

THE SHOESTRING BY CARL GOLDBERG

RADIO CONTROL

JANUARY/1966/50¢

MODELER

THE LEADING MAGAZINE OF RADIO CONTROL CDS



RCM DIGITRIO: DECODER

DEBOLT LOOKS AT GOODYEAR

Λίγα λόγια για μένα.

Είμαι Μηχανικός Ηλεκτρονικός και αυτό είναι το αληθινό μου επάγγελμα εργασίας.

Από μικρός δυο πράγματα μου κέντρισαν το ενδιαφέρον και ασχολήθηκα με αυτά.

Πρώτον ο ηλεκτρισμός και δεύτερον το απέραντο γαλάζιο του ουρανού και ο αέρας αυτού.

Το χόμπι του αερομοντελισμού το πρωτογνώρισα τον Οκτώβριο του 1973.

Μου αρέσουν οι ξύλινες κατασκευές αεροπλάνων και σκαφών από το μηδέν.

Ξεκίνησα να συλλέγω σχέδια, άρθρα, βιβλία και ότι άλλο μπορούσε να με βοηθήσει στο χόμπι από τα πολύ παλιά χρόνια.

Έχω δημιουργήσει μια πολύ μεγάλη προσωπική συλλογή από αυτά.

Από το 2004 άρχισα να ασχολούμαι με την ψηφιοποίηση τους, τον καθαρισμό τους αλλά και να τα μοιράζομαι μαζί σας αφού τα δημοσιοποιώ στο διαδίκτυο (όσα από αυτά επιτρέπεται λόγω των πνευματικών δικαιωμάτων τους).

Σήμερα μετά από όλη αυτήν την εμπειρία που έχω αποκτήσει, αποφάσισα να ψηφιοποιήσω, να καθαρίσω και να ξαναδημοσιεύσω σε ψηφιακή έκδοση και ελεύθερα όλα τα τεύχη του περιοδικού RC Modeler από το 1963 μέχρι το 2005.

Σίγουρα είναι μια πολύ μεγάλη, δύσκολη και επίπονη εργασία αλλά πιστεύω με την βοήθεια όλων σας να την τελειώσω σε ένα καλό αλλά μεγάλο χρονικό διάστημα.

Ζητώ συγγνώμη εκ των προτέρων γιατί τα Αγγλικά μου είναι φτωχά.

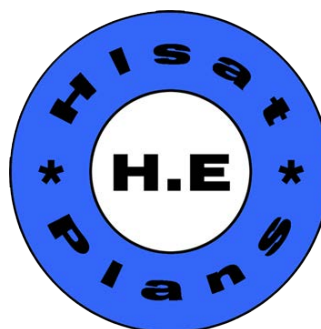
Δεν είναι η μητρική μου γλώσσα γιατί είμαι Έλληνας.

Εύχομαι σε όλους εσάς που θα επιλέξετε να τα συλλέξετε και να τα διαβάσετε αυτήν την εργασία μου καλή απόλαυση και καλές κατασκευές.

Το όνομα μου είναι Ηλίας Ευθυμιόπουλος.(Η.Ε)

Το ψευδώνυμο μου Hlsat.

Η χώρα μου η Ελλάδα και η πολη μου η Ξάνθη.



A few words about me.

I am Electronic Engineer and this is my true work job.

From small two things attracted my interest and I dealt with them.

First electricity and secondly the blue sky and the air him.

The model aircraft hobby met him in October 1973.

I love the wooden structures from scratch airplanes and boats.

I started collecting plans, articles, books and anything else that could help the hobby of many years ago.

I have created a very large personal collection of them.

Since 2004 I became involved with the digitization, clean them and to share with you since the public on the internet (as many of them are allowed reason of copyright).

Now after all this experience I have decided to digitize, to clean and to re publish in digital edition and free of all issues RC Modeler magazine from 1963 to 2005.

Certainly it is a very long, difficult and tedious task but I believe with the help of all of you to finish in a good but long time.

I apologize in advance because my English is poor.

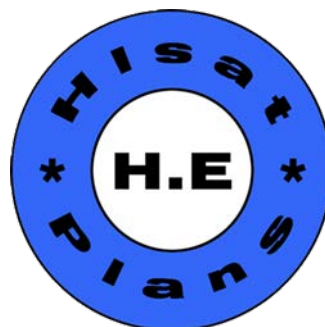
It is not my mother language because I am Greek.

I wish all of you who choose to collect and read this my work good enjoyment and good construction.

My name is Elijah Efthimiopoulos. (H.E)

My nickname Hlsat.

My country is Greece, and the my city is Xanthi.



RCM Magazine Editing and Resampling.

Work Done:

- 1) Advertisements removed.
- 2) Plans building plane removed and hyperlinked.
- 3) Articles building plane removed and hyperlinked.
- 4) Pages reordered.
- 5) Topics list added.

Now you can read these great issues and find the plans and building articles on multiple sites on the internet.

All Plans can be found here:

Hlsat Blog RCModeler Free Plans and Articles.

<http://www.rcgroups.com/forums/showthread.php?t=2354459>

AeroFred Gallery Free Plans.

<http://aerofred.com/index.php>

Hip Pocket Aeronautics Gallery Free Plans.

http://www.hippocketaeronautics.com/hpa_plans/index.php

James Hatton Blog Free Plans and Articles.

<http://pulling-gz.blogspot.gr/?view=flipcard>

Vintage & Old-Timer RCM Free Plans.

<http://www.rcgroups.com/forums/showthread.php?t=2233857>

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Thanks Elijah from Greece.

RADIO CONTROL MODELER

JANUARY 1966

VOL. 3 NO. 1

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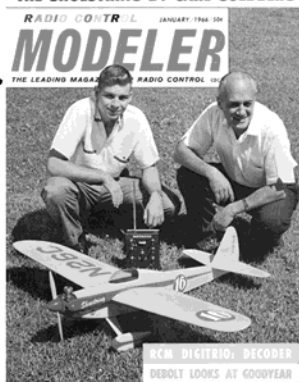
The Cover

Carl Goldberg, on the right, poses with Meahlan Smith and Shoestring prototype. The Shoestring, featured in this issue, was designed by Carl and built by Meahlan. F&M radio equipment.

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Sierra Madre, California 91026
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Laguna Beach, California 92652
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Official Publication of
The National Association of Radio Control Clubs
International Model Power Boat Association
National Miniature Pylon Racing Association

THE SHOESTRING BY CARL GOLDBERG

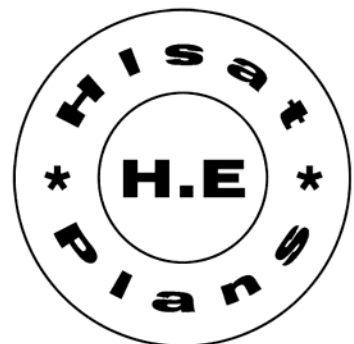


Subscription service: All subscription correspondence should be addressed to R/C Modeler Circulation Dept., P. O. Box 1128, Laguna Beach, California. Please allow at least six weeks for change of address. Include your old address, as well as new — enclosing an address label from a recent issue wherever possible.

Editorial contributions: must be accompanied by return postage and will be handled with all reasonable care. Publisher assumes no responsibility for return or safety of art work, photographs, or manuscripts. Address editorial contributions to The Editor, R/C Modeler Magazine, P. O. Box 487, Sierra Madre, California.

Subscription rate: One year, \$5.50, 2 years \$10.00. Canada, one year \$6.00. All other countries, one year \$6.50. Payment from all countries must be in U. S. funds.

R/C MODELER MAGAZINE is published monthly by the R/C Modeler Corporation. Contents copyright 1965. All rights reserved. Printed in U.S.A. Second Class Postage paid at Milwaukee, Wisconsin and at additional mailing offices.



EDITOR'S MEMO

by Don Dewey



ONE of the most common bonds in this R/C fraternity is the nightly building stint while watching Johnny Carson's 'Tonight' show. From the letters we receive, and the many modelers we talk with each month, it would seem that almost everyone in this sport watches this hour and forty-five minutes from the master of patter and humor while building their latest radio control project. We're no exception, and our own rating would put this show as number one for the edification and education of R/C addicts throughout the country. Despite the fact that Bernie Murphy gloats over the fact that he, and his fellow Easterners, get the show a day ahead of us.

That, however, does have one distinct advantage. Such as the time we were warned in advance that the exotic dancer, 'Little Egypt' was in store for us the next night. Even then, I wasn't prepared for the whole bit, and when she appeared in her act that evening (and that was about all she wearing), I found that in my excitement, I had picked up my cigarette and lit my X-Acto knife. Which wasn't half as bad as stubbing my cigarette out through the silk wing of a new model as she wound up her routine. . . .

'Young John,' as Skitch "Heidelberg" Henderson calls the host of the Tonight show, usually starts his evening routine off with a monologue of supposedly true incidents. We'll pass on a few of our own to the RCM/Tonight Show Reader-Viewer Fraternity.

This one happened at one of the Big Eastern Meets during the past contest season. It seems there was this Doctor from the Detroit area who was a dyed-in-the-wool R/C boat enthusiast. Insofar as boats and radio equipment went, he knew them both on a first name basis. But from airplanes, he couldn't care less. This, apparently, got to one of the big names in R/C who happened to be a friend of the good doctor. Somehow, this flyer (who is also a kit manufacturer), convinced our physician friend to build a single channel airplane kit which he furnished for that purpose. In addition, he invited the doctor to attend the Big Meet and see some real flying by some

of the top pros in the East. The doctor not only agreed, but brought along his plane and gear, taking his benefactor up on the offer to teach him to fly it after the contest was over.

Comes the day of the big meet. Everywhere there are spectators — four rows deep, at least. And Names — all of the Big Ones in the East. Enough to make even an average Contest Flyer shake in his long woolies. And the doctor is there with his single channel, escapement driven cabin job. Imagine, then, his feeling when, at the completion of the first round of contesting, his "friend" takes the microphone in hand and announces to the entire assemblage of contest fliers and spectators, that Dr. So-and-So is going to solo his single channel ship during the brief lull in activities!

With no rock to crawl under, the brave MD sets his airplane down under the trained gaze of the East's Finest. Despite the tremors that had suddenly beset him, our hero finally managed to get his engine started. Turning on his transmitter and receiver, he followed the rules of the game and checked to see that his rudder didn't wag when it was supposed to wig. As luck would have it, it wiggled.

It was now the Moment of Truth. And in this case, enough to make a grown man cry. All systems go, the doctor started down the field at a wobbly run, his airplane held high in one hand, the transmitter grasped firmly in the other.

And then the launch . . . with a mighty heave, our friend hurled his transmitter high in the air, then stopped dead in his tracks, the disbelief on his face turning to a rosy shade of embarrassment as he stood staring at the model still in his hand, the engine screaming away. . . .

Unbelievable, but true, friends.

And then there's the story from the Whirlwinds M.A.C. of St. Joseph-Benton Harbor, Michigan, concerning five of their members who attended the Mid-Western States Championship Contest at Bong AFB last September. One of the members brought along camping gear for the entire crew, and they arrived at the field one night early in

order to bed down and get a good night's sleep before the morning of the meet. Imagine their surprise when, around midnight, they were infiltrated by National Guard troops holding maneuvers at the field! After this initial, and somewhat bizarre awakening, they were subjected to machine gun fire from 4:30 a.m. until dawn!

Getting better? One more time.

It was a contest in Northern California, wherein one of the scheduled events was Open Pylon. Although this is popular in the East, it doesn't draw many entries on the West Coast. So, it wasn't too much of a surprise when only three deltas showed up on the registration for the Pylon polishing. One of the overworked meet directors was somewhat disgusted by the lack of interest in this affair, so as a joke, entered his Custom Privateer in Open Pylon.

As the qualifications for Open Pylon came around, the deltas met with one accident after another. One hit a pylon and destroyed itself. Another was unable to fly due to radio or equipment failure. The third crashed shortly after takeoff.

The result? You guessed it. The ten foot Privateer slowly floating around the pylons, taking about a half mile to circle each one. And when all was said and flew, the Privateer emerged the winner.

In Open Pylon, yet.

RCM is both proud and honored to welcome Carl Goldberg as a contributing author this month. The Shoe-string, presented in this issue, is one of Carl's finest efforts in a long modeling history of outstanding designs. For those of you who haven't had the pleasure and privilege of knowing Carl from the early days of free flight, we would like to state that he is virtually unequalled in the contributions he has made to model aviation, and in fact, is an individual whose career in this field is a living example of all of the assets of model aviation — sportsmanship, honor, integrity, and a helping hand extended to all with whom he has come in contact. Carl Goldberg has, indeed, earned the title given him many years ago — Mr. Modeling.

We will also predict that Carl's Shoe-string design will be an all-time favorite — even more popular when the CG Models kit is released in the near future.

Another RCM contributor this month is Hal deBolt, a pioneer RC'er who was

instrumental in making this entire hobby possible. Hal certainly needs little introduction to RCM readers—and, we think you'll find his analysis of the present Goodyear Event a needed critique of this popular favorite. I hope that his article will stimulate some creative thinking concerning the rules in this event so that it will not be relegated to the dominion of a few, but rather, remain in the hands of the majority of RC'ers for whom it was intended.

In the category of Coming Events—MATS—Model Airplane Trade Show, the first all R/C trade show ever to be held on the West Coast. Sponsored by the Garden Grove R/C Club, this event is destined to become an annual affair, catering not only to the R/C hobbyist, but also to the general public who is now spending more time and more money than ever on leisure time activities.

The West Coast MATS will be a five day stint, commencing Wednesday, January 13, 1966 and running through Sunday, January 17, 1966. Each day's program has been planned to give exhibitors from every part of the country maximum exposure as well as providing them with a look at the intensive and enthusiastic modeling that is so much a part of the Southern California way of life.

Wednesday, the 13th, the Garden Grove Club will invite manufacturers and distributors to attend an open club meeting where they will have an opportunity to meet members from many of the Southern California R/C Clubs. Thursday will be a Welcome Party for all of the exhibitors. Friday and Saturday, the MATS will be held at the famed Movieland of the Air Museum in Santa Ana, California. Exhibitors will display their products amid the exciting spectacle of a myriad of old time planes restored to perfect condition. The general public will be invited to this two day show via newspaper advertisements and news release.

Sunday, January 17, will wind up the first MATS with an Action Day at Meadowlark Field. Here, top flight modelers will put their ships through exciting stunt patterns. Additional antique aircraft will be on display through the kind assistance of Tall-Mantz Air Museum. The Experimental Airplane Association has arranged for their members to provide a fly-in air show of homebuilt aircraft.

Just a suggestion—why not turn your trip into a vacation? Plan on attending the West Coast R/C Trade Show—MATS, within minutes of Disneyland, Knotts Berry Farm, Marineland of the Pacific, and of course, Hollywood land and Beverly Hills.

We'll look for you, there.

In the Errata Department, our apologies for captioning the picture of Pete Holland in our Internat's coverage as being that of Windy Kreulen. And our apologies to Windy for not having a picture of him in there.

Or something.

Also, in the errata department, Dave Platt of England, who designed the fabulous scale R/C version of the Miles Magister soon to appear in RCM, was most unhappy with us for labeling the Magister in the British Nat's as his—the one pictured was extensively altered from scale and belonged to another modeler.

We apologize, Dave. But everybody makes mistakes. Think how Leif Erickson must feel about old Christopher!

I've been inundated with letters about the Royal Coachman. Seems like the ugly little monster became a popular favorite both at home and abroad. They've been set up with everything from escapements to full proportional, and from .09 to .23's yet! One even took third in Class I at a British contest! Which just goes to show you that none of you guys got any taste. . . .

A Dewey Prediction: the price of kits and balsa stock items are going up. The two sources for balsa wood in South America have both increased their prices to U. S. bulk consumers, such as Sig, Midwest, etc. This isn't as bad as it sounds, and may not be too noticeable. Balsa will still be one of the least expensive items in this hobby. . . .

Next month, yours truly is going to take three days off and see what this flying bit is all about. Going down to my mother-in-law's ranch and fly from morning to night. They have a ranch in the mountains of San Diego with nothing but acres of level area all about them. You sit on the porch and fly. Period. And if you guys aren't nice to me, I'll spend the next six issues telling you about my Number One wife and her R/C exploits. . . .

Go in' back to Houston. . . .

**DON'T MISS THE EXCITING
R/C MODELER ANNUAL
ON SALE
FEBRUARY 15, 1966**

PRE-FLIGHT CHECK LIST

(Reprinted from Tucson R/C Club "Noise")

1. **Check batteries:** The best way to perform this check is to fly two or three flights and see if they hold up.
2. **Check operation of all equipment in aircraft:** Put an unbalanced prop on to cause excessive vibration which will overcome any stickiness in servos.
3. **Check all wiring:** If everything worked in Step 2, wiring is obviously okay—disregard this step and proceed to Step 4.
4. **Aircraft alignment:** If plane is out of alignment, don't worry about it. This will show up quickly in flight performance.
5. **Balance:** Only put main gear on plane during construction. If model is nose heavy, install tail wheel. If tail heavy, install nose wheel. (This system has the added advantage of enhancing ground appearance.)
6. **Engine thrust:** Any adverse effects here will normally be canceled by warps.
7. **Warps:** These are normally canceled by incorrect engine alignment.
8. **Preliminary range check:** Performed with antenna removed from transmitter at a distance of about ten to fifteen feet. If system does not operate, simply reinstall antenna.
9. **Spare parts:** (props, rubber bands, glow plugs, etc.) Make sure fellow club members are flying on the days you plan to go to the field.
10. **Tools:** If the preceding steps have been religiously adhered to, tools will not be required.
11. **Field range check:** Everyone knows this is best performed while the plane is in the air. If plane is under control at all times, range is adequate.
12. **Ground handling:** If this worries you, try slot racing.
13. **Test flying:** Best performed in front of a large crowd for the following reasons:
 - a. you may show off your abilities to their best advantage.
 - b. in the event you make a mistake, there will usually be ample advice available.
 - c. experience has shown that the guy who hollers advice the loudest is usually correct.
 - d. in the event of a crash, yell in a loud and clear voice—"Interference!"
14. **Landing:** This phase is guaranteed. What goes up must come down.
15. If you happen to be flying proportional, substitute 'Fail-Safe' for interference in Step 13, Part D, and disregard the balance of the instructions.

Showcase '66

Meinke Model Engineering has announced their 5 Star Series of pre-fab wings for R/C models. Each wing is completely covered and ready to be joined upon removal from the shipping box. No sanding is required. Finish can be applied directly to wing covering without the necessity for silking. A good gloss can be obtained in three coats. Nylon hinges are included in the kit for fast, simplified installation of strip ailerons. Landing gear mounts are pre-installed. Pre-formed wing tips are included. Wings are currently available for the Taurus, Tauri, Falcon 56 and Senior, P-Shooter, Jenny, Candy, Orion, and Beachcomber at \$24.95 each. Stabilizers are available for most of the above at \$8.95. For further information, Circle #1 on the Reader Service Index.

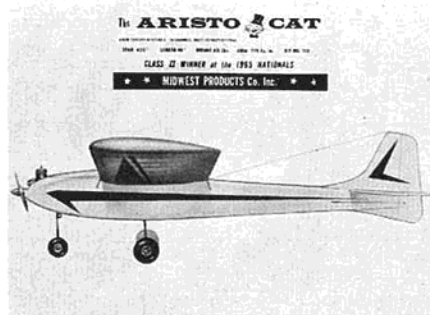
Johnnie Cashburn has announced the forthcoming release of his Sweeper kit, a swept-wing Texas Class III design, the kit swept featuring foam wings. Plans only are available for \$3.75 per set. For further information, Circle #2 on the Reader Service Index.

Years of research and development, plus thousands of dollars in pictorial and descriptive effort have apparently gone into the set of four catalogs completely covering the hobby industry, and recently released by Lees Hobby Supplies. The set consists of 280 pages, individually broken down into four major categories—Slot Car; Railroad; Miniature Figures For Collection; and Radio Control, Airplane and Boat Equipment. Just completed and available for shipment, the entire set is sold for \$2, refundable to the consumer on his first order of \$5 or more. Lee's feels this to be a giant step forward in making hobby merchandise more readily available to the general public throughout the country. Circle #3 on the Reader Service Index.

North El Monte Hobby announces that they are distributors for the new Jensen Enterprises Kwik-Fli kit—the RCM design by Phil Kraft that has been winning contest after contest. At \$34.95, RCM feels that this kit is an outstanding buy, and one of the finest kits we have ever seen. It is highly recommended by RCM and will soon be reviewed in Kits and Pieces. Dealer inquiries are invited to the newly established North El Monte distributorship. For further information Circle #4 on the Reader Service Index.

Delta Specialties announces their new Stickum, an excellent spray adhesive for covering styrofoam cores and laminating fuselage doublers. This is an ultra-light, exceptionally strong, and fast drying contact adhesive for use with styrofoam, balsa, plywood, wood veneers, and bristol board. Each aerosol can of Stickum contains enough adhesive to complete two full size multi aircraft, including wings, stabilizers, and fuselage doubling, bonding over 4000 square inches. Price is \$4.95 per can. Circle #5 on the Reader Service Index.

The Class II Nat's winning Aristo Cat is now available for immediate delivery from Midwest Products Co. Designed for 6 to 10 channels or proportional, price of the Aristo-Cat kit is \$24.95. Circle #6 on the Reader Service Card.



If you want the finest in R/C engines, RCM recommends that they be hand reworked by Lou Penrod. When received by Lou, these engine are set up so that all the bearing surfaces have the right clearances to prevent internal drag, a factor that causes most internal combustion engines to lose 75% of their efficiency. Lou also improves the volumetric efficiency of each engine. The end result is that the engine will idle smoother and more reliably since it doesn't have to fight as much internal drag. Top RPM is better for the same reason, along with the result of improving the air fuel intake channels and passageways. Engines reworked by Lou were used by Jackie Gardner to win Class I at the recent Nationals, Nick Neville to win Class II, and Harold Coleson who took third in Class III. Price is \$10 plus postage for any engine. Allow a week to ten days for return. Circle #7 on the Reader Service Index.

Texas Crystals concentrates its entire efforts on the manufacture of quartz crystal frequency controlling elements for use by the communications industry. By specializing solely on crystals, the customer and RC'er, is assured of the finest product available at the lowest possible cost. For a brochure on crystals for communications and radio control use, Circle #8 on the Reader Service Index.

Sig Manufacturing Company has announced a brand new white glue which will use a catalyst. This is one white glue that is not only completely waterproof, but much more easily sanded. Pot life will be 8 to 10 hours, with a set-up time of about twenty minutes. Full strength is reached in 4 to 6 hours. Completely fuel proof. Price will be more than their Superweld but considerably less than epoxy. It is our feeling that this may turn out to be one of the most popular adhesives ever used by the modeling industry. Circle #9 on the Reader Service Index.

Tested and highly recommended by RCM is Core-Grip contact cement, specially formulated adhesive designed for use with styrofoam cores and balsa to balsa sheet doublers. Extremely light weight, Core-Grip adds less than one ounce of weight to a five hundred square inch wing. Price per pint is \$1.89 and \$2.95 per quart. One pint will cover a wing of approximately 600-800 square inches of area. Circle #10 on the Reader Service Index.

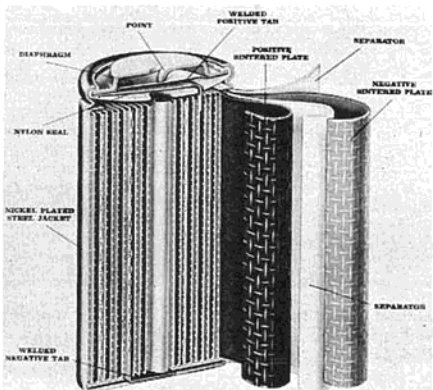
The Newport Custom Cabin Cruiser from

(Continued on Page 17)

Norco Marine is an example of the finest in materials selection and pre-fabrication. This cabin cruiser is designed for the larger mills such as the Gannet and O&R, with more than adequate room for almost any combination of R/C equipment. A complete accessory fittings kit is also available. RCM currently has a Newport under construction and can definitely recommend this kit to the R/C boat enthusiast. For further information, Circle #11 on the Reader Service Index.

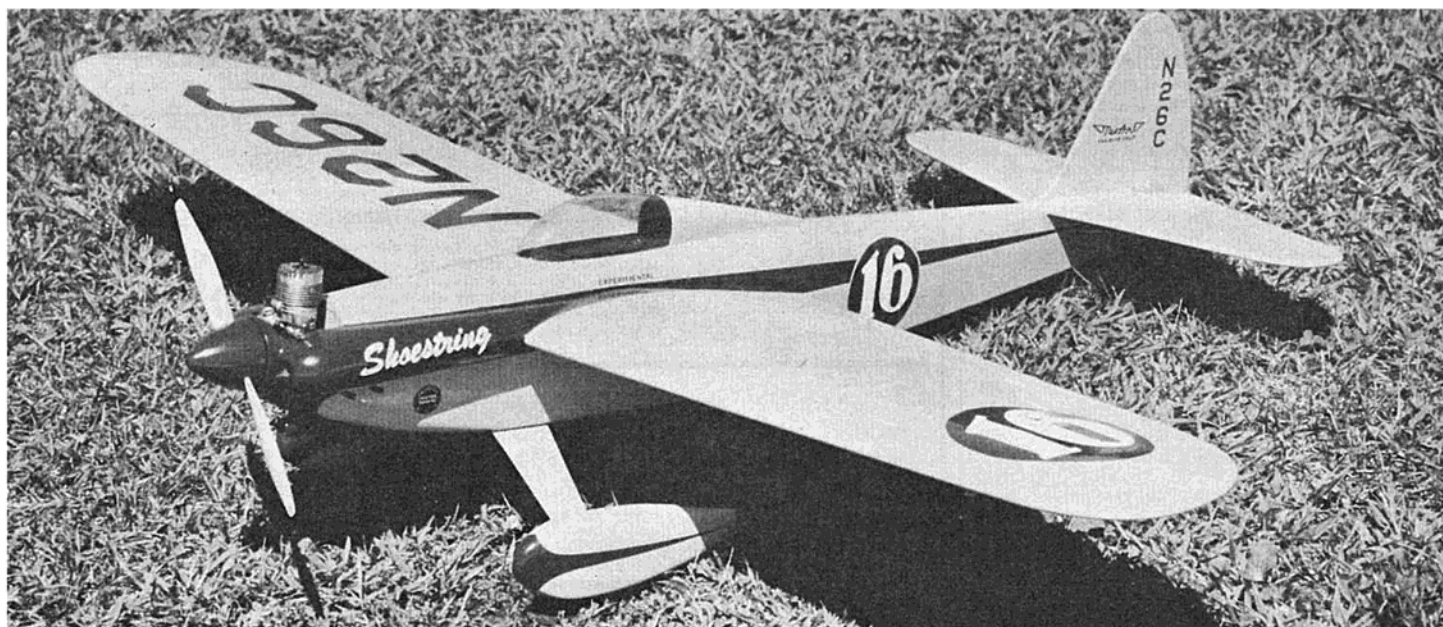


Sonotone Corporation's, Battery Division has just issued a new four-page technical brochure on its line of sealed nickel-cadmium battery cells, picturing the firm's line of sealed cells, applications, maintenance features, packaging arrangements, charging, and constructions. Physical and electrical characteristics of Sonotone's entire line of sealed cells are listed on an easy-to-use table. The cutaway photo shows the Sonotone sealed, rechargeable sintered-plate, battery cell with its new safety vent. In event of improper use, causing buildup of internal pressures, the cell vents as the diaphragm is pushed against the point, releasing pressure. The venting action does not halt the performance of the cell. The strong "thru-weld" construction allows the battery to maintain flat voltage outputs under extremely high current loads. Distributor for Sonotone nickel-cadmium cells in the hobby industry is GM Hobbies. Circle #12 on the Reader Service Card.



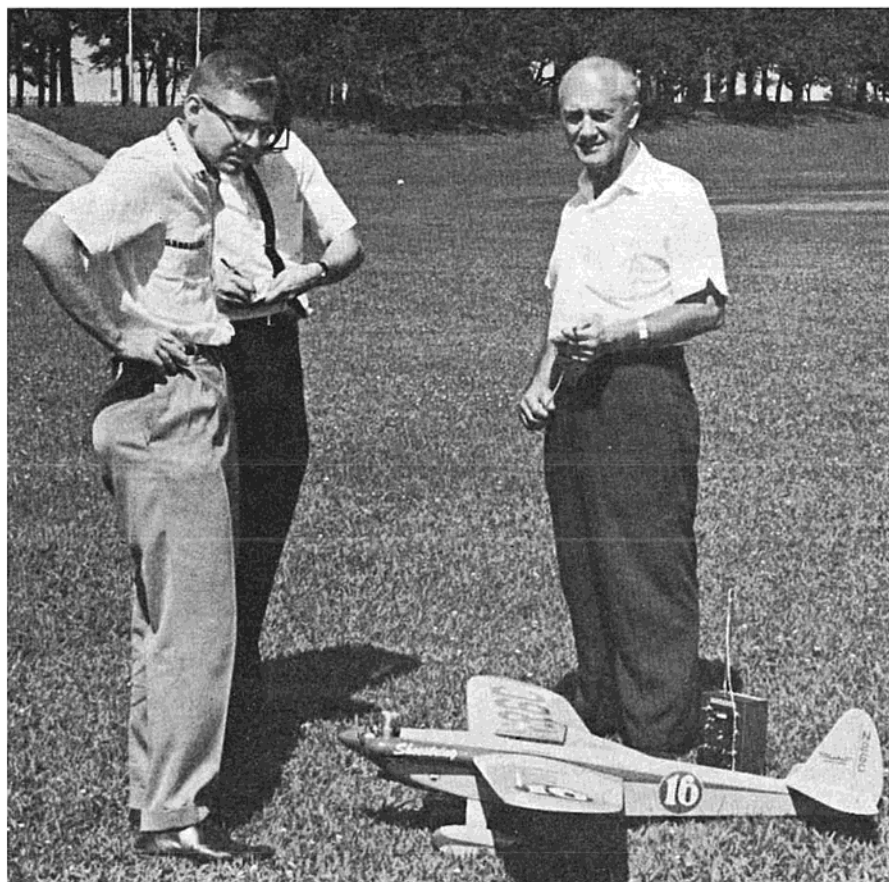
For R/C hydro enthusiasts, Octura Models has a custom flywheel, collet, and universal designed to fit the fast Rossi 60 and also the Dooling 61. Price is \$7.95. The Octura line of X70 metal props are available in precision cast unpolished bronze for \$3.75 each and polished stainless steel for \$5.85. Drive slot is cast in. Circle #13 on the Reader Service Card.

One of the products most commonly used around the RCM shop is Hastings Polyester Resin. This is one of the finest fiberglass resins we have yet used. Dry time is 2-3 hours at 70 deg. F. A two pound can is \$1.75 with hardener and will last quite a



SHOESTRING

BY CARL GOLDBERG



THERE is something about almost every full scale airplane that makes it singularly beautiful. Of course, there are many different kinds of beauty. Some are even beautiful in an ugly sort of way, if you know what I mean. But when it comes to the Shoestring, designed by Rodney Kreimendahl, it has always seemed to me that he created a classic beauty fit to stand with the all-time greats.

Our model of the Shoestring, adapted to R/C, was begun in the summer of '64 but didn't make much progress until the idea of the miniature Goodyear races began to take hold. By sheer accident, our basic dimensions, etc., fitted into the Goodyear pattern. The only major change was to thin out the airfoil somewhat.

The original wing span of 54" and overall wing area of 540" were retained. The additional area (above the minimum required by the rules) might make this ship a bit slower than the fastest, but we certainly didn't want a bomb that only the finest flyers could handle. This ship had to be something the average man could fly. This eventually proved to be true. Even I was able to fly it, and when you consider my extremely limited multi time, that's really saying something! For the real hot

shot, with blood in his eye to win races, sufficient area can easily be taken out of the middle of the wing to reduce it to the minimum allowed by the rules.

Another factor we kept in mind was that, for most flyers, an upright engine is a simpler deal and more practical to work with in every way. However, we provided room in the cheek cowl so that the engine can be mounted horizontally and completely concealed except that the head would be more or less flush with the outside.

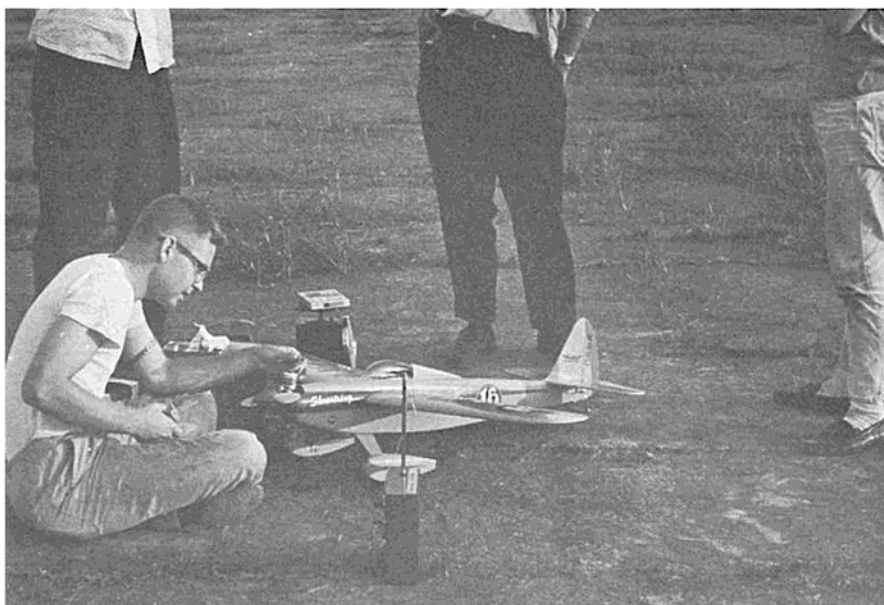
Another consideration was how much dihedral to use. A flat wing like the original would, of course, be scale, but would require somewhat greater flying skill to handle than one with a few degrees of dihedral. There again, the choice can be made by the builder. For most flyers, we recommend the 4 degrees of dihedral shown, although the difference in stability probably wouldn't be substantial.

The prototype pictured here was built by Mehlin Smith. He began work as soon as our drawings of the fuselage permitted. Even then, his speed in building the model was often slowed down by the time we took in solving individual design problems as they came up. The ship was originally flown with 10 channels, although, 8 channels (omitting trim) is perfectly practicable. If you're not going to be racing according to NMPRA rules requiring ground steering, the ship undoubtedly would do fine on 6 channels for aileron, elevator and engine.

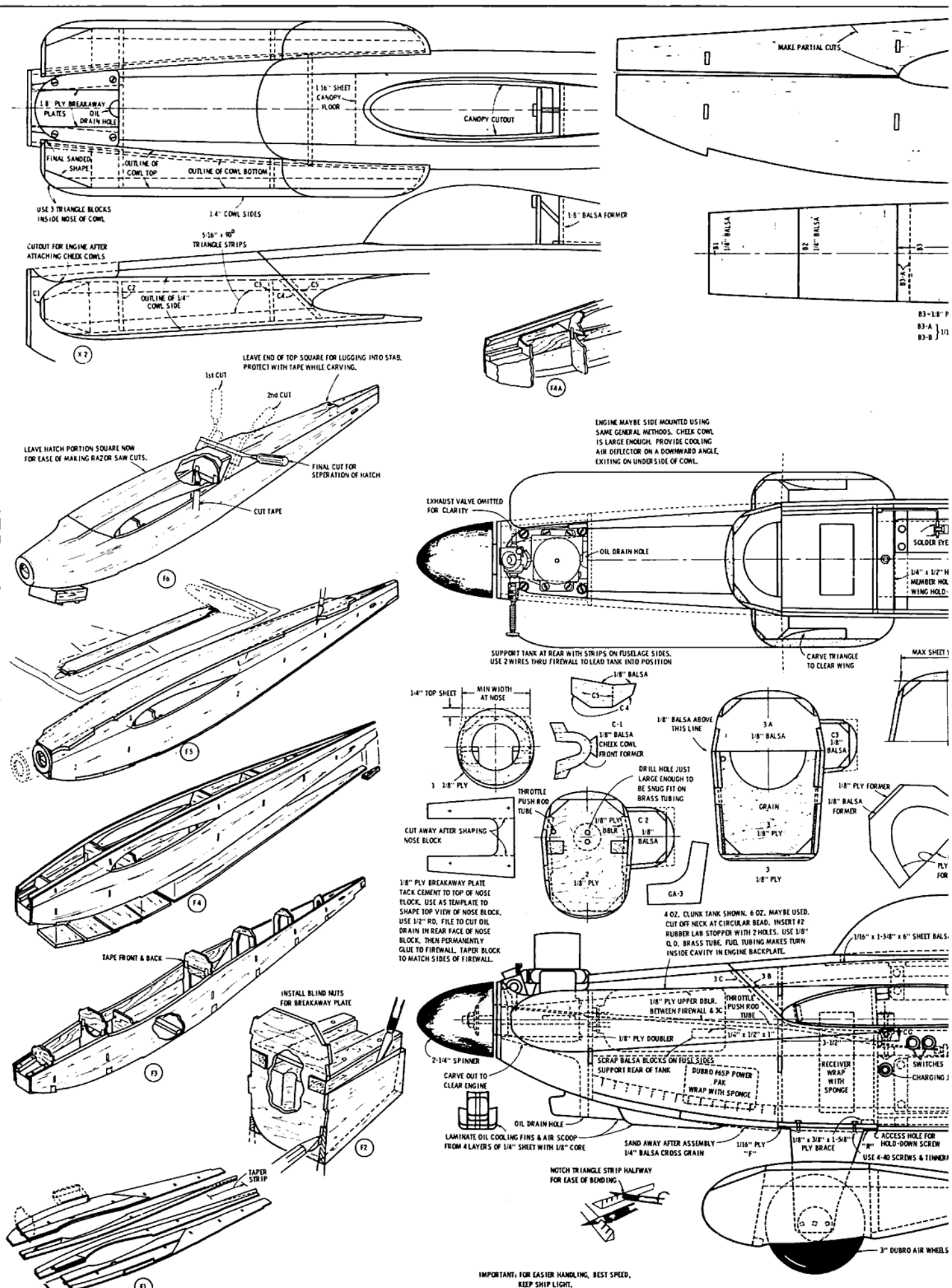
In testing the Shoestring, the original small ailerons seemed too slow in taking hold so they were increased to the present size. Otherwise, only small detail changes were indicated. The landing gear, which is right in the scale position, worked out beautifully on somewhat rough ground and on short grass. There was never a tendency to nose over or fishtail.

One unusual construction feature is the aileron torque rod setup. It's different from the usual pushrod and bellcrank arrangement normally used for conventional ailerons. It actually is based on the idea of the simplicity of strip ailerons.

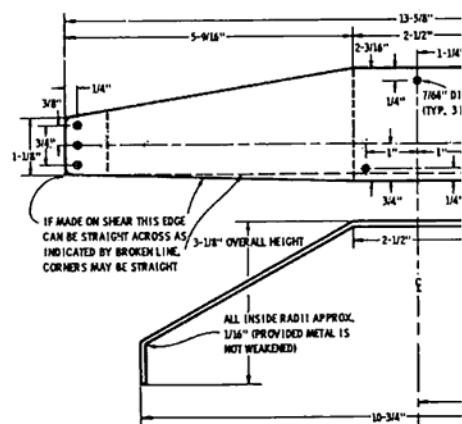
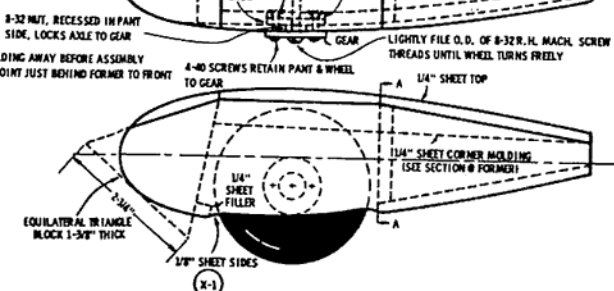
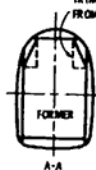
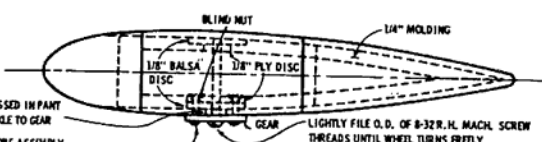
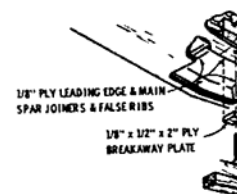
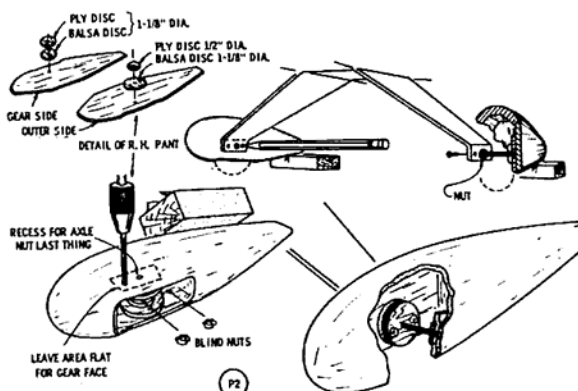
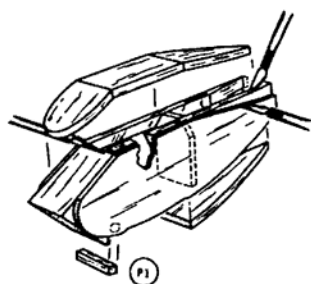
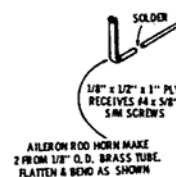
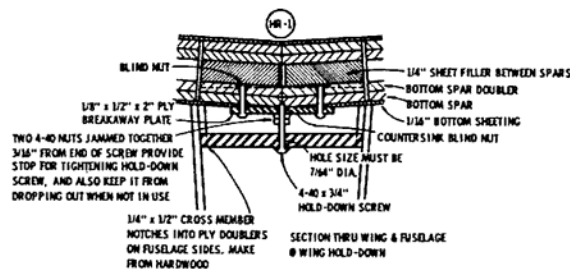
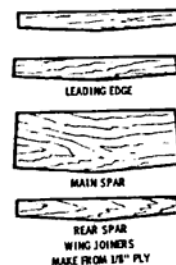
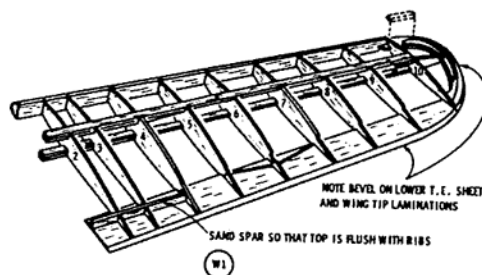
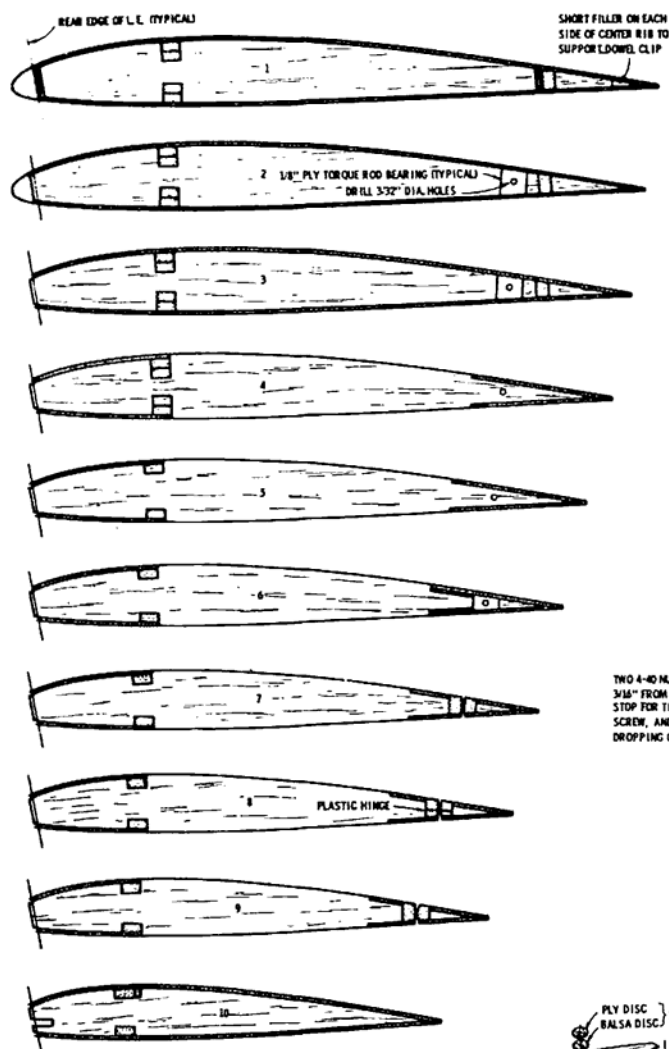
Another different feature, and one which probably gave us the most design headaches, came about while trying to get rid of external rubber bands for holding the wing down. A great many ideas were kicked around, including several tryouts in mockup form. The hold-down system shown on the plan originally led to a number of hot discussions. In its present form it is both simple and highly effective. The main hold-down, at the wing spar, is an adaptation of the breakaway engine mount idea. When the plywood plate

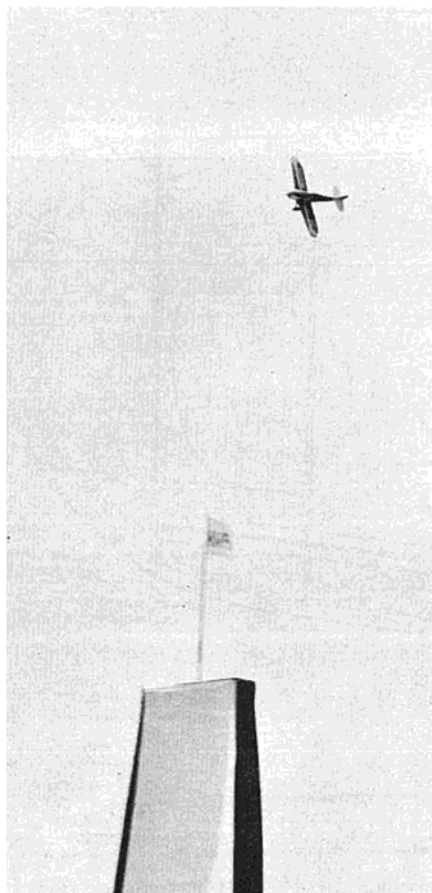


(Continued on Page 17)



IMPORTANT: FOR EASIER HANDLING, BEST SPEED, KEEP SHIP LIGHT.





IS THE GOODYEAR EVENT HERE TO STAY?

BY HAROLD deBOLT

**One of the Nation's Leading R/C Authorities
and Foremost Competitor Takes a Long, Hard Look
At the New Goodyear Event. Will It Live Up To Our
Expectations As An "Everyman's" Event?**

WITH telephone in hand our editor conned me into tearing Jerry Nelson apart with this article. I am afraid that even now I do not get the message unless it is that Jerry is too big for anyone on the West Coast to take on and that my being 2500 miles away should make it safe for me. Or does it, in this jet age? Anyhow, Jerry and I are buddies from way back and he is always accusing me of using the same french curve on all my models, even though most everyone knows that I have more than one! It looks like this is my golden opportunity . . .

Seriously . . . it seems obvious by now that Jerry Nelson started something when he came up with this Goodyear Pylon racing event. Certainly, it has been many a moon since anything has come along which has created as much interest and anticipation as this. Many of us have sat around the Winter fires (and even cracker barrels) wondering why an event with as much potential as Pylon racing had not caught on. Many reasons were advanced, hashed over and discarded, until the event settled down to a battle of the pie plates among a small group of experts. Certainly, it has little but passing interest to the average modeler and the public, the way our AMA rules set it up today. Then comes along a "dirty little kid," as Jerry is affectionally known by his friends, who goes to full-scale mid-gate races where he wonders why we can't do the same with our models.

The rest is history. With the ambition of youth, he went ahead and developed such a program. Now it has caught the fancy of the modeling world, and when demonstrated to the public, steals the show! Obviously we have caught the ball we have been looking for but the question now is . . . how do we keep from dropping it?

Most of us have watched the N.M.P.R.A. during the past flying season. For the most part it seems reasonable to say that we liked what we saw, and it would appear that we all would like to see more of it and even get into it ourselves. With these thoughts in mind the question now is whether the track we are running on is straight to the point, or whether it may have some

Jack Roth's "Jenny Bonzo" won two heats at the Philly Nat's. A 5¼ lb. modified dmeco Jenny, it has logged about 500 flights. Model performs entire Class III pattern with competition quality.



wicked curves which could throw us for a loss. Perhaps Don Dewey is right when he suggests that now may be the time to look it over, "kick the tires" and decide whether it may not need an overhaul before we accept it completely. Certainly this past season has given us some food for thought, plus experience, which we can use to good advantage.

Let's look at the picture as it now stands: First this event originated in California, and from reports drifting back here it has reached a fair measure of popularity in that region. We also had a demonstration at the Philly Nats where hundreds turned out to spectate but very few, by comparison, competed. This was in the East, of course. There also have been some sanctioned events held throughout the Eastern half of the country where, on the average, you could say interest was very high but competition was mediocre, at best. In other words — why the great interest and not the competition to go with it?

One might ask how competition is shaping up in the West where this Goodyear event is strongest. If you have had a chance to check the contest results you would note that it looks very much like a listing of the stunt or pattern winners from that area. In other words, where are the newcomers to competition which this event was supposed to attract? And, if they are there but just not in the winners circle, what

(Continued on Page 16)

gives the "experts" the advantage so early in the game?

Another aspect is to wonder how much progress has been made, and towards what extreme these racers are heading? Just what performance is being obtained from them and what does it look like the ultimate will be? Are the speeds of these machines going far beyond our (or Jerry's) original intention? If so, are these speeds and their associated dangers necessary to make the event interesting?

Last, and far from least, was it Jerry's intention and is it ours that this event should establish some sort of speed category for R/C that would be similar to control line speed? In other words, an event established and run for a group of highly specialized modelers? Or, was it the intention that this event would hold interest for the greater mass of modelers and be a place for them to compete and promote our sport?

As you may already feel, these are loaded questions which would be difficult for any one person to answer, even Jerry himself! However, we do have some experience now which can be related to the problems and perhaps provide some fertilizer for our thinking.

First and most important: why don't we have a rush of entrants in Goodyear and why are the ones we do have mostly the established experts?

This point is liable to hurt, but it seems as though it should be made. It must be understood that this event was invented by an "expert," even if he is a "dirty little kid," and that as a whole, experts lack the vision which it takes to see this sport from the eyes of an average flyer. Thus, they tend to tailor the rules along their own line of thought which usually is a bit too advanced for the average guy. It may well be that they have good reason for this . . . they may think that it is necessary to do it that way in order to accomplish the end desired, but what it actually does is to rule out the average guy before he even gets started.

At this time it would appear that the average flyer, from whose ranks this mass of entrants would have to come, is not at all eager to spend untold hours building a fancy scale pylon Goodyear racer to take out and rack around the pylons. In the first place, most of them are not very interested in building fancy airplanes . . . they require too much work, ability, and

time for the average Joe. Secondly, he has very seldom flown a pylon course and believes that this would be an awfully easy way to bust up airplanes, especially fancy scale jobs. So, the obvious answer would be to make the Goodyear racer a simple airplane, one requiring far less effort to build and one which he could replace quickly if he should happen to tear it up. Given a much less "expensive" airplane, a modeler might figure he could afford to take it out and practice the course. From these aspects the answer seems to lie in a simple sort of Goodyear racer, not the mighty pretty versions the experts are flying today. Example of another sort: Bob Dunham commented at the Nats that this sure was an event with interest and potential. When asked why he did not have one, the answer fitted our point pretty well in spite of his being an expert. His answer was that he "just plain did not have the time to build such fancy airplanes and keep them in the polished state it took to garner the handicap points necessary in order to win!"

A rebuttal to the simple airplane might be that the event is supposed to duplicate the appearance of a full scale Goodyear race and how can you do this with simple types of models? The answer to this might be to ask how full scale Goodyear racers "ace" up your sleeve that will give you a good speed advantage, you just are *not* going to overcome a handicap like that! The trouble is that there is no way to get a speed advantage by building non-scale the way the rules are now . . . all that you can possibly do is give away 15 seconds . . .

Maurice Woods tried another handicap system this year at the "Tournament of Champions." He used a handicap system which seemed more suited to the average flyer with no consideration being given to scale. Maurice handicapped everyone by speed alone and it seemed to work well since a relative newcomer won 2nd place in the finals, flying against the Champions with what seemed like a slower-than-average model.

The speed handicap worked this way: One round of qualifying was held, and at the end, everyone was handicapped by the number of seconds that he was slower than the fastest time posted. In other words, if you flew fastest in the qualifying heat, your handicap was zero. Whenever you flew again, your competitor would get a head start on you in the amount of his handicap. Example: Joe Blow was 12 sec. slower than you in qualifying. John Doe was 17 sec. slower. Now, the 3 of you are starting a heat. What happens is that when the gun goes off, the

watch is started, and after 17 seconds John Doe is waved off. Five seconds later Joe Blow gets the flag, and 12 seconds after him you get to go. Naturally, what this does is to make you, the fastest, fly on as close to a par with the others as possible. You must win your heat in order to advance to the semi-finals, hence you need to fly all-out in this heat. The delayed start tends to create realistic heat times, thus if you are fast and flying in a fast heat, you will post a fast time, indicating that you actually were flying quicker than those in other heats and thus deserve any heat prizes which may be awarded. For the semi-finals, new handicaps are used, garnered from the times in the quarter-finals, so that before the racing is over, very realistic handicaps will be in use no matter what happened in the qualifications.

Perhaps this is not the final answer or it may need polishing but it can be said that it did work, and that it is another way to handicap races.

The question about how things are shaping up in the West seems to hinge on why the winner's circle is so crowded with experts. The only answer that is easy to see here is that it takes an expert to build a fancy scale Goodyear racer and that it takes experience, plus enough "guts," to rack all that work around the pylons. There is little room for newcomers under those conditions as we mentioned before. Given the opportunity to use a simple, more expendable airplane, the newcomer might see fit to get into the show and learn by competing.

The progress question could be a serious one. As I recall, good old Jerry originally stated he thought the speeds of these things would be about 75 mph which would seem realistic for competition. From what he said, one would gather that he saw no need for the winning speeds to go much above this in order to have a good competitive show. What is already happening may not be what Jerry envisioned at all, and in fact may have some serious ramifications from the safety viewpoint. It is a fact that races are now being won with the clocked speed of 60 mph and better. This means that taking the turns into consideration as well as the fact that you actually fly *AROUND* and *OUTSIDE* the measured course, the straight away speeds are approaching 100 mph easily! Then there are the stories sifting through the pipelines which say that in some straightaway dashes over a measured course many

(Continued on Page 17)

SHOESTRING

(Continued from Page 10)

is screwed in place as shown, it takes a pull of more than 50 pounds to break it. This is plenty for normal flying, but in a very bad or a crash type landing, it gives the wing a chance to shift or even come off entirely.

The many sketches accompanying the plans, will be sufficient no doubt, to clarify most construction questions. However, a few suggestions on procedure may be useful. The entire fuselage and wing should be well completed, including silking, before fitting the cheek cowl in place.

In building the wing, the four trailing edge sheets are cut accurately to shape, including cutting the aileron outlines out of the top sheets. The bottom sheet is pinned to the plan, and ribs (except #1) and leading edge and top spar are added. Next come the tip brace, tip, and top trailing edge sheet. The ribs in the aileron area are now cut to receive the aileron spars, the two end riblets added, and the aileron sheeted. The top leading edge sheet is added, after which the wing is removed from the building board and the lower spar and bottom leading edge sheet cemented in place. The $\frac{3}{8}$ " sheet on the bottom of the wing tip is added, allowed to dry, and sanded. The wing is then replaced on the table with the trailing edge pinned down at the root, but with a $\frac{1}{16}$ " shim under the rear of #10 rib. The purpose of the shim is to set all the wing ribs at the same angle. If left as built, there would be a slight progressive wash-in towards the tip. The $\frac{3}{8}$ " sheet is now added to the top of the tip and allowed to dry solidly, at least over night. Sanding can then be completed. The reason for the top tip sheet going on last, is that it helps to retain the effects of the shim under rib 10.

Your comments, questions, etc. will be welcomed. May your Shoestring delight you both as a beautiful model and thrilling flyer!

GOODYEAR

(Continued from Page 16)

of these racers are easily topping 100 mph with some getting well into the "teens!" With speeds such as these already here, and the sport hardly started, it would seem wise to take a good long look at the models and the safety requirements for the event.

In answer to the last question we placed, we might mention one of the problems which plagues our sport today. It is a harsh fact that one thing which we need is more people to enjoy the sport. Sure, we who are now participating are enjoying it greatly, but what about the future? When we get too tired to compete, wouldn't it be nice if we could at least go out to a contest and see how our replacements are doing? Then, too, things could happen quicker than that—we have a rather high drop-out rate in this sport, and it is possible that if we do not get enough newcomers, we could even wind up without enough people to fly with us in a meet!

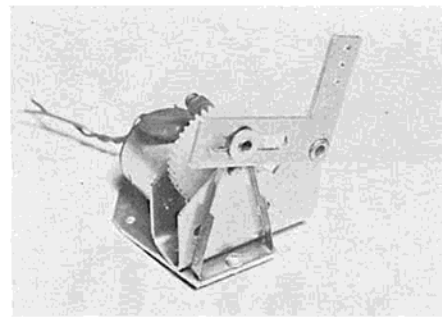
Again, the real point is that this is an attractive event to most people and it might be wise if it could be tailored to attract the newcomer as well as providing a good contest for the rest of us. One thing for sure—keep it an experts class and it will soon be occupied by specialists only, just as so many other events have ended up.

I don't expect that, in this short space, we covered all the ramifications of this exciting new event, but I do hope that we may have accomplished our editors goal which is to set us all THINKING about where does Goodyear go from here.

Frankly, it is up to you and all your fellow R/C flyers . . .

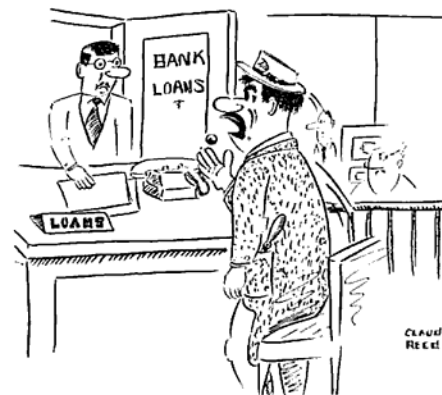
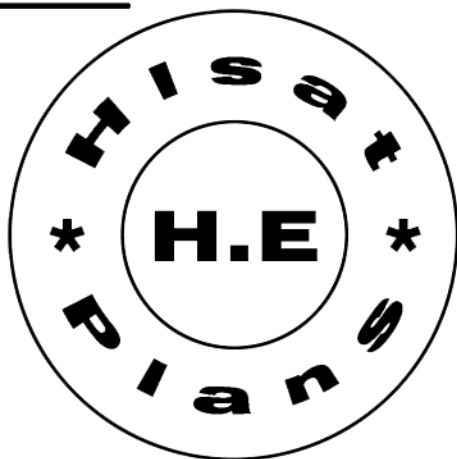
long time. Excellent for fibreglassing nose sections, wing center sections, or for general glass molding. Write Hastings Plastics Inc., 1704 Colorado Avenue, Santa Monica, California for name of nearest dealer, or Circle #14 on the Reader Service Card.

Tomoser Electronics and Manufacturing has released their GG-1 Galloping Ghost servo, designed for operation on 2.4 to 3.0 volts. This 1.2 ounce unit is unique in that it features direct pushrod operation to the rudder and elevator surfaces, eliminating the unsightly tail harness commonly associated with GG operation. Pulsing is a nominal 60 ma at 3 volts. Ideal for .02 to .09 models. Dealer inquiries are invited. Price is \$16.95. Circle #15 on the Reader Service Card.



Advance Model Engineering Co., Nutley, N.J. announced this month, the release of a package consisting of their Quick Bond foam cement, thinner, and roller applicator. Tentative price is \$3.95, complete. Advance also plans to market the highest quality foam blanks for those who wish to cut their own foam cores. Two blanks will be included in the package, each measuring 12" x 36" x 3". Price will be \$3.95 per pair. Stabilizer blanks will be \$1 for the two half sections necessary to complete the standard multi stabilizer. Also on the agenda at Advance, for future release, is a Hot Wire Foam Cutter which will sell for about \$24.95. For further information, Circle #16 on the Reader Service Index.

Ellis R/C Inc. has released a complete line of accessories for the RC'er. This is one of the most complete individual lines we have seen, running the gamut from several sizes of rubber hold down bands through fuel pumps, phenolic motor mounts, nylon hinges, various sizes and angles of nylon belleranks, formed Goodyear wheel pants, keepers, dacron line, 'gator clips, mylar hinge material, and the like. For information on the complete Ellis line, Circle #17 on the Reader Service Index.



"Whadya' mean you never heard of Radio Control?"

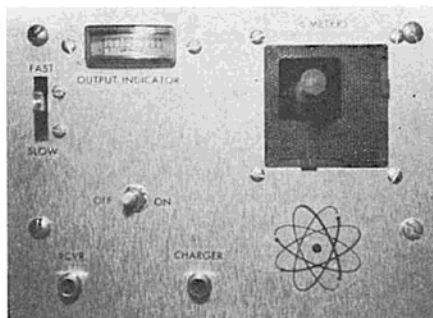
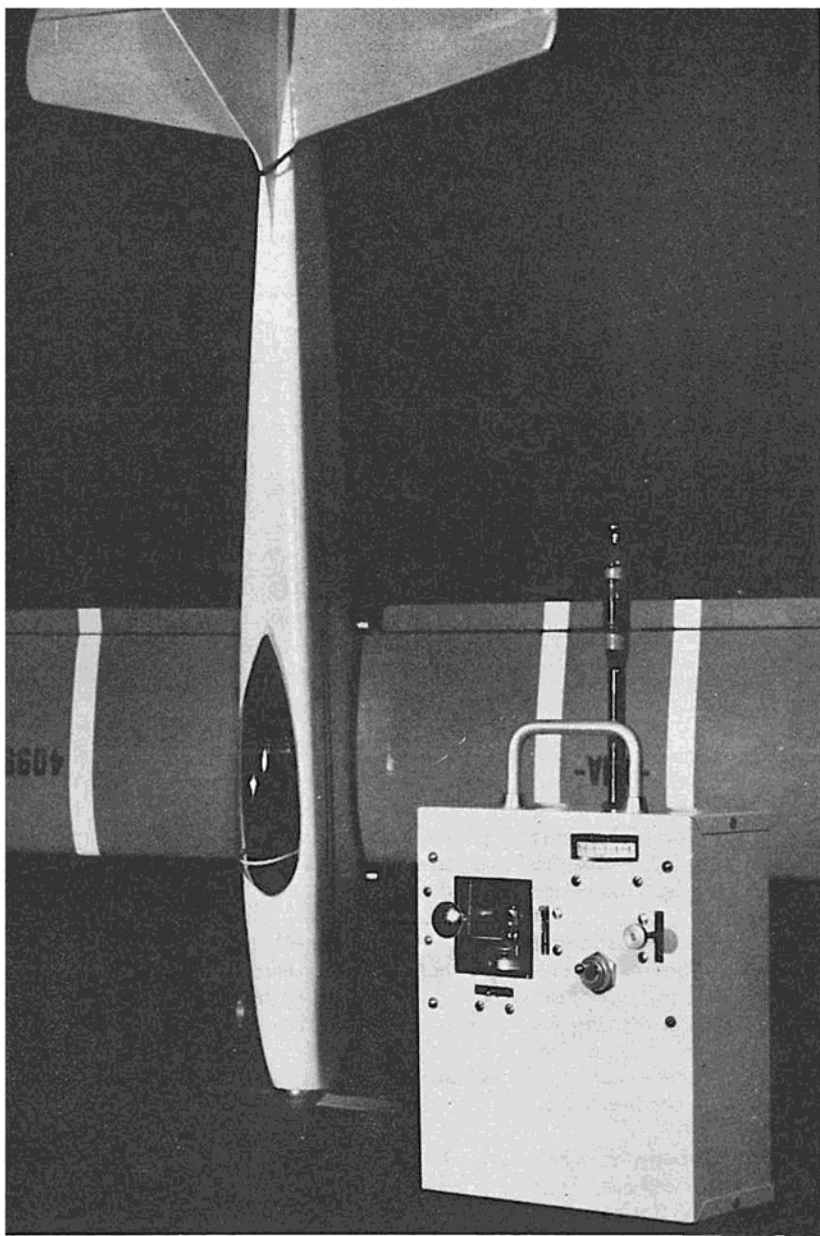
RCM DIGITRIO

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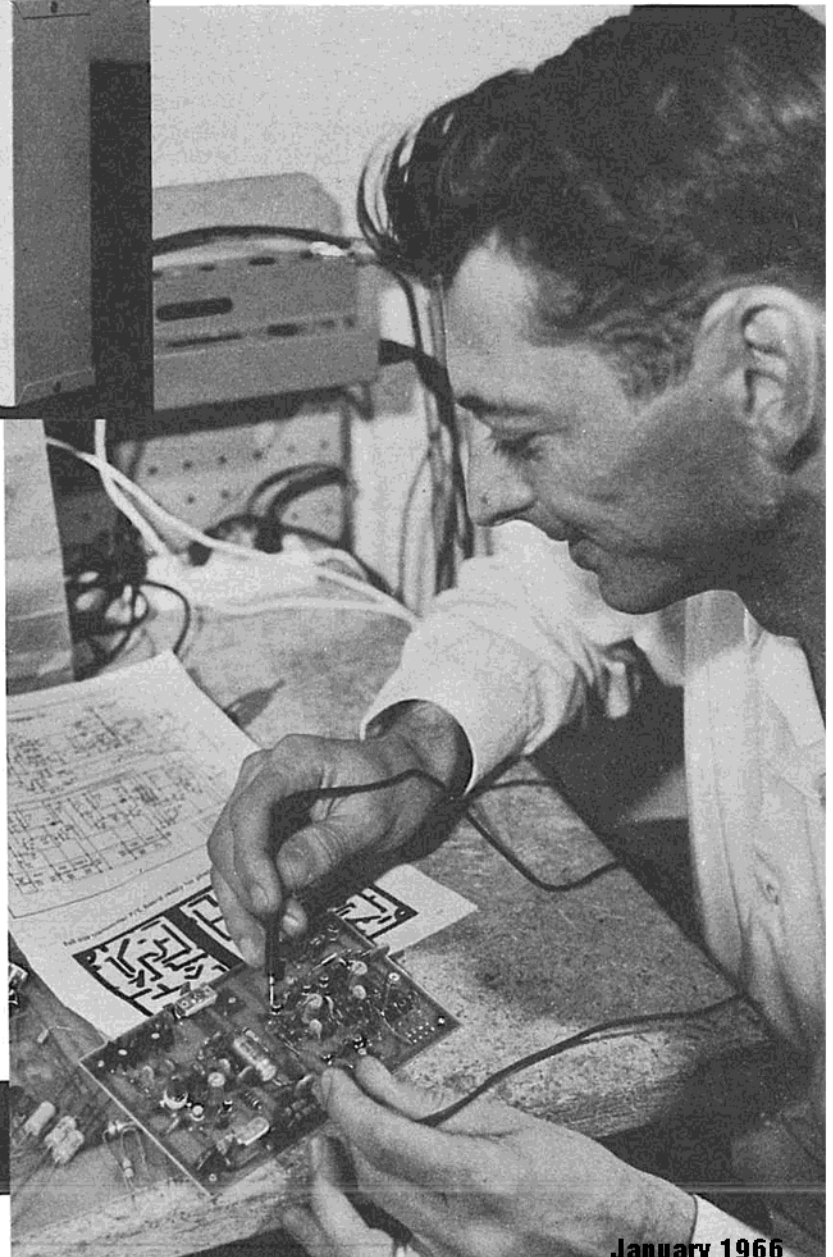
Constructing the Decoder

ED THOMPSON

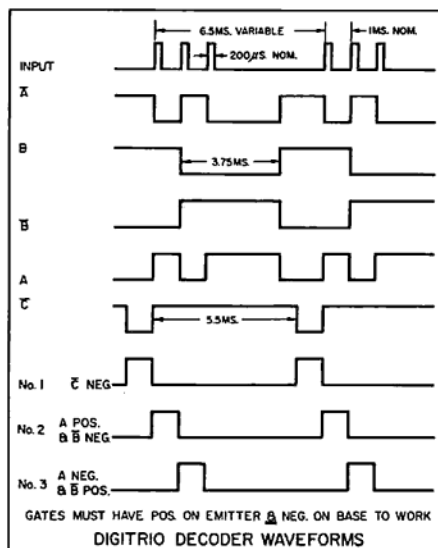
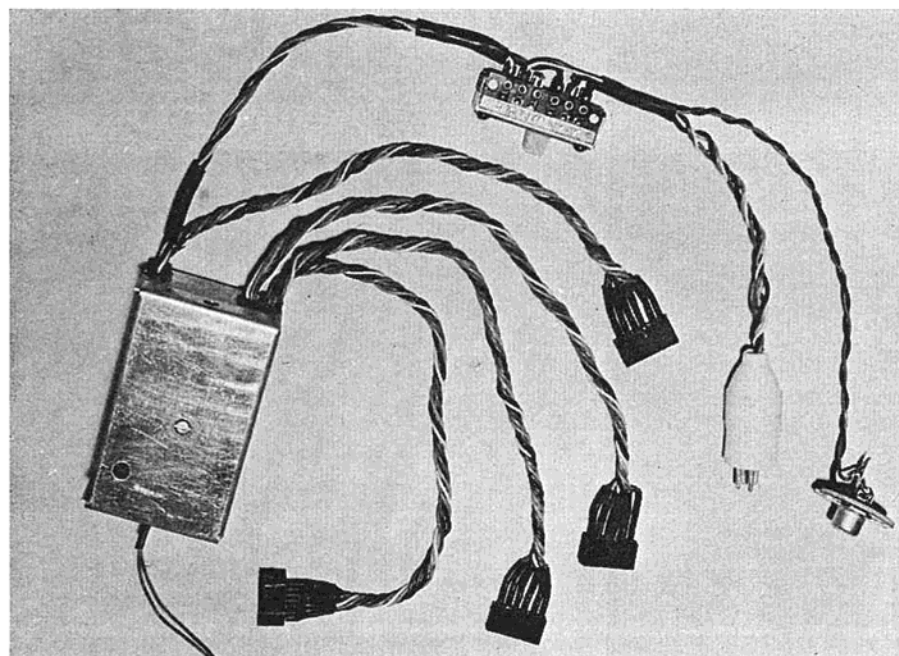
RCM Contributing Technical Editor



Top: Bryce Petersen's Digitrio modified for left hand operation. RCM "Patriot" in background. Above: Digitrio with Bonner stick assembly. Xmtr is on 53 Mcs. Both modifications will appear in a future article. Right: Slim Snelling working on his Digitrio transmitter board.



An **RCM** Technical Feature



The completed receiver and decoder with switch, battery connector, charging jack, and four servo connectors in place.

Preface

I RECENTLY had the opportunity to spend a couple of days at World Engines so that Jack Port could evaluate the Digitrio and I could get a first hand look at their operation. Jack Port, John Maloney and myself spent the better part of one day at the local flying site. We flew both the Digitrio and the Controilaire 5 Proportional System. After John scrounged up some fuel, a glow-plug, battery, etc., from the local flyers we got in some good flights, having installed the Digitrio in a C.G. Falcon "56" with an O.S. Max 35 up front. To sum up, I had an enjoyable visit in Cincinnati and met some very nice people, capping it all off with a steak dinner, courtesy of World Engines. I would like to express my thanks to Jack and John for their hospitality.

Dave Holmes, who sent the scope pictures of the transmitter waveforms, came through with the receiver scope pictures in this article — his unit being on 50 MC. Dave changed C2 to 18 PF, L1 to 7T tapped at 1 turn, L2 to 4 uH and inserted a 6 meter crystal. To date, all works well. Bernie Murphy is also building a Digitrio and said he will include his comments in a future kits and pieces column.

I asked Don recently if any electronic projects had come in for the design contest that I could evaluate for him. I was disappointed to hear that not many had been submitted to date. I know there are a lot of good ideas around and hope that some of you experimenters will pass on your goodies to the rest of us.

Here are a few questions based on letters I have received about the Digitrio and my answers:

Q. Can a commercial stick be used with digitrio?

A. Yes. In fact, there are some already built using the Bonner stick assembly.

bly. I am building one on 6 meters with a Bonner stick and will present it at a later date.

Q. You mention that World Engines is kitting the system but fail to mention when or what the price will be?

A. It is not the purpose of this series to advertise any commercial items. See the World Engines advertisements or write to them directly for information. The kits will be released concurrently with each article and prices will be announced by World Engines.

Q. Are you going to design circuitry for other makes of servos, four channel operation, 3+1, commercial stick installation, 6 meter conversion, etc.?

A. If I don't get writers cramp first, I'll write about anything you want. I'll present the articles in the order of most letters received.

Q. Can I obtain advance information in order to complete my system?

A. This has been covered before and the answer is no, due to the pressure of time.

Q. Will a designer-approved kit be produced in the United Kingdom?

A. I don't know. I have received letters from manufacturers in the U.K., but don't yet know their intentions. I have not as yet approved any foreign kits. Exportations will export to foreign dealers and I suggest that overseas readers see their local World Engines dealers.

Q. I would like to build a Digitrio but only in a four channel version, when will this information be available?

A. As stated previously, what I write is based on reader response and this is one of the least requested items

to date.

Q. Will I have to purchase commercial servos and modify them for Digitrio? If so, I don't see how I can build the system for \$200.00.

A. No. The servos will be built up like the rest of the system using only World Engines' mechanical servo parts. It is possible that World Engines will offer the servo built up for the Digitrio, however at a higher price.

Q. Since you have me interested in the Digitrio can you recommend a good book on transistors?

A. Yes. I think the Department of the Army T.M. 11-690 is an excellent book. It can be purchased for \$1.25 from Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

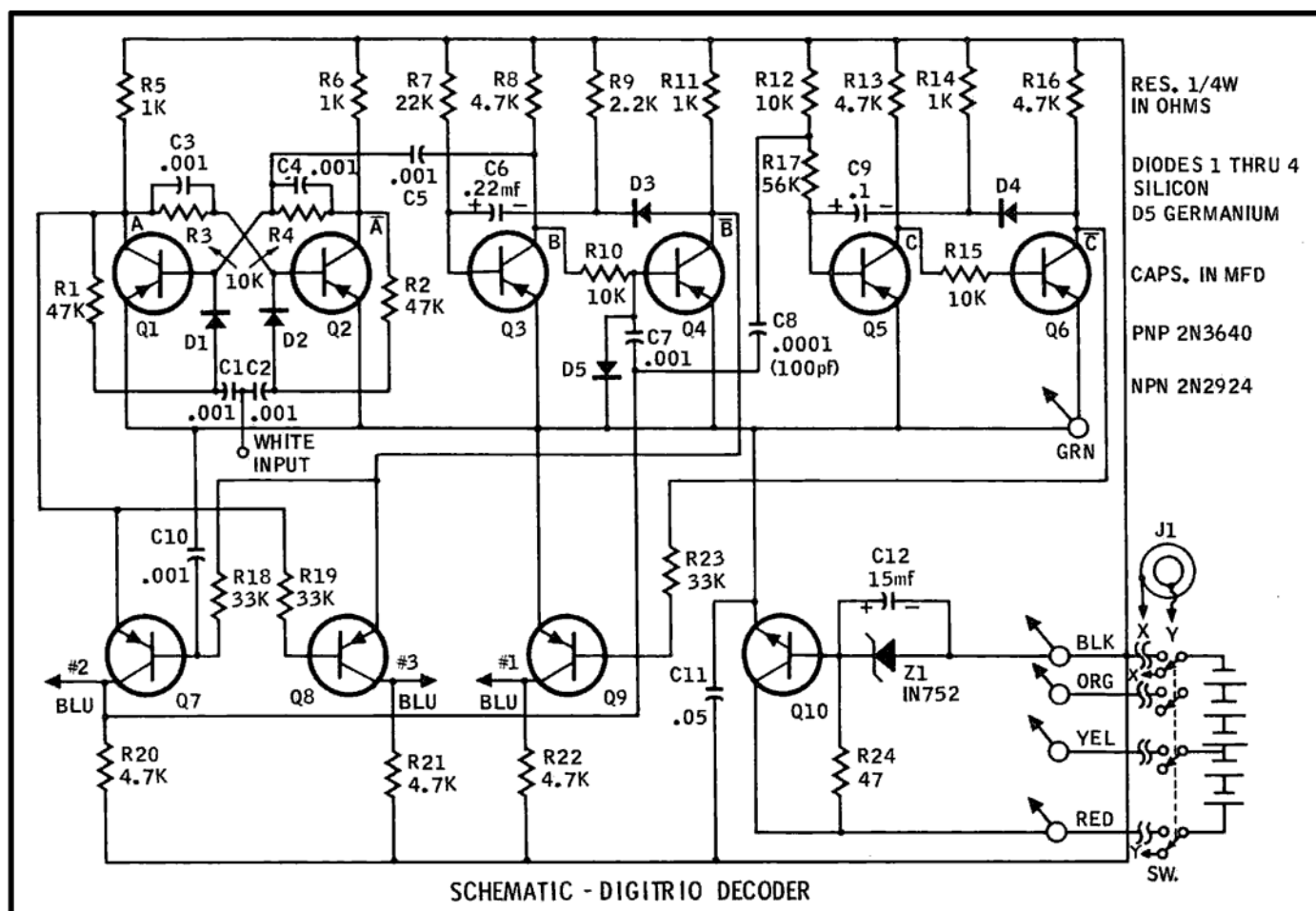
Q. I missed the first two issues of your Digitrio article and hope you can help me obtain them.

A. Try writing to the RCM Circulation Department, P. O. Box 1128, Laguna Beach, California, for any back copies.

THEORY OF DECODER

Most of the circuits in the decoder were covered briefly in the first article. One flip flop, two one shots, and two gates (Q9 is merely an amplifier) are used to count/sort the pulse trains into separate channels. Constant reference to the decoder waveforms will be necessary to grasp its operation.

The input to the decoder is a replica of the transmitted signal. Q1 and Q2 (flip flop) are triggered by the leading edge of each pulse. This produces square waves at both collectors (Point A and A'). The width of these pulses are determined by the width between the leading edges of the pulses in the incoming pulse train. Since Q1 and Q2 cannot be in the same state at the same



time A and A will be inverted replicas of each other.

Q3 and Q4 (B and B) form a one shot that is used to reset the flip flop during the sync pause. It also assists the flip flop sort Channels 2 and 3.

Q5 and Q6 (C and C) form another one shot that is used to measure the time between the #1 pulses in the pulse train. The time between #1 pulses is compared with the timing of this one shot to produce the motor control pulse.

Q7 and Q8 are the output gates for Pulses 2 and 3 respectively. Q9 is the motion control output transistor. Q10 in conjunction with Z1 provide regulated voltage for all the timing circuits including the reference generators in the servos. It also provides regulated voltage for the receiver. J1 is wired to the off side of the switch and is used as the charging jack.

Let's start with the action of the flip flop (Q1 and Q2) and first one shot (Q3 and Q4). Assume that Q2 and Q3 are conducting, Q1 and Q4 are cutoff and we are waiting for the first pulse. This places a negative voltage on the emitter of Q7 and base of Q8 (from collector of Q1). There is also a negative voltage on the base of Q7 and base of Q8 (from collector of Q4), under these conditions neither Q7 or Q8 is forward-biased so they're not conducting.

When the first pulse arrives it changes the state of the flip flop. The

collector of Q1 goes to ground and Q2 goes negative. This places the emitter of Q7 and base of Q8 at ground potential. Since the first one shot didn't change state we now have Q7 forward-biased with Q8 still cut off. **The circuit will remain in this condition until the second pulse arrives.** The latter changes the state of the flip flop again and Q1 goes negative while Q2 goes to ground. So we're back where we started (at least for a pico second)! Q7 cuts off because we remove its emitter ground at Q1's collector when Q1 goes negative.

Let's review quickly: The first pulse caused Q7 to conduct and the second pulse cut it off again. So we have a positive square pulse at Q7's collector. The pulse width is determined by the distance between Pulses 1 and 2. Since we vary this distance at the transmitter by moving the stick we can also vary the width of the pulse at Q7's collector.

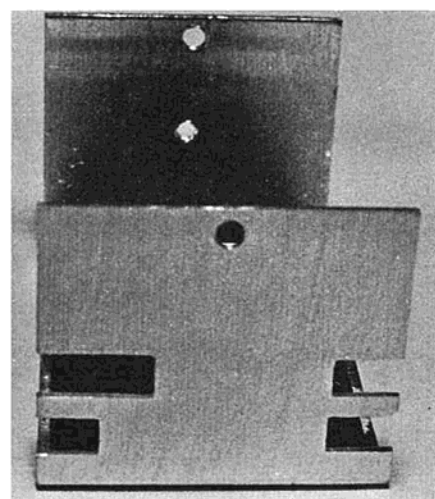
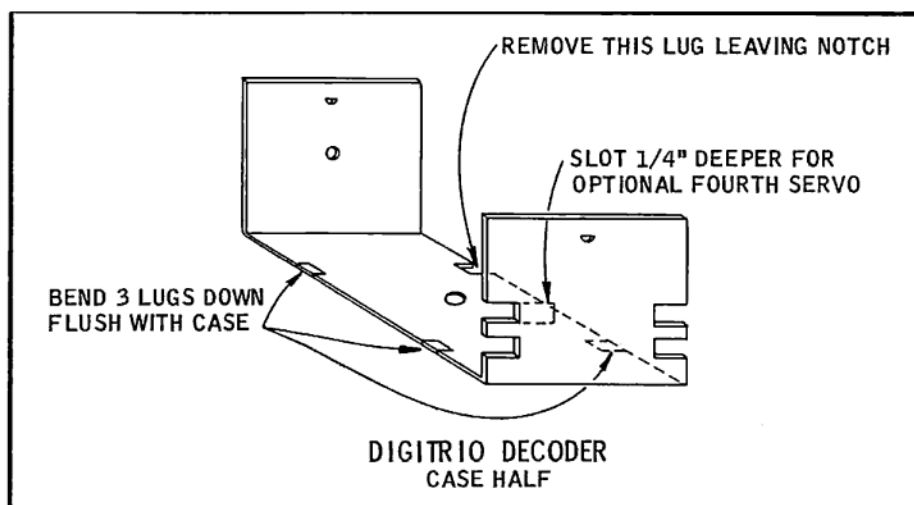
When Q7 cuts off (collector going negative) a negative-going pulse is impressed on the base of Q4 via C7 causing this one shot to change state and start timing. B goes negative and B goes to ground. This places a ground on Q7's base (it stays cut off) and a ground on Q8's emitter (it's base is negative from Q1's collector) so Q8 conducts. It will remain conducting until Pulse 3 arrives.

When Pulse 3 arrives it changes the state of the flip flop again and Q8 cuts

off because Q1's collector places a ground on Q8's base. We also place a ground on Q7's emitter but Q4 is still holding Q7's base at ground so neither Q7 or Q8 is conducting.

After 3.75 MS has lapsed the one shot will return to its quiescent state (Q3 conducting - Q4 cut off). When it changes state Q3 going to ground transfers a positive pulse via C5 to Q1's base changing the flip flop's state at the same time. This resets the decoder (Q2 and Q3 conducting - Q1, Q4, Q7 and Q8 cut off) and it is now waiting for another pulse train. Therefore the second pulse not only turns off Q7 but turns on Q8. The width of the pulse at Q8's collector then is the width between the second and third incoming pulses and width is determined by stick movement at the transmitter. The uninterrupted carrier between pulse trains is the "sync pause." During this sync pause the first one shot returns to its quiescent state resetting the circuit.

As you can see we intentionally skipped the #1 output pulse. This is how it works. As stated before, the #1 incoming pulse causes Q7 to conduct (collector goes positive). This transfers a positive trigger pulse to the junction of R12 and R17 via C8. This triggers the second one shot which begins timing. Q (C) conducts placing ground on Q9's base cutting it off. Approximately 5.5 MS later this one shot returns to its quiescent state with Q6 go-



ing negative. This places a negative voltage on Q9's base and it conducts. It will remain in conduction until the second one shot is triggered again when the next #1 pulse arrives. It arrives approximately 1 MS later triggering the second one shot which causes Q9 to cut off. So we have a positive pulse at the collector of Q9 whose width is determined by the interval between #1 incoming pulses and is controllable at the transmitter. Q10 is an emitter follower with its base voltage regulated at 5.6V by Z1. R24 sets the operating point of the Zener and C12 filters voltage excursions. The voltage at Q10's emitter will be this Zener voltage less the base to emitter drop of Q10. It should be approximately 4.8 - 5.1 volts depending on the tolerance of the two devices.

C11 is merely a by-pass capacitor.

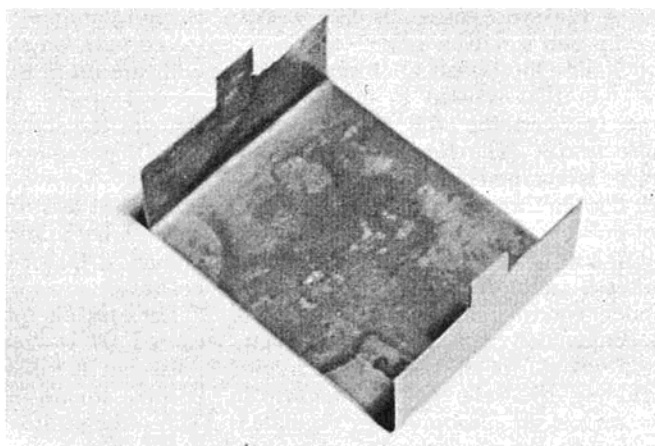
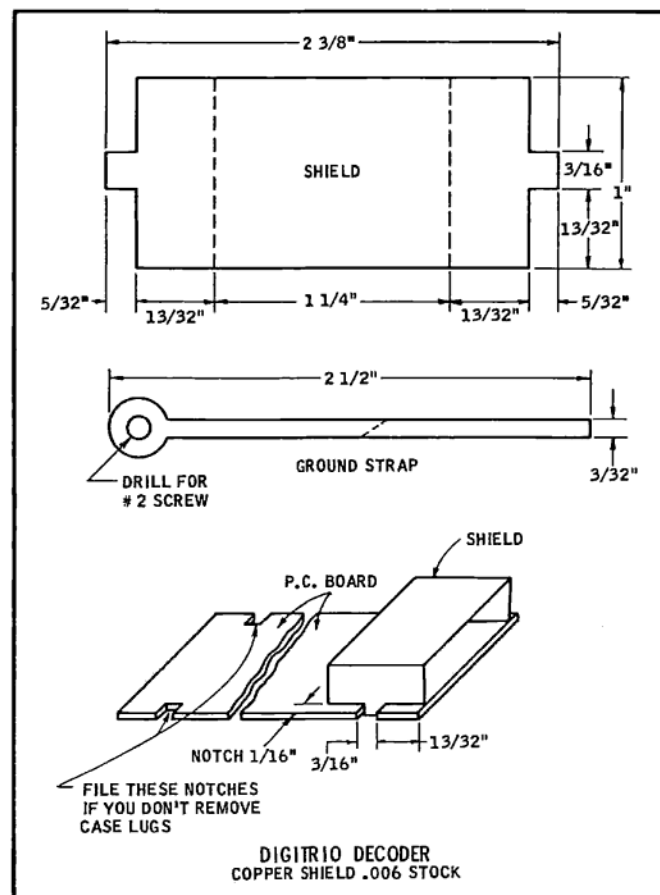
I recommend that you re-read the theory as many times as necessary for a complete understanding. It may help you analyze symptoms leading to malfunctions if you have to troubleshoot the circuit later on.

PREPARING THE P.C. BOARD AND CASE

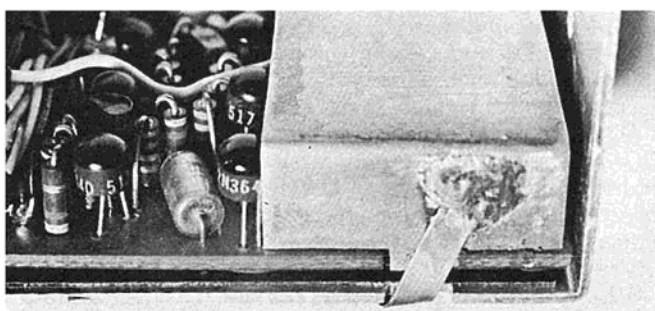
- () File slots in end of case as shown in the drawing. If you want to operate an aileron servo in parallel with the rudder servo, file one slot 1/4" deeper as shown by the dotted lines. This will allow for the additional servo leads.
- () Square and size the board with a fine file. File out the two notches as shown on drawing.
- () Bend three of the case lugs down

flush with rest of case and remove the lug shown on case drawing. If you wish you can use the other three lugs for better case rigidity by filing four notches in P.C. board.

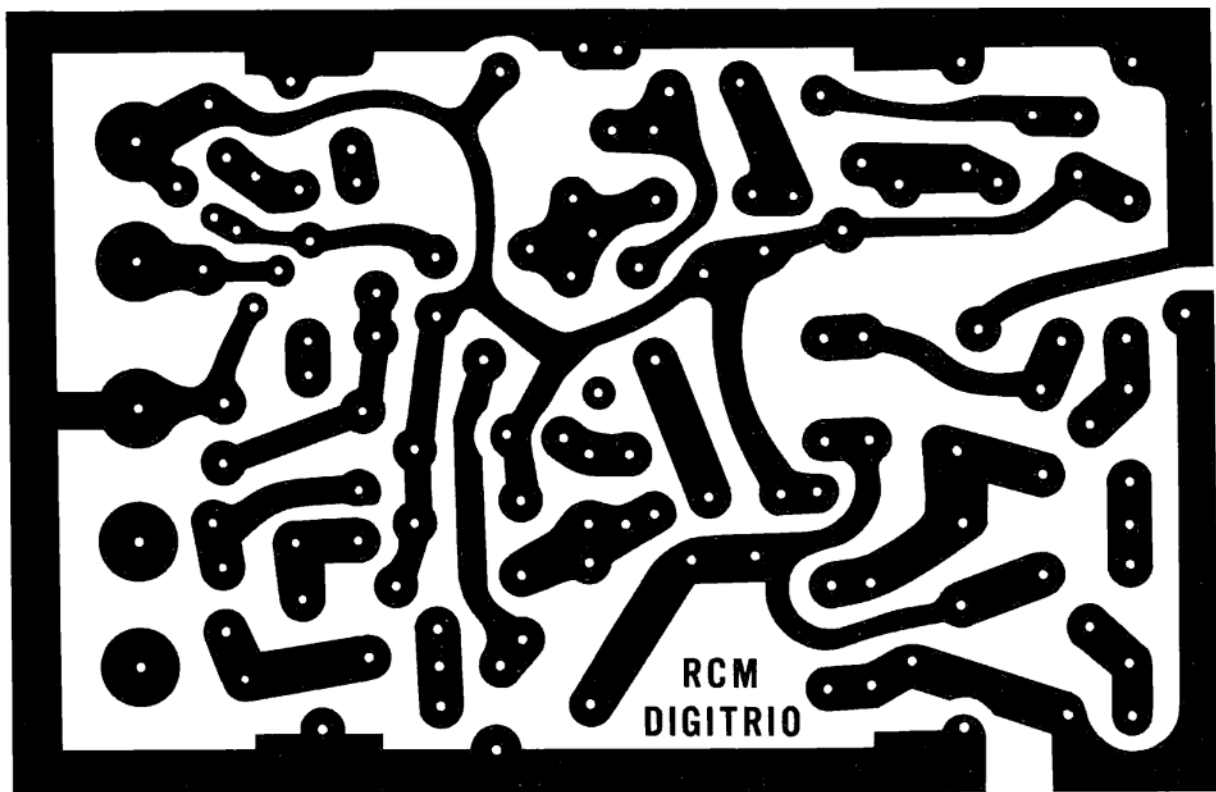
- () Center the insulating sheet and P.C. board, copper side down, in the case with the five large round lands at the end where you made the slots. Drill the mounting hole slightly undersize so the mounting screw can tap itself into the board.
- () Remove the P.C. board and insulating sheet and enlarge the mounting hole in the case to match the diameter of the mounting screw.
- () Secure the insulating sheet with contact glue (do the same to receiver also).
- () Drill all holes in the P.C. board



Top photo shows completed decoder shield. Photo below shows shield and ground strap in place.



REDUCE TO 2"



Decoder PC board shown three times full size. Actual size PC board shown at left. Either can be used for photographically reproducing the circuit board.

with a $\frac{1}{32}$ " drill except the very small lands which should be drilled a little smaller. If you don't have a smaller drill be careful or you'll tear the lands off the board.

- () Enlarge the holes in the five large round lands at one end of the P.C. board to $\frac{1}{16}$ ".
- () Place a 6" square piece of emery cloth on a flat surface and "sand" the copper side to remove all burrs.
- () Clean the copper side with scouring powder until it is bright and shiny.

NOTE: If board was purchased from World Engines it will be silver plated and the last two steps will not be necessary.

- () Make the copper shield and ground lead as shown on the drawing and check for fit. Do not install this shield yet.

WIRING P.C. BOARD

- () Install all resistors close to board.
- () Install diodes including Z1 observ-

ing polarity. The bar should be up on all diodes.

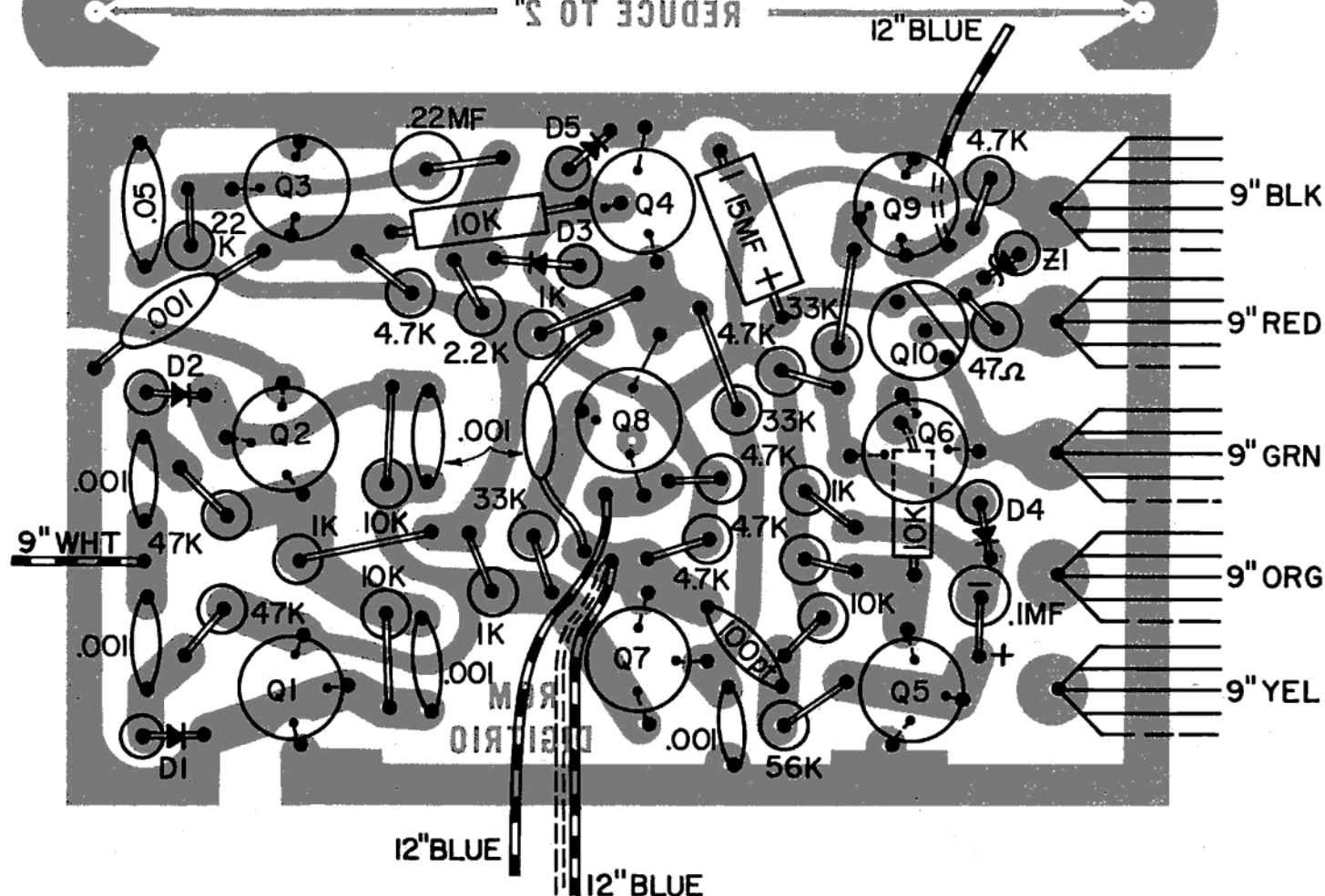
- () Install all disc caps.
- () Install tantalums (two each — .22 negative up and .1 positive up) observing polarity.
- () Install 15MFD cap observing polarity.
- () Install transistors (make sure mounting screw will clear collector lead on Q8). Mount Q1, 2, 3, 4, 7 and 8 slightly higher than adjacent resistor leads to provide platform for copper shield to rest on.
- () Install the copper shield as shown in drawing and check for clearance. A piece of electrical tape on the underside of shield will insure against unintentional grounding of components.
- () "Flat" the lands to $\frac{1}{32}$ "- $\frac{3}{64}$ " with a fine file, bevel the edges and clean board with acetone or dope thinner.
- () Cut four 9" pieces of orange, yel-

low and green hook up wire. Cut five 9" pieces of black. Cut four 9" pieces of red. Cut three 12" pieces blue. Cut one 9" piece of white.

- () For the three sets of servo leads take one each yellow, orange, green, red, black and blue and group them (route all blue and white wires as shown in photo). For battery leads take one each red, black, yellow, orange and group them. Group the above leads so that two sets come out of each side of the board.

NOTE: For coupled aileron rudder take an extra 9" red, blue, yellow, orange, green and black and insert them as shown by dotted lines on the construction overlay and make an extra servo group.

- () Take the remaining black, green, and white wire and group them for the receiver.
- () Place a $\frac{3}{16}$ " long piece of large Controlaire heat-shrink tubing over each set of wire as close to the board as possible.
- () Slip a $\frac{1}{4}$ " grommet over each set of wires.
- () Mount the decoder in the case and form the three servo and battery wires so that the grommets slide into the slots.
- () Twist and cut the servo leads to the length desired and solder servo



connectors as shown in the drawing. Use a 1" piece of large heat-shrink tubing to hold each group of wires at the ends and small heat-shrink tubing over each pin.

- () Wire the switch to the battery leads using heat-shrink tubing as on the servo leads. Wire the charging jack at this time also.
- () Cut a piece of red, orange, yellow, black wire to length desired for leads between switch and battery connector. Using heat-shrink tubing as usual, solder one end of these leads to the switch and the other to the male battery connector as shown in the drawing. Don't forget to put the connector shell over the leads first. You can wire the plug to match your reed battery pack if you match the plugs and voltages correctly.
- () Wire five each 600 MA batteries as shown on schematic and drawing and solder female battery connector to the leads.

NOTE: The copper shield is necessary to prevent interference from the decoder which would otherwise be picked up by the mixer. The ground strap insures a good connection between the shield and case and must be used.

Substitution of parts or part values here could be hazardous unless you fully understand the circuit and can test it

properly.

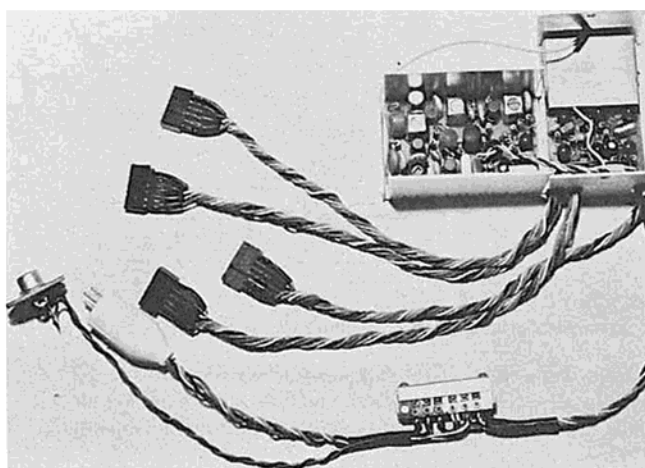
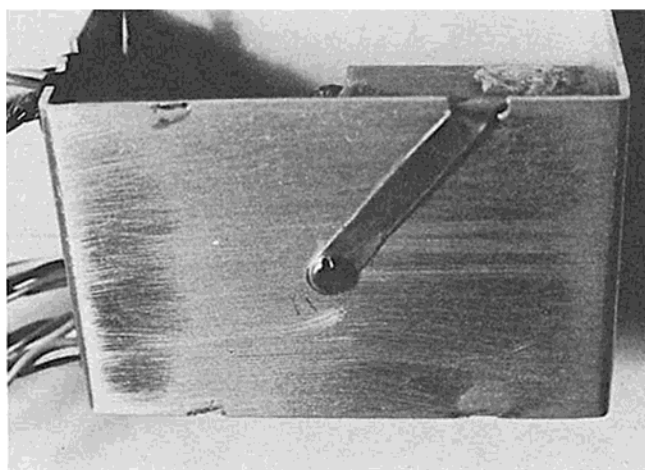
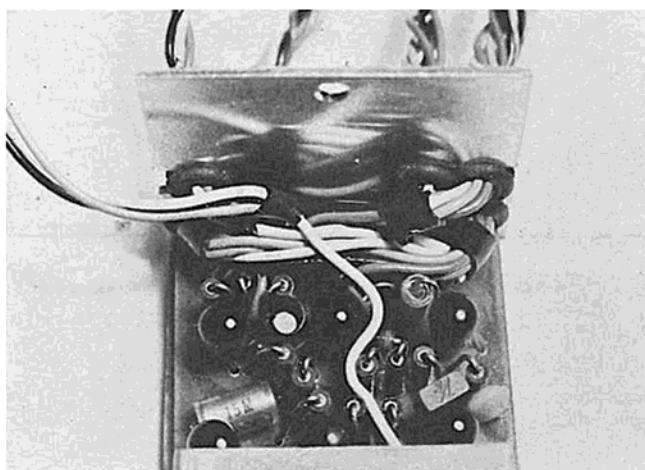
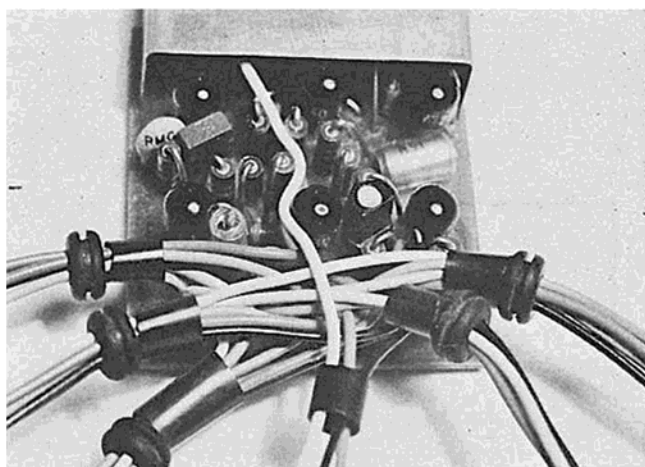
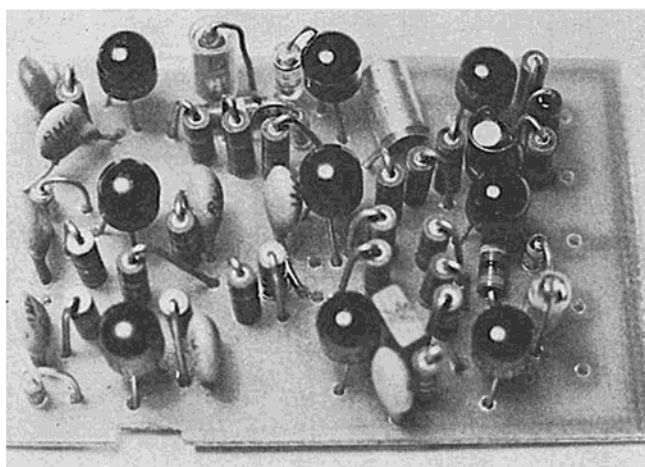
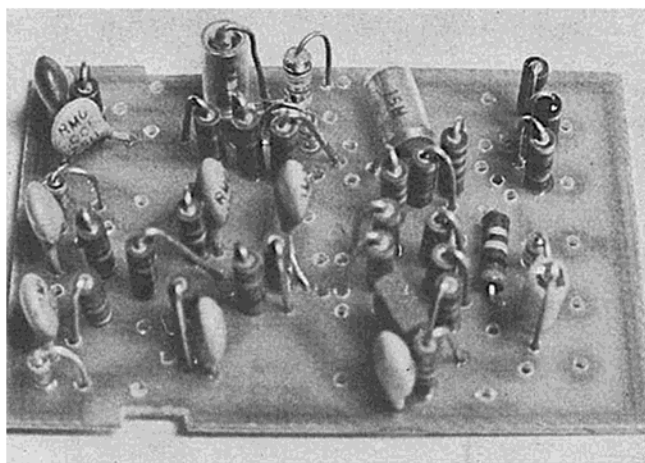
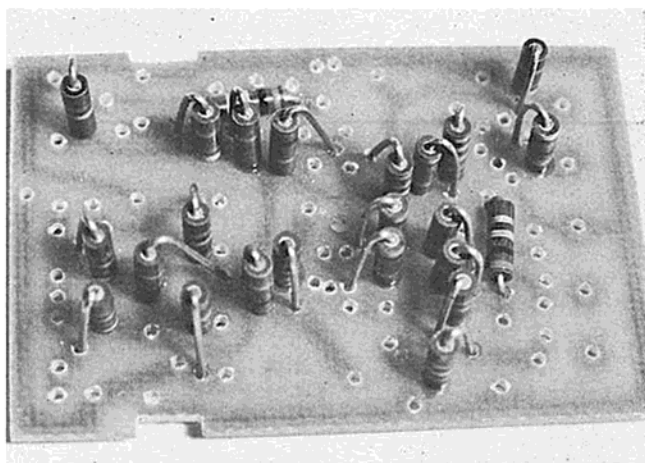
As you can see no adjustments (variable resistors, etc.) are used and all timing adjustments will be made at the transmitter which I'll cover in the last article.

CONNECTING RECEIVER AND DECODER

- () Insert the decoder board into its half of the case and position the servo leads in the slots.
- () Using the ground strap under the mounting screw secure the board in place. Run the ground strap to the notch in the case and bend it over. Solder the ground strap to the shield (see photo).
- () Remove the black, green and white wires on the receiver board.
- () Cut the black, green and white wires on the decoder board to 3".
- () Replace the black, green and white wires removed from the receiver with the wires from the decoder board.
- () Mount the receiver board into its half of the case.
- () Run the antenna lead through the hole provided in the decoder half of the case. Slip a 1" piece of small heat-shrink tubing over the antenna lead to protect it.
- () Slide the case together and check for fit.

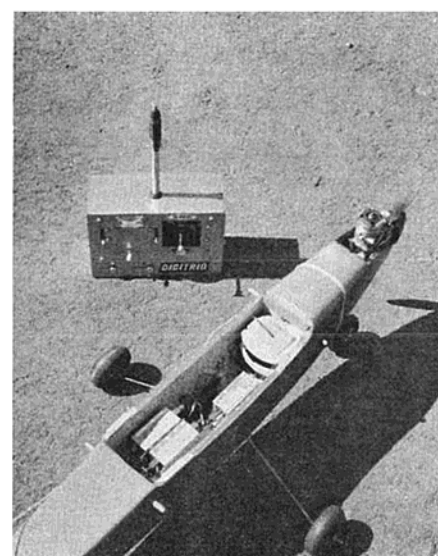
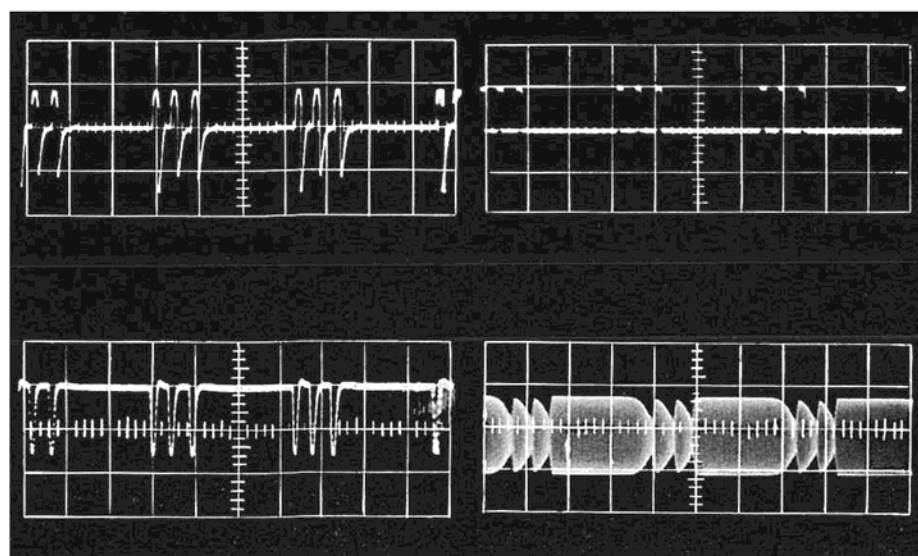
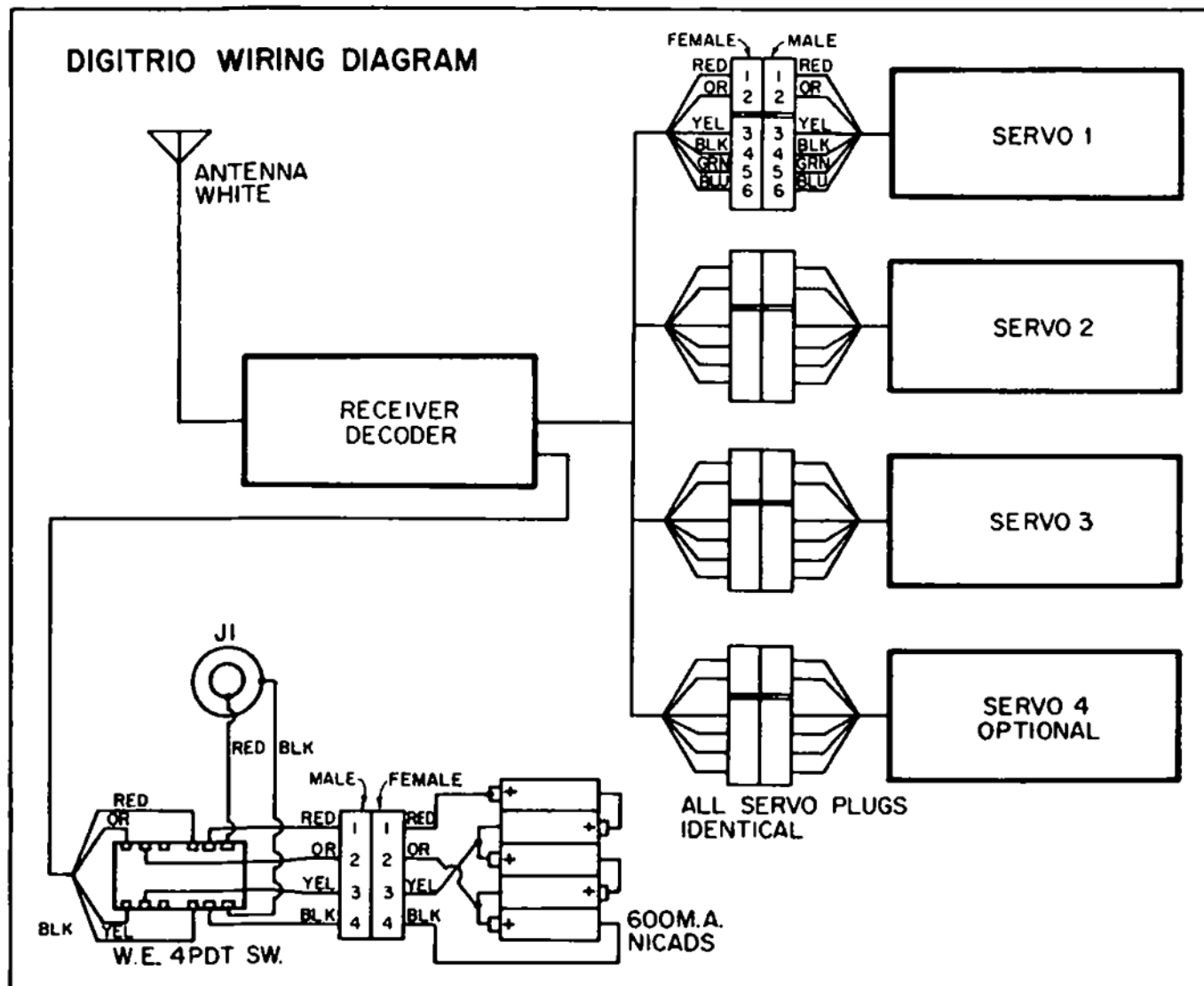
PRELIMINARY CHECKOUT

- () Measure the resistance between any red and black wire at one of the servo plugs (observe polarity red to red, black to black). You should read approximately 5,000 ohms.
- () Reverse the meter leads and you should read approximately 1,000 ohms.
- () Measure the resistance between any green and black wires at one of the servo plugs (red to green, black to black). You should read approximately 13,000 ohms.
- () Reverse the meter leads and the meter should read approximately 1,000 ohms higher.
- () Connect the battery and measure the voltage between any green and black wire (red to green, black to black). You should read approximately 5V with the switch turned on. If not turn the switch off immediately and check the polarity of Z1.
- () With the transmitter and receiver-decoder operating you should hear a buzzing sound with a high impedance headset connected between the blue and green wires at each servo plug (use a .05 in series with one of the headset leads).
- () If you have a scope or access to one you can check the decoder waveform as shown in the drawing.



1st row, left: All resistors in place on decoder board. Note notches for shield. 1st row, right: Capacitors and diodes added. 2nd row, left: Adding the decoder transistors. 2nd row, right: Servo wiring with thermoshrink and case grommets installed. 3rd row, left: Decoder board mounted in LMB case. Heat lamp used on thermoshrink. 3rd row, right: Ground strap from decoder shield to case. Left: Completed receiver-decoder unit with all plugs, switches, and jack installed.

DIGITRIO WIRING DIAGRAM



Dave Holmes supplied these scope traces from his 50Mc Digitrio receiver. Top, left: Collector Q7 (output) 5V/div 2ms/div. Top, right: Collector Q5 5V/div 2ms/div. Above, left: Diode load (R10) .2V/div 2ms/div. Above, right: Collector Q3 (3rd IF) 2V/div 2ms/div.

The Digitrio installed in an S.T. 23 powered CG Falcon 56. Trimmed 0-0 degrees, a good combination for the sport flier.

NOTE: Don't be concerned if waveform widths are not exactly as shown. They should be close however and we will adjust the transmitter later on to suit your particular system.

ERRATA

SEPTEMBER ISSUE

- Figure 2—First waveform should be labeled 6.5 MS not 6.5 US.
- Schematic—R5 should be labeled 330 ohms not 300 ohms.
- C25 should be added to schematic in parallel with C23. It should be added to parts list as C25 .05 MFD Centralab Part #UK20-503.
- The following will clear up questions about overlay components going to the wrong pots:
Change pot lead labeling in upper left corner of construction overlay to read — R38, R35, R34 and R31 left to right.

NOVEMBER ISSUE

Change pot labeling in November issue on Digitrio stick assembly drawing so pot designations are reversed (i.e., R34 to R38 and R38 to R34).

Change text so that pot numbers (R38 and R34) and (R35 and R31) are reverse also on Page 35 of November issue under "Assembling Transmitter."

The above may sound like a lot of changes but they have no effect on construction or operation. They are merely pen and ink changes.



Above: Rusty Fried with Digitrio-Falcon combo at Phoenix "Arcs" flying site. Right: Two shots from our readers during construction of their RCM Digitrios.

PARTS LIST FOR DECODER

REFERENCE NUMBER	DESCRIPTION	MANUFACTURER OR SOURCE	MANUFACTURERS NUMBER
C1	.001	RMC	SM .001
C2	.001	"	"
C3	.001	"	"
C4	.001	"	"
C5	.001	"	"
C6	.22 Tantalum	T.I.	SCM224FPO35D2
C7	.001	RMC	SM .001
C8	.0001 (100 PF)	"	SM 100
C9	.1 Tantalum	T.I.	SCM104FPO35D2
C10	.001	RMC	SM .001
C11	.05	"	ERIE Z5E
C12	15 MFD (Axial Leads)	W.E.	---
D1	Silicon Diode	"	DHD 806
D2	"	"	"
D3	"	"	"
D4	"	"	"
D5	Germanium Diode	Ohmite	1N34 or Equivalent
Q1	2N3640	Fairchild	2N3640
Q2	"	"	"
Q3	"	"	"
Q4	"	"	"
Q5	"	"	"
Q6	"	"	"
Q7	"	"	"
Q8	"	"	"
Q9	"	"	"
Q10	2N2924	G.E.	2N2924
R1	47K 1/4W	Ohmite	LIDSM
R2	47K "	"	"
R3	10K "	"	"
R4	10K "	"	"
R5	1K "	"	"
R6	1K "	"	"
R7	22K " 5%	"	LIDED
R8	4.7K "	"	LIDSM
R9	2.2 K "	"	"
R10	10K "	"	"
R11	1K "	"	"
R12	10K "	"	"
R13	4.7K "	"	"
R14	1K "	"	"
R15	10K "	"	"
R16	4.7K "	"	LIDSM
R17	56K " 5%	"	LIDED
R18	33K "	"	LIDSM
R19	33K "	"	"
R20	4.7K "	"	"
R21	4.7K "	"	"
R22	4.7K "	"	"
R23	33K "	"	"
R24	47 ohm 1/4W	"	"
Z1	Zener Diode (5.6V)	T.I.	1N752

MISCELLANEOUS PARTS

#26 Hook-up Wire (2 Pkg.)	W.E. or Bonner	---
9" Large Heat-Shrink Tubing	W.E.	---
15" Small Heat-Shrink Tubing	W.E.	---
3 Female Servo Connectors	W.E.	---
1 Battery Connector	W.E.	---
P.C. Board	W.E.	---
Switch 4 PDT	W.E.	---
4 1/4" Rubber Grommets	W.E.	---
1 2 1/8" x 1 3/8" x 1/8" Piece of Insulation Sheet	W.E.	---
1 #2 x 1/4" Self-Tapping Screw	W.E.	---
1 Piece Copper 2 3/8" x 1 1/2" x .006	W.E.	---





CONTROLAIRE has now entered the servo manufacturing field. In development for over a year, they have now offered as an assembly kit, the Controlaire relayless Multi Servo. Its design reveals several very important features. One, its ease of troubleshooting and repair. As with any servo, the rigors of R/C flying and time will eventually introduce a failure. It would be foolish to believe otherwise, so in their design concept, Controlaire decided that all internal working parts would be centered around and attached to a central "C" frame. To this end, the top and bottom case can be removed for complete inspection of internal parts and still the servo is operable.

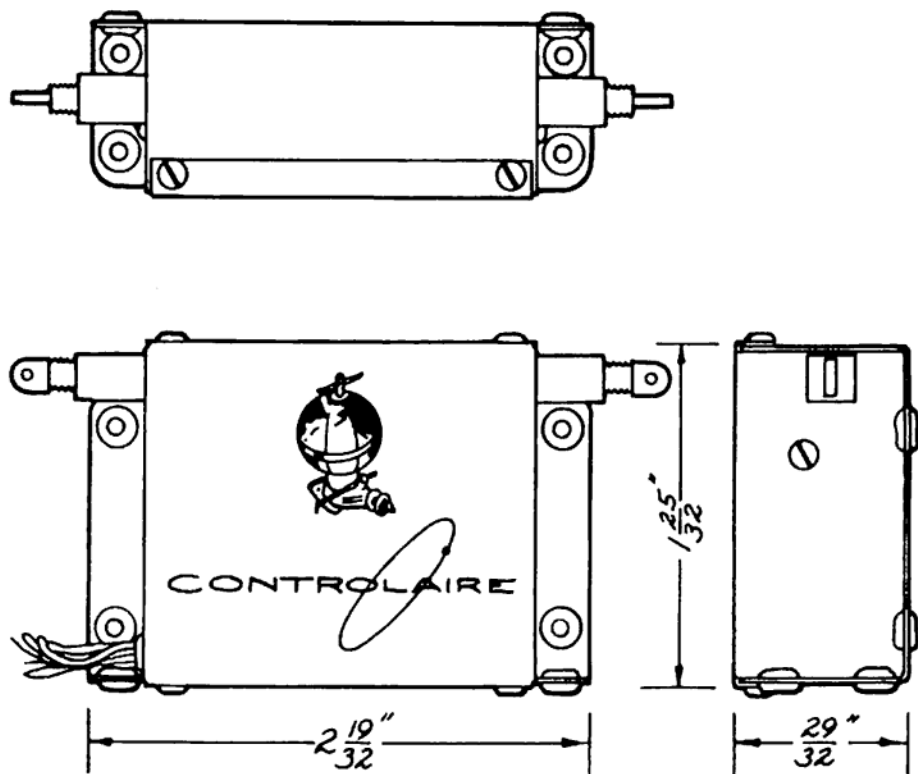
Whether your trouble is mechanical or electrical, the troubleshooting effort is eased by operable access to internal parts. A second feature is that the gear train is fully adjustable to any degree of gear mesh clearance by adjustment to the gear support pins.

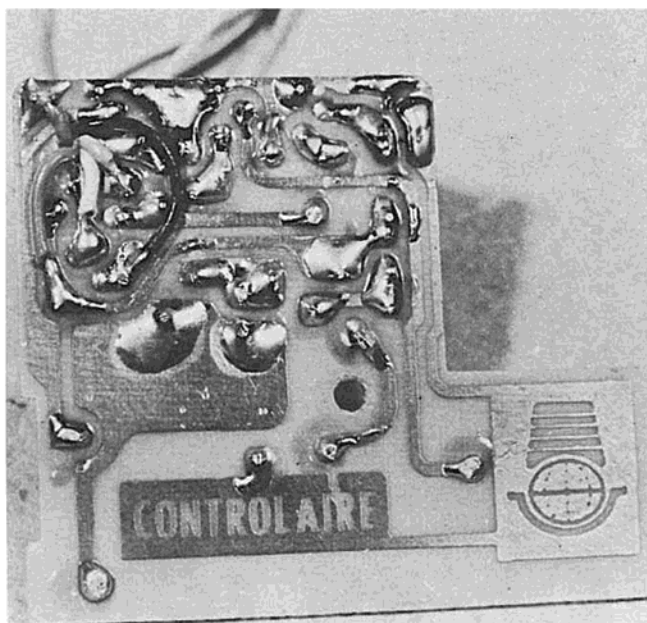
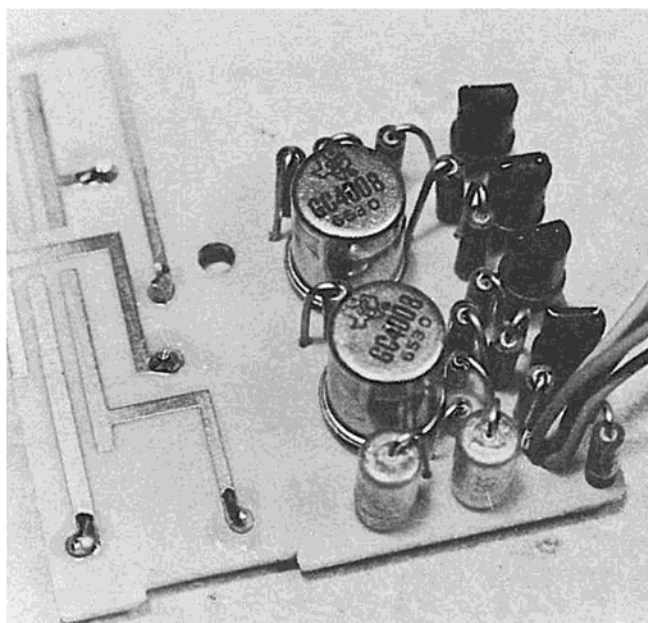
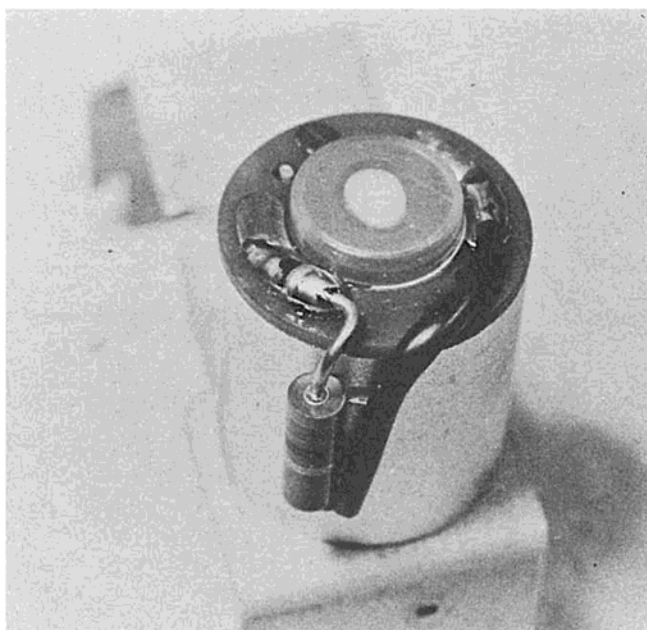
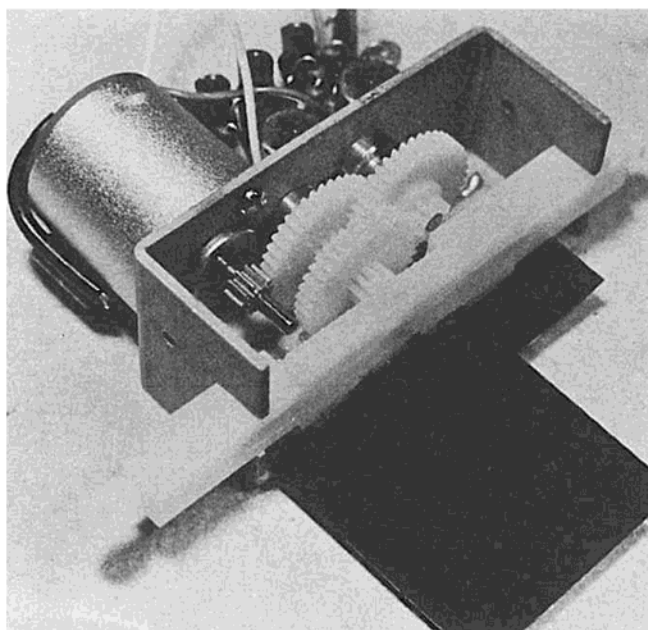
Third, the electrical circuit is an improved version of their earlier 6X amplifier that has already proven itself in years of use. Other features include strong mechanical design, a 5 pole double brush motor, and Silicon plastic gears and traverse rack.

The Controlaire relayless Multi Servo kit is furnished with three separate instruction manuals. Construction of the kit is not difficult, and was designed with the average RC'er in mind. The accompanying photographs were made as RCM assembled a prototype unit, and illustrate some of the more critical assembly areas. This servo unit has been built from a standard kit, tested, and recommended by R/C Modeler Magazine.

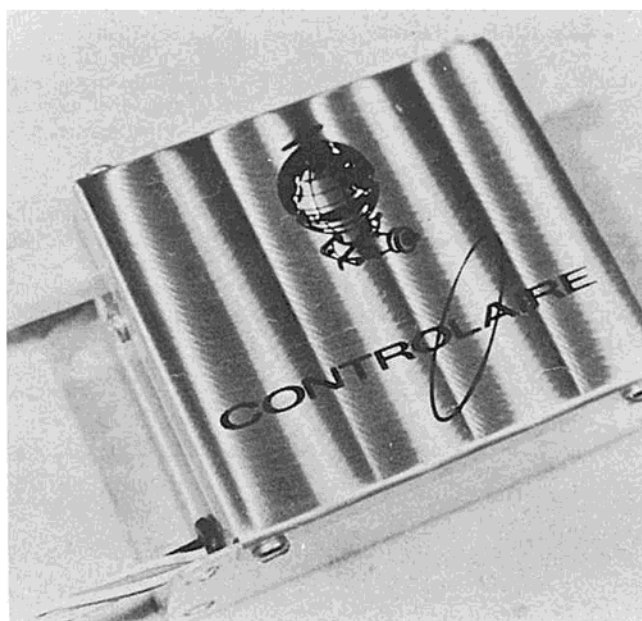
CONSTRUCTING THE CONTROLAIRE RELAYLESS SERVO KIT

BY CHUCK WAAS





Top, left: The completed servo, minus case. Note gear train and output arm arrangement. Top, right: Resistor soldered to servo motor must be located at approximately 45 degrees in order to clear case. Lead on right must be insulated with heat shrink tubing. Above, left: All amplifier components in place. Note position of flat side of 2N2924 transistors. Above, right: Note routing of wires on copper side of board to prevent compression and subsequent shorting of leads on soldered lands. Right: Completed unit is an excellent, powerful, and compact multi servomechanism.



R/C PRIMER

BY FRANK JUSTIN

RCM is proud to present this comprehensive analysis into the why's and how's of the beginner — written by the prolific pen of the master of things R/C — and, we may note, written in his own natural and unedited style.

OH, come. Come see. See Dick fly.

Dick has a friend. His name is Tom. Tom spends many hours. He spends many dollars. He is not fully loved at home. He has a hobby. No one knows what the hobby is. It has a code name. It is called R/C.

Tom told Dick what R/C means. Dick is hooked. Dick will buy the things he needs for R/C. First, Dick will sell his car. Dick has half the money he needs. Dick will refinance his house. Dick will have almost all the money he needs. Dick's wife wants to know why he refinanced the house. Dick says it is educational therapy. Dick talks good.

Dick asks to use his son's bicycle. Dick has no car. Dick is going to see the hobby shop man. The hobby shop man is nice. Dick says, "Hello, Hobby Shop Man."

The man says, "Take a number. I will call you when your number comes up." Dick does not know it but his number was up when he met Tom.

Dick hears his number — "Eleven." Dick has gained recognition. He goes to the counter. The Hobby Shop Man smiles. It is a funny smile. Dick has seen this smile before. His boss smiles like this when he fires people. Dick is not afraid.

Dick says, "I want to fly."

The Hobby Shop Man smiles again and says, "Single, Multi, or Proportional?"

Dick says, "What did you say?"

The Hobby Shop Man says, "Number 12."

Dick says, "Hold it, buster!"

Number 12 says, "Buy a magazine and study up."

Dick has got out cheap. Dick gets on

his bike. He puts his magazine under his arm. The ink stains his white shirt. It is a good magazine. It is all about R/C. Dick can hardly wait to get home. He runs a signal at the corner. A truck hits Dick. He is not hurt bad. The truck driver sues. Dick's son cries for three days. Dick's wife cannot get the shirt clean. Dick gets to read his magazine in bed.

The magazine explains many things. Dick learns that all the equipment is good. It says so in Product Review. Dick learns that anyone can fly. It is easier than driving a car. Dick has no car.

Dick likes the little planes. They are easy to build. They take single channel. Single channel is cheap. The receiver is plastic. The transmitter is plastic. Even the tubes are plastic. It will transmit for hundreds of feet. It will receive for 25 feet.

Dick has chosen a ship. It comes from a long line of ships. They are smart. They have all been to school. It is called the Schoolhouse. It flies like a house. Brick.

Dick sees the Hobby Shop Man again. They are friends. Dick takes his stuff home. He returns to the Hobby Shop Man. On the box it said "Complete Kit." Dick decides to buy some extras. He buys a motor, starting battery, clip, fuel, fuel pump, fuel line, rubber bands, silk, dope, paint, thinner, brushes, glue, propellers, wheels, X-acto knife, sandpaper, and a new magazine.

Dick is excited. He studies his plans. The ship can be built in eight hours. Eight hours go by. Dick understands the plans. Dick's family is thrilled about the new hobby. They pitch in. Dick's son wants to join Little League. Dick's wife wants to go to the show. Dick's dog likes

balsa.

Dick works hard. Dick works late at night. Dick's wife get sick when she smells dope. Dick goes to the office. His eyes are red. He picks glue off his fingers. The people in the office look at each other and nod their heads. Dick is not understood.

Dick joins an R/C club. Dick is understood. The club helps Dick. The club has insurance. Insurance is good. It does not cover Dick. He had measles when he was a child.

The club has a field. The field is in the country. Dick has no car. The club holds contests. They are great. The same man wins. He makes equipment. He is smart. The club has meetings. They are fun. Everyone laughs. They conduct business. It takes three hours. They talk about R/C. It takes ten minutes. They hold a raffle. The man with three Proportionals wins. They have a guest speaker. He does not show up. Dick likes the meetings.

Dick makes a friend. The friend's name is Harry. Harry is expert. Dick knows this because Harry told him. Harry has flown many ships. Harry can prove this. Part of each one hang in Harry's garage. Harry does not build much now. He does not have to — he is expert. Harry is a test pilot. He will test your new ship. There is no charge. Harry has fun. Harry is always at the field. Dick will be glad he is Harry's friend.

Dick makes many friends. He listens good. Someday Dick will fly and express an opinion. Dick will lose friends. Dick is ready to paint his ship. He says, "My ship will be the best looking on the field."

It isn't. Sam Superfinish has the best looking ship. It has three coats of auto primer and twelve coats of hand-rubbed lacquer. It weighs forty-eight pounds. Sam couldn't care less. He doesn't like to fly. Even Harry won't fly it.

Dick is ready. He is excited. Dick has a problem. It is difficult to pedal a bike and carry an airplane. The field is in the country. The day is getting late.

Dick reaches the field. Tom is gone. Sam is gone. Even Harry is gone. Thank God.

Dick is alone. He puts the wing on. He starts the motor. Dick turns on the transmitter. Dick runs down the field, downwind. He throws the ship in the air. It dips to the earth. It rises again. It turns to the left. It turns to the right. It stalls. It stalls. The motor quits. It comes to earth.

See Dick's eyes. They shine. Dick didn't turn on the receiver. Dick rushes to tell his family.

Dick's son is at a game. Dick's wife is busy. Dick's dog doesn't listen. Dick is happy at work the next day. He tells his friend John about R/C.

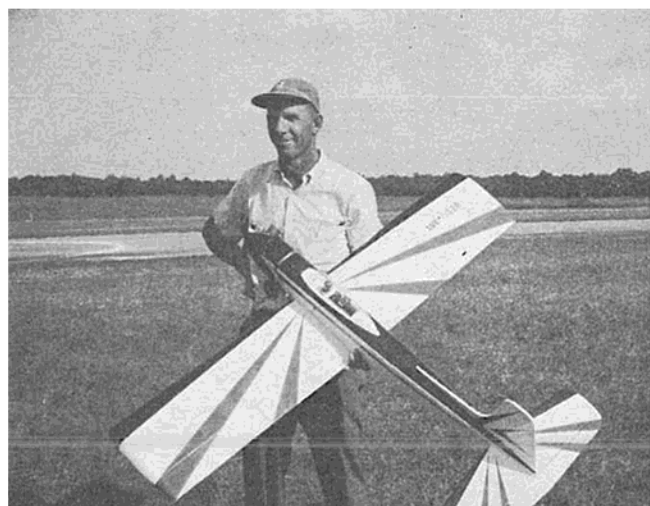
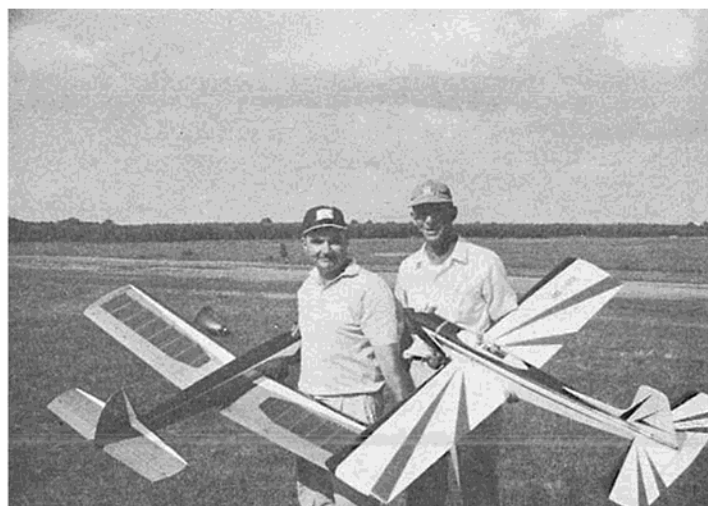
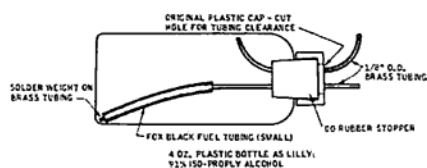
John is hooked. Watch out, John!

BY
KATHLEEN ACTON



FLY-IN

Lead photo: A portion of the 80 members of the Monroeville Model Flyers Club, Monroeville, Pa. Left: The RC site of the recent Maryland State Model Airplane Meet held at Frederick, Md. Below, left: Dick Gillette and Harold Coleson of Atlanta, Georgia. Harold was 3rd and Dick 4th at recent Philly Nats. Below: Another shot of Coleson and his 6 lb. S.T. 56 powered RCM Kwik Fli. Kraft proportional.





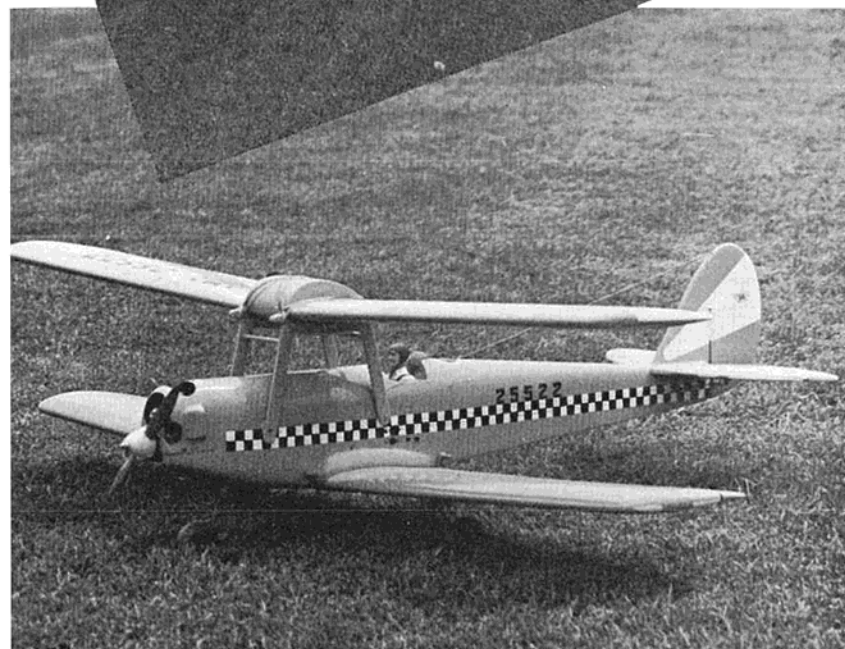
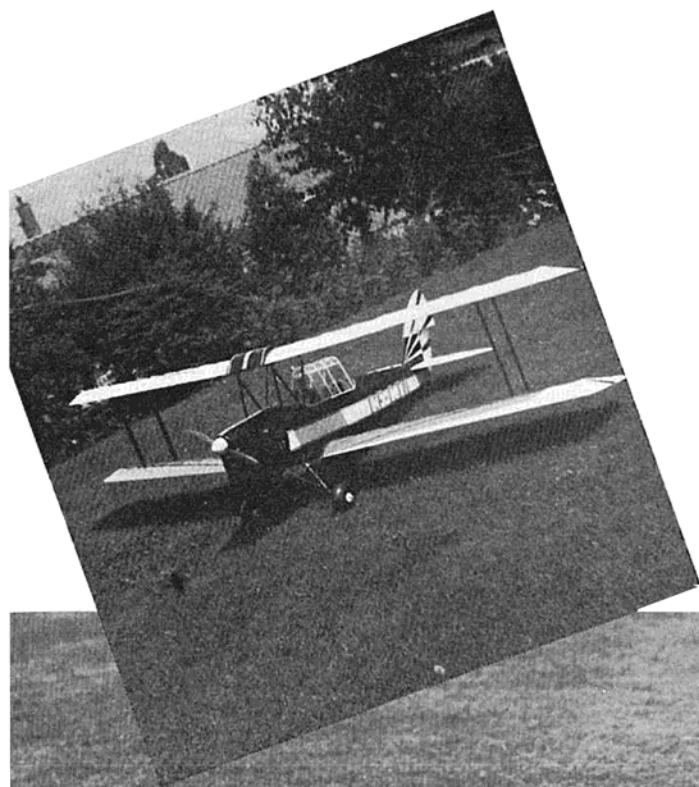
MAURICE WOODS' 1965 Invitational Tournament of Champions was an all-time outstanding success, drawing the top Class III contestants from all four corners of the United States to compete in the Oklahoma City affair. This was a contest for the "pro's," with the first five positions being won by what would appear to be a listing of the top Class III fliers in the U. S.

First place was captured by New Mexico's Ted White with his F&M Proportional and original "La Flecha" design. One of the striking free-style maneuvers demonstrated by Ted was his impressive, and seemingly impossible, Sabre Dance.

Second place honors went to California's Phil Kraft with his original Kwik-Fli II (RCM design) and Kraft Proportional System. Following in the third slot was another Californian, Nat's winning Cliff Weirick with his renowned "Candy" (RCM design) and Bonner Digimite Proportional system.

World Champion Ralph Brooke, from Seattle, Washington, was fourth with his Crusader (MAN design) and Orbit 7-14 proportional system. From New Orleans, Jim Kirkland was fifth with a Citron (AM design) and Kraft proportional.

(Continued on Page 32)



Top: The winners at the recent Valley Flyers meet. Standing, Granger Williams, Howard Reed, Cliff Weirick, Clarence Lee, Jerry Krause. Front row: Jim Oddino, Bill Dennis, Al Karp. Left: A pair of Moth's. See text for details. Above: SEVRCG Annual Contest winners: Lonnie Brown, Paul Ennis, Bob Smith, and Ed Avery. Dave Holmes was CD.

All in all, a battle of the Masters — and an event that will be ranked high among the best in the years to come.

On the California scene, the Valley Flyers Annual Contest was marked by 100% proportional competition — the only “reeds” at the yearly meet being Howard Reed and Reed Packard! Manufacturers represented included Kraft, Bonner, E.K., Space Control, Micro-Avionics, and Deans. When the dust had finally settled, Clarence Lee emerged the victor in Class III Expert. National Champion Cliff Weirick tied for second place honors with E.K.’s Jerry Krause. The resulting Valley Flyer matched flight between Weirick and Krause was the high point of the weekend as far as the spectators were concerned, calling for both pilots to fly simultaneously, the three judges decided which flyer performed each maneuver more perfectly. The ensuing fly-off, incidentally, was won by Cliff Weirick 14 to 7.

In Class III Novice, another Valley Flyer took first place when Bill Dennis emerged victorious with his Kraft-designed “Ugly Stik.” Second and third, respectively, was taken by Jim Oddino and Al Karp.

In the Goodyear event, FAST club member Granger Williams was first, followed by Howard Reed and Cliff Weirick.

In Open Pylon, Cliff Weirick and Jerry Krause made it one and two as they finished in a tie score of 1:07, a fly-off requiring the pilots to perform a loop on the upwind leg and a roll on the downwind side. Cliff delayed his roll until the last second which put him in a perfect bank around the pylon, cutting one and a half seconds off his time. In third position was Art McLizzie of the LARKS.

And what of the proportionals? Five wins for Bonner, four for Kraft, and three for E.K.’s Logictrol.

August 14-15 marked the two day Coffee Air Foilers Sixth Annual R/C Contest, held at Tullahoma, Tennessee, and directed by Chet Tuthill, CD. Held at the Tullahoma field, 56 miles from Huntsville (and fifteen miles from the Jack Daniels Distillery), this yearly event is considered the “most relaxed” contest in the South. The meet was blessed with near-90 degree weather and excellent contest organization.

In Class III, the first three notches were won by Harold Coleson of Atlanta, Jim Whitley of Decatur, and Dick Gillette of Atlanta. In the Novice category, Ken Kirchman eased out Bob Mitchell and Bill Welker, to end up one, two, three, respectively.

Nat’s winning Nick Neville made it two in a row by capturing the Class II slot from Bob Grimes, and Jim Edwards.

Class I saw Joe Gordon, Ernest Wann,

and Bill Welker capturing the first three positions. Open Pylon was won by John Carden of Atlanta, Georgia.

September 6, 1965 marked the First Annual Contest for the Soo Modelers of Ontario, Canada. Despite the weather, which was both windy and wet, there was a good turnout of contestants, with Class I and II along with Novelty Events being the order of the day. The latter included the Limbo, Spiral Dives, Parachute Drop, and Ground Handling.

In Class I, the combination of Merril Hinchcliff and his Rudder-Only Houdini was the winning combination. Class II competition was bested by Jim Elgie flying a modified Pronto and six channel reed equipment. Stan Lyons was top dog in the Novelty category flying a Falcon with dual-simultaneous proportional gear.

The majority of the Soo Modelers are flying Falcon type airplanes in Class II with 6 and 8 channel reeds and dual simul propo systems. Topping off the Soo season will be a year’s end banquet, where it is expected that plans for next year’s contest season will include a Class III event.

The South East Virginia R/C Group held their Annual Contest on October 10th at Langley AFB with Maryland’s Paul Ennis taking first place in Class III Expert with his Marksman and Bonner proportional system. Second in the Expert category was Bob Smith of Lynchburg, Va., and a Kraft proportional equipped Beachcomber.

In the Novice division, Lonnie Brown of Troy, N. C., was first with a Mustang and Yates proportional system. Second was Ed Avery with a Taurus-Zeus combination and Orbit reed gear.

The finale of the contest season for the SEVRCC was the announcement of an AMA Double A event to be held in the early Spring of 1966.

In the up-and-coming category for the late contest season is the Fly-Fun Weekend sponsored by the Tucson R/C Club, and scheduled for December 4-5 at the Marana Air Park near Tucson, Arizona. What may well be called the finest contest facilities in the southwest include a dormitory, bar, banquet area, and full-size aircraft facilities for fly-in contestants. The latter consists of a 5000’ paved runway for the benefit of RC’ers who plan to travel to the event via private aircraft.

Also on the agenda for the weekend is an NMPRA sanctioned Goodyear pylon event, scheduled for 9:00 A.M., Sunday, December 5th, according to Ken McDaniel, president of the Tucson R/C Club. All RC’ers are invited and welcome.

A pair of Moths — a DeHavilland Tiger Moth and Gypsy Moth, the first by Gordon R. Ince, President of Poli-

Tronic Industries Co. Ltd. of Ontario, Canada. The DH-82C was fully scaled from DeHavilland plans and sports an 86” span with a total wing area of 2024 square inches. Power plant is a Fox 59 R/C. The radio system consists of an Orbit 10 with rudder, motor, elevator, and elevator trim being used. Weight is slightly over nine pounds.

Gordon also incorporated an integral ignition system for the engine, since starting is somewhat complicated by the fully enclosed engine.

The Gypsy Moth is the work of Bill Campbell of Delta Specialties. Wingspan is 60” with an overall area of 1200 square inches. Weight is 10½ pounds with a wing loading of 17 ounces/sq. ft. Powerplant is a S.T. .56 with 12/6 prop. Construction details include balsa covered styrofoam wings, horizontal and vertical stabs, and fuselage turtle-deck. The forward fuselage area is filled with pour-in-place polyurethane foam.

The Moth is fully aerobatic and will do the entire AMA Pattern, handling as easily as a standard Taurus. Bill logged over fifty flights this summer, using F&M 10 channel reeds with Bonner Servos. Deviations from scale include the tricycle gear, cowling, and detachable birdcage.

In the Hints & Kinks department, a few ideas from the KC/RC “Contacts” . . . nylon tubing can be flanged using the small round tip used in the Ungar woodburning iron. Place the point inside the tubing, and as the iron heats up, roll back the flange. The tubing will melt if you try to do it after the iron is hot. The resulting flanged tubing can then be epoxied to a bulkhead. . . .

In lieu of sighting down the tail to align your model, try using a bubble protractor or a Devil Level to align the wing and tail. . . .

Be sure **not** to scratch polypropylene hinges with knives or other sharp objects — the material will snap like a piece of glass. Sans scratches, however, the tear strength of the material is exceptionally high. . . .

And from Bill Westphal of Mountlake Terrace, Washington, a couple of good ideas gleaned from his years of modeling. First, and for the shop, a 5” piece of C-shaped curtain rod, screwed at one end to the workbench and flared at the other, makes a fine soldering iron holder.

Finally, if you are tired of the elbow grease required when sanding Hobbypoxied or fiberglassed surfaces, try wet sanding with Hobbypoxy thinner or acetone instead of water. Use a grade or two finer paper than usual since cutting is very rapid.

(Continued on Page 36)

MAYNARD HILL SETS WORLD STRAIGHT-LINE DISTANCE RECORD

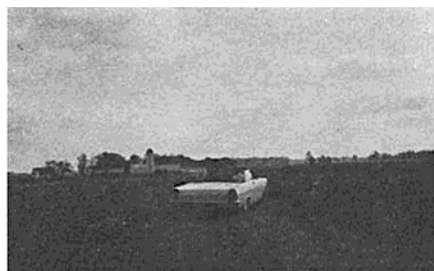
BY HAROLD deBOLT



Maynard prepares model for the launch from a farmer's pasture 1.2 miles from the N. Y. State Thruway entrance at Batavia, N. Y. Flight commenced at 11:09 A.M. Don Blackburn of Hamburg, N. Y. and a flight observer watch the proceedings. The chase car and radio monitor in background.



The initial launch by deBolt was successful and Maynard is circling the pasture area to check his engine setting before proceeding to the thruway and the official flight. The first setting was perfect as the record shows.



The convertible chase car leaves the launch area with Maynard flying from the rear seat. After reaching the thruway he assumed a reclining position for protection from the cold winds at speeds up to 75 mph. Driving the chase car is Raymond Cramer of Laurel, Md., and in the front seat is AMA official George Wells of Washington, D. C. The leading car in the photo is the official N. Y. State Thruway authority car which accompanied the flight, and driven by traffic supervisor Kenneth Havill of the authority.



Maynard reaches his "Stretcher" model at its landing point in Canajoharie, N. Y. The airline distance covered was 183 miles, the actual thruway distance being 198 miles. The landing was made at 2:29 p.m. for a 3 hr. 20 min. flight. The point of touchdown was 600 feet from the thruway facilities at the Canajoharie interchange. Note thruway in background. Maynard is still holding his Dee Bee CL-5 transmitter.

WASHINGTON — Another Russian-held world record tentatively was broken by Maynard L. Hill, Silver Spring, Md., on Oct. 2, when he flew a radio controlled model 183 mi. non-stop from Batavia to Canajoharie, N. Y., according to the Academy of Model Aeronautics.

The model was flown at an altitude of between 1,000 and 1,500 ft. along a route parallel to the New York Thruway. Mr. Hill operated his radio control transmitter from the back seat of an open convertible driven by Raymond Cramer, Laurel, Md.

The flight, which took 3 hrs. 20 min., was monitored by Thruway Traffic Supervisor Kenneth Havill. Helped by a 20 mph tailwind, Mr. Hill's Merco .61 powered Stretcher had an average ground speed of 55½ mph.

The Russian radio control record for straight-line distance was 155 miles, set in October of last year by N. Malinkov at Elets, Russia. The Academy of Model Aeronautics will forward Mr. Hill's record to the National Aeronautic Association and to Federation Aeronautique Internationale in Paris for confirmation.

Weighing 10.5 lbs. fully fueled at takeoff, the 7.5 foot wingspan model was launched from a farm field near the Batavia interchange. Hill said his Dee Bee CL 5 radio control equipment, operating on 53 mc, functioned perfectly as he guided the model at a constant altitude while the automobile was kept abreast.

After landing in a field near the Canajoharie exit, the model weighed about 8 lbs., indicating enough fuel remained to fly another 150 miles, or almost to New York City. FAI regulations, however, require that the landing spot be designated in advance. Mr. Hill chose a distance that would break the old record by 18%.

Official witnesses to the flight included Harold deBolt, model kit manufacturer; his assistant, Don Blackburn; and Cornell Aeronautical Lab scientist, Gerald Sterbeutzel, all of Buffalo.

During the year, two of Mr. Hill's previous records were topped. His R/C altitude effort of 13,328 ft. set in 1963 was bettered by Bill Northrop, Newark, Del., in September with a flight to 16,640 ft.

Mr. Malikov of Russia recently submitted to FAI a tentative R/C duration record of 10 hrs. 38 min., according to AMA, which would top Mr. Hill's 1964 mark of 8 hrs. 52 min.

Currently Mr. Hill holds the world R/C closed course distance record set in June of this year with a flight of 174 miles, and shares the R/C glider speed record with team-mate Ben F. Givens, Wheaton, Md., set in September at 23 mph.

TOP OUT

BY JERRY KLEINBURG



pitality was well received.

Ted White, F & M Electronics service chief, proved to be the chief attraction of the meet. Each time he flew he stopped the show with performances that were not only outstanding but left no doubt that proportional radio equipment provides a radio link as intimate as the bow of a virtuoso's violin. Unhurried, maximum performance sweeping maneuvers, reflecting a high degree of determination and perception, characterized Ted's flying during both the pattern event and the 'free form' demonstrations. Highlight of his flying skill was the "Saber Dance," where the ship—in a 60° side-slip attitude—describes a 100 foot radius, 360° circle over the ground, two feet off the deck! A real chiller! Ted's list of wins at the meet were Open Pylon, Expert Pattern, and the "Speed and Seed Event." This last is the TORKS version of the Las Vegas Race with an added twist of watermelon seeds and lung power in addition to the usual dice roll and pylon flying.

Bill Thomas, hereafter known as the "Bartlesville Wind," shared honors with Ted in the "Speed and Seed" by spitting his watermelon seed 48 feet at the end of his flight. (As might be imagined, some fliers lost or swallowed theirs during the pylon runs.) Bill, a class II fan who took 5th at the Philadelphia Nats, again showed his pattern skill by sharing class II honors with Bud Atkinson (Aristo-Cat, Propo-Cat), Nats 3rd placer. Bud, incidently, also took 2nd in Scale at this meet flying a beautiful Piper Apache which featured a retractable gear that, at times, had a mind of its own!

Dick Weathers, the Pittsburg Kansas KCRC'er, flying his scale Ercoupe 415D equipt with a Veco 45, Orbit reeds, and Transmites, gave a mighty

(Continued on Page 35)

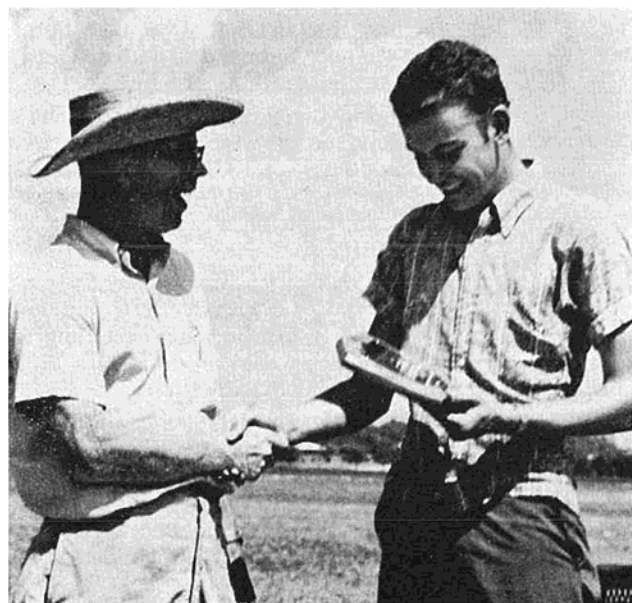


TORKS-ville, USA. Scene of the 4th American RC Annual Contest, the safe and effective flying layout of the Oklahoma City RC club attracted top fliers from across the country for outstanding Labor Day meet. Viewed from the operations center vantage point, field phones link contestants with the judges who are afforded an unobstructed (and shaded) view of the flying. New location was cleared, graded, and finished in one month's time!

OKLAHOMA City and the TORKS provided the 1965 summer season curtain ringer with their well-established competition classic, the American RC Annual Contest. Perfect weather and the long Labor Day weekend were prime ingredients of this three day meet that saw fun and skill neatly balanced to produce a sporting event memorable to contestants and spectators alike.

Randy McGee and his fellow TORKS, who have long received our vote as leading RC contest impresarios, again proved their ability to see ahead and build their annual shindig

around events attractive to fliers and to manage the show for maximum effect. Plenty of prizes—attractive trophies, stacks of merchandise, a bagful of souvenirs for each contestant—and a Saturday night party (complete with 16mm sound movies of the flying taken that day!) recompensed fliers for their efforts in making the 1965 American Annual a resounding success. Spectators, besides being treated to an unequalled variety of flying weren't left out of the festivities. In addition to the exciting events, the club gave out big slices of iced watermelon—and on a warm afternoon, the hos-



C. G. Hoover, popular Albuquerque RCer modestly accepts Sportsmanship Award from Red Maier, TORKS past president. Presentation occurred during 4th American RC meet where "CG," who is newcomer to Open ranks, showed he is developing into a top performer. NMPRA lineup at TORKS meet. Long Midget in foreground, flown by Maurice Woods, was winner in 2:50.7 minutes. Same ship won demonstration contest at 1965 Nats! To be featured in RCM Annual.



pleasing performance to repeat his 1964 Heart of America Contest Scale win. Featuring a fiberglass cowl and full instrument panel Dick's 2 year old scale job flies as good as it looks. Although there were few scale entries, Dick and the Ercoupe would be hard to top anywhere.

A 30 lap Rat Race with a mandatory pit stop was another feature of the meet. With separate flight categories for class II and III to encourage broad participation, the event proved an interesting endurance test of pilots and machines. Forest "Sleepy" Hines of Wichita Falls, Texas — flying an original and using C & S Digicon II propo gear — beat out "J. R." Cox of Hobbs, N.M., and Bud Atkinson for the top spot in class II. Class III Rat Race was won by C. G. Hoover, a young fellow who's well known but should soon become better known among RCers. Under Ted White's tutelage, "CG," son of the chief of Albuquerque based F&M's Frank Hoover, is rapidly developing into a competent poised flier with top Nationals potential. In watching both Ted and "CG" in Oke City, it appeared

And 1 the winner in Class I Junior: Phil Morris looks satisfied while Bob Woods shows he's a good loser.



that through their performance they served notice to the RC fraternity they're after top honors from here on out.

The Rube Goldberg Award represents a TORKS effort to encourage inventive progress and to provide a contest trial of the new gadgets. This award is of interest to commercial enterprisers who are becoming aware of this competition and its potential to future products. Cletus Brow, Hobbs, N.M., HARKS gadget king, won this

year's award for his simple retractable landing gear. First seen this year at Buckeye, Arizona Southwesterns, Cletus further improved his lightweight simple mechanism and drew the close attention of Duke Fox and Bill James who liked what they saw. Paul Runge, Ace RC chief, was also on hand and fully scrutinized Byron Lakin's new nose gear assembly. Byron, incidentally, won the traditional Testors' Best Finish Award with a flawless red and white original class III bird.

Class I action was centered upon two juniors, Bobby Woods and Phil Morris, in a nip and tuck three day battle. The moderate wind made their chore a little tough and although both had to come back after extensive repairs the competition went down to the last round which saw Phil finally outpoint Bobby. Part of Phil's winnings included a used Falcon hulk which one of the TORKS contributed after seeing the remnants of Phil's Mambo Special. Phil, of Oklahoma City, is a 14 year old flyer with lots of drive and spirit who strives mainly on his own with help from obliging TORKS. Readers are familiar with Bobby Woods who despite his young years has been contesting a long time. Bobby, the junior RC partner of his dad, Maurice, placed 5th in Jr-Sr Class I in Philadelphia this year with his well-worn Mark I rudder ship.

As noted before, Open Pylon was won by Ted White with a time of 1:12 flying his La Flecha powered with a sweet-sounding Merco 61. Open Pylon also gave a preview of the Goodyear NMPRA Event and an opportunity to compare the new with the old racing event. By having Goodyear racers compete, Open Pylon was bolstered and the qualifying flights for the Goodyear event were accomplished at the same time. The warm-up also was beneficial for the Goodyear contestants, Dale Nutter, Maurice Woods, Bud Atkinson, Al Solnok, and Leonard McCoy who were able to trim their ships and engines for the main attraction of the meet. As expected, interest in the new RC event was high and a large crowd was on hand for the checkered flag and the snarling buzz as the miniature racers leaped from the starting line. We purposely watched for spectator reactions and noted that everyone scrambled for best vantage points so as to not miss any of the exciting races. Listening to comments as the racers went on it was apparent that a new high in interest has been found. In avid style spectators soon selected favorites and cheered them on with advice on what the flyer could do to stay or get ahead. Although in some cases this was the first RC flying many had ever seen it was noted that spectator interest and enthusiasm were at levels usually expected of RCers. It

was quite an experience and the noted reaction was most likely heightened by the outstanding brand of flying by the contestants. The final heat was a cliff hanger between Woods and Nutter who somehow managed to change the lead at each pylon turn and received roars each time it happened. On the final downwind pylon Dale's white Mustang slipped wide a little and Maurice turned inside with his orange and white Mustang to take first place with a time of 2:50.7!

Trophy presentation was presided over by Curt Brownlee, TORKS prexy, and "Red" Maier while the occasion was sound filmed by John Thomas who had recorded much of the meet. It was John's efforts that made movies of Saturday's flying available for the Saturday night get-together at the Holiday Inn — a notable innovation and possible first for the enterprising TORKS. Jerry Welborne, contest director, had effective help in the record keeping department with big Bob Lutz as chief starter and judge, Homer Darnell as chief timer and Lloyd Keating, Bill McAbee and Roger Evans — TORKS secretary — as judges. We can't take leave of Randy Magee and all the TORKS (including 'Sam,' the jack of all trades) without mentioning their new flying field which they obtained and made operational for this meet in only a month's time! The layout, together with the operations center and spectator retaining fence, is a model for safe effective flying. Judges are afforded shade in the operations center (which evidently helps in the point scoring department) and are kept in touch with fliers via field phones manned by communications relayers. (The flier calls maneuvers in the usual way and the relayer nearby phones it to the judges who are located 200 to 300 feet away. Since aircraft flying out of view of the judges are over the spectator area any maneuvers not visible are automatically graded zero. The whole arrangement was simple, effective and it worked!)

As we said in the beginning, the TORKS provided the 1965 summer season curtain ringer. After looking over the souvenir ashtrays, the famous TORKS 'crying towels,' the winners patches, the fine trophies, and recalling the outstanding flying and congeniality, all that may be added is that if the season had to go — what a way to go!

A TIME TO HELP

Via the Tulsa Glue Dobbers news letter we read the following request that not only speaks for itself but does a uniquely effective job also. It is passed on for understanding consideration in this season of Christmas and Good Will:

Cebu City, Philippines

July 17, 1965

Gentlemen: (Glue Dobbers)

From an old issue of *Model Airplane News*, I have read that the Annual Modelers Meet is usually held in your area.

I am a member of a newly revived group of modelers here in this city in the Philippines who would want to get acquainted with some of your modelers. We are trying to slowly organize here to pursue this wonderful hobby again when we were cut off during the last war from ordering items and supplies from the United States.

But our main drawback now is the high cost of model kits and engines. Just to give you an idea, to get a dollar kit from your country we have to buy a bank draft which will cost four pesos (Philippine currency) and at the present rate of exchange of the dollar to Philippine pesos we have decided to bring up the following proposition to you:

We have so many beautiful items here (machine carved) out of wood, like salad bowls, fruit dishes, giant spoon and fork for wall decor, carved figures, wall plaques, also many ladies items like native bags, capiz sea shell jewel boxes, etc. I'm sure some of your modelers have wives, sisters and mothers who would be interested in our products. We would be happy to exchange with maybe a few gas model kits and engines, or maybe some balsa sheets and strips.

We hope some of your modelers would be interested in our offer so that we would be happy if they will write and let us know what they would want from this country. Our enthusiasm is great, but you cannot get along in this hobby without having materials to build the airplanes.

Trusting to hear from your interested modelers soon. Don't laugh now but the latest and only copy of *Model Airplane News* that I have is of April, 1959 where I got your address. I do not see any copies at the newsstands anymore, maybe because subscription rates have also increased. I treasure this copy of M.A.N. next to my wife.

Sincerely yours in modeling,
s/ Marcelo I. Arriola

Address:

P.Y. Arriola & Sons, Co.
Sanciangko St.
Cebu City, Philippines

THIS 'N THAT

* Via Martha Beason and SHARKS SPARKS we hear from George and Louise James about their trip to the Internats in Sweden. Taking advantage of an opportunity to visit relatives, the Palm Beach, Florida, RCer writes:

"The Internats in Sweden was a delightful experience. There was a great deal of rain during our stay in

this country, but the three days of the meet were really perfect. We rented a car in Malmo and drove to Helsingborg which was the closest large city. It was a 45 minute drive to Jyoungbyehed through beautiful rolling country. This military base consisted of two small hangars, of which one was used to display the models and where maintenance on them was performed. There were also neat bins for the transmitters.

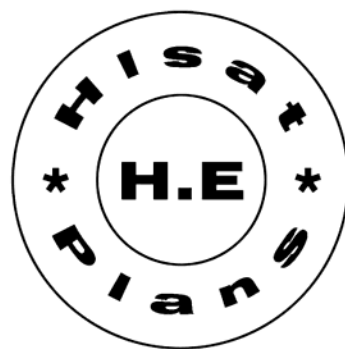
"There were very few non-modelers at the meet, probably because of the remoteness of the location and possibly because the sport is not yet as advanced as at home. The absence of Gendarmes constantly reminding one of the ropes was refreshing. I believe an award should have been given to the announcer, who seemed to address all contestants in their native tongue, easily drifting from one language to another in explaining various maneuvers etc. I think the Czechoslovakian contestant should have also received an award since his iron country restrictions limited his accessibility to such an extent that he had to build his own engine!! — quite a feat. I wonder how many contestants there would have been had they all been in his shoes. Sportsmanship of an RC contestant never ceases to amaze me. Even though this lad came in last, his colossal effort was awarded by a standing ovation by his fellow modelers!

"The ability, the friendliness, the efficiency and dedication of the American team was apparent from the start. Led by our very able 'Kaz,' they put on a show of which we all can be proud. Even the 'totals' of Doc. Brooke and non-contestant Nate Rambo did little to mar the image of the group. Doc's crash came during the lunch hour's 'I can do better than you can do' escapade when he was attempting four vertical rolls. The G's on the pre-dive pull out also pulled out the elevator horn. Nate's came during the first turn of a Pylon demonstration, also during the lunch hour. It seems that NMPRA Pylon has yet to stir Europeans and in his eagerness to promote this enthusiasm, trouble developed at the stick — so said Nate. Up to this point he received well-earned applause from the crowd by his lunch hour flight demonstrations. . . ."

George also commented on the popularity of Carl Goldberg's Falcon Sr. in his neighborhood. Says the new fliers find it a "forgiving old gal" and that flown without ailerons as an intermediate ship, all maneuvers are done with ease. This makes us hope that Carl has his balsa stocks built up again after the shipping strike so that he's again able to meet demand for his popular kit. . . .

* Newest "Down to Earth" Club candidates among the Shreveport SHARKS are Keith McCoy and Tom Barker. "Down to Earth'ers" are a select group of SHARKS who 'earn' the distinction, as you might guess, by clobbering their ship in unique fashion. For instance, Keith flew his multi into the open trunk of his car! Explained he was late and wanted to pack in a hurry!!

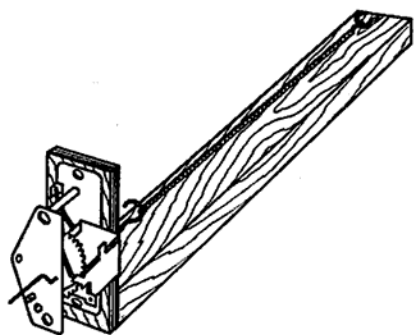
Instrument panel view of the winning scale ship at TORKS meet. Dick Weathers, KCRC'er, tends his Veco 45 powered Ercoupe 415D. Ship flies as good as it looks, uses Orbit reeds, Transmits. Pair won Heart of America Scale event in 1964.



FLY-IN

(Continued from Page 32)

And that's it for this month. What's new with you and your club? We'd like to know, as would other modelers throughout the country. Drop us a note — and don't forget the black and white photos of your activities.



SUNDAY FLIER



By KEN WILLARD

THE time has come to give some of you R/C "parents" a few helpful hints on "the care and keeping of escapements."

It now appears that escapements, like horses, are always going to be with us, no matter what exotic developments in modern means of control and transportation come forth.

So, for all you escapement users, here's some thoughts on how to get them in working order and keep them that way.

In the eyes of some servo fans, escapements are sloppy, crude, ill-fitted mechanical gadgets that long ago should have been consigned to the trash barrel. For those of us who still like to use them, though, they are simple, inexpensive, and lightweight devices that give positive control, without time lag. They just need to be kept in adjustment.

It used to be that every escapement which left a manufacturer's plant was bench checked before shipment. I don't know whether that is still true or not, but even if it is, that does not assure you that your escapement will work right from the box. There are reasons for this. Like damage in shipment, for instance. Although this is rare, it can occur. Another reason is that the manufacturer's bench check is usually made with batteries connected directly to the escapement. Although the escapement works fine this way, when you connect it to your receiver, two things happen—particularly with all-transistorized relayless receivers. First, the receiver takes some of the voltage from the battery, and the voltage across the escapement isn't quite as high as the voltage to the receiver. Therefore, when checking your battery voltage, always check the reading at the escapement. At the most, there should only be .1 to .2 volts drop from the reading at the battery terminals to the reading at the escapement. If the drop exceeds this, then your receiver is marginal, or your solder connections are bad.

Second, there's always a small amount of "leakage" through the power transistor on relayless receivers, and a little current flows through the escapement. This current isn't strong enough to "pull the escapement in,"

as the saying goes, but occasionally, if the escapement is adjusted so the armature either touches or comes too close to the solenoid when the full voltage is applied, then when full voltage is cut off, the "leak voltage" is still enough to "hold the escapement in," and that's when you hear the frantic calls of "interference!" But it isn't. It may take 2.3 volts to actuate the escapement, but once it's pulled in, a small fraction of a volt will hold it in.

This can usually be overcome, if and when it occurs, by putting a small piece of Mylar tape on the end of the solenoid. Then, even though the tolerance of the escapement mechanism would permit the armature to touch the solenoid when pulled in, the tape prevents it, and also provides an automatic gap equal to the thickness of the tape. This way requires another adjustment, which we'll look into later on.

There's another source of malfunction that the manufacturer's bench check doesn't cover, and that's "chattering" or "skipping thru" when engine vibration is introduced. And sometimes, when you adjust the escapement to prevent skipping through when the engine is running, then it won't release from neutral when the engine quits, and you end up with a frustrating free flight glide.

So let's outline a procedure which will locate any possible malfunction. Then we'll review some methods of adjustment to correct any faults.

For brevity, and also because I use them most frequently and therefore am most familiar with them, I'll limit the description to Babcock Mark II and Mark V type escapements. The basic checks and corrective actions, however, apply equally as well to Bonner, Citizenship, Elmic, Aristocrat, and other makes.

First you need a bench check setup of your own. This is simple. A one foot long piece of most any kind of wood, 1" x 2", with a frame attached to one end to hold the escapement, and a hook at the other end to anchor the rubber. Mounting holes are drilled in the frame to fit the particular escapement you are checking.

Mount the escapement to the frame, just as though the frame were a bulkhead in your model. Wind up the $\frac{1}{4}$ "

rubber to a double row of knots. You are now ready for the first full voltage full power check. Connect two pencils in series for 3 volts, touch the positive and negative leads to the escapement terminals and observe the operation. Everytime you apply voltage, the escapement should release instantly from neutral and rotate to the first stop. When the voltage is shut off by removing one of the leads, the escapement should instantly release from the stop and return to neutral. If the escapement is a simple movement, like the Bonner SN, it will stop at the opposite neutral; if a compound is used, it will rotate back to the single neutral position.

The rubber power for this full power test should be $\frac{1}{4}$ " for the Babcock, $\frac{3}{16}$ " for the Bonner, and $\frac{1}{8}$ " for the Citizenship. You can try the larger rubber with the Citizenship and the Bonner, but it has been my experience that they tend to "hang up" under the torque of $\frac{1}{4}$ " rubber, when wound to a double row of knots.

Next is the full power, low voltage check. Manufacturers use a rheostat to cut the voltage down. You can too, or you can use very long leads, or weak batteries.

Whatever method you use, the escapement should operate, with the rubber fully wound, on a voltage of 2.2 volts. If it operates on lower voltage, you've got a good one—unless it "chatters" under vibration. Check that later.

If it doesn't operate, then gradually unwind the rubber until it does. Make sure it not only releases from neutral when voltage is applied, but also returns to neutral with voltage off.

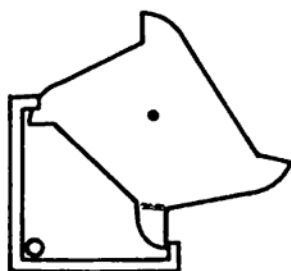
Now you know how tightly you can wind the rubber and still fly safely.

Sometimes you can improve the release action by cleaning and buffing the stops on the escapement mechanism, then coat them with liquid graphite. The buffing, with Crocus cloth, will remove any burrs that may be present, even though manufacturers do their best to "deburr." The cleaning usually isn't necessary on a new escapement, but if you're checking out a used one for reinstallation, it may have picked up grime, or exhaust products. This

(Continued on Page 38)

makes the surface tacky and helps prevent it from releasing. On the Bonner SN and Super compound, the nylon parts pick up dirt and become sticky unless you clean them occasionally.

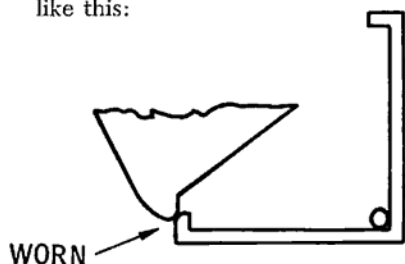
Now let's take a look at another source of trouble—the "finger wheel" or position stops which bear on the armature tabs.



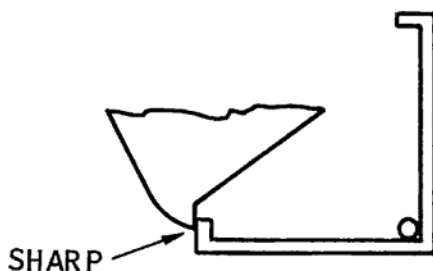
When the escapement is at neutral, the neutral stop bears against the neutral tab of the armature, held there by the wound-up rubber. Then, when voltage is applied, the armature "pulls in," permitting the neutral finger to slip off the neutral stop. Similar action occurs at the position stops.

This sliding action is probably the main source of escapement malfunction. So here are a few things to check if your escapement isn't working properly.

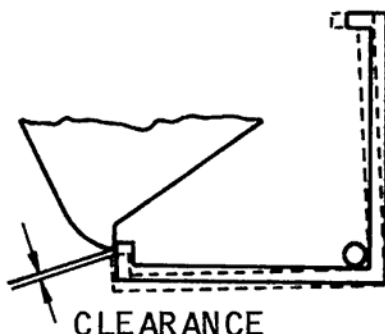
1. Contacting surfaces of the finger wheel and the armature tabs should be clean, so the sliding action isn't impaired.
2. After an escapement has worked properly for some time, and then starts to "skip through," look at the contacts. They may be worn, like this:



Vibration then permits the wheel to skip off the armature tab when it shouldn't. If this occurs (I've exaggerated the amount of wear for clarity) you can, with a small, fine file, reshape the contact surfaces to fit like this:



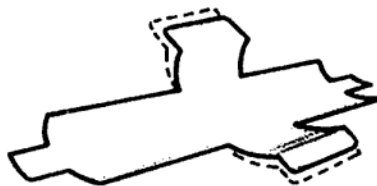
This may require an adjustment to the armature tab so the finger wheel contacts have enough bearing surface to hold in place under vibration and still slip freely past the armature tabs. This admittedly is a rather delicate adjustment, but by holding the escapement up to the light so it's back lighted you can manually operate the armature and turn the escapement shaft, and observe the clearance. This clearance should be the minimum possible, both



on neutral position when the escapement is pulled in, and on the control positions when the escapement is released.

This adjustment also may be required if you put a piece of Mylar tape over the end of the solenoid, as I described earlier, since the travel of the armature is now reduced by the thickness of the tape. It doesn't seem like much, but the thickness of the tape is just about equal to the right clearance for the armature tabs and the finger wheel, so it has to be watched carefully.

Next, a word about the governors on compound escapements. On the Babcock, it's the star wheel and rocker, and the speed can be decreased by bending the rocker in, or increased by flattening it slightly. Not too much, or the action



will be lost entirely.

On the other types, the ratchet wheel speed is determined by the weight of the rocker. They can be slowed down by adding small weights to the rocker, but this is not recommended.

Of course, the size of escapement rubber also affects the speed, but you have to consider how much force is required for your model before you reduce rubber size. For models using rudder only control, without the "kickup" elevator, the force required is very small, since the air load on the rudder is light. But if you add a "kickup" elevator, you need about four times as much power due to the constant down-load on the elevator. As a general rule, any model up to .19 size can safely be controlled using $\frac{3}{16}$ " rubber, or even $\frac{1}{8}$ " rubber, fully wound, if only the rudder is operated. If you use the kickup elevator, $\frac{3}{16}$ " rubber will work on .049's, $\frac{1}{4}$ " will be needed for larger models up to .15's and for .19's you better have enough torsional flexibility in the elevator torque rod ($\frac{1}{8}$ " sq. balsa will do) so the escapement will go through the up elevator position even though the air load permits only slight up elevator action.

After you've completed the bench check and inspection you still have to check the escapement operation under vibration. A preliminary indication can be obtained by tapping the escapement bench checkout rig with the escapement mounted and the rubber wound up. If a light tap will release the escapement from neutral and let it cycle thru, vibration may do the same thing. But this is not always true, so the only reliable test is to mount the escapement from neutral and let it cycle thru, vibration may do the same thing. But this is not always true, so the only reliable test is to mount the escapement in your plane and check the operation, both with engine running, and without. Also, with the engine running, hold the model up gently by the wing, to eliminate any damping of vibration by the landing gear. I had an unusual case once where the escapement would slip off the third position (which I was using for elevator), when the engine was running and the model rested on the ground, but it worked perfectly in the air! So the idea is to simulate airborne conditions as nearly as possible.

Sometimes you'll find that the combination of escapement and motor vibration with one type of propeller results in "cycling thru" and merely changing props will eliminate the trouble.

Well, there's a few thoughts on how to keep your escapements operating. If any of you have some other good pointers, let us know, and I'll pass them on. You know, once your escapement is adjusted, it's very reliable, and to steal a phrase, "Us escapement fliers would rather fly than switch!"

The Roostertail



The Official Publication of the
International Model Power Boat
Association
General Office:
2405 19th Avenue Broadview, Ill.

As a part of our service to boat modelers, we do our best to keep you up to date with the latest records, as recognized by the IMPBA.

Classes: .00A.10B.20C.30D.458E.67F3.05. The class appears between the displacement limits.

Straight 1/6 mile

	Time	mph
A-3 - R. Foley	0:10.05	22.39
B-2 - J. Henry	0:08.11	28.09
C-3 - J. Henry	0:09.05	24.86
D-2 - M. Preusse	0:12.8	17.6
D-3 - J. Henry	0:08.34	26.96
F-1 - S. Stevens	0:08.74	25.74
J-3 - C. Borchert	1:12.99	03.08

1/4 mile Oval

C-2 - J. Haltmeyer	0:45.0	20.0
D-3 - J. Whitlatch	0:45.46	19.79

Tether

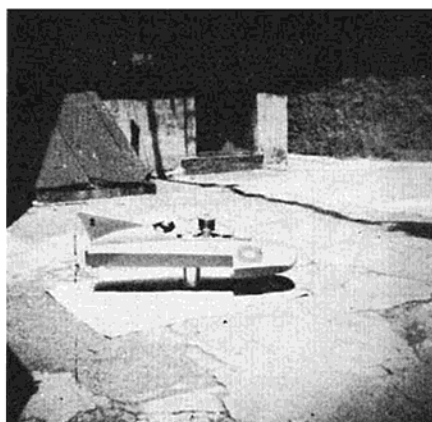
B Proto		
T. DeMeskey	0:45.0	43.47
D Stock		
J. Sampias	0:45.46	97.60

Next month we will publish our annual list of records. By now, your present list must look pretty shabby. 1965 has been a year to see many new records set, pushing the speed of model boats higher and higher. Perhaps the reason for this lies in the fact that the R/C equipment is more reliable than ever, thus allowing the hull and engine specialists to show their stuff.

For those who wish to figure the actual speed of any boat, time the model for a measured 1/16, or 1/4 mile and use the following formulae.

1/16 mile: mph = 225 / time in seconds
1/4 mile: mph = 900 / time in seconds

The August 22 "run for record" meet of the San Diego Argonauts brought 27 entries, mostly in the 1/16 mile. The big hydros from Los Angeles and San Francisco never made it to the meet. Jim Henry's .19 Hydro amazed everyone.



Tom Demeskey's tether "B" proto with homemade 20 c.c. mill. 20.67 seconds for 43.47 MPH.

His fastest runs were 0:07.03, and 0:07.35, but these were both in the same direction and he had trouble getting his roostertail up before hitting the traps on the way back. His best pair of adjacent runs were for an average of 0:08.01 for a speed of 28.09 mph.

The most popular class was D-3 (.35 and .40 ski boats) with six boats entered, all exceeding the record, and four running over 26 mph. The two fastest were running Super Tigre .40's.

In addition to the seven records set, the B-3 1/16 record of 23.29 mph was exceeded by Bob Foley, of the Argonauts, with a speed of 23.98 mph, but the engine blew before the necessary 1 mph margin could be attained. How about that? And you thought you were the only one who had trouble!

The Racine (Wis.) Wing & Hull Radio Control Club held its annual invitational Regatta Aug. 22, at Aqualand, a Skin Diver's paradise. The bottom of this pond runs from 60 to 90 feet away from the top, but, should a boat sink, there were swarms of Scuba divers ready to help search the crystal clear water. As with most pools, the bottom, or the depth of the water has little to do with the racing of the boat, but the sides of the pond are another story. Not the shores, the sides! This place is an old stone quarry, and the surface of the water is about 15 feet below the ground level, straight down! This is sure rough on the paint job if the radio fails.

The courses at Racine were the 1/4 mile Oval, and the Giant Slalom. Ron Buck of the Minute Breakers (Lombard, Ill.), took 1st in the Oval, then throttled down his red hot, White Heat 60, and took 2nd in the Giant Slalom. This just proves that a boat can have good handling characteristics in both high speed, and low speed.

What wild regattas have been held in the midwest in October. Multi Boat Meets! Not "pairs" racing, but real boat racing with four or five boats racing at the same time. The DeVry Dolphins of Wheeling, Ill., held a Multi Meet with classes broken down by engine size. The Skippers R/C ran a Handicap Multi Meet in Downers Grove, Ill. My personal feeling is shared by all who attended. This is fabulous competition! Note the wording all who **attended**. The spectators really whooped and cheered along with the contestants. When a heat is running, everyone watches. Nobody fiddles or repairs, or adjusts — there is just too much to be seen.

At the Skippers meet, the handicap was based on the time run in the 1/4 mile Oval competition. For some time now, it has been said that single boat running is like time trials before a race, so that is how it was used. The handicap system requires that all the boats be started, and held in port until released by the starter. The slowest boat goes first, and the fastest boat goes last. The time of the "head start" of the slower boats is determined by a formula using the 1/4 mile Oval time as a base. We used a point system for determining the winner, and at the end, wound up with a three way tie! This only proves that the handicap system is a real equalizing factor. The first place winner was Bob Weirick, of Beloit, Wis., who ran the Oval in 1:11.5, and second place went to Ron Schweisow of Aurora, Ill., who ran the 1/4 mile Oval in 0:44.8. With this much difference in the base time for running the oval, Bob had a 42 second head start in a 4 lap race. Ron caught up and was about to pass on the inside at the 8th turn, but cut the buoy and had to circle the marker. This was all Bob needed to win by 1/4 of a lap.

The DeVry meet in Wheeling, Ill., broke multiple racing classes into the same groups as are generally used for Oval racing, i.e., under .30, .30 to .60, and over .60. The allotted R/C frequencies are amazingly well distributed, and as such, allow four to five boats to race in each heat. In this race, a flying start was used, with the boats crossing the starting line at the expiration of a large one minute clock. This means that the boats mill around behind the starting line for a full minute trying to jockey for position. Tension and enthusiasm go sky high as the clock shows less than 10 seconds to go, and you hear the throttle start to open. The noise goes from a low rumble to a wild snarl as the five boats speed across the starting line, answering the starting horn with the sweet music of a group of well tuned mills.

(Continued on Page 41)

CUNNINGHAM ON R/C



If you ever chance to visit the land of the fig leaf, top-less waitresses, buxom starlets, and other flora and fauna of the West Coast, try **not** to include a trip of Uncle Don's Cabin as one of your high spots. I made a mistake and did just that and darned if he didn't put me to work!

Of course you really can't find the place anyhow. If you drive a Texas size car you simply cannot navigate the goat trails and paths leading up to the Dewey hide-a-way. It is perched on the side of a California hill (called mountains out there). If you are astute enough to discover the way up to the seat of RCM you are in for an awful fright—you've got to go **DOWN** again to get away from the place. The acid test is if you can negotiate the trip twice! The first time you must also inhale at least an hour of dope and fuel to really feel like making the return trip to the land of the living.

And, you should see the Editor's "flying field!" Just heave the darn thing off the side of a cliff and if it's going to fly, it will. If it won't, well, it's too far down to bother to pick up the pieces.

We discussed at some length just what scope my writings should include and the best answer that was forthcoming from your editor was something like "... beats the heck out of me, you decide what you want to write about." Which is just an executive way of saying "you've got the ball, now run with it."

In coming issues we plan to emphasize R/C design, as related to current models, and also as related to types that haven't been tried, or at least have never been kitted. It is going to be our purpose to try and present information that will be interesting to many modelers, and especially the free thinking type who are tired of kit models, or of the rut that they have been in in their construction. Along the way we plan to present some designs that have been designed to be a little out of the ordinary.

An early project will be a simple twin engine ship, easy to build and yet a good flyer. I think that twins are like biplanes—everyone would like to try one, but just don't because of the problems involved. Biplanes have proven to be fun and well worth the extra effort. And this holds true for twin engines as well.

Another in the series of up coming articles will deal with getting more con-

trol functions from your multi servos by simple mechanical linkages that allow you to hook things to other things. Boy, how do you like that for confusing talk?

These are only some of the ideas that will be presented in the future. We also hope to be able to answer some of the questions that may come up from time to time on what, why, and how some ships fly and others don't.

This month, however it seemed like a good time to launch into another of my favorite subjects (and pet peeves), discussing some of the things that go on at most flying areas. If you recognize someone in any of these inside looks at flying field habits, I hope it isn't yourself.

R/C flying is becoming more and more popular each passing year, with more and more new faces appearing at our flying areas, both in the form of participants and spectators. For us to "police" ourselves is going to be darned hard. We don't have any hard and fast rules to govern conduct, and in the past, it has been pretty much of a gentlemen's agreement as to what would be done at what time. Many new fliers and spectators simply don't know what to do, or how to be careful, and I think that if all of us would pitch in and help them find out the right way we will all be better off five years from now.

As an example, I heard the other day about one of our fraternity out testing his new proportional rig at a field that he had seldom used before. His ship suddenly went ape in the sky and came tearing down to the ground, resulting in a smashed ship, crunched radio, and shot pilot! While he was picking up the pieces, another modeler walked over and told our friend about a man on the other side of the field that had been working a transmitter while his ship had been crashing. It seems that he had been deliberately trying to "hit" the ship in the air, and hit it he did! Our friend accosted the transmitter owner on this delicate subject and was told that he had as much right to turn on his rig as the next guy, and it was simply tough if they happened to be on the same frequency!

It goes without saying if most of us had been there we would no doubt be spending some time in jail for assault, but our friend was smart enough to pack up and leave. Result—a big repair bill and a great doubt as to the goodness of fellow modelers. This is really worse than the CB lads who park

their cars near a flying site and then see how many four hundred buck jobs they can shoot down with their \$39.95 units! It's a pretty rare flyer who has not been hit by one of these friendly characters at some time in his flying career.

These people are not really a part of our hobby and it's a good thing, but an awful lot of us can, and do, make life just as uncomfortable for other fliers... many times not even realizing that we are doing it.

Suppose that you are out at your local field, the day is bright, just perfect for flying, the wind light, the sun not too hot, and the temperature just right. And then along comes "Friendly Sam."

Sam really likes people. He never wants to be on the outside of anything. When he arrives for a day of flying he always likes to put his gear down right in the big middle. Kinda' like a fat lady making room at the butcher counter. Sam spreads out and in short order has his engine going. Of course the prop blast is aimed right at your ship, and dust, dirt, fuel, old rags and almost everything else is blowing all over your nice clean ship. Sam isn't satisfied with his throttle, so he runs his engine up and down at least six hundred and twenty times until it sounds just right.

Then Sam takes off. Now, however, he has become the "Lawn Mower"—not the kind with a nice quiet Briggs and Stratton engine, but a screaming demon type lawn mower that likes to make lower and lower passes across the strip. Each pass is made from a high speed dive. This is living! He has a new proportional rig and the control is just great! Back he comes again and this time the poor soul who just got his nose up out of the grass dives for cover again. If you are flying at the same time, lots of luck! You are going to need it! With the LM around you'll be very fortunate if you don't get a pants leg full of prop when he lands, or at the very least, a new flat top haircut.

Good old Sam, he finally lands his flying grass trimmer and everyone begins to breathe again. Another flyer on Sam's frequency starts flipping his propeller. After all, it's his turn to fly. Sam, by this time, has quickly refueled his beast and since no one on his color is in the air, starts his engine again and roars off down the runway and into the wild blue.

The "Air Hog" has now taken over.

It happens all the time. He always brings at least two gallons of home brew to the field and is determined that one of the jugs will disappear during the course of the day. The Air Hog is generally a pretty nice guy on the ground, but like the man that changes character when he gets behind the wheel of his auto, once he gets into the air, it's **his!**

Antics of the Air Hog can, and sometimes do, lead to another of the residents of the field, the "color blind transmitter thumper." All he really wants to do is to check out his radio gear to see if his throttle is working and that he plugged in his servos right and that up elevator is not left aileron. This is good. But not when someone else is flying that just by chance happens to be on the same frequency. Again, this happens all of the time. More often at smaller, less busy fields, because no one thinks that there is enough traffic to impound transmitters or remove antennas or do any of the other things that could help in preventing the careless from causing trouble to everyone else. There have been many damp arm pits caused by this problem. To keep the Frequency Forgetters in line is everyone's problem and more so for the man about to fly. Take the time to advertise your color, loud and long and clear.

I'll bet that with a little thought you can come up with many, many more of the special cases that haunt the flying fields, but I'll lay you odds that this next one never happened to you. But, sure enough, it did to me.

Dogs are not the best thing to have around when serious flying is at stake. Sometimes they become offended by the sound of two cycle engines running on the ground and will charge the monster with the great idea of defending their master from this evil noise. These dogs are the visiting kind cuz' any modeler's pup would be used to the sound in short order. Dogs also cover ground very rapidly and can wind up on the landing strip before any one can say scoot. But, the crowning blow by a dog happened just the other day. He thought that my nice shiny blue transmitter was a fire plug! You know what dogs do to fire plugs. He did!

Since that time two schools of thought have evolved. One holds that my transmitter will simply rot away, while the other holds that now my transmitter will serve as a rally point for all dogs unfortunate enough to be caught out in the country with no fire plug in sight to help them out in their time of need.

Anyone want to buy a transmitter, slightly used?

Your day at the field really isn't complete until a full complement spectators have passed by, asking questions, stepping on your elevator, and in general making themselves very welcome. Every now and then a really "Big Stud" stops by just to watch the "kids" play with their "toys." His mouth is filled by a large cigar (at least a two bit kind), and he feels that anything the "kids" do is ok by him. He gets a little shook up when he finds out that the "kids" are getting gray on top, a little paunchy, and quite likely are smoking a two bit

cigar, too! He can't understand why grown men are playing with toys, so after making a few comments, takes off down the road to follow his hobby — drinking beer and chasing girls. Ok, so who's nuts?

Then we have the spectator who once, long ago, built models and is fascinated by all of this radio business. He asks all sorts of questions, and is blown out of the tub when he finally hears the price of things. He tells you that he has an old Atwood Sixty that has been gathering dust for a few years, like maybe fifteen, and he thinks that it would be just right in a full scale Fokker D-7 with about a six foot top wing. Don't laugh, this guy will be back, and chances are he will show up with a single channel ship with a nice new .049 in the nose. What did you ever do with that Atwood? I've got a Super Cyke myself, and some day. . .

Small boys are probably the best kind of spectator to have, if not in too great a number. With a little coaxing they will carry your fuel jug, wipe down your airplane, hold it while you run the engine, and while not working, disclaim to all of their less fortunate friends just how this and that works. Or, we have the small character that is 900% mouth. Your flying day is now drawing to an end, you have lived through the "Duster," the "Lawn Mower," the "Air Hog," and others, and you are trying to get in just one last flight before packing up for the long trip home. "Master Mouth" has arrived.

"Hey, mister, why don't your engine start, huh?"

You have been flipping the propeller for some time wondering the same thing.

"That's a pretty nice looking ship ya got there, why don't ya make it go?"

You wish you could.

Finally the engine catches on, and with a slight smile playing around your face, you reach over and lever the engine to low throttle. It doesn't sound just right so you run it up and down a bit to be sure. With a finely tuned ear you listen to the hum of the propeller. After all you're no beginner.

"Ya gonna fly now? I sure hope ya do. Boy, would that make a swell crack up!"

With nerve ends tingling, you start to taxi out on the takeoff strip, turn into the wind, check controls and gun the engine. It dies. Grabbing the rudder, you trundle it back to your tool box for a refill and a fresh start. The toothless mouth is waiting there for you.

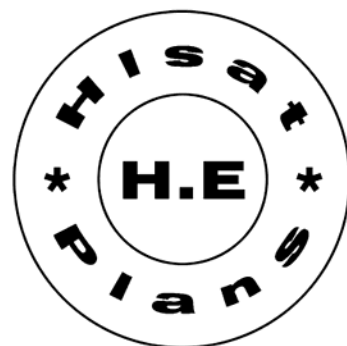
"I knew it wouldn't work," he says joyfully, "must be a spark plug or somethin'."

By now you are growing a little desperate, so with a double hard flip of the propeller you get the engine running again. At full bore you race down the runway and take off. If you were lucky

you remembered to turn on the receiver.

The Mouth, is now standing next to you, jaw operating at a rapid clip. It's no wonder that hands get just a little shaky when pushing buttons on little boxes.

Next month back to practical subjects, Gadgets and Gimmicks.



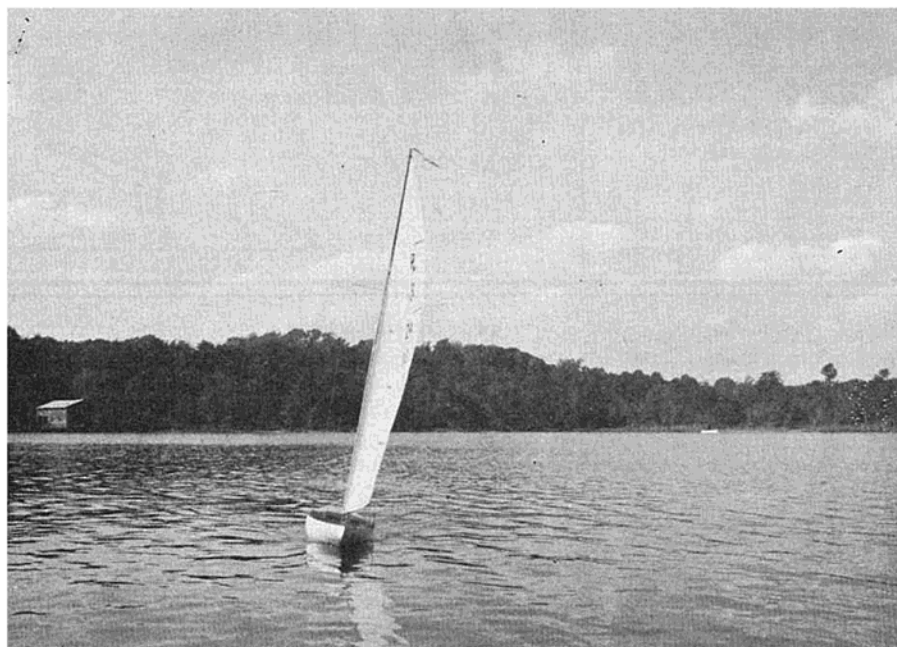
ROOSTERTAIL

(Continued from Page 39)

Bumping hulls, near misses, flips, collisions, derelicts out of control, drifters — All of these add to the thrills, and test the skill of the remaining drivers.

After having two rousing multiple boat races in a row, it is doubtful that anyone in the midwest will ever be satisfied with a race which consists of only "time trials."

KITS AND PIECES



THIS month, we diverge somewhat from our usual line of construction. A considerable amount of interest was created by 'RCM Goes Sailing' in the August issue. Unfortunately, however, these large sailboat kits are generally available only by mail order, and at rather stiff prices. Kits and Pieces decided to investigate and build one of these kits.

After due consideration, we chose the Regatta One Design, kitted by R/C Model Sail Yachts, Box 3134, Burbank, California. This is a large ship, with an overall hull length of five feet, a beam width of 12½", an overall height of 6-10½", and a sail area of 1250 square inches (wing area). The "complete" kit is priced at \$97.50 plus freight.

The package that arrived (about two weeks after ordering) could have easily passed for a coffin, measuring 6 feet x 13" square! The carton was well designed to protect its valuable contents from the tortures of shipment.

After unpacking the kit, we immediately examined the contents, including an unusually fine group of brass fittings, and a superb set of dacron sails. The most tedious part of any boat construction is the completion of the hull. The hull supplied with the Regatta One is made of molded fiberglass with the shear rails (wood strips around the edges) and deck beams molded in. The hull is one of the finest pieces of fiberglass molding that we have seen, being completely smooth and free of defects

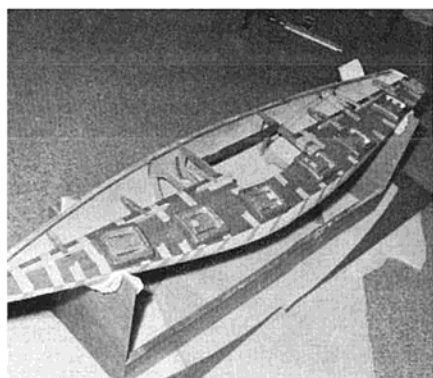
of any kind.

A detailed instruction book and a very clear set of drawings accompany the kit, making assembly easy, even for the novice builder. A list of nautical parts identification proved invaluable to an individual such as myself who has spent most of my time with my head in the air! As it turns out, the most apparent difference between aircraft and ship building, from a construction standpoint, is the use of hardwoods and epoxy glues (sorry, no balsa).

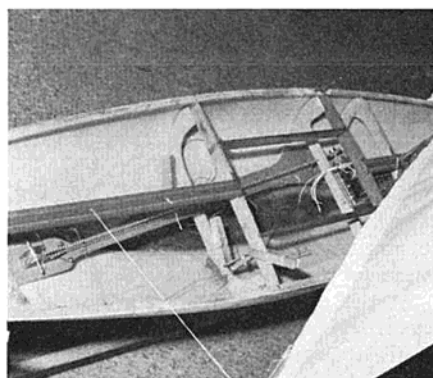
The kingplank (mahogany deck center strip) was fitted and epoxied to the hull, and the rudder carved to cross section shape and fitted to the keel. Sixteen pounds of #9 shot (not included due to shipping weight) was epoxied into the keel for ballast, completing the hull assembly except for the addition of decking. At this point, the hull is ready for fitting of radio gear and drive mechanism.

A "sail sheeting kit," available from R/C Model Sail Yachts (\$29.95) was ordered with the kit. (Frankly, we thought that this 'extra' were the sails, themselves). This kit consists of a pair of ball chain drives, complete with micro-switch stops, for controlling the sail lines. Also included were fitted wood bulkheads designed to fit into the hull and carry the drive mechanisms. A pair of Super Monoperm motors were purchased to drive the chains. The drive mechanisms fit perfectly and should pose no problems to the average model builder, although a schematic diagram of the micro-switch stops would be helpful.

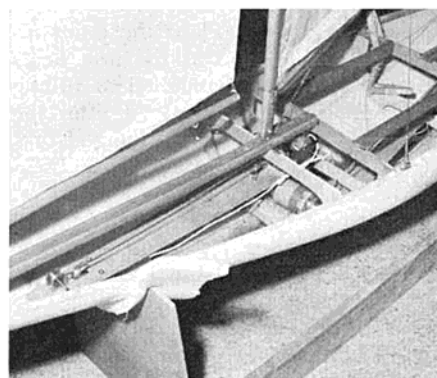
Radio installation proved to be a little tougher than anticipated, at least mentally. The controls are ideally suited to reed equipment, even the old relay units. The only thing available, when it came time to install the radio gear (much sooner than expected) was the F&M Proportional System. This was excellent for the rudder control, but some means of operating the sail drives had to be "designed." After



Lotsa' tape and weight assure a good deck fit.



Kingplank, drive chains, rudder bellcrank in place, ready to add decking.



Drives in place and sails temporarily installed.

much deliberation (at least five minutes), we decided to install three proportional servos, one tied directly to the rudder, and the other two used to activate lever switches (type used on reed transmitters), controlling the two drive chains. This system tested out well. The only problem now, was how to work this system from a two-stick transmitter. Rudder control in the ship was tied to the normal rudder transmitter control, while down elevator became mainsail out and up-elevator, mainsail in. Left and right aileron controlled jib sail in and out.

Everything appeared to be A-ok in the radio and control department. The mast and booms were tapered and fitted, then all wood parts were given three coats of Hobbypoxy clear and sanded well.

All of the fittings for the mast and booms were installed, and the turn-buckle locations were marked. The mast was temporarily fitted to the hull (we just couldn't wait for the decking to be installed), and the sails rigged. Our yacht was beginning to take shape.

A thorough check of the sail operation at this point revealed a noise prob-

A little help in the sanding department from Don and Steve produced a fine finish on the deck (Slave labor).



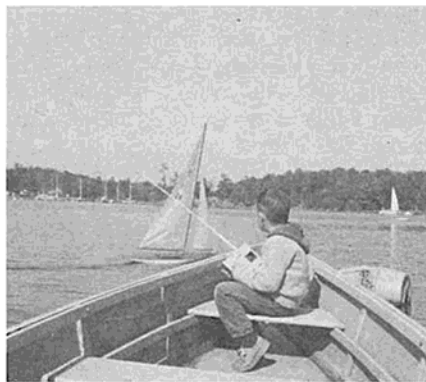
lem caused by the motors on the sail drives. A small capacitor tied across the motor terminals eliminated the trouble. The mahogany deck could now be epoxied in place, and the hatch cover built.

Once the deck was dry, the hull was turned over on the bench and blocked up level. The waterline was marked, using a surface gauge (a pencil attached to a small square would suffice). Three coats of Hobbypoxy clear were applied to the deck and hatch. The hull never did get painted due to our eagerness to get the ship in the water.

The column deadline was fast approaching when the ship was completed, with but two weekends left to complete the running tests. Friday evening, the ship's crew was assembled for a final checkout at the controls. Sat-

urday morning, all was ready — except the weather — cloudy with 30 knot winds, and small craft warnings flying. Ours was certainly a small craft! Sunday, however, dawned bright and clear — but again 30 knot winds! After considerable deliberation, we decided to at least take the boat down to the river

Son Don at the F&M control box.



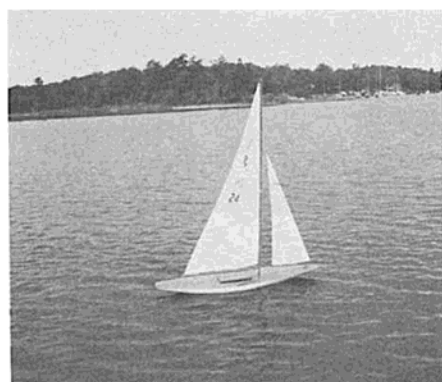
and take a few pictures. Rigging the sails was almost an impossibility, but finally we succeeded. Someone suggested setting the Regatta One into the water in order to take the photos and make a "wet" check of the controls. (We assumed the following weekend would produce rain, or worse.) So be it!

As I returned to the car for our camera, I was startled by a cry of "look at her go!" I turned. There in the middle of the river was the Regatta One, literally going like the wind! We had so darn much fun during the next few hours that we almost forgot just how rough the wind actually was.

After the tests were completed, and under the most adverse conditions, we had our pictures, we had done something new (for us), and we had had a ball — all without a mishap (quite different from early R/C flights).

The following weekend ultimately turned out to be ideal for sailing — so we did. Our Regatta One now has a total of five hours running, and has responded perfectly at all times.

The end result — a whole new world of R/C enjoyment.



Being an R/C flyer, I was a little doubtful about the pleasures to be found in sailing. I must say that the fear of a crackup, pilot error, or malfunction does not exist. Neither is there the three control axes of multi flying. Still, sailing does offer a definite challenge — man and machine against nature — requiring different, but nonetheless, exacting skills. I still have a lot to learn concerning the control and operation of the ship, and I will certainly enjoy learning. And so will you.

In my opinion, the Regatta One is a fine sailing yacht (I am not an expert on yacht design), very well made and easily constructed. The workmanship, especially the hull and sails, is excellent, and the price is reasonable.

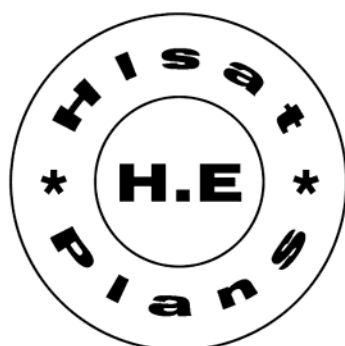
All we need now is someone to race with. How about **YOU?**

We received a sample of the 'Li'l Blinker,' produced by Angel Mini-Flite Co., Box 437, Fitchburg, Mass. This little flashing light could save many an RC ship, from a cold night or three while lost in the brush. Although the light is not bright in direct sunlight, it is easily visible at dusk. The wiring diagram supplied with ours was in error, showing the actuator switch connected across the battery, rather than breaking one of the leads. Wiring as shown would produce a direct short.

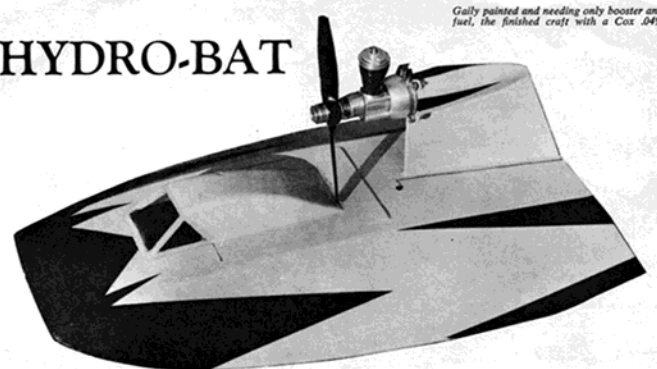
We have just completed two Digitrii (Digitrii?) and they both check out exactly per instructions. Looks like The Chief (our Editor) has come up with a real winner!

Speaking of winners, we have just received one. This, in the form of a kit of the Kwik Fli II, manufactured by Jensen Enterprises, Box 214, Glendora, Calif., and distributed in the U. S. by North El Monte Hobby, distributor division. This kit will be featured in this column next month. All we can say now is that this is the most — most — well, it's just the most! The kit is priced at \$34.95, which may seem a little high for a ship of this type, however I doubt that anyone will complain once they see the kit! The quality and precision of this kit are immediately apparent, even to the worst builder! As I mentioned, this is next month's review, but here are a few previews — balsa: better than I could ever hand select; machined parts, not die cut; pre-tapered sheeting and spar doublers; pre-cut wing cap strips!; pre-cut and angled stab ribs!! Why not order a Kwik-Fli now and work along with us? It will have to be seen to be believed.

Till next month — see **you** at the field (better bring along some skiis!).



HYDRO-BAT



Gaily painted and needing only booster and fuel, the finished craft with a Cox .049.



Savannach VG



Savannach VG



Savannach TM



Savannach TM



Savannach ADV



Savannach ADV



Savannach Bingo



Savannach Bingo