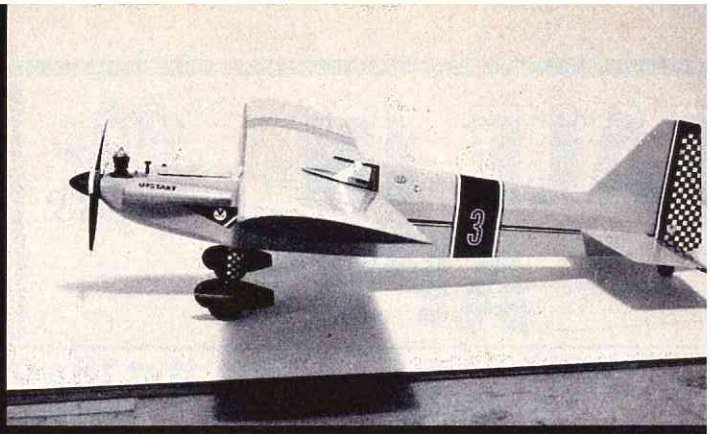
MAY 1971 75¢

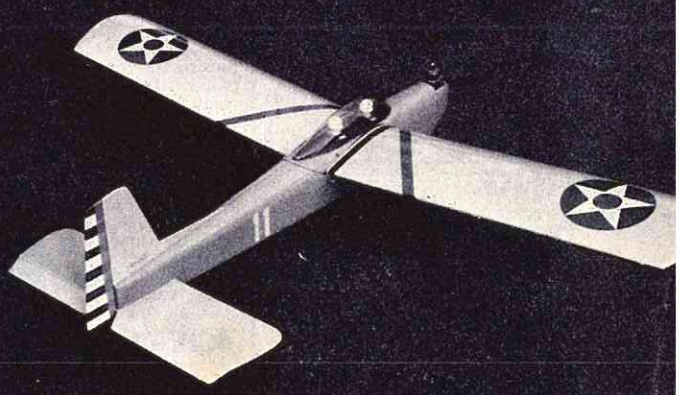
RC MODELER

THE WORLDS LEADING MAGAZINE FOR RADIO CONTROL ENTHUSIASTS

The Upstart . . . . first of the exciting new Half-A Midget Pylon Racers. By Owen Kampen. See page 28.
Ken Willard's BT-70, an ideal Basic Trainer for the R/C novice. Page 16.

THIS MONTH





THIS MONTHS COVER

Ed Keck's original Starfire uses Pro-Line radio and retract gear and is powered by a Webra Blackhead .61. The model is silked over-all and finished with Aero Gloss Dope. All-up weight is seven pounds. 8 x 10 Ektachrome transparencies by Lee Howick and Robert L. Clemens.

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VOLUME 8 NUMBER 5

MAY 1971

VIEW POINT

DON DEWEY

We need your help!

Every two years R/C Modeler Magazine presents its Reader Interest Survey and asks the cooperation of all of its readers in completing this questionnaire and returning it to us. In this manner we are able to change RCM into the type of magazine you want it to be . . . for it is *your* magazine. If you feel we run too much of one type of material to the exclusion of some other particular facet of RC flying, let us know by completing the form. If you have some suggestions on how you feel the magazine could be improved, we want to know what they are. If you think the whole rag is rotten, say so. But, let us know *why*.

You'll find the form on the last two pages of this issue. *Please* take the time to fill it out and drop it in the mail to us. Only in this fashion can we make RCM the magazine *you* want it to be. It will only take a few minutes of your time and will help us to give you what you want to see during the next two years. The final tabulation of results be be published as soon as possible.

The 1971 National Model Airplane Championships are scheduled for July 26-August 1, At Glenview Naval Air Station, Illinois (just north of Chicago). This will be the 24th Annual Championships hosted by the U.S. Naval Air Reserve Training Command.

A full schedule of competition events is planned, essentially similar to that of the 1970 meet. No full scale air show, however, will be held to close the meet as in previous years, but a model aviation air show is planned to take its place.

Entry forms will be available early in April from the Academy of Model Aeronautics. Requests for forms should include a self-addressed envelope with return postage affixed (6 cents for each form requested; 10 cents for Air Mail). Such requests should be sent to the Academy at 806 Fifteenth St., N.W., Washington, D.C. 20005.

Berthing will be limited at the air station to males only. Approximately two hundred barracks berths will be available, with priority for issuance in order of entry form receipt. Tenting and trailering will be permitted on the station, to relieve the berthing problem. Motel information is also currently available from AMA – your request should be accompanied by a self-addressed envelope with return postage affixed.

This will be the 31st National Model Airplane Championships directed by the Academy. The first was held in 1923, in connection with the St. Louis National Air Races, sanctioned by the National Aeronautic Association. The Academy of Model Aeronautics, a division of the NAA, has planned and directed all of the annual meets since 1937.

The National Model Airplane Championships, popularly known as the "Nat's," is recognized as the world's biggest model meet; with over a thousand contestants each year in three age categories and over 40 competition events. Contestants come from all fifty states and several countries around the world. RCM invites you to attend the National Model Airplane Championships for the largest model airplane meet of the year.

■

The following letter was received from one of our readers, Ernest E. Leger, and we would like to reprint it in its entirety:

Dear Don,

I sincerely hope you'll be able to publish this letter soon in your "Viewpoint" column as a sort of "Thank you" to a very good friend of yours and mine. I've never written a word for any periodical before – I've never had any particular reason. That's changed now and I think you'll agree I have good reason after reading this.

This Episode in my life began during June 1969, in Fort Worth, Texas. It was one of those afternoons when you get the irresistable urge to relax in a way known only to those fortunate enough to be involved with R/C modeling. The scene opened at the Thunderbird Flying Field beside Benbrook Lake when one of our local police cars drove up seemingly to spend a few quiet relaxing moments. Actually he was looking for someone – namely me!

To shorten what otherwise could develop into a lengthy story, he told me that my daughter, Terry, was involved in an accident and both she and my wife, Floria, were on the way to Harris Hospital by ambulance. I was given a red light-sirened escort all the way to the center of Fort Worth where I found them in the emergency ward. Terry was being attended to by a physician. She had suffered a badly broken nose and lacerations but through some miracle, and I know, God's good graces, otherwise came through all this without major problems.

For several days we attempted to find out who had obviously given their time and efforts to help us during this crisis. Someone had administered to Terry as she lay beside Boat Club Road choking and trying to get her breath after having been thrown from her horse.

Terry's riding companion rode swiftly home and got Floria. Someone called an ambulance and the Benbrook

(continued on page 4)

police department. Someone drove our car home and in the driveway after Floria and Terry had left in the ambulance – Who?

It was a year and a half later when, during a discussion with Chuck Cunningham at one of our regular monthly Thunderbird meetings, he asked if I minded answering a few personal questions – something was "bugging" him. The conversation brought to light, finally, that he and his wife had witnessed the accident that day and were the "someone" that we wondered about for so long. At the time, I was relatively new in the R/C game and my name was not too familiar to Chuck. However, Terry's name remained in his subconcious mind all that time.

It was his concern that forced him to watch that fleeing horse as he drove on his way to visit friends at Eagle Mountain Lake. It was this concern, after seeing the accident occur through his rear view mirror, that caused him to spin around on the highway and be at Terry's side to help all he could. And it was his concern that caused the other "mysterious" happenings that day. I believe Chuck and his wife very possibly saved Terry's life during those early anxious moments. I have no reason to believe otherwise.

I've tried many times since to find a way to thank those wonderful people – none of them seemed adequate. I hope this small effort on my part will convey not only our heartfelt thanks to the Cunninghams but also highlight one more outstanding example of the caliber of people associated with this exceptional hobby.

Very truly yours,
Ernest E. Leger

■

We would like to congratulate our new AMA President, Johnny Clemens on the excellent work he has done in the first few weeks of his Presidency. John dropped us a note thanking us for our support in his successful bid for the Presidency, and we have since noted some of his various activities on behalf of Academy members.

John's business is that of running a hobby shop in Dallas, Texas, but he took the time to fly to Washington D.C. to Academy headquarters in the Shoreham Building just a couple of blocks from the White House. John spent two whole days probing, prying, checking and studying the business operation of the Academy and stated

that he was particularly impressed with the improved business handling, considering the great increase in membership and obvious increased work load that such an increase demanded. In fact, he noted that this improvement was especially evident since his last visit two years ago. The computerizing of membership status information was one major notable improvement.

The trip to Washington included an evening jaunt to the home of past AMA President, John Patton, in Frederick, Maryland, for the purpose of planning the upcoming World R/C Championships in September.

The World Championship Planning Committee, which met at Patton's home, was a "high-powered" group comprised of former AMA President Walt Goode, former President Maynard Hill, former President John Patton, former President and present Executive Director John Worth, AMA Secretary-Treasurer Earl Witte, District 3 Vice-President Ron Morgan and present AMA President Johnny Clemens. The result of the meeting was some concrete planning with great pride and enthusiasm on the part of these leaders.

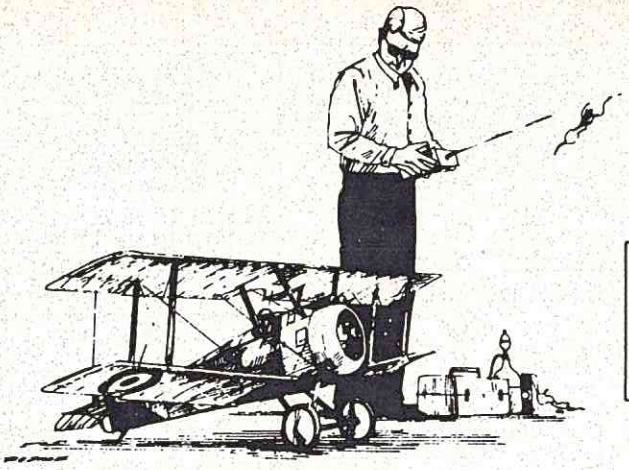
In our correspondence with Johnny Clemens, the AMA President mentioned that he does not feel that there is near enough information offered to the membership about who our officers, committees, and activators are and what they do. This is a two edged sword, since recognition is the only pay the volunteer workers obtain. The other edge of the sword is to make the membership better acquainted with these people so that they can vote more wisely in future elections. In addition to his program to get more information to the membership and more membership participation in Academy affairs, Johnny Clemens has the personal goal of putting more "fun" in modeling . . . .

To which we can only add our personal endorsement.

■

PLEASE

DON'T FORGET TO FILL OUT AND RETURN THE READER INTEREST SURVEY LOCATED ON THE LAST TWO PAGES OF THIS ISSUE . . . .



by DAVE PLATT
(Designer — Top Flite Models)

SCALE IN HAND...

Rather than base this months column on one central theme, as we have been doing in the past several issues, we're going to catch up on some of the short items of news, comments, letters, photos, tips, etc. When we run a how-to-do-it feature, space precludes anything else. Once in awhile we have to clear the files out!

★ ★ ★

Several readers came up with queries about the Dow Corning "Silastic A" moulding rubber. First, where to get it. If no local supplier exists in your area, write to: High Strength Plastics, 1401 W. Jackson, Chicago, Illinois. Telephone (312) TA9-2335. They can supply by mail order. A 1 lb. pack costs a little under $8.00, and you'll need to specify No. 1 catalyst. Incidentally, High Strength Plastics also sells a wide range of glass-fiber materials, resins, cloths, release agents, etc., so if G.F. is your need, write them.

In the wheel-making column we didn't give any idea how the correct measure of Silastic could be found. Due to the high price of this material, we want to use only enough. The way to do this is to fill the wooden moulds with ordinary salt, then pour this into a glass jar or bottle. This tells you how much Silastic to mix in the bottle to fill the cavity, with no waste. Make sure you clean out all of the salt from the mould and the jar before proceeding!

★ ★ ★

NOTES ON WEATHERING

We've had a steady stream of requests for our weathering feature prepared for the Washington DC'RC Club's 1969 Symposium. The AMA advises us that copies of the Symposium book containing this article have long been sold out. Recently the "AeroModeller" Annual published the same article, so there's another source. If you want a copy and all else fails, write your columnist:
104 Talcott Ct. Bolingbrook R. Br. Lamont, Illinois 60439.

★ ★ ★

Still on the subject of weathering, it seems that we're constantly being asked about suitable airbrushes. Frankly, the one that we always use came with us from England, and any time someone would ask, "Is the (brand name) airbrush any good?" we'd invariably reply that we didn't know, due to no experience.

Eventually the realisation came that we'd just have to get hold of a natural-born American airbrush and see how it compares. The one we tried was the Paasche H-3 model which retails for about $26.00 including air hose. A compresser of about 28 lbs./inches is required.

Probably the most severe test of any airbrush is to see if it can successfully handle a weathering job on a 1/48 plastic kit. Obviously, such infinitely fine detail is required for this job, that any brush that will succeed here is going to have no trouble with a 1½" or 2" to the foot R/C job.

So, we picked up a 1/48 model that had been laying around and got started. Without going into extensive details of the tests made, our finding was that the Paasche was quite capable of doing a very fine job. You will need to thin out the paint quite a bit, but this is no problem. Also, if you want to spend another $6.00 to $7.00, you can get the H-5 color adjusting parts and HC-5 air cap, which will enable you to put the basic paint scheme on with the same brush. For information, write Paasche Airbrush Co., 1909 W. Diversey Avenue, Chicago, Ill.

★ ★ ★

Wake up at the back, there!

During one month we had two separate requests for sources of Sopwith Triplane drawings. Both of the guys said they had been reading the column since Day 1.

Now it happens that a few months ago, we mentioned a Mr. Bill Hannan (Graphics, P.O. Box A, Escondido, California 92025) and that he has a number of aircraft drawings. One of these is (you guessed it!) the Sopwith Triplane. Send for the man's catalog – it's only a quarter.

★ ★ ★

C.A.P. Plans

Over the past several months we've been getting quite a number of inquiries from readers concerning the C.A.P. (Complete-A-Pack) range of plans, made in Scotland and sold here by Bob Holman Plans Inc. These plans are all R/C Scale models and in order to form an opinion, we wrote to Jim Scott and asked him about the accuracy, etc., of his plans.

His very detailed reply was quite the most refreshingly candid that we have so far encountered from a manufacturer speaking about his own product. We can't print the whole thing, but a couple of excerpts from his letter will show what we mean –

(continued on page 83)

engine clinic

By Clarence Lee

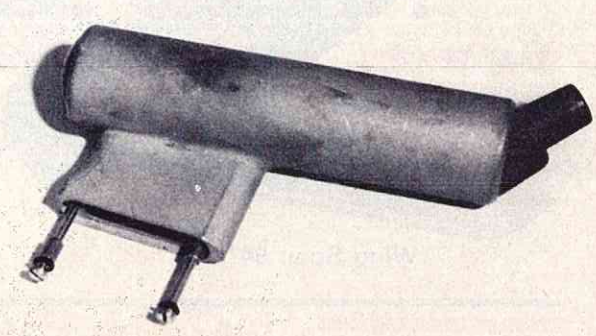
The Silence-Aire 'Twin' expansion chamber muffler.

It has been almost two years now since our initial report on mufflers. Many letters have come in wanting to know if there have been any changes or anything new in the way of development. Several individuals have made mufflers on a limited basis but the situation still remains pretty much the same with the commercially available units. As with our original findings, the Silence-aire and KO are still the top rated mufflers. For new readers of the column who may not have read the original report, the Silence-aire does not cause any power loss and the rpm drop between muffler-on and muffler-off operation is nil. The KO does have a very small drop of about 150 rpm but is the quieter of the two. With some of your factory type mufflers that come as optional equipment causing a drop of 1,000 or more, this is practically nothing. Of course some of these real 'choker' jobs are quieter, but this is at the expense of considerable power loss, increased engine temperature and wear, more carbon and varnish build up, etc.

Some of the fellows have complained about the Silence-aire and KO being louder than they would like. Some of this opinion is being based on noise level when you are standing right on top of the engine rather than in the air. Both the Silence-aire and KO being of the venturi or flow-through type are open at the front and consequently noisier than the closed expansion chamber type. In the air they are quieter than ground tests indicate and do remove the loud bark and crack that annoy people the most. Now, Super Tigre has gone to the flow-through type of muffler for their line of engines. The flow–through Super Tigre muffler compares closely with the KO as far as power loss. The S.T. .56 I checked evidenced a 250 rpm drop with the muffler installed. I like the idea of cooling fins on the muffler, itself, such as used by Super Tigre. Some of the increased heat in your engine is being caused by the heat from the muffler being conducted back to the engine. If the muffler is cooler, then the engine, in turn, will run cooler also. This is also one of the advantages of the flow-through type of muffler – cooler operation.

Both KO and Silence-aire now make expansion chamber type mufflers in addition to their flow-through model. The KO uses the same muffler body as with their flow-through model and plugs the front end with an anodized aluminum cap. The back of the muffler has a high temperature plastic cap with a short 3/8" diameter tube outlet. Performance of this muffler proved rather surprising as the power loss with the muffler installed was only 150 rpm, the same as with the flow-through model. This is the smallest power loss I have ever had with an expansion chamber type of muffler that was still doing an adequate job of silencing the engine. I checked the operating temperature of the engine with both the flow-through and expansion chamber models and could detect little difference. However, I am sure the flow-through model would run somewhat cooler in the air once the airstream was passing through it, and with the venturi action helping to extract the exhaust gases, possibly regain the 150 rpm loss. If, in the past, you have found the noise level of the flow-through model too high, then the expansion chamber model would be your better choice. *(continued on page 78)*

The KO expansion chamber muffler.



CUNNINGHAM ON R/C

RCM's Chief Skinflint shows you how to save enough money on your next few R/C jobs so you, too, can go skiing in New Mexico . . . .

No doubt by now you have all read or heard about the bad press that R/C received at the hands of the LA Times writer. This of course was simply pure nonsense, written to sell a few more papers. But, did you hear about the recent bad rap for R/C, and done by R/C fliers, themselves?

This latest bit hit the newspapers and radio stations around the first of February. It seems that several enterprising Europeans decided that large radio controlled aircraft were just the thing to smuggle drugs over the border between East and West Germany. The details have been sketchy, but those that I heard claimed that the aircraft had wing spans of about ten feet, and could carry up to ten pounds of drugs. Now, Sports Fans, who says that this isn't the most interesting and fascinating hobby/sport in the world. Talk about an R/C PAA-Load event . . . . someone beat us to it.

While on the subject, perhaps many of you do not know that single channel radio control equipment has been used for years to train hunting dogs. The dog wears a collar containing a receiver, battery pack, and a shocking device. When the dog makes a wrong move, or takes out after the wrong type of game, the trainer presses his control button, and WHAM, the dog gets a real jolt. He doesn't know where it came from, but he soon learns to do the correct thing every time. Kinda like the old 'Thunderbolt-from-on-High theory.' Wonder if they make things like that for kids, might just be the right kind of training outfit for a couple of bright eyed and bushy tailed youngsters I know.

Naturally this column is being written in the dead of winter for consumption in the early spring. It is hard to turn thoughts from the cold winter wind to the first lovely spring days and flying time for many of our Northern friends. We have been enjoying an unusually mild winter in Texas, while just further North it has been a rough one. My new biplane, the "Playboy," has been undergoing flight tests for the past couple of weeks, and after a few very minor changes, it is about ready to have the plans drawn. I think that all of you bipe lovers will like her. She carries 1160 square inches of wing area, and yet ready to fly only weighs 7.5 lbs. She is a direct descendent of the Show Off, and retains some of the Show Off type looks, yet is larger but lighter. It is really a fun airplane to fly, and with an Enya III with Silence-aire muffler she really tracks through the sky. It will float in for a landing as light as a feather, and you can make a choice of either two wheeled roll out type landings, or ease her down for a three pointer. I know you will enjoy the Playboy.

This month we are going to explore very briefly some money saving ideas again. Some of these ideas I have presented to you in the past while some are new. You may not have been exposed to them before, so read on a bit and see if you can save a buck or two on your next project.

WINGS

You can sink a lot of money into building a wing if you are not careful. If you go the all-balsa route you can now save some money by going to a bit thicker grade of wood for sheeting, spars, etc., and building fewer ribs. At one time the cost of balsawood was directly proportional to the thickness of the wood. Thus a 1/16" thick sheet was two thirds the price of a 3/32" sheet, and half the price of a 1/8" sheet. Now, a 1/8" sheet costs about 40% more than a 1/16" sheet rather than 100%. You can see, then, that if you go for larger wood, you can redesign the structure, and possibly save money in this way with a bit of thought. The same thinking holds true for the fuselage and the tail surfaces. Other ways to save money in wing construction is to look for new ways of building, and new types of covering materials. For a number of years I have been using foam wings and covering them with cardboard. I have used all types of cardboard, with nearly equal success. The cardboard that I like to use is about 1/32" thick, and has a smooth surface on both sides. You can use lighter cardboard on smaller aircraft, and a bit heavier on the larger ships. If you are worried about the strength, then use spars made from spruce, or even more simply, drop down to your corner hardware store and buy a selection of 3/16" dowels, (they cost about a nickel each), and use these for spars. While you're there, you can invest in a couple of good striaght 1/4" dowels to use as pushrods.

Another covering that I came across the other day was 1/32" wood veneer. Naturally, this isn't a new material, as some pretty nice aircraft in the past sported veneer covered wings, but the source is different. I read about the material in Popular Science. The U.S. Plywood company is putting out veneer kits, containing a sheet of wood veneer, 1/32" thick, 30 inches wide, and 60 inches long, plus a container of glue, all for $3.90. There is plenty of material there to cover a big wing, and have some left over. You might have to wet the leading edge to get it to conform to the airfoil shape. I haven't used this yet, but I bet that it will work very well. I suggest that you not use the glue that comes with it until you have experimented with a piece of scrap foam and covering material. Also high on the list of coverings is plastic sheeting. Check your local plastic supply houses, such as Cadillac Plastics for rigid vinyl sheet in .010 thickness. In some of the larger houses you can purchase it in colors.

FUSELAGE

As we mentioned earlier, you can gain strength by going to larger thickness of wood, and by altering the structure of the aircraft under current pricing conditions of balsa wood. Where formerly it was universal to use 3/32"

(continued on page 60)

KEN WILLARD'S BT-70

In the February, 1970, issue of RCM, I inserted a questionnaire for beginners. The idea was to find out what their preferences were in the way of a model with which to learn R/C flying skills. Five questions were included. They were, basically, as follows: What size, what material, what design, what radio, and whether the modeler preferred to buy a kit, a partially assembled kit, or an ARF (almost ready to fly) type.

Six months later the results of the survey were completed and were published in the September issue. Naturally, there was no common agreement, but there were enough indicators in the desired preferences to show that a four to five foot model, made out of balsa and plywood, with a good stable design (which most agreed should be a high wing model), and controlled with a digital proportional radio is the most popular choice. The modeler also prefers a kit to an ARF.

Now, as I said when the results were published, you have to take into consideration just what type of beginner would be most likely to see the questionnaire. Most of them identified themselves as either free flight or control-line flyers who would like to get into R/C. Obviously, the article didn't reach many of the absolute newcomers to modeling, since most of the men in that category wouldn't know about the existence of R/C Modeler Magazine until they had been in the sport for awhile.

Several of the respondents were very emphatic in their desire that the model not be another "look-a-like" if it could be avoided. And that did make the assignment a bit tougher. There are several kits on the market which just about fill the bill – the DeBolt Champion, the Esquire, and Top Flite's Headmaster, for example – and they're stable, high wing designs. So, if you didn't want it to look like them, you have to disguise the high wing setup. Now, the way to do that, I figured, would be to make the model a mid-wing, then drop the stab down in the fuselage a bit so it's below the wake of the wing, and then you still have a basic high wing layout – but it doesn't look like it.

It's pretty hard to beat a flat bottom wing when it comes to longitudinal stability. And you can't beat it for simplicity of construction – at least if you have a flat working surface to build it on. No matter how good the design is, if the wing and stab aren't free of warps, you're gonna get into trouble on that first flight.

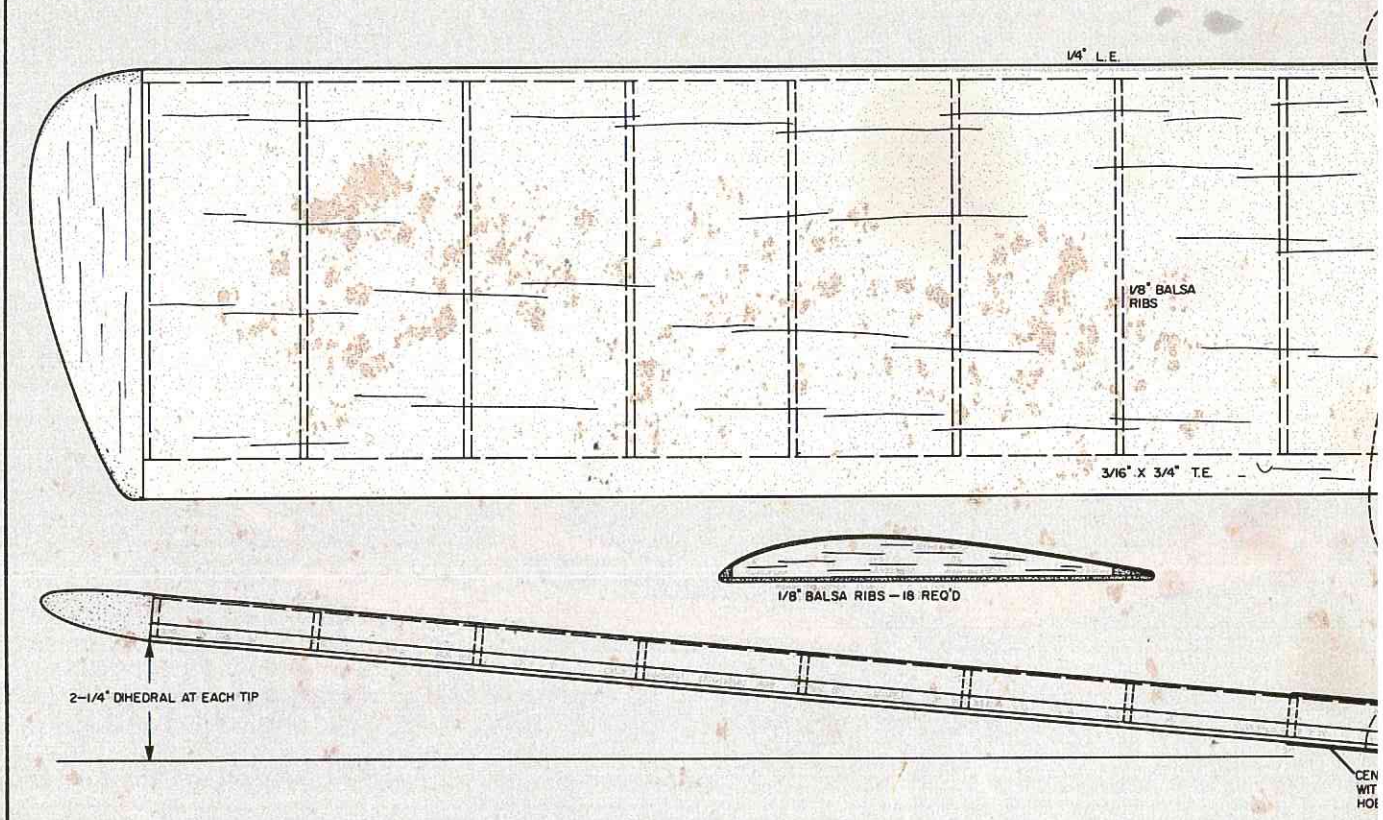
For the beginner, tricycle landing gear is the only way to go. If you carefully line up the wheels so the model rolls in a straight line, then takeoffs can be made unassisted. The model should sit at rest with the nose very slightly down. This assures that the model will have good flying speed at lift off, and also will help to prevent ballooning back into the air on landing. The nosewheel doesn't have to be steerable, but it isn't too hard to install that way, and it is more fun.

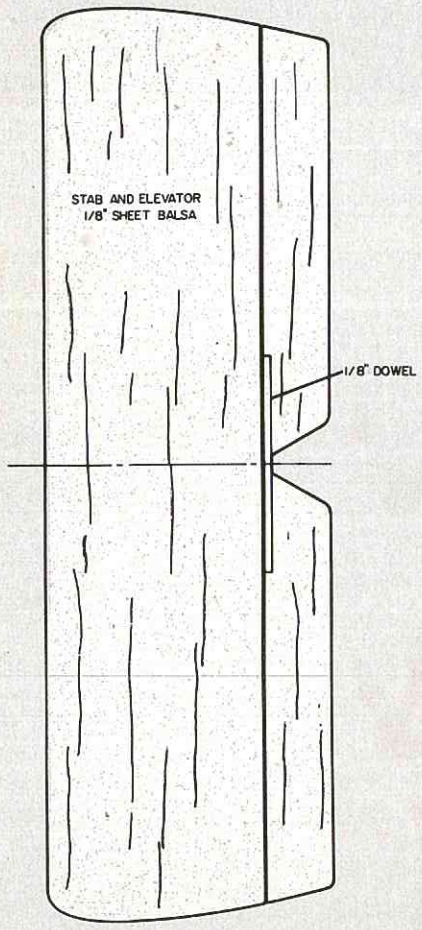
All these things were taken into consideration in designing the BT-70. In addition, the simplest possible construction – all sheet balsa, plus carved balsa blocks for the engine cowl, hatch, and the wing fairing for the cockpit canopy is used. The only tricky part in the entire building process might be considered the fitting of the sheet balsa over the turtledeck. But I considered that an essential part of the design in order to avoid the "look-a-like" slabsider. Also, since the model is a basic trainer, there should be provision in the cockpit for a student and instructor pilot.

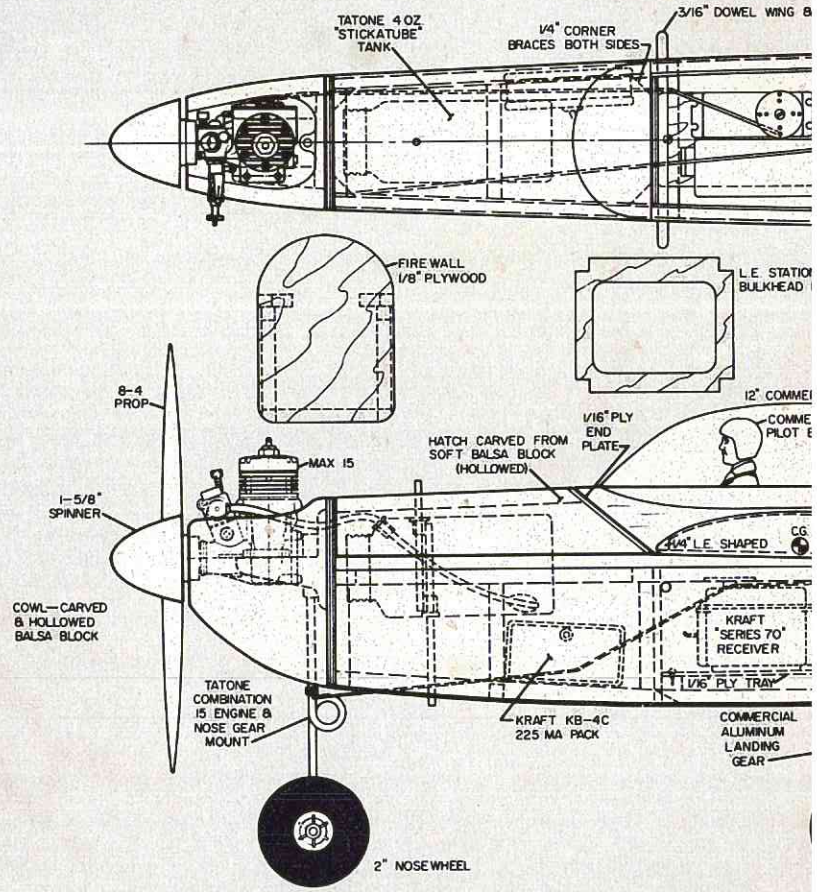
All of the fittings on the BT-70 are obtainable, either from your local hobby shop, or directly from the manufacturer or various mail order houses which advertise in RCM. For awhile I toyed with the idea of a specially built up canopy – like they had on the BT-13 in WW II, but decided that might complicate things more than using a 12" canopy and cutting it to fit. Those of you who prefer to save a buck or two can carve one out of balsa and paint it black, with silver lines to depict the structure. Similar modifications can be made in lieu of the Tatone combination engine and nose gear mount, which does cost six bucks – but saves a lot of building time, too.

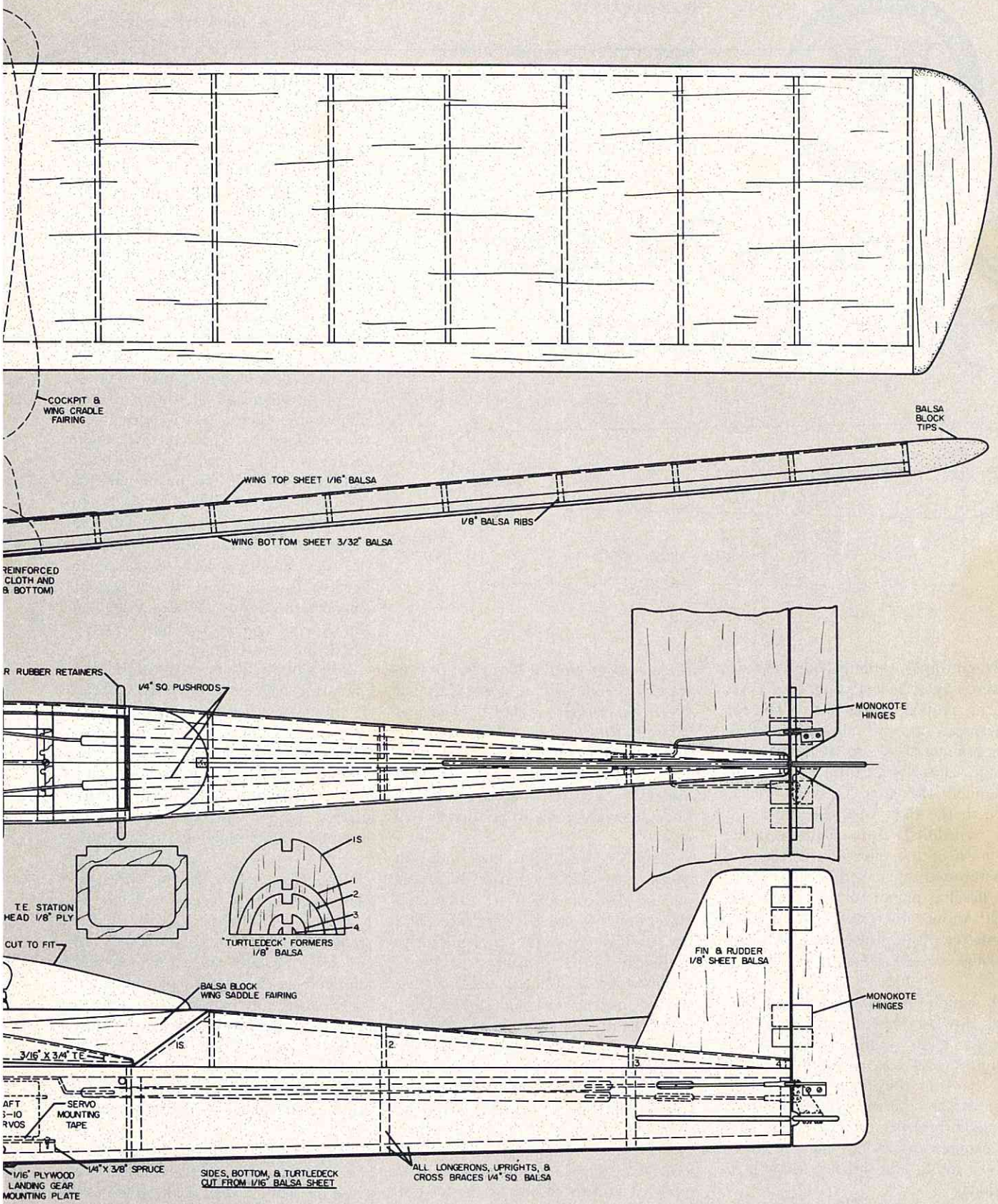
All the wood is in standard sizes. You'll need these: ¼" sheet; 1/8" sheet; 3/32" sheet; 1/16" sheet; 1/8" plywood; 1/16" plywood; 3/16" dowels; ¼" square balsa; 3/16" x 3/4" trailing edge stock; 3" x 1½" balsa block stock.

(continued on page 74)


1/4" L.E.
1/8" BALSA RIBS
3/16" X 3/4" T.E.
1/8" BALSA RIBS — 18 REQ'D
2-1/4" DIHEDRAL AT EACH TIP


STAB AND ELEVATOR
1/8" SHEET BALSA
1/8" DOWEL


TATONE 4 OZ "STICKATUBE" TANK
1/4" CORNER BRACES BOTH SIDES
3/16" DOWEL WING
FIRE WALL 1/8" PLYWOOD
L.E. STATION BULKHEAD
8-4 PROP
1-5/8" SPINNER
MAX 15
1/16" PLY END PLATE
HATCH CARVED FROM SOFT BALSA BLOCK (HOLLOWED)
COWL — CARVED & HOLLOWED BALSA BLOCK
KRAFT "SERIES 70" RECEIVER
1/16 PLY TRAY
TATONE COMBINATION 15 ENGINE & NOSE GEAR MOUNT
KRAFT KB-4C 225 MA PACK
COMMERCIAL ALUMINUM LANDING GEAR
2" NOSEWHEEL



BT-70

DESIGNED BY	KEN WILLARD	DRAWN BY	DICK KIDD RANDY KIDD

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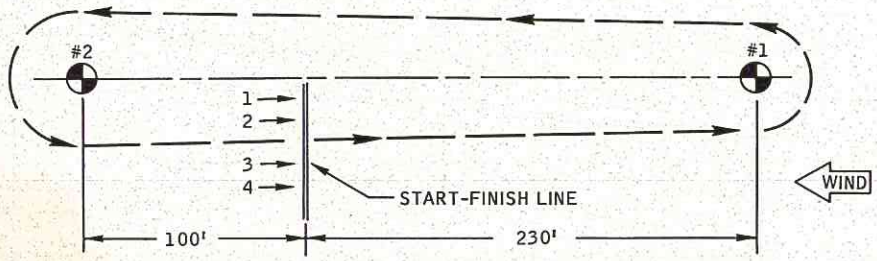
Rules compiled by

JOHN BRODBECK and DON DEWEY
Text by JOE CORR

R/C MODELER MAGAZINE
presents its

Quarter Midget Pylon Racing



When Chuck Cunningham sired .15 powered pylon racers a couple of years ago, his proposed class had to wait for widespread use of miniature radios. This summer the Marin Radio Control Group, using Chuck's rules as a base, scheduled the first Quarter Midget Race in the Bay Area. The first race was scheduled three months after adoption of the rules in order to give all interested a chance to design, build, and develop planes for the event. To assist those interested, a monthly newsletter listed the kits and plans available, as well as a reprint of RCM's rules.

A couple of months before the race, Howard Baldwin and Joe Corr brought plans and a plug for a fiberglass fuselage to a club meeting. It was the ship they were planning to enter. Before the meeting ended they had six firm orders for a kit they had not planned on selling, did not know how to mold, and did not know if it would fly.

A few weeks before the race, Quarter Midgets began appearing at the field and all stopped what they were doing to watch the test flights. The first efforts revealed room for improvement. Henry Poteet was first to test fly his Sig Doubler and after three or four ground loops he got it in the sky. From then on it was Katy bar the door! Henry's plane bobbed and weaved from oversensitive controls; however, while it was gyrating about the sky, it breezed by one of our faster .60 powered pattern ships and we all knew we were going to be flying a real racer.

Sam Crawford and Les Anderson were next to have a ship ready. It was one of Baldwin and Corr's fiberglass Mini-Minnows and all were interested in whether or not it would fly, particularly the designers! After a snakey takeoff roll the tail came up and off it sent, fast and stable. On a later flight, Crawford gave us all a lesson in what prop **not** to use. He acquired, by devious means, a toothpick prop used by the control-line speed people. With the engine screaming at a speed which would have made the O.S. Max designers cringe, the ship was released on what had to be one of the longest takeoff runs in history. We had never seen an engine work so hard to accomplish so little! Joe Corr supplied some design wizardry with an airplane combining tail heaviness with one aileron to produce a ship which would not turn right at all and snap rolled when a left turn was attempted at low speed!

Teething problems were solved with remarkable speed and, as development continued, it was plain to see the Quarter Midgets were going to supply an exciting race.

Our small amount of experience showed the O.S. Max .15 to be a most remarkable engine. It is capable of tremendous power and a good reliable idle. On standard club fuel (12% Nitro) we have found a 7/6 wood or nylon prop a good compromise between pulling power and top speed.

We also found the ground looping problem on takeoff was eliminated with practice and judicious use of the rudder. Further, our experience thus far has shown innovations such as coupled rudder and aileron, or the use of just one aileron, leave a good deal to be desired. Early in our flight testing we found that 2 oz. fuel tanks were not enough. To be completely safe most all are using 4 oz. tanks. In the tail wheel versus tail skid department, the tail wheel, regardless of how small, seems to assist in keeping the first part of the takeoff run straight. Many are still using tail skids out of laziness and have to work a little harder on takeoff.

For smooth flying it is a must that the plane balance at least 10% ahead of the normal C.G. placement as used on a pattern or sport plane. Approximately 20% back from the leading edge is a good place to start. This forward C.G., plus small control surface and limited movement, produces a completely manageable racer.

Race day came, and all the talk, planning, and theories, were put to the test. The well trimmed aircraft had a tremendous advantage. With the course being only three hundred feet long you are either turning or lining up for a turn and there is little time to recoup if you blow one. When the dust settled, Sam Crawford and Les Anderson were tied for first place in the point standing and Crawford was awarded first place by nature of better times.

We have now completed three races and number four is just ahead. The event has been so well received that we will have races every other month throughout '71.

If you are looking for an exciting event for the average R/C'er, try RCM's Quarter Midgets – you will not be disappointed. □

R/C MODELER MAGAZINE'S OFFICIAL 1971 QUARTER MIDGET RACING RULES

I OBJECTIVE

The purpose of the RCM Quarter Midget Pylon Racing Event is to provide an objective competitive event of multiple R/C model airplane races that will encourage as many entries as possible and can be carried out on a local, regional or national level with a minimum of officials.

II GENERAL

All AMA and FCC regulations applicable to the R/C flyer, his aircraft, and his equipment shall be applicable to this event except as noted herein. There shall be no limitation on the type of radio equipment fitted to the aircraft, or the number of controls that can be utilized. Each contestant shall be allowed two (2) entries in this event although the second, or alternate, aircraft may be used only if the first aircraft is not flyable. The contestant may have someone else fly his model in competition if he desires to do so and if said alternate pilot is approved by the Contest Director. The builder and the pilot shall have current AMA and FCC licenses and if an alternate pilot is so designated this shall be deemed a team entry.

Consideration of safety for spectators, contest personnel, and contestants are of the utmost importance in this event. Any unsportsmanlike conduct such as repetitive unsafe flying or intentional attempts to gain unfair advantage through rule violations, or any other unsportsmanlike conduct or hazardous flying over controlled spectator areas will be cause for immediate disqualification of that flight and/or disqualification of both aircraft and pilot from the event at the discretion of the Contest Director.

The decisions of the Contest Director or his designee relating to the interpretation of these rules shall be final and binding on all contestants.

III MODEL AIRCRAFT REQUIREMENTS

Models entered in this event are to be of conventional design and recognizable replicas of full size propeller driven aircraft which have competed in closed course or cross country air racing are to be encouraged. Deltas and tailless aircraft will not be allowed.

The Builder of the Model rule shall not apply to this event.

IV MODEL AIRCRAFT SPECIFICATIONS

ENGINE:

Maximum total nominal displacement shall be .159 cubic inches. Engines must be production units assembled from factory available production parts. Engines and all parts, whether original or replacement, must have been produced in quantities greater than 500 and all must be available through normal retail outlets in the U.S. A. Substitutions shall be limited to catalog listed parts produced in quantities greater than 500 units and available commercially to anyone from the manufacturer of the engine.

CARBURETOR:

Engines shall be equipped with a servo operated radio controlled throttle capable of varying engine RPM and commercially available from factory available production parts produced in quanties greater than 500, although not necessarily from the same manufacturer as the engine. The aircraft must be capable of remaining stationary with the engine running for a period of 10 seconds without any form of external restraint. Prior to the start of each race all contestants will throttle their engines back to full idle for a period of 10 seconds at which time the aircraft will remain stationary until the starter's flag at which time throttle will be increased to full rpm for takeoff. No change in needle valve setting is allowed after the idle period.

PROPELLER:

Only wooden or nylon fixed pitch propellers are permitted.

FUSELAGE:

At the widest point the basic fuselage must be at least 2¾" wide. At the deepest point the fuselage must be at least 5" deep (including windshield, canopy, or headrest). These points need not coincide (with depth).

WINGS:

Monoplanes: The minimum wing area, including that area displaced by the fuselage, but not including fillets or stall strips, shall be 300 sq. in.

Biplanes: The minimum total area of both wings combined, including the area displaced by the fuselage but not including fillets, or flaps, shall be 300 sq. in. On biplanes with different size wings, the area of the smaller wing shall be at least 2/3rds of the area of the larger wing. Flaps are permitted in both categories but wing area is to be figured with flaps retracted.

CHORD THICKNESS:

Wing thickness at the root shall be at least 7/8" for a monoplane and 5/8" for a biplane. On a biplane with different sized wings, the smaller wing must be at least 1/2" thick at the root. The thickness of wings must taper in a straight line to the tip in a constant percentage to the root.

In the specifications "root" shall be defined as the innermost wing section, not counting fillets, that may be measured without removing wing from fuselage. On a completely exposed wing, such as on a Parasol monoplane or the top wing of most biplanes, the "root" is that section of the wing that is intersected by a projection of the outline of the fuselage as seen in the top view: i.e. the root section would be 2" from the centerline of an exposed wing on a plane with a 4" wide fuselage.

WEIGHT:

Weight, less fuel, but including all equipment necessary for flight shall be not less than 2½ lbs. or more than 4 lbs.

MATERIALS AND WORKMANSHIP:

Workmanship must be of satisfactory standards. Contest committees are empowered to refuse permission to fly, or disqualify any ship which, in their opinion, is not up to reasonably safe standards in either materials, workmanship, detail design, radio installation, or condition as a result of damage.

FUEL:

There shall be no restriction on fuel used for this event.

IDENTIFICATION MARKINGS:

Models competing in this event must bear identification markings at least 1½" high. Identification markings shall consist of the letter N followed by the last two or three digits of the contestants AMA number, followed by the first letter of the contestants last name. Markings shall be located either on both sides of the fuselage between the wing trailing edge and stabilizer leading edge, or on the upper right and lower left wing panel surface. No other identification markings are required.

CONFORMANCE REQUIREMENTS:

To qualify for this event, each aircraft must score a minimum of six (6) points. Conformance points are awarded as follows: Scale-like appearance — 8 points maximum; finish — 2 points maximum; cowled engine — 2 points maximum; detailing — 1 point maximum; pilot — 1 point maximum. TOTAL — 14 points maximum. To encourage excellence of workmanship a "Concourse de Elegance" award is recommended based on conformance points.

V RACING COURSE SPECIFICATIONS:

The course is 10 laps with individual lap length of 1/8th mile. Total distance travelled is 1¼ miles (6600'). The race starts at the start-finish line. All takeoffs will be ROG. The race is terminated at the start-finish line ten full laps later. The race course specifications may be modified in the interest of safety or to suit existing field conditions at the discretion of the Contest Director and his Committee if safety is not compromised. (See sketch)

VI OPERATION OF THE RACE:

HANDICAPS:

There will be no handicap system employed. Qualification heats will be held in the morning of the first day of the race and a cut off line will be employed at 50% of the high times and this category will be declared the Novice category. The 50% of lowest times will be classified as Expert. In the event that there are not enough entries to warrant this Novice-Expert division, this ruling may be rendered void at the discretion of the Contest Director.

At the number one and two pylon, an official will stand in close proximity to the pylon and use an appropriate method to notify a missed pylon to the flyer in question.

A maximum of four planes per heat will be allowed

Engine must be started a maximum of 1½ minutes after the signal to start engines is given. At this point the contestant shall retard his throttle to full idle and will remain for 10 seconds without any form of external restraint. Any contestant unable to meet the idle requirement will be eliminated from the heat. At the end of 10 seconds the first contestant will receive the green flag followed by each successive contestant at one second intervals.

There shall be no helper permitted on the starting line.

All laps are to be flown counter clockwise with turns to the left.

No minimum altitude is required for quarter midget pylon racing.

If a pylon is cut that lap will not be counted. Two pylon cuts constitute disqualification of that flight.

Starting positions in all races shall be determined by picking numbers from a hat. Planes shall be flagged off at one second intervals.

All contestants must be given an equal number of opportunities to race.

All aircraft must be landed under power. A penalty in score will be assessed for 'deadstick' landings.

SCORING:

Points shall be awarded after each heat as follows: 4 points for first place, 3 points for second place, 2 points for third place, 1 point for fourth place. 1 point per heat will be deducted for each heat where the contestants aircraft is not landed under power.

The winner of the event is the contestant who has accumulated the most points after the conclusion of all heats.

If time permits and there is no frequency conflict, ties shall be broken by a fly-off race; otherwise the best single race time shall be considered in determining final placings. □

BY PAUL STRENGELL

THE HUMP

A .15 POWERED TRANSITIONAL 'TRAINER' THAT TURNED OUT TO BE SOMETHING MORE . . . . .

Before I hear any snide remarks about the names of these two airplanes, let me explain that I only build and design my own planes so I can give them any name I like. In fact, my standard procedure is to think up a name and design an airplane to fit it. The fact that the thing might fly is strictly coincidental.

All kidding aside, and in spite of their names, the "HUMP" and the "BUMP" are fine fliers and have served me well over the past year. Both have literally had their wings and tails flown off, with only one crash and that was with the original "HUMP" which succumbed to pilot error during landing. The second "HUMP" (shown in the photos) has been retired twice, but brought back to active duty both times for something to fly.

The "HUMP" was the original of the two. It was intended to be a transitional trainer from a Lanier Cessna with which I had been learning to fly. However, in bridging the gap I guess I left out a span 'cause it proved a bit more than I could handle at the time. Though stable, it was just a little too responsive for my ill-trained reflexes.

I liked the basic size and planform so, rather than drop my idea, I took a more conventional approach to a trainer and put the wing on top. The "BUMP" (it rhymes) was born.

This filled the gap and I began to find out what R/C multi was like. She proved capable of all but sustained vertical maneuvers and showed no bad habits. Since the wing loading was a little high the landings were a bit faster than I was used to and this proved to be my undoing with the "HUMP" later on. Don't get me wrong, the higher sink speed wasn't bad, it was just higher than the Cessna. In fact, I feel it is an advantage over a "floater" and, once I mastered my sink rate, my landings improved.

The "BUMP" finally wore out so I built another "HUMP" (to replace the original) to really prove whether it was a worthwhile design. I found it actually performed very much like the "BUMP", but, as stated before, was somewhat more responsive. Of the two airplanes the "BUMP" is probably the better overall flier, but I actually prefer the "HUMP" because of its responsiveness and appearances (ugh!).

CONSTRUCTION

GENERAL:

These are small airplanes and their performance is very dependent on

their wing loading so select your wood carefully. However, don't sacrifice strength for weight. The leading edges and main spar should be fairly hard and the stab, medium hard. I wasn't kidding when I said I had flown the wings and tails off the originals. Medium wood will suffice for the fuselage sides and medium soft to soft for the remainder.

Construction of either the "HUMP" or the "BUMP" is relatively simple; however, I'm going to assume that some of the potential builders are those who have gained the initial experience needed to fly airplanes like these on ARF types and have yet to build a built-up model. For this reason, contrary to a good many construction articles I have read lately, I will attempt to be a little more detailed in my construction description.

WING:

Cut out two rib templates from 1/16" plywood and drill two 1/4" holes in each template as shown on plans. Both templates should be identical, with the holes in perfect alignment. Start cutting blanks out of medium 1/16" balsa. You don't need to be precise on the outline, in fact, it must be oversize, and don't bother cutting out the spar slot nor the trailing edge recesses. After you have the required number of blanks, carefully position a template on each blank and drill the two 1/4" holes in each one.

Stack the blanks on two short pieces of 1/4" dowel, placing a plywood template on either side. Sand all the ribs to match the outline of the templates. Rough out the trailing edge recesses with a knife and finish to the exact outline with a piece of fine sandpaper or a file. Use a razor saw to cut the spar slot slightly undersize and use a small metal file to finish to the correct size.

Remove the two templates and pin the stack together to prevent shifting. Remove the rear dowel. Use a 1/4" square file (can be found in most hardware stores and you will find it a handy tool in the future) to shape the rear spar hole by working it back and forth in the 1/4" hole.

The above may sound like a lot of work, but, unless you own a good jig or band saw, its the easiest way I know to produce a really good set of matched wing ribs. Make all the ribs at once and trim some as necessary for sheeting and landing gear blocks.

Sand one edge of a sheet of 1/8" x 2" x 36" hard balsa perfectly straight using a long sanding block and the edge of a straight work bench for a guide. Mark the center and all rib locations on this piece and cut to the correct width with the straight edge as the bottom of the spar. Cut the rib notches, but do **not** cut the spar in half.

Use a piece of straight, medium 3/8" x 3/4" for the leading edge. Mark

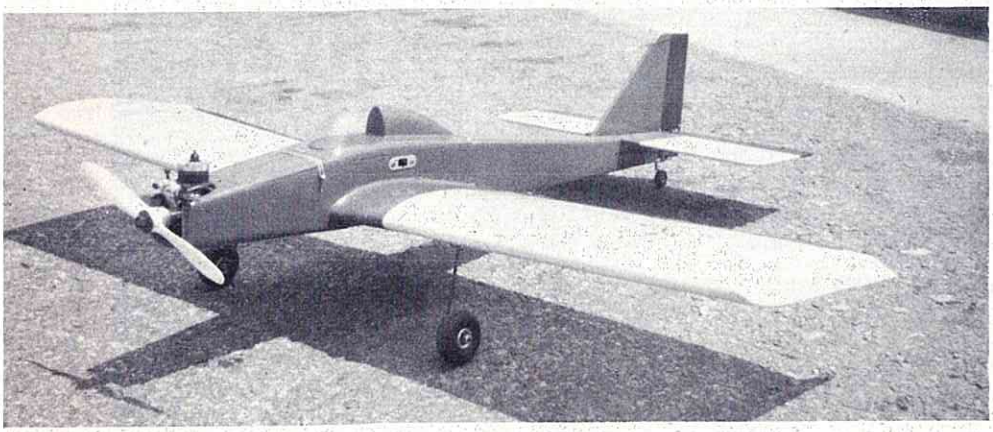
AND BUMP

A HIGH-WINGED VERSION OF THE 'HUMP' THAT IS CAPABLE OF ALL BUT SUSTAINED VERTICAL MANEUVERS . . . . .

the rib locations and center, then cut the rib slots using two pieces of hacksaw blade taped together. Do **not** cut in half.

Slide the ribs (except the center rib on the "BUMP"), in proper order, onto a straight piece of 1/4" square. Position the ribs and slip them into their respective places on the main spar. Pin the main spar on its correct location on the plans. Block up the rear spar ½" and reposition the wing ribs as necessary. Slip the leading onto the ribs and pin it down on 5/16" high blocks. (Note: the two center ribs on the "HUMP" wings are slanted out to allow for dihedral). Glue all the joints using Titebond or similar glue.

Allow the glue to dry for awhile, then glue the top 1/16" x 1" trailing edge in place. Let the wing dry thoroughly and remove from the plans. Pin the wing to the workbench, **upside down**, and blocked up so the trailing edge is flat. Glue the 1/16" square spruce in place on the top trailing edge and then the bottom 1/16" x 1" trailing edge. Pin the entire trailing edge down securely and check to see that it is straight. Allow to dry before removing.



Using a tri-square, carefully mark the center line on the trailing edge and rear spar, then cut the wing in half with a razor saw. Pin the wing halves together, leading edge to leading edge and block the tips up for the proper dihedral angle with the bottom of the main spars flush with, and perpendicular to, an edge of the work bench. Block up the trailing edges so both are the same distance above the workbench, then, using a long sandpaper block, with the workbench edge as a guide, sand the proper bevel into the wing center section.

If you are building the "HUMP" wing you may now epoxy the two panels together and pin them to the workbench, leading edge down, until the epoxy sets. Be sure to check for the proper dihedral angle and for any possible misalignment. The "BUMP" wing is done in a similar manner except the center rib is slipped onto one panel before the two are joined and then positioned after the panels are joined.

After the epoxy has set, install the dihedral braces on the leading edge and main spar and the balsa filler in the trailing edge. On the "HUMP" wing, sand the bottom of the main spar flat between the center ribs and also cut away the rear spar as shown.

The wing tip blocks are made by sawing a piece of soft 1" x 2" block in half diagonally. This is best done on a bench saw, but in lieu of that, it can be done with a handsaw if you are careful. Trace the rib outline on the block and saw to shape. Make the tip plate from fairly hard 1/8" sheet. Glue the tip blocks in place and then the tip plates. Sheet the center section with 1/16" sheet.

The leading edge on the "HUMP" wing may now be rough shaped except for the center section where it fits into the fuselage. Final finishing of the wing is done after assembly to the fuselage.

The "HUMP" wing is finished by assembling the servo box in the center section, sheeting the center section and shaping the leading edge and wing tips. A long sanding block is particularly useful in the final shaping of the leading edge to insure a uniform shape across its entire length. After the wing has been sanded, wrap the center joint with nylon tape glued or epoxied in place. Install the aileron torque arms using nylon tape and epoxy. The ailerons may now be shaped and fitted, but do not install until after covering the wing.

FUSELAGE:

Since there aren't any curved lines in the fuselage, I highly recommend that the fuselage sides be laid out on the wood by measurement and drawn with a straight edge. This is much more accurate (if you're careful) than tracing the sides from the plans. Use medium hard wood.

Cut out the 1/32" plywood doublers and glue to the sides with contact cement. Use at least two coats of cement and weight the sides while the cement is setting. While the cement is drying cut out all the bulkheads, uprights, install blind nuts in the firewall, etc., so fuselage assembly can proceed uninterrupted when the sides are ready. Glue on the uprights when the sides are dry.

Tack the fuselage top view to the work table and position bulkheads 2 and 3 on the top view, being sure they are firmly anchored and perpendicular to the table. If you haven't done so, cut out the notches for the wing leading edge, trailing edge and spar in the "HUMP" sides. The use of "fast set" epoxy can speed assembly of the fuselage considerably, but be sure everything is positioned accurately before the epoxy sets. Align the sides on bulkheads 2 and 3 and pin or block in position until the epoxy has set. Now epoxy the firewall in place, pull the sides together and glue at bulkhead number 4 and the tail. Use masking tape and pins to hold everything in place. Try to be as careful as possible because the alignment of the entire plane is dependent on the accuracy of the fuselage.

When all is dry, set, or cured, remove the fuselage from the plans. Sand the edges flush and smooth with the bulkheads. Glue in the cross pieces at each upright and the 1/8" sheet filler at the tail. If you're building the "BUMP" you can now glue in the top and bottom sheeting, plywood landing gear mount and nose blocks. (tack glue the nose hatch cover so it can be removed later). Sand off the whole mess so its neat and suits your fancy. Carve out the nose sheeting to fit your engine and you've essentially finished with the "BUMP" fuselage.

If you're building the "HUMP", you can glue the top rear sheeting permanently in place, but the bottom sheeting and front and rear hatch covers should be tack glued. The blocks on top of bulkhead F-2H can also be permanently epoxied in place, as can the ¼" sheet on the nose. Sand everything to shape, then remove the hatch covers and the bottom sheet. Remainder of fuselage is completed during final assembly.

TAIL SURFACES:

These are self-explanatory. Use light but firm wood. The stab can be made from solid sheet if you prefer although the built up stab is a little lighter and warp resistant. Round off all edges as shown and sand smooth. Do not hinge rudder and elevator until later.

FINAL ASSEMBLY:

HUMP

Slide the completed wing into place on the fuselage and adjust until it is in perfect alignment. Epoxy the leading edge, trailing edge and spar to the fuselage. Fill in the leading-trailing edge slots with scrap balsa and glue the bottom sheeting permanently in place. When the assembly is dry, finish shaping the wing leading edge and sand the whole works to shape.

BUMP

If you haven't done so, drill the fuselage for the wing dowels. Make the landing gear from sheet aluminum. If you are unable to obtain any aluminum, I'm sure there is a ready made gear which will fit. Drill 1/8" mounting holes in the gear and in the 1/8" plywood mounting plate on the fuselage.

The wing is fitted to the fuselage by cutting away the top of former F-2B so the leading edge fits properly.

THE FOLLOWING APPLIES TO BOTH THE "HUMP" AND "BUMP"

Glue the stab in place being sure it is correctly aligned. After it is dry, mark the centerline on the fuselage top and cut away the sheeting just forward of the stab to permit the fin to be glued in place. Use a triangle or square to check that the fin is perpendicular to the stab.

Glue the plywood "tongues" on the hatches. Make and install the tapped hardwood blocks for the hatch hold downs on the "HUMP". Use hooks with rubber bands for the front hatch hold downs. The triangular stock in the nose should be epoxied in place and the entire nose section interiors coated with epoxy for strength and fuel proofing.

The head rest and windshield on the "HUMP" are optional. You may prefer a bubble canopy or nothing at all.

For finish and cover I recommend MonoKote or Solarfilm. I silked and doped the "HUMP" shown in the photos and regret that I wasted the time. Solarfilm was used on the "BUMP". From the standpoint of weight and warps, both very important in these small planes, the plastic films have no peer. If you insist on a silk and dope finish you're on your own, but do keep it light.

After covering is complete the control surfaces can be hinged to the wing, stab and fin. The tail wheel can also be installed.

Locate the bulkhead in the center of the "BUMP" cabin to suit the size of your receiver. Mount the engine and, with a long drill or piece of sharpened wire, drill a 1/8" hole for the throttle tubing. I use 1/8" nylon tubing and 1/32" wire for the throttle linkage with a "Z" bend to connect to the throttle arm and a "kiwk-link" soldered to the servo end. Either put in a "V" bend for adjustment or unsolder the "kwik-link" to set up the throttle.

I used a 3 ounce Sullivan slant top tank in both airplanes. The tank should be kept as high as possible and the fuel line routed so it is free of kinks. I replaned the brass tubing with 1/8" nylon tubing since you can bend it nicely with just a little heat. Also I've noticed the brass tubing embrittles after prolonged contact with fuel and is very likely to split without warning and with possibly disastrous results.

As for mounting servos, I don't recommend using servo tape and I speak from experience. These small airplanes don't have the mass to absorb engine vibration like the big 5 to 7 pound ships. As a result the incessant vibration will eventually get to something and usually its the servo motor, namely the brushes and commutator. The standard servo tray (for Kraft KP-10 size and smaller) will fit the "BUMP", but you will have to make your own for the "HUMP". Use 1/8" plywood for the tray and No. 2 sheet metal screws for hold downs.

The servos (KP-10's) on the "HUMP" were mounted as follows:

ENGINE – Behind wing spar with long axis across fuselage and output wheel on right.

RUDDER – Behind and parallel to the engine servo with the output wheel on the left.

AILERON – On the right side behind the rudder servo, with long axis parallel to the fuselage center-line and the output wheel to the front.

ELEVATOR – Next to the aileron servo on the left side with the output wheel to the rear.

The switch was mounted just above the rudder servo on the left side.

Pushrod installation is conventional though a little tight on the "HUMP". On the "HUMP" you should route the rudder pushrod to the right side of the rudder and the elevator pushrod to the left side of the elevator.

Mount the landing gear and wheels and you should be about ready to go. Install the receiver and batteries and check the C.G. It's quite possible you'll come out a little tail heavy with the batteries in the receiver compart-

(continued on page 58)

BILL OF MATERIALS

WING

Balsa:

3/8" x 3/4" x 36"	1 ea.	L.E.
1/8" x 2" x 36"	2 ea.	Spar & tips
1/4" x 1/4" x 36	1 ea.	Spar
1/16" x 1" x 36"	2 ea.	T.E.
1/16" x 3" x 36"	3 ea.	Ribs
1" x 2" x 12"	1 ea.	Tips

Miscellaneous
1/32" plywood - reinforcement
1/16" wire
1/8" nylon tubing
threaded brass tube
1/16" x 1/16" x 36" spruce

FUSELAGE

Balsa:

3/32" x 3" x 36"	2 ea.
HUMP - fuselage sides	
3/32" x 3" x 36"	3 ea.
BUMP - fuselage sides & bottom	
1/8" x 3" x 36"	2 ea.
HUMP - top & bottom sheet (soft)	
1/8" x 3" x 36"	1 ea.
BUMP - bottom sheet (soft)	
1/16" x 3" x 36"	1 ea.
BUMP - top sheet	
1/8" x 1/8" x 36"	1 ea.
Uprights	
1/8" x 1/4" x 36"	1 ea.
Cross pieces	
3/8" x 3" x 12"	1 ea.
HUMP - top hatch	
1/4" triangular stock	

FUSELAGE

Miscellaneous
1/8" 7 1/32" plywood - bulkheads & doublers
hardwood blocks - HUMP hatch hold downs
3/16" dowel - BUMP wing dowels
Tatone short .15 engine mount (or a .19)
4-40 blind nuts
4-40 nuts & bolts

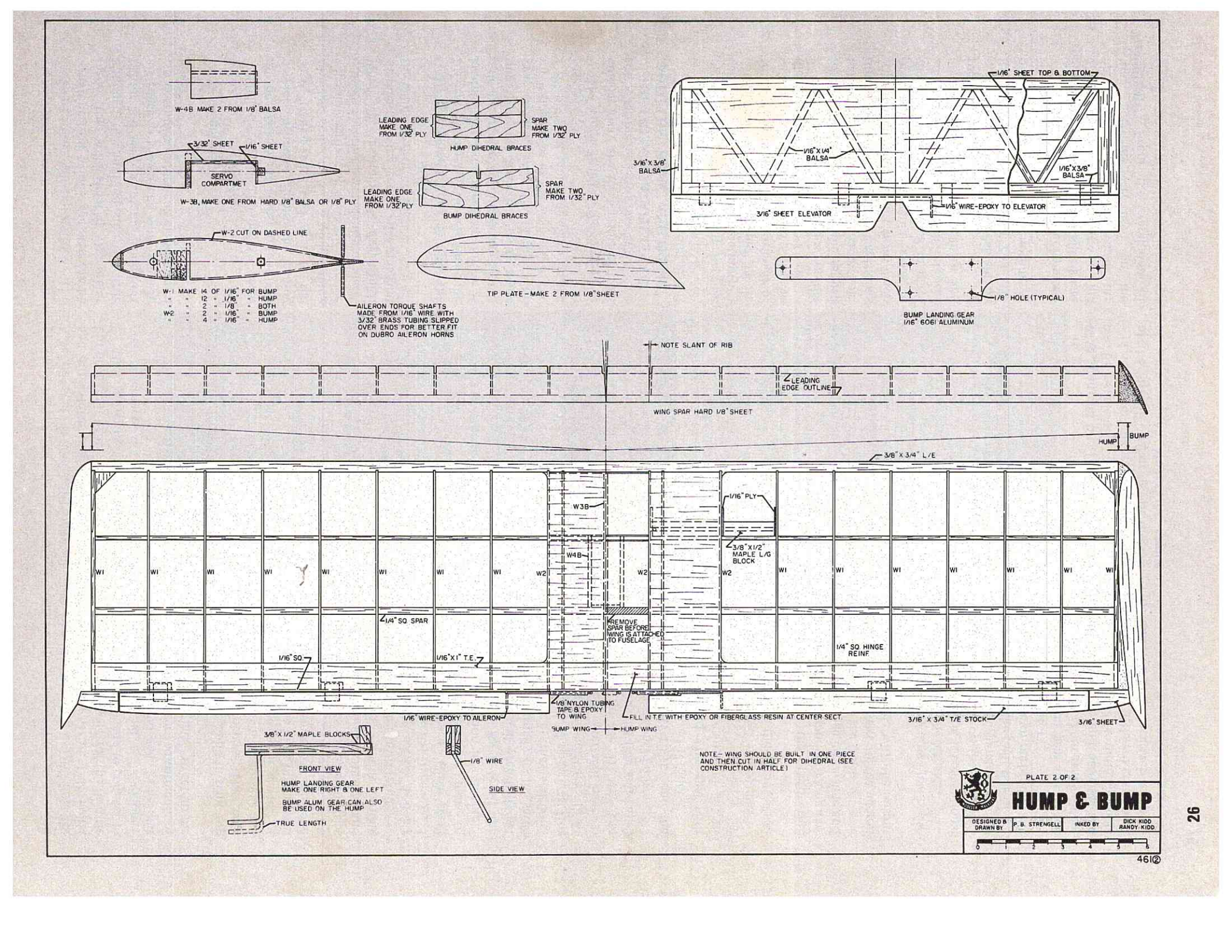
TAIL SURFACES

Balsa: (For built up stab)

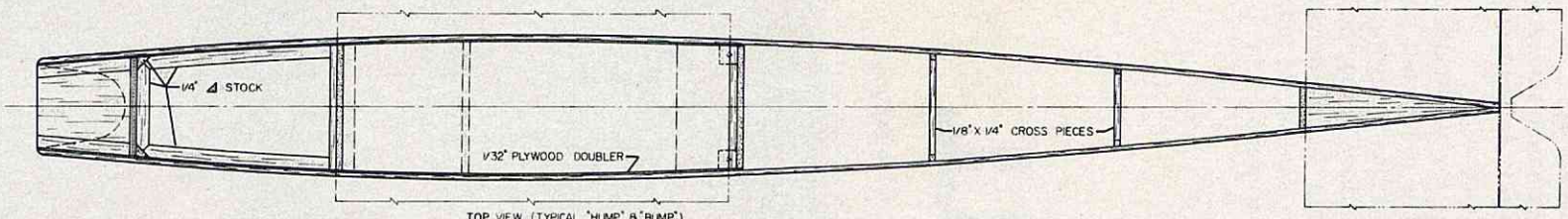
1/16" x 4" x 36"	1 ea.	Stab
1/16" x 3/8" x 36"	2 ea.	Stab
1/16" x 1/4" x 36"	2ea.	Stab
3/16" x 2" x 36"	1 ea.	Fin, rudder, elevator
3/16" x 1/4" x 36"		Fin

Balsa: (For solid stab)
3/16" x 4" x 36" stab, fin, rudder, elevator
3/16" x 1/4" x 36" - fin

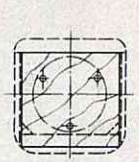
Miscellaneous
Hinges
Horns
3/16" plywood
1/16" wire
1/8" nylon tubing
1" wheel
2" wheels
1/8" wire for HUMP landing gear
No. 2 sheet metal screws
Aluminum for BUMP landing gear
Covering material
Titebond
Epoxy
.15 or .19 engine

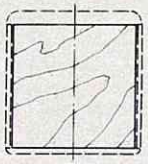

W-4B MAKE 2 FROM 1/8" BALSA
LEADING EDGE MAKE ONE FROM 1/32" PLY
SPAR MAKE TWO FROM 1/32" PLY
HUMP DIHEDRAL BRACES
3/32" SHEET
1/16" SHEET
SERVO COMPARTMET
W-3B, MAKE ONE FROM HARD 1/8" BALSA OR 1/8" PLY
LEADING EDGE MAKE ONE FROM 1/32" PLY
SPAR MAKE TWO FROM 1/32" PLY
BUMP DIHEDRAL BRACES
1/16" SHEET TOP & BOTTOM
3/16"X3/8" BALSA
1/16"X1/4" BALSA
1/16"X3/8" BALSA
3/16" SHEET ELEVATOR
1/16" WIRE-EPOXY TO ELEVATOR
W-2 CUT ON DASHED LINE
W-1 MAKE 14 OF 1/16" FOR BUMP
" " 12 " 1/16" " HUMP
" " 2 " 1/8" " BOTH
W-2 " 2 " 1/16" " BUMP
" " 4 " 1/16" " HUMP
AILERON TORQUE SHAFTS MADE FROM 1/16" WIRE WITH 3/32" BRASS TUBING SLIPPED OVER ENDS FOR BETTER FIT ON DUBRO AILERON HORNS
TIP PLATE - MAKE 2 FROM 1/8" SHEET
1/8" HOLE (TYPICAL)
BUMP LANDING GEAR 1/16" 6061 ALUMINUM
NOTE SLANT OF RIB
LEADING EDGE OUTLINE
WING SPAR HARD 1/8" SHEET
HUMP
BUMP
3/8" X 3/4" L/E
W3B
W4B
1/16" PLY
3/8"X1/2" MAPLE L/G BLOCK
W1
W2
1/4" SQ SPAR
REMOVE SPAR BEFORE WING IS ATTACHED TO FUSELAGE
1/4" SQ HINGE REINF
1/16" SQ
1/16"X1" T.E.
1/8" NYLON TUBING TAPE & EPOXY TO WING
FILL IN T.E. WITH EPOXY OR FIBERGLASS RESIN AT CENTER SECT.
3/16" X 3/4" T/E STOCK
3/16" SHEET
1/16" WIRE-EPOXY TO AILERON
BUMP WING
HUMP WING
3/8"X1/2" MAPLE BLOCKS
FRONT VIEW
HUMP LANDING GEAR MAKE ONE RIGHT & ONE LEFT
BUMP ALUM. GEAR CAN ALSO BE USED ON THE HUMP
TRUE LENGTH
1/8" WIRE
SIDE VIEW
NOTE.- WING SHOULD BE BUILT IN ONE PIECE AND THEN CUT IN HALF FOR DIHEDRAL (SEE CONSTRUCTION ARTICLE)
PLATE 2 OF 2
HUMP & BUMP
DESIGNED & DRAWN BY
P. B. STRENGELL
INKED BY
DICK KIDD
RANDY KIDD
0 1 2 3 4 5 6
4612

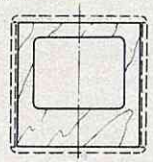
PLANS AVAILABLE ON PAGE 62

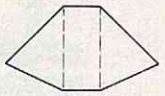


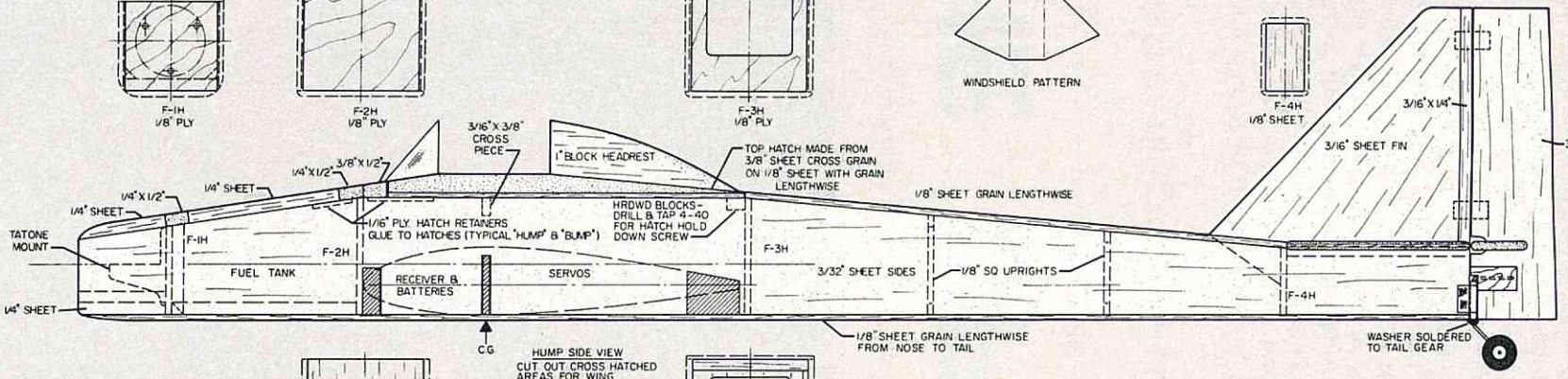
TOP VIEW (TYPICAL "HUMP" & "BUMP")
SHOWN WITHOUT TOP SHEETING



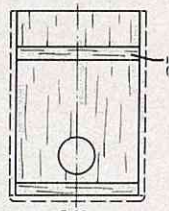


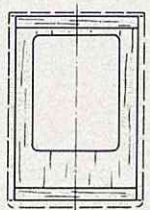


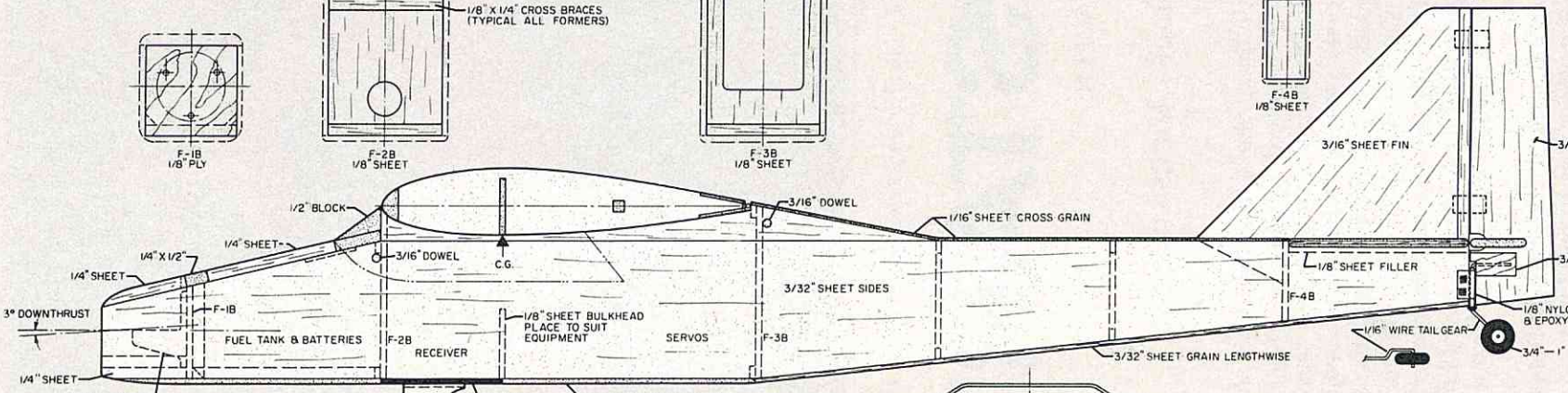




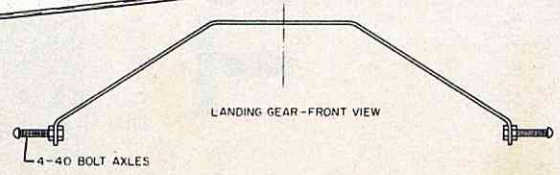
HUMP SIDE VIEW
CUT OUT CROSS HATCHED AREAS FOR WING







BUMP SIDE VIEW



LANDING GEAR - FRONT VIEW

PLATE 1 OF 2

HUMP & BUMP

DESIGNED & DRAWN BY	P. B. STRENGELL	INKED BY	DICK KIDD RANDY KIDD

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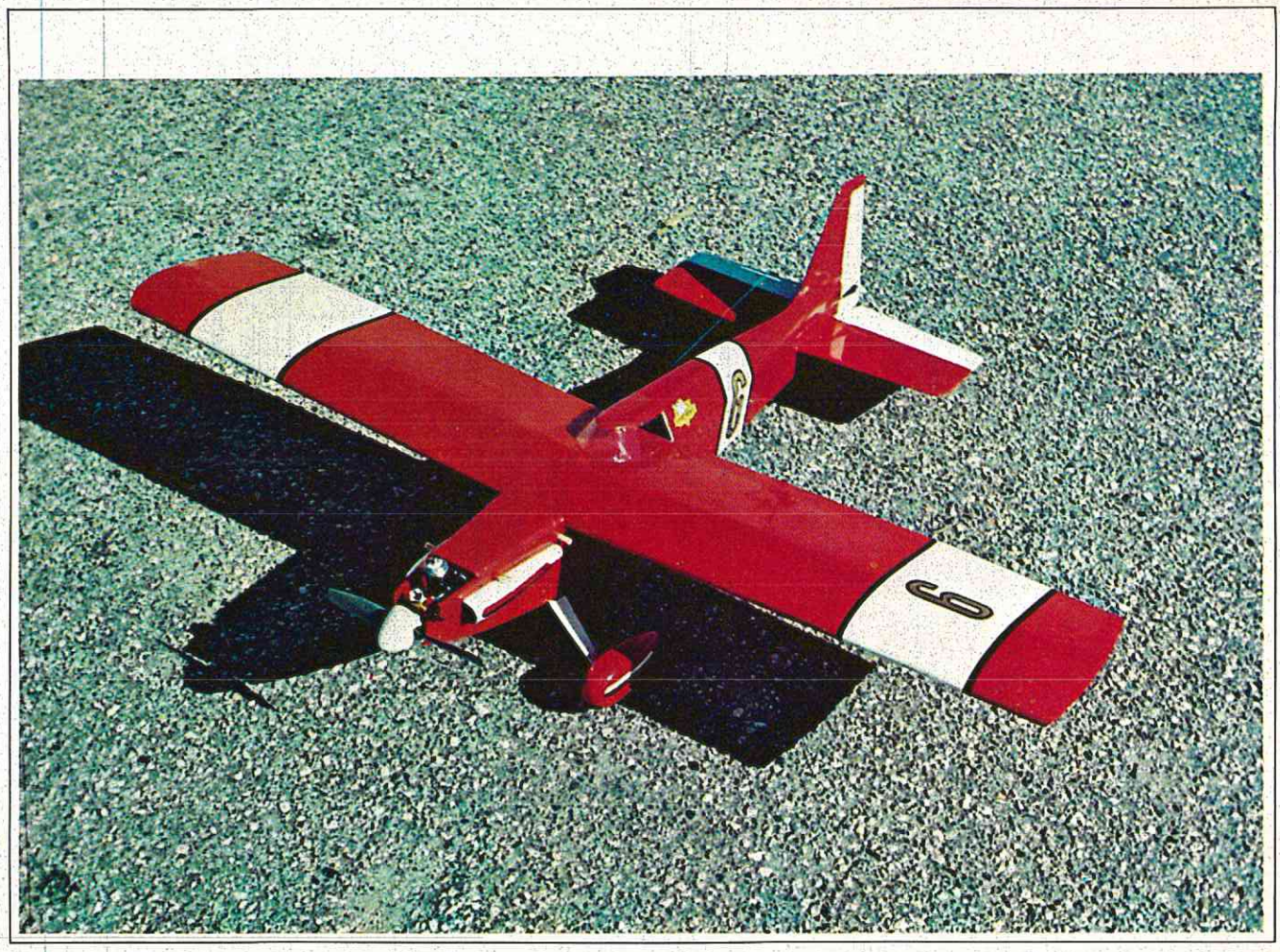
461②



"Nothing in the world . . . not all the armies . . . is so powerful as an idea whose time has come" – Victor Hugo

THE UPSTART

BY OWEN KAMPEN

FIRST OF THE EXCITING NEW HALF-A-MIDGET RACERS

These words are pinned to the cluttered bulletin board above my office desk and at this moment seem to be most appropriate, for in the few short weeks following the original proposal for a ½A Midget Racing Event, the response has been overwhelming. Preliminary drawings of the Upstart were sent to modelers in various parts of the country and in almost every case the response was one of immediate and enthusiastic support. This was remarkable in view of the lack of response given to earlier attempts by RCM and the author suggesting a similar event. ("Hoosier Hotshot" – RCM 4-67 and "Bonzo" RCM 8-67). But in retrospect, the timing was premature and, as a result, it literally never got off the ground.

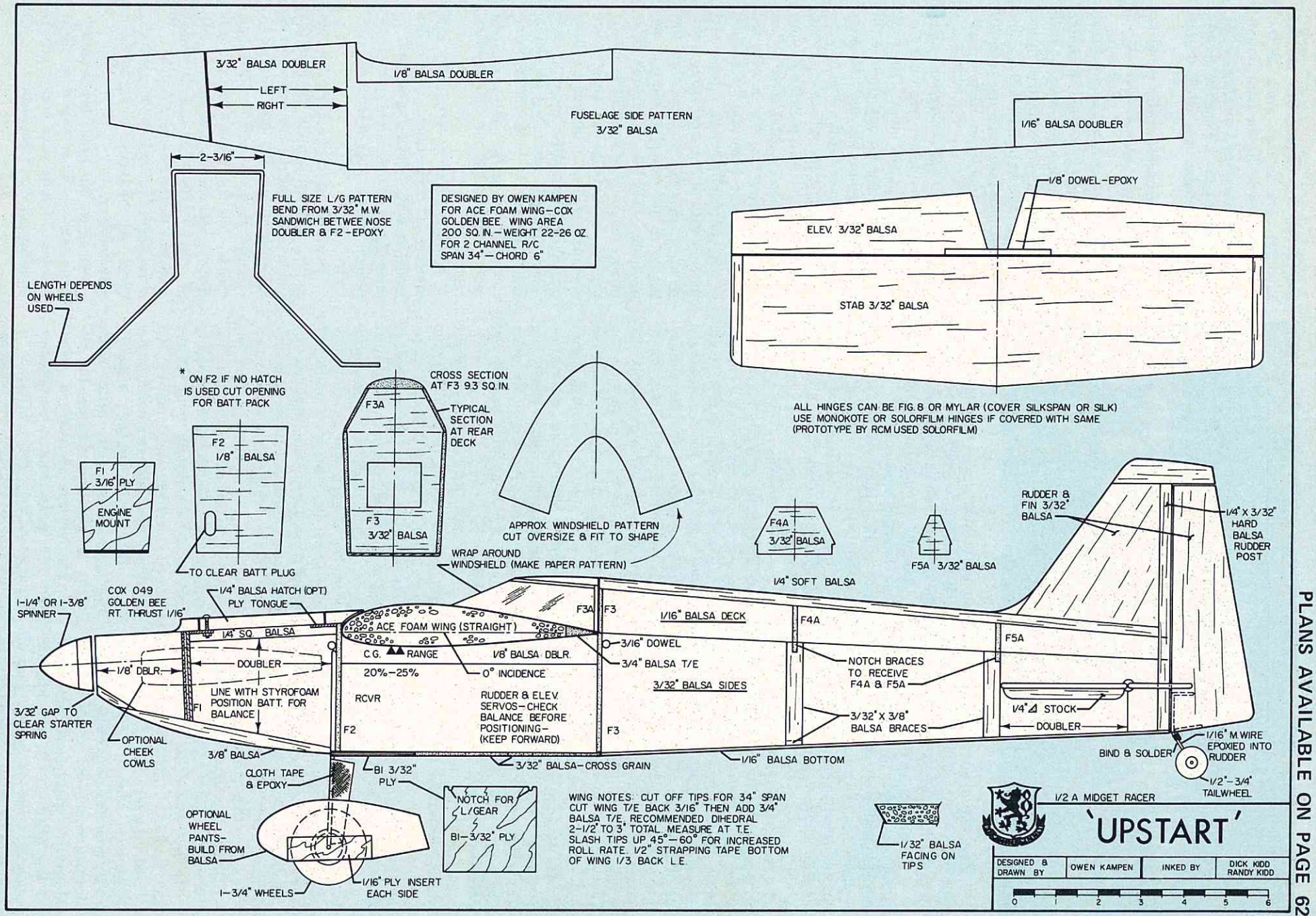
For four years, however, the rightness of the concept of an .049 racing event lingered on and was nourished by continuous discussions with Frank Baker, who got tired of trying to fly one man races which he always won and lost by coming in first and last simultaneously!

In the meantime, the hobby was undergoing rapid growth and change. Reliability went up as prices went down and the flying competence of the average modeler rose to new highs.

With the recent introduction of new lightweight two-channel digital equipment, priced below our wildest dreams of a few years ago, the time at last seemed right.

What was needed was a new design to take advantage of the current state-of-the art, and so the Upstart was born. While owing its parentage to the earlier designs, this youngster comes on strong – being smaller, lighter, faster and quicker to put together.

(continued on page 68)



PLANS AVAILABLE ON PAGE 62

OWEN KAMPEN and DON DEWEY on

R/C MODELER MAGAZINE'S

HALF-A MIDGETS

A little of the philosophy behind the intent and purpose of the exciting new Half-A Midget racers . . . . an event designed for you!

A race, in any shape or form, whether involving people, animals, or machines, has always been a major source of sport, recreation, and competition for most of mankind. For both the participant and spectator, it represents an involvement and excitement resulting in about the most fun you can have with your clothes on.

In recent years R/C pylon racing has been growing at a tremendous rate, yet the high investment of time and money, combined with the high risk involved, has tended to make spectators of too many of us. Therefore, in an attempt to overcome some of these limitations, a new event is proposed for your consideration. The concept of small racers is not new, having been explored at some length by R/C Modeler Magazine some years ago. Due to the lack of sub miniature equipment at that time, the idea never really caught on. Now with the growing availability of truly miniature two channel R/C rigs at popular prices, there is a confident feeling that here, at last, is an idea whose time has come. And this thought is surely borne out by the fact that word of mouth of this new event, prior to the publishing of the articles in this months issue, has resulted in a fantastic demand for plans for these Half-A-Midget racers.

By setting a tight set of design perimeters and taking advantage of readily available stock items – Cox. 049 Golden Bee engines, TD .049 and .051 engines, Testors .049, etc., as well as the Ace Mini-Foam Wings, maximum emphasis is placed on piloting skill and strategy.

This event offers attractive realistic aircraft appearance with fast and easy construction and field repairs; low cost and low risk; safety, since light weight and low speeds won't kill; increased participation due to relative ease of handling and economy; small field and simple facilities are all that are needed; and increased observer interest due to the close-in and low flying pattern.

The use of the .049 engines with their integral tanks, or with separate fixed control line type wedge tanks, eliminates the need for motor control and, with an average run of 3½ minutes at full speed, will give an approximate distance of 1½-2 miles.

The Ace Mini-Foam Wing, available from Ace R/C, provides the proper constant chord section with a span of 34", plus the addition of 3/4" balsa trailing edge stock for the necessary added area in high G strength resulting in the required area of 200 plus square inches. As you will notice from the enclosed rules, by standardizing the wing, equality will be insured and the use of ultra thin airfoils discouraged. The ease of building and making fast field repairs with quick epoxy are major bonuses for the foam wing although a built-up wing may be employed.

Since the R/C airborne weight averages 8-9 ounces, the resulting wing loading for these Half-A-Midget racers falls in the 15-16 oz. per square foot range. All RCM tests have shown that these planes reach an approximate speed of 55 mph and are extremely easy to handle. There is no "flittiness" usually associated with small models and they groove and track extremely well. The addition of a small tail wheel affixed to the moveable rudder has provided excellent ground handling with perfect takeoffs. All that is necessary to cut the throttle is to roll the aircraft inverted, facilitated by the "slashed" tips which greatly add to the roll rate of the airplane. Although performance is slightly better when using ailerons and elevator, the difference between ailerons and rudder are not great from a performance standpoint. Very little difference in actual mph was discerned between the use of the Cox Golden Bee and the Cox TD .051 engines. And, in the interest of restricting the noise output of these engines, the Cox Quiet Zone Engine will fit the TD engines as well as the QZ engine for which it was intended.

At the time of this writing there are a great number of these Half-A-Midget racers being built around the country. A great many more will be built when this magazine hits the stands. We hope that you will take advantage of this racing event where the emphasis is on relative speeds and pilot skill in aircraft that take very little time to build and are an extreme pleasure to fly and race.

It is not my wish to act as either judge or jury in matters regarding the Half-A-Midget racing event. Therefore the following suggestions are offered only as guidelines having the sole purpose of preserving the original concept of a simple and safe racing event where the emphasis is placed on flying skill rather than excessive speeds. This is not intended to stifle innovations for they are an inevitable by-product of any competetive event, however, in the long history of model avaition the trend of any event is always from the simple to the complex and the net result has been the dominance of a small elite group of specialists. Speed, per se, is the ultimate goal in an unlimited type of event but I believe ours should be **relative** speed to each other. (There is currently a parallel in full scale racing with the growing emergence of a new class of small racers which will use Volkswagen engines.)

The intent here is to establish and preserve a competition where the modeler with average skill and a limited pocketbook can become a participant rather than a sideline spectator.

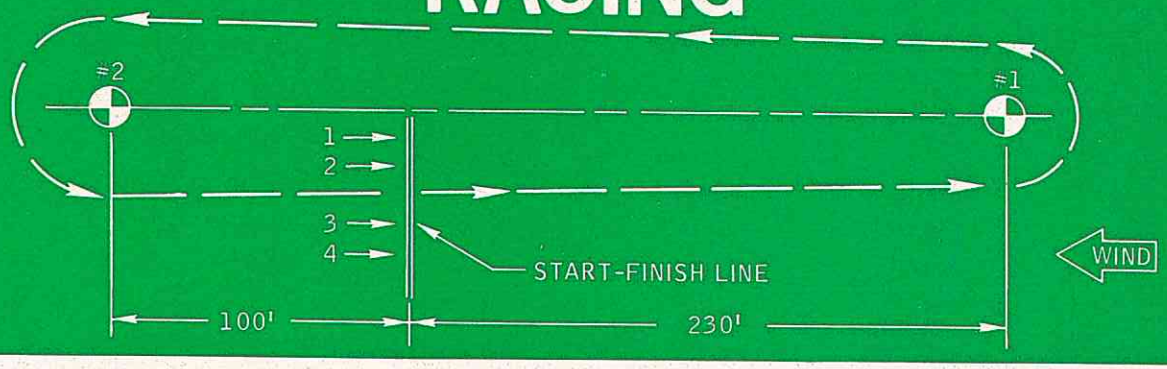
There is the sincere hope that this can be achieved without the need for cumbersome restrictions and enforcement. If we expend our energies in seeking ways to attain 100 mph speeds – the concept is doomed. I feel that the real challenge should be a test of flying skill and strategy using machines that are equally matched. If a real goal of racing is to "improve the breed" let our goal be to improve the **breed of flyer.**

Whatever this event becomes will ultimately be what you wish it to become for it is **your** event. Let us hope we can learn from history. □

R/C MODELER MAGAZINE PRESENTS
THE

1971 OFFICIAL RULES AND REGULATIONS
FOR

HALF-A MIDGET PYLON RACING



OBJECTIVE

The concept of the Half-A-Midget racing event is to run multiple R/C model airplane races while preserving the concept of a simple and safe racing event where the emplasis is placed on flying skill and speed that is relative from one aircraft to another rather than excessive overall speeds.

GENERAL

All AMA and FCC regulations covering the R/C flyer, his aircraft, and equipment, shall be applicable to this event except as noted herein. There shall be no limitation on the type of readio equipment fitted to the aircraft with the exception that only 2 control surfaces shall be actuated, i.e. elevator and ailerons, or rudder and elevator. Each contestant should be allowed two (2) entries in this event. The second or alternate aircraft may be used only if the first aircraft is not safely flyable. Only the contestant who has entered the aircraft may pilot it in this event unless an alternate pilot is approved by the Contest Director. The alternate pilot must hold current AMA and FCC licenses.

Consideration of safety of spectators, contest officials, and contestants is of paramount importance in this event. Any unsportsmanlike conduct such as repetitive unsafe flying or intentional attempts to gain unfair advantage or rules violations shall be cause for disqualification of both aircraft and pilot from this event at the discretion of the contest Director. The decisions of a Contest Director or his designee relating to interpretation of these rules shall be final and binding on all contestants.

AIRCRAFT REQUIREMENTS

Models entered in this event should be scale-like in appearance of full sized propeller driven aircraft which have competed in closed course or cross country air racing.

AIRCRAFT SPECIFICATIONS

ENGINE

Maximum total nominal engine displacement shall be .0519 cubic inches. Engines must be production units assembled from factory available parts. Engine and all parts, whether original or replacement, must have been produced in quantities greater than 500 units and must be available through normal retail outlets in the U.S.A. or from the engine manufacturer.

THROTTLE

No throttle shall be required for this event.

MUFFLER

At the discretion of the Contest Director, and as notified in advance publicity prior to the contest, mufflers may be required, depending upon local operating conditions and restrictions.

PROPELLERS

Either wooden or plastic type fixed pitch propellers are permitted.

WEIGHT

Weight less fuel but including all equipment necessary for flight shall be not less than 20 oz. nor more than 32 oz.

FUSELAGE

The fuselage shall employ a minimum cross section of 8½ sq. in. at the widest point.

WING

The minimum wing area including the area displaced by the fuselage shall be 200 sq. in. Wings shall be constant chord only with no taper permitted. Minimum wing thickness shall be 7/8".

FUEL

There shall be no restrictions on fuel used for this event.

IDENTIFICATION MARKINGS

Models competing in this event must bear identification markings at least 1¼" high. Identification markings shall consist of the letter capital N followed by the last two (2) or three (3) digits of the contestants AMA number followed by the first letter of the contestants last name. Markings shall be located either on both sides of the fuselage between wing trailing edge and stabilizer leading edge, or the upper right and lower left wing panel surface. No other identification marks are required.

MATERIALS AND WORKMANSHIP

There are no restrictions on materials used in construction of the aircraft. Workmanship must be to satisfactory standards. The Contest Director is empowered to disqualify any aircraft, which, in his opinion, is not up to reasonably safe standards in materials, workmanship, detail design, equipment installation, or condition as a result of crash or damage.

CONFORMANCE REQUIREMENTS

To qualify for this event each aircraft must score a minimum of six points. Conformance points are awarded as follows: scale-like appearance – 8 points maximum; finish – 2 points maximum; workmanship – 2 points maximum; cowled engine – 2 points maximum; detailing – 1 point maximum; pilot – 1 point maximum; TOTAL: 16 points.

OPERATION OF THE HALF-A-MIDGET RACE

A maximum of four aircraft will be flown in each heat. The order of takeoff will be determined by drawing numbers. Takeoff will be by hand launch, or by ROG at the discretion of the Contest Director. Takeoff interval will be one second between aircraft. Each heat will consist of ten complete laps of the racing course. (See sketch)

Officials will stand in close proximity to the pylons and the contestants and use a appropriate method to notify a missed pylon to the flyer in question.

Engines must be started a maximum of 1½ minutes after the signal to start is given.

All laps are to be flown counter clockwise with turns to the left.

No minimum altitude is required for racing.

If a pylon is cut that lap will not be counted.

Starting positions in all races shall be determined by picking numbers from a hat. Planes shall be flagged off at one second intervals.

All contestants must be given an equal number of opportunities to race.

SCORING

Points shall be awarded after each race as follows: four (4) points for first place; three (3) points for second place; two (2) points for third place.

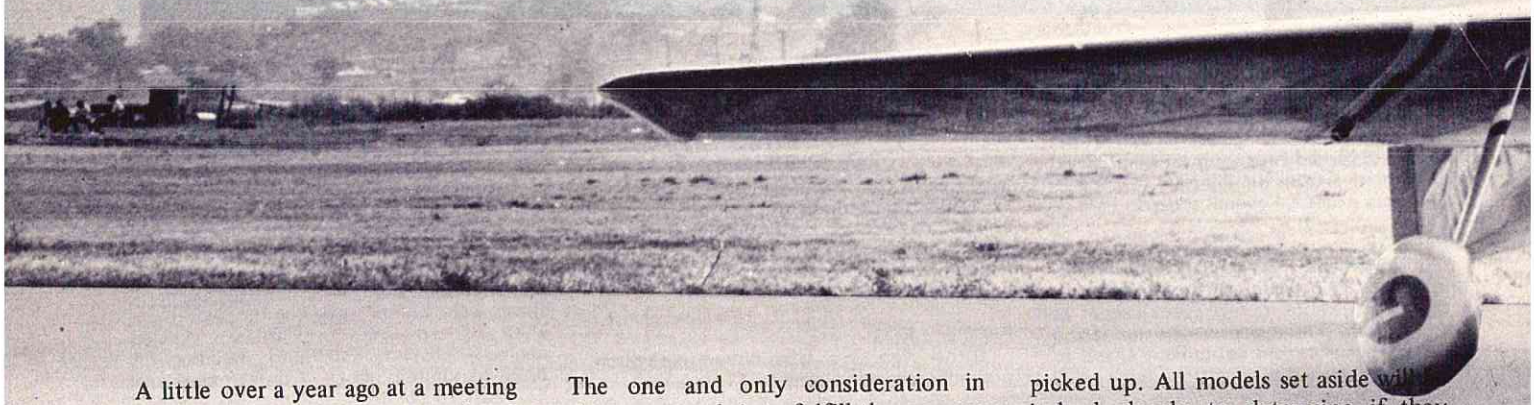
The winner of the event is the contestant who has accumulated the most points after the conclusion of all heats.

what ever happened to FORMULA I?

WE'LL SOON BE SAYING THAT IF WE DON'T MAKE SOME CHANGES IN FORMULA I. R/C MODELER MAGAZINE PRESENTS ITS PROPOSED CHANGES FOR THIS EVENT.

BY AL STRICKLAND

Photo by Russ A. Brown



A little over a year ago at a meeting of the F.A.S.T. club, I was appointed to head a committee to make a study of the present Formula I rules, and make proposals to change these rules as necessary to make Formula I racing a better event.

Since that time I have talked to hundreds of people, written thousands of words, and reached the conclusion that I would have been infinitely better off to have been absent from that meeting!

After a bit of discussion, the following goals were set down:

1. Make the event easier to administer.
2. Eliminate areas that cause argument.
3. Speed up processing.
4. Simplify the rules.
5. Get in more flights at contests.
6. Make the event safer.
7. Encourage the beginner.

It is obvious that some of these goals are overlapping; this is only natural as anything that helps in one area will usually help in others. The order in which the goals are listed are not necessarily the order of priority. The one and only consideration in these proposals is to fulfill the purpose of the committee, i.e., "make Formula I racing a better event." This means better **overall, for everyone, not just one person, or small groups.**

PROCESSING:

Purpose of proposed change: To speed up processing to allow more flights.

Proposed method to accomplish this: Set a minimum number of scale points that a model must receive to be eligible to fly in the contest. Line the planes up in a row and have three judges walk slowly down the row of planes. The judges will walk separately and not discuss the planes. If there is any doubt in any judges mind that a plane will not score enough scale points then he sets it out of line and continues on his way. The third judge will have the score sheet. All planes not placed out of line will be considered to pass and be qualified. The score sheet will only show 'qualified' or 'not qualified,' it will not show points. At the completion of the walk-by all planes not set out of line may be picked up. All models set aside will be judged closely to determine if they qualify. (Take-off order shall be determined by drawing prior to each flight.) The minimum number of scale points will be set out in the rules, not some arbitrary number picked at random by the contest director. The basis for awarding scale points will be published in the rule book so that each person may, more or less, pre-judge his own plane. Points will be awarded in a manner very similar to the present control line scale judging sheet. (See fig. I for sample judging sheet). This method of judging should not take more than 15 minutes for the walk-by, and a few additional minutes for the few planes that were set out for close examination. Keeping the minimum number of scale points required high, will keep the quality of the planes up.

As previously mentioned the take-off order shall be determined by drawing. The planes shall be flagged off at approximately one second intervals. Starting time would normally be considered next, but the new rules have already taken care of this.

This article will no doubt be met with more, "Who the hell does he think HE is?" comments than anything published to date. Let me say here and now, I fully expect this reaction and will be disappointed if it is not forthcoming.

There is one point, and only one point, that I want to make clear at this time. The ideas expressed here are not my own, but are a condensation of ideas expressed by hundreds of Formula I flyers throughout the country.

Please go back and read the last sentence again, since this thought must be uppermost in your mind, or you will not receive the full impact of the proposals herein.

If it is of any interest to you, I don't agree 100% with everything proposed here either, but I certainly haven't found anything better. You are sure to see the merit of these opinions expressed by the majority of the flyers, when you consider them individually. Your comments are invited on any or all of the proposals made here, and likewise any proposals you would like to make concerning Formula I rules are welcome. After all comments have been received, they will be reviewed, and if there are enough new proposals, or changes suggested to warrant doing so, another article will be published utilizing these suggestions. Now is the time to make it known if you have any. Don't wait until after the rules have been changed and then squawk.

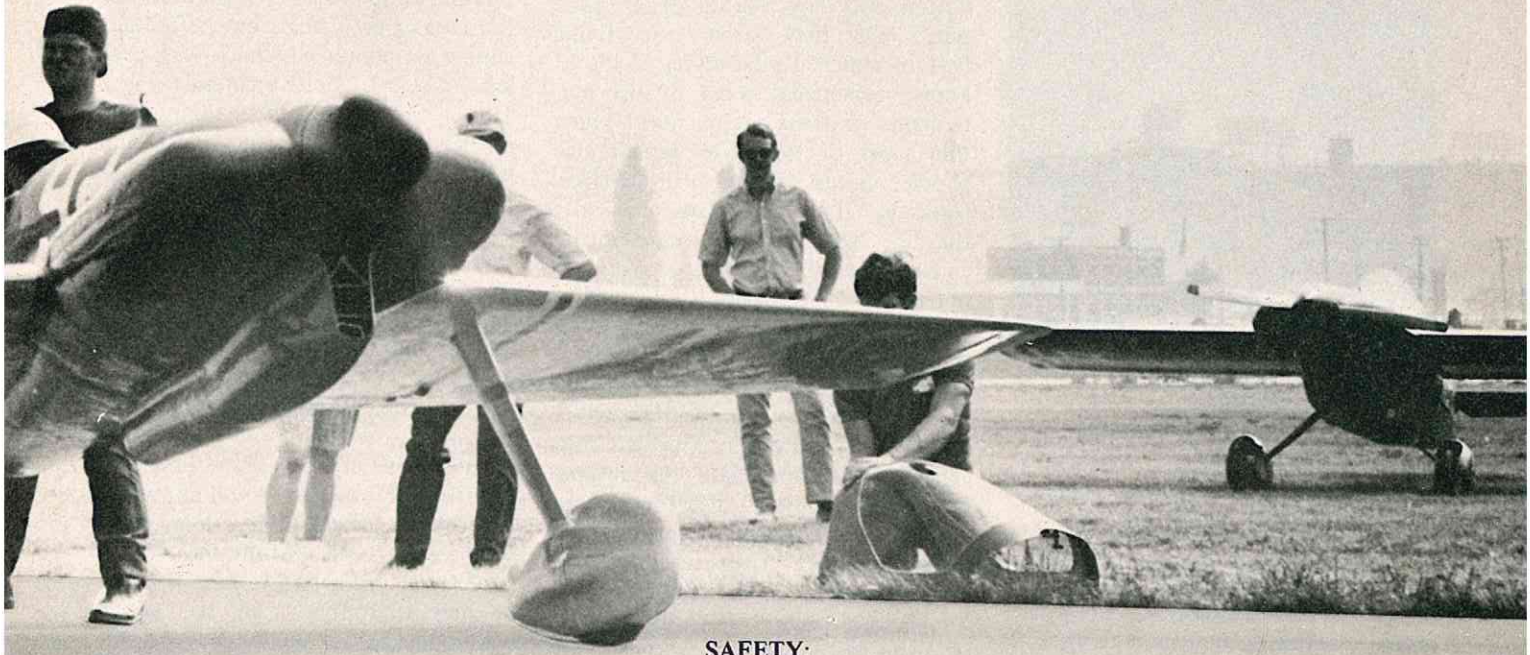


FIGURE I

Scoring shall be done in the following manner. Minimum of 65 points required out of 100 possible.

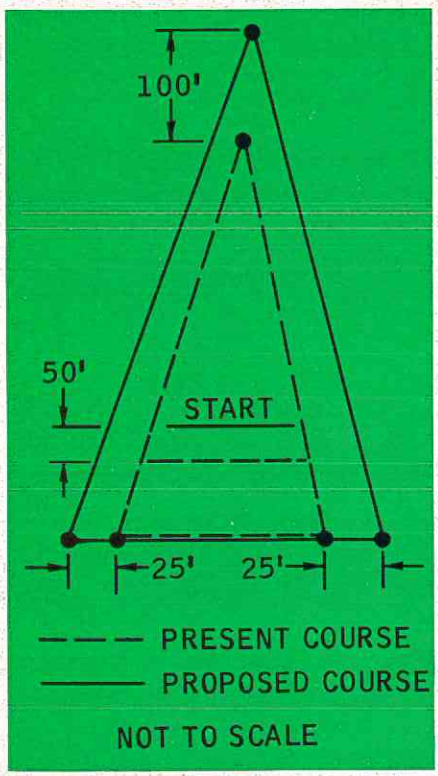
FUSELAGE		
General scale shape	10 points	☐
Clear Canopy	5 points	☐
Pilot	5 points	☐
Instruments	5 points	☐
RUDDER & STAB		
General scale outline	5 or 10 points	☐
Control surfaces shape & size to scale	5 points	☐
WING		
General scale outline	5 or 10 points	☐
Ailerons general shape & size to scale	5 or 10 points	☐
Dihedral Appx scale	5 points	☐
LANDING GEAR		
Plain strut & wheel	5 points	☐
Faired strut	5 points	☐
Pants	5 points	☐
Scale attachment point wing or fuse	5 points	☐
FINISH (circle one box only)		
Edcellent paint job, neat tasteful trim, all required numbers.		15
Good paint job, some trim, all required numbers.		10
So-so paint job, all required numbers		5

SAFETY:

The new rules state that the spectator and pit area be moved farther from the flying course, and this is an excellent recommendation.

It has been brought out that perhaps the greatest single factor that causes the beginner to have problems is the flying time around the course. When this event started, three minutes was not a bad time to turn in. This speed allowed plenty of time to roll out of one turn and get set up for the next pylon. Beginners are turning in times today that would have won any contest in the country a little over two years ago. This certainly does not mean that todays beginners are better than the expert of a few years ago. Far from this, it simply means that the planes are just one hell of a lot faster. There just isn't enough time between rolling out of one turn before you have to start another. It takes quite a few races to sharpen the reflexes enough to fly a good course.

Now I am not idiotic enough to advocate slowing the planes down, after all racing is to see how fast you can go. There seems to be only two ways to get more time on the course between turns. One is to slow the planes down (this is out), another is to enlarge the course a bit. Two suggestions were received here: one is to adopt the F.A.I. course for all flying. The other is to just enlarge the present course. The majority favored the latter action. The suggestion is this: Move the number one pylon 100 feet further back, then move the number two and number three pylons 50 feet further apart. The starting line is then moved 50 feet closer to the number one pylon. (See fig. II). The new course will not be any specific distance to race, like 2 miles, 2¼ miles, 2½ miles, etc., but who cares since everyone races over the same course and the winner is determined by points derived from seconds not miles-per-hour. Naturally, this will slow the times down some from the present level, but will allow that all-important (for the beginner) extra couple of seconds to get set for the next turn. This will help the beginner fly a smoother course,



which is also a safer course.

SCORING:

Next, we will cover the area that causes the most arguments. This area is the most touchy, most ridiculous, most asinine area of the rules. Everyone freely admits this, yet it is the hardest area to get people to agree on a specific change. I am referring to the present scoring system used to determine the winners of heats and, consequently the contest. This next statement is one to remember. **If there are not some drastic changes made in the area of scoring, we will see the demise of pylon racing very soon!**

Does this sound like the voice of doom, or from a born pessimist? Let me assure you that it is neither, it is just the voice of contest directors and officials all over the country. I will give just one example, although I could give you many.

In 1969, the Winter Nationals held at Tucson (hosted by the Tucson R/C Club and sponsored by this magazine) was a roaring success (from the contestants standpoint). That everyone had a good time despite a bit of bad weather is attested to by the fact that almost everyone returned in 1970.

What very few people know is this: There was so much arguing over scoring, so much bickering over trivial things, so many insulting remarks made to and about the officials, so much abusive language, that at the next club meeting after the contest, it was decided by vote **not to hold a racing event at the 1970 Winter Nationals.** Three or four months later another vote was taken and it was decided (very grudgingly and by a small margin) that they would try it just **one more time.** After the 1970 Winter Nationals, and the even worse abuse of the officials, I have been assured that there isn't enough tea in China to get them to hold a pylon event in 1971 **using the present rules.** This is **not** just an isolated case, it is just one of many. Most of the flyers involved in these arguments also fly Pattern. Do they take Jekyll and Hyde pills? Are they good guys flying Pattern and bad guys flying Pylon? I know, personally, most of the participants in these arguments. I know that most of them are darned nice people, contestants and officials alike. Naturally the participants feel that they are right, or there would not be an argument. Being right or wrong is not the point; the point is that there is just **too much room for argument** in the present rule structure for scoring. We must adopt a system that eliminates the problem, or very nearly so.

The most universally accepted concept is this: Eliminate the reverse order 4-3-2-1 point system for scoring. Does this seem radical? Remember **we must be radical to survive!** In the present system of scoring, there are too many areas of human judgement, i.e., who passed who (or whom if you prefer) who got lapped, who cut, who was a lap ahead, who had the red plane, etc.

We are presently timing all planes in each heat, even though the only time recorded is the winners. How simple it would be to **record all times,** how many arguments would be automatically resolved by this simple act. Of course instead of starting all watches on the first flag, each watch would start when the flag is dropped for that respective plane. Simple, isn't it? Regardless of who passed who, etc. The watch with the lowest time designates the winner of the heat.

This will also solve many side problems. One of the big problems is this: An official goofs under the present rule and the flyer is usually the loser. There just isn't enough time to reschedule the heat, and besides, the three guys who didn't get fouled up are satisfied and want things left alone. You lose, next heat, let's go!

Using this proposal, the one flyer is re-scheduled into the first available heat and is re-timed, what's wrong with that? Another big problem is this: "Why the hell didn't someone tell me I had a cut? If I had known, I would have flown an extra lap and some points instead of a zero for not finishing. Dirty blank-blank, etc." Sound familiar?

"If there are not some drastic changes made in the area of scoring, we will see the demise of Formula I very soon!"

How about this for a solution? At the end of each heat, but before any winner is announced, check with each lap counter to see if a cut was called. This includes the number three pylon on the tenth lap. If a cut was called, it is a very simple matter to divide the time in seconds, by ten (for 10 laps) to get the average time per lap. Add this average time per lap to his total time and it will give the handicap factor as if he had flown eleven laps. This eliminates the necessity for anyone to fly more than ten laps. It also makes no difference if a flyer fails to hear the cut called, there isn't anything he can do about it, anyway. Some have said that flying by the watch will not work, control line speed has been doing it for years and very successfully too!

One or two flyers were of the opinion that flying on the watch would take the racing out of the event. How, pray tell? Don't they time our flights now? Everything will be exactly the same as it is now except that the times will be recorded and the watches start a second apart instead of at the same time. Can you conceive of four racing planes taking off at one second intervals, flying the same course and not be racing? Certainly not, and neither can anyone else.

Now for a bit of explaining about the actual scoring under this proposal. The most universal suggestion is this: Print a chart that will automatically convert minutes and seconds, to seconds, and then to relative points, just by reading three columns across the page. As there are only three columns it can only take a moment to do this. The timer records his time in minutes and seconds or just in seconds (it makes no difference) and the conversion is done by the official scorer from the chart. (See fig. III for example of scoring chart). The reason the final score is converted to points is very simple. The majority of flyers prefer points to seconds, and this whole thing is to satisfy the majority.

The score card starts at 3 minutes, 20 seconds, which is 200 seconds. The scoring is figured from this 200 seconds. If a flight time is 1 minute, 40 seconds, that is 100 seconds. Subtract the 100 seconds from 200 and you have a points score of 100. A flight time of 1 minute, 45 seconds or 105 seconds gives a score of 95 points. Likewise a flight time of 1 minute, 35 seconds will give a point score of 105. When this is charted it is done in much less time than it takes to tell about it. If a flight takes more than 3 minutes, 20 seconds, his score is zero.

It is obvious that using timed flights will simplify scoring, and eliminate many areas that were previously open for argument. There are numerous side benefits to this system as well. Many of these were pointed out to me, and I will pass a few of the most obvious ones on to you.

Perhaps the most improtant benefit is that this scoring method will pick the winner of a contest based entirely on his own performance, rather than lack of performance on the part of someone else. One example is this: Pilots A, B, C, & D, fly a race and finish in that order. With the present system Pilot "A" has 4 points, "B" has 3 points, "C" has 2 points, and "D" has 1 point. Next heat a one plane race, Pilot "E" takes off and "ho hums" around the course, and picks up his 4 points. Everyone has seen this happen, it's legal by the rules, but is it fair? Let's examine this situation a bit and see how it really looks. Pilot "A" had a time of 1 minute, 40 seconds or 100 seconds. Pilot "B" had 1 minute, 43 seconds or 103 seconds. Pilot "C" had 1 minute, 50 seconds or 110 seconds. Pilot "D" had 2 minutes flat or 120 seconds. Pilot "E", who really didn't try, had 2 minutes, 30 seconds or 150 seconds. Yet under the present rules Pilot "E" received the same number of points as Pilot "A". Pilots "B", "C", & "D" received fewer points than Pilot "E", but based on actual performance, who deserved the most points?

Now let's examine the exact same situation, only apply the proposed rule. This time it looks a bit different. After converting to points, Pilot "A" has 100 points, Pilot "B" has 97 points, Pilot "C" has 90 points, Pilot "D" has 80 points, and Pilot "E" has 50 points; (after all wasn't he exactly 50 seconds slower than Pilot "A"?)

Now let's re-examine the situation in light of what Pilot "E" would do flying under the proposed rule. In reality he would not even be flying alone, for he would be placed in the next heat that had both room and frequency clearance. This would save time, and would make no difference in the outcome because he is now being scored on performance. But for the sake of our situation let's say he did fly alone. Naturally, he would not loaf around the course, but would fly just as if he was not alone. This would mean that he now turns in a better time. Let's say 1 minute, 47 seconds or 107 seconds. This converts to 93 points. This is better than Pilots "C" and "D" but not as good as pilots "A" and "B". Isn't this exactly where he should be? Doesn't this allow each pilot's standing to be determined by his own ability and not the inability of another? The proposed scoring rule would completely eliminate the possibility of a reoccurence of an unfortunate event that happened at a contest early last year. One pilot had numerous free rides for 1st and 2nd place wins in his heats. The unfortunate part is this: His fastest time in any heat was 2 minutes, 16 seconds, and all his flights ranged from there to 2 minutes, 31 seconds, yet when the contest was over, he was in **second place**. Another pilot flew in every heat, had a slowest time, 2 minutes, 3 seconds, and did not fail to finish a single heat. How did he finish? **Tenth place**! Had the proposed rule for scoring been in effect at that time, the results would have been like this: The tenth place flyer would have been fifth, and the second place flyer would have been nineteenth. Can anyone say that this is unfair? This proposal will insure that the consistently fastest plane comes in first, and the consistently slowest plane comes in last. Is this unfair? Isn't this the very basis of all racing events?

This proposal will also eliminate the problem of frequency incompatibility. While it is physically impossible for everyone to fly against everyone else, when all times are compared, it has the same effect as everyone flying against everyone else.

ENCOURAGING BEGINNERS

To make progress in any endeavor, you must constantly enlarge the scope of operation. Much effort has been, and is being, expended to bring the non-racing flyers into the racing camps. It is only natural that many of these flyers are reluctant to get their feet wet, especially against the calibre of competition that they must meet. Many programs have been tried to further this end, all with varying degrees of success. Bob Stockwell came up with one of the better ideas last year. He used qualifying times to determine a cut-off point. This worked out well in the top end and the usual winners came through. On the bottom end, unfortunately, it did not work quite so well. It seems that there were a few people who usually do much better, that had a bit of trouble in the qualifying heats. They got the problems ironed out before the race, and sort of cleaned up in the finals. Now do not read anything into that last statement that is not there. I know all the participants, and will vouch for the fact that there was no funny stuff going on, it just happened to be their time to have trouble. This contest was a sincere effort on everyone's part (officials and contestants) to come up with a way to encourage the non-racers to "come on in, the water is fine." There was even a set of trophies for the winners of the bottom half.

"There is just too much room for argument in the present rule structure. We must think and act to help this great sport of racing."

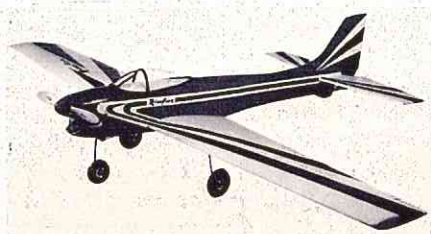
It seems that there are a few drawbacks to any program that employs qualifying times. One is that it slows down the contest, consequently cuts the number of flights. Another is that most all (I would say 95%) of the flyers I have talked to, do not like qualifying type races. Another, and perhaps the greatest drawback to putting all the so called experts together and the so called novices together, is the 'learning factor.' If you want to improve your golf game, ping pong, swimming form etc., you join the ranks of people who are better than you. Do you think that Don Scholander would have won the Olympics Gold Medal in swimming if he had spent all his time with children just learning to swim? Naturally not, he swam with people who made him extend himself, the people from whom he could learn something.

To keep the ranks growing, we must do something to give the beginner a chance to get some recognition, to win something, to compete against others in his own category. Yet, we cannot slow the contest down . . . we want more flights, not fewer flights. It has been suggested that the

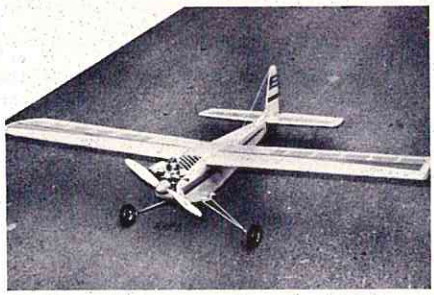
(continued on page 66)

TAKE A LOOK AT THIS..

Two new aircraft kits from Sterling Models, Sterling Building, Belfield Avenue at Wister Street, Philadelphia, Pennsylvania 19144, include the Rimfire – a 56" full house, high-performance model which is a beautiful thing to watch on the ground or in the air. Beautifully engineered in its classic simplicity, the Rimfire builds fast with it's table top, warp-free construction, into a rugged and exceptionally good looking model that attracts experts and beginners alike. The kit features full length fuselage sides, full length carved and hollowed fuselage top, formed main landing gear, and complete steerable nose gear assembly. The hardware package includes all nylon RC fittings as required for complete linkage, aluminum motor mounts, canopy, decals, shaped ailerons, and beautifully done full size plans and step-by-step instructions. Price is $27.95. The second new kit for 1971 from Sterling Models is their Schweizer 1-26D Sailplane – a 70" beauty that will capture the hearts of the tremendous number of RC Sailplane enthusiasts. Unbelievably realistic and unusually responsive to RC command, it has outstanding wind penetration. The magnificant silent flight must be seen to be appreciated. Superb engineering is reflected in the rugged easy-to-build assembly and warp-resistant construction. Beautifully pre-fabricated (including power pod materials), the kit features die cut balsa and imported birch plywood, complete hardware, including all nylon RC fittings required for complete linkage, canopy, nose cone, scale details, and full size plans with step-by-step construction details. Wing panels are detachable for easy transportation. List price is just $19.95.



Wing Manufacturing Company, Box 33, Crystal Lake, Illinois 60014, has produced their new Super Hinge, designed for all sizes of aircraft. This hinge is shaped with a triangle on each side of the hinge line and designed to fit in a slot made by an X-Acto knife. In fact, it is the same thickness as a cut made by a #11 blade. A slot is incorporated on the hinge line of the hinge proper to provide maximum strength as well as flexibility. A hole is simply drilled through the control surface and the hinge and a peg (supplied) inserted into the hinge hole. These hinges have been thoroughly tested by RCM and have been found to be among the strongest, most flexible, and fastest installing hinges that we have evaluated to date. Tested, Approved and Recommended by RCM. The price for a package of 30 hinges plus pegs is $1.00. Available at your local hobby dealers or direct from Wing Manufacturing.

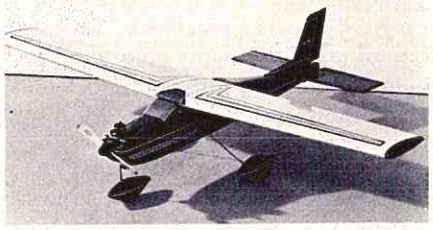


The Little Hawk is a 46" wing span shoulder wing, semi-symmetrical airfoil design for .15 or .19 engines imported from Japan by Rand Sales Company, Box 20059, Columbus, Ohio 43220. Designed for sub-miniature proportional systems, the Little Hawk employs all controls including ailerons. Priced at $14.85, it is a handmade kit that is virtually totally prefabricated and employs high quality balsa wood and extremely accurate cutting of parts. In fact, this kit is of extremely high quality. Although the plans are in Japanese, most of the notes on the plans concern the flying of the aircraft. The numbered sequence provided on the plans are easy enough to follow for the RC flyer with some experience. This is an ideal model for small field flying that is capable of advanced performance. Tested, Approved and Recommended by RCM.

Interested in the new Half-A-Midget pylon racing event? RCM recommends that you obtain a copy of the Ace R/C Inc. catalog priced at $1.00 and available from Ace R/C, 203 West 19th Street, Higginsville, Missouri 64037. Included in this catalog are all of the items necessary for the construction of the Half-A-Midget pylon racers. In addition, this catalog is an invaluable asset in the RC'ers shop or library.

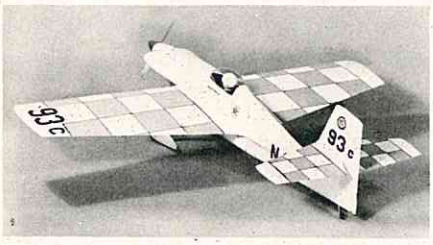
Carroll Craft, 1800 Yale, Denver, Colorado 80210, has produced one of the finest Almost-Ready-To-Fly aircraft that we have seen to date. The all new Splinter was designed by Ed Carroll and is now being manufactured in Carroll Craft's modern model airplane factory with precision molds and machines. It's fast assembly, outstanding performance, and handling characteristics make this model a welcome addition to your RC pleasure. The Splinter features a 5-6 lb. flying weight with .45-.60 engines; 60" wing span with 610 sq. in.; plastic covered wings and stab; vinyl plastic molded fuselage; and will fly the full AMA and FAI pattern. Test flown for over two years, the Splinter is one of the finest ARF kits we have seen. It is priced at $52.95 and is available from Royal Products or direct from Carroll Craft Products. A full line of replacement parts are available.

Finishing Touch, 9941 Debbie Drive, El Paso, Texas 79925, has produced frequency decals for your model and transmitter. Available at 98¢ a sheet retail, they include various sizes of frequency decals in color with the frequency printed on the decal. These decal sheets are available for all 27 and 72 MHz frequencies. They are available from your dealer or direct from Finishing Touch.



DeeBee, West Lambs Road, Pitman, N.J. 08071, offers as their latest model, a semi-scale version of the Cessna Cardinal. This airplane is de-

signed for rudder, elevator and throttle control. The wing features hardwood spars, top and bottom, and Duraflite covering. The fuselage, stab, and fin are molded vinyl and are held to close dimensional tolerance for ease of assembly and accurate alignment. The flying weight is 3¼-3½ lbs. with recommended engines from .15-.19. All control surface hinge slots are precut to save time and wheel pants are included with the kit. This is an ARF model that will go together in an evening and provide an excellent platform for the beginner or sport flyer.

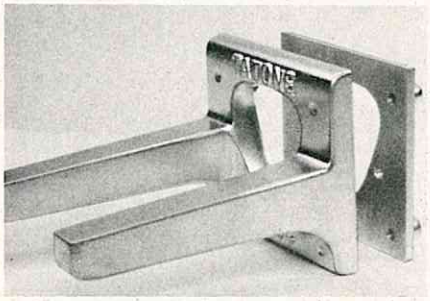


Tom Protheroe, of Vortex Model Engineering, 210 East Ortega Street, Santa Barbara, California 93101, has re-designed his "Little Mike" Formula I racer, and the kit is all ready to go. The new specs are: wing span 46½", wing area 473½ square inches, overall length 42½". He has lengthened the fuselage, shortened the landing gear so that the model rests in a less nose-up attitude while on the ground. The front end has been reproportioned – the cheek cowls are much slimmer now. The new wing is slightly thicker than the 1970 minimums and therefore acceptable under the 1972 rules. Wing loading has been decreased. They cut the foam wing cores with the proper washout and ship them in the original block – it can be used as a skinning jig. As to appearance points . . . Tom's "Little Mike" received 19.57 out of the possible 20 points at the Las Vegas International Pylon Races. Little Mike kit with fuselage, radio hatch cover, engine cowl, wheel pants, formed canopy, aluminum landing gear, and complete plans showing built-up wing is $42.50. A foam wing core with construction plans is available for $10.00.

XL-ent Products, P.O. Box 347, Port Jefferson, New York 11777, announces the availability for immediate delivery of the full line of ED diesel engines and accessories. ED is one of the oldest British marques, it being over twenty years since the first ED diesel engines were produced. The current ED range of model engines

comprises four models ranging in size from .09 to .30, available in either water cooled marine or air cooled versions. XL-ent Products new catalog includes the complete reprints of all the Peter Chinn reports on the current range of ED engines. Over 44 pages, it is available from XL-ent Products for 50¢ which will be refunded on the first order. Dealer and distributor inquiries are invited.

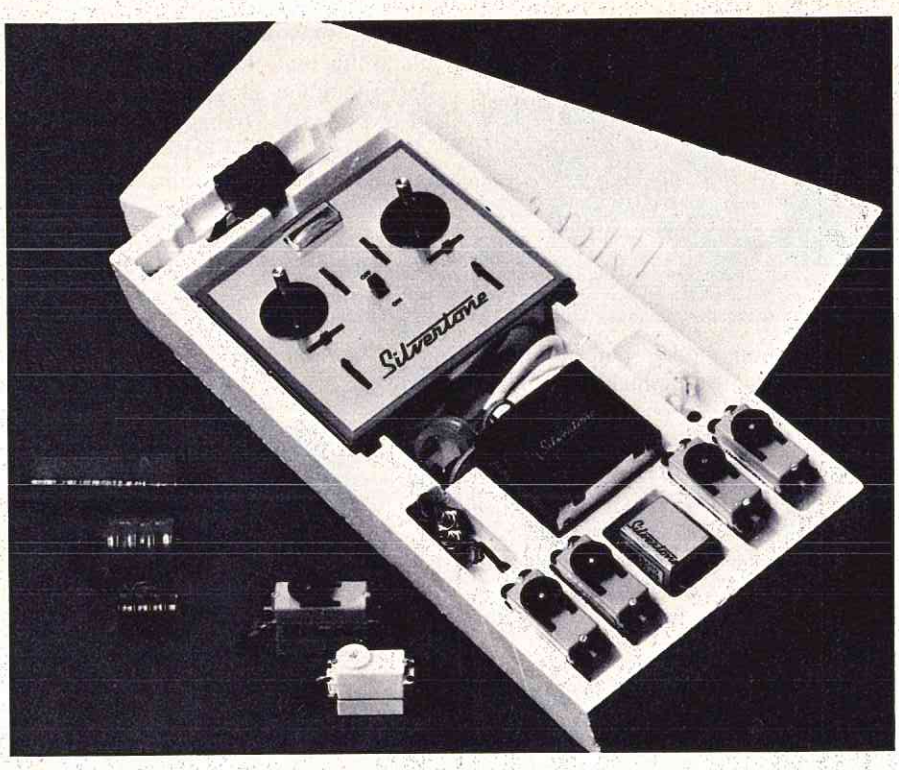
VK Model Aircraft Company, 12072 Main Road, Akron, New York 14001, announces that the Cherokee – The Big One – now lists at $39.95 while the VK Navajo now lists at $39.95 as well. Individuals may receive literature by sending a stamped self addressed envelope to VK Model Aircraft Company.



Tatone Products, 4719 Mission Street, San Francsico, California 94112, now has available a custom engine mount with matching nut plate designed especially for R/C Pylon racing RV .40 engines. This is not the reworked number 30453 mount mentioned to you several months ago, but a new mount entirely based on the advice and recommendations of many expert pylon fliers. To begin with, the beams are now 2-11/16" longer than before. Tatone has also eliminated all down thrust and side thrust which has been a frequent complaint. The back end of the mount is squared to provide more mounting surface and support area. This has a large hole to give better engine breathing and to make it easier to install fuel lines. To further reduce engine vibration to a minimum, a matching aluminum nut plate firmly anchors the mount and firewall into one solid unit. This mount is cast in 256 aluminum alloy, then heat treated to give greater strength and to relieve all stresses. The nut plate is drilled and tapped and all mounting screws are supplied. The weight of the mount and nut plate combined is 4¼ ozs. These new mounts may be ordered drilled at no extra charge for your particular engine. The price is $4.95 each.

Sonic-Tronics Inc., 8017 Craig Street, Phila., Pa. 19136, is proud to announce their NEW "Nifty" Electric Fuel Pump. The unit is contained in a molded case and is equipped with a heavy duty motor, high volume pump and reversing switch so as to both fill and empty your tanks. It operates from a 1½ to 4 Volt battery supply and works efficiently from your glow plug starting battery. It is equipped with 18" fuel lines and has both line filter and nozzle plus the Nifty instant mount. The complete unit including 2 **Year Guarantee** is $9.95, available through your local dealer or direct.

Fliteglas Models, P.O. Box 98851, Des Moines, Washington 98188, is now delivering their newest kit, the Gladiator, which is designed and flown by world renowned RC'er, Ralph Brooke. The Fliteglas kit features a joined fiberglass fuselage that weighs only 16 ounces; fiberglass wing tips; complete hardware; all necessary balsa except wing core sheeting; foam wing cores; and highly detailed plans. The only building required on the fuselage is to install the firewall and one bulkhead. The wing saddle requires only the addition of the wing hold-down blocks. The wing cores have all necessary cutouts made and the builder need only to install landing gear blocks, wing tips, and wing sheeting. The Gladiator has a wing span of 68" and an area of 730 square inches. The weight comes out at approximately 7 pounds with a .60 engine recommended for power. The kit is competitively priced at $59.95.

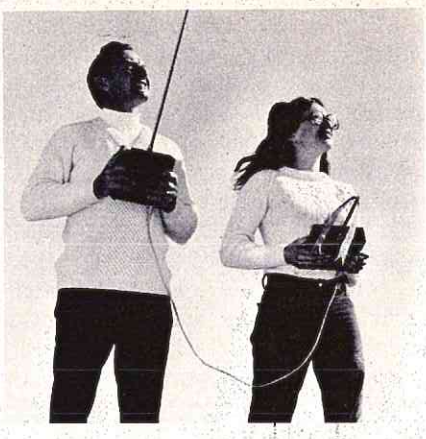


Silvertone 6 channel system showing servo and battery pack options.

RCM PRODUCT REPORT

SILVERTONE MK VII

From Australia, a digital proportional system with excellent performance and versatile features. In addition, details of Silvertone's foolproof and unique frequency control system.

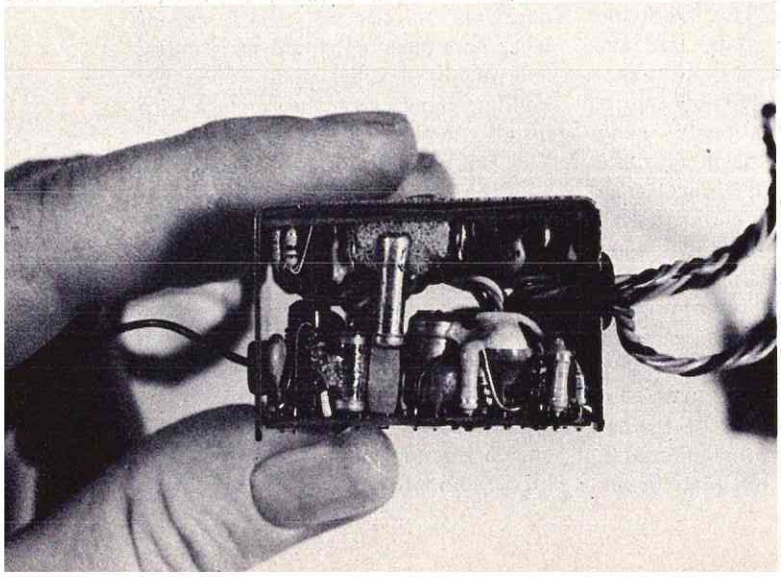


The Silvertone Mark VII is a modern digital proportional system manufactured by Silvertone Electronics, 727 Princes Highway, Tempe, N.S.W. 2044, Australia. Designed to give maximum results from an essentially simple system from an operators point of view, the Mark VII incorporates simplicity with a minimum of maintenance. This system, as received by RCM for test and evaluation, consisted of two transmitters, receiver, four servos, batteries, switch, and charger.

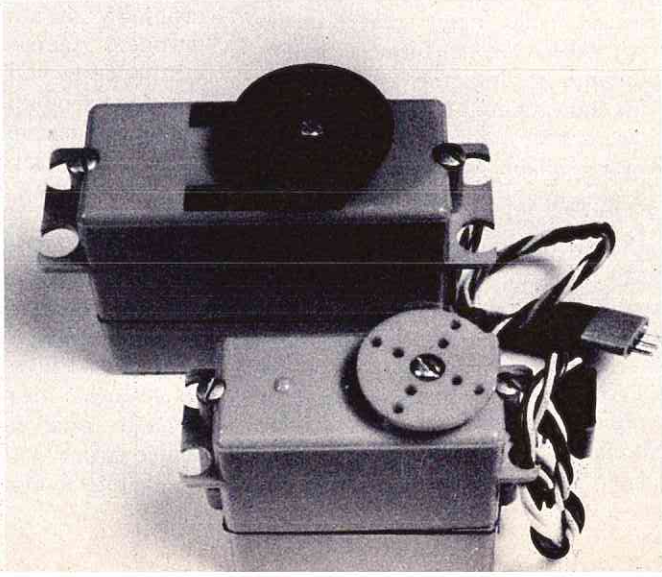
The most noticeable feature of the Silvertone system is the exceptional finish and appearance of the unit. The transmitter and receiver are anodized bronze-orange with an anodized black front panel. The transmitter is a sealed unit and features Orbit sticks with electrical trim. The stick mode may be changed by simply changing the spring and ratchet (housed in the tip of the throttle stick) and transferring the encoder wiring to the appropriate pots. A transmitter meter registers RF output when the transmitter is switched on and charging current

(continued on page 67)

Inside the extremely small and compact receiver. Note plug-in crystal in center.

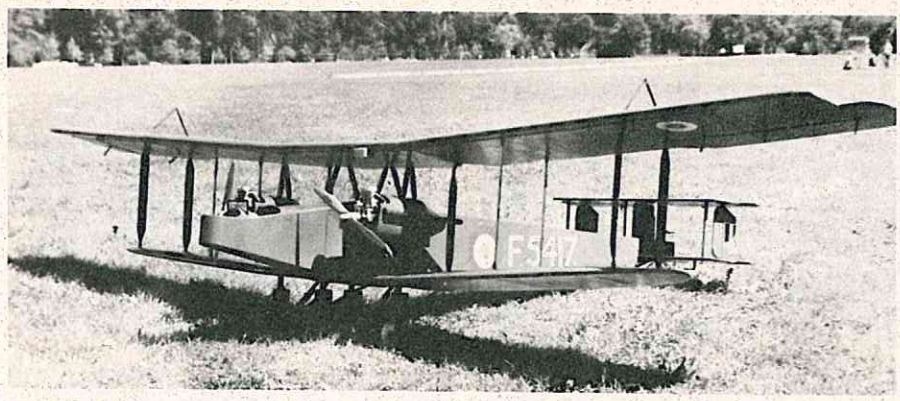


Two servo sizes are available, both standard Orbit configuations.

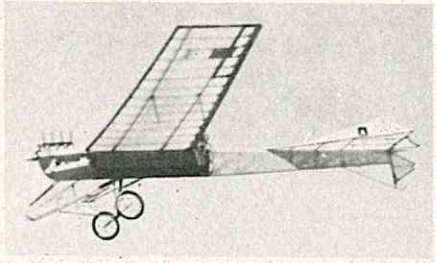


TOP OUT

JERRY KLEINBURG



Handley Page Bomber was St. Louis sensation. Maiden flight by Al Signorino, MM meet mainstay. Ship built by Bob Kurt in 1958, 20 lbs., 10' span.



ABOVE: Magnificent Men contest winner. 8 foot Antionette by Vern Zundel and flown by Al Signorino. Slow, realistic in flight. RIGHT: Another classic gets airborne. Art Biehl's Demoiselle was 2" scale replica, provided realistic crash.

LEFT: Bill Crame pic catches Bob Underwood, Pres. of Greater St. Louis Modeling Assn., buddy-box instructing two young visitors to Buder Park, Signal Chasers flying site. Park owned by city, controlled by Signal Chasers. Bob, co-promoted Magnificent Men classic.

AMA INSURANCE . . . Is it any good? A fair question – one that's often heard since it's of big interest to everyone who flies models. (That is, it should be . . .)Naturally, the question also has interest to property owners where we have flying sites.

Insurance, to be "any good", has to protect and reimburse folks for losses. As for AMA's insurance, what is its track record for covering damage that may be caused by model flying? Records show that through the first half of 1970 there were 31 claims settled amounting to $2252 in damages. This money went to pay for damages to cars mainly, with other settlements going to cover injuries to spectators and other modeler. Among the 31 claims that occurred from ALL types of model flying, there was even one made for a damaged tractor and one for a parked airplane. Amounts for the 31 claims ranged from $30.00 to a whopping $895.00. Most were promptly settled . . .

Unfortunately there were also some that took awhile to get settled. These happened mainly where claims were not sent in soon enough or where insufficient information was given. Ironically, where TOO much detail was provided, this also caused delay. An example of this last problem occurred when a claim report cited a cross wind as causing a model to fly into a parked car. In turn this caused added investigation and correspondence in order to clear up the fine legal point of whether the condition was beyond the normal control of the flier (in that case, no payment) or that the flier had exercised poor judgement in flying during the cross wind condition in the first place (AMA's insurance pays . . .). AMA's advice: Report promptly to AMA what happened . . . avoid indications of why!

From our look into the AMA insurance situation we conclude that the protection is worthwhile and dependable. We also found that its undeserved 'bad' reputation stems from the fact that not much has been made public before of AMA's successful performance in settling claims – a modest way perhaps of doing business but one not designed to instill confidence in the program among the vast majority of modelers who don't have accidents but still wonder and worry about the possibility. Another reason for the reputation are rumors that travel around the country based upon supposed facts but usually growing from accidents where claims weren't actually made or they were improperly filed and consequently got delayed or were left hanging fire. All-in-all, the best way to handle accidents is to report them promptly and send your District VP a copy for any necessary follow-up . . . One last fact: AMA insurance remains as the biggest reason that most RC'ers join and stay in the Academy of Model Aeronautics. . .

News Phobia . . . We all became somewhat exercised over the L.A. Times scare story that popped up last December to disturb the Christmas spirit among RC'ers. While the concern

Pawnee, possibly. A semi-scale sport model was fly-in ship for Bert Hahn, young Donna, Texas Flier. Bob Watson helps with 58 " span, 4½ lb. plane. Enya .45 and Logictrol III.

A good idea for fly-in events – let the ladies judge! Here Marie Elana de Silva, Marge Liedal and Rebecca Mattenberger count touch and goes of Citrus Race.

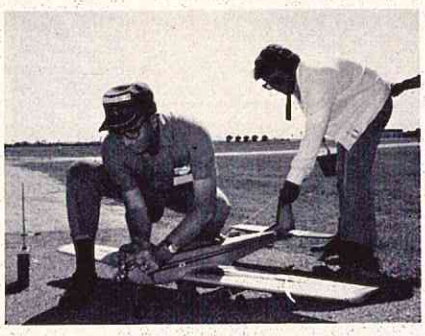
Simple ship right for fly-in fun events. Joe Marshal releases Headmaster for McAllen meet host, Art Brock. OS .19 power, PCS radio.

Wifely kiss was extra reward for Cyclone Pylon winner. Jorge Bustos won 20-lap event with 2½ lb. K & B .40 powered "Chilindrina" racer. Kraft radio for 150 mph speedster.

Gale Helms had daughter Elizabeth's help in Formula I. Thunderbirder placed 2nd in McAllen with familiar black Mustang. ST .40 ABC used 50% home brew fuel, trimmed 10 x 8 Top Flite maple prop.

Limbo poles get international flavor for McAllen fly-in. Jim Hahn, Angel Taboada and Carlos de Silva apply decorations.

Ancient Jenny ready. Gaston Mathelin starts another Limbo flight, Luis Castaneda releases. Max .80 and Logictrol III in 9 lb. bipe.



World Championship hopeful, Feliciano Prat of Mexico City, sets needle in HP .61 F/R of his original pattern ship.

"Chicano Power" was political sidelight humor by Angel Taboada of Monterrey. Merco .61. Note reed sombrero, gift to all contestants from Puebla, Mexico club.

was proper, it's also necessary to avoid any sort of phobia from taking place by recalling the dozens of newspapers around the country that plugged RC in positive ways through the year. 1970 possibly saw a greater number of the favorable than ever before and their cummulative effect must far outweigh the one sad display . .

Best coverage went to the Greater St. Louis Modeling Association headed by Bob Underwood for their "Magnificent Men in Their Flying Machine" contest. The St. Louis Globe-Democrat color-featured the contest in the December 6th Sunday magazine section and used 4 other pages of pictures and words to give readers the background and details of the precendent-setting contest – a contest dreamed up by Vern Zundel and Al Signorino (RCM – May 1970) who have devoted themselves to vintage RC miniatures. Al, you recall, is the creator of the famous RC Snoopy Doghouse that he has flown at many meets over the past two years. The Globe-Democrat story by the reporter-photographer team of Shirley Althoff and Dick Weddel covered RC in fine detail and was an outstanding example of journalism that may be written about RC and its fliers. Color, excitement, victory and philosophical despair over crashes were woven into the feature article . . .

Yep, both newspapers – the L.A.

Times and the Globe-Democrat – published major RC stories the same week and showed the entire spectrum that newspapers may exhibit about RC. Naturally, the question rises as to what may be done to bring about the good and avoid the bad variety of news coverage. While the answer is simple and easily understood, it's one that so far has been rarely achieved to the extent the Greater St. Louis Modeling Association has during the last decade. The formula: Best public relations result from local efforts that come from the work RC clubs do to become a visible and useful part of their community on a continuing basis! And success of the effort is not measured by the line-inches of newsprint alone but also by the flying sites and public support that results . . . Less tangible, but equally important, is the satisfaction gained from giving your community another creative outlet to enjoy . . . .

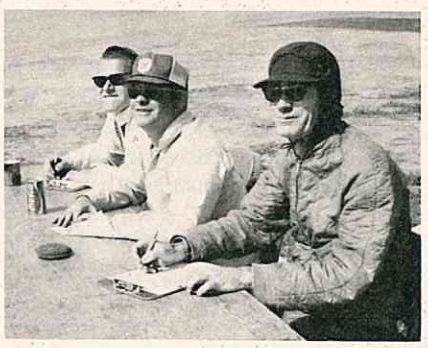
FCC LICENSES – Does your club have one yet? Clubs all around the country have been receiving them lately. The club license approach resulted from the reaction of RC'ers to the recent jump of the license fee from $8.00 to $20.00. FCC claimed they needed the extra fee to monitor the Citizen's band; now we hear renewals are down 50% . . . In the latest management vernacular, the FCC move could be labeled 'counterproductive' – to say the least. In the meantime, more and more clubs are taking advantage of the opportunity to acquire a club license for the $20.00 fee so that none of their members need to get an individual license which goes for the same price. If your club has missed the details on how to get a club license, check with AMA for the poop.

Contest Capers. Early season fly-in fun sprouted at McAllen, Texas, and it was liberally spiced with an international flavor that gave special life and color to the Valley RC Modelers affair. The 'valley' location drew RC'ers from both sides of the border and an 8-event meet was served up during the two day affair for some 40 U.S. and Mexican contestants. Host for the get-together was Art Brock along with Jim Hahn and Bill Keller and the other half-dozen RC'ers that make up the Valley RC Modelers Association. A homey atmosphere pervaded the proceedings helped along by the hamburger and hot dog lunches served by the ladies of the hosting club. An all-you-can-eat Saturday night banquet was also given to the contestants and guests. Understandably, it was the highlight of the Winter affair now in its 3rd year. Dessert was in the form of a large box of big ruby red grapefruit each contestant carried home after the meet. In addition, there were trophies and merchandise galore for all the event winners. And all this for just a $2.00 entry fee! Finances for the hospitality came from a program handout booklet given to the many spectators who came out in response to the coverage on 8 radio stations and 2 TV stations of the area who also backed the affair. The booklet showed 66 additional sponsors in the form of ads from the local merchants. The story of RC along with its record achievements were also carried in the handout along with the history of the Valley RC Modelers. All-in-all, the meet showed plenty of RC promotional savvy and

(continued on page 47)

ABOVE: Ernie Nikodem was 1970 Champion of the United Pylon Racing Circuit, the Upper N.Y. area association. Ernie beat Ken Landefield by only 3 points for honors. Full 1971 racing slate set for this year by UPRC. RIGHT: Bill Allen calls Take-off at 2nd Annual Cordova Model Masters Free Style pattern contest. No mandatory maneuvers, lots of competition.

Tim Symes fires up the ST .60 for a winning flight in CX event in Free Style Aerobatic meet in Rancho Cordova, California. Modified Sun-Fli IV.

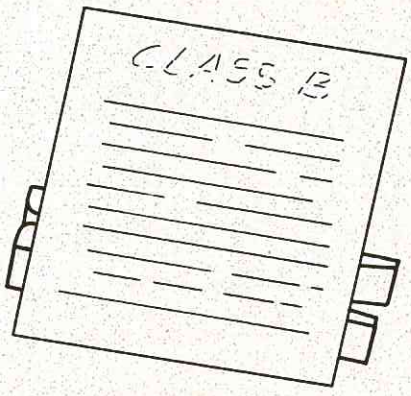


Cordova Model Masters judges for Free Style contest: Bill Allen, Jim Spurlock, Bill Woodward. Cold and wind didn't diminish spirits.

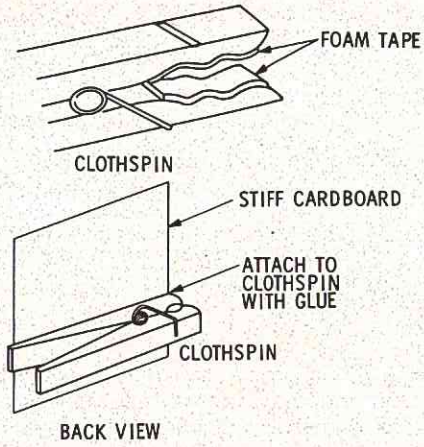
The winners! A, B, CN and CX classes in 2nd annual Rancho Cordova Free Style Aerobatic Contest. Contestants liked choice of 40 different maneuvers.

Jerry Gracia topped Class A in Free Style pattern meet. Prexy of Rancho Cordova Model Masters used Mid-Dart II with Webra .61 and retracts.

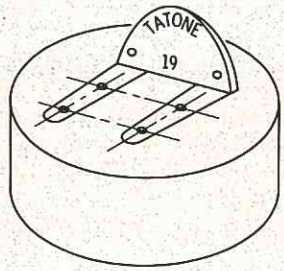
FOR WHAT IT'S WORTH

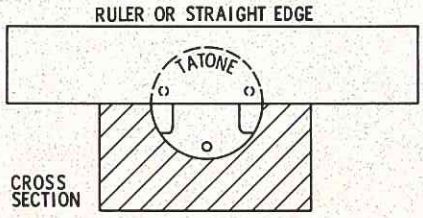


The following is an idea for a simple and inexpensive "pattern prompter," submitted by James S. Miura, of Hawaii, Jim simply types or writes out the maneuvers of the particular pattern on stiff cardboard and glues the cardboard to a clothespin. By clipping the clothespin to the transmitter anntenna he has the pattern maneuvers right before him. In order to prevent damage to the transmitter antenna, attach two pieces of foam tape to the clothespin where it grips the antenna.

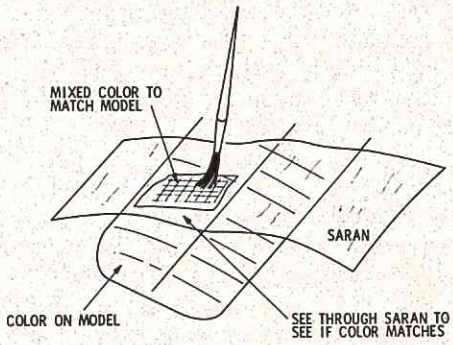


Copley R. Bean, of Tucson, Arizona, submits this useful kink to all modelers who are using the Tatone motor mounts in their models. Up until recently, Copley has had a serious problem in trying to drill the engine holes in his Tatone mounts – the problem being that the holes invariably came out off-center and many times crooked as well. The net result is in having an off-center engine. To alleviate this problem, Copley took an empty tuna fish can and filled this with a mixture of plaster of paris. As the plaster started to firm up he pushed the Tatone mount into the plaster. He then used a six inch plastic ruler to push the mount arms down exactly level with the top of the tuna fish can. He then scraped the excess plaster off so that he had a smooth surface. When the plaster was dry he had a surface to mark out exactly where the holes should go. The main purpose of this design is that you have an easy-to-handle object now and it is perfect to throw this can underneath a Dremel drill press and drill out a set of perfectly lined-up holes. Once the holes are drilled it is a simple matter to get the mount out of the plaster. Simply hold the can on its side and hit it with a hammer. The plaster crumbles and the mount pops right out ready for installation.

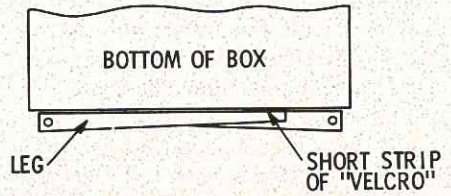




One of the handiest items Gorden Klein, of Santa Rosa, California, has come across lately is kitchen plastic wrap, such as Saran. When trying to match or duplicate colors on a model or color chip or decal, the usual method is to make a small frame covered and painted with the original color and then try to match it as best you can. This method uses comparison, or dabbing, until there is no more original color left and then repainting and starting over. However, if you take the Saran Wrap and place it over the color to be matched and then start dabbing you can keep moving the wrap till it looks right. This can be done right on the original color or model without messing it up – it is completely fuel proof and dope proof. This also makes for a much closer color match than by just comparing or having the color from underneath bleed through and making a completely different color. It dries with a smooth glossy finish just as it will on the model.

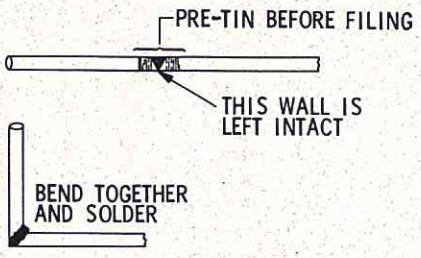


If the legs of your field box have a habit of dropping down while it is being carried, here is a suggestion from Richard Turner, of Raytown, Missouri. Glue in a short piece of Velcro or 3M Hook & Loop to hold up the legs. This material will last for many "hook-ups" and solve this somewhat disconcerting problem.

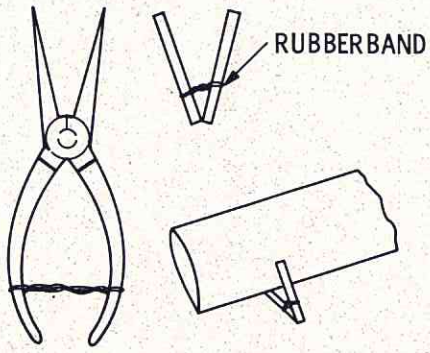


If you have had occasion to bend brass or copper tubing to rather sharp angles, where a radius bend requires too much space for installation, and since it is very difficult to cut the tubing completely in two and then solder them back together to get the required angle, try this method from Richard Beckman, of Glenwood Springs, Colorado. Dick pre-tins about ¼" of the tubing in the area where the bend is to be made. Then, using a small jewelers file, file through the tubing but leave one wall intact. The angle of the notch should be filed somewhat close to the angle of the bend required. A triangular file is ideal for making 90 degree bends. With the one wall intact, simply bend the filed

edges together and solder. After soldering, or before if you prefer, flush the tube out to clear it of any filings that will be inside. Dick has used this method many times and has never had any difficulty with the joint. Of course, one should test for any possible leaks, as air in the fuel line will cause a lot of trouble. If bends are not made sharper than 90 degrees there will be no restriction of fuel flow. □



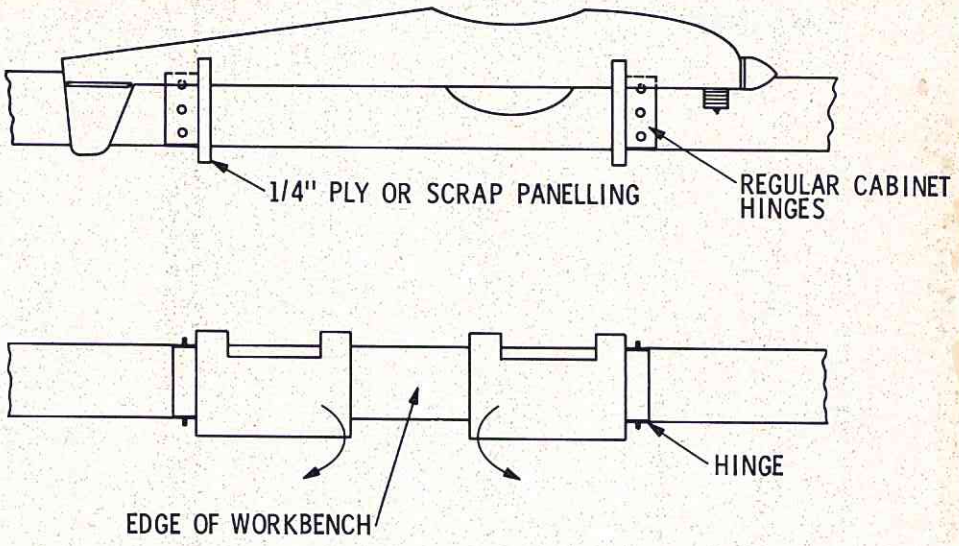
C-Clamps are always a problem and, when you're building a wing or fuselage, you usually end up with one or two short. A good idea is to take a pair of pliers and slip a rubber band over the handle as shown in the sketch. In this manner you have an excellent temporary clamp. One precaution: be sure the band isn't too tight on the pliers or it will indent the wood with little teeth marks. If you run short of pliers, then another method is to take two strips of maple or other hardwood and put a rubber band over one end. Then the two pieces of scrap will now make another excellent clamp that works like a clothespin, only better. This idea was submitted by Waden Emery, III, of Andover, Massachusetts.



John Steinkamp, of Rensselaer, Indiana, suggests epoxying a small magnet to your carving knife in order to pick up all excess pins from your workbench after building.

HAVE A GOOD IDEA?

SEND IT TO FOR WHAT IT'S WORTH AND YOU MAY WIN A 1-YEAR SUBSCRIPTION!



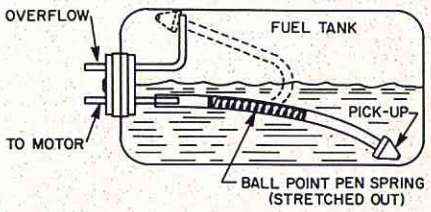
This gadget has been used on field boxes for some time, but Bill Cooper, of Louisville, Kentucky, uses it on his workbench. It is quite simple and a tremendous aid for working on radio equipment or any other inner workings within the fuselage. If you've ever had to hold a Kwik-Fli or large scale ship in your lap and work on the interior, you'll appreciate this fuselage-holding jig.

C. Barry Gillis, of White Rock, British Columbia, made up eight bags of various sizes ranging from 2" x 3" to 4" x 7" filled with steel shot or lead. These make excellent weights for holding down balsa skins when gluing; positioning awkward parts while you work on them; as well as many other uses. Make each bag the same weight as your radio gear and they can also be used to determine the center of gravity location without removing equipment from other aircraft. These bags form to almost any shape and do not leave any marks on the surface of the aircraft no matter how irregular the shape. Be sure to use a fairly strong close-woven material for your bags – Barry finds "seasoned" denim from the wife's household rag bin to be ideal.

After making an incision in a control surface, a hypodermic syringe and needle of sufficient gauge can be used to inject glue deep into the incision. This will insure a good bond between the hinge and wood and also leave any excess space filled with glue. We may be accused of "mainlining" glue instead of just sniffing it, but our hinges will be firmly seated. This idea is from Edwin Evans, of Lewistown, Montana.

A safety note from one who has learned the hard way – Roy McCuckin, of Pittsford, New York, would like to caution other modelers that, when cleaning brushes in solvent, to resist the temptation to draw the brush across the lip of the can to remove excess solvent. When unconsciously flicking the brush in this manner, Roy splatterd solvent into both eyes. He reports the pain and darkness were terrifying. Luckily he was able to feel his way to the laundry sink and wash out his eyes with a water hose prior to consulting a doctor. Roy recommends keeping the mouth of the can pointed away from your face when sloshing the brush around and then simply squeezing out the excess solvent with your fingers or a rag.

Clyde Harris, of Pittsburg, California, solved the problem of fuel lines doubling back on themselves by inserting a ballpoint pen spring stretched out to its full length into the tubing of the fuel pick up to the motor as shown in the sketch.



George Young, of Livermore, California, suggests using .010 to .030 clear plastic cellulose acetate sheet for transferring rib and bulkhead patterns from plans. Available at stationery stores, use the plastic sheet to trace over your plans using a pointed wax pencil. Cut out the plastic pieces and the templates are ready for use. This eliminates cutting up your plans and tracing onto a transfer sheet.

Larry Bowerman, Sky Rovers Prexy, fills P.A. chore for Hobo meet which featured fun-fly event.

TOP OUT

(continued from page 41)

sent 40 fliers back home looking forward to the next meet and anxious to tell their friends about the 1971 fly-in . . . Winners of the events were:

Spot Landing . .Emilio Lozano, Mexico City
Most Spins . . . . . Carlos de Silva, Monterrey
Limbo . . . . . .Roy Parks, San Antonio
Aerobatics . . . . . Luis Castaneda Jr., Puebla
Formula I· . . . Gerry Meyers, Victoria, Tex.
Open Pylon . . . Carolos de Silva, Monterrey
Cyclone Pylon . . Jorge Bustos, Mexico City
Citrus Race . . . . . Ben Castaneda, Puebla

United Pylon Racing Circuit' Speaking of meets, here's the 1971 schedule of pylon racing for the Northeast section of the U.S.:

May 23 Syracuse, NY.	ARCS field.
June 27 Lockport, NY	Niagara Co. Model Airport
July 11 Buffalo, NY.	Amhurst Airport
Aug. 8 Lockport, NY.	Niagara Co. Model Airport.
Sept. 5 Buffalo, NY.	Amhurst Airport
Sept. 18-19	UPRC Championship Rochester, N.Y. Monroe Co. Model Airport.

Based upon the success of the 1970 season, the 1971 slate of meets should attract first class competition and provide the leading pylon racing events. Each year a champion is named based upon accummulated points for the season. The 1970 Champ was Ernie Nikodem who had to go right down to the last heat of the last race to beat out Ken Landefield by a mere 3 points for the honors. Principal moving spirit of the UPRC is Harold "Pappy" deBolt whose mailing address for Circuit matters and the monthly newsletter "PYLON CUTTINGS" is: 49 Colden Ct., Buffalo, NY 14225. Phone (716) 633-6623.

NATIONAL AERONAUTICS – That's the name of the magazine offered by the NAA, the National Aeronautics Association. AMA is part of the Association and members receive a direct membership in the parent organization for a half-price of $5.00. The aforementioned magazine

comes with NAA membership or may be found at well stocked news stands. The Spring 1971 issue we've just received covers racing, aerobatics, home-builts, antiques, WW I, military, and air transport. It also serves a large helping of RC flying to make the publication the most complete single picture of aviation goings-on in existence. It's a must for every aerophile . . . The coverage of RC flying helps to get the story of RC across to other aviation types with whom we share flying space. It's therefore an important piece of PR between us and others who have flying interests.

This is the kind of public relations AMA is best suited to perform for all of us. The point here is that while AMA can and does fill part of the PR role needed to advance RC'ers interests, it cannot directly fill the role or function of local clubs in their own communities. As we pointed out earlier, local RC organizations can deal far more effectively in their own areas where they may best judge their needs and how to go about achieving necessary goals. Too often, however, we hear of local clubs who wait for AMA initiative in their neighborhood to get the job done for them. Frankly, it can't happen and time is wasted waiting for PR efforts of a national scope to bring about immediate practical effect to any particular locality. Never-the-less, AMA can help local programs get started with PR material and guides which have been put together for that purpose. Drop them a line, they'll be happy to help – and while you're at it, include a dollar for a copy of National Aeronautics and get the TOTAL aviation picture!

NEWSLETTER BEAT . . . .

HEAR YE editor, Fred Van Keuren, has a good idea to get more of the members of the Valley Forge Signal Seekers to contribute articles to the newsletter. It might be noted here that HEAR YE has had better than average

LEFT: Greensboro winner . . . Class B best was Bob Klineyoung using "Malibu" original with Webra .61 and E.K. radio. Bob, 1971 Prexy of Rocket City RC Club . . . BELOW: Texas license plate shows Charlie Hirsch's radio preference. Houston RC'er operates Ace Hobbies in Space City, active in scale meets.

results from their members in all the years we've read it, but that isn't stopping them from promoting added interest. The club has regular raffles and newsletter contributors will now get free raffle chances whenever their work is reprinted in a magazine or another newsletter. Yep, a darn good idee . . . In the same February issue that announced the program there were some mighty choice items. For instance: **NOISE METER** "Si Corson saw a write-up on an Allied/Radio Shack db meter, and passed it on for possible action. The meter – #33-1028 has been purchased by me. Jack Malriat volunteered to have a calibration check run on it. If it looks good, hopefully the club will buy the unit. Muffler research is not dead!" (Remember it was a research program by the Signal Seekers that stimulated muffler action in the past. They received an AMA award for their efforts . . .) *Another good HEAR YE item, this one entitled, "Balsa, Si" by Dan Rossman caught our attention:* "After 3 years in this 'hobby', I've developed some positively negative opinions about certain construction materials. I think that heavy wall fiberglass fuselages are fine but based upon my experience, for fuselage application ABS stands for 'atsa bad stuff' and PVC stands for 'pretty vapid cr--'. As far as I'm concerned,. you can't beat a sturdy built-up balsa fuselage for survivability. Sudden encounters with Mother Earth will, of course, strain a balsa fuselage and produce cracks, splits and even compound fractures. But it's been my experience that when a .02 thin ABS or PVC fuselage is loaded this way, it produces an absolute total body fracture too horrible to contemplate and results in an irrefixable (?) glop. I don't quarrel with the ARF concept nor do I think ABS or PVC should go away, but if we had a national referendum, my vote would be Balsa, Si; Plastic, NO!" *And another HEAR YE item – this one by Tom Jarick – deserves note. It was entitled "ENGINE TROUBLES AT FULL SPEED?" and went thusly:* "I had a problem with my engine recently and the solution may be of some value to others. The problem was an engine that would starve out and quit at high speed. The trouble was narrowed down to the clunk fuel filter. This was an excellent filter provided the screen is removed occasionally and cleaned. I removed the filter and popped out the screen, picked off that little gob of lint, etc., that usually gathers there and brushed it lightly until it looked clean. Then I held it up to a light and with a magnifying glass was surprised to see that 95% of the holes were still blocked! All efforts to brush, scrape and pick failed to open the screen until I held it over a lighted match and presto – the dirt changed to dust and easily brushed off." *(OK, fellows, see how easy it is to find items to help your overworked newsletter editor? These are the kind of things that make a newsletter valuable to all the club members and at the the same time make it fun to get into the act yourself. And besides, you may even get a few free raffle chances!)*

From Arizona and the Phoenix ARCS newsletter comes a comment about pylon racing. Remember, it's only one man's opinion, although we've got to admit we've heard similar comments from others in other areas and the idea should be given some thought. Acting Editor Tom Gadwa editorialized: **"While watching the 450 inch pylon races at this year's Winter Nationals, one thing was obvious to this writer as well as many of the**

people I spoke to . . . Formula I pylon racers are too fast . . . A look at the original pylon rules will show just how far off base we have gotten. One of those original design could be flown in pylon, scale or pattern. There was even a rule that stated that throttles must be capable of slowing down the plane to 'no faster than a brisk walk'. This event which was originally conceived to give the run of the mill flyer a chance to fly in competition has now become even more sophisticated than pattern events. I honestly believe that no more than 5 or 6 of the flyers at the Winter Nationals had the reflexes and skills to fly such a plane as we see in the event today in competition! The rest of the flyers just 'hang in there'. Rules which allow the Formula I speeds to increase even further are presently under consideration . . . good luck . . . . I hope that the AMA and NMPRA can come up with some ways to put pylon speeds back in the range of reality . . . "

CANADIAN CLAMBAKE . . . A letter from Ed Hardy of Calgary brought the following:

HELP WANTED

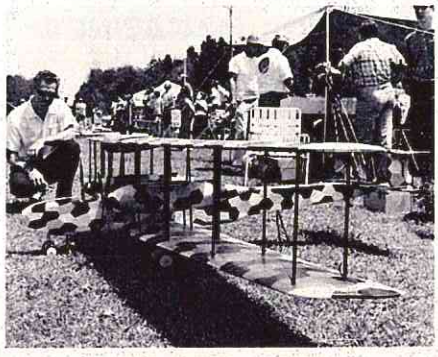
The Calgary Radio Aeromodellers Society will be exhibiting their models at the famous Calgary Stampede Exhibition July 8-17, 1971. This famous attraction has an average attendance in excess of 750,000 visitors . . .

The theme of our exhibit will be "The World of Modeling" and will feature a 6 foot diameter rotating globe which we wish to cover with decals from every known modeling club in the world. All clubs interested in joining us in this venture please send your club decals or flags to:

. . . Phil Kraft? Not quite . . . This is Bob Winkler of Salt Lake City. Ship is Kwik-Fli II (naturally) by Walt Staff.

Heading for limbo . . . Walt Throne's original clears, this time. Larry Abraham was ultimate winner of Sky Rover event. Pretty flying site . . .

Major attraction at Sky Rovers Hobo Meet was huge WW I Staaken R.VI bomber by Dick Sprang of Syracuse. No limit to RC, it seems . . .



Mr. Carl Prada
1006 - 13th Avenue, SW
Calgary 13, Alberta, Canada

Sounds like a good way to give a boost to the enterprising CRAMS and to also put your own club on the map where it will get plenty of notice. (And speaking of being "visible and useful" in the community – as we did a few paragraphs back – isn't the CRAMS effort a classic example of how an RC club may become involved?)

Prefer Free-style? How's this for a maneuver – a 360° turn in knife-edge flight? Or a horizontal figure 8 with continuous roll? These and 38 others made up the maneuver list for 2nd Annual Freestyle Aerobatic Contest of the Rancho Cordova Modelmasters, a Northern California club seeking to put life and spirit into pattern competition. All the maneuvers weren't 'way-out,' most of the regular AMA standards were there – loops, spins, flat pattern, landings. But the idea was to also provide something new, something novel for the RC pilots to tackle if desired in the 10 maneuver selections each was allowed to choose. Each maneuver was graded for difficulty ranging from a minimum of 10 points all the way to 40 points for the more exotic creations such as the Lom-slovak started from knife edge flight. Point values represented maximum scores allowed in judging how well any maneuver was done by the competing RC'ers. Wide experience interest was achieved in promoting the contest by having 4 classes of competition, A, B, CN and CX. Despite unseasonable cold weather (in California?) and a healthy serving of wind, after two days of flying here's how they lined up in the winner's circle:

CX
Tim Symes, Cliff Love, Jim Spurlock

CN
Neal Lowell, George Walker, Bud Phillips

B
Bill Woodward, Jim Graham, E. Schreyber

A
Jerry Gracia, Floyd Abrams, Bob Eson

RAND Active Again – Ruth and Herb Abrams are once again marketing RC equipment, this time with an expandable propo radio set. Herb will be remembered for creating the Rand actuator which was most popular a couple years back and is still available from Ace RC. Another Abrams original was the little red plastic pushrod keeper that has been widely copied and almost universally used in RC installations since it first appeared. Now this husband-wife team is offering their conscientious service with the Digiace radio and a couple of low-priced model kits that can show the new radio to best advantage. Known as the "Little Hawk" and the "Sky Kangaroo", the two ships are useful to a wide range of fliers and are a mighty big bargain among today's prices. Give these a good look the Abrams are nice folks to deal with . . .

WW I JAMBOREE – "Back to Fun" was the aim of the 1st WW I Jamboree sponsored by the Pioneers of Sunnyvale, California. With an eye on the success of the annual Rhinebeck meet promoted by the IBM RC Club of New York, the Pioneers are seeking to create a West Coast version set for a September slot each year. Despite the lack of super circus salesman, Cole Palen and his vintage air museum, the Pioneers look to increase the popularity of WW I scale contests with a 'combat ' flavor. In addition, CD Ken Wilson and the other Pioneers hope to insure their meet is conducted in a friendly relaxed atmosphere with maximum enjoyment of the hobby with minimum competitive pressures. Besides the regular scale

events (non builders will be allowed to enter without being awarded scale or workmanship points) Mission and Combat events include bomb drop, balloon burst and anti-aircraft features. Further information about this pace-setting operation may be obtained from Wally Hurley at 2753 Parkside Drive, Fremont, California 94536.

Sky Rovers . . . Pete Landschoot sends word the Finger Lakes RC Hobo Meet was well attended and many spectators enjoyed the Sky Rovers' flying site and balmy weather. Four events of the Fun-Fly kept pilots busy for the two-day affair that saw Larry Abraham win Limbo, Jerry Drumheller the Spin event, Spot Landing by John Gardner, and Gordon Nenno took Bomb Drop. Spectacular attraction was the giant WW I bomber displayed by Dick Sprang of Syracuse.

In closing . . . Congratulations to Percy Grondin, new MAAC President. With the growth of Canadian modeling the top MAAC executive job takes on a new dimension. So hats off to Perc, and well wishes on the new post!

Similar hazzahs go to Murry Frank, new District VIII AMA Vice President. Murry, a long time modeling sparkplug, has 'people savvy' and new impetus is building within District VIII with election of the new VP, As an example, here's the RC contest lineup for 1971 as we go to press.

Feb. 13-14 . . . . . McAllen Fun Fly
Mar 20-21 . . . . . San Antonio
April 18 . . . . . Dallas
May 1-2 . . . . Dallas (also RC Dist. meeting)
May 8-9 . . . . . Baton Rouge
May 9 . . . . . Fort Worth
May 15-16 . . . . . Tulsa
May 22-23 . . . . . Lafayette (Crawdad Boil)
Amarillo Fun Fly
May 29-30 . . . . . Kingsville NAS
June 5-6 . . . . . Dallas - Pylon
Little Rock - Fun Fly (Restricted)

RIGHT: C.C. "Ace" Wilson of Rocket City RC Club flies mini-Mustang with ST .23. Rudder and elevator adequate control. Micro-Avionics radio. ABOVE: Headmaster by Ted Baxter uses Controlaire radio, full house. Max .19 power. Ted member of New Bern RC Club; new North Carolina modelers have new Trent River flying site.

Larry Snedecker (extreme right) exhibits winning winter-building project at Rockland Co. RC Club meeting. Howard McEntee and other members enjoy Big John bipe.

SECOND ANNUAL RCM NATIONAL FUN FLY CHAMPIONSHIPS

WHERE: . . . . . Thunderbird Field, Fort Worth, Texas
WHEN: . . . . . June 19 and 20, 1971
WHAT: . . . . . National Fun Fly Championships, and AMA Scale.
PRIZES: . . . . . Outstanding trophies, 1st through 10th place in Expert, 1st through 5th place in Novice.
EXTRA PRIZES: Prizes to be given away during flying, plus drawings to be held at the end of the contest. Chances will be sold on a radio.
SCALE will be judged Saturday afternoon and Sunday morning, and will be flown at two p.m. Sunday afternoon. Trophies for 1st through 3rd place.

Advance Registration:
Contact Chuck Cunningham, 5333 Wooten Drive, Fort Worth, Texas 76133
Entry Fee:
Advance entry for both Fun Fly and Scale — $5.00 — Entry at the field will be $7.00 in both classes.
AMA and FCC Licenses will be required — This is a sanctioned AMA Contest.

June 12-13 . . . . . Houston
June 19-20 . . . . . New Orleans
June 19-20 . Fort Worth-RCM Nat'l Fun Fly
August 1 . . . . . Fort Worth
August 14-15 . Tulsa - Glue Dobbers Annual
Sept. 4-5 . . . . . Dallas - SW Championships
Sept. 11-12 . . . . . Fort Worth (Pattern)
Sept. 11-12 . . . . . Tulsa (Formula I)
Sept. 25-26 . . . . . New Orleans
Oct. 2-3 . . . . . Dallas

Sopwith Tripe by Wally Hurley of Pioneer RC Club. WW I Jamboree promoted by Sunnyvale, California club to provide West Coast "Rhinebeck" outing with "Back to Fun" theme.

THE HUMP & BUMP

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ment. If so, wrap the pack with plastic so it's fuel proof and mount under the fuel tank. This should be enough, but in any event do **not** balance aft of the wing spar.

FLYING

Before even going to the field the following items should be checked and adjustments made as required:

1. *Center of gravity* – this should be no further aft of the point shown on the plans and up to ¼" forward of that point.
2. *Engine operation* – proper idle adjustment and linkage adjustment. Also check the engine throughout its entire range for severe vibration and for proper fuel draw.
3. *Controls* – check for smooth operation and proper throw. The ailerons should be even with a total movement of about ¼" up and down. The elevator should move up and down about 3/16". Use plenty of rudder throw for good ground handling. About ½" should be sufficient.
4. *Landing gear* – check for straight tracking and free rotation of the wheels. On the "HUMP" the wheels should extend forward of the wing leading edge when sitting on the ground.
5. *Radio* – check according to manufacturers recommendation. Be sure the receiver and batteries are well shock proofed and, especially on the "HUMP", that none of the wiring fouls the servos.
6. *Surfaces* – check for warps. Minor warps in tail surfaces are acceptable, but any warp in the wing should be removed before flying.
7. *Get an experienced flyer to get the plane trimmed the first time if you feel your ability is not up to the task.*

Ground handling with a tail dragger always leaves a little to be desired and neither of these planes are an exception. If you allowed plenty of rudder movement both are manageable except in moderate to heavy winds. Be sure to hold "up" elevator and apply power smoothly when taxiing.

If you're flying from a smooth field just apply power and steer it down the runway. After it's up to flying speed give it a touch of "up" and it should come off smoothly. Be careful with the elevators as they tend to be a little touchy, so take it easy. The ailerons on the other hand are not overly sensitive.

If you're flying from a rough field, soft ground, or grass, you'll have to

hold some "up" elevator to keep from nosing over. As soon as you break ground release pronto or you may do your first (and last) horizontal figure 9. You can "horse" either one off the ground, but get a little experience first.

You should probably set up your first landing approach a little long to allow getting used to the higher landing speed. Kill the speed by bringing up the nose slowly. Don't overdo it, although the stall is gentle, it is complete! The thing just quits flying and comes down like an elevator so if you flare too soon – look out!!

I believe you'll find either plane very pleasant in the air. Both have nearly neutral stability, i.e., they stay in whatever position you put them. The "BUMP" snaps and spins nicely, but the rolls are a little slow. The "HUMP" on the other hand is difficult to snap, spins o.k., but rolls great. As stated before, the vertical maneuvers leave a lot to be desired because of the power loading. With a .19 in the nose . . . . who knows??? Let me know if your try it. □

CUNNINGHAM ON R/C

(continued from page 12)

sheet sides with balsa or plywood doublers for strength, now it is quite practical to use 3/16" or 1/4" sheet for the fuselage sides and skip the doublers. You have to watch out for a build-up in tail heaviness, but outside of that, just one larger sheet works great. With the saving of weight in radio equipment, and the power increase in the engine, the small weight that you add in structure doesn't amount to much in the overall aircraft. Other methods of fuselage construction that merit your investigation is in building your own fiberglass fuselage. If you have one design that you like, then take the time to carve a plug, build a mold and, when you need a new ship, you're only a few hours and very little material away from having a new fuselage. If you design the plug carefully, with good moment set up, then you can change the physical appearance of each aircraft by adding sub structures of carve; wood or balsa sheet. Give it a try – it isn't as hard as it might sound.

Several years ago I advocated the use of 1/32" plywood for a formed plywood fuselage. Since that time many fliers have written to tell me

how much they have enjoyed that type of construction. Well, the same metnod can be used to mold or form your fuselage, from plastic sheet rather than from plywood. Your best bet to try is either ABS or vinyl sheet in thickness of .040 to .060. You should use doublers of 1/8" plywood, or 3/16" balsa. Rough up the plastic with heavy sandpaper before gluing the doublers in place. Be sure to remove any plastic dust before using glue. I suggest that you use a good grade of rubber base contact cement brushed on for all of the doublers. Glue the firewall to the doublers with epoxy cement. Use a tail cone block of either styrofoam or balsa. Again, you can get this material from your supply house, it comes in large sheets, and one sheet will do for several fuselages, and it can be obtained in color.

If you like to stick with wood, then by all means do not overlook one of the most underated building materials, Italian Poplar plywood. This material can be purchased in 4' x 8' sheet from most import plywood supply houses in 1/8" thickness at a price of approximately $2.00 per sheet. Its primary use in industry is for dust covers inside furniture, backs of dressers, and in many hidden places where inexpensive wood can be used. It is very light and strong, and can be used for many, many things besides fuselage sides. Another material along this same line is inexpensive, prefinished 1/8" paneling. Often this paneling can be purchased for 3 bucks for a 4' x 8' sheet. You can use either the prefinished side, or the unfinished side for the exposed face of your aircraft. Be sure and remove the finish wherever you want to glue the wood. It will make a bit heavier fuselage, but one that will be darned hard to damage.

TAIL SURFACES

These can be constructed much like the wing. I personally lean toward the

CUNNINGHAM ON R/C

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All of my friends and flying companions know this. If I show up at the field with a beautiful aircraft, they know that I didn't build it. I have several really outstanding looking airplanes but they were built by my old chief, DD (better known as Fearless Leader). He likes to paint, I hate it. There are many ways to achieve a beautiful finish, a finish that you can see your own mug reflected in if you really want to, and many words have been written by experts to tell us how to do it. But, I can't. If I worked ten years to get a beautiful aircraft, at the end of that time, it still wouldn't be beautiful. So, long ago I contented myself with experimenting with quick finishes that would give a reasonably good looking ship with a minimum of time. Naturally, MonoKote and Solarfilm come to mind for beautiful finishes, with very little muss and fuss. They're really hard to beat. The old tried and true methods of dope, silk, dope, time, dope, weight, etc., are great and for a finish that will last for years, this method is the best.

But, for all of you lazy cats, here is the Cunningham method for getting paint on your model in a minimum of time, with a minimum of work and expense. Remember, it won't win any best finish awards, though the basic method, with more elbow grease, will actually get you there.

With cardboard covered wings, sheet tail surfaces, and sheet constructed fuselage you have all solid surfaces. Go to the auto paint store in your area and purchase a quart of DuPont Acrylic Lacquer "Hi-Speed" primer. Use butyrate thinner to cut it, about one-to-one. As it comes from the can, the primer is almost solid. (This can, by the way, will set you back less than $2.50. It will last for about ten or more large aircraft). Sand the wood surfaces well with 400 sandpaper for the final sanding. Brush or spray one coat of the thinned primer and let dry. About ten minutes. Then, sand down with the 400 paper. Repeat this same operation three times, lightly covering the surface with the primer, then

sanding. If the primer begins to thicken up, add some more thinner to it. The thinner evaporates very rapidly. The final sanding should be done with 400 sandpaper, wet. This will give you a good even surface, and the total weight gain will be very little. Let this all dry until the next evening. During the day go to an auto paint store that sells Ditzler "Delstar Acrylic Finish." It is Acrylic enamel, and is fuel proof to all normal fuels. It will not withstand the ravages of thirty percent nitro and above. A quart of this paint will cost you about four dollars and, under normal use, will paint at least five large airplanes. Also buy a gallon of fast drying reducer. This will be, again, a nominal expenditure. In fact, it has been so long since I purchased a gallon that I can't remember the cost. It will last for years of normal airplane building. The colors for the paint are limited only by the dealers inventory. The Playboy is painted with metallic blue, with orange wings. Cut the paint about one-to-one, and either apply with brush or spray. If you spray, put on a light tack coat, wait about ten minutes, and spray on another coat, wait about ten minutes more and spray on one more. If you are brushing, you can put on three or more coats one right after the other. You must be careful to complete your paint job at one time, as after twenty four hours the paint becomes sensitive, and cannot be recoated. It will bubble up if a recoat is added after that time. For repair work, you can get a can of material to paint over the old paint to de-sensitize it while adding new paint, or for light touchup, simply paint the areas with the heavy paint right from the can. This is much less sensitive.

Before you paint, you should go over the entire structure with a vacuum cleaner, and then a tack rag. Don't use the primer on the cardboard covered wings, as this would be adding only unnecessary weight, and the cardboard surface is already smooth enough. For trim I use 3M decorator tape, and either MonoKote or contact paper. You can also purchase rolls of tape for pinstripes and the combination of all of these tapes and sticky materials will make a pretty nice looking aircraft. If you wish to go over and fuel proof all of the trim and decals, then you can spray on a light coat of polyurethane plastic from a spray can. Be careful, some of these dry to a slight yellow, but they are fuel proof. All up, this finish can be applied in just two evenings, at a total cost of less than two bucks per aircraft for the paint.

A simple painting jig can be made by purchasing a package of very heavy needles about four inches long. Jab two needles into each wing tip, then support the wing between sawhorses if you are spraying, or suspend the wing over the work bench by resting the protruding needles on balsa or styrofoam blocks. It works great and costs

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WHATEVER HAPPENED TO FORMULA I

(continued from page 35)

new proposed scoring system offers the perfect solution. Put the beginner in the ranks along with everyone else, so that he will have an opportunity to learn from the better flyers, only see that he has a chance to win something.

Here we can learn from the Pattern flyers. They have a novice and expert class that has worked out quite well. It has been suggested that we use a variation of this plan. The newcomer may be designated "Novicek" "Beginner," etc. (I personally prefer Group I, Group II, etc.). Actually the designation is not important.

On all contest forms (entry blanks, score cards, master score cards, etc.) this designation is noted. In using "Novice" for instance, you would put the flyers name with "N" behind it. After the race is over, and the winners points are being tabulated, you would just pick out the three highest scores made by the "N" group. Very simple, yet it fully accomplishes the job, with almost no additional time consuming work. The "N" wins are noted on the flyers N.M.P.R.A. card by the contest director. He would receive reverse order points for the first 3 places. 3 points for 1st, 2 for second, 1 for 3rd. A total of nine points moves you up to the next category. Most feel that three categories should be used. The beginner would be a Group III flyer, eventually moving up to Group II and then Group I and the big boys. The last major point to be discussed concerns, of all things, points – championship points, that is. The Formual I flyers in other parts of the country (other than the West Coast) feel that they don't have much chance to become National Champions. They just do not have as many contests to attend, and the ones they do attend have fewer flyers. They feel that they are trying to reach for the moon, so to speak, while on the West Coast, with the numerous easy-to-reach contests, it is possible to become National Champion and never even place as high as 3rd in a contest, just enter all of them. Example: In 1970 I was in 4th place in N.M.P.R.A. point standings until the end of the season race at Sunnyvale. I had trouble there (I dropped my transmitter) and didn't pick up any points at all. Even so, I ended the year in 6th place, and I only placed above 5th one time during the whole year! It doesn't even take a close examination to see that it was entirely possible for me to have earned enough points to have been the National Champion. Notice, I did not say that I would have been the champion, only that I **could** have earned enough points. To **be** National Champion you must be the **best** not just be able to attend more meets than anyone else and do just so-so. I only used myself as an example to show what could have happened if I had started the season with that goal in mind. The general feeling is that we need to modify the manner in which the National Champion is picked. Again, the proposed rule change for points scoring is a natural for this.

It would be a simple matter to restrict the number of contests that would count toward the championship. This would also mean that we could spread the West Coast meets out again, and not have the frantic season we had in 1970. For those of you who might not know, the 1970 points season was shortened on the West Coast to try to make it the same length as the season in the North East. (This was to give the same chance to accumulate championship points). This did not have the desired effect of cutting down the number of contests on the West Coast, it just moved them closer together. This made it a real problem to schedule them and an even greater problem to attend them all. This was an effort to equalize, but it just didn't work. Numerous flyers suggested that a very workable solution could be something like this: Use a specified number of flights in a specified number of contests to determine the National Champion. An example of this would be: Use the first eight flights of eight contests during the season. Notice I said the first 8 flights, not the best 8 flights, and apply the points (as in the proposed rule) earned, toward championship standing. The contestant will have the option of picking any eight contests during the season. He does not have to declare his intent to fly for championship points until the day of the meet. To declare for championship points, he must submit, in writing, to the Contest Director, before the first flight of the day is made, a statement to this effect. If no written declaration is made, then his points do not count. He cannot change his mind and withdraw after the first flight is made. (First flight means anyone flying officially, not necessarily his own flight). This will give all flyers an equal chance to become National Champion, since they will be scored on the same number of flights, and will even pick the contest that they like best. This method is about as fair as can be devised. Again, the flyers own ability determines his final standing.

By using the proposed rules we can have as a side benefit in addition to a National Points Champion, an official A.M.A. National Record Holder (speed). Another, and in my mind, the strongest reason yet, to adopt the proposed rules for choosing the National Champion is this: As the 1970 point season drew to a close, there was a mad scramble by some of the top contenders to get in a few more points. This caused some darn fine people to do a few things that bent hell out of the rules. I am sure that there was absolutely no intent to cheat, but there was a strong inclination to take advantage of every loophole or area that was not clearly defined in the rules. As I said, these are fine people, and I think any rule that, by its very nature, encourages anyone to do anything that is really against their nature, is basically, a bad rule. Make the rule clear, concise, fair to all, regardless of his location in the United States.

Eliminate the end-of-the-season scramble, as well as the 'rule-bending' tendency. At this point I would like to ask that you give lots of thought to the areas of change proposed here. Discuss it with others concerned, be objective, consider it as it is intended– to make Formula I racing a better event, overall; offer a set of rules that is fair to all; that favors no individual, or small group; that allows the contest to be run with a minimum of effort, and will enable the flyers to get in more rounds of flying; that eliminates more areas of human judgement, so consequently, will ease tempers.

Remember that we must do **something** to make this a better event, or we will run out of clubs willing to sponsor contests. We have the only R/C event that will hold spectator attention for more than a few minutes. It should be growing two or three times as fast as it is. We are being held back by rules that literally invite trouble. Let's change them and save Formula I racing.

Remember, I have talked to over 200 flyers about these rules and the above represents the thinking of these flyers. If you feel that there is a better way to handle any or all areas covered here then write R/C Modeler Magazine

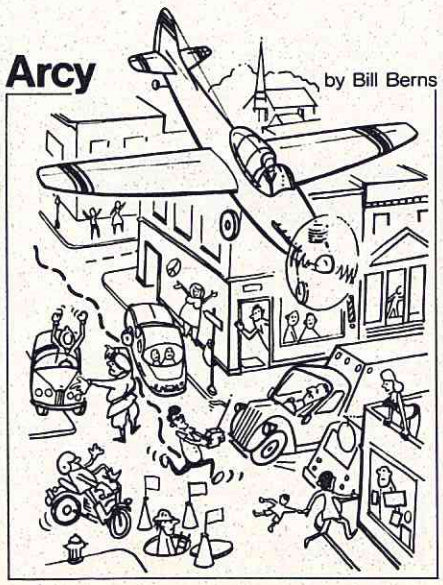
and let us know. Tell us what you think would be better, and why it would be better. Get **your** own thoughts and feelings in now. Do not wait until the rules are changed and then complain. We expect to receive many more good ideas as a result of this article. Each will be given careful consideration and the results blended in with the proposals presented here. About sixty days from the publication of this article, a formal proposal will be presented to the Rules Committee, asking that these proposals be made official. The ideas received by mail will, naturally, be considered and blended into the over-all proposal. A lack of response on your part will be construed as acceptance and the above will be presented to the Committee as such.

For those who care enough about our racing event to have read this far, I offer my sincere thanks, and just one more thing. **THINK-ACT** help us keep this great sport just that, a **GREAT** sport.

FIGURE III

1 min, 40 sec.	100 sec.	100 points
1 min, 41 sec.	101 sec.	99 points
1 min, 42 sec.	102 sec.	98 points
1 min. 43 sec.	103 sec.	97 points
1 min. 44 sec.	104 sec.	96 points
1 min. 45 sec.	105 sec.	95 points
1 min. 46 sec.	106 sec.	94 points
1 min. 47 sec.	107 sec.	93 points
1 min. 48 sec.	108 sec.	92 points
1 min. 49 sec.	109 sec.	91 points
1 min. 50 sec.	110 sec.	90 points
1 min. 51 sec.	111 sec.	89 points
1 min. 52 sec.	112 sec.	88 points
1 min. 53 sec.	113 sec.	87 points
1 min. 54 sec.	114 sec.	86 points
1 min. 55 sec.	115 sec.	85 points

Chart continues to 3 min., 20 sec. or zero points – all flights below this receive zero. □



RCM PRODUCT REPORT
SILVERTONE MK VII

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when the transmitter is off and on charge. The two transmitters we received were on 27.095 MHz on Mode 1 with Mode 1 sticks while the other was on 27.085 MHz on Mode 2 sticks. This 10 K/c frequency spacing is a unique feature of the Silvertone system and allows many more flyers to fly on the 27 MHz frequencies allocated in Australia. We found that there was absolutely no interference on this spacing although stock Silvertone systems are shipped with 15 K/c frequency separation. In addition, three new frequencies on 40 MHz are available in Australia with 20 frequency capability on 27 MHz. The receiver, as illustrated in the photographs, is an extremely small and lightweight unit and features interchangeable plug-in crystals as does the transmitter.

The servos available with the Silvertone Mark VII system are either the large or the small Orbit servos.

The operation of the dual control system for pilot training depends upon two items: (1) the connecting cord, and (2) the function switch. The former has one end taped black which always goes to the instructors transmitter. The latter has two positions and must be positioned correctly. Toward the center of the case is active RF while toward the outside of the case is passive RF. The Silvertone dual control system provides two methods of operation – Method One, which gives the instructor the active RF, while Method Two gives the pupil the active RF. In Method One the pupil is to receive instruction on the instructors aircraft whereupon the instruction passes control to the pupil by depressing his push button. Control automatically returns to the instructor on release of the push button. In Method Two, the pupil is to receive instruction on his own aircraft and the instructors function switch is passive and the pupils function switch is passive. The instructor passes control to the pupil, again, by depressing his push button, while control returns to the instructor on release of the button. Any Mark VII transmitter may be used as a dual control transmitter regardless of stick Mode, frequency, or number of channels.

Due to the 10 K/c and 15 K/c frequency separation, Silvertone has developed a frequency control system singularly unique, and consists of a visual display system which consists of a vertical panel approximately 36" high and 6" wide layed out on a 0.1" equals 1 KC grid. This panel is slotted every 5 KC and each slot is painted with the appropriate color for the frequency. In operation, each club member has his system checked and graded by the club frequency officer. The three gradings used are 15 KC, 25 KC, and 35 KC separation. This transmitter check is most important. Upon grading, each transmitter is marked Grade 1 for 15 KC, Grade 2 for 25 KC and Grade 3 for 35 KC. Each Grade has a special key, the width of the key being proportional to the band width of the receiver, e.g.: 15 KC keys are 1.5" wide; 25 KC keys are 2.5" wide; and 35-50 KC are 5" wide. Obviously, then, a Grade 3 flyer on band 4 is protected from all interference provided he plugs in a 5" key into the band 4 slot. This system is self checking and places each fliers safety on his own shoulders. Should the odd sets use more than 50 KC then the owner can supply his own key. The club can supply the keys or each flyer can have his own.

The advantage of this system is that it allows a random mixing of sets of all calibers and frequencies be they old or new. As long as a flyer can fit his key into the board, he is safe to fly. This system was devised due to the greater number of frequencies used in Australia wherein forcing Australian fliers to adhere to the American 6 spot frequency would be a gross misuse of their local frequency allocation as they are allowed to use as many spots in those blocks as their equipment permits.

R/C Modeler Magazine has extensively flight tested the Silvertone Mark VII digital proportional system and finds it equals or exceeds the manufacturers specifications for it in all respects. The only difficulty encountered was an intermittant malfunction of the airborne toggle switch. Whether or not this was peculiar to our individual test system, we do find that we prefer the slide type switch as commonly used on the majority of American proportional systems. In addition, we did notice that the on-off switch on the transmitter was in reverse position to standard American sets causing an unconscious reaction to turn the set on instead of off.

RCM has Tested, Approved and Recommends the Silvertone Mark VII digital system. □

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Without getting deeply involved in design philosophy, a few observations can be made regarding some departures from general practice. Five degrees of downthrust is indicated and the reasoning for this is based on past experience with models not utilizing ailerons. In this special case it has been found to be desirable to have about 50% of the rudder area below the thrust line to increase the rate of roll. It was felt that this advantage in the turns would more than compensate for a minor loss of thrust. In any event, this is a builder's option and if you believe a 0°-0°-0° setup is best, go with it. Let's prove out our beliefs on the race course, for this is what it's all about.

The shoulder wing configuration was chosen for ease of hand launching and the inherent stability necessary in a small fast plane. The Ace foam wing has been proven in a half dozen designs to date and offers the obvious advantages of fast building, fast field repairs and excellent flight characteristics at high and low speeds. The latter is a must if we are to achieve optimum lift in the power off glide on approach and landing. (This must be seen to be believed even at up to 18 ounce wing loadings tested.) This is a direct result of airfoil thickness and should not be sacrificed on the altar of speed. The built up balsa option is available for those of you willing to put in some extra hours. It has also been tested and works equally well. The choice is yours.

As the weather in these parts has been hovering around the zero mark and over 20 inches of snow lie round and about, a minimum of flying as been done. Therefore Don Dewey will report in greater detail on his findings in a fairer climate.

It should be emphasized that for those of you who have digital rigs with medium size servos, you are still in the game. My MRC outfit, which falls in this class, weighs in at just about 8 ounces using two servos and 225 m.a.h. batteries. Those possessing the ultra small airborne packs can do even better. Two of the ½A models tested weighed in at 26 ounces and performed beautifully so there is a considerable amount of leeway.

At the time of writing over 40 models are under construction from coast to coast so let's get on with a brief building bit so that you too can get off the bench and become part of the action. No attempt will be made to give you a joint-by-joint account as the

basic construction is about the same as all other basic constructions. A few points are worth mentioning, however, to speed up the operation. My own method of transferring plans to balsa is the pin prick method using a straight edge and french curve to connect the dots on the wood. If nothing else – it saves the plans. The next suggestion is to use the cut-out pieces as patterns for the **second** model. Surely you're not going to settle for just one? Choose your wood wisely for many of you will be using 225 m.a.h. battery packs to reduce weight and tail heaviness is sudden death to a small fast one. Incidentally – for those of you using 2 servos from your 4 channel rig, the smaller batteries will give you plenty of air time because half the number of servos coupled with extremely light flying surface loads greatly reduce battery drain.

Epoxy is heartily recommended around the motor end as well as for the landing gear. Titebond is great for the rest. Silkspan over all balsa parts greatly reduces the time to fill the grain and really helps reduce splitting. Another option will be mentioned when we get to the foam wing which appears to be now.

Rather complete instructions come with the $2.95 Ace foam wings but a quick review may be helpful. An X-Acto razor saw works very nicely for cutting off the slash tips. Be sure the chord line is at right angles to the leading and trailing edges. Then use a steel straight edge to cut back the trailing edge of each section about 3/16" and use Titebond to attach the ¾" T.E. stock. A couple of rubber bands will hold it evenly while drying. To protect the tips, face them with fairly stiff 1/32" sheet balsa and sand to shape. Make sure both tips are slashed equally as this plays an important part in achieving good flying trim. Be sure to use a sanding block for the dihedral joint to keep it square and insure a good butt joint. (Total dihedral can vary between 2½" and 3" measured at the trailing edge.) Then use an ice pick (what's that?) or a nail or pointed punch to prick a dozen or so holes into the butt end of each wing section. A neat, even coating of

Devcon 5-Minute Epoxy really does a joining job but be sure to block the wing carefully to the correct angle so that it doesn't move while the glue is setting. Saliva on a finger will smooth out any overflow.

When everything is dry, do a careful sanding job paying particular attention to a smooth, evenly rounded leading edge. **Make sure the wing is balanced.**

Now comes the answer to the problem of finishing raw foam which has plagued the builder of small ships from the moment moulded wings became available. Weight vs. finish has been the past choice and one or the other has had to yield. Now a happy solution has appeared in the form of TopCote from Quick-N-Easy Products. This is a very light and strong mylar type contact covering which really does the job. More than the savings in weight over other heat shrink products, is the fact that it can be doped or painted which makes the stockpiling of a variety of colors unnecessary. Peel it from its paper backing and apply lengthwise in four sections (each half, top and bottom) overlapping at leading and trailing edges. Heat from a small traveling iron or tipping iron is used to bond the covering at the balsa trailing edge and tips. **Do not use a hot iron over the foam – it will melt!** Wrinkles can be smoothed out – a hair dryer will produce mild shrinking and doping will finish the job. A couple of coats sprayed or brushed will produce a high glossy finish with a weight increase of just a few grams. Try it on the fuselage and tail too! Don used Solarfilm as an excellent low temperature covering and should definitely be considered.

In closing, serious acknowledgement must be made to Frank Baker for his stubborn persistence and belief in the concept and his infectious enthusiasm which led to this designer's decision to try it "one more time". Also to Romie Bukolt for being the first to join the act and his many contributions along the way. Romie has two semi-scale versions of his own which he will soon be sharing with you. So "Over to You" and whether you win or lose – HAVE FUN! □

COMING NEXT MONTH

CASSUTT SPECIAL for Quarter Midget Pylon Racing

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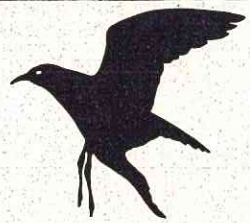


CUNNINGHAM ON R/C

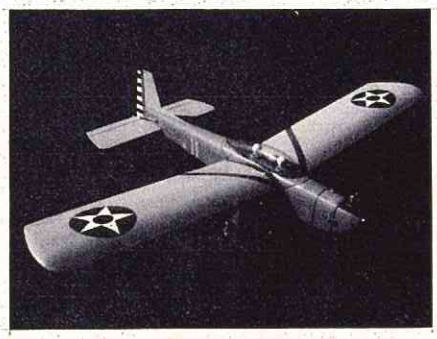
(continued from page 65)

about thirty cents.

And now, for one last hint. I tripped across this the other day while looking for some noseweight for the Playboy (I got too heavy with the paint on the aft end). I usually buy lead sinkers, melt them in a tin can over the kitchen stove and pour the results into a hollowed out hone in the nose block of the aircraft. Sometimes I use a piece of 1/8" plumbers lead wrapped in foam.

I explored the hardware store a little more and came up with the absolute ultimate in nose weight: "Plumbers Wool". It is a lead wool used for caulking sewer pipes. It is sold by the pound, at about ninty cents a pound. It looks like steel wool, but is made of lead. It can be molded to conform to any space by simply cramming it down into the space. I lifted the tank out of the Playboy, mashed a bunch of the lead wool into place, packed it into the corners, checked the balance, replaced the tank, and was done. Instant, trouble free nose weight that you can carry to the field for any adjustments that you need.

It's time to close up the typewriter case for another month. I hope that the Spring brings lots of flying. In the meantime, give some of these construction methods a try. And, let me see some pictures of the results. □



KEN WILLARD'S BT-70

(continued from page 16)

All balsa stock should be of medium grade. There is no particular need to use "rock hard" balsa, and it makes the model heavier.

As for accessories, you'll need, Tatone .15 engine and landing gear mount; Tatone 4 oz. "Stickatube" tank; 2" nosewheel 2¼" main wheels; formed aluminum landing gear; Quik-

link control rods; control horns; control rod wire (I use straightened out heavy duty paper clip wire).

When it comes to building the model, since most of you have indicated previous experience in free flight or control line, I think you'll find the plans, together with the photos, enough to go by. I didn't show the amount of the various sizes of balsa, since it is apparent from the drawings. Some of you may use 3 in. wide sheet, butted together and cut to size; others might use 4" sheet stock. Depends on what you have handy.

For this size model, you have several choices of cement, depending on your preference. Ambroid is excellent; it's drying rate isn't so fast but what you can get is the ¼" longerons glued to the sheet sides along the full length without one end starting to dry out first. Titebond is also good, but it doesn't sand as easily when dry. Up around the firewall, though, I recommend Hobbypoxy cement, including a thin coating to go over the firewall and the inside of the cowl for fuel proofing. Same for the hatch and the wing fairing on which the canopy rests. And for the canopy, after cutting it to fit snugly, I used Testor's model cement formula B. Don't forget to paint the balsa black and inset the pilot heads first, though.

IF YOU WANT TO LEARN TO FLY . . . . .

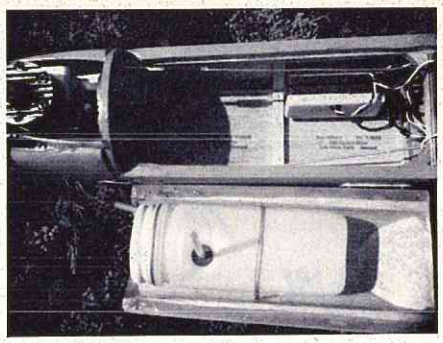
THE BT-70 IS FOR YOU.

FULL SIZE PLANS ARE AVAILABLE. SEE PAGE 62.

When fitting the turtledeck sheeting to the top of the fuselage, wet the outside and it will curl around the formers without splitting.

As for covering, I used MonoKote – yellow for the wing, dark blue for the fuselage, then cut the letters and numbers out of "wet" MonoKote trim strips. Incidentally, the coloring is authentic. I dug out some old color photos from WW II training days with the U.S. Army Air Corps. Wing stars are Top Flite's decals, and the diagonal squadron leader stripe is red.

When it comes to flying the BT-70, you'll find it flies just like a sport free flight, all by itself. That is, assuming your wing is straight – and it will be, if your tabletop is! Better check it – I found out that mine has a very slight



Tatone "Stick-A-Tube" tank is held to the inside of the hollowed-out hatch with a rubber band looped over the small screws.

twist in it, and had to replace it. When you put that bottom sheet on the table, then attach the top sheet, that wing isn't going to warp unless your table does. Same goes for the stab. And, of course, sight down the nose and be sure the fin and rudder are perfectly aligned.

Note the slight downthrust in the engine, achieved by putting washers under the rear mounting holes of the engine between the mounting lugs and the Tatone mount. This downthrust is not absolutely necessary with proportional control, but it does help to keep the nose down under power and then let the nose come up slightly when you throttle back. It is a necessity for those of you who may want to fly this model with rudder only control, otherwise the glide angle will be too steep when the model is well trimmed for level flight at cruise.

On takeoff, if the nose wheel is tracking properly, all you have to do is give it full throttle. Do it slowly, otherwise it will turn to the left slightly due to the sudden torque effect. It should run along straight and even get a little excess speed due to the slight nosedown attitude, then any slight irregularity in the runway will bounce the nose wheel up enough for the model to take off. Naturally, if you prefer, a very slight back pressure on the stick will lift it off sooner. But remember, if it is trimmed, and the CG is as shown, it will fly unassisted, and you can let it climb to a safe altitude before trying any control movements. Once it's upstairs, you can experiment with it, and if you get confused, neutralize the controls and it will resume a normal flight attitude all by itself.

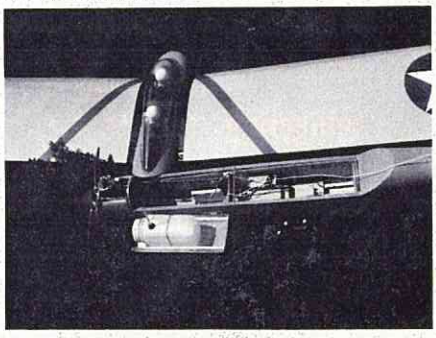
Hand launches are possible, but I don't recommend them. Usually they're all right, but every now and then you'll heave it crooked, and then

you've got a problem simply because you are too close to the ground for the model to recover from the sharp bank which usually results.

And, finally, even though it will fly by itself, just remember that the BT-70 is intended to be a basic trainer – and if at all possible, you should have an instructor – like they do in basic training.

Good luck, and happy landings. ☐

BT-70 "innards."



ENGINE CLINIC

(continued from page 10)

Silence-aire actually makes two types of expansion chamber mufflers. One is very similar to the flow-through model with the front end capped. However, the main body is almost twice as long resulting in increased weight and size. This was evidently done in an effort to gain more expansion chamber volume. The tests that I conducted on this muffler some some back showed a considerable drop in rpm and, as far as I know, the muffler was not brought into the country by Technisales. The other expansion chamber model of Silence-Aire is called their 'Twin'. This is a small can-shaped muffler with two tail pipes protruding from the side. Tests of this muffler showed an rpm drop of 300 – more than the flow through model or either model of the KO but considerably less than those supplied by most of the engine manufacturers. This would be considered an acceptable power loss for muffler operation. Anything over 500 rpm, I would consider unacceptable. A 200-300 rpm difference is hardly detectable in the air. A 500 rpm drop becomes noticeable. Noise level for the 'Twin' was higher than for the expansion chamber KO and very close to the flow-through models. Due to the compact shape of the 'Twin', it would lend itself well to scale type ships – particularly those with large ring cowls and other designs

where a very compact muffler would be required.

So to sum up our findings this time and the test of two years ago – the Silence-aire flow-through muffler is still the most efficient followed very closely by the KO flow-through model. If you consider the noise level of these two mufflers too high and want quieter engine operation then the KO expansion chamber muffler is the most efficient of this type followed by the Silence-aire 'Twin'.

Dear Mr. Lee:

We of the South Jersey Flyaways R/C Club have been faced with a big problem. We have been losing flying fields. The chief reason fields have slipped through our castor-covered fingers is noise, for we have not had a muffler rule in the club in the past.

Finally the South Jersey Flyaways have taken the inevitable step. We have initiated a muffler rule covering all engines from .24 cu. in. upward. But this brings up some new problems which we are at a loss to solve. Since you are probably the most experienced model engine expert in the country, we hope you will be able to help us. Our questions are are follows:

1) How do you measure engine noise level?
2) What is an acceptable standard noise level that we should try to muffle down to?
3) What are some good commercial mufflers on the market?
4) Are there some engines that muffle particularly well, losing less power than others?
5) Are there some engines that don't muffle well?
6) What can be done to lengthen engine life, or is short life to be expected with mufflers?

We would very much appreciate your comments on these questions. We have been without a club field for some months now. We don't want to lose the next one we get. A club field is essential to a viable model aircraft club, so we are in effect fighting for existence.

Sincerely,
Robert J. Perlstein

Many clubs are sharing your same problem, Bob. Flying sites are becoming harder and harder to find, particularly in the larger metropolitan areas. Taking your questions in order.

1) Engine noise level is measure on a decibel meter.

2) No standards for model engine noise level have been set as yet. This is a very difficult thing to do as the noise level that one person might find irritating might not bother another at all. Sometimes it is not so much the noise that gets to people, but the constant droning noise that our engines make. I can site a good example of this.

Many years ago when I was active in U-control we had a flying site in Griffith Park, in Los Angeles. Next to the flying site was a large four lane highway. Beyond the highway was the Los Angeles river channel, Grand Central Air Terminal, and the Southern Pacific railroad tracks. We contin-

ually received noise complaints from a woman who lived beyond the railroad tracks. The trains did not bother her. The full size airplanes did not bother her, nor did the automobiles, trucks, and motorcycles. The constant droning of our model engines drove her out of her mind – so she said. So you can see that establishing a noise level that will be acceptable to all is quite a problem short of absolute silence.

Your third question was answered in the first part of the column this month.

4) There is no one engine in particular that will take to a muffler better than another. Power loss depends mainly on the design of the muffler. A racing engine that is intended to develop its power at a high rpm will naturally be effected more by the installation of a muffler than a lower rpm stunt type engine.

5) No, all engines can be muffled. Some engines do have more of a 'crack' to the exhaust than others of the same displacement so in turn will be noiser even with a muffler.

6) The muffler, itself, does not necessarily shorten engine life, it only increases the carbon and varnish build up. The shorter life comes from modelers running the engine too lean trying to regain the power lost by installing the muffler. Also, it is harder for some modelers to detect a lean setting with a muffler equipped engine, and they invariably fly on the lean side. In fact most modelers try to fly with the mixture too lean even without a muffler. A muffler will cause an engine to run hotter even with a rich setting. If the setting is too lean the temperature really skyrockets. Far more so, in fact, than the same lean setting without a muffler. If you are going to use a muffler, then be sure you are running the engine on the rich side. You should hear the engine bubble rich at the bottom of loops, long dives, etc. If it screams flat out through out the whole flight the setting is too lean!

Mr. Lee:

I have just purchased a Veco 19BBRC (Catalog No. 6712). It is to be installed in my first R/C airplane – a Northrop designed "Apprentice".

Our club (the R/C Bee's) requires mufflers on all airplanes flown on our field. Assembling a muffler to my engine does not seem completely straightforward. The linkage to the Exhaust Rotor interferes with the strap clamp furnished with the Tatone muffler I bought.

My dealer suggested that I remove the linkage because the Rotor "doesn't make much difference, anyhow." There must be a better way.

Is there another muffler that would fit better? Is there an approach that I am overlooking? Your suggestions would be appreciated.

Very truly yours,
William S. Woods
Fullerton, California

The exhaust baffle does make a big difference when you operate the engine without a muffler. Without the baffle the idle would be unreliable and the acceleration very bad. The purpose of the baffle is to create back pressure and keep the glow plug hot. The installation of a muffler can replace the baffle. The muffler creates the necessary back presure to keep the plug hot, although not as effectively as a baffle. It would be desirable to retain the baffle along with the muffler, but, as you have found out, it is rather difficult since the linkage gets in the way. Most fellows eliminate the baffle when they install a muffler. I do not recommend just leaving the baffle in place and removing the linkage as there is always the possibility of the baffle rotating shut under vibration. When you remove the baffle you will have to plug the holes in the exhaust stack. You will have to make aluminum plugs or you can cut the ends off of the baffle and epoxy them in place. The KO line of mufflers have a size for the Veco .19 and do supply the aluminum plugs for the holes.

Dear Mr. Lee:

A few months ago I picked up a Veco .29R engine, new, intending to install it in your design of the "Redskin" team racer. Since that time I have got caught up by the R/C bug and U-control is now out.

The engine has never been run and I have been wondering if it is possible to convert the mill to R/C. My first thoughts were of the Kavan or Perry carbs, however, the Perry is too large. Is it possible to bore out the carb intake to insert the Kavan? Kavan of the size required for an OS Max .19 for example.

I would appreciate your comment.

Sincerely,
Leroy McCormack
Mehlville, Mo.

Gee, Leroy, you really dug up a couple of oldies. I hope some hobby shop didn't unload these on you as the latest thing. The 'Redskin' kit was dropped by Veco at least 10 years ago, and the Veco .29R was dropped by K & B when they purchased Veco 4 years ago.

I do get many letters such as yours from modelers wanting to know if they can convert old U-control engines to R/C use. Most of your U-control sport or stunt engines can be converted by the addition of an R/C carburetor and fabricating some sort of an exhaust baffle. The easiest way to get

around making an exhaust baffle is to use a muffler. The Veco .29R will not lend itself to the conversion very well. This engine was intended for U-control rat racing. The porting and timing are a little too 'wild' for a reliable idle. This would be true of any of your U-control engines intended for rat racing and combat use. Kavan makes a carburetor for the Veco .35 which has the same size venturi as the Veco .29. Both engines used the same crankcase just in case you should want to give it a try. However, I do not recommend that you do this as you will have enough problems getting started in R/C without fighting an unreliable idling engine. This can be quite a problem even with engines intended for R/C use.

The following letter does not concern an engine problem but is a question that many beginners – and experts alike for that matter– should be aware of.

Dear Mr. Lee,

I am a newcomer to R/C and in June I purchased an EK-5. I have flown some, but am still in the beginning stages. Since winter has come and school has begun there won't be a lot of time for flying. My question is this – is there danger in letting my radio set lay idle for say 30 to 60, maybe even 90 days, at a stretch? I've had one transmitter battery go out on me and I hope this wasn't caused by lack of use. What are your ideas?

Thanks for the help.

Sincerely Yours,
Steve Barnhart
Oklahoma

Any time you're going to let your radio set idle for awhile you should fully charge the batteries. If the radio is going to set idle for several months it would be a good idea to recharge the batteries every 30 days. If all of the batteries in your pack are in top condition it is not necessary to re-charge this often, however, there is always a chance that one cell might be weak or marginal. Allowing the radio to set for 60 days could let this weak battery completely discharge. Upon recharging it is possible for the battery to take a reverse charge or reverse its polarity. When this happens the battery pack is shot and usually results in a badly bent airplane. How many of you modelers in the mid-west and east hang your ship up for the season around November? Then, about March or April, you charge up the batteries and head for the flying field. You take off, crash, and start swearing at the lousy radio manufacturer – especially after you find out the battery pack was at fault. Keeping the battery pack charged during the winter months might have avoided that crash! □

(continued from page 6)

"C.A.P. 3 Bucker Jungmeister. Inline and radial, same plan. Great performer, both versions .61 power. There is something wrong with the nose of the radial version, but I can't quite place what it is. From radial versions seen the model is not quite right."

This same honesty was evident in each description, so that when we read: *"C.A.P. 4 P-47 (2nd plan) Very accurate . . . more accurate than A.P.S. drawing (***by George Duval, accepted as THE drawing of the P-47 – D.P.).** *I honestly believe this plan is as accurate as any on the market. Good Class I model"* . . . then, gang, you can make book on it.

The C.A.P. range runs the gamut from semi-scale through to World-Championship-accuracy stuff. If accuracy is your need, write Jim and ask him about the plan you have in mind. The answer you'll get will be honest-injun. His address: Complete-A-Pac, West High Street, Earlston, Berwickshire, Scotland. Remember, this is **not** the address to order plans in U.S. For this, see the Bob Holman ads.

★ ★ ★

A picture that fair makes these old eyes glaze over in reminiscence comes from Brent Reusch of the Y.O.R.K.S. over the border in Canada. It shows Jerry Fingler and his fine Me 110 twin, with 2 Merco .49's and Logictrol radio. Scale is 1½" = 1' and by our figuring it gets to be some 80" wing span. How about inverting those engines next time, Jerry? Let's see some more WW II pictures, you guys out there!

All of which reminds us that several readers have asked for the lowdown on WW II Luftwaffe national markings. Seems we should get into this subject. So far as we know, no model magazine has ever published the correct proportions for the crosses and swastikas, so we can't really blame the modelers when we see wrong markings on these ships.

The two most common errors are (a) putting crosses of upper-wing pro-

portion on fuselage sides and under wing surfaces, and (b) painting the swastika on the right (starboard) side of the fin as a mirror-image of the left-side swastika. At every Nats we see some model with this latter fault. 'Taint so, fellas. The swastika on the starboard is the same as the one on the port – not in reverse.

Now, anyone who has studied national markings knows enough not to be dogmatic about what was and what was not. Exceptions and non-standard markings seem at times to almost outnumber the so-called "correct" cases. Never was this more true than with Luftwaffe aircraft. Even so, it would be good sense to find out what the "standard" was, so that variations can be noticed more readily.

For example, as our diagrams show, the white border on wing-upper crosses was a good deal narrower than the white in the lower-wing crosses. Since the fuselage crosses were almost always the same as those on the lower

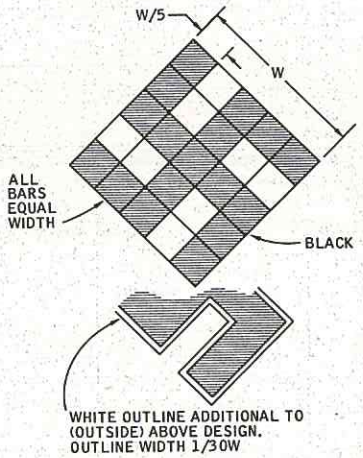


DIAGRAM 1 – SWASTIKA. Note: Design same both sides.

wing, they would have the wide white.

Sometimes, in fact very often, the black "corners" outside the white were left off on fuselage sides and upper wings, but seldom, if ever, on underwings. Other exceptions spring readily to mind: the white-cor-

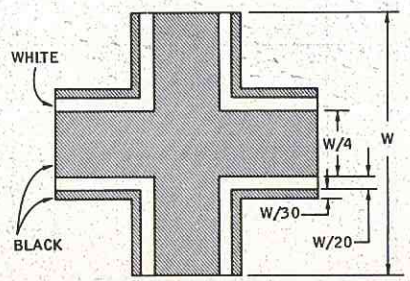
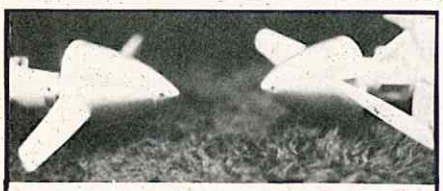


DIAGRAM 2 – cross, style 1. Wing upper surfaces only, with rare exceptions.



ners-only crosses with no black, the black crosses with no white, or the crosses painted dark green instead of black. In spite of this abundance of non-standard markings, certain ones stand out as rare, and we've given a couple of examples. If you're building a Luftwaffe model, look again carefully at the markings and be sure you're doing them right.

We've often noticed incorrect English markings too, and next time we'll get into R.A.F. roundel proportions. There appears to be some confusion about the colors of these, since we've only ever seen **one** model at the Nats in recent years where these colors were correct (Talchik's C'L Hawker Typhoon, last year).

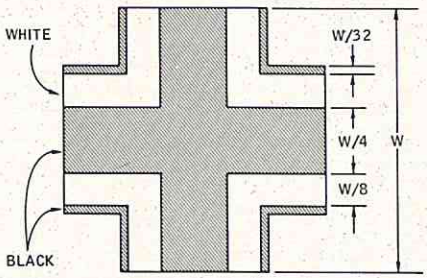


DIAGRAM 3 — cross, style 2. Wing undersurfaces, fuselage sides.

★ ★ ★

Magnificent is a word often used in scale modeling and here's one case where it is certainly deserved. Picture #2 shows genial Jim Bonnano of Des Moines, Iowa, making a brave attempt at holding up his 12½ lb. C-124. On second thought though, that's light for what it is — 7 feet span, four S.T. .23's, flaps and all.

The rest of the story is just too sad to tell, so pardon me while I hold a 1-minute silence. *Nil carborundum,*[1] *Jim.*

★ ★ ★

[1] Don't let the B---s grind you down! □