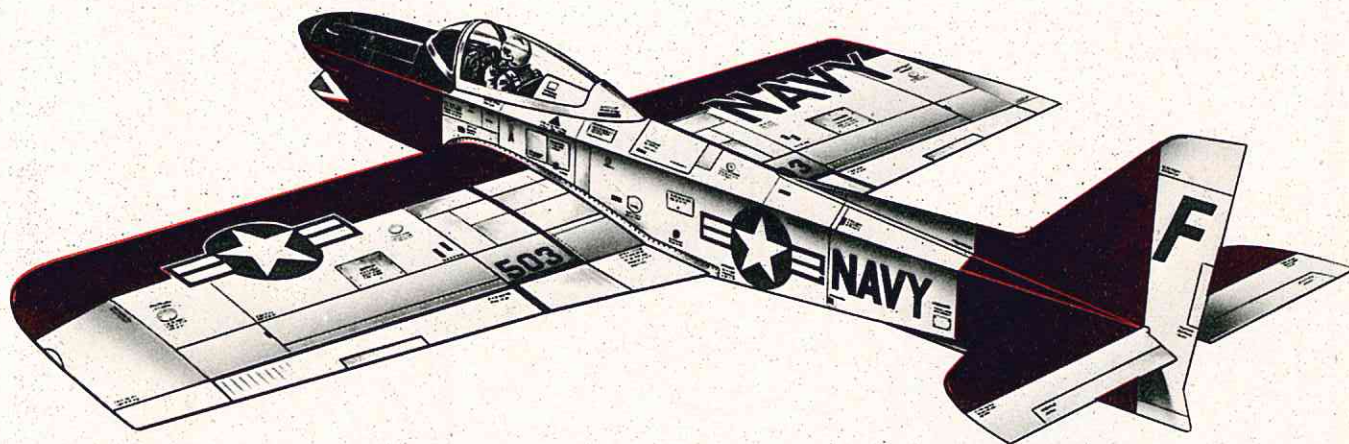
TAGS — Contestant, Transmitter and Mechanics Tags are regular commercial tags with strings and available at any supply house. These come in all sizes, colors and shapes. These should be pre-numbered to correspond with those on the Master Score Board — we use marker pens for these.

FLIGHT CARDS — Color Coded Flight Cards are regular 5" x 8" index cards. We purchased 500 each of 3 different colors. Yellow for 27 mHz., Pink for 53 mHz., and White for 72 mHz. We cut these cards down to 3¼ x 8" (continued on page 74)

FROM THIS



TO THIS



IN JUST 8 HOURS?

It's NEW from Top Flite! The CONTENDER—the first all-balsa R/C model you can build in just 8 hours.

What makes the CONTENDER so unusual? From its inception, this plane was created and designed by the Top Flite engineering staff so that it can be built in only 8 hours. When you're ready to finish the CONTENDER, you can save additional time by covering it with Super Monokote.

When it comes to performance, the CONTENDER, because of its inherent docility, flies aerobatics as well or better than a model which needs expert handling. It does beautifully with anything from a .29 to a .60 engine.

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The CONTENDER

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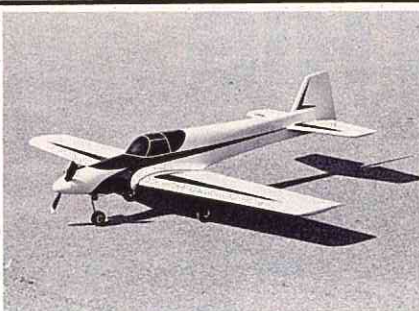
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Engine—.29-.60
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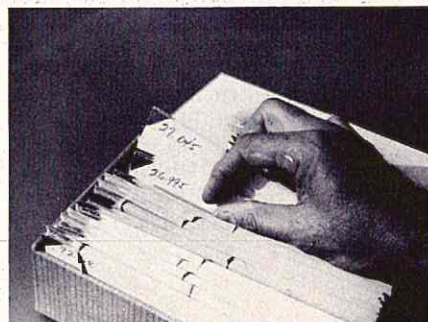
HOW WE DO IT

(continued from page 72)

to fit into the slots in the Flight Boards with about 1" protruding. We also pre-color the upper left hand corner using a colored marker pen with the approved AMA color code, and also write in the specific frequency in the same color, in case someone is color-blind. Example: 72.08 is Brown on a White Card (Brown/White, as per AMA), 72.24 is Red on a White Card (Red/White) and so on. In the 27 band, 26.995 is colored Brown on the Yellow Card, 27.045 is colored Red and so on. The same procedure applies to the 53 band — and we use a Pink Card for easy identification. 53.1 is colored Brown, 53.2 is colored Red, etc. We make up 40 for each frequency which gives us an adequate reserve supply for several meets. A list of AMA Frequency Colors is shown:

27 mHz. 26.995 Brown; 27.045 Red; 27.095 Orange; 27.145 Yellow; 27.195 Green. 53.2 mHz. 53.1 Brown/Black; 53.2 Red/Black; 53.3 Orange/Black; 53.4 Yellow/Black; 53.5 Green/Black. 72 mHz. 72.08 Brown/White; 72.24 Red/White; 72.40 Orange/White; 72.96 Yellow/White; 75.64 Green/White.

Pre-Colored Flite Cards, stacked in a cigar box prior to use, were prepared before contest.



FLIGHT BOARD — is a regular time card rack which has 40 slots (pockets) in a vertical order. We purchased a "Lit-Ning" brand Tabulating Card Rack Jr. model #5170 which is 44" high and 9"

ABSOLUTE SAFETY
ANOTHER SILVERTONE FIRST
NOW FROM THE DESIGNERS OF THE FABULOUS MARK VII.
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ELIMINATE ACCIDENTAL FREQUENCY CLASHES FROM YOUR CLUB
COMPLETELY WITH THE
SILVERTONE KEYBOARD CONTROL
THE MOST ADVANCED FREQUENCY CONTROL CONCEPT YET.
DO AWAY WITH COLOURED PEGS FOREVER!!



CHECK THESE ADVANTAGES

- * Reduces the risk of accidental frequency clashes (and crashes).
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- * Eliminates the need for clubs to decide on which frequency spacing system to adopt.
- * Provides maximum utilization of block frequency allocations.

FLASH All Silvertone Mark VII TX, delivered after February 1st 1971, have interlock sockets fitted as a standard feature.

SILVERTONE MK VII

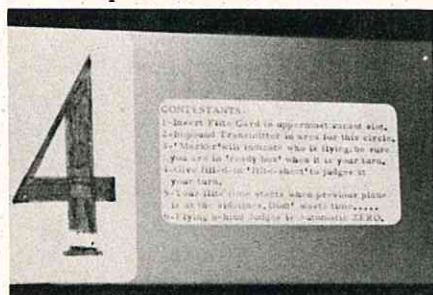
THE MOST COMPLETE SYSTEM NOW AVAILABLE
FULL SYSTEM 4 CH. 4 PS-4 SERVOS
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SILVERTONE

* The Silvertone personal key, interlock concept, requires each flyer to have a key proportional in width, to the bandwidth of his RX, TX, combination. In order to fly, each flyer must plug his key into the appropriate frequency slot, thus reserving his frequency and any others nearby, which may interfere with his system. If his key cannot fit into the board, he cannot fly. This key, when not in use, is plugged into the TX cutting off power to the RF stage, thereby rendering the TX inoperative until the key is plugged into the board. This then forms a true interlock system and will go a long way toward eliminating accidental frequency clashes.

To take full advantage of this system, standardization of boards and keys is essential. Sets of plans are available giving full construction details — \$4.00 per set (overseas add 50 cents). Ready made board and keys also available. Write for details.

wide and cost between \$15.00-\$20.00 each. We use 4 of these, 1 for each flight line. As a winter club project, your fellow club members may want to make these to save on expenditures. We made easels of 2" x 4" lumber, hinged on top as shown in the pictures with the Flight Boards mounted and located at each Flight Line. Since the 'Shulman System' is new, we printed contestants instructions as to the procedures on each flight board. We also printed a 'Contestants Information Sheet' explaining the system — to familiarize everyone with the simple procedures. Because of the possibility of rain or high winds, you can hang a sheet of clear plastic vinyl, or stretch a length of 1/4" flat rubber band from top to bottom, which will keep the cards in place.



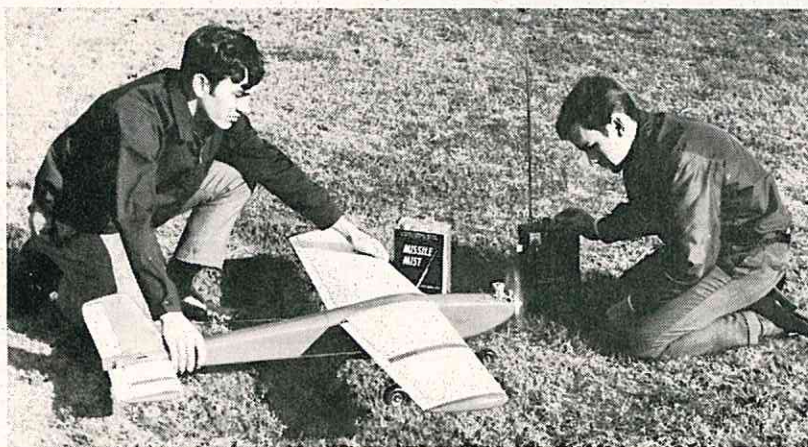
Close-up of Flite Board with contestants information.

Flite Board in use. Colored 'Marker' pin points to flier now 'on deck.'



(continued on page 76)

HERE'S WHY A PRO, LIKE DON BROWN, CHOSE THE FOX 36 RC FOR HIS TWIN SONS...



Mr. Duke Fox:

Pictured here are my twin sons, Mike and David with their Dee Bee Alpha model which is powered by your remarkable 36 x RC engine. It has performed flawlessly for them throughout their flying sessions, in both hot and cold weather.

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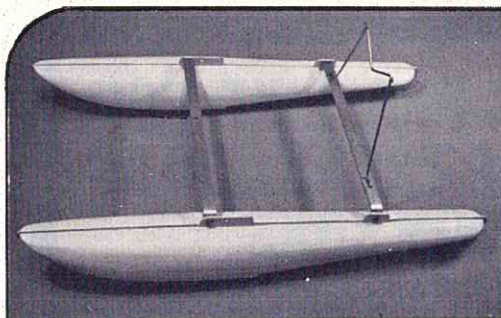
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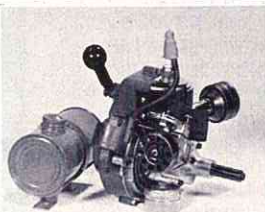
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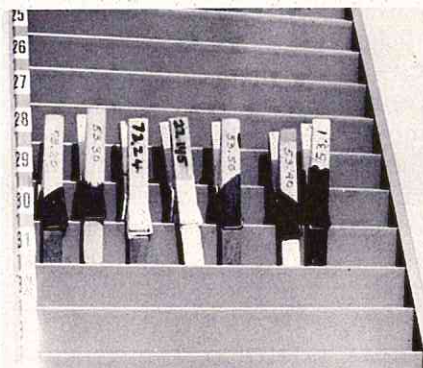
PHONE (801) 486-8077

P.O. BOX 155

MIDVALE, UTAH 84047

HOW WE DO IT

(continued from page 75)



Flite Board - Note colored coded Frequency Pins stored for use by fliers.

TALLY COUNTERS - are small gadgets that show 3 or 4 digits and tally each number as it is 'punched in.' We purchased these from Goldsmith Bros. Stationers in N.Y.C., and they cost between \$4.00 and \$5.00 each. They are trouble free and should last indefinitely.

The 'Shulman System' has been used successfully in large and small meets and, to date, we have not had any problems develop. The results have been the streamlining of meet management, eliminating confusion of frequency distribution and prevention of 'shoot-downs' where 2 fliers on the same frequency are assigned different flight areas. We have seen this happen at several meets, from local club meets to the National Championships. If

Tally-counters being used by Judges.



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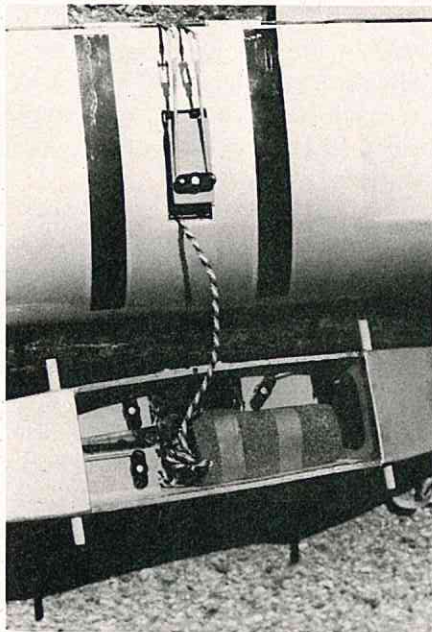
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this system prevents even one modeler from losing his plane and valuable equipment it will have been well worth the little time, effort and money invested. Remember — obtaining the equipment has to be done only once, and is usable at meet after meet. As a matter of fact, several clubs in an area can team up and make one complete set and rotate it amongst themselves. The results should be in smoother meets run with less headaches and more flying. In our own small way we offer this system to the modeling fraternity and we hope this system will contribute to the further growth of our wonderful Hobby/Sport. □



Kraft series 70 installation with KPS-12 servos and 225 Mah battery pack.

CENTERFIRE

(continued from page 24)

the T.D. engines should be used. The fuel tank is a 1 ounce Veco clunk unit.

Wing construction is quite simple since it can be built flat on your work surface due to the semi-symmetrical section. The ribs, top and bottom leading and trailing edge sheeting is 1/16" and the cap strips are 1/16" x 1/4". Spars are 3/16"

(continued on page 78)

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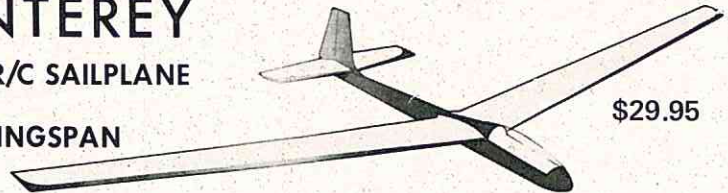
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DID YOU READ MY AD LAST MONTH?

Well, if you didn't, I told everyone how Hobby World was the biggest and best strictly R/C shop in the world . . . and if you don't believe it you are cordially invited to stop in some day and compare. Anyhow, last month I told you I had a story to tell and here it is:

This is a story that happens over and over again and really should be told. This fellow walks in my shop and says he's been trying to get in R/C but just can't seem to get off the ground. He bought a kit somewhere and some "price" equipment that was touted as "just right" and not only is he having a heck of a time building this durned kit but the equipment isn't even working right on the bench. Ninety-nine times out of a hundred this poor guy has been suckered in by somebody that is selling kits and equipment, who really doesn't know what he is doing . . . he is just selling merchandise . . . I wonder how many prospective flyers have given up because they were sold the wrong kit or the wrong equipment. Which leads me right to what I wanted to say in the first place . . . that is . . . that at Hobby World R/C is our business . . . when I'm not selling it, I'm flying or building it. I'm here to fill your orders and help with your problems . . . if you have been waiting to get in for one reason or another, get in touch with me . . . you will be glad you did because you will get the right information, the right kit and the best deal anywhere. Sound good? You bet . . . this is not only my business, it's also my hobby and I love it. That's the story, fellows . . . if it's R/C and you want it . . . I've got it. Try me and find out . . . call or write . . . I'll be looking forward to hearing from you.

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CENTERFIRE

(continued from page 77)

square balsa with no webbing employed. Although the photographs show an "air scoop" on the bottom of the wing to house the servo for the conventional strip aileron linkage employed on the original prototype, the plans will show the servo laying flat and connecting to the ailerons via bellcranks installed in the wing. This will eliminate the somewhat unsightly air scoop and subsequently, cut down on the amount of drag it produced. The trunion blocks for the landing gear are made up from 1/4" x 3/8" spruce or pine with 3/32" music wire gear legs. Wheels are Perfect 1-1/4" units. A steerable tail wheel is employed which is fastened directly to the rudder.

The entire aircraft was covered with Super Solarfilm (available from Technisales) in order to provide maximum strength and appearance at the lightest possible weight. The prototype was finished in silver with red and white striping and touched off with Finishing Touch decals. Any small canopy can be used to complete the model.

We strongly recommend the use of Cox Racing Fuel and the prop best suited for your particular engine. Start with a Cox grey 6/4 and experiment with the different types of propellers until you find the proper combination for your finished aircraft. Keep all control surface throws to a minimum until you have thoroughly trimmed out the model since the slightest error in initial setup will show up drastically on the first trim flights due to the small size of the model. Even with minimum aileron throw you will find that you will have a roll rate exceeding 1 per second! We hope you enjoy the Centerfire as much as we did and invite you to pass on photographs and comments of your version to RCM. □



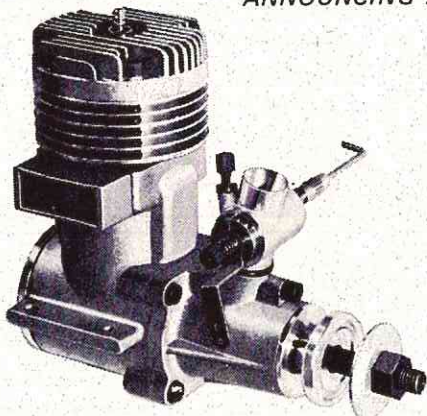
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MRC F-710

(continued from page 47)

#2 lightweight linear servos is \$350.00. The same system with 4 Model #3 car or boat servos is \$300.00. For 72 mHz systems, an additional \$20.00 is charged. The Model #3 rotary output servo lists at \$30.00 each, while the Model #2 linear output servo retails for \$35.00 each.

R/C Modeler Magazine awards the Tested, Approved and Recommended Seal of Approval to the Model Rectifier Corporation's F-710 digital proportional system. During our period of testing this system, it has equaled or exceeded all of the manufacturer's specifications for it. We commend this system for your consideration. ☐

KRAFT SYSTEMS

(continued from page 27)

less than ideal weather conditions after having charged their

packs the night before. With the alkaline energizers, no recharging is necessary and the glider pilot can simply fly whenever the weather permits without worrying about charging.

Also included in the Series 71 line is the new KP-3S single stick three channel proportional system which is identical to the Kraft two stick KP-3B. Price of this unit is \$209.95 and incorporates all of the features of the larger systems.

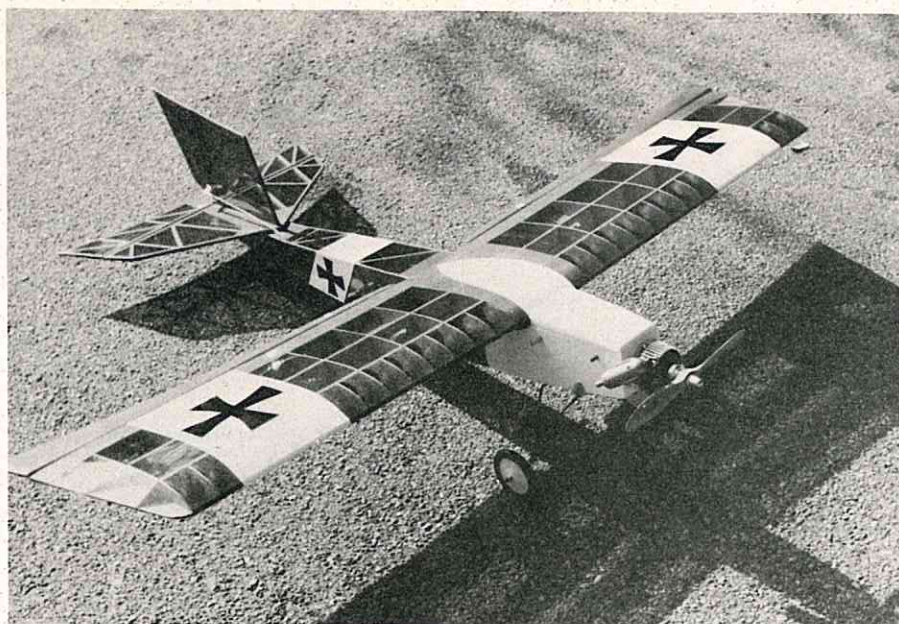
All of our test units were purchased with the small KPS-12 servos although several servo configurations are available from Kraft. Also available are a variety of servo mounting trays from the Kraft-Hayes Products Division; all of which add up to a host of options available to the Kraft consumer adding to the almost unlimited versatility of the Series 71 system.

Our conclusions upon completing the flight tests of our three systems which were flown in a complete variety of aircraft from gliders on up to the largest of powered competition aircraft, is one of the shortest on record. The Kraft Series 71 line, in our opinion, exceeds in every respect the demands put upon it by the Kraft engineers and technicians. These new systems are the finest we have tested since we began RCM product evaluations seven and a half years ago. The seemingly endless line of accessories and options available to the Kraft buyer virtually creates, in effect, a custom tailored system for the individual RC'er according to his needs and desires. We were unable to find anything that we would want added to the systems or altered in any way. When all of this is added to Kraft Systems' complete dedication to customer service — keeping the man in the field happy with the system he has purchased — for which Kraft personnel are renowned, we could not do anything but say that the Kraft

(continued on page 85)

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FRANTIQUÉ TOO

(continued from page 17)

the side sheeting. Dowel locations are shown, if not used, omit. The landing gear as shown is very rugged, but if the larger engine is used add a spreader bar across the axle. The gear may be bent to size on the plans with the front leg extending straight down but with a forward bend. Sand at the soldering points, bind with copper wire, and solder securely. Slide the washer and brass tubing over the end of the axle and solder. Fit the wheels and drill through tubing, using a washer and cotter pin for attaching.

Lay out the rudder according to the plans, noting the front and rear spar of the fin extend 1/4" for keying into the stab. The rear one is spruce while the filler for the horn mount on the rudder should be extra hard balsa.

The stabilizer uses spruce on the leading and trailing edge only. The center section is laminated with two sheets of 1/16" with three strips of 1/8" between. Note that the grain on the 1/16" runs with the span and the grain of the 1/8" with the chord. Begin by laying the two spars

(continued on page 82)

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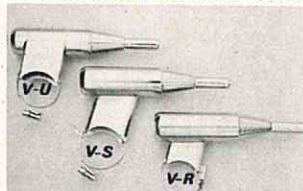
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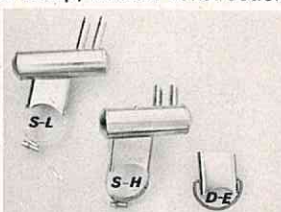
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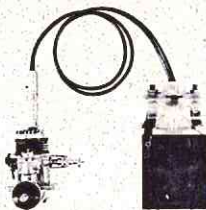
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FRANTIQUE TOO

(continued from page 81)

along the hinge line, install the center sections, the two ends, and the forward stab spar, add the remaining braces and the four forward gussets. Bow the trailing edge of the elevator into position then add the remaining braces. Note the plywood insert for the elevator horn is mounted on either the right or left side as desired. After this and the rudder have dried, set aside.

The ailerons are constructed by laying down the bottom 1/16" sheet and securely pinning the 1/4" spar in place. Then lift the trailing edge 1/16". Next cut and fit the ribs and fillers leaving the tops a little high. When these have dried, trim, sand, and secure the top sheeting.

The wings are begun by pinning the 1/16" lower trailing edge down flat. Then add the balsa rear spar, the spruce main spar, and then the ribs, blocking under the main spar to support the flat rear section of the airfoil. (Note: If no dihedral is desired the wing should be built in one piece. All ribs are marked up.)

After the ribs are in place add the inside piece of 1/8" at the trailing edge then the other rear and main spar, following with the top trailing edge sheeting. Remove the wing and add the leading edge and trailing edge cap. The leading edge is 3/16" spruce with two strips of 1/16" balsa. Add the false ribs and plywood dihedral braces. Make the pattern for the latter after determining how much you desire, it can vary from 0 to 2" under each tip. For the .19 version use 1/16" for the main and 1/32" for the rear; for a .29 use 3/32" on the main and 1/16" on the rear.

On the .19 version cut and fit 1/16" sheet between the main spars and ribs with the grain vertical. On the .29 job use 1/8" out to the last three ribs using 1/16" on these. Also web the

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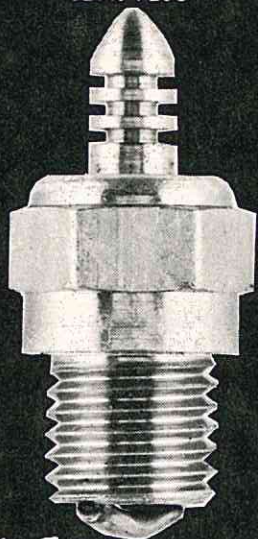
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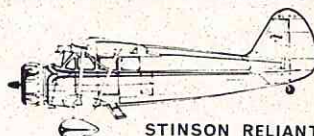
Sheet in the center section
except in the servo location on
the bottom. Add the tips and
horn plates, and sheeting for the
rod exits. Horn plates may be
1/8" or 3/32" ply. After mount-
ing the servo and linkage, sheet
in enough to keep the servo
opening inside of the fuselage. Be
sure to stiffen the inside edge
from the back with scrap.

I seem to recall there was a
fuselage around here someplace.
FUMBLE CRUNCH *%&'@+ \$!
well that saved cutting out one
of those pieces of spruce that
made my wing rest sorta' funny!
Use a piece of 1/16" ply to
mount the skid, and make the
skid from whatever you have
leftover by now, as long as it is
1/8" and not balsa. Use a couple
of those little nubs of 3/16"
spruce on each side and you will
have to tear the plane up to
knock it off. All you lucky hard
surface pilots get the fun of
putting some hard to bend wire
on it!

As far as a forward hatch
cover goes I haven't seen anyone
yet take my advice on this sub-
ject so this is going to be your
project. Oh, you were going to
dress up the nose anyhow with a
cowl and everything?!

By now you're wondering how
in the heck you're supposed to
hang an engine on this thing.
Well if you have gone this far
you are going to have to get one
of those strange looking, trouble
saving devices made by Midwest
or Tatone. Wrap a layer or two
of nylon around the nose and
across the bottom where the
L.G. mounts. Start sanding and
covering after you have figured
out your control linkages. A
WORD of caution here: Don't
nail your servos down just yet, if
you have been building tail-heavy
planes all your life you may be
fooled this time. If you want to
save some covering, leave the rear
of the fuse open, but dope well.
Yes, it will still fly. When you
hook your links up put the ail-
(continued on page 84)

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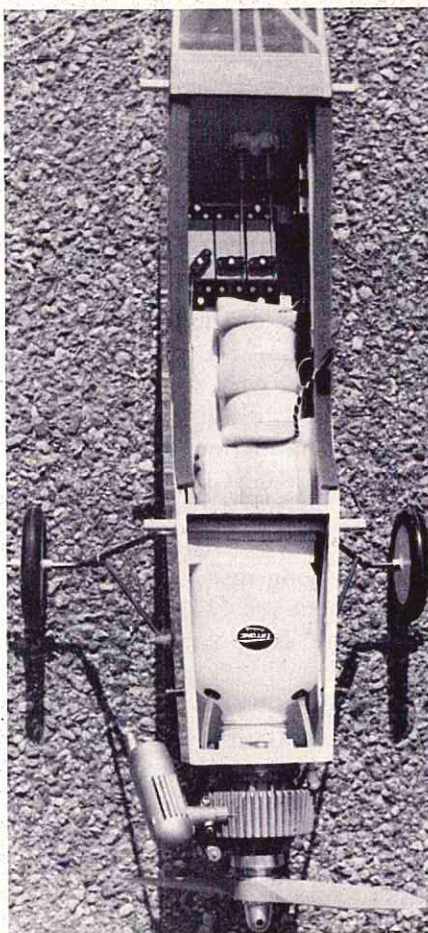
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View of Kraft Series 71 radio installation. Foam wrapping surrounded by G-Pad. Tatone Stick-A-Tube tank is excellent for all applications, simplifying tank installations.

FRANTIQUE TOO

(continued from page 83)

erons in the outer hole and the elevator in the next to the last as with the rudder.

FLYING? Don't worry if you can, it will. Before you do, check that balance just one more time. Two of these planes have been flown with the balance off an inch both ways without anything but frayed nerves. Just remember that this is a small ship and it moves fairly sudden.

The "Baron" says he can't think of anything else but to tell you he hopes you have as much fun with the "Frantique Too" as he has had, and he hopes you send him a picture of yours. His address is 711 S. Dewey (???), Sherman, Texas 75090. □

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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.



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KRAFT SYSTEMS

(continued from page 80)

Series 71 line has set an all new standard of excellence for the radio control industry.

As a sidenote, we were privileged to check out a pre-production unit of the new Kraft retractable landing gear. In keeping with Kraft standards, we found this to be the strongest, most durable and reliable unit we have ever seen. Completely unique when compared to other retractable landing gear systems currently available, the actuating unit is completely enclosed in a Fiber-Fill case and is operated by an electric motor and a very unique and virtually foolproof actuating mechanism. We did everything possible to attempt to destroy the unit we tested, including mounting the housing in a vice and bending the wire gear in all directions, until it was at a 45 degree angle to its normal position. At the completion of each "destruction test," the gear operated normally and reliably. Tentatively scheduled in the price range of \$60.00 for a set of three units, this new retract gear system is destined to set a new standard of reliability and excellence for retracts.

Anything further we could say about the Kraft line would read like a paid commercial and would be superfluous to the excellence of the product itself. So we'll close this review with a simple Tested, Approved, and Recommended by RCM. □

KEN WILLARD

(continued from page 14)

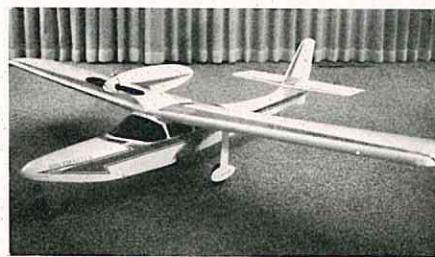
Note the big nacelle behind the Supertigre .60. That's so it



can carry a twelve ounce fuel tank. And that long nose with the cruiser bow gives it excellent taxi characteristics in the water. Note the bow wave in this action shot.

Some modelers who have seen the Wavemaster have questioned the size of the vertical fin; they think it's too small. Maybe so, for some people, but I've never been able to detect any hunting tendency during any of the test flights, either as a landplane or as a flying boat. But I will say this — if further testing ever indicates it should be larger — then we'll make it larger.

Now take a look at the landplane version. Note the wide tread on the main gear, and the long moment of the nose gear. This makes for really first class runway performance. You will also note that the nosecone of the hull is separate. It comes off so you can drop the nosegear, close the exit hole for the pushrod, replace the nosecone, and you're ready for water flying.



Here's another little molding touch that Paul dreamed up. In this photo of Paul holding the model, you can see the bottom of the hull, and note the skid at the tail just forward of the rudder. Now the rudder comes down below the skid when in the water, but for land flying the bottom extension of the rudder



is removable so that if the model rocks back on the tail in a hard landing, it hits the skid and not the bottom of the rudder.

As we developed the model, the biggest single problem was to find a way of keeping water from getting inside. In fact, we haven't completely licked it without resorting to water resistant grease (vaseline) at the exit holes for the pushrods. And the wing cradle requires foam tape which must be snugged down and compressed by the wing mounting bolts. This, of course, is no problem to the modelers who fly it as a landplane.

The model is heavy — but not too heavy. It weighs 8 to 8½ pounds, depending on equipment. With a Supertigre .60 for power, I have made water take-offs at half throttle. Admittedly, it takes a somewhat delicate touch. But at full throttle the transition from taxi to step to airborne is fast enough that you can hardly observe the passage through what is referred to as "maximum spray speed" which is the speed where the spray will get inside the hull if there is any pinhole opening.

Water can be pretty hard if you hit it flat. That's why the Wavemaster hull is made of heavy gauge plastic, with an overlapping seam to provide extra impact strength. My good friend Addie Naccarado, who runs Hobby Lobby out there in Burbank, California, says, "You're gonna need bracing or Celastic reinforcement along the seam or it'll be splitting on hard landings!" Addie's a positive thinker — but I think she'll find that this seam holds up. Naturally if it doesn't, it can be reinforced.

During the design phase, we tried out a system of using the same wire mounting support for the wheels and the floats. It worked well, but the attachment fitting for the floats couldn't quite take a series of waterloops which I forced the model to go through, so we revised the design

(continued on page 86)

(continued from page 85)

and have separate supports. It's a little more costly, but worth it in the long run.

From previous experience with designs which I have published, and kits which I've designed, I can be sure that no matter how the Wavemaster is finally marketed, there will always be those rugged individualists who will modify it — just as they have with every other kit. That's what makes this sport so challenging, I guess.

One feature which improves the performance of almost all flying boat designs is a spray rail along the chine forward of the step. None is used on the Wavemaster — it isn't necessary — but one could easily be added by cutting a strip of the scrap plastic material about $\frac{3}{4}$ " wide, curved to fit the shape of the chines, and merely bonding it to the chine with about $\frac{3}{8}$ " overlap so the spray rail is about $\frac{3}{8}$ " wide. For those who do this, my guess is that they could get easy take-offs using a good .40 like K & B's new R/C version, or any good .45. And that's in spite of the fact that this is a full six foot airplane at $8\frac{1}{2}$ pounds!

Speaking of spray rails brings me to a point which one of the readers pointed out to me — and then went on to educate me in nautical terminology. Here's a letter from Richard McClelland of Nutley, New Jersey:

Dear Mr. Willard,

I look forward to your articles on waterbased aircraft. The latest in the December R/C Modeler was especially interesting and technically correct in all particulars except one: the definition of the term "chine."

By definition the chine is the intersection of the planing bottom with the hull side, or the point of intersection between the terminus of the angle of deadrise to the freeboard.

What you erroneously referred to as the "chine" is in reality the device known as a spray rail. The spray rail

deflects the spray laterally and also increases the lateral stability.

In addition to the spray rail, seaplane floats employ a device to achieve the same end, but in a different location called a sister keelson. The sister keelson is an auxiliary keel placed midway between the keel and the chine. It entraps both air and water, compresses same and causes a lateral deflection of the latter. Enclosed are several sketches, to wit:

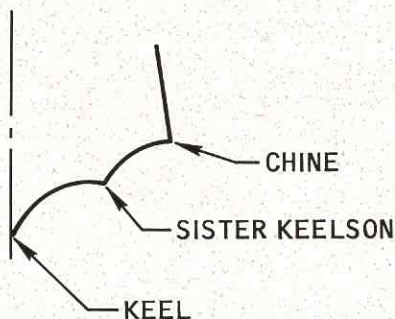
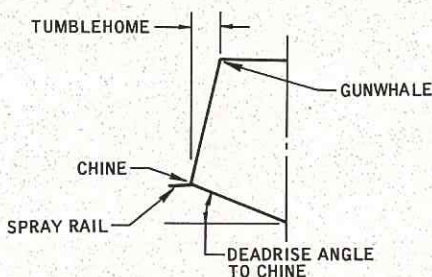
Hoping you don't object to the criticism, I remain,

Yours truly,
Richard A. McClelland

WE'RE SORRY

Due to space limitations in this issue, we were unable to present R/C Modeler Magazine's Quarter Midget Racing Event Rules and Racing Specifications. Watch for them in the May 1971 issue.

THE EDITORS



SEAPLANE FLOAT

He's right, you know; I had fallen into the bad habit of referring to a "sharper chine by adding a strip," and that's wrong. Thanks for catching me on that, Dick. Reminds me of a similar

occurrence some time ago when a reader pulled me up short for referring to the angular setting difference between the wing and the stab as "decalage." Correctly speaking, decalage is the difference in incidence between the lower and upper wings of a biplane. But a lot of us got into the habit of using the term in reference to wing and stab settings. There's always room to learn.

I'd like to close off this month with a rather plaintive request that I received from M. Delfino of Taft, California.

Dear Mr. Willard,

Having seen my first R/C glider during the meet at Gardener Field (North vs. South on December 5-6, 1970), I am both intrigued and eager to get in. I'm currently a powered aircraft fan, and would like to know more about R/C gliders. How do you get the tow line to let go of the glider? Which glider should I start with? Is the Graupner "Cirrus" a good beginner? How about an article for the beginner glider man? I'm really at a loss as to how to start into this particular phase of R/C modeling. I did nothing but observe, and read everything I could buy concerning powered craft before I ever bought a tube of glue (took more than a year of research). Any help you could give me would be very much appreciated.

Sincerely,
M. Delfino.

It's an interesting thing to note that many power plane enthusiasts are taking up R/C soaring — and finding it, strangely enough, so different that it is, at the same time, both easier and harder to do than power flight. Easier, in the sense that things happen slower, but harder, because the techniques require knowledge of the natural forces of the air. You can't get yourself out of trouble by pouring on the power — you have to fly your way out.

So, in a forthcoming column, I'll try to outline a reasonable course of action for beginners. But I'll need some help from you, so send me your ideas.

Like I said, there's always room to learn. □