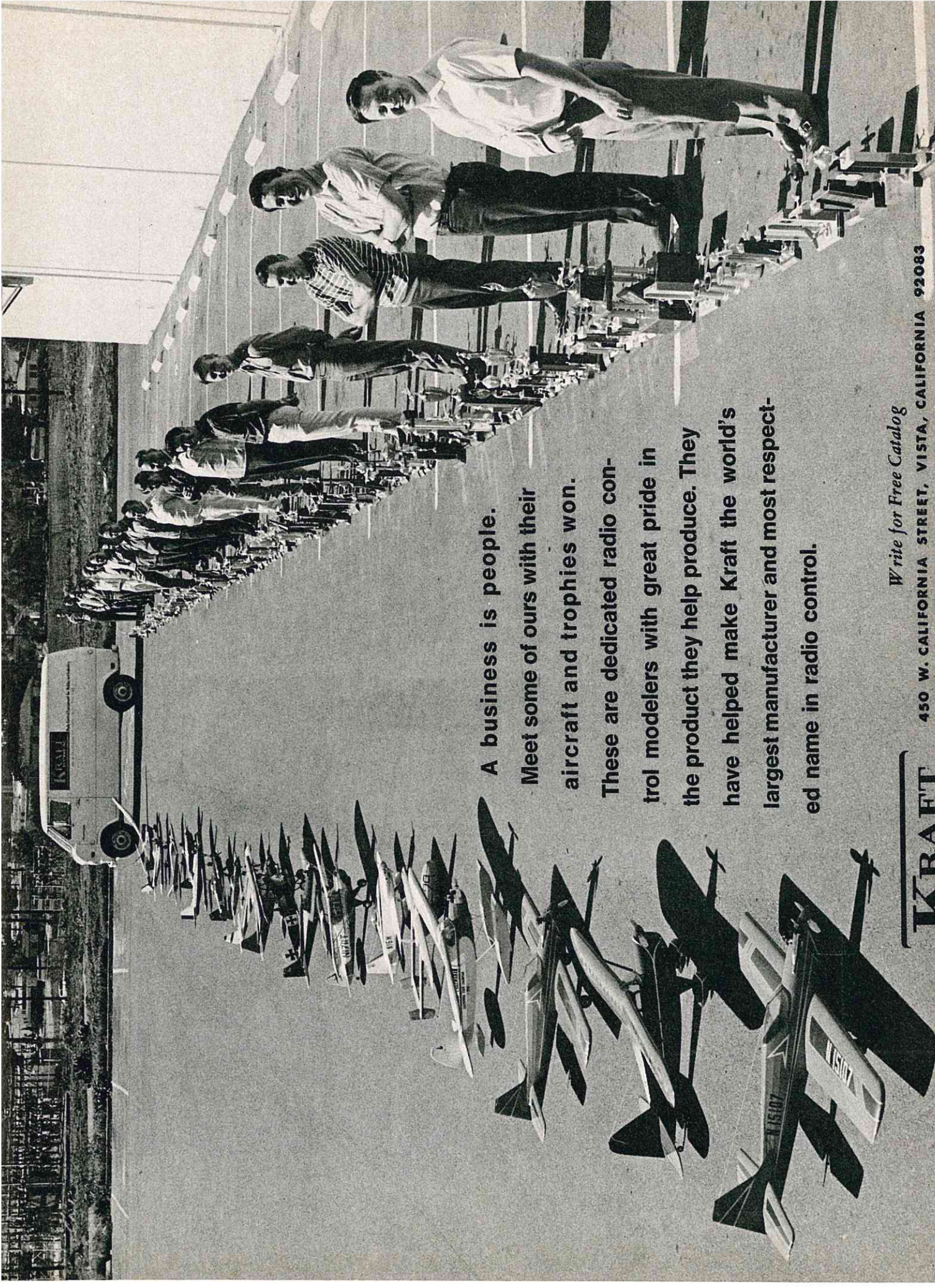




RC MODELER

THE WORLD'S LEADING MAGAZINE FOR RADIO CONTROL ENTHUSIASTS





A business is people.
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These are dedicated radio con-
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the product they help produce. They
have helped make Kraft the world's
largest manufacturer and most respect-
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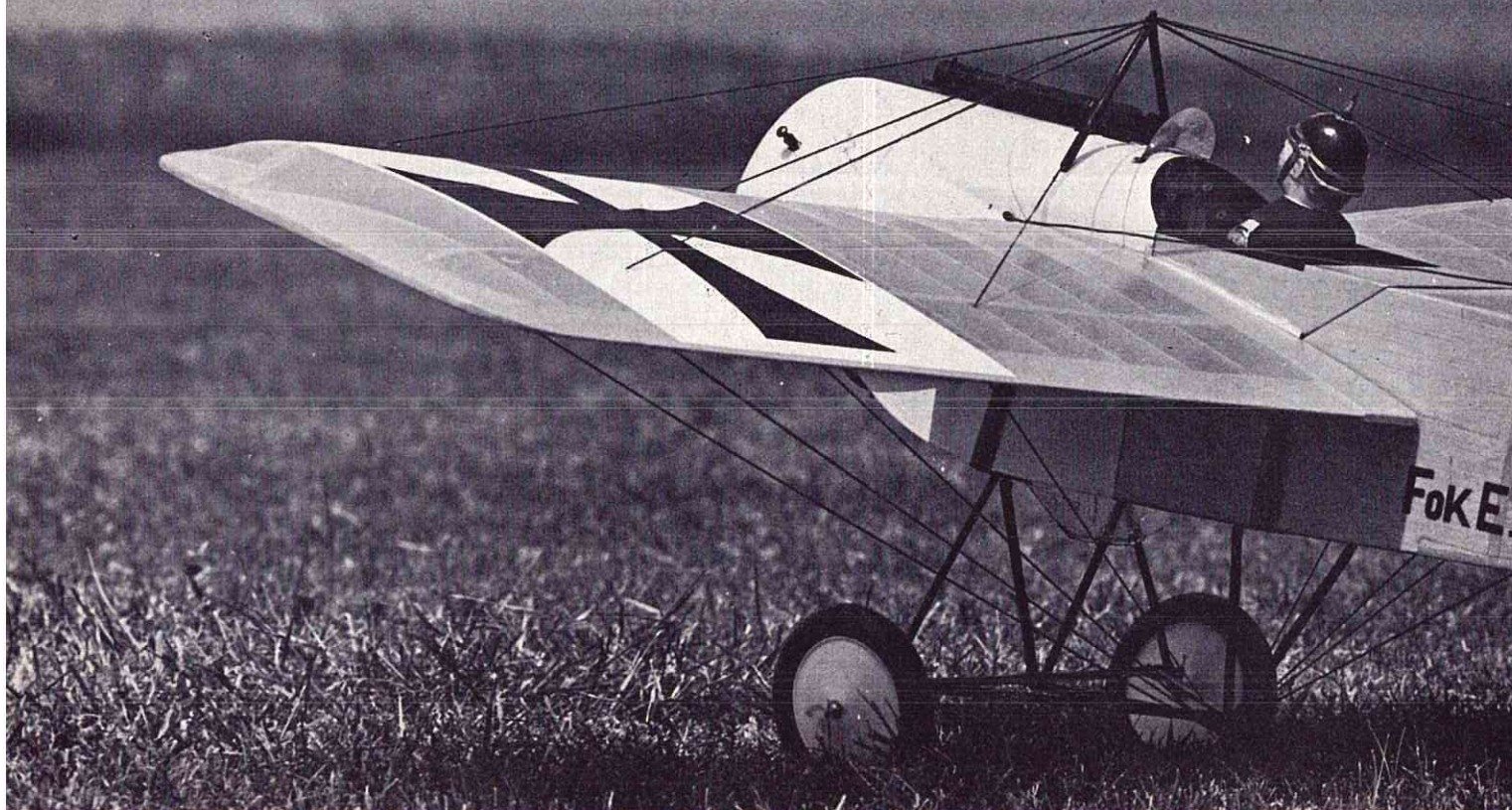
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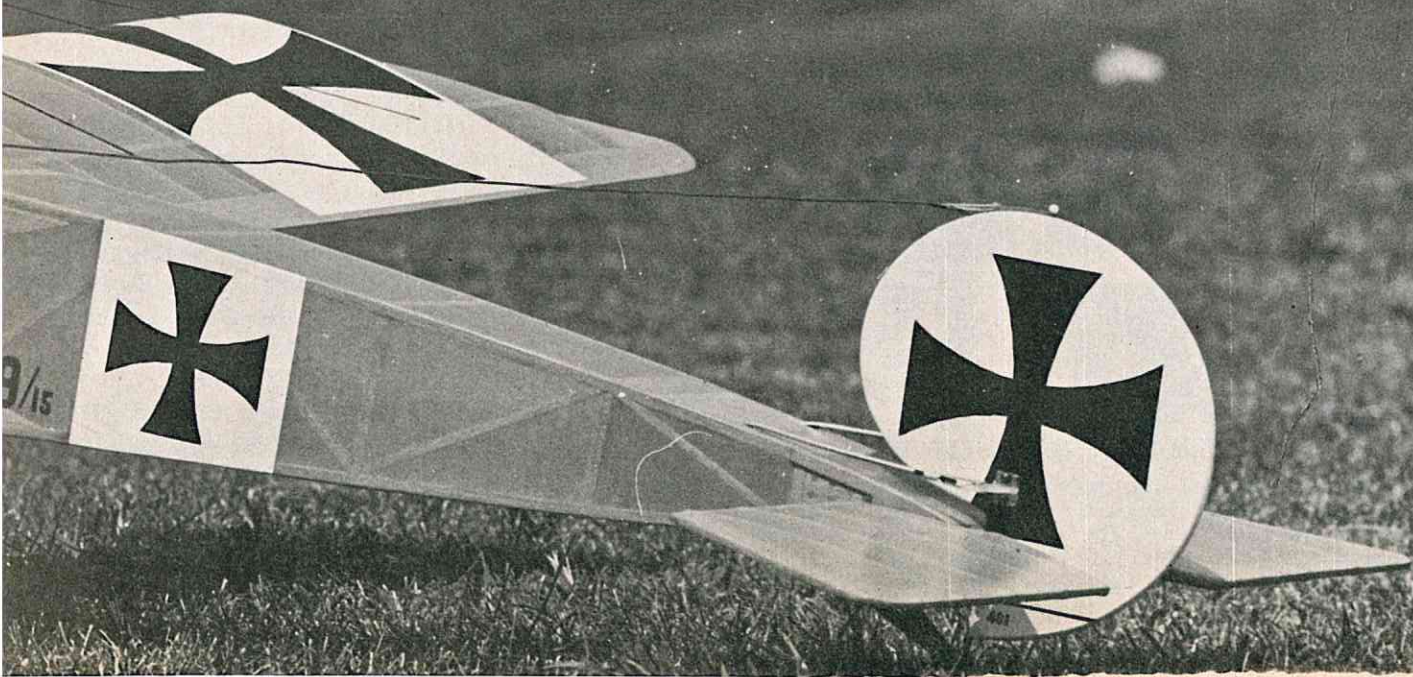
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COVER: Lovely Christa Adams, daughter of noted RC'er, Dick Adams, paints a beautiful scene for the two prototypes of the Valley Flyer, a joint-effort design by some of the nation's top RC'ers, and members of the Valley Flyers R/C Club of Southern California. Ektachrome transparency by Reed Packard. **FRONTSPIECE:** John Holland built this delightful Eindecker which is equipped with an O.S. .19 and E.K. Logictrol III equipment. Flies beautifully. Has very germanic type pilot complete with spiked helmet. Photo by Henry J. Nicholls.



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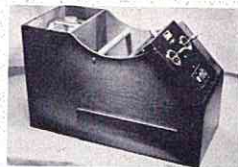


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SPECIAL! 3 CHANNEL DIGITAL PROPORTIONAL - \$99.00

CONVERTIBLE TO 4 CHANNELS ("Digit Mig" with one servo)

I want to explain this outfit to you as this deal is even better than it looks. The 3 Channel transmitter and receiver are readily convertible to 4 CHANNELS. To convert the transmitter and receiver to a 4 channel "full house" outfit you simply buy a conversion kit priced at \$17.99. I can't think of a financially easier way to work up to a 4 channel RC outfit.



So, right away for \$99 you can fly an airplane like a Midwest Tri Squire, Dumas Evolution, or Falcon 56 rudder only, and by adding servos and finally the 4th channel you can fly "full house" RC.

Outfit includes: Transmitter, receiver, one servo, receiver n-cads, charger. Extra servos are \$25.00 each. Price in effect until Feb. 28, 1971.

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Larger quantity for the money. Either 1" or 1-1/4" sizes.



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Reg. size \$1.25. Large size \$2.25

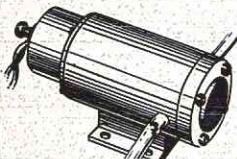


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2-3/4" dia. pr.	5.39
3" dia. pr.	5.89
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VIEW POINT



Although our readers are used to the great variety of reading matter which we present to them in our pages, they may, this time, raise their eyebrows when they find that in this issue we go into print with a report of a *biological* nature. But, as you will see, the matter definitely has a bearing on our sport and hobby, and even may have a considerable impact on it.

A German scientist, Prof. Dr. Otto Jahn, the famous biologist and "microbe hunter," has recently published a report in the German "Medizinisches Wochenblatt," which will certainly interest hobbyists and in particular modellers, since he claims to have discovered a new germ, a virus, which he calls *Virus Hobbyensis* - and for good reason, as you will see.

Medical Science has authenticated the discovery and confirmed the name of the new germ as given it by the professor, and has even honored him by adding his surname to it. The virus is therefore now officially listed in the catalogue of known germs as "*Virus Hobbyensis Jahni*."

We herewith give you an extract of the professor's paper which he recently read to an august audience of biologists, physiologists, MD's and other scientists.

"Some years ago," – said the professor – "I spent my summer holidays with a friend of mine at his country home, and since it was a rainy summer, much of it was spent in my friend's workshop, for he is a confirmed hobbyist and modeller, making and operating model airplanes, ships and other things, with and without remote control, etc.

"I was fascinated by his work, and not too long after my return home I also had a little workshop, where I spent more and more of my time, and where my friends and colleagues, whenever they came to visit, mostly found me.

"Three of them have now also caught the 'hobby infection.'

"I use these words 'caught the infection' intentionally, because it actually is an infection, as I shall prove.

"When the idea, that the addiction to modelling as a hobby had all the symptoms of a disease, struck me for the first time, I immediately discarded the thought as an unlikely, even improbable hypothesis, probably due to a state of mind which the French, more to the point than flatteringly, call "deformation professionnelle" – professional deformation (of the brain, in my case!).

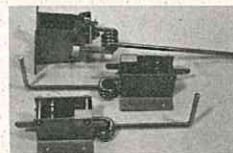
"However, as my circle of acquaintances among hobbyists and modellers widened and I could make ever more observations with respect to contagion, incubation period and the further development of the disease up to crisis and its after-effects, the observed symptoms had such an extraordinary similarity with certain kinds of virus infections, that I finally was convinced that a virus, or in any case a germ must be the cause of it.

"But, as a scientist, I had to prove my theory.

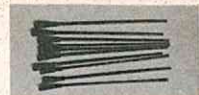
"The records of the many thousands of experiments and observations which I carried out and recorded over the past three years, their analysis and interpretation, are to be found in a synopsis annexed to this paper.



HOBBY LOBBY TYPE II PINLOCKS... 4 for \$2.99



SPECIAL! WORLD ENGINES S-4 SERVO MOUNTING TRAYS
List price \$6.40
SPECIAL-\$3.97



SPECIAL! KAVAN QUICK LINKS... 10 for \$1.95

GOODYEAR RACING DECALS

\$1.95
4-1/2" x 9" sheet



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20 sheets 3/32"x4x36	List \$13.00	Our price \$9.97
10 sheets 3/32"x6x36	List \$14.00	Our price \$10.47

Prices in effect until March 30, 1971

NEW! BRO SPORTSMAN 600 ARF List price \$59.95

Our price \$49.97

62" span for .60 engine. Good stunt performance, but gentle enough for a new flyer.



NEW! EXTRA SPECIAL... BLUE MAX 4 CHANNEL DELUXE DIGITAL PROPORTIONAL SEMI KIT **\$169.00**

The best buy we've ever offered on a digital proportional. "SEMI KIT" means that all the printed circuit boards have been assembled and TESTED. You do only the interwiring and mechanical assembly. Outfit includes excellent instruction manual, and SEMI kits for transmitter, receiver, chargers, all nicads, and 4 servos. One servo is fully assembled for a reference.

VERY high power 12 volt transmitter, new high resolution servo design are features of this reliable well-proven outfit. \$169 price in effect until Feb. 28, 1971.

"Assembled outfit shown"

SILENCEAIRE MUFFLERS **\$12.95**

Notice that some new ones have been added: For OS 30,40,50,58, 60, Enya 35,45, 60II, Merco 49, 61II and Merco 61 III if screw bulges filed off, OSH40P, STG21/40-46, STG60-71, ST 51,56,60, ST 35, K&B 40,45, Veco 61, Webra 60, OS80, Veco 50 (with modification).



ASSEMBLED P/C BOARD



OS "COUGAR" 4 CHANNEL DIGITAL PROPORTIONAL **\$179.00**



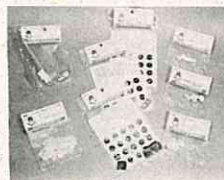
"... speaking of OS... I haven't had even so much as an iota of trouble with the set... the importance of reliability in a radio cannot be stressed enough. And (my OS Cougar) has performed flawlessly all this time."

WS
Mass.

"... you said to let you know how (the OS Cougar) worked. Well, it works GREAT!!"

RB
Tucson

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NEW! MCE R/C RACE CARS

COMPLETELY assembled Indy – type car with radio and engine ready-to-race right out of the box. It comes two ways: 1. Entire outfit fully assembled with car, engine AND radio, or, 2. Car and engine only, but fully assembled.

Please write for price.

SPECIAL! I-M PRODUCTS SAMPLER List value \$7.26 **SPECIAL \$4.99**

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- 2 IM adjustable strip aileron horns
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- 1 pack IM medium hinges (17 hinges)
- 1 pack IM small hinges (5 hinges)
- 2 IM nylon noiseless carburetor arms



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Don Dewey Did:

Dear Jim:

Would you please ship to us another Hobby Lobby Field Box whenever they are available. I like the first one so well that I'm going to give the second one to one of our top staff men for Christmas. If it wasn't that you didn't have such nice things there at Hobby Lobby I wouldn't even write you because you're a dirty old man.

Best wishes,
RC MODELER MAGAZINE
Don Dewey

HOBBY

LOBBY
INTERNATIONAL

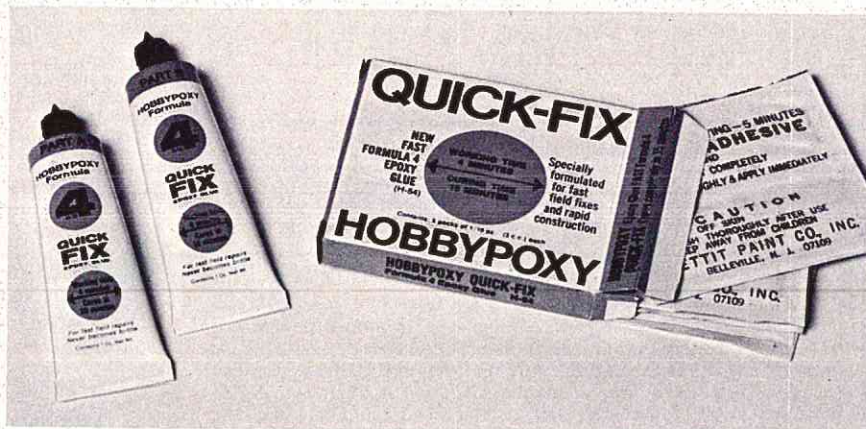
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Hobbypoxy's
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Fast-Acting
Epoxy Glue
NOW IN TUBES!



You asked for it, so here it is . . . Formula 4 QUICK-FIX in two-tube sets. That's two ounces for two dollars. The quick-setting 4-minute epoxy glue that never turns to glass. Flexibility counts, and Hobbypoxy has it.

Formula 4 QUICK-FIX

Working time: 4 minutes/Curing time: 15 minutes

Two ounces (net wt.) in tubes: \$2 per set.

Five double-pocket foil packets: \$1 per set.

And don't forget these other Hobbypoxy Glues

Stick with Hobbypoxy . . . there's a formula made for every model building need.

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The original epoxy model glue

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Two-tube set: \$1



Formula 2

The "Easy-Does-It" Glue

Working time: 45 minutes

Curing time: 3 hours

Two-tube set: \$3



HOBBYPOXY PRODUCTS DIV. PETTIT PAINT CO., INC.
507 MAIN ST./BELLEVILLE, N.J. 07109

You can study this at your leisure. I won't bother you with it here.

"As a first result I gained the conviction that the germ — bacillus, microbe, virus or whatever it was — is not propagated by contact, not through insect bites, rats, water, etc., but that it flies through the air, such as the viri of the common cold or 'flu.' It was therefore logical to assume that it could be found in its highest concentration in the air of hobbyists' workshops.

"The college laboratory kindly lent me a VHP* pump and five HP cylinders, which I gradually pumped full with the air of 25 modellers' workshops. The air was then cooled to -235° C and liquified. The deposit which after a month had formed in the liquid was filtered through finest porcelain, and the filtrate, as well as the residue remaining in the filter, were both examined under the microscope after the usual processing, coloring, etc., as is usual for the preparation of slides.

"It is only after hundreds of observations, and only under the electron microscope, that I finally detected a *filtrable virus having the shape of a spiral drill bit*, which I had never seen before. Neither could I find any reference to, or description of it, in any of the numerous works and reports on biological research and discoveries which I consulted.

"This virus therefore most probably was what I sought, but to prove my find I had to isolate and cultivate it.

"All the normal attempts of a culture in broth, on boiled potatoes or agar-agar, failed. Even Koch's 'hanging drop' method would not succeed, since other viri thrive with equal vigor in the drop, and it was impossible to segregate my foundling.

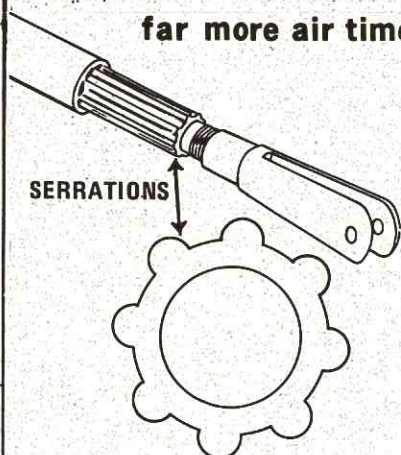
"It is only after I inserted into the drop, with an extremely fine hollow needle especially manufactured for the purpose, a tiny

(continued on page 83)



for the **FINEST** in
RADIO CONTROL
ACCESSORIES

NOW...NO JAM GOLD N/PUSHRODS far more air time



The new serrations on no-stretch Gold N/Push rods, with only 8 contact points, assure a frictionless fit in the tube. No worry about oil and dust causing internal binding. No jam, no stretch, no worry... just better flying. Low cost, too. 36" size priced at 2 for \$1.25.

Recommended for snaking

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Recommended for Relatively Straight Installation — Elevator & Rudder on Large R/C Aircraft

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Cable Type GOLD N/PUSH RODS 1-set \$1.00
(Cable Size .030" O.D.)

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Basically for Push & Tork Rods, Wing Spars & Struts

Rigid Fibre Glass GOLD N/PUSH RODS
(Arrow Shaft Type) 5/16" O.D. 2-sets \$1.50

NEW: Slant Style Fuel Tanks in 7 Sizes
2 oz., 3 oz., 4 oz., 6 oz., 8 oz., 10 oz., 12 oz.

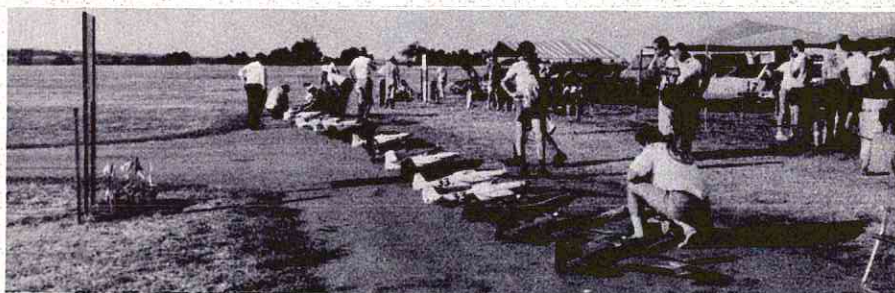
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CELL TANKS** for R/C race cars.

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PHONE (215) OL 9-3900

CUNNINGHAM ON R/C



Those of us who have been around the R/C scene for a number of years are aware of a very interesting fact. A few years ago, at least prior to proportional type radio equipment, the challenge of simply getting the radio to work, and getting in a flight or two without a major repair job, was enough to keep interest at a high level. Contests were simple affairs, and really didn't need to be held very often to keep the fliers in a competitive frame of mind. This is not the case today. With the advent of proportional radio, with its very much greater reliability, and with its much much greater ease of learning to fly, today's pilot expects to get in many successful flights in a days flying time. Pilots become good pilots in a much shorter period, and then begin looking around for a new challenge. In the summer of 1970 the Contest Calendar bloomed with multiple contests every weekend. The Contest load has become so heavy in most parts of the country that even the safety of an AMA Sanctioned weekend hasn't been enough to keep contests from crowding one on top of another. More and more clubs are planning contests, and therefore more and more people are getting involved in running contests, thus exposing a lot of fliers to the problems of trying to run a successful competitive event in competition with other competitive events. Perhaps the following will make life a little easier for you if you find yourself in this position.

If you have ever been exposed to teaching in Uncle Sam's military world

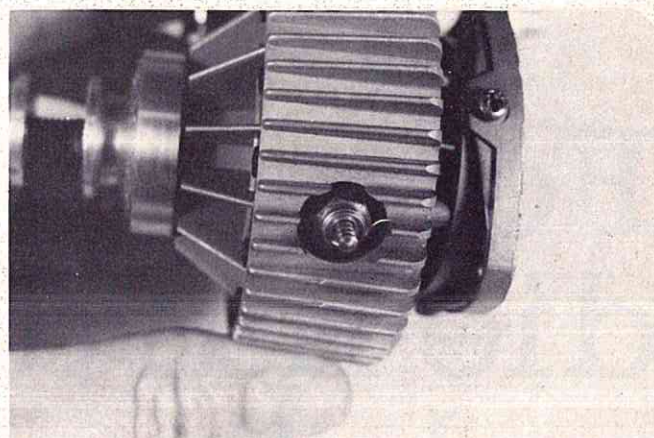
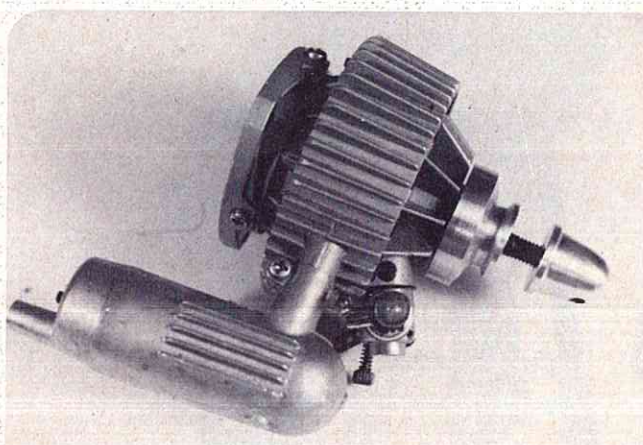
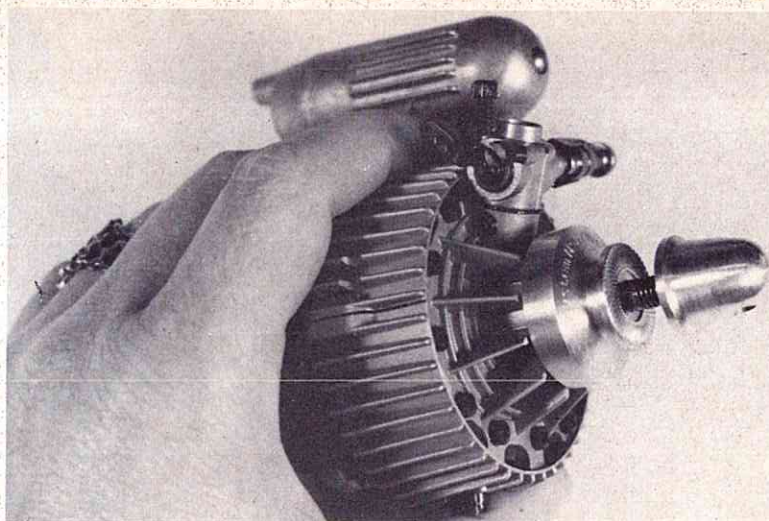
you possibly came across the following gem: the five P's, "Prior Planning Prevents Poor Performance." These five P's can be thought of in almost anything that you do, from planning how to build your next model to planning your next contest; or even to planning your wife's next grocery trip, the idea being to Plan Ahead.

The first step in planning your club contest is to decide just what type of a contest you are going to hold. Is it to be a strictly club affair with members only, a large AMA sanctioned action with an invitation extended to contestants far and near? Is it to be a pattern meet, a race meet, or a fun fly? Of course, each type of contest takes a special type of planning. For example, if your contest is to be a more simple club type affair, then you should expect that most of the club members will be flying in it, and therefore should share the duties both helping to run the meet as well as participating in it. If the event is an invitation to the public, then the Contest Director should plan not to fly in the meet since he should devote all of his efforts to making the contest a success. Many of the key positions in the contest organization should be manned by those not flying in the meet. Nothing is worse than to have some unhappy modeler wandering around the field with a gripe, either legitimate, or imagined, and not be able to find the Contest Director because he is too busy getting ready for his next official flight. It can be done in small contests,

(continued on page 76)

engine clinic

By
Clarence
Lee

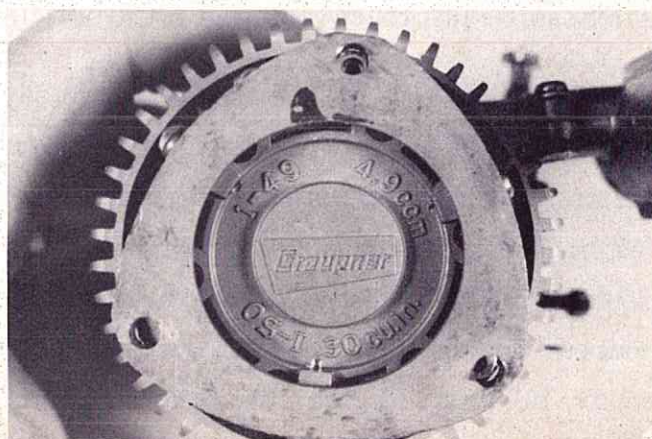
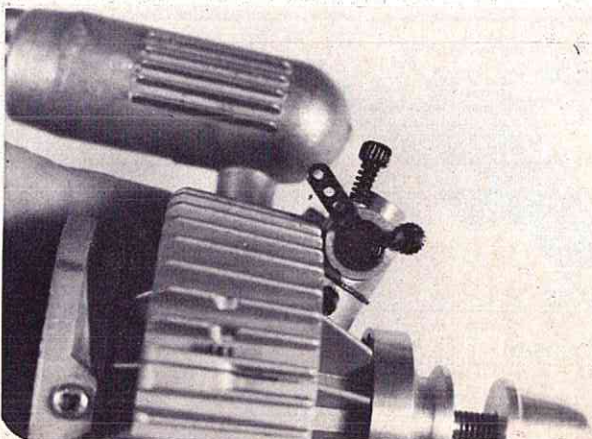


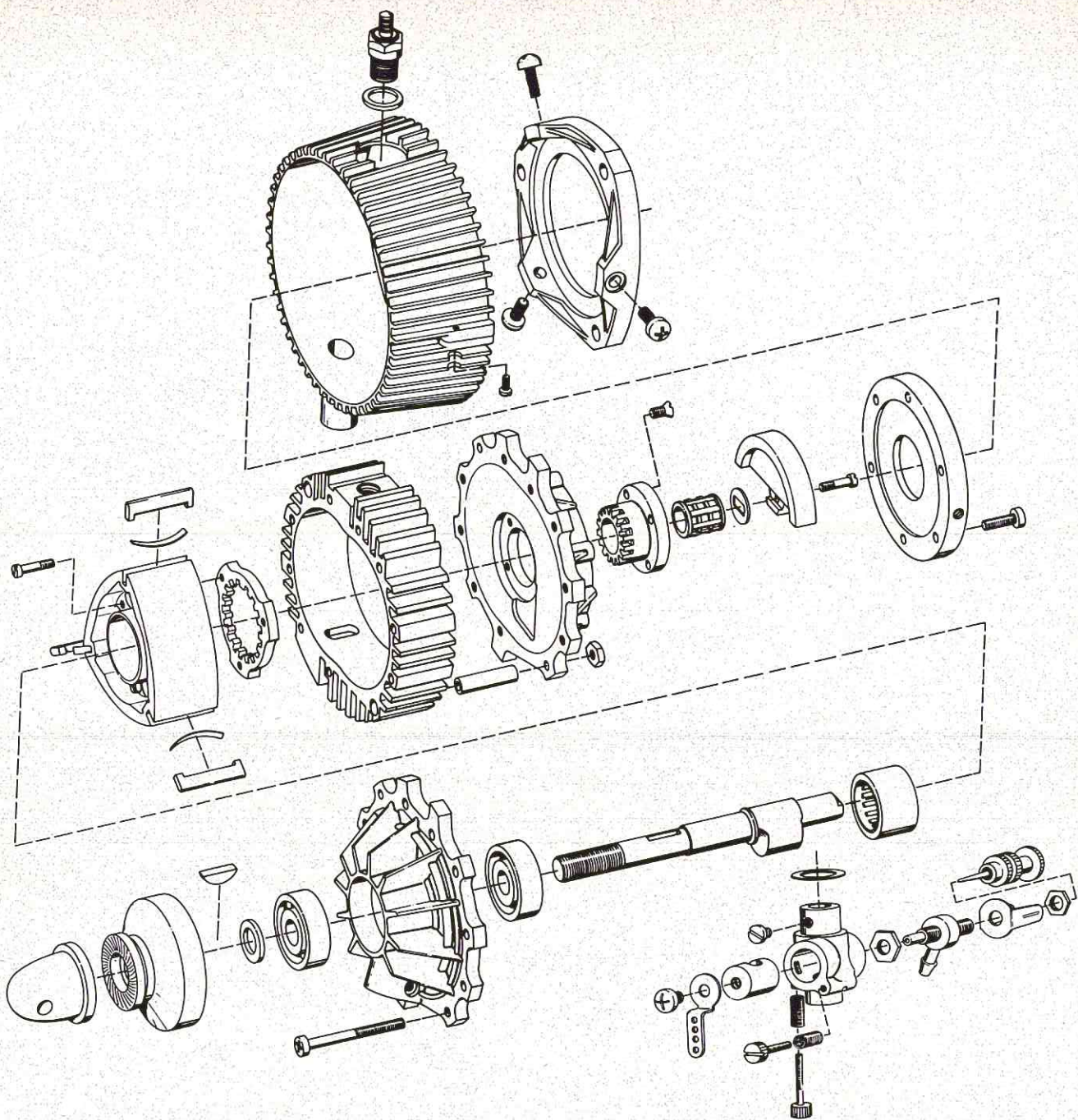
This past month General Motors announced through the news media that they had paid \$50,000,000 for the right to manufacture Wankel engines in this country. Up to now Curtiss Wright has had the exclusive license in this country. I have received quite a few letters from R/C fliers wanting to know what the real scoop on the Wankel insofar as model engine use is con-

cerned. Will it be replacing the conventional engines, what are its advantages, 'etc'? When General Motors pays a staggering amount of money just for the right to produce the engine, there must be good reasoning for its existence.

The full size Wankels do have many advantages over a conventional four cycle engine... far less parts, greater power-to-

weight ratio, smoother operation, and lower production costs, to name just a few. Wankel powered automobiles have been available in both Germany and Japan for several years now. Those of you that follow the automotive magazines know that Mercedes has announced a sports car called the C.111 powered by a four bank Wankel that is astounding everyone with its ter-





rific acceleration and speed potential. The car is capable of zero to 60 in under five seconds and a top speed of 186 mph. The main problem with Wankel engines in the past has been rotor sealing and low end torque. Evidently the seal problem has been overcome, and by stacking the units the low end torque problem is also solved. (The four bank Wankel actually being four Wankels joined together into one unit.)

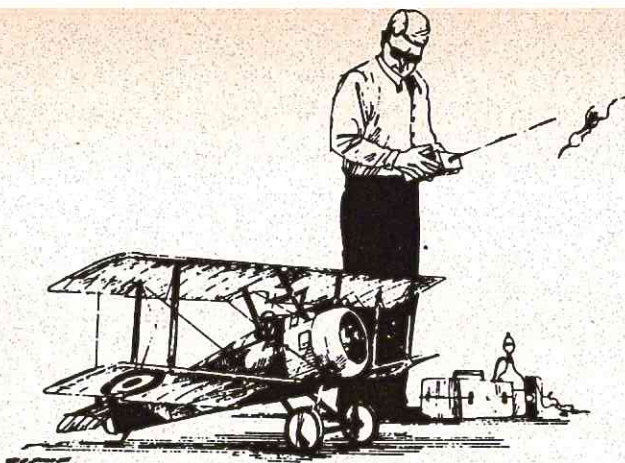
When it comes to our model use the situation is somewhat dif-

ferent. We are already using a very simple form of engine that lacks valves, valve train, etc., that makes the large Wankel engine an advantage over the conventional automobile engine. Our little model engines also have one of the highest power-to-weight ratios of any internal combustion engine. So, will there be any advantage to using a Wankel engine in model airplanes?

The Graupner organization in West Germany has spent the last several years developing a .30 cubic inch Wankel engine for

model use, the engine being based on the original NSU/Wankel patents. The engine, in turn, is being manufactured by the O.S. Company in Japan. The engine is presently available in Europe and Japan, but cannot be imported into this country until an agreement is reached with Curtiss Wright. I understand World Engines has been working on this and will soon be importing the engine. In fact, by the time you read this,

(continued on page 48)



by DAVE PLATT

(Designer — Top Flite Models)

SCALE IN HAND...

This month — a discussion on materials and methods for making canopies; and an explanation of the various points of view and the problems underlying the current “Complexity Factor” (so called) row brewing on the scale scene.

For as long as this columnist has been building scale models he has considered the cockpit of any subject to be its “focal point.” For some strange reason, normal human beings seem fascinated with the “Bit-Where-The-Man-Goes.” When we look at a model, whether consciously or not, we look at the cockpit, seeing all else surrounding it in our field of vision but seldom making the effort to do so. In a detailed examination of the model, of course, this does not hold true, but nevertheless, the way a model “hits” us on first impression has a lot to do with its cockpit area. At least, this is what we believe and if you think about it for a moment, you may agree.

If any of this is true, it would appear that extra effort at this vital spot is well rewarded. For years, we have used this theory and it seems to work.

A cockpit is not a canopy or windscreen alone — this is merely the “house” in which all the “furniture” — the detail — is confined. Cockpit detail will provide a subject for a future column; for now, let’s be concerned only with the canopy.

There are seemingly endless methods and materials used in making moulded canopies and no

one way seems best. Best is what you can make work! Some materials are more friendly than others, so let’s discuss them as we go.

Stage 1 in forming any canopy is making the pattern. This is usually made of wood. Balsa can be used and probably is preferred by most modelers owing to the ease of working. Unfortunately, balsa has a very open grain and it is essential to fill this well if a good canopy is to result. Dope, or any paint for that matter, is

(continued on page 68)

DIAGRAM A

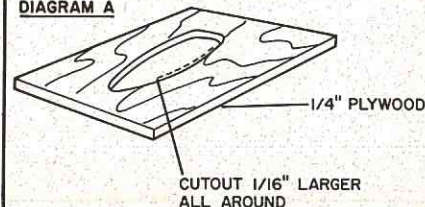


DIAGRAM B

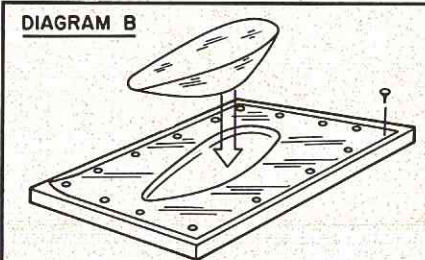
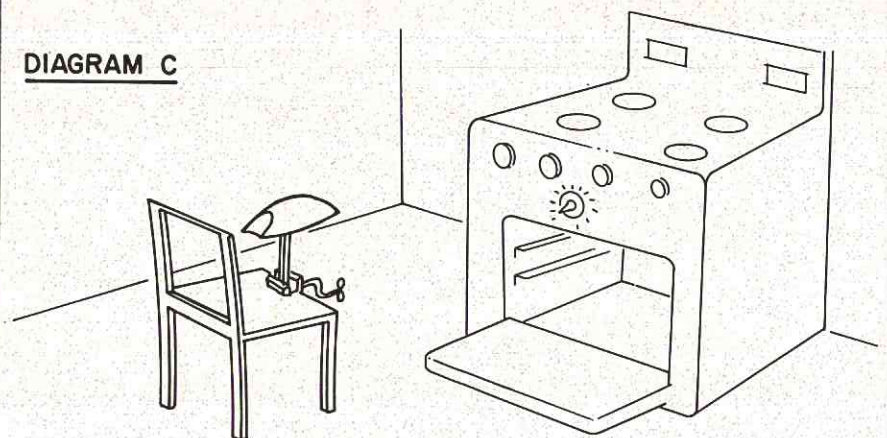
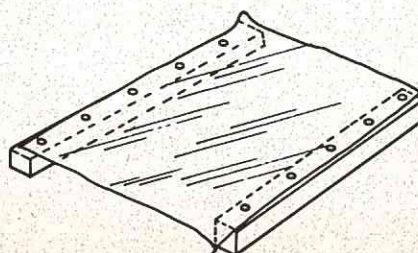


DIAGRAM C

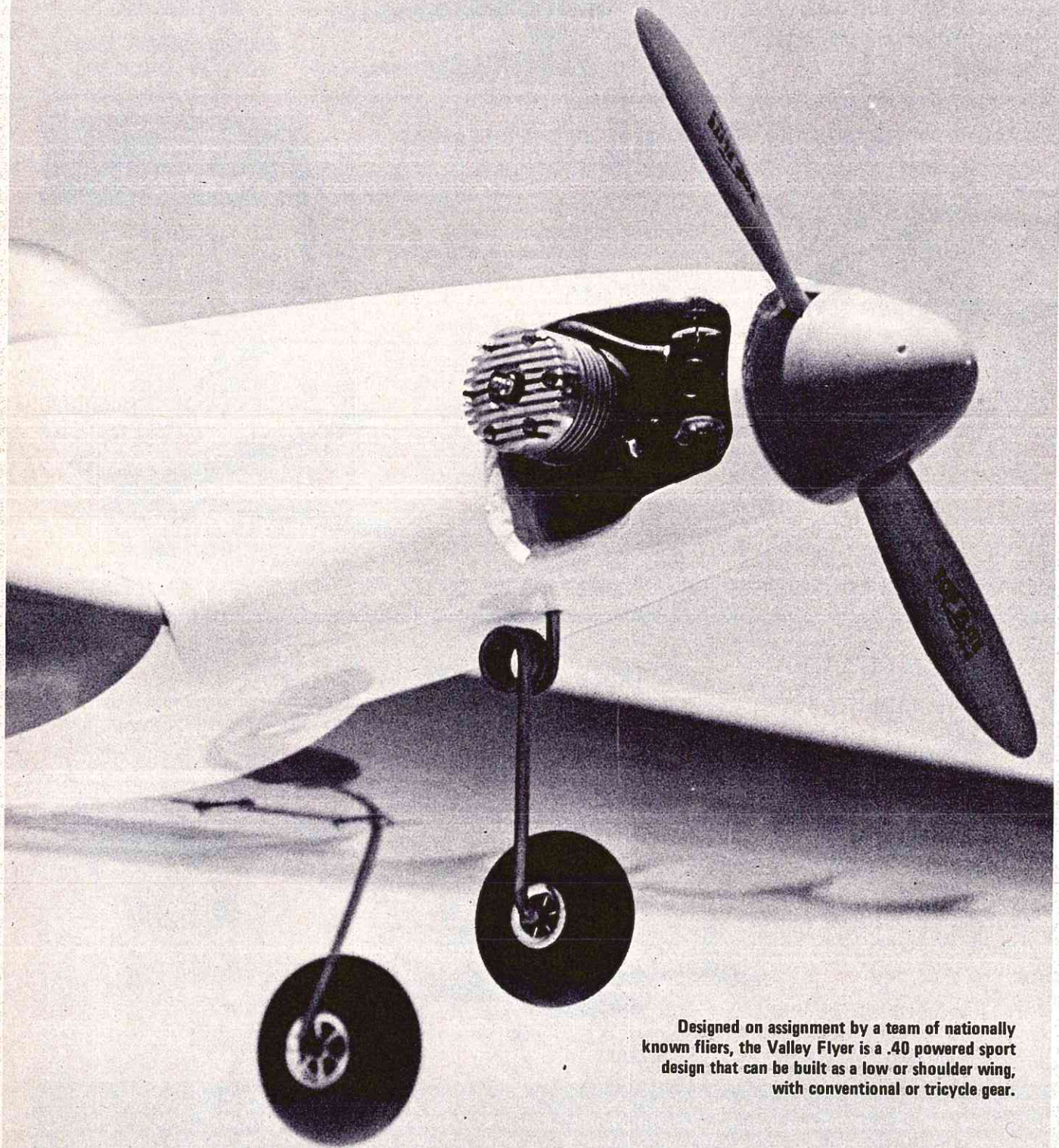


GET SET UP RIGHT / SET OVEN AT 450°

DIAGRAM D



VALLEY FLYER



Designed on assignment by a team of nationally known fliers, the Valley Flyer is a .40 powered sport design that can be built as a low or shoulder wing, with conventional or tricycle gear.

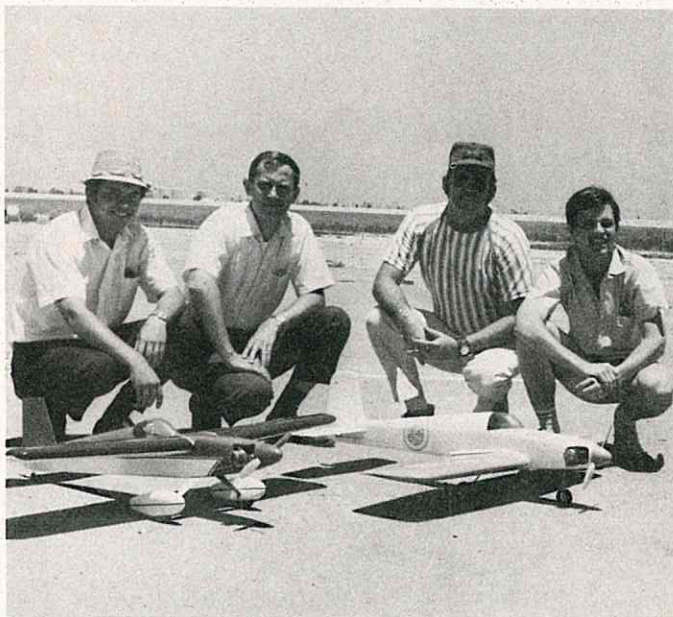
TEXT BY NATE RAMBO

To fully appreciate the Valley Flyer you should first realize that it is not the usual product of one mortal man. Rather, it is the product of a group of experts detailed to design and build an R/C model just for you, the RCM reader. Responsibility for the whole business must be credited to RCM's Contributing Editor, Dick Sonheim. When Dick was elected 1970 president of the San Fernando Valley Flyers R/C Club, he assigned a team of experts from the club to design an airplane for RCM. The driving philosophy was that the club was poor and could use the proceeds which Dick would choke out of Dewey for the article. Well, at any rate, that was the idea.

There is little argument that the club members Dick assigned to design and build this airplane were real honest-to-goodness experts. Larry Leonard, Bill Northrop, Joe Bridi, Don Butman, Bob Upton, and Earl Harting, and the Stockwell crew were just a few of the talented modelers that Dick assigned to the team. But of course every organization must have a problem child. That's where I come in. Dick assigned me to act as glorious leader and get the whole gang of experts headed in the same direction. Furthermore, Dick put absolutely no stipulations or restraints on the job. Great!

So off to work we went. And when you get a group of knowledgeable people together and all have a common objective, things really move fast and decisive action can be taken. During our first work session it took only five hours and 32 cans of beer for all those super-duper experts to come to one universal agreement. Each and every one agreed, without exception, that he liked girls. There was no further agreement. One expert wanted a pattern ship, another a Formula 1 racer, another a scale job, and so forth. Then of course there was "Wild Bill" Northrop who was having Big John Biplane fantasies and hallucinations throughout the entire first meeting.

All I can say is thank goodness for Earl Harting who finally came up with the design concept which



Larry Leonard, Nate Rambo, Bob Upton, and Whit Stockwell pose with both versions of the Valley Flyer.

the experts, who had gathered together for that first meeting, ultimately merged into the Valley Flyer. Earl proposed that the design be a sport type model which could be built as either a low-winger or high-winger and as either a tail dragger or a trike gear job. A few sketches proved the whole business could be achieved with one set of parts and a little ingenuity.

The Harding design proposal was soon agreed upon. Thereafter, it was unani-

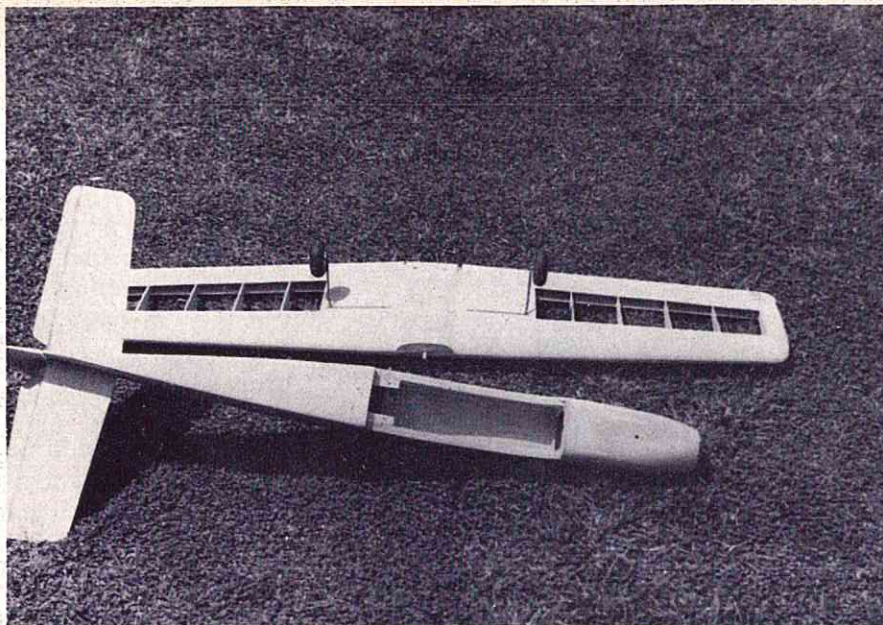
mously decided that the ship should look like a real airplane, be small enough to transport assembled, and be designed around the new K & B .40 sport engine which was soon to be available.

Finally a lot of hard work and thought by a talented group of people bore fruit and the Valley Flyer model was born in the two shapes shown here. Both have been flown by a long list of both experts and beginners who have been favorably impressed.

The ship is not a beginner's flight trainer. On the other hand, it is not tricky. For one thing the thick Bridi Sun Fli type airfoil section gives either version of the Valley Flyer a very docile stall. Slow flight characteristics are particularly evident in the shoulder wing version where the prop wash wets a lot of highly curved wing section and provides a respectable amount of lift at low air speeds.

While on the subject of flying, even Jim Kirkland would have a ball with either version of the Valley Flyer. Both designs are very nimble and very quick. For those flyers who have the knack of doing knife edge flight, powerful rudders and large side areas permits knife edge from horizon to horizon.

Like to try and build a Valley Flyer? The construction is so straightforward that little need be said. Select the version you like before or after cutting the parts. About the only difference is that the location of the stabilizer slot must be reversed when going from one version to the other. (High stabilizer on low wing version and vice versa.)

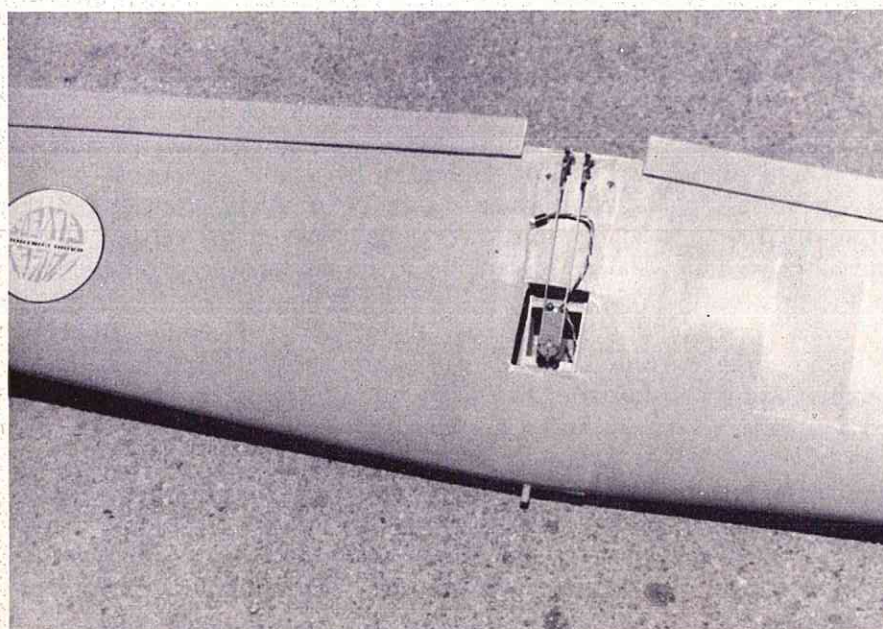
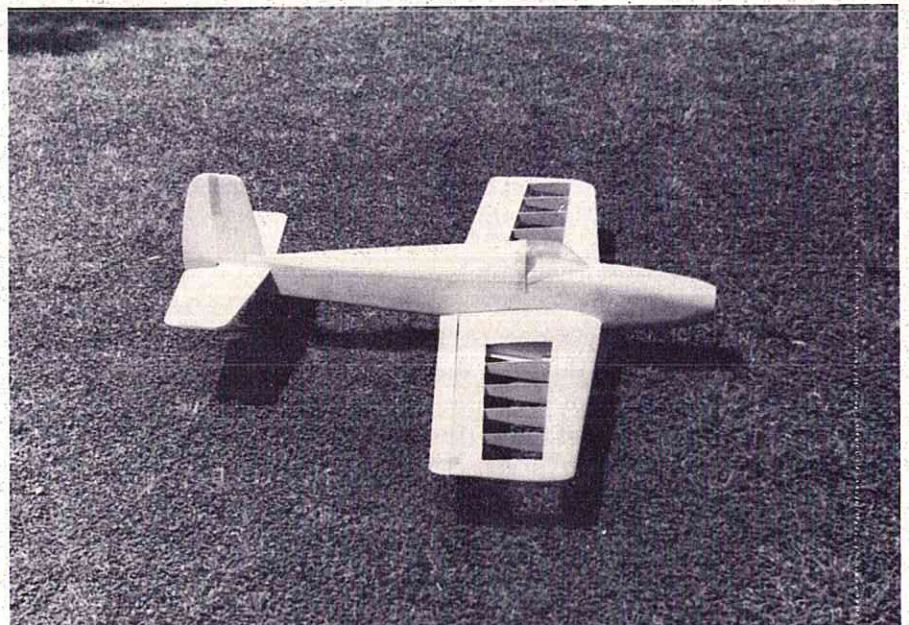


place between the sides, etcetera. Put the firewall in with plenty of glue and support it with scrap balsa reinforcement side doublers, tying it securely in place. Attach the unshaped soft balsa nose, top, and bottom blocks that will later provide the fuselage with its personality. The plywood ring which faces these blocks against the spinner should be epoxied into place. Next, build up the turtle deck as shown on the plans. When all the glue is dry, shape the fuselage with a razor plane and sanding block.

Let's diverge a little from the building details. Talking about all this gluing and wood assembly brings up adhesives. I use about

While choosing the configuration, decide which landing gear version titillates (?) your fancy. There is no use cutting landing gear blocks for the wing of the shoulder winger because the aluminum gear will be mounted on a plywood platform which should be cut with the rest of the parts. Also, if you decide on a tail dragger, don't bother to cut the hardwood nose gear blocks which will not be needed.

Now to the actual assembly of the airframe. I refuse to fill up paper telling how to build a box type fuselage. It would insult my intelligence. On second thought...pick up the glue bottle, glue the bulkheads in



the same glues and adhesive techniques that the experts use. My own personal Valley Flyer, the shoulder winger shown on the cover, was built with three types of adhesives. Most of the internal wood joints were bonded using good old white glue. I buy this by the quart at the hardware store for about \$1.75 and apply it using a small squeeze bottle. Unless you are very careful, white glue will leave a joint which is impossible to sand. Therefore, I always shift to a regular model cement (such as Testors white label) for any place where large surface joints are concerned. My third type of adhesive is epoxy. Devcon, Hobby-

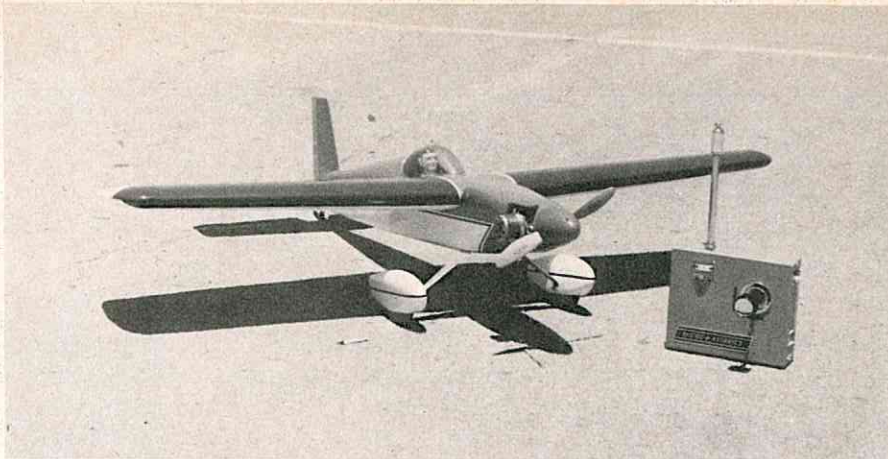
Poxy #1, or a similar epoxy is mandatory for those high stress areas such as around the firewall. The epoxy is also about the best thing going for securing those pesky plastic canopies.

Like the fuselage, the wing is simple enough to knock out. After building foam wings for the last five years, the experts re-discovered the built-up structure. Joe Bridi's Sun Fli technique is used here. One-fourth inch holes are drilled in the ribs and the wing is assembled on two ¼ inch rods from the hardware store. (RCM Wing Jig). First slide the ribs on the rod. Then glue the spars, leading edge, and trailing edge in place. All of the wing sheeting is applied with the rods squarely resting on two parallel wooden blocks. (Flip the wing inverted or upright as required.) The rods and blocks guarantee that the wing is assembled straight. Before removing the wing from the rod/block jigs be sure to put 1/16 inch sheet webs between the upper and lower spars. This structurally closes the leading edge into a torsionally rigid "D" tube and absolutely prevents wing warping. Static condition warps make you curse a ship for not "tracking" through the loops.

If you build the shoulder wing version, screw the wing in place with nylon bolts prior to installing the canopy bulkhead and canopy. This insures a good fit between the canopy assembly and fuselage turtle deck.

There is little more to be said about assembly so here's a word on equipment installation. The Valley Flyer has enough space for big servos such as the old PCS servos or the reliable Kraft KPS-9's. I installed KPS-9's across the fuselage and used wheel outputs on staggered sides. Earl Harting took the opposite approach and installed one of the mini-sized radio systems and had room to spare.

Irregardless of which radio you use, make the actual installa-



The shoulder wing, tail-dragger version of the Valley Flyer. K & B .40, Micro-Avionics radio.

tion a neat one. A particular point of workmanship to watch when installing a radio is to make the pushrods go straight. No Zee's, please. Even though the VF is a small ship, make up a pair of rigid pushrods using ¼ inch dowels or fiberglass arrow shafts with 1/16 inch music wire ends or commercial clevis assemblies. Another point on the equipment installation is to keep the control surface movements small compared with bigger ships. This is particularly true of the aileron movement.

When you choose an engine for this ship try to go the .40 class route. Frankly, a .19 probably won't fly the Valley Flyer and give the flyer much satisfaction. If you can't afford a new K & B .40 sport engine or some other nice shiny mill, be

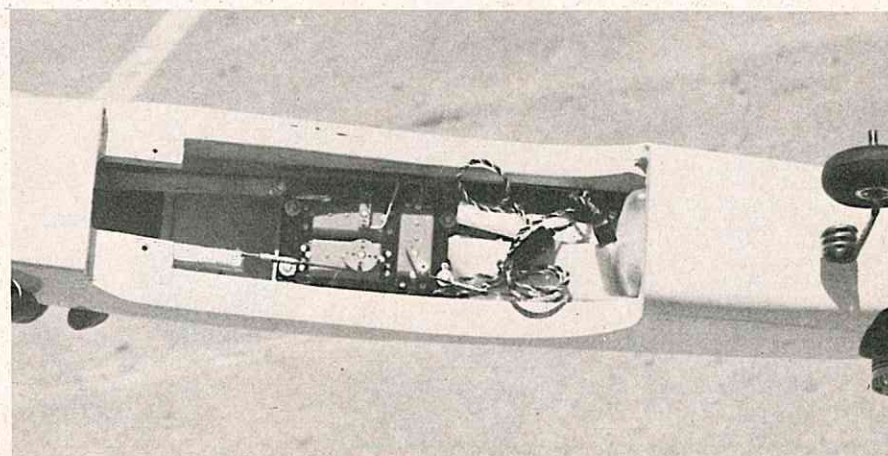
nice to one of your pylon racing buddies and see if he won't throw you one of his old 1965 vintage .40's which has long been outmoded.

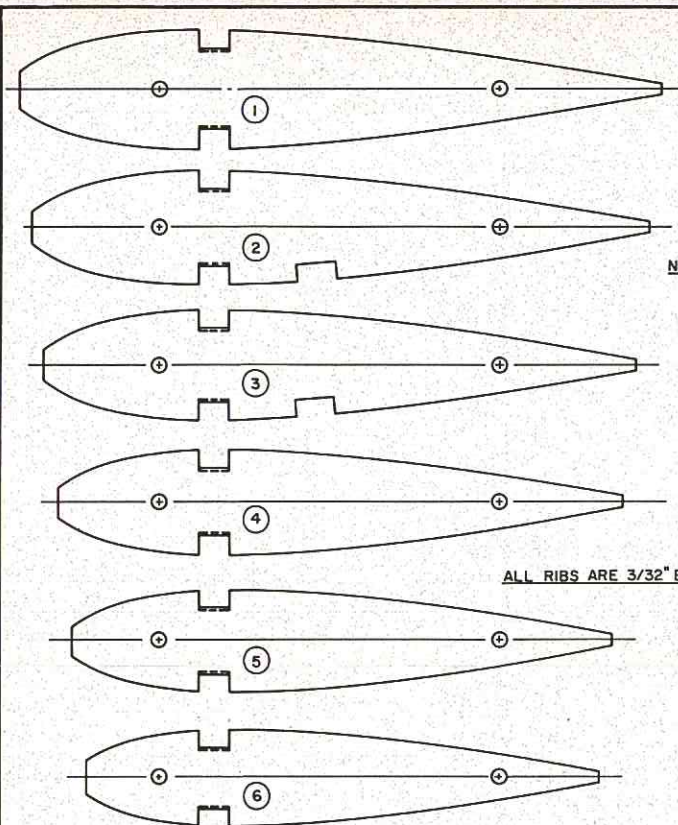
If you want to really glamorize your Valley Flyer, pick up some plastic parts like wheel pants and cowl cheeks. Install these and you will suddenly put some real personality and bounce into the finished ship.

Finish the ship off the way you like. For information, the little shoulder wing on the cover of this magazine was covered with MonoKote. Only ten hours labor was involved which makes the hand-rubbed lacquer finisher wonder if the old-fashioned techniques are worthwhile.

Read enough? Start building and fly the VF in about 10 days. □

View of radio installation in Valley Flyer. Adequate room for most systems.



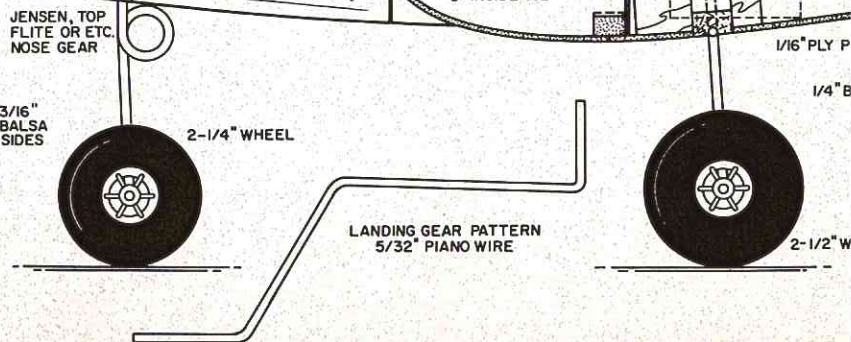
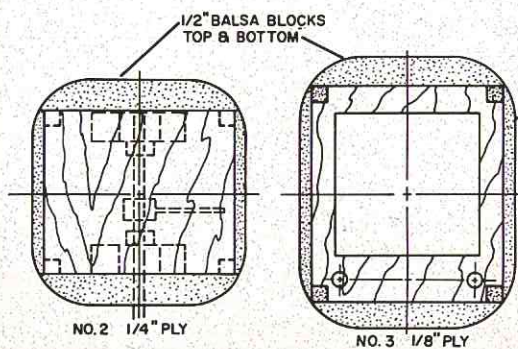
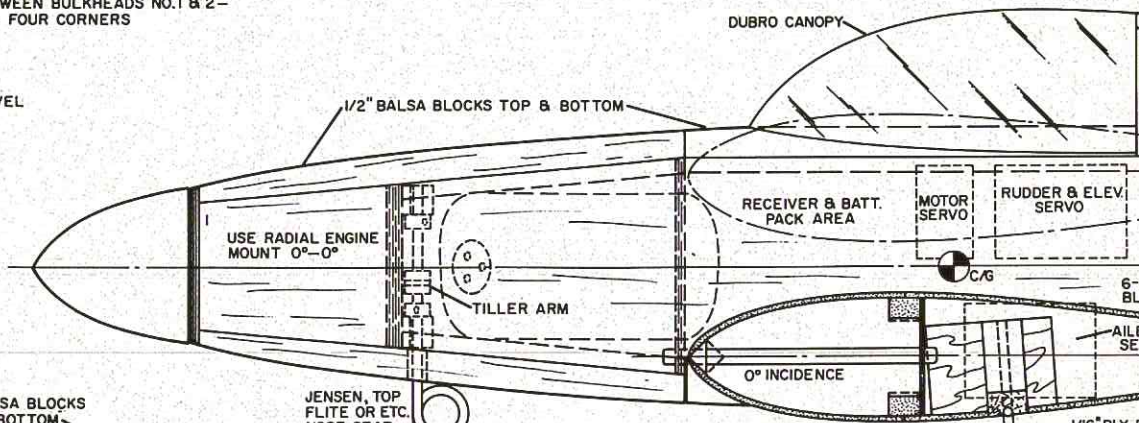
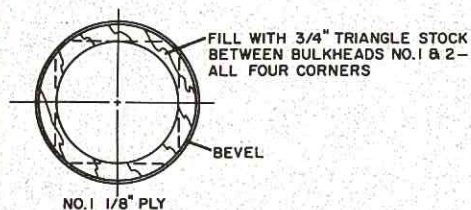
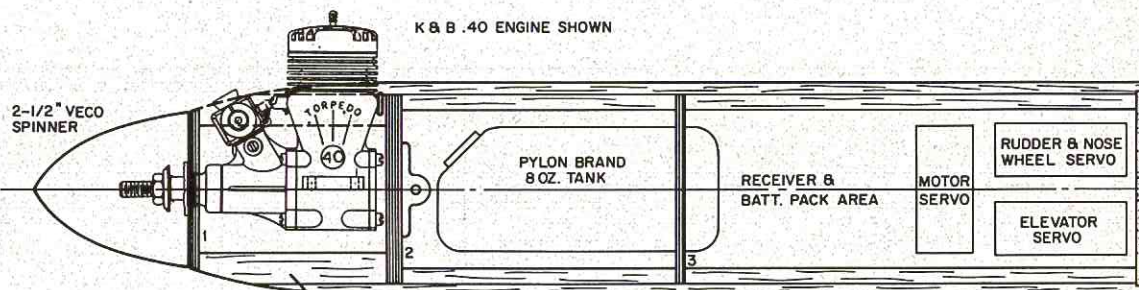
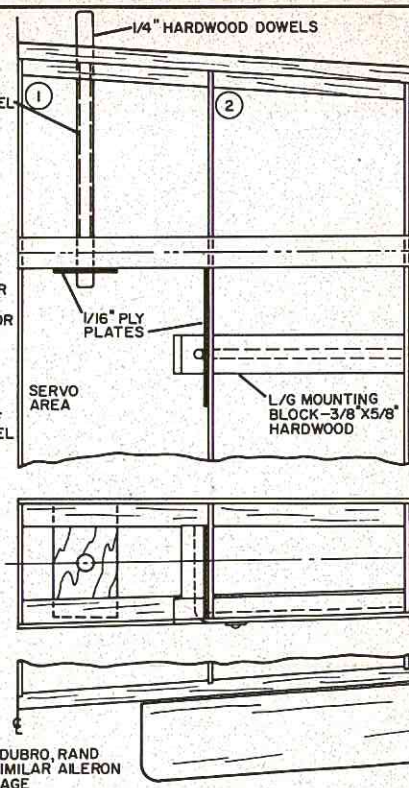


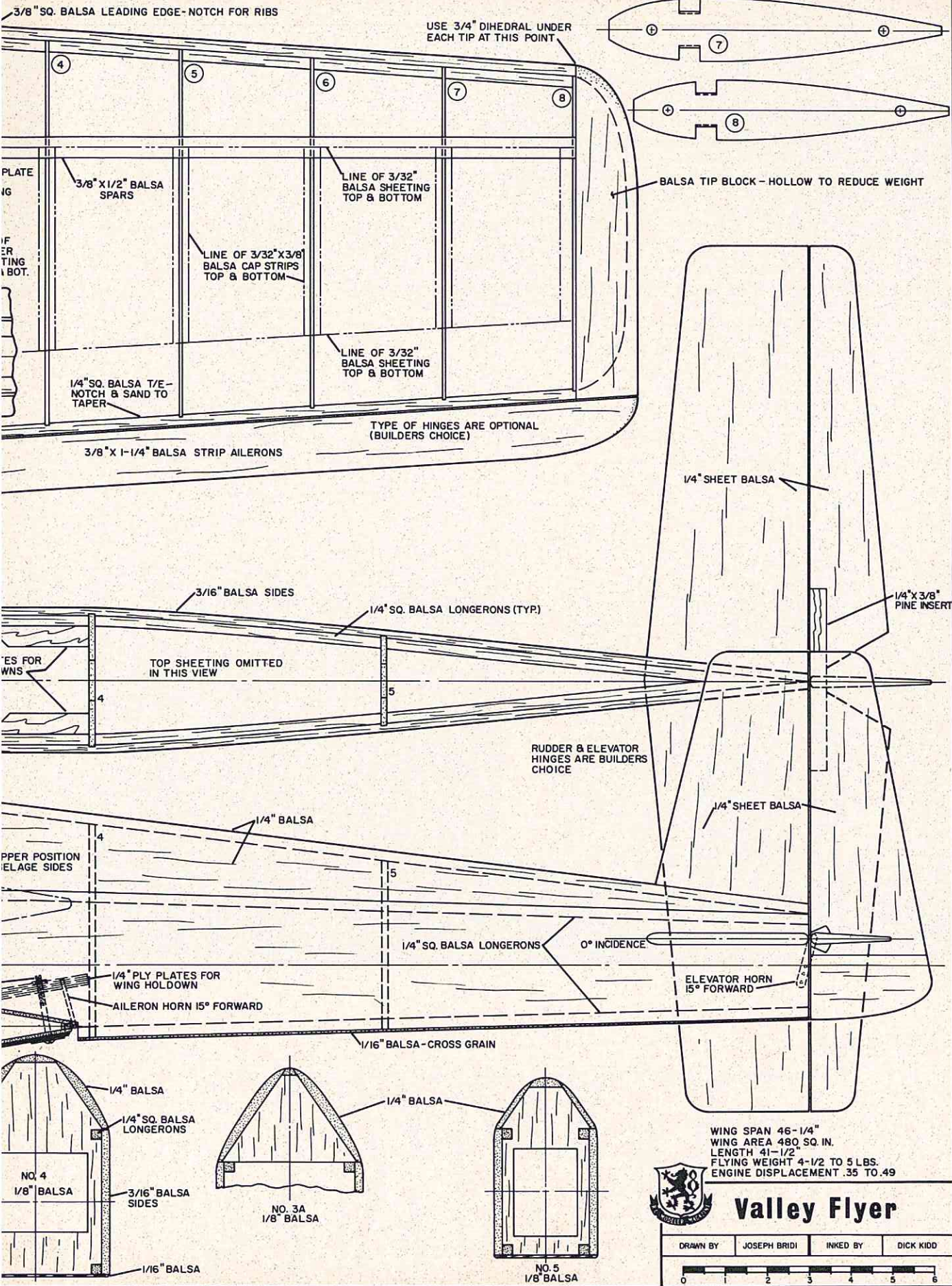
ALL RIBS ARE 3/32" Balsa

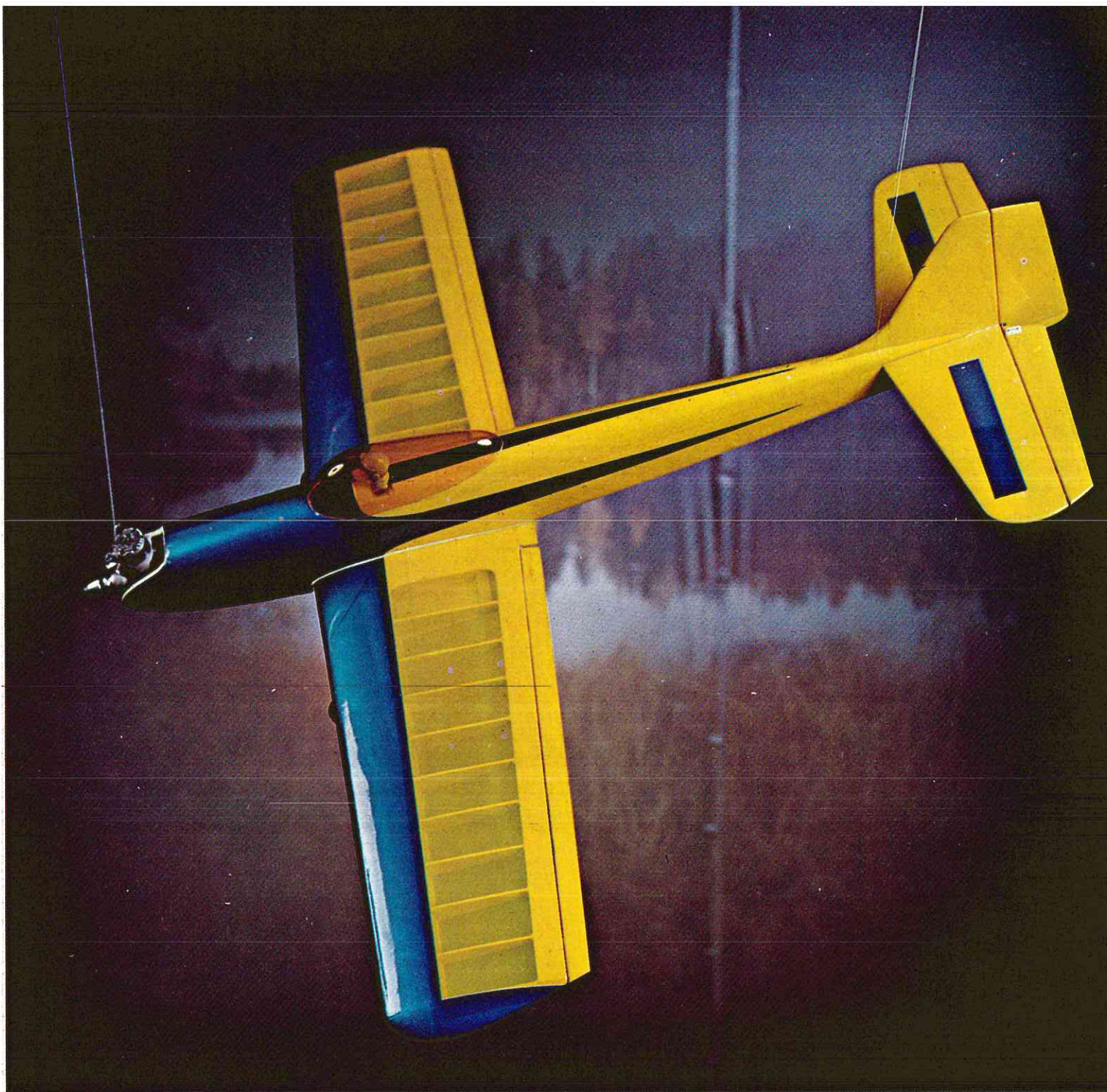
3/16" Balsa FALSE RIB
TOP & BOTTOM OF DOWEL

NOTE:

1. CENTER SECTION BUTTS TOGETHER ONLY. NO DIHEDRAL BRACE REQ'D. CLOTH, GLASS CLOTH, CELASTIC OR OTHER MATERIALS ARE NEEDED TO SUPPORT CENTER SECTION. EXTEND AT LEAST 2" EACH SIDE OF CENTER.
2. IT IS HIGHLY RECOMMENDED THAT YOU REFER TO AUGUST ISSUE OF R/C MODELER MAG. USING 1/4" STEEL RODS TO ASSEMBLE WING.







HARRY ALLAN'S

By Jack Immelman

BOKKIE

R/C Modeler Magazine is proud to present Harry Allan's "Bokkie." This two-and-a-half pound model from South Africa is the finest performing .19 powered R/C aircraft we have yet seen. The word 'Bokkie' is the South African common name for a little deer, and this model exhibits all of the nimbleness and grace of its namesake. The exaggerated 'quickness' common to the smaller R/C aircraft has been overcome in the Bokkie, and you will find that it performs the aerobatic schedule with the same finesse as its larger competition counterparts.

— Don Dewey

When Phil Kraft promised to send us, as franchised agents in South Africa, an early sample of his lightweight system, it seemed logical to test its capabilities in a lightweight model. Local modeler Harry Allan claimed he could produce just the thing — a smaller development of his already small 50" low-wing.

So, in the nimble-fingered way of a natural modeler, Harry ran up a little sports job with an all-up weight, with radio, of only 2½ lbs. After a lot of flying with my sleek, smooth, .60 powered 'Upset,' I cannot say I viewed this new little toy with much enthusiasm. What could one expect with only a fussy little .19 up front?

The first take-off with the little beastie was all of 20 feet long, whereupon it leapt into the heavens with the agility of a little deer frisking over long grass on a dewy morning. Hence the name, "Bokkie." After five minutes flying I had exhausted every manoeuvre in my limited repertoire, and the experts queued up for a little stick time, with "Bokkie" still fresh as a daisy. This was our only mistake — nobody who took over the 'box' was inclined to give it back again until that huge four ounce tank was down to the last drop!

So, to all you guys with 12 oz. or larger R/C systems, here is what to do. Cut out the fuselage sides and mark the former positions. Then glue the formers in at the same time as the tank floor which squares everything up even if you work in fresh air. Add the sloping sides and the top piece, and Titebond on the sheet stab and fin. The plan shows the little rectangular jig pieces which are spot-glued to the centre and tip ribs. Cut carefully since this will give a 1/16" washout when built on a board. Now, trial-fit the wing servo and fuselage pushrods and equipment and get everything working nicely. Only now should you glue on the lower fuselage sheet. The usual sanding and doping completes the job with that little bit of silk or Super MonoKote you had left over from your last monster. But use light tissue for the tail surfaces, and clear dope over coloured silk is better than a heavy layer of colour dope. The whole secret, you see, is to come out at under 2½ lbs. Then you only need this little engine, and little tank, for big, big performance.

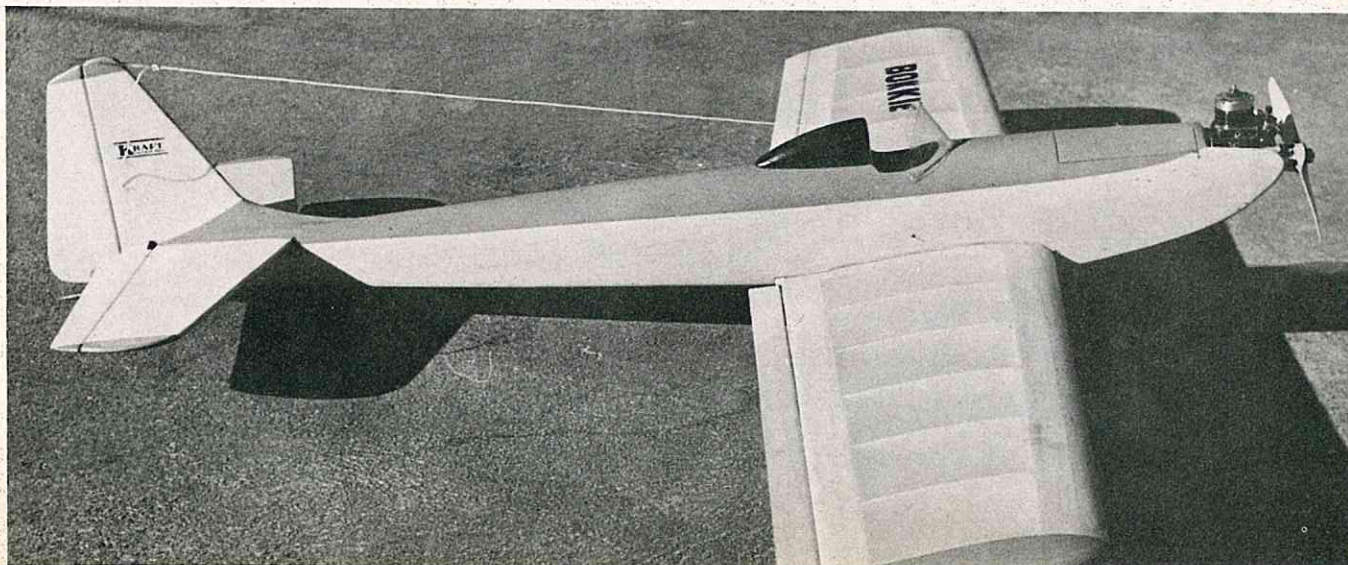
For flying, use any 50 ft. strip, if your landing aim is that good! After starting the motor, wave away all helpers, grasp the rear fuselage lightly in one hand and the transmitter in the other, and you can march around for miles feeling no strain. For the real lazy types, hold the "Bokkie" vertically up on full throttle and you can rest your arm. Any day now, designer Harry Allan will be tempted into trying a VTO, even at our altitude of 5000 ft. We figure at sea level power it will happen anyway when someone lets go by accident!

But don't be fooled by all this talk of lightweight performance, because when you cut for a landing it does not float all around the sky but comes down in a groovy approach like it should. With it's symmetrical, zero-zero setup it will handle windy weather too, although 2½ lbs. does get bumped around more than the usual 6 lb. contest model. Did we say contest? Well, we haven't found anything it won't do well. Maybe a trike gear would improve ground handling, although the little wire tail skid is quite adequate for most conditions.

A few last little tips. Fit an outside charging point on the fuselage if you can, (included with the

The 'Bokkie' in profile . . . takes off fast like others of the deer family, but what buck can do a 100 ft. loop?

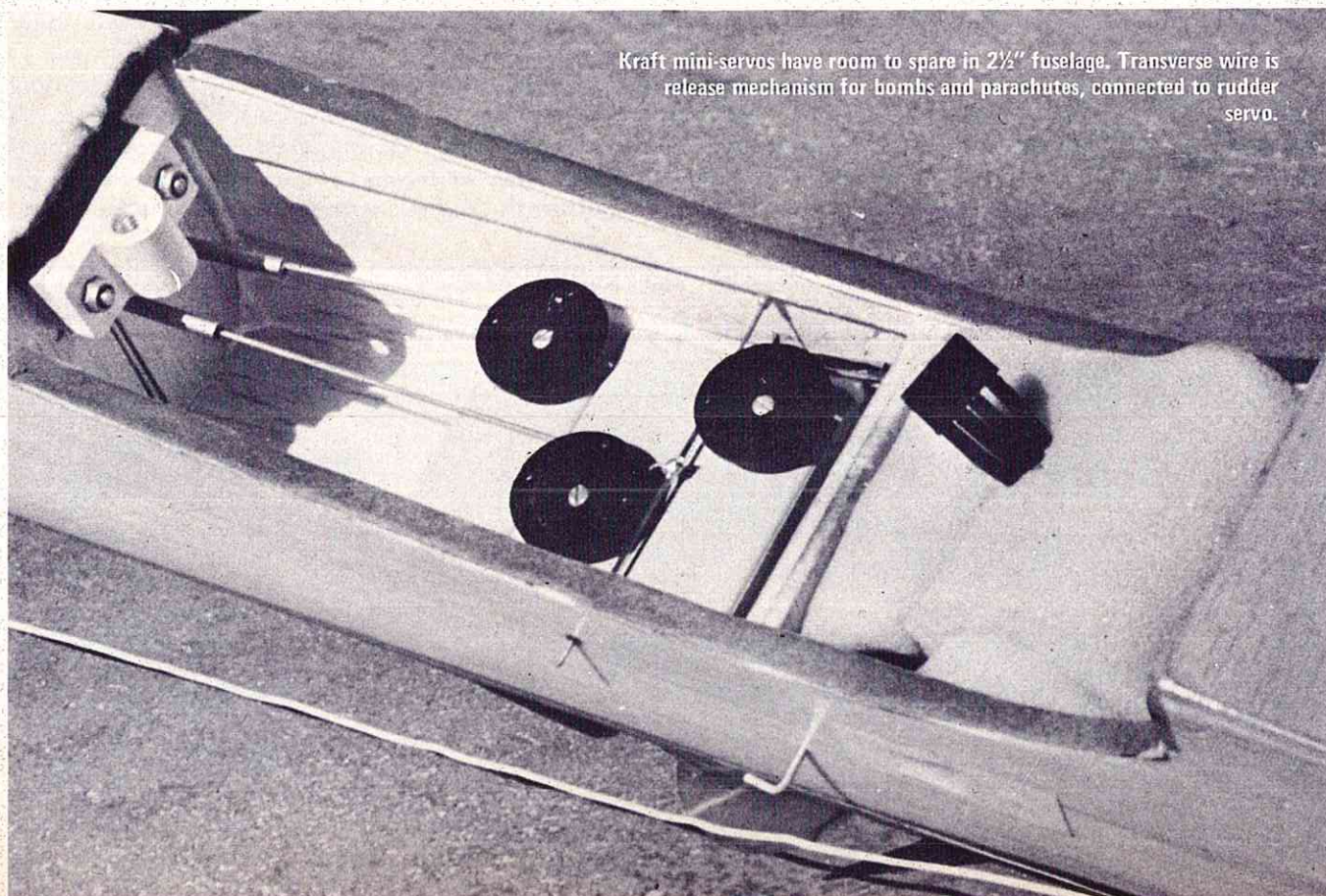
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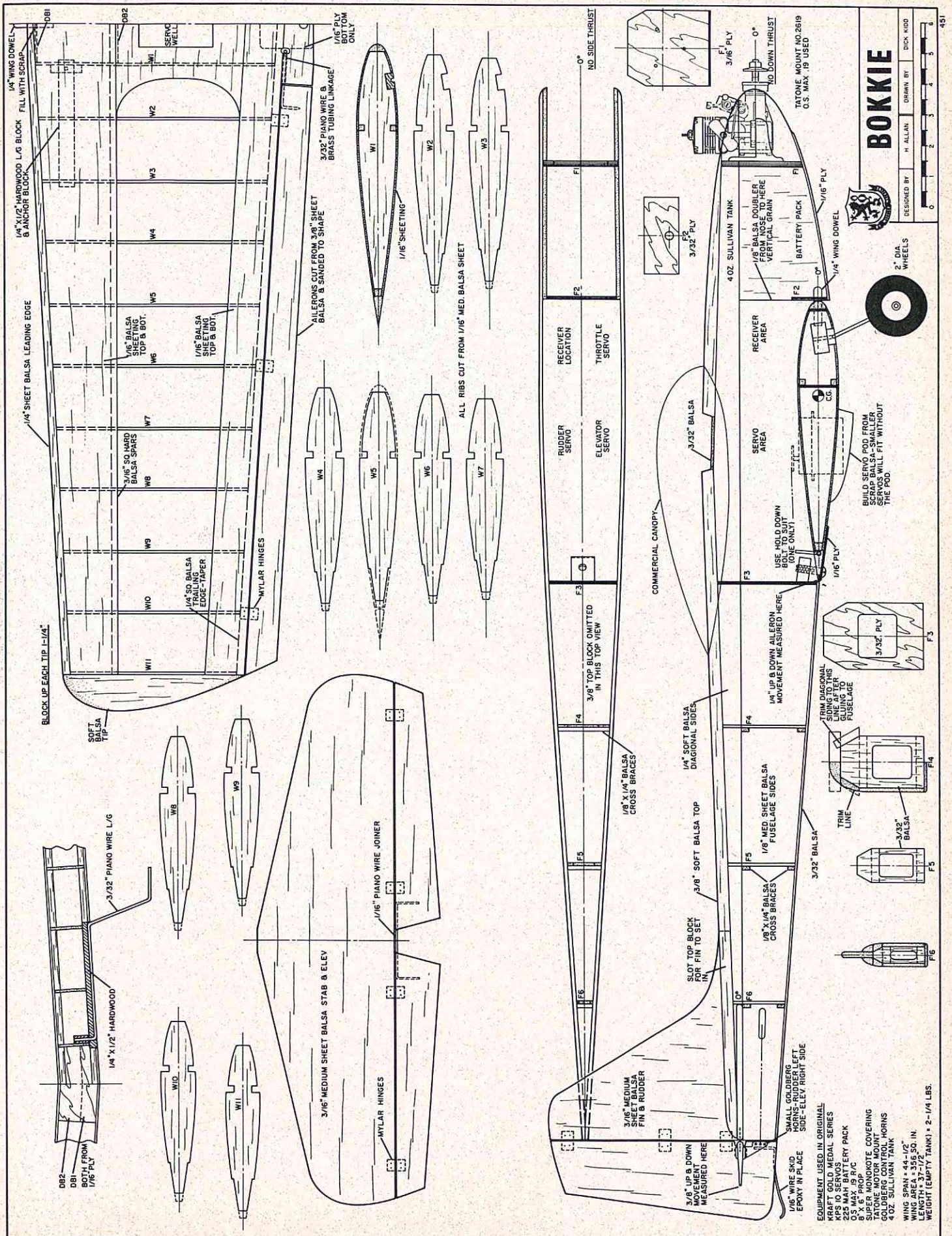


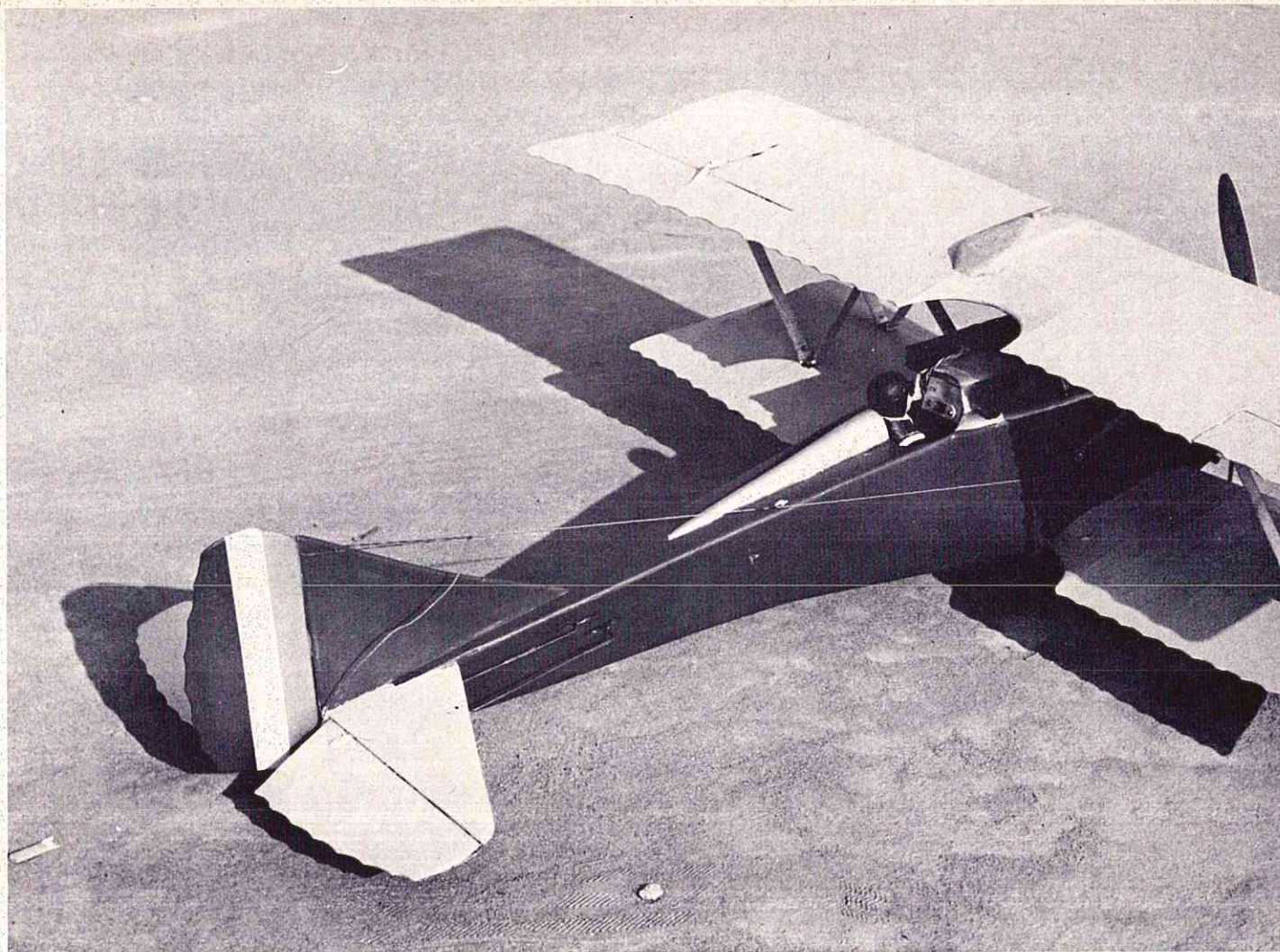
Designer Harry Allen with the 2½ lb. 'Bokkie.' "Anything you can do, Bokkie can do, better," says test flier Jack Immelman.



Kraft mini-servos have room to spare in 2½" fuselage. Transverse wire is release mechanism for bombs and parachutes, connected to rudder servo.







Ansaldo SVA-5

The Italian Ansaldo, first flown in 1917, was designed as a light scout bomber and reconnaissance aircraft. Its speed kept it away from most interceptors, while its maneuverability gave it an even chance in a dogfight. This .60 powered scale model faithfully follows the prototype — in both appearance and performance.

BY GUS MORFIS

We are all familiar with the “best” pursuits planes of WWI . . . the “Camel,” “The S.E.5,” “The Fokker D-7,” and the “SPAD 13.” But nobody remembers the Ansaldo S.V.A.-5. The Italian Ansaldo was certainly no “Second best” performer and if its theater of operations had been as well publicized as the Western Front was, the Italian Scout would be better known today.

First flown in March, 1917, the Ansaldo was designed with speed and range as its prominent features. Its maximum speed was 143 M.P.H.; time to climb to 13,500 feet was 10 minutes, and non-stop flights of 900 miles distance were flown in proving out its range capabilities — no “second best” performance, especially in 1917!

The airplane was developed as a light scout bomber and reconnaissance aircraft, duties which would take advantage of its unique performance capability. Its speed would keep it away from most interceptors

and its maneuverability would give it a fair chance against any which trapped it into a fight. The Ansaldo was apparently a very reliable machine, its six cylinder SPA-6A engine hauling it on many a long range mission over the Adriatic Sea and over enemy territory.

The Ansaldo served in the Italian Air Force until the 1930's finishing up in the training schools. The Ansaldo also served in the Peruvian, Argentine and Latvian Air Forces and a few found their way into this country as well.

My buddy, Earl L'Homme, was looking for something to enter in an upcoming WWI meet. From all the scuttlebut around it seemed like everone was planning a SE-5 or a Fokker D-7. Both are excellent choices for models, but why pick out the same thing that everyone else would be entering? The trick was to choose a prototype which would be sufficiently "different" from the crowd to catch the judge's eye and still not be a "freak."

C.G. location and balance was another problem. Most WWI air-

planes have such short noses that it is very difficult to balance them properly without having to virtually fill the cowling with lead. Because of this, short nosed airplanes like the Sopwith "Camel" and the Fokker D-8 were rejected. There really wasn't much left to choose from and when we studied the vertical radiator design of the S.V.A. it seemed like a natural place to bury the engine. And so the choice was made! We would try a model of the Ansaldo S.V.A.-5.

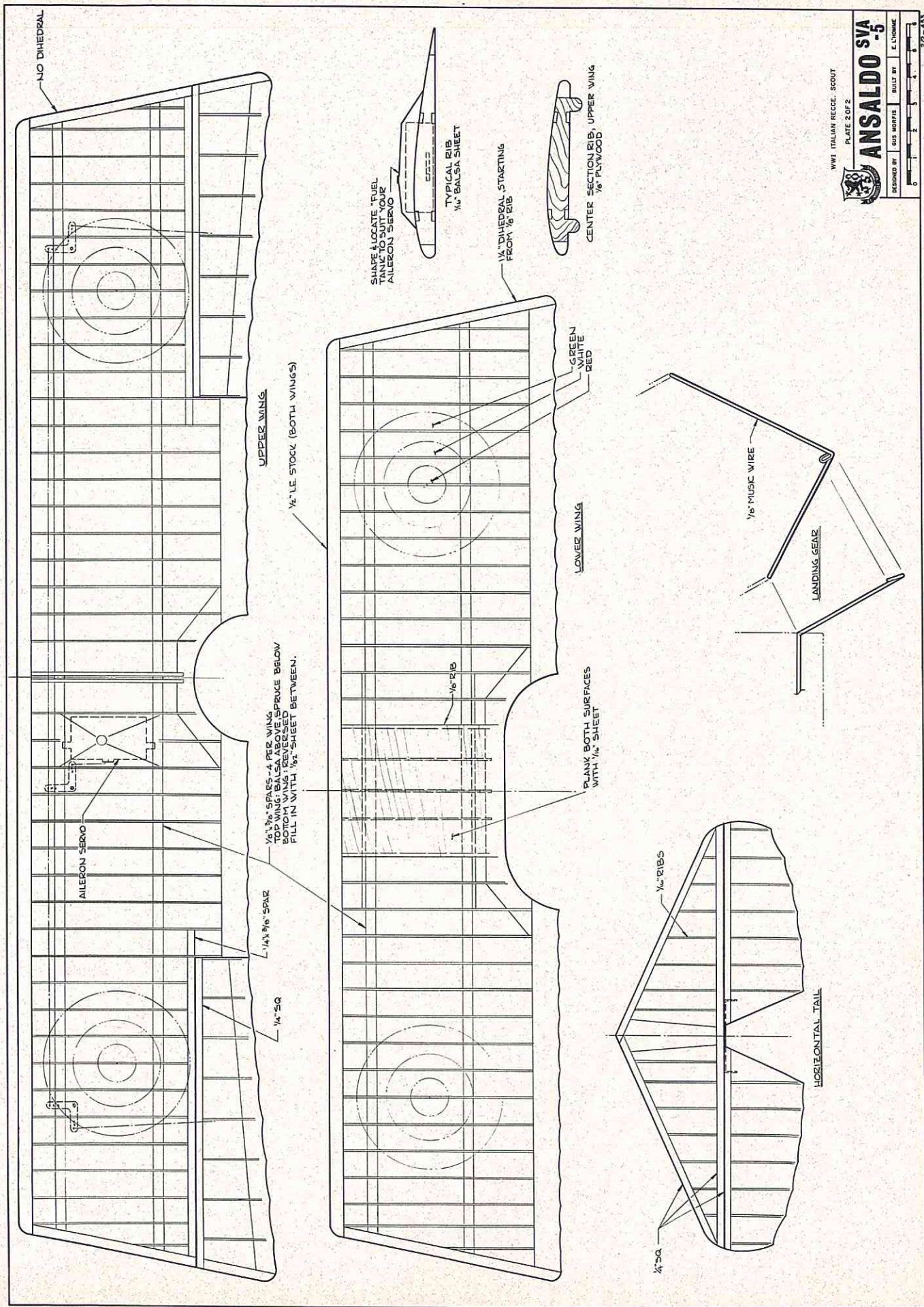
Our model is made to $1\frac{1}{2}=1'0''$ scale which produces a 45 inch wingspan. The cowling line is just perfect for a Merco .61 at this scale except that at the very front the radiator must be widened out a bit to clear the cylinder. This is not too objectionable especially since the widened nose shape lets you completely bury the engine.

We realize that a .61 sized engine is a bit larger than you expect to see in a model this small, but consider the situation: (1) Bi-planes, especially WWI bi-planes are quite draggy, so top

(continued on page 71)

The Ansaldo is a fairly simple model to construct for the RC'er with building experience. It is not recommended for the beginner in either the construction or flying departments. In the air it is fast, highly maneuverable, and capable of full-scale performance with powerful .60 packed away in the nose.







"Hey, Wagger!" yelled Walt from the runway, "Watch this landing! I'm going to slow it up and really nurse it down the old chute . . . AWK!"

Walt's last strangled cry was occasioned by the sight of his little Sig Flutterbug performing a quick snap-roll and sliding into the blacktop on its needle valve and canopy. Parts flew in several directions: the engine popped from the firewall, the cowl split away, and Walt's temper went gallumphing out of control as usual.

"Dognab it," he fumed, "how long do you have to fly these mini-multi's before you learn

how to land them on their wheels? I've got 50 flights on this little bird, and every one has been followed by a semi-controlled crash when I try to get it back down. Aren't these little ones supposed to fly just like the .60 jobs, Wagger?"

The Bassett, who had been watching this show from the pit area, regarded his master through blood shot eyes which registered more than the usual amount of skepticism.

"Look, oh dum-dum boss," he intoned as he nosed some parts into a small pile for removal, "don't knock Sig or any other maker of mini-multi's for things that are beyond their control. They do their best to market an aircraft that is practical within the state of the art at the present time. What they cannot control are the laws of aerodynamics and the modifications of the builder!"

"Now," continued the dog as he started to pull his little red wagon full of parts off the field, "you know that this little ship is carrying the same radio, engine, and fuel tank that you use in larger ships but it's doing it on a lot less wing. The wing is a foam wing to boot, which is somewhat heavier. In addition, you upped the engine to a .19, you added a

doll in a complete cockpit, the radio is full-house, and you've added contact paper to the wing. Naturally it has a high sink rate and pulls a high angle of attack for landing. The airplane's only sin was that the whole wing quit flying at once when you finally pushed it too far; then, when the ship started to wobble you added aileron which stalled out a wing-tip. That's when it snapped over, and I don't blame it."

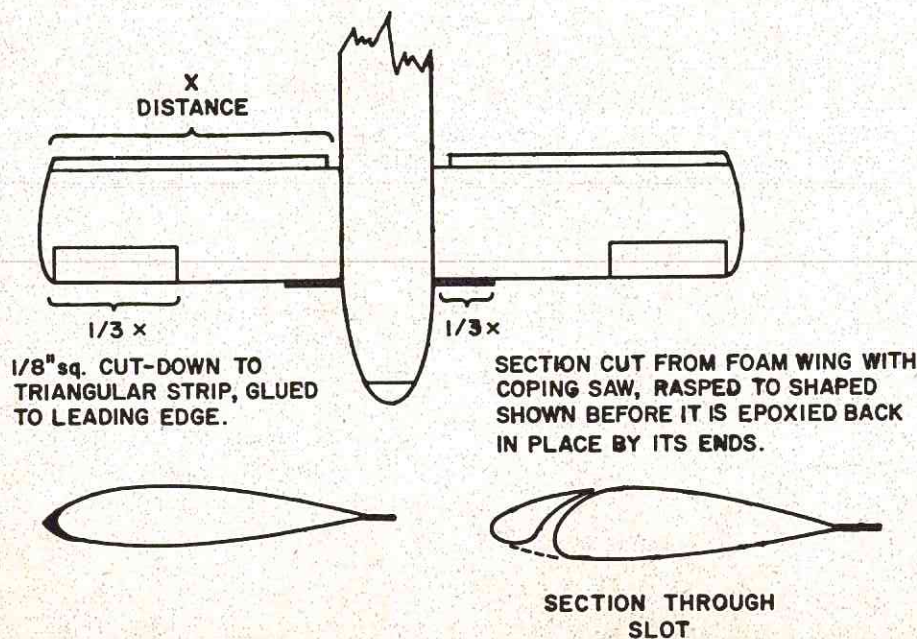
Walt began to unload the parts from the wagon into the trunk of the Austin-Healey Sprite the pair used as transportation. "I agree with your analysis, as usual," he pouted, "but I don't see any cure except to buildup a wing with washout twist at the wingtips to delay the stall out there. I hate to do that because it eliminates this dandy, tough little foam wing. Got any other cures in your doghouse of tricks?"

"As a matter of fact, I do," sniffed Wagger as the Sprite began bouncing its way home. "Hand me that foam wing and that coping saw, and I'll put this trip to good use." So saying, the dog began to make the modifications shown in the sketch below.

"Now," said Wagger as they pulled into the driveway, "the sharp leading-edge at the butt will stall first, the middle part next, and the slotted tip last, if ever. With this wing, you will be able to keep pulling the nose up for a higher angle of attack without losing aileron control or having a stalled tip throw you into a snap roll. It will still land somewhat fast, of course, but you will be able to control it at all times. The beauty of the modification is that it can be performed in an hour with conventional tools and fast-drying epoxy."

"HMFFff," grumped Walt as he unloaded the parts alongside the now-modified wing. "After that buildup you gave it, this better cure my low-speed control problem!"

It did. □



A Heath Servo For Retract Gear

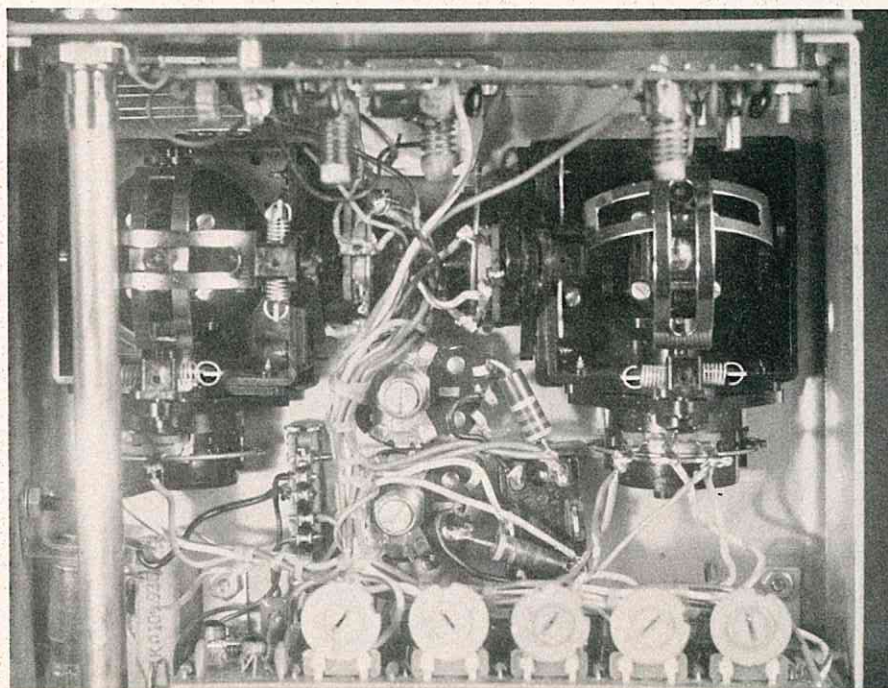
By Floyd W. Scheel

YOU CAN MODIFY YOUR HEATHKIT
SERVO FOR LESS THAN \$1.00.

Over the past several years, while attending various contests and fly-ins, I became intrigued with the sleek appearance and obvious increased performance of the planes with retractable

landing gears. I also observed numerous failures of the gear to function properly or dead stick landings as a result of the engine dying when the throttle trim was pulled back to extend the gear. I kept thinking that it should be possible to actuate the landing gear using servo electronics and eliminate the hard-to-adjust

INTERIOR OF TRANSMITTER
Showing Placement of Pots
and Switch.

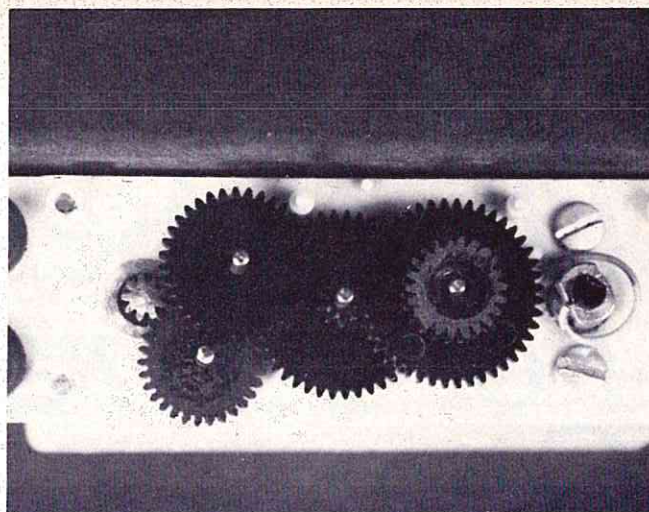
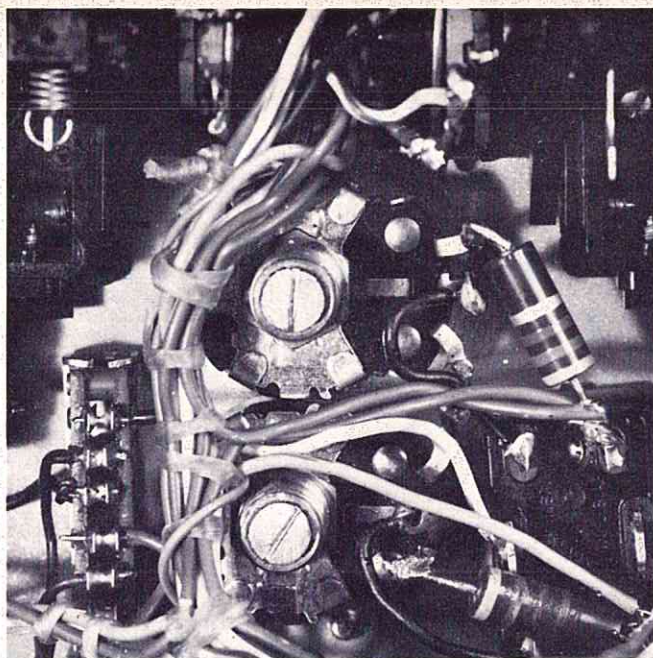


switches as throttle travel extremes. I knew that Mr. Lloyd Nicholson from Denver, Colorado, was using this type of system at least on his main gear, so I decided to see what I could accomplish with my old faithful Heathkit equipment.

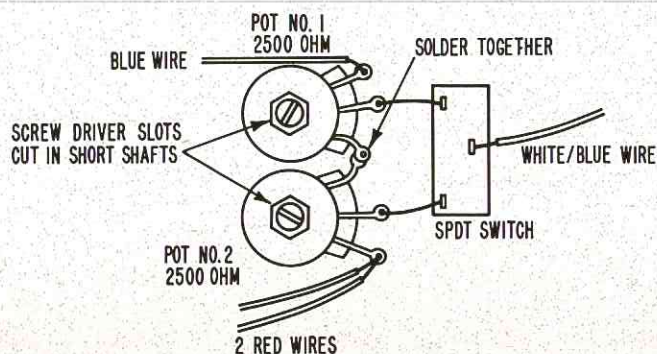
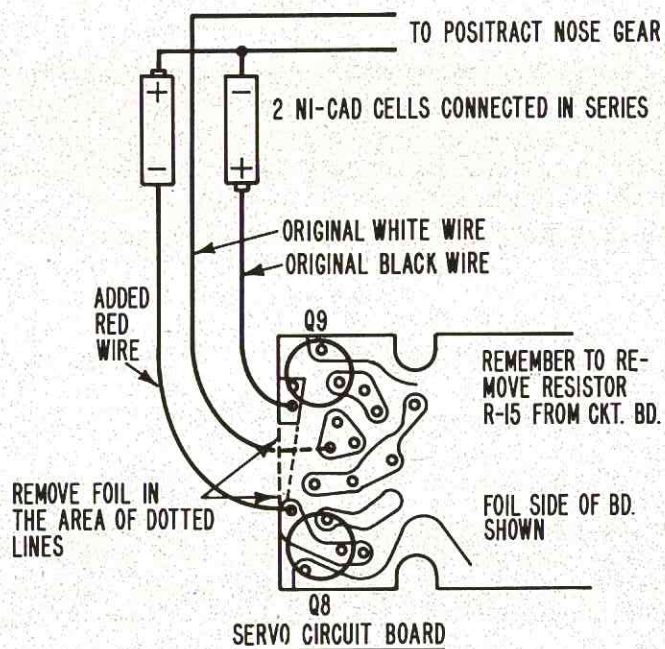
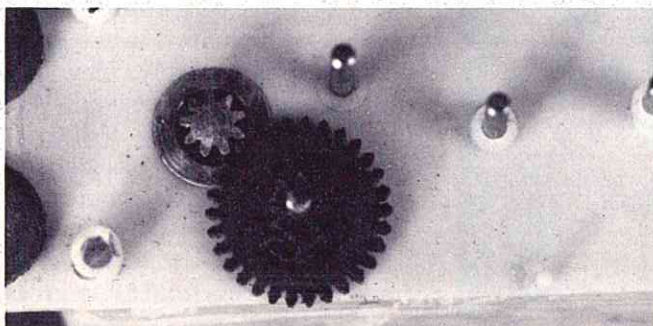
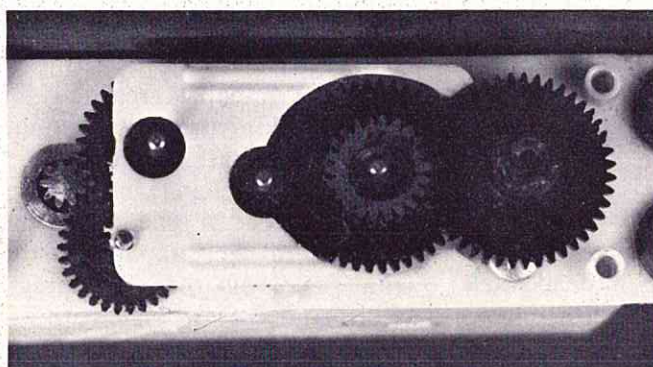
Mixing myself a good stiff hi-ball, I headed for the basement and dug out my extra servo. Since I knew that I would need a 180-degree rotation of the output arm to operate a retractable gear, the first thing to find out was if the feedback capacitor would physically rotate this far. To my pleasure I found that it would do just that. Now, was it possible to change the servo electronics to produce the 180-degree rotation with the information it received from the transmitter? Taking a stiff belt from the hi-ball, I reached for my Heathkit assembly manual and the schematic of the servo. I knew that the change would have to be made in the RC time constant of the one shot in the front end of the electronics. While studying the schematics, I could see that the resistance value was eleven megohms, but the capacity of the variable feedback condenser was not shown. This temporarily eliminated a logical approach to the solution but, being of an impatient nature, I tried to come up with a correct resistance-capacity value on a hit-or-miss basis. Needless to say, this was like looking for that proverbial needle in a haystack. Giving up in disgust, I went to bed.

The next morning I made a telephone call to the Heath Company and was advised by their technical department that the value of the two-section variable feedback capacitor was 142pf and 59pf respectively. This gave me the clue that I needed. During the noon hour I hurried home, made the necessary changes, and I had the electronics of a 180-degree servo.

At this point the servo would travel the necessary 180 degrees,



TOP LEFT: Wiring of pots and switch on my unit, I used 200 ohm pots and added 470 ohm resistor on each end. DPDT switch was used with extra terminals used as tie points. **LEFT:** Modified rack gear guide showing how top of added shaft supported. **CENTER LEFT:** Front of transmitter showing switch. **BOTTOM:** Position of added gear on servo case. **ABOVE:** Complete gear train with added gear.



but it did not have the sufficient power to operate a retractable landing gear. Looking at the gear train in the Heath Servo, I decided that it would be possible to add another pinion gear right off the servo motor and amplify the output torque to the point where I would have adequate power. Digging in a junk box where I had some gears from an old scrapped analog servo, I found a pinion gear with about a four-to-one ratio that would mesh with the existing gears and would physically fit so that it could be added to the present gear train. I thought that I had created a first, but I now find that there are other modified gear drives on the market that utilize the KPS 9 servo case. Should you desire to modify a servo along the lines that I have used and are unable to find the right sized pinion gear to add, you might consider purchasing one of these ready-made gear trains and adding the modified electronics. You will raise the cost of the conversion considerably though, for the way I did it the total retail cost would be less than one dollar.

To modify a servo, first disassemble the entire unit. Unsolder the wires leading to the motor and the feedback capacitor. Unsolder the 27pf capacitor that is connected in parallel across the variable feedback capacitor. Take a 100pf disc ceramic capacitor and solder it across lugs 2 and 3 only of the variable capacitor. **NOTE:** Do not hook it up as shown in the *Heathkit Manual* with the jumper going from lug 3 back to lug 1. Connect it to lugs 2 and 3 only. This is the only change that is required in the servo electronics. What was accomplished here is to parallel the 100pf capacitor across the 59pf section of the variable capacitor. Instead of having both variable sections and the fixed 27pf capacitors hooked in parallel as it originally was; it now takes 180 degrees of rotation of the smaller capacitor across the larger fixed one to time the one shot of the servo in order to

match the incoming pulse from the receiver.

If you have been lucky enough to come up with the proper sized gear and wish to modify your own servo gear train, first remove all the gears and put the rack gears away as replacement parts. They will not be used because they would limit the travel of the rotary output. The extra gear is now positioned on the servo case so that it meshes with both the gear on the motor and the original motor-drive gear as shown in the photograph. Next, drill a hole in the servo case to make a press fit for the proper sized shaft for your extra gear. The gear on the servo motor is now pressed further down the shaft so that it just clears the motor bushing. Grind the shaft and gear down to the point where the motor gear will mesh with the additional gear only. Now, by using small spacers cut from a piece of NyRod tubing, space all gears as needed for clearance. The thickness of some of the gears can be reduced by stroking them on a piece of sandpaper. The servo case top section will have to be relieved to clear the added gear, and it also has to be relieved for clearance of the gears that were spaced with the pieces of NyRod. The spacing and fitting of the gears will take some tinkering, but at least it's cheap.

Now, if you are ahead of me and went ahead and wired the servo motor back in, you had better get the soldering iron back out. The leads **MUST** be reversed at the servo motor. With the addition of one gear into the gear train, this reversed the drive direction of the output shaft, and if you do not change the polarity of the motor, you will not cancel out the error information at the servo, but only add to it, and the servo will jam against the end. The result will be burned-out transistors.

Since the BK retractable gear that I used required 7/8 inch of travel, I could not use the output wheel that is supplied with the Heathkit servo because it only

has a 3/4 inch throw. I used one of the many output wheels that would give me the 7/8 inch travel, but I had to trim the end where it sets on the square output shaft so the output wheel would not ride on the servo case. **TRANSMITTER:**

When working with the servo electronics, I used the auxiliary channel control on the transmitter just as it was originally built, but since it took full control to raise or lower the gear, I could see that with a greasy thumb you might not get the gear fully extended or retracted and locked. At this point I decided to convert my transmitter to toggle switch operation for the auxiliary channel.

To do this, unsolder the leads that go to the auxiliary control and remove the potentiometer and its bracket from the transmitter case. In the center of the slot where the thumb control was, I drilled a hole large enough to put in a DPDT toggle switch. Actually, all that is needed is a SPDT switch, but I used the extra terminals as tie points to hold the two added pots in place. Two 2500 ohm pots are now soldered together and wired to the switch as shown in the drawing. At this point it is handy to have a scope available to adjust the auxiliary channel control pip to the proper width. If you do not have access to a scope, just turn pot number one fully counterclockwise, and pot number two, fully clockwise.

Next, connect your modified servo to the auxiliary channel of your receiver and turn the receiver on. Turn the transmitter on and allow the servo to come to a stop. With the switch in the up position, you must adjust pot number one until the servo comes to one end of the 180-degree rotation. Be careful that it does not jam against the top of the feedback capacitor. Now, flip the landing gear switch to the down position and allow the servo to come to a stop. Then

(continued on page 48)

After having tried almost any and every finishing technique around I have found out that most all of them are good if you build up a good base and this is the part that involves a little work.

The systems of final finish I have tried include dope, epoxy, lacquers and vinyl. As all final finishes are easy to accomplish if you spray, the biggest difference comes in the base build-up. I strive to obtain an acceptable finish for a pattern or sport job and don't know if I could obtain a "Platt Special" or not. As a matter of fact, I don't even try. To me an acceptable finish is a medium combination of work, price, and appearance.

Generally, my own method goes like this: On wood surfaces do your final sanding with #400 dry—I try to stick with 3M wet-or-dry paper. Now fill any nicks, cracks, dings, etc., with a good spot putty available at auto supply stores. (I use Dupont or 3M acryl-blue spot putty #5960).

Now remember, at this state, that your final surface will be a copy of what you are looking at right now!

Apply two heavy coats of clear dope and let dry overnight, then sand with #360 to #400 dry then cover with wet silkspan (0-0) using dope as the adhesive. When dry, sand off the overlaps, if any, then fill the paper with 2 more heavy dope coats. Sand again after drying and brush on two to four coats of a dope-talc mix that is cut 50% with thinner (I use Dupont 3656S thinner in the clear dope mixes). Approximately 2 tablespoons of talc to a 2 ounce jar seems to be OK. Now sand with #360, then #400 as final sanding.

Although this base buildup is not the fastest, it is light if well sanded, and can be done while building the frame of your backup ship. The most time involved is in drying time and this is also building time. The actual application and sanding

time entails but a few hours.

OK, now mix your paint for spraying (I use only Dupont products)

- (1) Cut the Dupont Lucite 100% to 125% with 3656S thinner.
- (2) Add some 3979 retarder depending on the weather. If it is hot and damp or just simply damp, this is advisable as the retarder slows down the drying and eliminates blushing. The retarder also works in dope in less than 5% additions. Normally I use about 10% in the Lucite-thinner mix, more if it is extremely damp. Too much will slow the drying appreciably so 15% should be about maximum. I have sprayed while it was raining outside with 15% mixes of retarder.
- (3) Add a plasticizer of your choice. I obtained mine as a sample, but I am sure the commercial jobs are OK. Before the sample was picked up I used about 10 drops of castor oil to 4 oz. of mix and this seemed to be fairly sufficient.
- (4) While the paint sits, clean the part with 3919S Prop-Sol by Dupont. I use a window spray bottle for application and wipe off as soon as sprayed (within 15 to 30 seconds). The Prep-Sol removes all grease and finger prints so don't touch it after cleaning and spray immediately after cleaning. Now hang up the sterile box for spraying. Blow off lint and any loose balsa dust with your air hose. Strain the paint into your gun and go at it. Usually one tack coat and one wet coat will do the job. This painting operation is good for 1 hour including clean up.

When completed allow it to set for two days then rub out with white Dupont compound and reclean with Prep-Sol.

The same 1, 2, 3, 4, procedure is used for the trim. At this point I cop out, although the painting

is easy, I hate to mask off the model so I normally use regular MonoKote for trim with some india ink panel markings or pin stripes. Now get some clear Lucite and follow 1 through 4 and give it a good clear coat over ink, MonoKote and all.

For cardboard surfaces; I use board that is coated on one side with a plastic or enamel. Knock off the shine with #360 then #400 dry and follow 1 through 4. This is a very quick process since no filling is needed.

Well now that you have a good looking model—wait a week or two—wax it, and fly the heck out of it.

Material

- 1 gal. 3656S
- 1 qt. clear (small as it comes in good for 10 planes)
- 1 pt. color (1½ Henchmans' worth)
- 1 qt. retarder
- 1 qt. Prep-Sol
- 1 gal. cheap thinner (for cleaning gun and brushes)
- 1 unit plasticizer

□

BY JACK IAFERT

THE ACCEPTABLE FINISH

A COMBINATION OF WORK, PRICE, AND APPEARANCE

(Reprinted from the Works 'Worksheet')

BY VIC BIRD

SIMPLE, EFFECTIVE MECHANICAL BRAKES

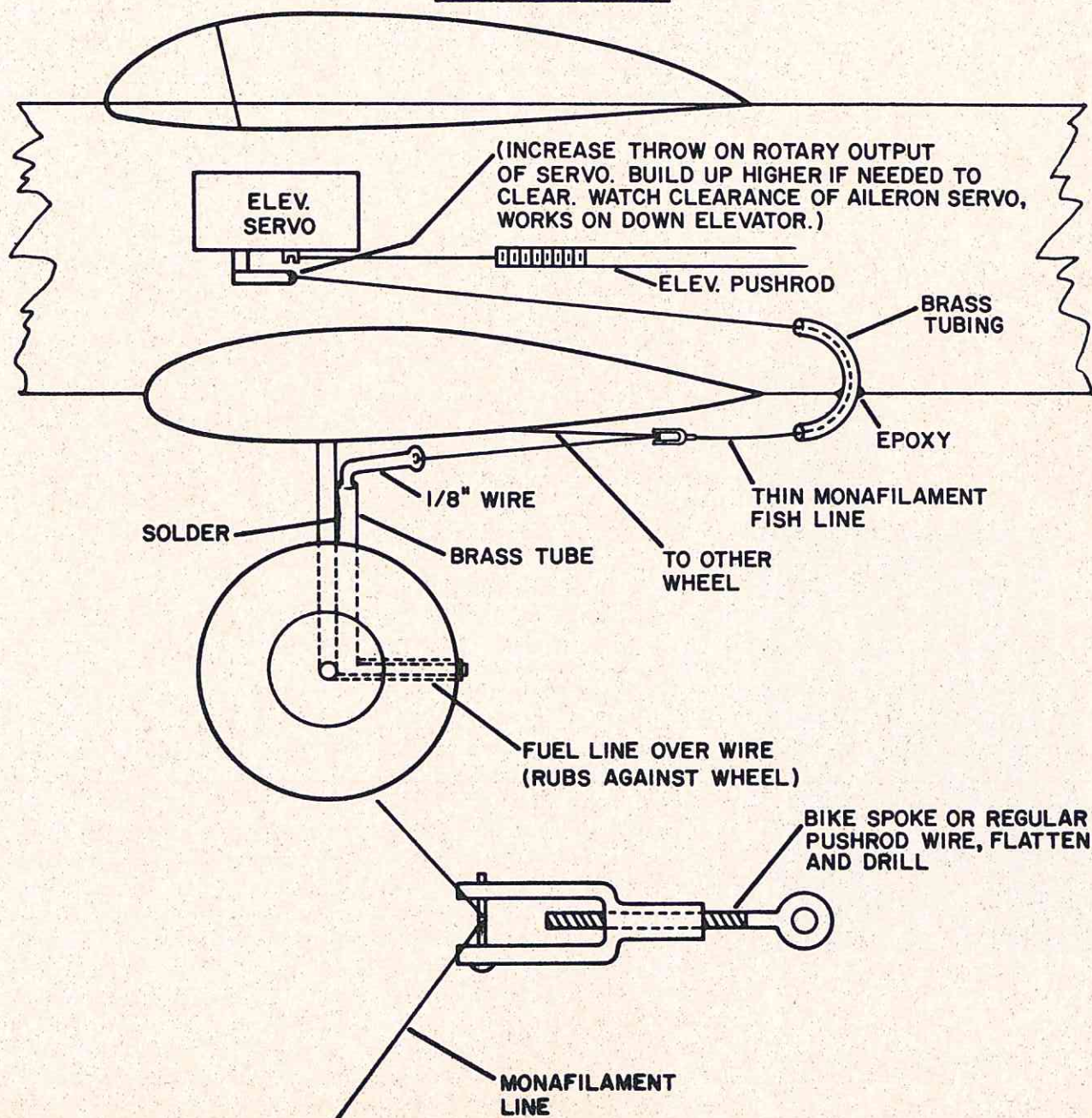
(Reprinted from the Forest City 'Flier')

Although there are many different methods of installing brakes on your aircraft, the most widely accepted and most efficient method is the simple mechanical linkage from the elevator servo to the main wheels. This is not only simple, but inexpensive, and works quite efficiently and will keep you from running into the long weeds. The drawing is completely explanatory and, al-

though you may be tempted to attach the monofilament line directly to the elevator pushrod, you will probably find that it takes more movement than that to operate the brakes properly. The easiest method is to increase the throw on the rotary output of your servo by adding a nylon arm extension made from one leg of a standard nylon bellcrank.

Remember — don't give down-elevator to actuate your brakes until your wheels are firmly on the ground! I did, and it's a little messy. □

BIRD'S BRAKES



10 STEPS TO LINING UP YOUR PLANE

(Reprinted from the Forest City 'Flier')

**Basil Derrough
and
Tony Van Eck**

Many of you are presently planning or currently building that new ship for next year's flying season. Remembering the old saying, "If it's worth doing, it's worth doing right," we would like to apply this to your design whether it be a contest or a sport ship. If you are a contest flyer you will have a competitive edge if you are also a proficient builder. The same axiom holds true for the sport and Sunday flier. With a little forethought and care with regard to construction, we can all come up with a precision aircraft of which we can be justly proud.

First of all, there is the selection of the plane you wish to build. Be it a kit, or scratch built from plans, study the plans and instructions carefully. Think ahead: How is the engine mounted? Is the tank location correct? How about the Center of Gravity, equipment placement, etc? If the design employs a short nose moment, you might have to build more lightly in the tail, keeping your equipment well forward. Make sure your work surface is flat and true, and line everything up properly. Watch the wing and stabilizer incidence as this is quite important. One thing you must remember is that the designer of a given model has probably had more experience than you, so don't change incidence settings, thrust lines, Center of Gravity location, etc., just for the sake of change or because it doesn't look right.

When the construction is complete, and prior to finishing, I like to make a dry run: engine installed, equipment in place, tank installed, etc., and check the Center of Gravity. Make absolutely certain your model is not tail heavy because a rearward CG shift produces a model that will not groove well and one wherein the elevator is extremely sensitive.

Pay attention to the smallest details. Check your control surface movements for binding or glue in the hinges. Is everything

tight with no movement around neutral? If you've ever heard aileron flutter at high speed you know what I'm talking about. Make sure the throttle cable movement is correct and does not bind. Ascertain that the engine mounts are true and solid. I like to button the engine in using socket head screws. The crankcase could distort if the mounts are not true. Make sure the tank location is proper and that the fuel line to the carburetor has no kinks in it. Remember that an engine has to breathe clean, fresh air, so proceed accordingly. If it's a rear rotor engine with the carburetor on the back, make a provision for air entry and get the exhaust exit away from it. A cowled-in engine takes a little time and patience but done properly will run cool and give no problems.

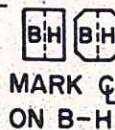
Once your ship is completed and the equipment installed and you think it's ready to fly, give everything a final check out. Make sure all controls move in the proper direction and that the Center of Gravity is still correct. I prefer to run and set my engine at home before going to the field. Get to know your engine inside and out: How much time does it require? When it's running lean, or when it's rich, what is the proper needle valve setting? After the initial run, re-check every nut and bolt for tightness. You may be surprised at what you have overlooked.

When you get to the field be ready to fly — don't find yourself grounded by some simple little thing that will make you look silly. Check the starting battery, glow-plugs, propellers, et al, before you leave home so that you won't find yourself with a dead starting battery or without propeller or transmitter antenna. For most of you, the above is old hat, but if a beginner saves one aircraft by reading these few notes and checking out the ten steps on the drawing included with this article, it will be worth its publication. □

(F) BOTH MUST BE 100% SAME

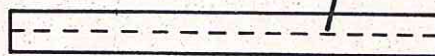


ST. 1

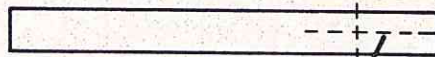


MARK C
ON B-H

C INSIDE TOP BLOCK

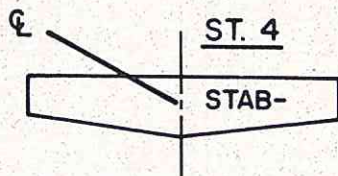


ST. 2



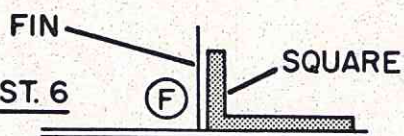
ST. 3

C OUTSIDE TOP BLOCK



ST. 4

STAB-

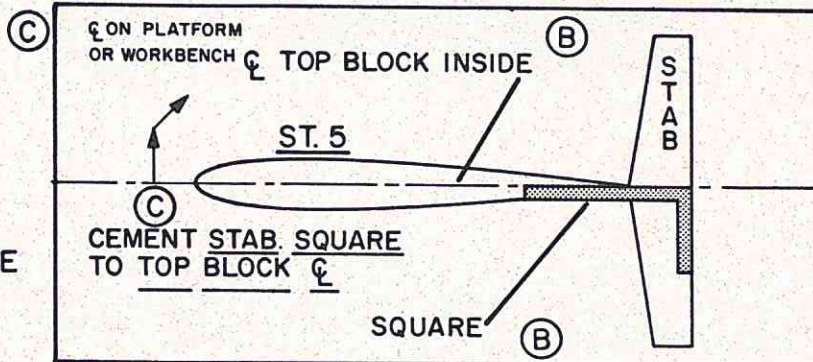


FIN

ST. 6

SQUARE

CEMENT FIN SQUARE
TO THE STAB.



(C)

C ON PLATFORM
OR WORKBENCH

C TOP BLOCK INSIDE

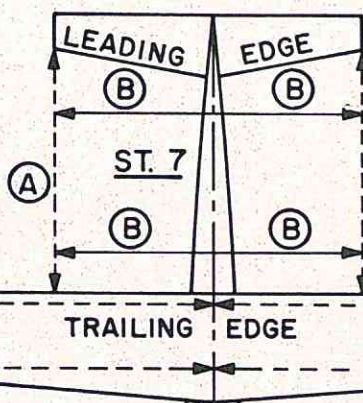
ST. 5

CEMENT STAB. SQUARE
TO TOP BLOCK C

SQUARE (B)

(B) 100% STRAIGHT PLATFORM
OR WORKBENCH

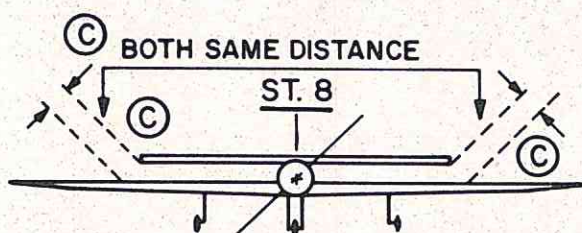
DO NOT USE A PEN
FOR MARKING THE
BALSA.
BALANCE YOUR WING



ST. 7

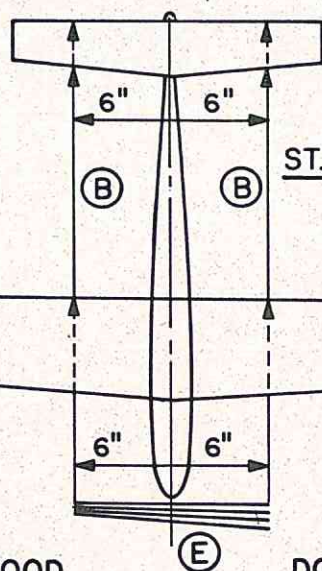
TRAILING EDGE

(A) (B) BOTH SAME
DISTANCE



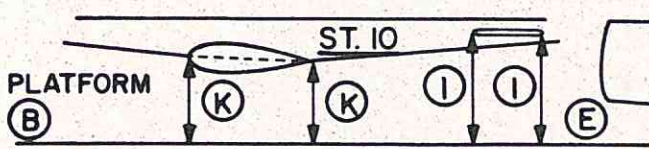
ST. 8

(C) BOTH SAME DISTANCE



ST. 9

(B) ING-SIDE
TRUST



ST. 10

PLATFORM (B)

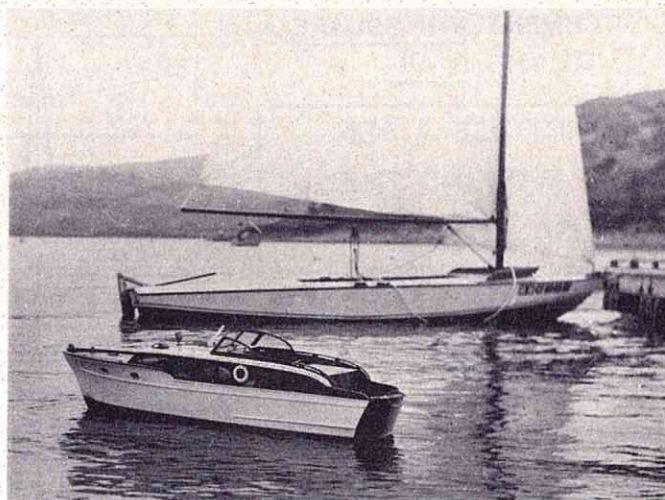
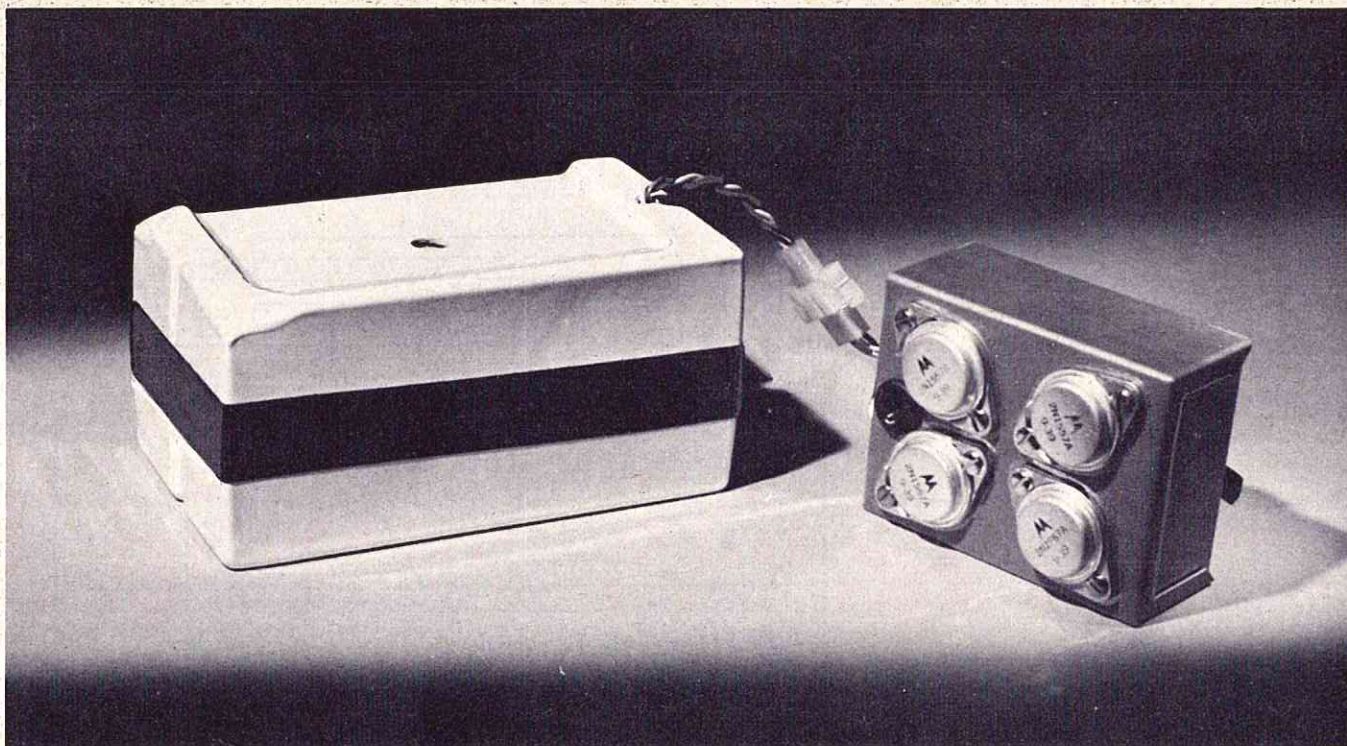
IF 0-0

(K) MUST BE THE SAME

(I) MUST BE THE SAME

USE A WOOD
PROP -(11 or 12")

DO NOT USE
NYLON PROP



Hans Kunzke

The Control Technology Super Driver MD-3 is an all solid state motor driver which operates electric motors in forward and reverse proportional speed. The unit provided to RCM for test and evaluation was supplied by the manufacturer, Control Technology Incorporated, 344 Hamilton, Birmingham, Michigan 48011.

Our tests have been performed in a 48" Sterling Chris Craft model cabin cruiser by the name of Super Sabit. From the very outset, we will state that the MD-3 Super Driver equalled or exceeded manufacturer speci-

cations for the unit. The cabin cruiser used for the test procedures was equipped with two six volt Pittman Boatmasters although we used two six volt leadacid four ampere hour batteries in lieu of the Scorpion battery pack provided and recommended by Control Technology Inc. The leadacid units are preferred to the manufacturers recommended nickel cadmium battery packs since the capacity of two amp hours provided by the latter in conjunction with twin Pittman motors did not give adequate running time.

(continued on page 64)

RCM PRODUCT TEST CONTROL TECHNOLOGY'S

MD-3 SUPER DRIVER

Here is a simple, light, portable, and inexpensive set of pylons that your club can build for Goodyear, Limbo, and Balloon Busting events.

The pylons, themselves, are made up of gold anodized aluminum antenna mast. Their dimensions are 1½" in diameter and 10' in length, a standard size available at most television stores. These units are telescoped together as shown in figure 1 without the use of any additional hardware. Three sections are required for each 30' pylon. One clamp is attached at the top end of the lowest section to secure the guide lines. The latter consists of three 20' lengths of 1/8" sash cord with one stake required for each guideline.

The aluminum mast sections and clamps may be purchased from Lafayette Electronics or your local TV dealer. The Lafayette part numbers and prices are as follows: mast section (3 required per pylon) #18F56145WX at \$2.49 each; clamp (1 required per pylon) #18F63216 at 35¢ each. Attached to the top three feet of the pylons are red, white and blue crepe paper streamers that are 48" long. These make the pylons visible and also indicate the wind direction for the pilots. Masking tape is used to fix the streamers to the pylons. The pylon sections are assembled and lifted into place while the guide wires are made fast to the stakes. The latter are sent 10' out from the pylon base before the pylon is erected into position. The first section of the pylon is also fitted out with paper clips taped to the mast at desired heights. These are used to support the crepe streamer for the Limbo events. A clothespin, string, and six ounce fishing weight are fastened to the streamer, passed over the paper clip, and adjusted to keep the streamer taut. The weight should not touch the ground. For use in Limbo events, the adjusted distance between two pylons is 60'.

These pylons also find a use in

the Balloon Breaking events by suspending a balloon between the tops of the two 10' poles by a thread in the same manner as the crepe paper was used in the Limbo event.

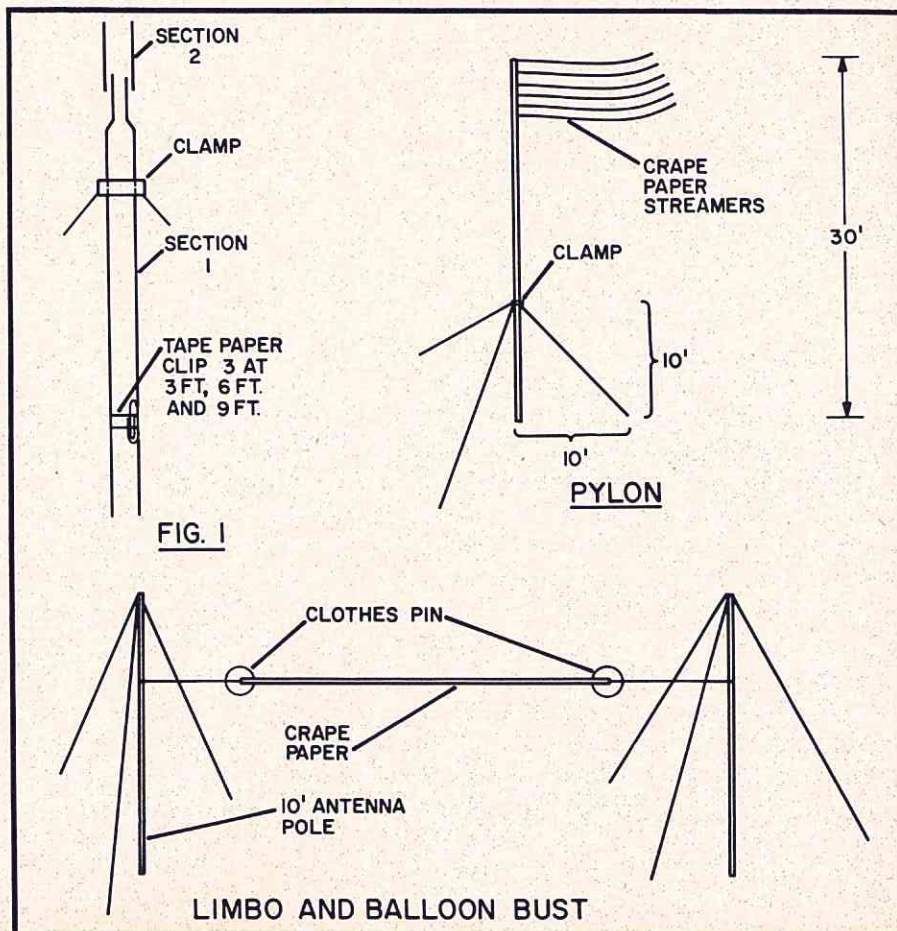
A set of the two 30' pylons cost our club less than \$20.00 and were used successfully in all three events during the flying season. □

MAKE YOUR OWN PYLONS

AS A CLUB PROJECT, THESE INEXPENSIVE PYLONS ARE
RUGGED AND EFFICIENT AND CAN BE USED FOR
GOODYEAR, LIMBO, GLIDER, AND BALLOON BREAKING
EVENTS.

By Richard F. Tax

Rockland County R/C Club



FOR WHAT IT'S WORTH

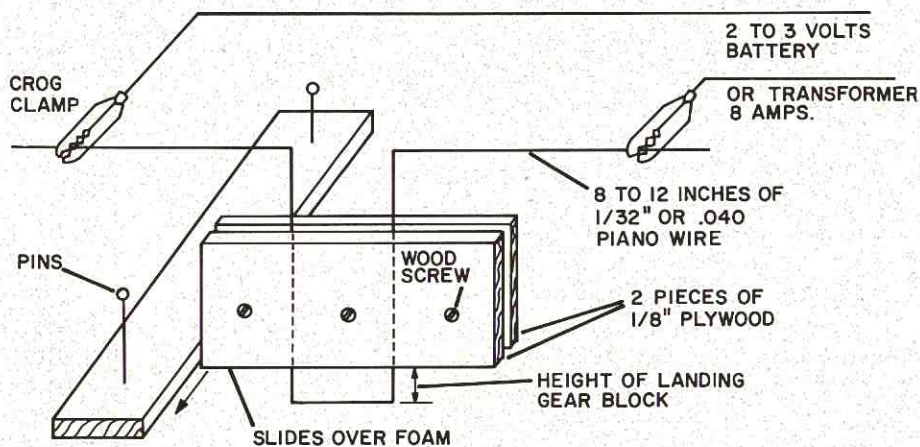
Roy McGuckin of Pittsford, New York, suggests that a good source of light gauge sheet metal for making those special pieces of hardware or for cowlings is from empty pint and quart dope thinner cans. The metal is flat, plated, clean and easily soldered. Be sure to wear gloves when cutting off the top and bottom, as the edges and corners will be extremely sharp.

Sid Kauffman, of Durham, North Carolina, found himself in desperate need of a funnel to filter and transfer some fuel from one can to another. The trash can produced an empty Clorox bottle. Cutting the top off yields a reasonable funnel complete with handle.

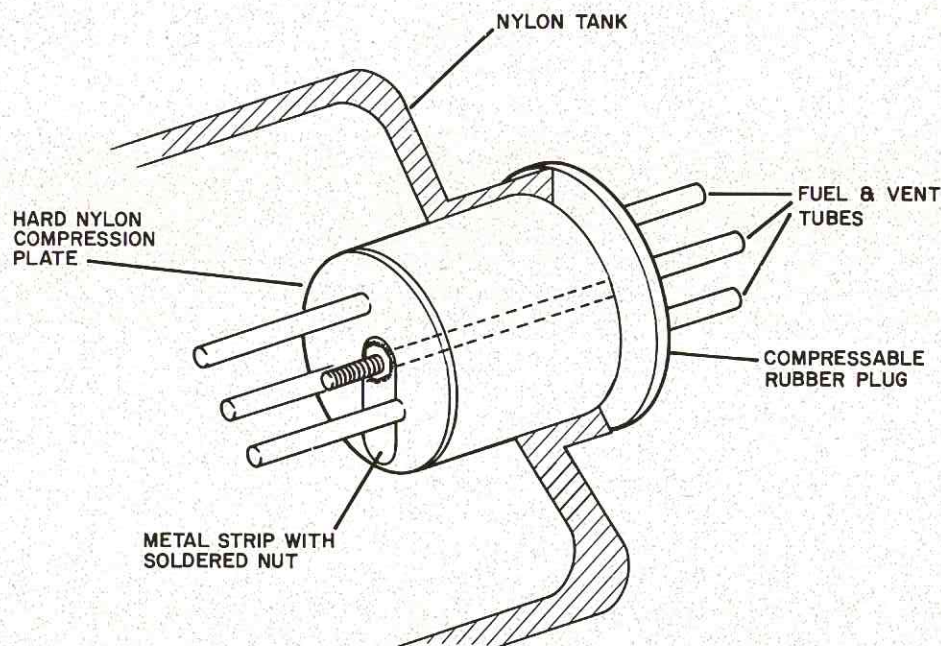
Eight year old Kurt Hurley, of Fremont, California, suggests two strips of Coverite stuck together back to back with a hole punched in each end for an outstanding, durable and flexible hinge. These are quite simple to make and will outlast many commercial hinges.

If you've ever experienced difficulty in refinishing the motor area of a model which has been soaked with fuel, you will find that several applications of a talcum powder pack will soak up surface oil sufficiently to allow Super MonoKote to stick or dope to be refinished. This idea was submitted by Dan Caswell, of Lockport, New York.

Pierre Hoffman, of Luxembourg, Europe, submitted this sketch for the channeling tool which he uses for foam wings. It is quite easy to work with and the temperature of the piano wire can be regulated by simply moving the alligator clip. Pierre bends different forms for landing



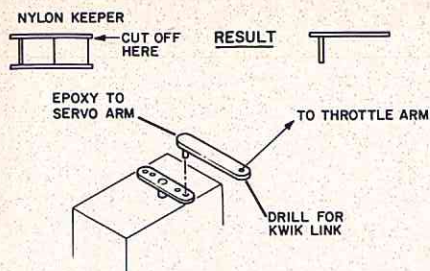
gear blocks, spars, and even servo cutouts.



(DO NOT PROTRUDE BEYOND O.D. OF RUBBER PLUG ON SOME TANKS, TO LONG A TAB MAY INTERFERE WITH TANK WALL)

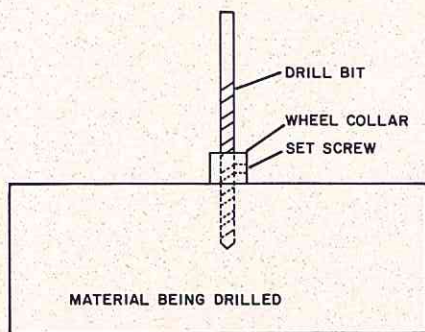
Since the majority of fliers are using the nylon fuel tanks that use a compressible plug to seal the fuel and vent tubes when tightened, they have also experienced a particularly frustrating problem if care was not exercised. This is evidenced by stripping out of the plastic compression plate by overtightening the sheet metal screw originally furnished with the tank kit. Using a larger screw will sometimes cure the problem. If you are the

person, however, that wants to insure a tight seal, the larger screw will not last long before it too becomes stripped. A solution to this problem is to replace the sheet metal type screw with a bolt and nut of appropriate size. Solder the nut to a metal strip, leaving a short tab. Enlarge the hole in the nylon compression plate and drill a hole in the metal strip at the soldered nut to provide for the bolt passing through the strip. When the bolt is tight-



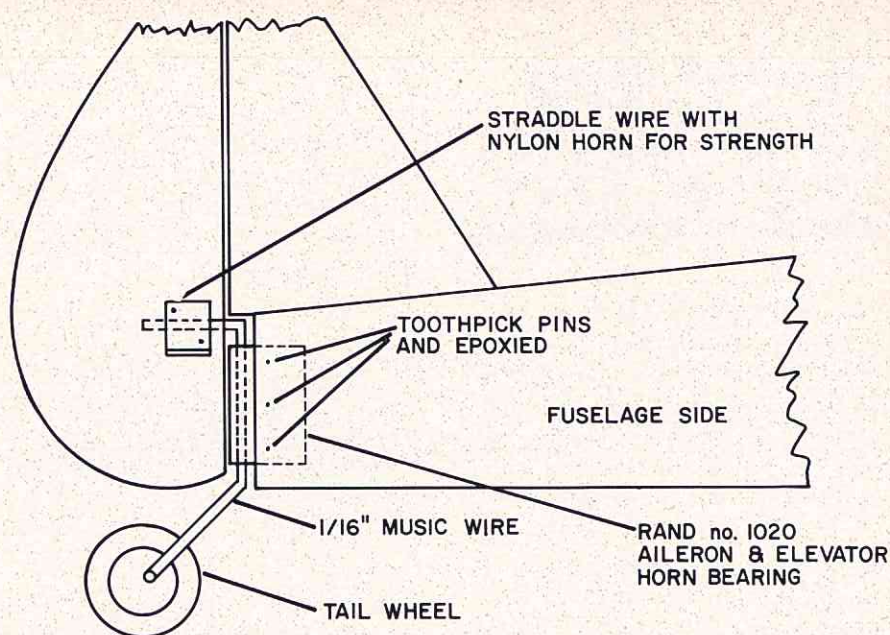
ened from the outside of the tank in the usual manner, the tab will rotate a small amount until it binds itself against one of the internal tubes inside the tank. When loosening to disassemble, the tab will swing in the reverse direction. This arrangement will be less apt to strip and will normally provide a tighter seal than the original hardware furnished with the tank kit. The accompanying sketch should serve to clarify this description. This idea submitted by Lou Bagnato, of Jacksonville, Florida.

Sarge Johnson, of Federalsburg, Maryland, has experienced difficulty in obtaining enough servo throw to actuate his engine throttle. To remedy this problem he cut a nylon keeper in half leaving the tip in place, then placing the tip in the servo arm hole and with a small amount of epoxy on the end he developed an extended arm for additional throw.

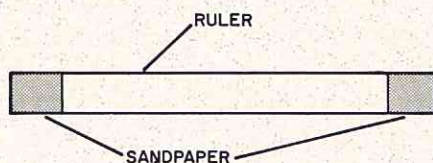


If you need to drill holes to a measured depth, try using a wheel and collar on your bit — this keeps the drill from going too deep. This sketch from Dale Stambaugh, of Modesto, California, will explain how it works.

James Kraft, of Marysville, Kansas, has found a very effective method for installing steer-



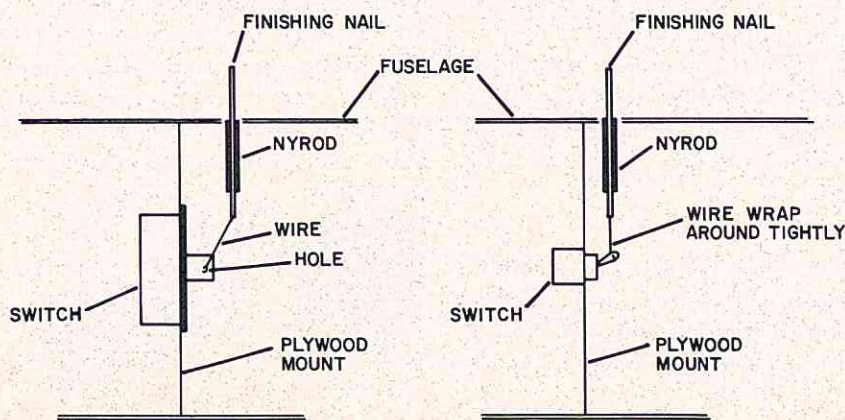
able tail wheels in R/C airplanes. His method employs a Rand #1020 Aileron & Elevator horn bearing and is quite simple to install and has proven to be very strong. The accompanying sketch is self-explanatory.



If you have experienced difficulty with your ruler slipping along the balsa, etc. while cutting glue a couple of pieces of extra fine sandpaper to the back of your ruler with the sanded side out and you will have developed a non-skid ruler for use in your shop. This idea submitted by

David Smith, of Islington, Ontario, Canada.

If you fly sea planes and have difficulty with water getting in your R/C switch and shorting it out, here is a way to solve your problem from Stan Moote, of Brampton, Ontario, Canada. Drill a hole in the switch and connect a NyRod to the hole with a Kwik-Link clevis or a piece of wire. Or, you can simply use a NyRod and connect to the switch by wrapping a wire around it. Be sure to put vaseline on the NyRod to prevent water leakage. Make sure the head of the finishing nail is inside the Nyrod so water will not get in or alternately when the switch is out, it will not be pushed out and lost. □

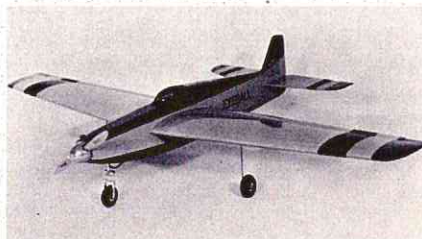


TAKE A LOOK AT THIS..

Carl Goldberg Models Inc., 2549 W. Cermak Rd., Chicago, Illinois 60608, has, for some time, produced one of the most outstanding lines of RC accessories and fittings available. One of the many new items scheduled by this company for 1971 is a steerable nose gear which is much simpler to use than their previous model as well as being more versatile. The steering arm can be to either side or may be slightly up or down as may be required by individual installations. It can also be mounted on the bottom if a collar is added in the slot. The steering arm is stiff enough for good control yet flexes under shock to protect the servo. The collar used is steel and the screw is hardened. You can really torque this unit and obtain an excellent grip on the music wire. Carl Goldberg Models has also retooled their popular Mini-Link which includes a new feature of a ring molded inside the arm which snaps into a groove in the pin, adding security to prevent accidental opening of the link. Carl Goldberg also states that they've had a continuing demand for their older Adjusto-Link so they have gone ahead and retooled it but in the style of the newer Mini-Link. Prices on the above items will be \$2.95 for the new blister packed nose gear and 29¢ each for the Mini-Link and rod and 40¢ a pair for just the nylon end alone. Tested, approved and recommended by RCM.

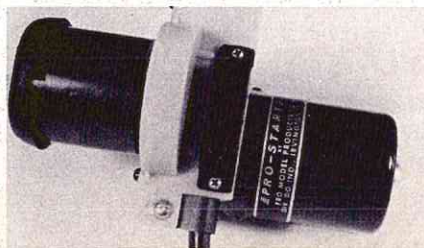
J & J Industries, R/C Model Aircraft Division, P.O. Box 202, Oakhurst, New Jersey 07755, is now offering Art Schroeder's Eyeball in kit form. Containing all AAA grade balsa, the kit is

highly prefabricated with all balsa precut to exact kit shape. With a 12 hour construction time, the Eyeball is an outstanding design that will do every conceivable AMA and FAI maneuver. Recommended engine is .60 cubic inches only. Price of the kit is \$49.95.



A new Veco .19 R/C "Series 71" for model planes and boats or as an in-line engine for model race cars is announced by K & B Manufacturing, 12152 Woodruff Avenue, Downey, California 90241. A new hemispherical head, machined from aluminum bar stock, and with extra deep fins assures cooler running and increased power. Machined surfaces of head and crankcase eliminate need for a head gasket. All other features remain the same as the previous model. Engine retails for \$30.00. For increased speed the "squish band" head is recommended. Price is \$3.50.

Pro-Model Products, Division of D G Industries, 1080 Springfield Avenue, Irvington, New Jersey, has released their Pro-Start, a new starter that features rugged lightweight construction; compact design for easy handling; high torque gear box for easy starting; heavy duty ten foot cord; revolutionary Posi-grip driver unit; and special adapter for model cars and boats available as an optional accessory. Price of the Pro-Start is \$19.95. Also available from Pro-Model is



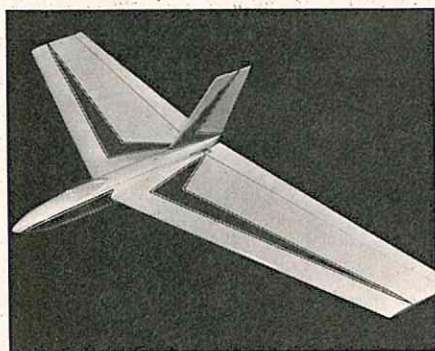
a patented spinner which features a new two piece design for quick mounting and removal and especially designed for use with electric starters. Available in 1¼", 1-5/8", 1¾", 2", and 2¼" diameters, the spinners are available in red, black, white, blue, yellow, and silver. Dealer inquiries are invited.

New from Lanier Industries, Briarwood Road, Oakwood, Georgia 30566, is their Comet II. After many years of success with this design, Lanier has re-styled the Comet to make it look a lot better. They have changed the access hatch and added some plywood pieces to the aft fuselage to really beef it up. It has always been an outstanding flying aircraft and the new Comet II evidences the same excellent flying characteristics. Price is \$46.95. Also new from Lanier is a new 48" shoulder wing ship for the 'no-aileron' crowd which will replace Lanier's Jubilee. The Aztec is designed for a K & B .40 and should be one of the most popular sport designs available in 1971. Price is \$34.95. Also of interest is a unique float set-up from Lanier which they have been testing for some time and have now perfected. This float allows any standard .60 size low wing model to fly off water and convert back to a land plane in 15 minutes. It is unique in several ways, one of them being that it actually gets off the water — even very smooth water quite easily. Further information will be available on this kit in the near future.



Model Dynamics, P.O. Box 2294, Orange, California 92629,

has produced one of the most highly prefabricated and outstanding kits we have seen in some time. In addition, the Gryphon slope soaring glider is an entirely unique concept in sail planes. With a building time of approximately 8-10 hours from the precision machined kit, this glider flies like a powered multi and is fully aerobatic including spins, inverted flights, inside and outside loops, as well as maintaining ability to stay aloft in minimum conditions. With a span of six feet and an area of 860 sq. inches, the all up-weight complete with radio equipment is 2½-3 pounds. Two channels of proportional equipment are required for this aircraft. Priced at \$34.95 FOB Los Angeles there will be immediate shipment on money order and cashier check orders although personal checks must clear before shipment. R/C Modeler Magazine has tested and flown the Gryphon and have found it to be not only an outstanding kit, but one of the most unique and exceptional designs from a performance standpoint that we have ever had the pleasure of reviewing. A complete building review will appear in a forthcoming issue of RCM. Tested, approved and recommended by RCM.



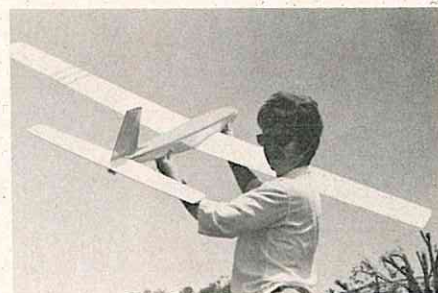
Carroll Craft, 1800 East Yale Avenue, Denver, Colorado 80210, has released their all new Splinter A.R.F. kit. Designed by Ed Carroll of Carroll Craft Products this design has been flown by beginners as well as experienced modelers. It's fast assembly, outstanding performance, and handling characteristics make

this model a welcome addition to your R/C pleasure. Priced at \$52.95, the kit features a 5-6 pound flying weight and is designed for a .45 to .60 engine; a 60" wing span with 610 sq. inches of area; plastic covered wings and stab; a vinyl plastic molded fuselage; and a kit that has undergone 2 years of test flights and is capable of the entire AMA and FAI pattern.

XL-ent Products, a Division of PJS Hobbies, P.O. Box 347, Port Jefferson, New York 11777, announces their appointment as the United States distributors for the famous ED Product line, Manufactured by Electronic Developments of England. ED Products include model boat kits, air-cooled and watercooled diesel engines, and a large line of model aircraft and boat accessories. ED model diesel engines are manufactured in .09 through .30 sizes, both watercooled and aircooled, and with or without R/C throttles. The ED model boat kits are made with fiberglass hulls and wood superstructure. At the present time there are two available, the Krak-A-Long and the Nippy. The ED line of accessories include some that should become industry standards, among them the "Super-Safe" control horn and a series of fuel tanks designed especially for model boats and cars. The XL-ent Products 1971 catalog of over 40 pages is available for 50¢ which is refundable with the first order. Dealer and distributor inquiries are invited.

The Jalapeno aerobatic slope soarer and pylon racer is designed and manufactured by Jac-Mac Models, P.O. Box 3196, Ventura, California 93003. A highly prefabricated kit of outstanding quality balsa, the Jalapeno features either a high or low wing of 71" span with a wing area of approximately 610 sq. inches. The fuselage length is 43" with an all up-weight of 2½-3½ pounds. Designed to fly on rudder, elevator and ailerons, the

Jalapeno has a computerized Eppler airfoil designed for aerobatics. An all balsa kit, the parts are precision machined sanded with such features as plywood fuselage doublers, wing leading edge notched for ribs and grooved for sheeting, and a set of instructions to compliment the highly prefabricated kit, all adding up to quick construction and more flying time. Priced at \$27.95, the Jalapeno is available at your local dealer or direct from the manufacturer. Tested, approved and recommended by RCM.



The first fully assembled production R/C racing car is also the first such vehicle with exclusive Unicast precision scaled body for utmost strength, detail and protection. We are talking here about the new fully assembled car from Model Car Enterprises, Inc., 944 Third Avenue, Brooklyn, New York 11232, who is exclusively represented by Model Rectifier Corp., 2500 Woodbridge Avenue, Edison, NJ 08817. Another first for this new vehicle is 100% steering servo protection, provided by a device on which a patent is currently pending. Designed for the expert R/C car enthusiast as well as the beginner, the radio, car and engine fully assembled are priced at \$249.95, or the car may be purchased fully assembled for \$89.95 with only the engine and radio installation required. The two channel, two servo digital radio is priced at \$160.00, if purchased separately. Tested, approved, and recommended by RCM. □

SUNDAY FLIER

KEN WILLARD



I've been working too hard.
"Whaddaya mean, you've been working too hard! Ya' been flying a new sailplane in contests, and flying your seaplane, the Islander, in contests, and having a ball! You call that work?"

I can hear your reaction right now. But you're missing the point. Sure I've been having a ball; but then I've been sitting down and writing about it, and that's work. Sure, it's pleasant work — but that doesn't change the fact that I've been working too hard. Let me explain.

I'm supposed to be an "Associate Editor." I run a column; I can editorialize, but this column is for Sunday Fliers — my associates, if you please — and they should help write the column. So it's time to turn it over to them for their turn. And that means you. So this month I'm gonna' relax a bit and let some of you speak out, through the medium of some of the letters which I've picked out of the mail. OK? Here goes.

Long overdue for airing are some comments I received from Tony Baker, Secretary of the Marquis Flying Club in Weymouth, England. Tony first wrote me last April; here are some excerpts:

Dear Sir:

I feel I must write and comment on your soaring column submitted by Otto Stensbol on pages 46-47-58 of the May edition of R/C Modeler.

Every photo published of the European scene has the most outdated gear I have ever seen!! On page 46, May issue, how about those three

TX's!!! Two look like very early digitals and one is a Grundig tuned filter outfit, which in my experience, has never even been seen at the European sites I have visited over the past five years!

So I think perhaps you ought to get another point of view rather than have someone from Sweden, or is it Denmark, giving you the run down on what seems to me to be a floating thermal type of event with points for circling two or three flags and then ending in what can only be described as a spot landing event. The members in our club would not like you to think that Mr. Stensbol is speaking for them.

To really get a good idea of the slope soaring movement in this country (England) then a browse through Dave Hughes column "Strictly for Soarers" in the English magazine 'Radio Modeller,' is quite a revelation.

The club that I am a member of, has 65 members with well over half of these being very keen soaring fans.

We fly every Sunday, and this time of the year, most evenings also. We are lucky in having some really super slopes that you can just drive to the top of — get out of the car and just start soaring.

We have organized two "Soar In's" so far this year, the first we wrote and phoned all the clubs in the area we knew had a soaring interest, and the attendance, quite honestly, was unbelievable! Loads and loads of soaring fans arrived!

The second meeting we advertised in the 'Radio Modeller' and as you can imagine being advertised nationally, the attendance was phenomenal! I think we all underestimate the interest there is in soaring all over the world.

The models flown at our meetings and used generally throughout the country have an almost flat wing with

usually an Eppler 374 section — this gives good slow speed handling, and is ideal for fast penetration on really windy days. In pylon racing almost all of the top pilots are using nearly flat wings with strip ailerons and quite a few all moving tails are to be seen.

The photos I have enclosed show the type of models that are being flown locally. The yellow model "Ridge Rider" is our own design fiberglass bodied, foam wing, and foam all moving tail aerobatic machine. It is capable of loops, banks, rolls, inverted flight, inverted horizontal eights, spins, etc. and is very, very fast — making an ideal pylon racer.

The orange and blue model I'm holding weighs 5½ lbs. and is kept for really heavy weather! Perhaps you would be kind enough to publish my remarks or photos to let the American soaring fans know that we are not all behind the times in Europe!!

Incidentally, thank you from all 65 of us in our club for a really super magazine.

*Yours faithfully,
Tony Baker*

Unfortunately, the photos he sent were not satisfactory for publication. So, I wrote back, and about three weeks ago received another letter, this time enclosing some black and white photos of his scale Skylark IV and his original "Ridge Rider." I would way that his contention that sailplane design and equipment in use in England rivals that which we use in the United States is certainly borne out by the photos. That Ridge Rider looks like it would be a formidable competitor in any slope soaring race. Here are a few remarks from his later letter.

(continued on page 56)

Well, here we sit on the IP seat in a B-52 high above Texas heading north on a routine training mission. Over in the Aircraft Commander's seat sits our regular typist, advisor, flying buddy and Guinea Pig, a one Maj. John Banta.

John typed the first six articles and is the builder and owner of the second "Chigger" which has been built. He is a super professional, very cool and calm, deliberate military bomber pilot and probably, because of that, his initial chickout in "full house" proportional R/C flight consisted of the last half of a "Chigger" flight followed by a solo flight!

We have taught well over a hundred modelers to fly "in person" and as a result of the GEMS column in RCM have been considered a "teacher" by many isolated modelers. As yet, we see no correlation in any way between experience (either real or model planes) and ease of learning. As a matter of fact, we see no correlation between anything, which points out the fact that we are each a unique individual and should be considered by all as such.

We are sitting here watching John fly his B-52 and reflecting on the Dallas R/C club's annual spring meet just completed four days ago. There were over fifty individual entrants in the pattern competition and if you've ever been to a "pattern" contest you'll swear all fly alike — BUT — they don't!

This writer hasn't flown in pattern competition since 1967 partly because of the Vietnam thing and partly because we were tired of hearing the continual griping about contest judging. So we entered the new class "D" pattern event after a three year layoff and, due to excellent coaching of possibly the finest competition flyer in the world, we finished somewhere besides dead last!

You may not realize it yet but this story so far has several important points for you to consider so let's look at 'em one at a time.

The first is: You can't expect to win any pattern competition on the "D" level without the practical discipline of a professional military pilot like Major Banta. This means we must fly frequently and often! Like two flights a day at least five times a week and each flight must be the complete pattern in order! Once to the left and once to the right. And so on!

The fantastic Ted White is our personal mentor, who gave us our

initial checkout on proportional flight way back in 1963! He is without a doubt the best single Radio Control Model Pilot in the World today! We don't mean to slight any one with such a statement because, for instance, he is not the current world champion. But — Ted White has won, and does win, regularly in all phases of competition as far as pattern and pylon go. Then, in addition, he also wins at the crap shoot, carrier, limbo, spins, musical pylon, open pylon, and, for that matter, all other categories of fun flying. He even wins at combat (13 midairs to date notwithstanding!) Then, in his spare time, he flies a Schweitzer and a Phoebe slope soarer and he is regularly employed as a test pilot flying experimental model planes for the Sandia Corporation. Then for frosting on this cake, he is president of the Galatron Corporation which makes the R/C gear he flies.

The point is — even with a coach of this calibre, winning is not automatic!

Well you say — what else is necessary besides good guidance and discipline? There are many other things needed. One is a better system. Ted White has a proposal for a better system which we believe has considerable merit. We won't expound on it just yet as it is scheduled for publication in a future issue of RCM. We can say it is based on the real airplane FAI programs and, additionally, calls for the judges to be far removed from the pilot (which will really cut down on the "song and dance" pilot scores!)

Another thing is the design of the plane. That is much too complex to go into at this time and will be the subject of future articles, anyway. So you can begin your routine for now by

choosing a proven winner of late vintage!

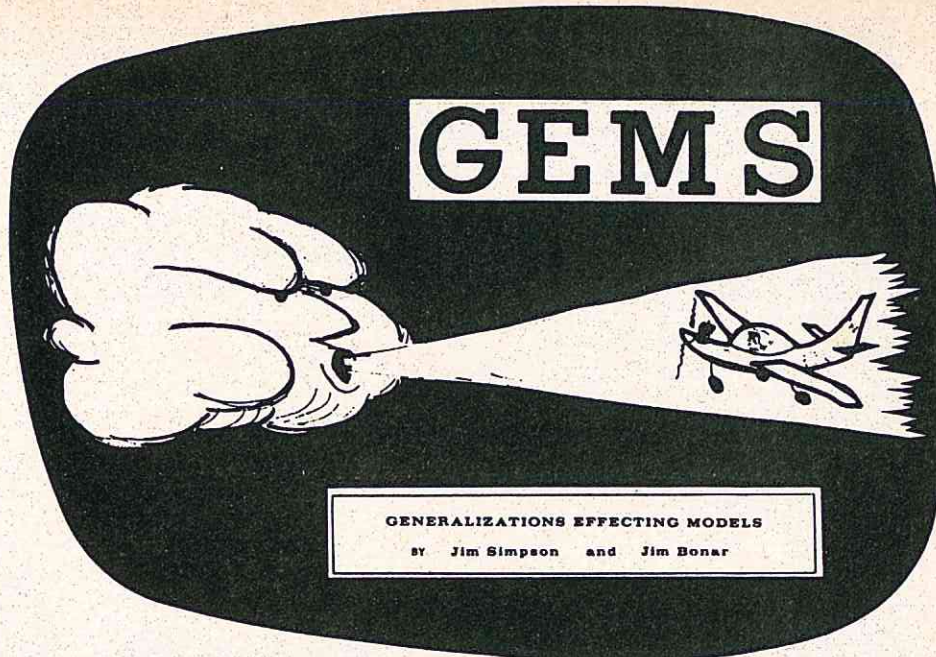
Did you notice that if you stick with the same plane and a disciplined regimen that your proficiency goes up by the square thereof? Why do you think people like White, Kraft, Bonetti, Etc., stick to the same basic plane? It's so they can beat you, that's why! And they do, too, don't they?

Now, about you and the competition. There are many, in fact the vast majority of fledgling pilots who enter the A- Pattern, then B-Pattern, then C-Novice, then C-Expert when they get run out of C-Novice. You can't help but wonder if all the other countries in the world have a similar structure? And how about this; when you've won A or B-Pattern or C-Novice at the Nationals who have you beat? Or, in other words, why not learn one pattern and learn it well? No matter, there are arguments each way — in the interest of time (yours) and to keep a promise we made in the beginning about world championship — we will now consider the FAI pattern.

The FAI pattern is your vehicle to a world championship via a trip to Europe. Certainly a prize worth shooting for!

To compete in this category you must be an AMA member and, as such, you will have a book of Model Aircraft Regulations, and in this book are found the guidelines for our vehicle!

Technical Regulations for FAI competition exclude metal propellers and require national identification marks (minimum sizes are listed), and so forth. The point is this is the first
(continued on page 62)

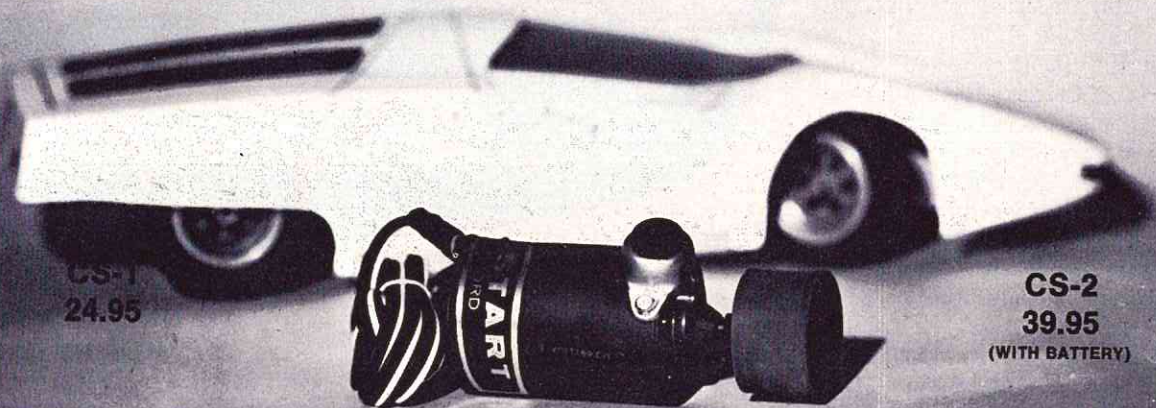


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HEATH SERVO FOR RETRACTABLE GEAR

(continued from page 33)

adjust pot number two to obtain the other extreme of the 180-degree rotation. Some good advice would be to check the rotation several times to see that the servo is not jamming at either extreme of the operation.

The unit was installed in a Citron and given a thorough bench test during which it worked flawlessly. At the flying field it proved that it would work as well in the air as it did on the work bench. Several weeks and many flights later, a cross-controlled inverted spin went flat and stubborn and proved to be the demise of my test plane.

Faced with building a new plane, I decided to go for a nose gear also, as I never could make a good take-off with a taildragger, and since I was able to borrow a Posittract nose-gear unit from a friend, I decided to see what could be done with one of these.

Having already learned that I could parallel the auxiliary channel output from the receiver and operate two servos simultaneously, I took another servo-circuit board and wired a 220pf capacitor in place of the variable feedback capacitor, and then hooking the wires that went to the servo motor to the Posittract unit, I flipped the switch. The nose gear would work, but it was very slow. The Posittract instruction sheet shows that the unit should be operated at 3.6 volts instead of the 2.4 volts that I was using. Various methods were attempted to increase the available battery voltage to the nose gear unit, some of which resulted in ruined output transistors. Removing resistor R 15 (47ohm) from the circuit board, opening up the connection between the collectors of the two output transistors, and wiring two additional ni-cads in series as shown in the drawing, proved to be the solution. □

ENGINE CLINIC

(continued from page 12)

the engine may be available through World Engines.

I just recently received one of the Graupner-O.S. Wankels from Japan and ran some very interesting tests. I will not go into the history, design, or system of operation of the Wankel engine as this has been covered many times in other publications, both model and automotive. My English friend, Peter Chinn, just recently did a two part article on the development and design of the Wankel, so anything I might say would only be repetitive. I suggest that, if you are really interested in the operating principle behind the Wankel engine, that you read Pete's write up in the September and October issues of Model Airplane News.

What I am going to do is tell you of my findings from the operational standpoint, having

SILENCE-AIRE...THE EXPERTS CHOICE!

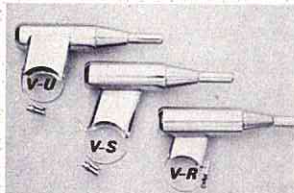
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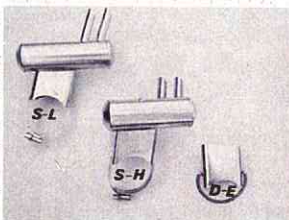
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flown a Wankel engine on the front end of a Little Stik for several weeks now.

Prior to running the engine I was a little skeptical of its performance, having read and heard of other individuals experiences with the engine in the past. Heavy, hard starting, lack of power, etc. Some of these original engines were prototypes, and like every new product, have bugs to be ironed out. The engine I tested was a regular production engine and accounted very well for itself. In fact, to say I was very surprised and impressed with the performance of the engine would be an understatement!

I had read in the past that the engine was very difficult to hand start, and an electric starter should be used. This is most true. You are wasting your time and a lot of energy if you try to start the engine by hand. An electric starter is a must. (Ed's Note: We have another production Wankel which we have currently been flight testing and have found it to be quite easy to start by hand without the necessity for an electric starter. We have found that the engine is extremely reliable in all flight attitudes with exceptional power—equal to most conventional .35's and .40's. Simple readings with a Thumb Tach gave us a consistent top end of 13,800 RPM with an idle of 2500 RPM. Prop used was a 9-6 wood and fuel was Low-nitro Content Tiger. We share Clarence's surprise and enthusiasm for the performance of the Graupner-O.S. Wankel.) The engine does not have a definite 'on-compression' feel like our conventional engines, being similar to starting a V-8 auto engine with a hand crank. However, this is no big problem due to the availability of several electric starters on the market now. 90% of the pylon fliers are already using them.

The engine likes to be started quite wet. The best starting procedure seems to be to put

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Photo of Bernie Murphy's Tripe, flown at Rhinebeck

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your finger over the venturi and hit the spinner with the starter. When the engine starts to pop, remove your finger and the engine will take off running. The first thing you will notice is the quietness of the engine. It makes noise, yes, but considerably less than conventional engines of the same displacement. I first ran the engine without the muffler that comes with it. With a muffler it is even quieter. When equipped with the muffler you only hear a low roaring noise in the air. If another airplane with a conventional engine is flying at the same time you do not hear the Wankel at all. Someone made the comment that it sounded like a roaring sewing machine, and I believe this to be a good description.

After starting the engine for the first time and setting the needle, I started to throttle back slowly to check the idle — expecting it to die at any time. It throttled down and set there idling beautifully without even touching the air bleed or making

any adjustments. The idle was about 2700. Later experimentation has shown 2700 to 3000 to be the best idle speed. The engine is very reliable at this setting. Below 2700 it has a tendency to suddenly stop without warning.

How about the top end? This is where the big surprise came in. I had read, in the past, that Wankels do not have the power of conventional engines of the same displacement. Maybe I just got hold of an exceptional engine, but this one really hauls! I have used many engines on the Little Stik from .19 through .36 displacement. The .30 cubic inch Wankel pulled the Stik as well as some of the .35's that had been used in the past. It would go through the complete pattern without sagging, never died during spins or touch and go's, and remained running until we killed it after taxi back at the end of each flight. RPM checks were made with various props and these are the findings. 9 x 6

Top Flite — 12,500. 9 x 7 Top Flite — 11,700. 10 x 6 Top Flite — 10,500. 10 x 6 Power Prop — 11,000. All of these figures are extremely good and there are not many R/C .29's or .30's that can top them. In fact, the standard O.S. .30 will not equal these readings. The engine seemed happiest when turning up so we used the 9 x 6 Top Flite prop. These readings were taken without the muffler and using Cox blue can fuel which is 15% nitro. Installation of the muffler lowered the readings by only 200 to 300 rpm. This small drop in rpm is brought about by the small exhaust port on the engine — being only slightly larger than the muffler outlet. If the muffler outlet were the same size as the engine exhaust port, I doubt if there would have been any rpm drop at all. With the engine as quiet as it is the muffler outlet could be enlarged to the same size as the engine exhaust port and still be an extremely quiet engine.

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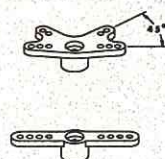


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Stk. No. ASL-29

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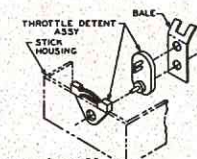


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02	Long Control Horns	.79 pr.	22	Wing Bolts 1/4-20 x 1-1/2"	.59 pr.
03	Mini Control Horns	.79 pr.	23	Wing Bolts 10-24 x 1"	.59 pr.
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05	Aileron Links	.79 pr.	25	Nose Gear Bracket	.59 ea.
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07	Push Rod Retainers	.59 4	27	Antenna Exit	.59 4
08	Push Rod Exits	.59 4	28	Throttle Detent (Kraft)	1.29 ea.
09	Steering Arm	.59 ea.	29	Aileron Swivel Links w/Horns	1.59 pr.
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11	Missing Link	.79 ea.	31	Servo Output Arms (Kraft)	.98 2
12	Missing Link w/o hardware	.79 pr.	32		
13	Dual Output Servo Screw	.59 3	33		
14	Quick Mount Servo Tape	.79 yd.	34		
15	Throttle Eze	.98 ea.	35		
16	Bellcrank for Orbit Servo	.98 ea.	36		
17	Connector Locks	.79 4	37		
18	Override Device (Kraft)	.59 ea.	38		
19	Override Device (World Eng.)	.59 ea.	39		
20	Override Device (Log III)	.59 ea.	40		

WATCH HERE FOR MORE TO COME!!!!

The engine did use a little more fuel than conventional engines of the same displacement. We normally obtain 10 to 12 minutes with a six ounce tank while the Wankel averages 8 to 10. The engine has only had a dozen or so flights and was being kept on the rich side. With additional running I would expect the fuel economy to improve.

What the life expectancy of the engine will be I cannot say. It is a beautiful piece of workmanship and O.S. certainly did an outstanding job in its production. The crankshaft runs on two ball bearings and a needle bearing. The three lobe cam, or rotor, that replaces the conventional piston also runs on a needle bearing. Every effort has been made to insure long life. However, the rotor does depend upon a lapped fit for sealing on both sides, and spring loaded vanes at the tips of each rotor lobe. What will happen when some of you hackers out there start running dirt, etc., through

the engine will remain to be seen!

Besides being extremely quiet, the engine is also very smooth. It does have some vibration — less than a conventional .30, but by no means as smooth as an electric motor as one might hope for. The engine is heavy for a .30, weighing 12.7 ounces. Possibly, with future development, the weight can be decreased. The main body of the engine is steel as is the rotor. This is to allow for equal expansion rates. I am wondering if hard chromed aluminum for the body could not be used along with an aluminum rotor. The model engine Wankel is in its infancy and I would imagine considerable performance improvement will come about in the next few years. I can see room for improvement in the intake system as it is right now, which I am sure would provide a considerable performance increase. Possible experimentation with the glow plug location would also prove benefi-

cial. The glow plug screws into a socket that, in turn, only has a small (approximately 1/16") hole leading into the combustion chamber. This is done to keep the engine from firing over into another chamber as might happen if a full 1/4" hole were drilled all the way through. (The three lobe cam or rotor having three chambers. One for combustion, one for intake, and one for exhaust.) Some years back I experimented with heads for our conventional engines using a separate plug chamber with a small hole leading to the combustion chamber to see if we could get away from using the idle bar plugs. A definite power loss was noted, so I am sure the same thing is happening with the Wankel. Relocation of the plug where a full 1/4" hole could be used would result in better performance, I am sure. This would have to be done by installing the glow plug on either the front or back face of the engine which would make it less accessible, so




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everything is a compromise. You do not want to use an idle bar plug in the Wankel. An idle bar will cover over the small hole leading from the glow plug into the combustion chamber and result in very erratic performance. We ran the engine on the plug that came with it as well as the long reach K & B. Both performed equally as well.

Most everyone that looks at the engine comments on the small size of the exhaust port, so lets take a little time to explain this. With a conventional two cycle model engine the exhaust port opens between 65 to 70 degrees before bottom dead center, and closes 65 to 70 degrees after bottom dead center. This means that the exhaust port is open for 130 to 140 degrees of crankshaft rotation. So we use big ports and a big exhaust stack to get as much of the spent exhaust gases out of the engine as possible. The design of the Wankel allows the exhaust port to be open for the full 360 degrees of crankshaft ro-

tation. With this amount of duration, as large an opening is not needed. This is the same reason you only have a 1¾" or 2" exhaust pipe sticking out of the back of your car.

So to sum it all up, what, if any, are the advantages of the Wankel engine for model airplane use? I doubt if the Wankel engine will ever replace the engines in our pattern ships. However, due to their extreme quietness, a modeler will be able to fly a Wankel powered ship in areas where conventional muffler equipped engines would not be allowed. This, in itself, is a big feature. If you have the room you could fly one of these from your front yard and not have noise complaints from the neighbors. I know—I don't know your neighbors! One of the largest markets for the engine will be with the scale builders. With its radial appearance and small overall diameter it will lend itself beautifully to many models. How about a Ford Tri-

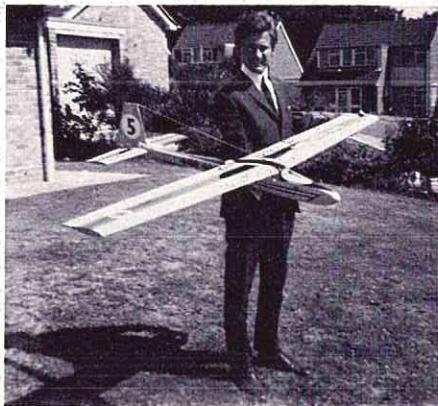
motor with three Wankels hung on it? The scale judges would blow their minds! Or, one of the Turboprop airliners that wouldn't look right with a couple of cylinders hanging out. The possibilities are endless.

That about wraps it up. Next month we will get back to answering some more letters. □

SUNDAY FLIER

(continued from page 46)

Very many thanks for your letter. I am extremely pleased that you may



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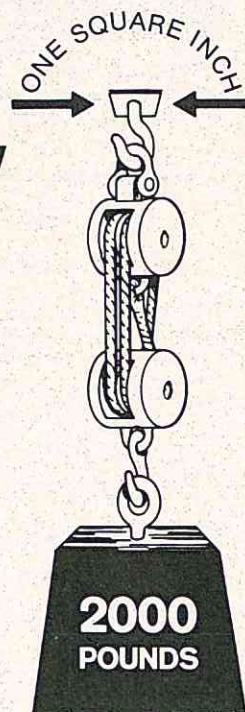
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publish parts of my previous letter as I do feel that the gliders flown here are so very different from what is flown in



the U.S.A.

I see you mention you are building and flying the big stuff, eight and twelve feet wingspan, but don't you find they are only floaters?? Surely the answer is something that has fast penetration with a minimum sink rate.

We have just had 6 American Air-men join our club and they came to the slope with the usual "Cirrus Lil'T" and with almost no wind to speak of. They did very well, especially the guy with the Heath Kit/Cirrus. He managed to get to a tremendous height, but as it got nearer midday the wind strength increased and it became a real struggle for them to fly comfortably.

Well, by that time we had our models airborne and the expression on some of the Americans' faces was almost of disbelief. We heaved off into a very strong S/Westerly and not wanting to float around to great heights, we all started doing formation aerobatics — side by side, rolls, banks, loops, Cuban Eights, etc.

One of your countrymen said as we all landed (one behind the other!), "Gee! If only the guys back home knew about this sort of stuff!!"

And from what I can gather he has done a fair bit of soaring but has never

seen that type of flying done in the State. True or false?

Do any of your events cover glider aerobatics? I am enclosing some rather poor prints I have of two of the models I am now flying and as I said in my previous letters the almost flat wing model is truly sensational.

Anyway, thanks again for taking time out to reply to me. I do appreciate that you must be extremely busy. I was seen reading R/C Modeler in the office, and it turns out that I have been working next to Dave Platts cousin!! Boy, what a small world. Tell him Geoffrey Lord sends his regards.

*Sincerely,
Tony*

Next, I think all of you R/C buffs would be interested to hear about R/C activities at the U.S. Air Force Academy near Colorado Springs. Here's a letter I received from Cadet David B. Newill:

Dear Sir,

I thought you might like to see how The Air Force Academy puts RCM to work. The plane is your Southern Gentleman and features one of the



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3 CHANNEL (3 SERVOS)	\$149.95	\$209.95
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4 CHANNEL (4 SERVOS)	\$214.95	\$284.95
5 CHANNEL (4 SERVOS)	\$224.95	\$296.95
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wildest paint schemes around - when you've got something to say just paint it on the plane.

Other photos show some of the activities of the Air Force Academy Model Engineering Club. If you do publish this letter or photos, please include this note:

The Academy Engineering Club would appreciate any notices or invitations to RC and control line meets in

the west and midwest areas.

Thanks for a fine R/C magazine.

David B. Newill
Cadet USAF ACADEMY



Interesting sidelight; note that three of the cadets are wearing glasses. Many years ago, I tried to qualify for what was then the U.S. Army Air Force; failed because I had to wear glasses. Finally made it in WW II but as a weather officer. Anyway, some of you Sunday Fliers in the west and midwest ought to respond to Dave's request for notices and invitations to meets in your area. Send your information to Cadet David B. Newill, Box 1965, USAF ACADEMY, Colorado 80840. Who knows? You might

drum up a home and home contest, with the cadets coming to your field and then arranging for you to compete at theirs.

The next letter is pretty typical of several that I've received on the subject of trimming. LT. j.g. Mike Fischer, embryo T-2 jet jockey down in Meridian, Mississippi writes:

Dear Mr. Willard,

I decided to take you up on your invitation in the Jan. '68 issue of RCM to write to you direct. I hope the invitation still stands.

I am an avid follower of your column, or I should say I have been until the last year or so. I only have been able to read you off and on lately, as I am now in the Navy and very busy with flight training. I'm originally from California (San Bernardino), but now am stationed in Meridian Mississippi, learning to master the T-2 Buckeye jet trainer.

I'll try to keep this to a minimum, as I realize you have other more important things to fill your "free" time.

I've been fooling with R/C for four or five years now but with very limited



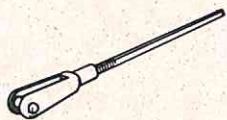


CARL GOLDBERG

THIS MONTH
IN THE SPOTLIGHT

CG MINI-LINK

I think a lot of modelers are going to like our new MINI-LINK. It's strong enough to hang 3 big 7 lb. ships from it. But it's small enough to look right on the new small models. Made of tough nylon, so you can use it anywhere because it makes no electrical noise. MINI-LINK comes with a long, strong rod (needs no connector) and has a mini-price—29¢. See your dealer for it.

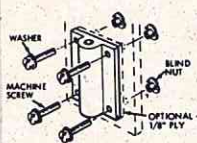


Send 10¢ for 4-pg. Illustrated Catalog, with recommendations on "Getting Started in R/C."

P.S. For best service, see your dealer for kits you want. If not available, write direct; add 35¢ per kit in U.S., 75¢ outside U.S. Minimum order \$1.

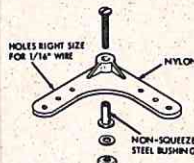
FITTINGS and ACCESSORIES

NOSE GEAR BEARING



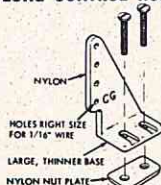
One-piece Nosegear Bearing mounts easily to firewall without alignment problems. If extra steering angle is desired, use 1/4" ply stand-off. Includes blind nuts, screws, etc.80¢

AILERON BELLCRANK



Bellcrank has steel bushing of proper size, so crank can be screwed firmly in place without binding. No electrical noise—all metal parts are screwed tightly together. 50¢ for 2

LONG CONTROL HORN



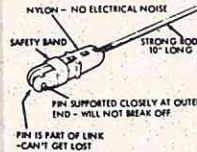
Control Horn has right size holes for 1/16" wire, and nut plate for simplest mounting to control surface. Horn is long for maximum range of throw; can be cut down. 50¢ for 2

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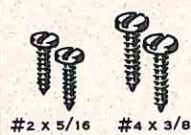
Extremely tough. When applied with heavy coats of cement, it approaches fiberglass. Excellent hinge material. 3/4" wide x 5 ft.25¢

NYLON AJUSTO-LINK



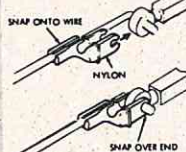
Ajusto-Link is used for adjusting linkage to control surfaces, throttle, steerable nose gear, etc. Nylon-tough and no electrical noise. Takes heavy load.29¢

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success. I tried escapement R/O with no luck. I had a little bit better success with a Rand actuator on R/O. I tried the Rand with all three controls with disastrous results. Went back to R/O with Rand and Adams actuators. (I built your Shearwater, it came out heavy, wouldn't ROW, otherwise OK). Lately I've been building .010 and .020 sized with the Adams Baby actuator. I've had great success with these small ones.

Part of the bad luck I've had can be attributed to the fact that I didn't get much help along the way. I picked up most of the tricks the hard way, and I still have a lot to pick up. I need some advice on how to trim with regards to thrust line and angle of incidence. I like to scratch build from plans, but no matter how careful I am, the thrust line and/or the angle of incidence has to be juggled and I'm not sure which one to attack first. I would appreciate it immensely if you could set up some basic rules of thumb in the area of my troubles.

Keep up your excellent column and magazine. Don't forget about us guys that can't afford the miniaturized

digital systems, but are stuck (enjoyably so), with the \$70.00 R/O systems.

Sincerely Yours,
Mike Fischer

Here's what I told him:

"Thanks for your letter. And when you've mastered the T-2 and go on to other jets, you'll understand why it's kind of hard for me to answer your letter regarding trim adjustments, since they vary so much with different designs.

You are no different than any other modeler when it comes to "juggling" the incidence and thrust line. I do a lot of it myself. And even though two guys may build the same design from a kit they may wind up with different settings depending on the type of flight they are looking for.

For example, take the Headmaster. Now, if you want it to be fairly slow, have a good recovery

from steep banks, and a slow and somewhat mushy glide, you'd have to put a shim of about 1/8" to 3/16" under the leading edge of the wing; then, to keep it from swooping and stalling with this additional incidence, you'd have to put about 1 1/2 -2° downthrust in the engine. It would fly slower under power, and then, when you throttle back, the nose would tend to come up and give you the mushy glide.

On the other hand, the Headmaster can be made very maneuverable, fast, and comparatively hot if you want to. Put a shim of about 1/8 inch under the trailing edge of the wing, and take out about 1° of the built-in downthrust. In this configuration you'll have to fly it out of turns, but it will stay inverted very easily, even without ailerons.

As for which item to change first—the thrust line or the angle of incidence—it would depend upon the way the model

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American Cancer Society
Fight cancer with a checkup and a check.

behaves when under power and then in the glide. For example, if it stalls under power but glides steadily, or perhaps even too nose down, then putting in some downthrust would take care of the stall, but you might have to move the CG back a bit to make the glide shallower.

These are just some of the adjustments. Others which have to do with the straight glide but power turn problems are right and left thrust adjustments, such as — straight glide but power turn to left, add right thrust (gently!).

I wish I could be more specific but it would take a book to

discuss all of the possible variations. It's much harder to do when all you have is rudder control, since the proportional jobs with their trim controls make it possible to make trim adjustments while airborne, and then you can make the changes needed after you have landed.

I haven't forgotten you guys that fly rudder only — even though I seldom fly that way any more. Just too lazy. But the next design I publish will be capable of rudder only flying. Best regards."

When I wrote Mike, I had planned to publish the BT-70

design as the "next one" capable of rudder only flying. It was, as the TeeVee people put it, "pre-empted" by the Islander, (which could be flown rudder only, but it would be a real chore), and the MaxiSailer (which can't be flown rudder only unless it is completely retrimmed from the competition settings). But the BT-70 — a trainer for the 1970-1980 period — will be coming out soon.

Now I'm going to let Stew Vance, editor of the DC/RC Newsletter, close off this month's column. I recently wrote him a note of encouragement, after reading some



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comments that he put in his paper. Here's what Stew wrote back:

Dear Ken:

Well, You sure brightened my day. I came home for lunch (a rather rare occasion, and brought about because I was all fed up with wrestling with a rather arcane problem on my government job) and there was your letter. What a lift to the spirits. Thanks for the thanks, and the understanding you bring of the fact that each of us is not wrestling with his own problem alone.

Yes. The other newsletters all tell the same. How it should be a practical reality that among any number of people there will be a percentage who surely care nothing about others, is

beyond me. Why can't one of us, somewhere, be blessed with a bunch of all right nice guys? Too much to ask, I guess. In any case, your comment will keep me, for many months to come from getting entirely too shrill in my complaints. Sometimes I wake up and realize that I should be accentuating the positive, but when I find that all I can say is that "Good Old Joe was seen flying his BooBoo XX faultlessly in a faultless sky under a benign sun in light breezes and among a bunch of nice guys while wearing a smile on his face" that gets a little bland too, doesn't it? So, the old newsletter editor gets around to trying to tell 'em all how to do something or another. Hmhmhmhm. A Godhead complex, eh?

Your memories of the DC/RC are still around, but only as memories. We still have determined electronic gadgeteers, but with nothing to gadget. While the Maynard Hill-Walt Good-Ben Givens technical complex yielded up the thermal sniffer, that is about the most recent coup we can count. Then the Ray Smith development of gliders (as outlined in that other magazine) keeps some of us watching. The rest of the time we are not even addressing ourselves to airframe development. Only Maynard Hill's record models for duration, altitude and speed seem to show design characteristics. The others are just whittling around on some of the kits and plans (many of them with Willard origins) to make theirs a little different, and with not much real

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innovations. For instance, I am now flying on my own Sunday Flier expeditions (and that is what I am), a Tri Squire kit with the cabin lowered 3/8", a lot of the lateral dihedral taken out, and the horizontal stab taken from the bottom of the fuselage to the top. It looks more like a deBold Champ than anything else, but flies great and I have a lot of fun with that sturdy high floating wing on rudder-elevator-motor setup and a completely unmodified (but muffled) O.S. Max .19 engine. Oh yes, with tail dragger gear, too. None of these are either design nor innovation, but just shifting things around to suit.

The thing that really bothers me about the hobby/sport right now is the number of people who are not specifically competition oriented, nor even Sunday Fliers in the sense of your devotion to the sport. They are really thrill seekers who don't have the guts to put their own self in the mill, but get their kicks out of a similarity to thrilling actions. The number of inverted low pass wipeouts every month is a direct reflection of this type. Among these are, of course, the showoff and that swells the ranks until as one looks around now and then one wonders where the guys with the white hats went. Then, if you look hard enough you find some of the guys we have around who fly unspectacularly some very unspectacular planes, wipe them off lovingly after every flight, carefully patch and paint after every little mis-kabobble, and who sit quietly watching the passing scene, or fly in their own little world of carefully planned and executed maneuvers and even (when you watch real close) their own form of an aerial ballet which they perform just for themselves. Then the world comes back in focus and you know that the world isn't so bad after all, and civilization may yet triumph over chaos. We have one (really more than one around, though) young fellow who built his own Digitrio, expanded it to four, learned to fly on an old Esquire, then built two WWI scale (except for those tiny details) which he brings out on Sundays and flies and flies and flies, and when he's there I know that the world is really OK.

Philosophy is not my forte, so I'll knock that off, but it is interesting to ask now and then "Whither go we?"

Keep up your good work. You make very bright spots in my month.

Yours,
Stew Vance

You talk about bright spots, Stew? It's letters like yours, and the others I've published, plus the hundreds of others that there just isn't room to print, that make me grateful for the privilege of editing this column.

So thanks for writing, Stew, Mike, Tony, Dave — and all the rest of you Sunday Fliers. And now that our work is finished, let's go flying. Somethings bound to happen that'll be worth more hangar flying next month. It always does.

Be sure and tell me about it. I'll pass the word. ☐

GEMS

(continued from page 47)

section you should read and comply with.

Next we go to the section entitled FAI Radio Control Aerobatics World Championship Regulations and, as we read, we discover such interesting things as the definition of a Radio Controlled Model, rules governing the amount you must build, and so on.

Some points of interest are the mandatory muffler, limit of one helper, and so on. Again, this is only to point out the importance of reading the rules before you start, which is not a substitute for actually starting!

Last, but by no means least, are the maneuvers themselves! These you must know by heart inside and out and you must also know the conditions to which they apply.

All day Saturday we (and several others) tried to do the figure M (which is the first maneuver after takeoff) with both turns to the right (which is very difficult and sometimes not possible) because that's the way it is illustrated in the rule book.

Saturday night someone read the rules and discovered that in the written description of the figure M the words (left or right) describe the turns!

Needless to say, Sunday's figure M's looked much nicer because it's so easy to turn left (with the torque if you will).

Another "for instance"; notice that it says nothing about being downgraded for not crossing the same point on either figure eight but we'll bet you can't get away without doing so!

Again, the key is; know the rules

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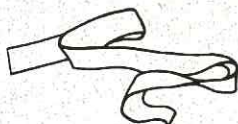
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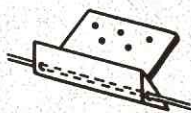


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before you play the game.

The last element in this composition is luck. Most of us have it. Most of it is good. For instance: we decided to enter open pylon with our FAI stunt ship when it became obvious we weren't gonna' win the "D" pattern event.

Our luck was superb as we asked Jerry Krause to call our pylon turns for us and he consented.

Right there, if people had known it, they would have just conceded the race. Luckily we were able to disguise it by doing some calling for other pilots too!

Then when it was too late for them to concede we had the second place trophy in the car heading home to Ft. Worth! No matter, though, as nobody remembers who came in second and of course all of us who didn't win think it was a "lousy meet" but we'll all be back next year!

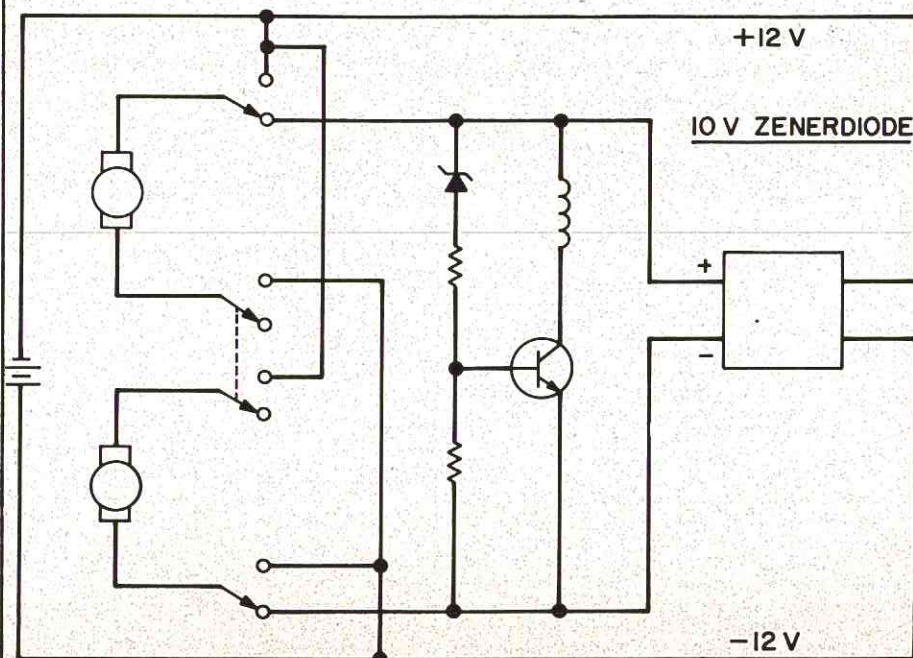
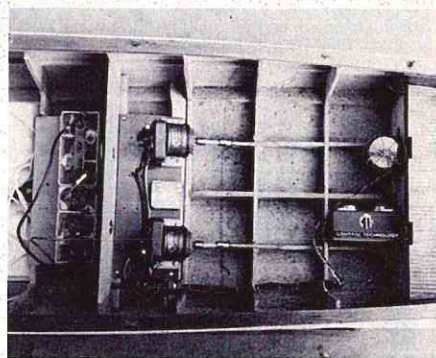
As for you—we won't say that luck is the most important ingredient, but if you don't have any, or what's worse, if yours is all bad, then just tear up this magazine and go for a ride in your car! □

MD-3 SUPER DRIVER

(continued from page 38)

Since we personally believe quite firmly in not reading the manufacturers instructions before attempting to use a new product, feeling that it is much more fun to destroy it all by yourself without any outside help, we felt that it would be

best if we connected the two six volt motors in parallel and drive the unit from a 12 volt battery since we would get such increased power. At the outset these motors purred along beautifully as long as there was 25 to 50 percent throttle. When we opened the throttle to full, the Chris Craft would suddenly quit, stand still, then start jumping forward, repeating this process over and over again. As a consequence we learned to appreciate the built-in safety circuit which prohibits damage to the control unit from such overloads. The automatic reset used, for the boatman, is a very nice feature since the boat cannot become stalled in the middle of the lake due to overloads. Since that initial problem, we switched the two motors in series and no further problems have been encountered. Since the idea of using the two six volt motors in parallel with the 12 volt battery seemed to stick with



us, we devised an override circuit which allows us, at approximately 90 percent load, to switch the motors in parallel and hang them right across the dry battery without use of the control circuit. A schematic diagram for this circuit accompanies this article. No definite values for the parts are given on the diagram since we feel that only a technician who knows how to handle this type of circuit should build it, as well as the fact that the parts were obtained from salvage sources with all denominations on the individual parts having been obliterated by the tooth of time.

It was quite impressive to run this 48" cabin cruiser on a lake where there were fishermen and kids in abundance. The controls were handed to the youngsters who had no previous experience running boats or in radio control and within two or three minutes, they were driving the boat without any problems. The possibility of reversing the motors makes backing much easier. On the other hand the boat has also been used in meets where the model boat clubs have extremely fast and competitive ships that sometimes quit in the middle of the lake and the Super Sabit could retrieve those boats and push them ashore. The pushing had to be done in reverse and therefore took some time, but would be more than adequate for such a practical function where power boats are employed.

The next step in the use of this Super Driver MD-3 will be a six foot model of a German cruiser wherein it is hoped that we can make full use of the potential of this control unit. In conclusion, we would like to restate our opening statement to say that this unit is well worth it's advertised price of \$49.95 and should give the electric model boating fraternity quite a boost as well as an invitation to model boaters who do not like to run around noisy Super Tigre .60's and similar engines in order to operate their equipment on

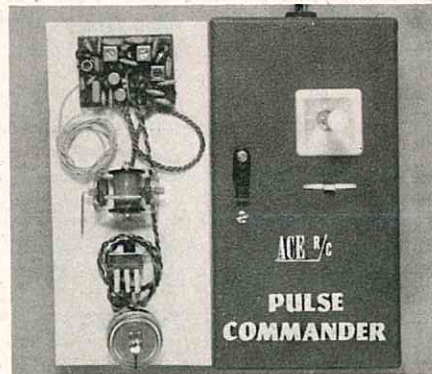
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the water. In addition, an electric boat together with this control would be excellent for electric precision steering events or electric slalom contests. Whatever the future for electric boating and radio control, it can be only aided by an outstanding product from the people at Control Technology. □

SCALE IN HAND

(continued from page 14)

not good for canopy patterns because it blisters under the heat of the plastic, ruining the job and the pattern both. Possibly the best filling materials are epoxy glue and fiberglass resin. But here we run into another problem; these materials are anything but easy to sand smooth. For this reason some modelers prefer not to fill the grain of the pattern, but mould directly on it. Clearly, some wood with a far closer grain than balsa but retaining easy-carving properties is called for, or some other way found to provide a smooth barrier.

In the former case, bass will be found an excellent choice. It has fairly close and smooth grain and is very easy to carve — actually time is saved because no filling is vital to the operation.

In the latter case, a suitable barrier is simply made by moulding one canopy on the pattern, and, leaving it there, another one is moulded on top — the second one being the one for the model. As a further refinement of this idea we can use styrene sheet for the barrier as it is more easily moulded and is less expensive than the clear materials.

The choice on patterns is yours. The method we use is to combine the last two ideas — that is, we use basswood patterns with a styrene barrier.

One point concerning canopies . . . don't mould where you don't have to! That is, if any of the glass areas are flat panels, use flat material and join on the frames. No matter how careful or skillful we are, the moulded plastic is never as clear and smooth

as the virgin material. Another tip . . . don't try to make the canopy in one piece if you can use two, or more. For example, a P-47 canopy, being a bubble, must be done in one crack, but a T-28 canopy has two frames; this one can be made in two moulded parts with flat sheet for the screen. This will be an easier, and better, way to go.

So far, so good. Now — about materials. Item #1 here, is that regardless of what you thought before, the thick materials are easier to mould. Because a material is thin (up to .030") it will not form or drape more easily. On the contrary, .060" works better because it retains its heat for a longer period making the moulding job less of a split-second desperate hurry.

There are several clear materials that can be used for canopies. In order of ascending temperature, we start with Styrene. This is inexpensive if you can find a supply of it, and is incredibly easy to form because it softens at a very low temperature. Herein lies the problem. Exposure to a moderately warm day (80°+) will soften it and cause malformation, however, it might be useful in countries where it is always perishing cold. Siberian readers note.

Next, we have Vinyl. This forms at a slightly higher temperature but still will malform in "normal" U.S.A. conditions of 90° — 100° combined with a hot runway bouncing the heat back. Vinyl is easy to mould and would be suitable in temperate countries like England, Canada and Australia.

Next comes Butyrate. This material is entirely suitable for use in America but naturally is more difficult to mould. Even so, the difficulties are not severe and good methods will conquer butyrate readily.

Lastly, Plexiglas. (This is called Perspex in Europe). Plexiglas forms at very high temperatures — over 400°. However, it moulds quite readily, since it retains its heat for so long. In fact,

one has literally all the time required to pull it down on the pattern, and even then it must be held for three minutes or so while it cools as it can shrink back and malform. You could, of course, get the wife to pour cold water on it — makes a mess but saves those aching muscles!

Plexiglas has one further important difference. Whereas the other materials will part-off (crack) along a scored line, Plexiglas won't. Even with a very heavy knife-score inside and out, Plexiglas exerts its independence and cracks somewhere else, ruining the canopy. The only reliable way we have found to part-off a Plexiglas canopy from the excess material is to use a Hot-Knife (X-Acto makes one).

In spite of these sundry annoyances, our opinion is that this material is all-around the best for canopies. Certain other advantages present themselves — Plexiglas glues easily (Vinyl is well-nigh impossible to glue to anything) and has exceptional beauty when carefully made and polished.

Canopy frames are best made by simply moulding a thin (.020") styrene layer over the final canopy form and cutting-out all the windows leaving only the frames. This frame is then painted and, finally, glued on the canopy.

So much for materials. Now to methods. There are basically two ways of getting the material down on the pattern. Method #1 is to cut a 1/4" plywood plate out, to the plan shape of the canopy plus 1/16" all round for the material thickness — see Diagram A. The material is then thumb-tacked to the ply, heated, and the pattern pushed in — Diagram B. The writer has on several occasions tried to make a canopy this way and has yet to succeed. But give it a try, because so many modelers have recommended this method that we're prepared to believe the fault for the failures must be our own incompetence.

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But if you do, per chance, have the same luck as we have had, try Method #2. This involves gluing the pattern on a 3" x 1" or so stick, mounting in a vise clamped to a chair near the gas oven — Diagram C. The idea is to have at least 6" of space all around under the pattern. Now tack the material to a couple of bearers — Diagram D. Using oven-gloves, hold the material in the oven by the bearers. When very flexible, in one smooth and fairly rapid motion, bring the plastic over the pattern and pull down by the bearers — HARD! Hold still until cool. Mark position of canopy frames while still on the pattern. Of course, you previously had so marked the pattern. We've had no trouble getting good quality canopies this way. If you do, go back to Method 1 or try harder.

You don't have to use a gas-oven. Almost any source of heat will do provided it heats the entire sheet evenly. If bubbles or blisters occur in the sheet, throw it away and try again — you let the plastic get too hot. If, on the other hand, the plastic is too cool it simply won't form well and you can re-heat the same piece. We normally figure to make at least six canopies before getting one perfect example, so don't worry if first efforts aren't prize winners.

The

"Complexity Factor" Controversy

One of the aspects of scale-model contests which its followers point at with a good deal of justifiable pride is the limitless scope allowed the contestant regarding his airplane. The path to success in almost every other modeling contest has been so fine-tuned, that the casual observer at, say, a ½ A F'F, a C'L Speed or R'C Formula Race can scarcely tell one model from another. Those rare individuals who do diverge from the proven route risk ridicule or failure. How lucky the scale fan! He can build anything from a Fly Baby

to a B-36; 60 years of aviation history at his whim and it doesn't matter what his choice, his "bag," his speciality, is — he can be competitive. It is a basic premise at scale contests that all subjects are equal: it is the **interpretation** of the chosen subject which counts, not the subject itself.

At least, this is how things are supposed to be.

Unfortunately, in practice, things are not quite this idyllic. Are they ever? A problem arises in that airplanes, in their infinite variety, present the modeler with a broad spectrum of difficulty in order to achieve a given result in terms of actual quality. We already have said that this quality, or interpretation as we called it a moment ago, is all that we are interested in.

Obviously, the modeler who sets out to build a 100% perfect S.E. 5a with every rib, stringer, cable, instrument, etc., exactly so, even if he doesn't have it easy, at least gets a helluva' better break than the chap who fancies doing a B-29 to similar standards, with its fantastically complex cockpit and landing gear alone representing a far higher level of skill and sheer effort than the entire S.E. 5a!

Herein lies the problem. We rightly believe all subjects should be equal on the contest field. The trouble is that our material — the full-size airplanes — are not equal to start with. The "Complexity Factor" in many variations has been put forward as a solution to the dilemma.

It is this column's view that the words "Complexity Factor" are, themselves, a somewhat unfortunate way to describe these proposals, because the immediate impression they give is that extra points are going to be loaded onto complex subjects out-of-hand, thus giving the builder of a simple subject no chance of competing. Indeed, we mentioned these fears to Claude McCullough (Chairman of the Scale Contest Board) and he

agreed, replying that "whenever you say 'Complexity Factor' to someone they think it's a way all us so-called experts want to put the event out of the reach of the newcomers."

Let's stop for a moment and remember what it is we're aiming at. We don't want to give a model of a complicated airplane a better chance of winning. We just want it to have an even chance. Right now it doesn't have a hope: the modelers realize this and the result has been a surge of "easy" models — simple high-or-low-wing monoplanes, homebuilts and so on.

What we'd suggest is that we call the scheme (whatever it turns out to be) the "Subject Equalizer." This describes the function but doesn't go scaring everyone.

It may be that a formula for this "Subject Equalizer" will be difficult to write. And furthermore, we may not get it exactly right the first time. We shouldn't be put off by this, "adjustments in the light of experience" are an expected part of the game.

What we need to do is to ask ourselves what we want to see in Scale. Do we want a succession of Chipmunks, Druine Turbulents, Volksplanes (sorry, John!) and Cherokees, etc? Or, do we want a real three-dimensional history of flight with everything from Antoinette to Spad, Curtiss Hawk to Helldiver, Bearcat to Tigercat; Comanche to Lancaster?

If the former, then we can sit back and forget any changes because the present set-up is producing a perfect crop and will continue to do so in an ever-narrowing circle of types. But if the latter, stand ready to accept revision when it comes. Better yet, if you feel that you could work out a fair, unbiased system to equate the new with the old, the pristine with the weary, the light with the heavy, why not send your ideas to Claude? The more widespread our response, the better the S.C.B. can judge our wishes. □

ANSALDO SVA-5

(continued from page 27)



speed won't be too bad. (2) We were going to require nose ballast anyway — so why not get some work out of the ballast? (3) Just because the power is there, we don't have to fly full bore all the time, do we? (4) We could take advantage of the engine and put a large diameter, flat pitch prop on our model which would look more to scale. And, (5) we had a Merco .61! The combination worked out well.

What is most important, however, is that this model has been the most amazing flyer we have seen in a long time. Control response is instantaneous, both going in and coming out of a maneuver. At full throttle this Ansaldo will go faster than you think and will hold its own in an impromptu pylon race. It might give a little on the straightaway, but boy does it make it up in the turns! The ailerons are extremely powerful and this model rolls fast, tight, and true. Spins are a true delight, very fast and the pullout is very clean. There is enough power to make a large circular loop if you want to, or you can really haul it over on its back in a combat situation. In addition, we have noticed no ground loop tendencies, quite unusual in a WWI type model.

I definitely feel that the Ansaldo SVA-5 will delight you with its flight characteristics and will put you into the WWI flying scale picture with a vengeance.

The Ansaldo is well written up in the Profile Publications No. 61 and I strongly urge getting this particular Profile if you plan to model the Ansaldo. If your local store doesn't carry the Profiles, I suggest you try Gordon Madison

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The Profile shows that the Ansaldo also served as a two-seater with a gunner in the aft cockpit. The model could be easily modified to this configuration. I don't think the model's flying characteristics would be damaged by this change and the resulting model would certainly stand out on the flight line. It would also look nice in the air with two heads sticking out.

CONSTRUCTION

The Ansaldo is certainly not suggested for the beginning modeller. The construction is different but not really difficult.

However, there is no point in trying anything more complex than you need to at the start of your modelling career. As a general comment, I would point out that lightness is always important in any airplane and that **weight is not necessarily strength**. This model is no different. As you build remember that an extra ounce in the tail requires about four (yes, four!) ounces in the nose to balance it out. "Nuff said!"

FUSELAGE

Plan out your work before you begin. Draw the outlines of your radio gear on the plans so you can be sure just where everything has to go. The forward half of the fuselage being square in cross section is pretty straightforward construction. At the cockpit the fuselage sections change to triangular. This means you are going to have to pinch your sheet sides together at the bottom and hold them true while everything is setting up. Make sure your

longerons are trimmed to the proper chamfer angle so your tapered sides makes a good faired fit. A bunch of spring clothespins will work well to hold the bottom seam while the glue sets up.

Locate your fuel tank immediately aft of your engine as high as you can put it without causing yourself fuel flow problems. The servos, receiver and batteries should be as far forward as possible which will put them right under the fuel tank, because of this it might be wise to seal off the fuel tank with a piece of sheet stock to keep any fuel leakage away from your radio gear.

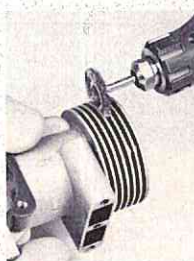
You can finish the "turtle-deck" forward of the cockpit now. Make sure you are completely satisfied with your fuel tank installation before you close up the area. It's tough to get at the tank after you close up! Remember that some of the cabane struts come out of the "top" of the fuselage and meet at the



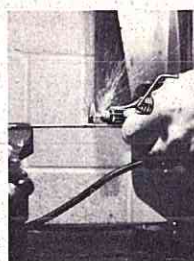
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center of the top wing. The other half of your cabane struts start half way up the side of the fuselage and meet the inboard canted wing struts at the top wing. Remember to reinforce the areas where the struts tie in. Don't try to understand it all from my written description, your best best is to study the photographs in the Profile.

WING:

The wing panels are quite simple. Just make sure you cut enough ribs! We took advantage of the fuel tank on the top wing panel and hid the aileron servo inside. We had to cheat a bit on the size of the "tank" to hide the servo but the finished job doesn't look all that bad. You lucky guys with the new tiny servos will have it made.

The bottom wing is essentially similar to the top wing, except that it has the dihedral and the center section of it is planked. We put the "hard" spars on top of the bottom wing and on the bottom of the top wing in order to give the interplane struts something rugged to bear against. Put webs between the spars to build up the beam strength, but none at all are needed outboard of the interplane strut mounting pads. Fill in between the upper and lower spar caps with wood and bury a blind nut in there for the wing struts to attach to. Now your wing panels should be ready for covering.

EMPENNAGE:

There isn't anything special about the tail. Our model used solid balsa, but if you can build up structure it will probably look a lot better. If in doubt, use whichever system produces the lightest job.

Remember our previous comment: an ounce of extra weight in the tail will take about four ounces in the nose to balance it out. This increases your models weight and takes away from its performance.

RIGGING:

Rigging the Ansaldo is a bit different than most other bi-planes because of the Warren

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truss bracing. The Warren Truss makes up into a very rugged assembly and one which holds its geometry true for a long time.

The first step is to install the top wing, attaching it to the fuselage at the center. Make sure that the top wing is set at zero incidence by measuring from the trailing edge down to the fuselage deck and from the leading edge down, too. Both dimensions should be the same.

Attach the bottom wing next, using rubber bands, or better yet use nylon screws. The incidence on the bottom wing is set automatically in the fuselage when you install the wing.

Jig up the wings with scrap balsa or whatever will do the job for you. Make sure that the top wing is horizontal and that the bottom wing is set on symmetrically. The remaining struts can be installed now, starting from the center section and working outboard to the wing tips. The struts can have some adjustment built into them which you can

lock in at this time.

It's far easier building some adjustment into the struts than trying to measure their true length. You might consider the possibility of making two sets of wing struts, the first just for adjusting to size and the second scale set built to those dimensions.

DETAILS:

The wheels shown on our plans are close to the correct size. Our model has wheels a bit too large but it doesn't look too bad. I like to think the bigger wheels help on the take-off from rough ground.

PAINTING:

Color details are all in the Profile Publication we mentioned earlier. Apparently the Italian front did not have a standardized color scheme, not even a standardized insignia. You would probably be safe with an olive drab or brown fuselage with grey or black engine panels. The radiator shell should be copper colored. Wing panels and empennage

can be buff colored to represent clear doped linen. Wing roundels can either be red-white-green, although green-white-red is not unknown.

BALANCE:

Make sure your model balances where shown or forward of this point, under no circumstances should your model balance aft of this point. There is a space just under the engine that could be used to pour Cerrobend or Epoxy coated lead shot. Remember what I said earlier about building the tail lightly? This is where you will pay for your sins!

One personal point, please: Put a pilot in your airplane. Nothing looks so "off" than to see a scale model of a real plane without anybody at the controls. The realism of any scale model is greatly enhanced with a pilot.

The Ansaldo will give you a great deal of satisfaction, it looks and flies well. Here's hoping you knock off some trophies with yours! □

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(continued from page 8)

but not in a large one, and especially not in a Contest that has invited the public to plunk down a sizeable entry fee. Therefore, a contest should not be run by the most competitive flier in the club unless he accepts the responsibility of being a non-participant for that weekend. Many of the best run contests are directed by club members who have been around a long enough time to be able to put aside their flying for this weekend, or by fliers who are new to the game, and can spend the weekend making things tick rather than watching their aircraft gyrating through the sky.

In each club there are members who are real workers, and members who say that they will work, but when the chips are down, are either flying in the contest or are off visiting their Mother-in-law that weekend and simply not available to help out. Your first duty as a contest director is to classify in your own mind which type each club member is and give him a job according to his classification. After all, a contest is a club affair, and each member of the club should expect to carry part of the load. The smart CD will not accept the responsibility of running the contest unless he has the approval of the club as a group for the holding of the contest. Many good clubs have come to grief over unpopular contests.

Once your club has decided to hold a contest, and you have accepted the job as Contest Director, then your first job is **planning**. Take a piece of paper and list all of the members of your club, then group them as I have indicated earlier. Next work out on paper the jobs to be filled during the contest. You will need Judges, Score Tabulators, Registrars (wives do an excellent job of the latter), a Safety Marshal, Timers, Runners (12 and 13 year old sons make great Runners), an Announcer if you are having a PA system, and many other specialty jobs. If you are planning a Pylon Race keep in mind that it will take manpower in the neighborhood of twenty to thirty to be successful. Other contests take far fewer people. But, try and list on paper all of the jobs that will need to be filled. One of the most important is that of an Expediter. This can be you as Contest Director, or can be another official, but this person must be the type that can keep the contest moving by getting the fliers to the ready line, and by moving them with good will and with a smile. In the words of my

old buddy Helmer Johnson, the Thunderbirds Chief Expeditor, "Head 'em up, and move 'em out."

To the contest entrant the success or failure of the contest is how many times he gets to fly, or how much time he spends sitting around waiting for a chance to fly while an inept Contest Director allows his contest to stagnate. Any contest is a flying event, and thus, maximum effort should be expended to get fliers into the air as quickly as possible, and a good Expeditor is the key to this.

Once you have listed all of the jobs that will need filling, then begin to match the names from your list to the jobs to be done. Try to match them according to the type of work the people do, or the kind of interest that they show. For example, if you have a great club member who earns his living by hard physical work, use him on the flight line rather than sticking him into a tent to be a tabulator or score keeper. Save the bookwork for the guys that are used to this type of work. Suit the job to the personnel, not the other way around.

The next step is to decide which of the jobs are to be primary type jobs, jobs of command, and which are to be secondary type jobs, jobs of workers, Chiefs and Indians. As in anything else, some must be Chiefs and some must be Indians. Too many Chiefs will ruin your efforts and no Chiefs at all will throw a load on your shoulders that will be pretty darn hard to carry.

Create some Chiefs, and give them responsibility for a particular area of operation. Make clear to each Chief that he reports to you, and also, make clear to the Indians which Chief is responsible for which area. Always try and define the responsibility of the job, be it Chief or Indian, so that the poor guy knows what is expected of him on the day of the contest.

After matching all of the above, and putting it down on paper so that you won't forget that you gave Harry the job as timer, and Sam the job of Tabulator, and Bob the job as Announcer, begin making a list of all of the items that you will need for the contest. Start with prizes, either trophy or merchandise. You will have to decide in your own club which to give. Frankly its a tough decision, but I tend to lean more toward trophies than to merchandise. Years later, the merchandise and/or money will be long gone, but a trophy will be a reminder of fun back in the "good old days." A combination of trophies and



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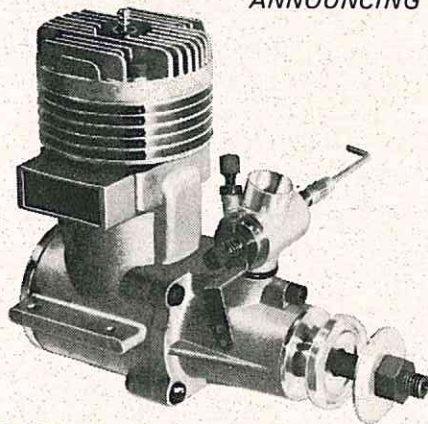
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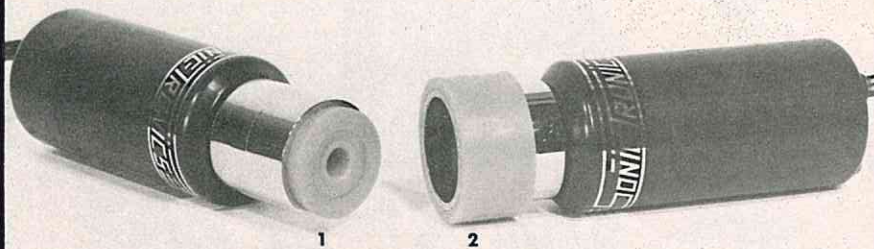
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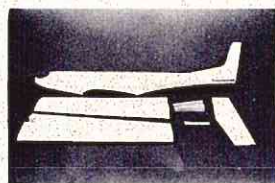
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merchandise is not too bad. Often, a gift certificate at the Hobby Shop is worth more than winning a new engine, or a kit. Which brings me to a chief gripe. I frankly feel that the practice of flooding the mails to all of the advertisers in this and other magazines asking for donations to this and that contest has been greatly overdone and does not serve any really useful purpose. Perhaps your contest gains a lot of give away prizes this way, and perhaps it receives the cold shoulder but personally, to me, this represents a weakness on the part of the club throwing the contest and upon those charged with running the contest. If a contest is worth having then it should be worth working out a method of paying its own way. Any advertiser will no doubt be willing to sell you merchandise at a wholesale price, this takes the burden from his shoulders, and remember, its hard for him to make a buck too, and assures you as contest Director that you award the prizes that are important. As an example of this, at the National Fun Fly we sold raffle tickets at one buck each on an EK radio. The Thunderbirds purchased the radio from EK and stood to win or lose on the sale of tickets. We purchased 12 cases of Fuel from Duke Fox to give away during the contest to those who were flying when a secret alarm went off, not to winners, but simply to the lucky guy in the air at that time. But, in each case, rather than to panhandle the prizes, they were purchased at a fair price both to the supplier, and to the club.

After you have decided upon the prizes then make a listing of the equipment that you will need at the field, such as tents, stop watches, pencils, paper, an adding machine if necessary, fences for spectators, chairs, tables, tape measures for laying out any special course, lime for marking if needed, name tags, transmitter tags, entry blanks, score cards, clip boards, scotch tape, string, boxes to carry things in, a bulletin board, and on, and on, and on. Water for the judges is another item to consider. Keep a notebook in your pocket all of the time prior to your contest to jot down notes as you think of them. You will need many more items than I have mentioned, so keep a list.

If this is your first club contest effort, then you are flying pretty much on your own. Try and visit other contests to see how they are run and to notice their weak and strong points.

Where are they great, and where are they poor? If your club has held similar contests in the past, then talk to former Contest Directors to get their ideas of what was good and what was bad. Ask them what they would change from the last contest if they were doing it again and all the while, make notes in your book.

After you have compiled the list of items that need to be at the field on contest day, or that need to be done prior to the big day, assign the responsibility for seeing that this is done to one or more of your fellow club members. You can't do it all yourself, so enlist the aid of the other guys to carry this load. Your job is to see that they get it done. For example, if a man has a sit-down job assigned to him, then make him responsible to provide his own chair and table. This way you don't have to scramble around lining up chairs and tables, and trying to keep track of them. If his job required that he reside on his backside throughout most of the contest as a tabulator, or an announcer, then "bring your own chair, pardner." Assign each person these little things, and then remind him of it just before the contest. It is not too great to work out a system of assigning responsibility for each area and then not to tell the troops about it!

Make up contest "Kits" to be used in each job before hand. By a "kit" I mean a packet of things to be used in each job, such as several pencils, a clip board, stop watch (if timing is needed), and scratch paper for each judge. Stick each kit into a separate paper bag and label it as "Judges Kit," "Timers Kit," etc. When you pass out the kits, make each receiver responsible for it, and you will be surprised at how little running around you have to do, 'cause Joe doesn't have a pencil, or Jim doesn't have a stop watch, etc.

Prior to the contest make sure that you have score cards printed up making the scoring easy. If you are holding an AMA sanctioned pattern contest then secure the score sheets from the AMA. If you are holding a racing meet, or a fun fly, then you will have to print up your own score sheets. A good score sheet, or card, will make tabulating the results much easier. A 5 x 8 card makes the best type as it will not blow around in the wind as would a piece of paper. In almost every city there is a printing shop that uses new rapid reproduction machines. This is a godsend to you, as you can have your contest announce-

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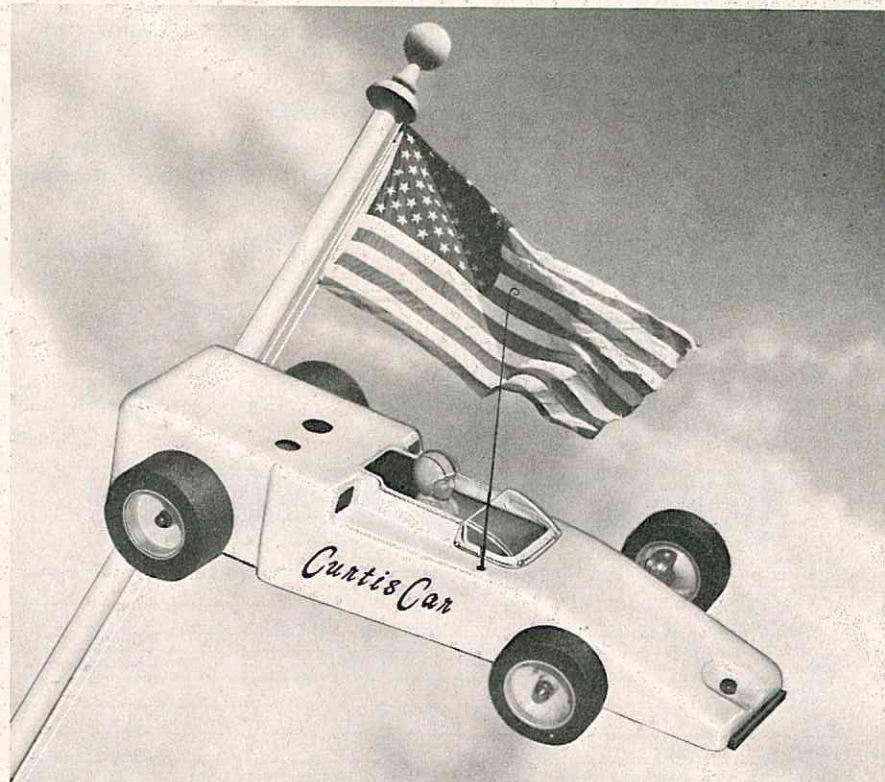
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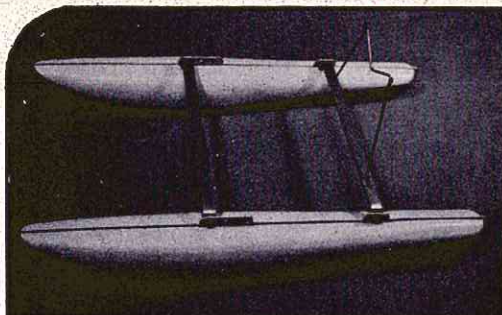
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ments, judging information, score cards, and almost anything else printed up from your master at very little cost.

As the day nears for your contest, double check with your key personnel to be sure that they know what their job is, and where their responsibilities lie. No matter what type of contest you are planning to have, you need a judges training session. If your club has held many of the same contests in the past this may not be too important, but if your judges are new at the game, then schedule several training sessions to acquaint them with their job. The newest, and most workable idea in judging, especially in pattern, is to have the fliers, themselves, act as the judges. Of course you should be careful not to have a flier judge his flying partner, but by having four judges for each flight and eliminating the highest and lowest score, and averaging the other two, you tend to eliminate any "sand bagging" before it gets started.

As an example of assignment of area of authority and responsibility, let me again draw upon the National Fun Fly. The idea behind this contest was to provide as much flying as possible to the entrants. In order to accomplish this, a good organizational set-up was a must. Also, to keep me from going buggy on the days of the contest the responsibility had to be divided up. This is the way that we did it, and it worked very well.

In the beginning, two flying sites were to be used, with two flight lines on each site. Entrants were assigned to these areas by frequency. When it became apparent that we were not going to have 150 entrants the contest was shrunk down to one site and two flight lines, but the organization remained the same. Prior planning provided the basis for a very large entry, or a normal entry with the same ultimate results. Two "Site Managers" were appointed, each of which was responsible for the operation of his site. Then for each site, four Flite Line Judges were appointed, two for each flite line. Each pair of Judges were assigned the title of Co-Judge and were allowed to work out their own times of work, as each flite line only required one judge for each flight. Next, six timer/counters were assigned to each flite line. These timer/counters were the responsibility of the Co-Judges, both to be sure that they were going to work their jobs, and to find replacements if they were not. An "Expeditor" was selected for each site,

as was a "Transmitter Impounder" and a "Tabulator." With a smaller contest, all of these people were not necessary, but the system worked just as well. The Responsibility then went like this: The Site Manager was directly responsible for the total operation of his site, the Expeditor, Tabulator, and Impounder worked directly for him, as well as the Co-Judges. The Co-Judges were responsible for the operation of their own flite lines, and all of the personnel on each line. It was a simple staff organization, and worked very well, with no hitches in the work.

To make it easy for the contestant to tell where he belonged, and to keep track of him, each contestant was registered by number, and according to frequency. Thus, the numbering system was numbers from 101 through 199, and 201 through 299 assigned to Site A, flite lines 1 and 2. Numbers 301 through 399 and 401 through 499 assigned to Site B, flite lines 3 and 4. This number was placed upon his registration blank, his score card, a small shipping tag attached to the contestant, and a small tag attached to the transmitter. Flying was done in strict rotation according to number. When a contestant dropped out of the flying for any reason, his score card was retained in its proper order, and as that round was flown the word "passed" was written in the recording space for that round. This allowed the Expeditor to keep track of who should be in the ready line, and also allowed a contestant to make repairs and resume his place in the flying rotation by simply being ready the next time his number came up to fly. No shuffling, or reshuffling, was involved, and the system worked beautifully. Since the transmitters were tagged with the same number, it was an easy task for the Impounder to keep them in order, and all that he had to look for was "number 217", not, "that red one over there with the name plate on the back."

The same methods can be used for contests whether large or small, Pattern, or Fun Fly. Keep one thing in mind: your job as Contest Director is a most important one, and you must keep on top of the entire contest at all times. The entrants at your contest have spent a lot of time, effort, and money to come to your affair, and in many cases driven a great number of miles. You have a responsibility to these men to provide them with the best possible chance for flying and trying to prove that they are a winner.

□

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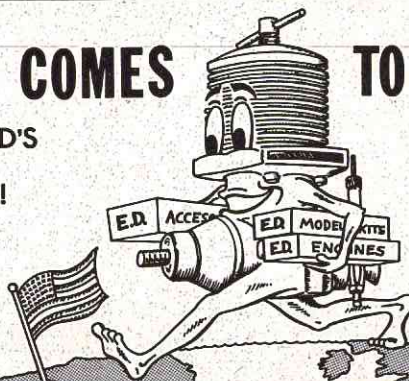
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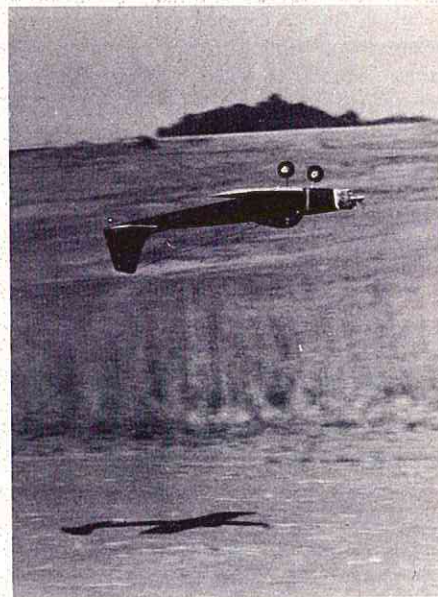
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BOKKIE

(continued from page 23)

As a test-bed for high altitude tests on the Graupner NSU/Wankel, the "Bokkie" carries extra weight and power with only a change of the trim lever. Docile flypast at quarter throttle.



new Kraft systems), because you will probably cart it around complete with the wing in place. Thus, you will get a flight in while the other guys are assembling their heavyweights, and another two while they take them apart again to clean and re-pack in the automobile. And if you are using a half-size Kraft battery pack, don't worry about running out of 'juice.' These little control surfaces take very little servo power, and the receiver takes next to nothing. One is inclined to fly the little ones far more than the big ones, maybe because there is so little investment of time, trouble and cash that it is all fun and no fear. I shouldn't think battery capacity would be a problem with any of the lightweight new systems, even so.

So do use a 225 cell, and keep everything easy and light. There is no such thing as an overweight "Bokkie" in nature, is there? They don't survive for long — ask our recent visitor Joe Bridi, who has seen both the four-legged and the 'flying' variety here in South Africa. □

(continued from page 6)

but accurately metered bubble of contaminated air of the following composition:

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as a result the drill-shaped virus grew and proliferated beyond all expectations, while all the others died.

"From now on, to isolate the new virus, it was all plain sailing; but to reach this point, to find the correct composition of the "magic" air bubble which allowed the growth, this alone called for over 300 tests with different mixtures, and this was, you will agree, a painstaking job.

"After sufficient cultures of the now segregated virus had been grown, I could proceed with animal tests. You equally find the records of these tests in the annex to this paper; but may I be allowed to give you here a brief anthology of some particularly typical ones. In every case the test animals were given intravenous injections of a weak watery solution of the virus culture, in doses commensurate with the size and weight of the animal. Effects usually became apparent two to three hours after the injection.

"APE: The local zoo allowed me to treat a monkey couple of the baboon family, living in a large cage with a tree in the middle. Various materials, such as rods, spars, paper, string, etc., were placed in the cage.

"After the usual interval, the male of the species (the female did not register any notable effects) began to assemble sticks in varying patterns, mostly cross-wise, tying them together with string and covering the structure with paper and banana leaves, using remains of its lunch pap or

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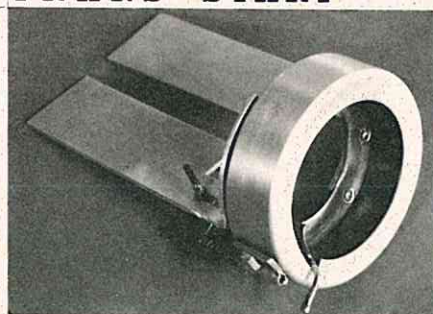
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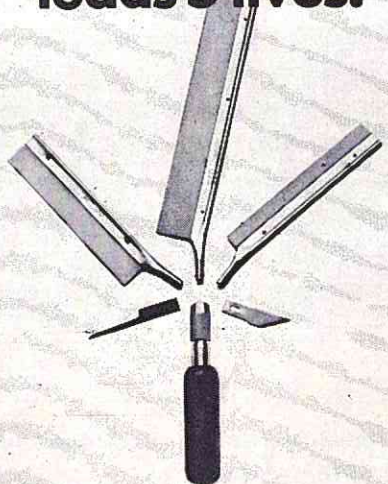
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mash for glue. Contrary to its usual behaviour, it worked late into the night, and showed no interest for its female companion at all.

"In the morning, the structure apparently having been completed, it climbed with it to the top of the tree and launched the thing into the air, with the obvious intention of making it fly. In doing this, and probably due to the effort of launching, it produced a sound very similar to the burping sound of a model engine.

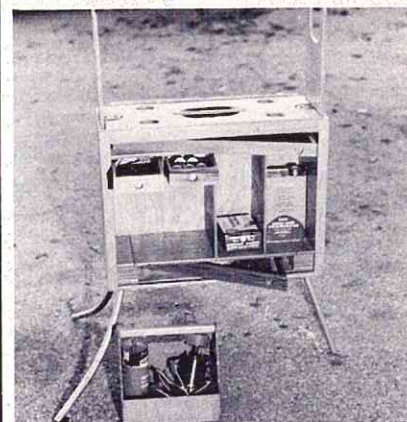
"DUCKS: A bevy of inoculated ducks all of a sudden took to the water, swam rapidly on a straight course towards the leaf of a water lily, rounded it at high speed, shaped again a straight course, still going full out, to the stalk of a reed, rounded this too, and finally made their return to the landing stage from which they had started. Obviously a race around a triangular course, the winner of which, being hailed with loud quacking by the others, stood up in the water on its hind legs flapping its wings, and then flew a victory round — tail forward in this case, as is usual for a 'Canard.' *

"DOVE: A brace of inoculated doves were let out of their cage after the usual interval. While the female again showed no abnormal symptoms and flapped about in the usual way, the male dove flew off on a straight course, then completed a figure of eight, climbed steeply, executed one backward and two forward loops, spun down to about 10 feet off the ground, soared down in a perfect approach of gliding turns, lowered the undercarriage, landed — and fell on its back. It then took off again, and disappeared over the trees turning right and left slow rolls.

"These symptoms are, if you gentlemen ever have observed modellers flying their airplanes

* Canard — French word for duck. This type of model is usually built by modellers who have been infected by a particularly virulent strain of Virus Hobbyensis.

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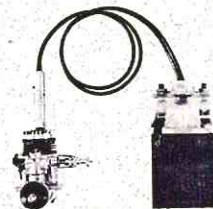
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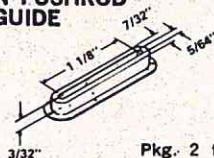
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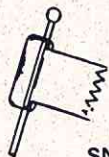
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and racing their boats, so telling and conclusive, that in my opinion there cannot be any doubt that the virus which I discovered is the cause of the addiction to hobbies, and modeling in particular, as found in an ever increasing number of individuals. I have therefore given it the name "Virus Hobbyensis."

(The audience, which contained a large proportion of modelling physicians, surgeons, and other scientists, gave the lecturer a standing ovation).

"Thank you gentlemen, for this token of appreciation for my modest efforts. But if I may beg for your indulgence a bit longer, I should like to apprise you of some other interesting issues which presented themselves to my mind.

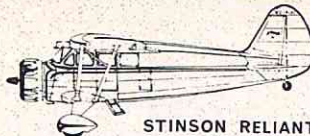
"You will have noted that the female of the various species of test animals seems usually quite unaffected by the treatment. This same feature is also apparent in human beings. This led me to a hypothesis, which, I confess, at the present hangs completely in the air and can in no way be substantiated. I give it to you nevertheless, in the hope that it may stimulate some of my esteemed colleagues to carry out further research along the lines it suggests.

"I base my hypothesis on the following two premises:

- 1) "It is an established fact that certain virus infections may upset the harmonic balance of an individual to such an extent as to change his or her behaviour pattern fundamentally and permanently.
- 2) "The symptoms of the change in the male behaviour pattern, as a result of the infection by virus hobbyensis, can be summarily stated as follows: *The urge to produce and operate miniature scale models of existing full scale prototypes.*

"If 1) is correct — and it is, since it is proven by hundreds of case histories — then it is logical to assume that the reason for the obvious immunity of the female

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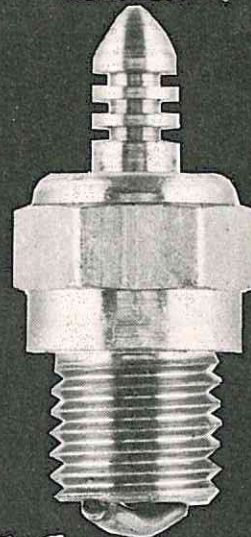
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against infections by virus hobyensis is due to the fact that her
hormonic balance and therefore
behaviour pattern is already similar
to that of an infected male.

"In other words, the urges as
formulated in 2) are already existing
in the female, whilst they come into
existence in a male only as a result of
an infection by my virus.

"Females now can yield to and
satisfy these urges by producing and
operating babies, which as a matter of
fact are nothing but miniature reproductions
of the full scale original, while males
have no other issue than to produce and
operate baby airplanes, baby ships, baby
trains, etc.

"A further analogy is to be found
in the fact that miniatures can never truly
and in every dimension be scaled down from
the full scale prototype. Thus, for instance,
the empennage of a model airplane is always
and necessarily larger in proportion to the
full scale original. The same feature is to
be found in babies who have a disproportionately
large head in relation to the remainder of
their structure.

"Having thus, with this hypothesis,
thrown a challenge into the arena of scientific
research, I hope that it will be taken up by
one or the other of my esteemed and learned
colleagues. I, on my part, have decided to
pursue the matter further, but more heads
are better than one.

"I thank you gentlemen for your kind
attention."

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tion, as well as an antitoxin for the cure or immunization of affected individuals, also in a marketable package, preferably tasteless and in soluble powder form, so that hobbyists' wives or mothers could secretly dope their husbands' or sons' morning coffee with it.

The former product would of course be eagerly bought by Model Clubs, who then no longer would have any difficulties in increasing their membership. Manufacturers of kits and model engines and editors of model magazines would also buy it in large quantities, for free distribution to the clubs.

The other product, the anti-toxin, on the other hand, presents a grave danger for our sport; it may, if it comes to the worst, eradicate it completely from the face of this world — to say nothing of your beloved magazine, R/C Modeler, which will have to stop publication.

If Santa Monica Chemicals, who have put large sums at the disposal of the professor for the development of these drugs, really go into volume production one of these days, the matter may have to be brought to the attention of the Congress, to introduce suitable legislation and to prevent a disaster. If so our honorable lawmakers will have to debate, for once, on a subject of real importance. □

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