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RC MODELER

THE WORLDS LEADING MAGAZINE FOR RADIO CONTROL ENTHUSIASTS

THIS MONTH

VOLUME 7, NUMBER 6

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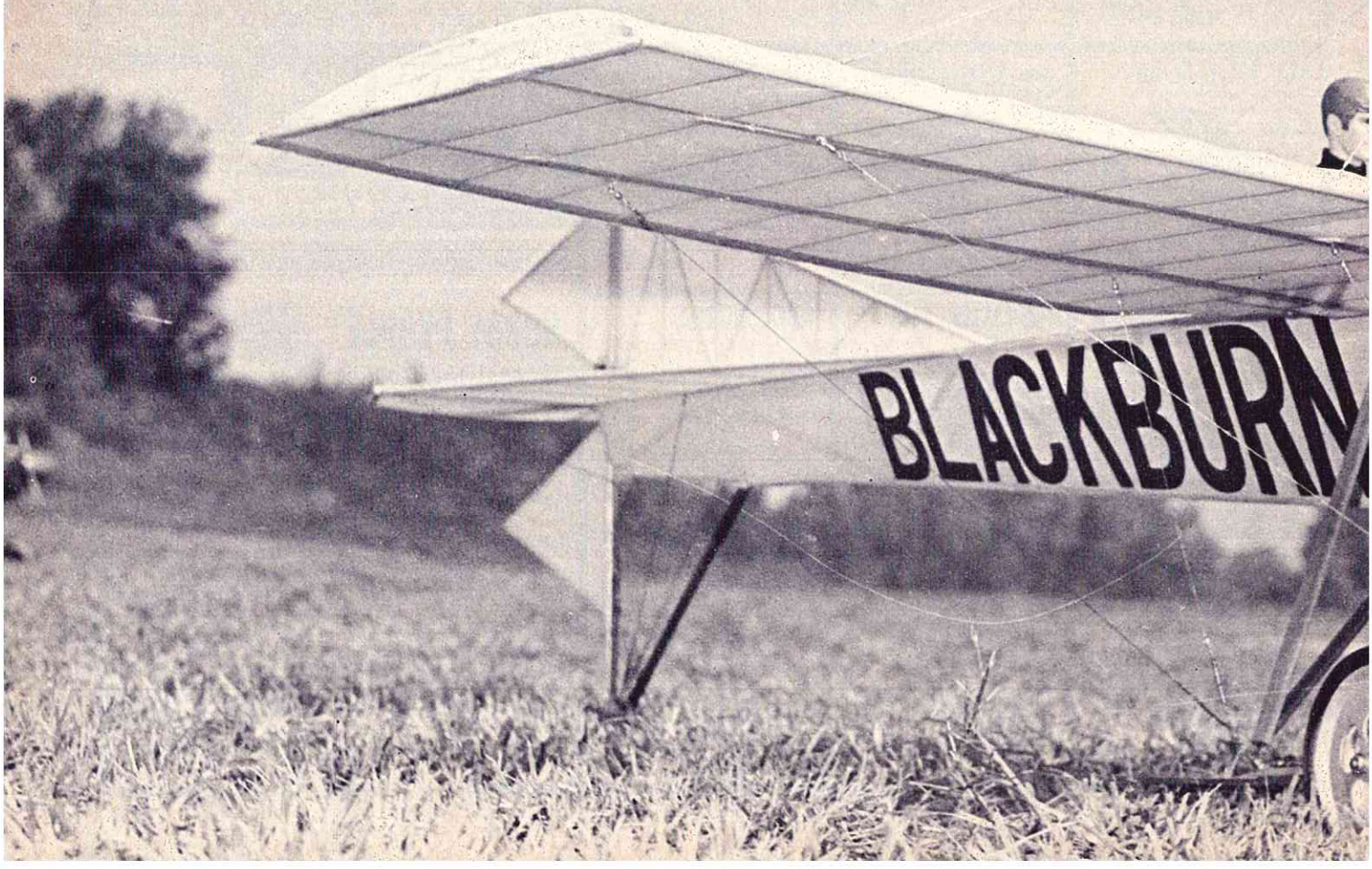

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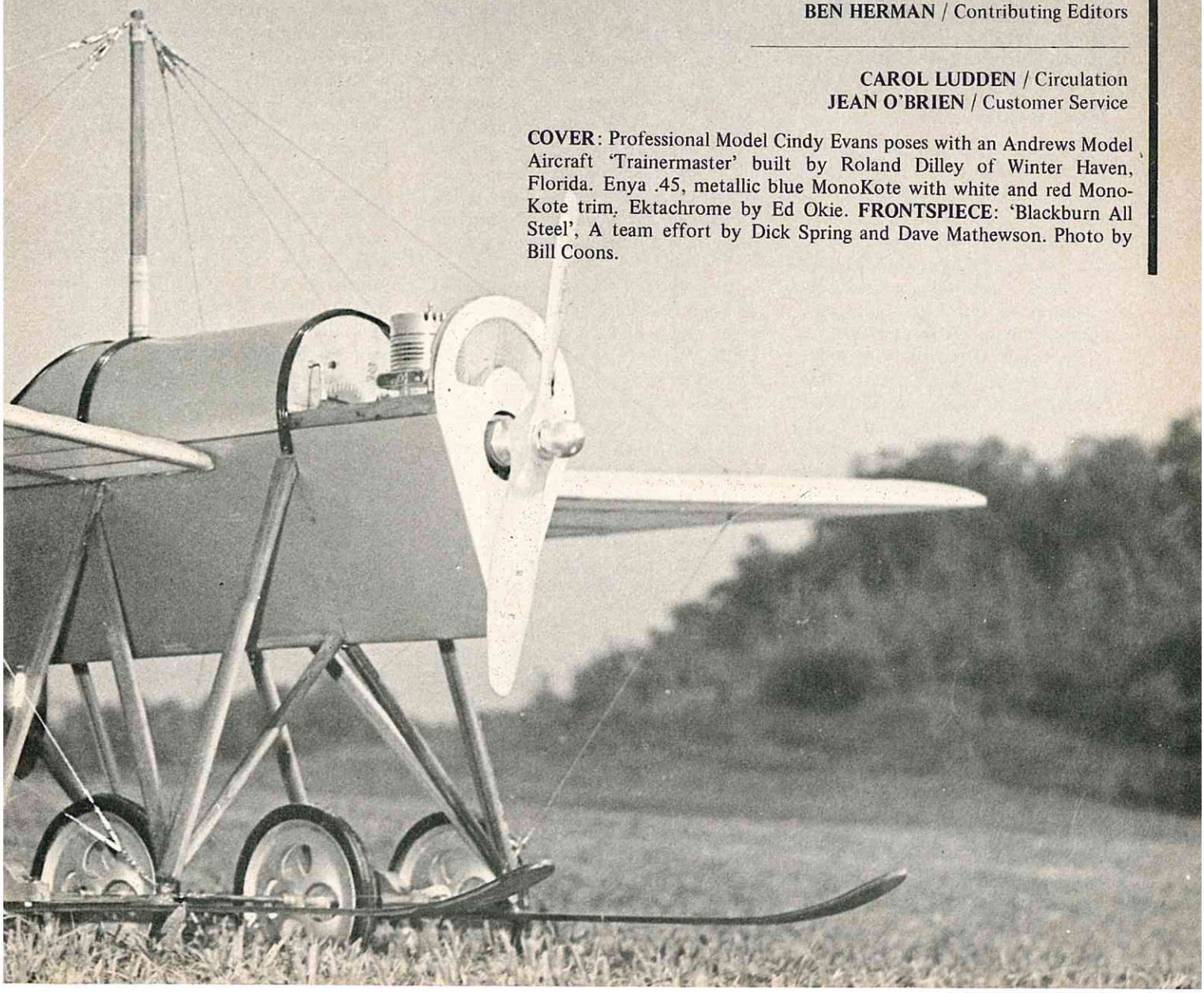
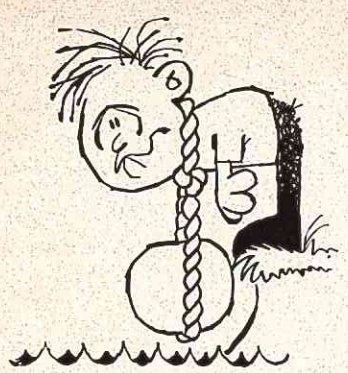
COVER: Professional Model Cindy Evans poses with an Andrews Model Aircraft 'Trainermaster' built by Roland Dilley of Winter Haven, Florida. Enya .45, metallic blue MonoKote with white and red MonoKote trim. Ektachrome by Ed Okie. **FRONTSPIECE**: 'Blackburn All Steel', A team effort by Dick Spring and Dave Mathewson. Photo by Bill Coons.





VIEWPOINT

BY: DON DEWEY

During the past couple of months, RC glider flying has exploded into a popularity that can only be described as phenomenal!

RC flyers from all other facets of the hobby, including Goodyear racing, are trying their hands at the slope waves across the country. In those parts of the country where geographical terrain makes slope soaring impossible, hi-start, towline, and power assist thermal machines, are becoming more and more prevalent. This is evidenced by the sudden increased demand for glider kits and plans and the tremendous number of inquiries being received each week at the RCM editorial offices, for glider construction and general information articles.

I, for one, am particularly pleased to see this interest growth in this exciting, majestic, and challenging aspect of our sport. Several of us at RCM have been flying slope and thermal gliders for several years, and have found this to be one of the most rewarding and challenging periods of our lives. It is quite common, among the uninitiated, to think that glider flying is easy, as well as being an activity which quickly becomes boring. Nothing could be further from the truth! This was pointed out, quite graphically, several times in the past few weeks, when several prominent competition multi flyers made these very same statements after observing the silent grace of a soarer riding the crest of a slope wave. Each of them, proficient flyers in powered aircraft, tried their hand at soaring, and found themselves in difficulty within a few seconds time. Yet, after learning a few of the basic fundamentals of slope soaring, they were soon demonstrating their ability to keep the machines aloft. Yet, by the end of a hours flying, they had discovered that there was an all new challenge before them . . . and one that would provide them with endless hours of pleasure. As Bill O'Brien, our Special Projects Editor describes it – "RC soaring is very much like full scale sail boating: anyone can learn to sail a full-scqle boat in just a few minutes, but to become expert at it is a never ending process of learning that takes far longer than that required to master a power boat."

If you haven't yet tried RC soaring, you are in for many hours of sheer pleasure and enjoyment that you could never believe possible. No matter how much you enjoy this sport and hobby of ours, and if you're a competition pattern or Goodyear pilot, give soaring a try – a world of silent flight and graceful majesty.

For you RC glider enthusiasts who have been preaching this gospel during the past months, or years, look for more and more material in the pages of RCM on slope and thermal soaring. And, we invite you to submit your ideas, photographs, and articles on gliding to RCM so that we may share them with other enthusiasts throughout the country.

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R/C Modeler Magazine is proud to announce the forthcoming publication of the first book in its RCM Anthology Library Series. This will be a series of 8½" x 11" books on various specialized RC subjects, and are being presented in response to the many demands from throughout the world for publications of this nature. The first in the series will be one for which we have had the most number of requests – a compilation of seven years of hints and kinks, currently published each month under the column heading "For What It's Worth." Since all of us look for ideas that can save us both time and money, in the shop and in the field, we often make a mental note to utilize that idea the next time it would be appropriate. Unfortunately, however, when the time rolls around we are at a loss as to where to find that particular suggestion. Those modelers who have a complete collection of R/C Modeler Magazines, spend hours hunting through the various issues for a short paragraph describing the solution to a current problem. With this in mind, we have taken all of the top ideas published in RCM since 1963, and printed them under their specific categories, with a complete reference index. As an example, there is a section of the book entitled "Finishing", and under this segment would be such items as doping, filling, silking, etc. Another example would be a sub-heading of "Canopies", with an index reference to attaching canopies, fairing-in canopies, canopy detailing, etc.

We think that you will find this book an invaluable shop aid that will save you not only a great deal of money, but a great deal of time, since it will make seven years of our readers best shop and field ideas instantly available at your fingertips. Only a limited number will be run, so we suggest you order as soon as possible. An order blank will appear in the pages of the July issue of RCM. (And, if you haven't already done so, send in your ideas to 'For What It's Worth' so we may share them in the monthly issues of RCM)

Future titles in the RCM Anthology Library will include a book on slope and thermal soaring, one on the "Best of Clarence Lee," a complete book on foam wings, a book for the newcomer to RC, model boating, RC race cars, etc. Other titles will be added as time and interest dictates. We hope that you will enjoy this new series of publications fron R/C Modeler Magazine.

A scholarship stipend valued at $1500 will be awarded the winner of the first Boeing Management Association Model Aeronautics contest which will be held in Seattle, Washington, June 20 and 21, 1970. The contest, which follows closely behind the Spokane Internats meet to be held in Spokane, Washington, on June 12-13-14, is sanctioned by the Academy of Model Aeronautics.

Contestants, who must be less than 19 years old on July 1, 1970, will compete in 17 events ranging from

free-flight model helicopters to radio-controlled fixed wing aircraft. Entrants must be members of the Academy of Model Aeronautics or the National Association of Rocketry and must make and fly their own aircraft.

"We have sponsored this contest to help develop aeronautical skills among our youth," said O.C. Boileau, president of the Boeing Management Association. "We also believe the contest will help build community awareness of the technical know-how of these youngsters."

The Boeing Management Association is made up of several thousand supervisors of The Boeing Company.

Free-flight events include 1/2 A Gas, unlimited rubber, hand-launched glider, towline glider, cargo and helicopter. Control line competition will include combined speed/record racing, control line scale racing, stunt, Navy carrier, and 1/2 A profile proto speed. Specialty category events are indoor hand-launched glider, indoor easy "B", rocket quadrathon, swift boost glide rocket, radio-controlled pattern, and design craftsmanship. The contestant's best score in four events will be combined to determine the winner. Trophies will be presented to runner-ups.

Entrance information may be obtained by writing Boeing Management Association Model Aeronautics Contest, M/S 85-48. The Boeing Company, Seattle, Washington, 98124.

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The St. Louis Globe Democrat newspaper has expressed an interest in sponsoring the Sixtieth Anniversary London to Paris Commemorative Air Race in cooperation with the Greater St. Louis Modeling Association. This race is to be held on Sunday, September 27, 1970, and is based on the movie "Those Magnificent Men in Their Flying Machines." Most models will probably be two inch scale RC, however, any scale is acceptable.

The Globe Democrat personnel would like to know how many entries to expect so perspective contestants are asked to write to Al Signorino, 11959 Glenvalley Dr., Bridgeton, Missouri 63043 and let him know their intentions of entering the race and the type of plane they intend to fly. This race is planned to be more fun than competitive but winners will be determined and awards will be given. The race will be over a closed course or a very easy over-land course.

To provide additional activity for the contestants there will be offered a *(continued on page 80)*

THE MODEL WIFE

BY: KATHY HARRISON

"Hello, Mom, – is my wife there? . . . What do you mean she won't talk to me? She's being ridiculous . . . I know she's sore at me, but it's been almost a week now; how long can she stay mad? Nothing happened! Nothing at all! . . . You only heard her version."

"Saturday – that's when it all started. I'll admit I agreed to rake the leaves, but that was before I realized how windless the weather was outside. What's wrong with going flying for a few hours. I know I also watched Wide World of Sports on T.V., but the Model Airplane Winter Nationals were on and that's only once a year . . . I did too talk to her Saturday afternoon. I distinctly remember asking why she hadn't put any beer on ice."

"She said I wouldn't come to dinner? That's not exactly true. I had to clean my airplane and check a servo I had trouble with and beef up the tail section that was loose. I said I'd be in after that, but it was just my luck there was a hole in the wing I had to patch and dope. I told her I'd eat my dinner in the garage and do you know what she said?" She said: "I'm not running a hotel. You can get your own dinner!" "Now, is that a nice thing to say to anybody who's trying to keep his airplane in good flying order?"

"Aw, Ma, you know how she exaggerates. Bob & I didn't talk about the club contest until 11 o'clock; I hung up at 10:45. She knew I liked airplanes when she married me. I came to bed right after I put the airplane on the charger."

"Sunday? I guess I did say something about raking leaves, but first I had to go flying with the boys because the club was having a contest. Besides, she should be proud of a guy who won second-over-all. I was home by 1 o'clock."

"That's not true. I did let her into the garage. I only told her to get out after she asked me what color drapes I wanted in the bedroom just as I was at a

(continued on page 79)

ENGINE CLINIC

BY CLARENCE LEE

This month I would like to bring to your attention a mixture control carburetor that has been available for almost a year now, and yet few fellows are aware of its presence. Although intended primarily for use on the .40's for pylon racing, versions can be had to fit any stunt engine as well. Made by Bob Seigelkoff, here in California, it is called the C.B. carburetor. The prime feature of this carburetor is the advantage of being able to adjust the fuel mixture in the air.

How many times have one of you pylon fliers been waiting on the starting line with your engine screaming while another flier is trying to get his engine started? Your engine begins to sag off slightly and you wish you could throttle back a little and richen up the mixture. You don't dare because your idle speed is about two hundred below the high speed, and the engine just quits. As a result you have to run back to the airplane and richen up your mixture while the other guy still tries to get his engine going.

Or, how many times have you gotten off, went two laps and the engine richens up or leans out? If only you had a means of changing the mixture in the air.

With the C.B. carburetor you can do just that. The principle of operation is as follows: The regular needle valve for the initial mixture adjustment is threaded to the rotating barrel on one side of the carburetor body in the conventional manner. A course threaded nylon insert, threaded into the other side of the body, holds the needle valve seat or jet. An arm is attached to this nylon insert, and, by moving it back and forth, screws the nylon insert in and out of the body. This, in turn, moves the fuel jet in and out in relation to the needle valve, richening or leaning the mixture. An arm on the needle side rotates the barrel in the conventional manner for throttling purposes.

The mixture control means that you will have to use an extra servo, but with the size of the servos we are now using, this is no problem. The only hang-up may occur if you have only a four channel set, since a fifth channel is needed.

The C.B. carburetor can be had with either a .343" or .375" venturi diameter. I recommend the .375", but pressure is a must with the hole this large. The price may rock you a little at $19.95, but remember that this is a limited production item. There is a good deal of machine work and time involved in making a carburetor such as this, and the quality and workmanship are there.

I only have one complaint with the carburetor, and that is the lack of a positive high speed stop. The carburetor barrel is free to rotate a full 360 degrees. You have to be very careful to have the servo travel stop exactly at full throttle. Any over travel means the carburetor barrel goes past full throttle and starts to close again.

If you wish a C.B. mixture control carburetor for an engine other than the K & B and Super Tigre .40's, you can order same from Bob. His address is 15713 Via Represa – San Lorenzo, Calif. Tell him Clarence sent you . . . .

★ ★ ★ ★ ★

Ed Tisdial sent in the following information on stress relieving and tempering nylon propellors. For those of you who continue to play Russian Roulette with nylon props, it is VERY important that they be stress relieved. This is especially true if you use them on the .60 size engines and fly in cold weather. Thanks for sending on the info, Ed. Articles like this make my writing chore a little easier.

Dear Clarence:

The correct way to stress relieve and at the same time temper your nylon props, as well as those other nylon items, is as follows: Support the prop on a cookie sheet by its hub so the blades are suspended freely, bolts are placed upright or are hung from wire racks. These are then placed in an oven, pre-heated

	WATER ABSORPTION %		FLEXURAL MODULUS, p.s.i.		
NYLON TYPE	50% RH	SATURATION	DRY	50% RH	SATURATION
6/6	2.5	9.0	410,000	175,000	85,000
6	2.7	9.5	395,000	140,000	70,000
6/10	1.5	3.5	280,000	160,000	100,000

if you prefer, and the oven is set at 225°F for ½ hour minimum (45 minutes optimum). There will be little degradation if you should forget it for 5 to 6 hours. After you have shut the oven off, just crack the door and let the parts slowly cool to room temperature. You will now have almost doubled the flexural strength of the item as well as relieved any built-in stresses. You can notice this change by bending the blades. They are stiffer and more resilient. You can perform this tempering as often as you feel it's necessary. You should especially perform this operation after having dyed your props in boiling water. The reason for this marked change is that nylon is a crystalline material and is also hydroscopic, which means that the chemical groups have an attraction for and will absorb moisture out of the air. These absorbed water molecules interfere with the crystalline structure of the nylon which results in decreased strength, increased cold weather brittleness, and increased flexibility. All of these properties are undesirable.

The frequency with which you perform this operation is dependent upon your end use. Higher RPM engines such as a .40 and up require it more often because of the total stress involved. If you want maximum performance from a nylon prop for a contest, then perform this one or two days ahead of time. The nylon will absorb more moisture in warmer weather because of the higher humidity.

Sincerely yours,
Edward E. Tisdial
Columbus, Ohio

Dear Clarence:

1. At what point in engine design does the requirement for piston ring(s) occur?
2. Take for example an O.S. Max 40 which, apparently, is available with or without a ringed piston. What determines the choice made by buyer?
3. Is a .40 of this (or any) type just a souped-up .35 made to get a piece of the pylon market and therefore probably not apt to demonstrate the good idle characteristics etc. of its .35 counterpart?
4. What are the advantages and disadvantages of bearings, i.e. needle or ball vs. bushings.
5. Is it wise to buy an engine with excessive power and fly about with a reduced power setting?

Yours truly,
Doyle Kelly

Well Doyle, I realize that a lot of people will probably not agree with what I am about to say, but this is my opinion and findings:

A lapped piston engine will put out more power than a ringed engine because of the better piston seal and lack of ring drag. (The Dykes ring being the exception.) However, when you get into the larger displacement engines the piston becomes too heavy and bad vibration problems begin to occur. Along about the .49 size engine it is best to go to rings for the sake of engine smoothness. This is one of the reasons Super Tigre has come up with their ABC set up for racing engines. Several others are now following Super Tiger's lead, such as Rossi, etc. The ABC means that they are using a lapped aluminum piston and chromed brass liner or sleeve. Aluminum cannot normally be used for a lapped piston, but does work with the chromed brass sleeve due to similar expansion rates. However, a special high silicon aluminum with a lower expansion rate than that of regular aluminum must be used.

In the case of the O.S. 40, the ringed engine will be the smoother, and the lapped piston engine will swing more prop. Which do you want?

Most of your .40's did evolve from a .35, and it cannot be denied that it was to get a piece of the .40 market. However, this is nothing against the engine and no reason for it to affect the idle characteristics, etc., of the engine.

Ball or needle bearings will have a much longer life and less drag than an ordinary bushing. This is mainly due to the fact that needle and ball bearings can run with only a mist of lubrication. At higher RPMS a sleeve bearing can go dry and bad things happen. If you could keep a constant flow of oil to a sleeve bearing there would be no problem, but this cannot always be done in our model engines.

I do not believe it is wise to buy an engine with excessive power and fly with a reduced throttle setting. It is naturally better to have a ship overpowered rather than underpowered, but you would not want to put a .60 in a .35 size ship, although there are those that are doing just that. To fly around rich, or throttled back, is only going to varnish and carbon the engine badly, not to mention the resultant mess on the airplane. True, the engine would not be working as hard and would last longer, but it is still better to match the engine to the airplane and run it as was intended.

★ ★ ★ ★ ★

Dear Clarence:

I have a question that you might use in your column that has been a puzzle to me ever since I can remember. The only answer I can get is "just because it is made better" or words to that effect.

I date back to the early '40 when we flew the old Roger's 29 and Forrester 29. Of course then the Forrester was the better engine. But both were the same size.

Even here on the lake where I live someone will have a small outboard engine that will perform circles around someone else's bigger engine. Again the question, why is this so? I go out to the field and one brand of 19 will run circles around another brand of 23, why is this so?

To bring the question right down to black and white, I own a Veco 45 which throws a 11 x 6 prop. I also own a K & B 45 which throws a 10 x 6 prop. Yet the Veco throws its prop better and runs circles around the K

(continued on page 77)

The Toledo Conference has always held a warm spot in my heart, since here was an opportunity to get away after a long winter of being penned in with the family. A chance to meet old friends and make new ones, to talk of radios, airplanes, cars and boats, to reminisce old times and to plan the future.

Last October, when this year's trip was being planned, it appeared that Toledo '70 was going to be a new experience. Shirley, my wife, decided that she would like to go along. For those who haven't met Shirley, a few statistics — she lives with me, therefore, she doesn't like R/C — she very rarely goes to any R/C activity — she had never flown on an airline, much less a Jet. Which leads me to the obvious question — who blabbed about the Pink Pussycat A Go-Go?

When flight reservations were made, the trip to Toledo turned out to be United's milk flight which stopped at every airfield along the way. Surely the thought of such a flight would change her mind! But, as we left Friendship Airport together, I knew Shirley was going along!

We arrived at the Lucas County Recreation Center early Friday afternoon, in time to stroll around and get a quick look at many of the displays and chat with a few old friends. I figured that she thought that this was it, now let's go home — but she

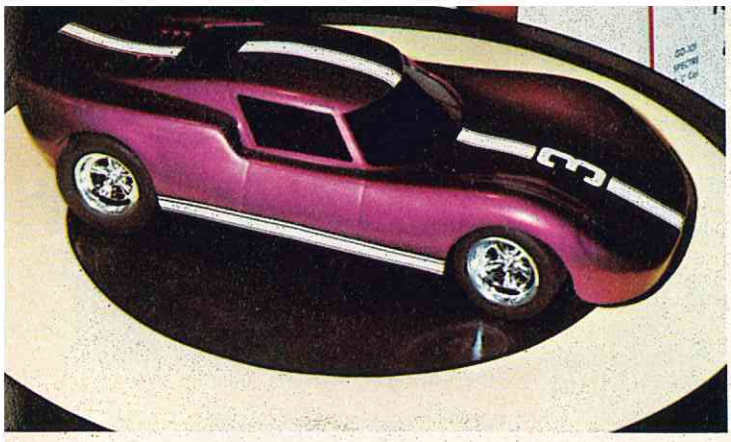
BY BERNIE MURPHY

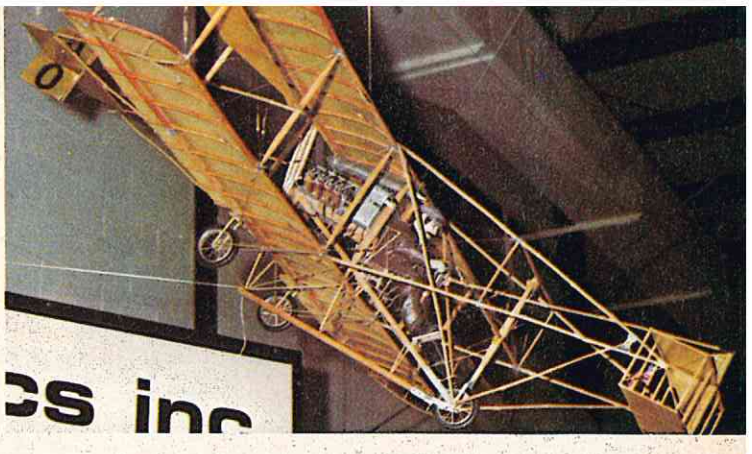
kept quiet. Supper at Ho Jo's ain't dinner at the Ritz!

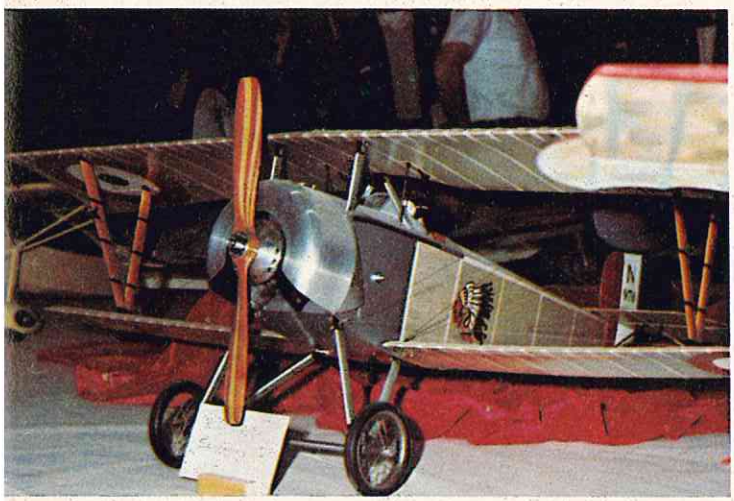
After a short stay at the Friday night hospitality party, Shirley headed for our room to read a magazine, leaving me free to talk about R/C. Some time later, I returned to the room (which adjoined the party) only to find that the party had expanded into our room, and Shirley sitting in the chair listening to Brownie and Benkner of World Engines telling airplane tales — what's more enjoying it!

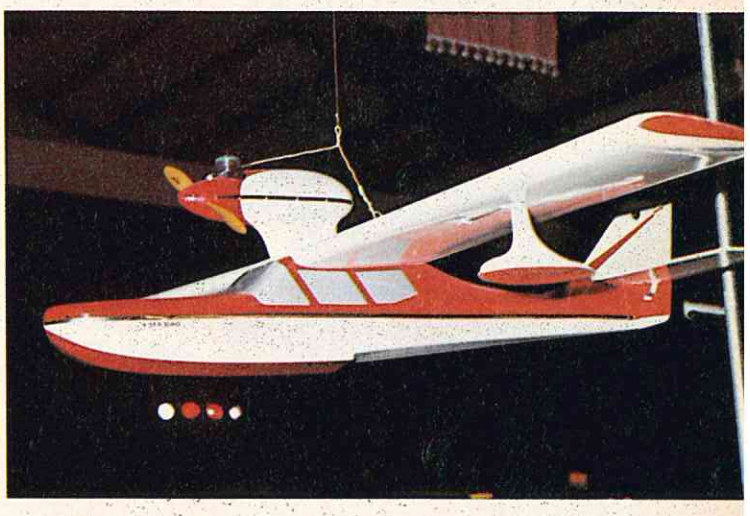
Saturday, she stayed at the show until noon, then took off for the rest of the day with some of the girls — to check out the Pink Pussycat no doubt! Besides, with the crowd of six to seven thousand people crowding into the Recreation Center, there really wasn't room anyway.

The "Weak Signals" Conference has grown so large, that we feel it would be virtually impossible, and certainly impractical, to attempt to name and give photo space to each of the eighty plus manufacturers who displayed their lines. It would take four pages of just pictures, and if each of the model magazines uses four pages of photos of manufacturers, plus a couple pages of other interesting photos — that's a lot of space!







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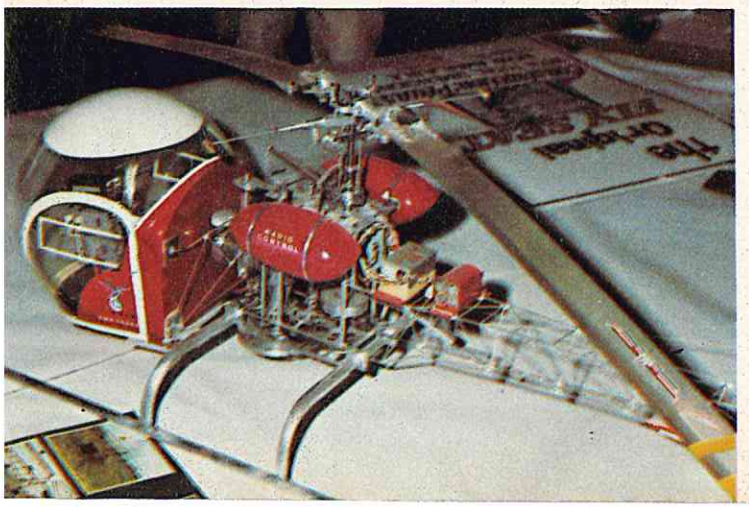


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Bill Hannah (Heath) & Carl Goldberg.

Midwest's Barnum, Davis, and Peifer.

AAMCO's Mini Master.

Jerry Nelson, Nelson Model Products.

Sterling Models' popular booth.

Our aim is not to take you second-handedly to the Conference, but rather to show, or tell you, about a few of the more interesting features and models and urge you to plan to attend first handed next year. Just think, if you had gone to this years conference, I could be working on my new ship right now.

Many of the manufacturers have stable lines which don't change from year to year, for example, Franklin Glue is offering the same Tite Bond that they offered last year. These will be glanced over briefly or skipped entirely. And here we go around the Center – From Palco Hats a beautiful 8' Piper Cub; Daniels Design & Development had several very impressive R/C ski boats; Pro Line, a relatively new R/C system, with an enviable reputation; Wing Mfg. with their well known retractable gears and excellent fiberglass scale kits.

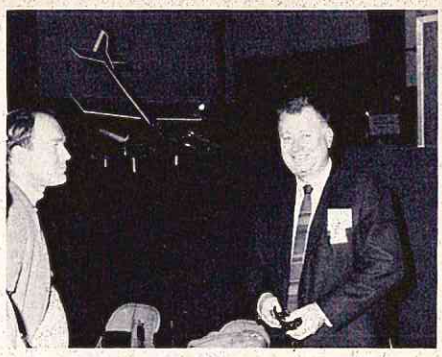
Kraft Systems introduced their Series Seventy – smaller and lighter with many new features; Tatone Specialities with their seemingly endless array of mufflers, mounts and hardware; Ace R/C with a display of miniature R/C ships that I, for one, would like to see become available.

Bill Kessler, BK Model Products with a seemingly foolproof retractable gear (that's the kind for me!); Royal Products with their line of engines and accessories, and a very professional job on RCM's Classic system; Fox Manufacturing, with new engines and carburetors; PMP Manufacturing's display of fiberglass fuselages and boats was very impressive – in addition they stock a complete line of hardware, and fiberglass process materials for the do-it-yourselfer.

Carl Goldberg gave us a close look at his new multi-ARF, a large version of the successful Ranger 42; Larson Electronics, a new entry in the R/C field, with a miniature 5 channel system; Sky Glas had some of the prettiest fiberglass fuselages that we have seen; while Hobby Lobby had some of almost everything that we had seen – the only thing more impressive than their vast stock is their rapid service!

R/C Development is our first encounter with R/C cars; Cliff Rausin, of Technisales, displayed their line of imported kits, parts and mufflers; RaCar, another outstanding R/C race car manufacturer, with all the goodies.

If you brought along a magnifying glass, Bill Northrop will gladly show you the new I.C. ship used in Micro and



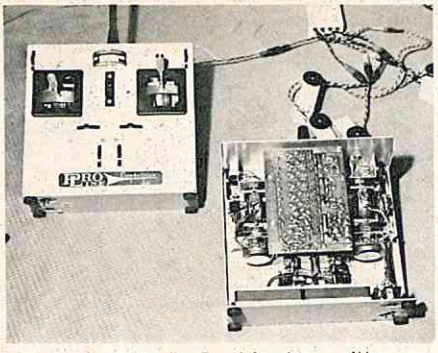
John Maloney of World Engines.

Jay Brandon, Dumas, with Walt Good.

Dan Pruss & Dick George promote NyRod.

Ed Manulkin talks with Matty Sullivan.

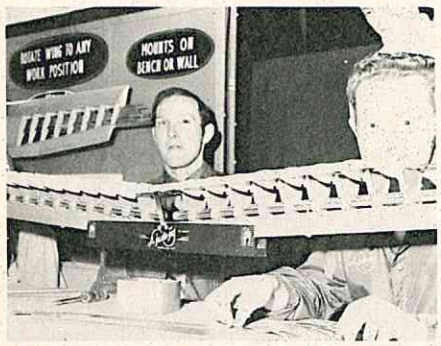
Min-X with all new line for '70.



Inside Jim Whitley's Pro-Line transmitter.

Quick-N-Easy Products display.

Bernie & Shirley Murphy with VK Fokker.



The easy way — A-Justo-Jig.

A perpetual crowd for Kraft Systems.

Orbit systems, while John Elliott explains to the crowd the many changes that have taken place in the systems since acquisition by Datatron.

Nick Ziroli of Major Models is justifiably proud of his new FW190 kit – it looks like a fine addition to an excellent line; At Dynamic Models booth, we met an old modeling friend, Hi Johnson, whom we had not seen for 18 or 19 years. Dynamic is entering the Race Car field with some of the nicest mechanisms we have seen – Johnson know-how (Hope to report more on this one later); Paul Benkner and Brownie must have been giving those new Saturn 60's and Mule Transmitters away – 'cause we couldn't even get close enough to find out. Oh well, I had enough of those two the night before.

Penford Plastics Auto Start sure beats split fingers for getting a cranky engine going. This is just the ticket for cold weather starting – know what I mean? National Electro Dynamics offers a tiny FM Telemetering Transmitter which emits a tone, trackable with a portable FM receiver, great for finding lost ships – if you had installed one; Indy R/C Specialities features most everything from soup to nuts in R/C, Warner Industries with foam wings, fuselages, and jigs, both stock and custom; MK Distributing Co., a Canadian firm with budget priced single channel "Mac Gregor" equipment; CRC, another Canadian R/C manufacturer with their updated system; Paul Sherlock, of Sherlock Models, introduced two forthcoming models, the 727 and F4 Phantom, quite an undertaking!

Wenzel Engineering is producing a line of R/C race cars which appear to be quite simple and also very rugged; Tom Mitchell introduced us to Quick Clean, a cleaner which cuts old Castor Oil with remarkable speed and wipes clean – $1.95 makes 4 gallons – that's cheaper than Windex, and works better! Chopp's nylon T-engine mounts are excellent for radial type installations, they are lightweight, hold screws firmly, and dampen vibration; Vic and Art Alfieri, of Myco, offer a tough paintable covering for foam wings; Bill and Audrey Cannon were on hand to answer any questions about their kit R/C system.

GEM Models had a complete display of their new boat kits and accessories, while Hartman's fiberglass line of boats, planes and gliders seems to grow endlessly, Model Accessory Co. featured a new "super" Coverite, and PB featured a fine line of carrying boxes and fuel

Toltzis and Hankinson of Sonic Tronics.

Model Engineering's Johnson & Davis.

MRC's Bob Foshay & Bernie Sadoff.

John Tatone with complete accessory line.

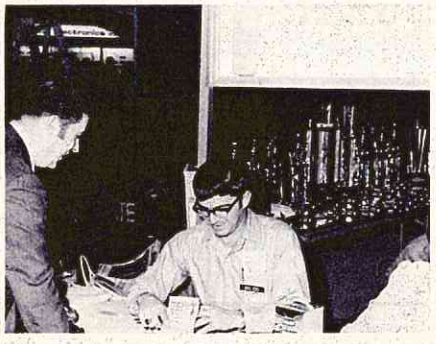
Wing Mfg. popular exhibit.

Tom Runge of Ace R/C.

Bob Maritz at Royal Products booth.

Carl Goldberg with new CG ARF.

Cliff Rausin with Technisales Imports.



Dave Penry, Penford Plastics.

pumps. Neil Kilby of Champion Electronics was on hand to tell us about their R/C system and demonstrate its accuracy; Gramer Plastics currently offers a foam glider, a powered glider, and a small semi-scale Volksplane of foam.

Vic's Custom Models has an expanded line, including a couple of sharp looking pylon ships; Midwest's display featured their Flea Fli + 10; while Dumas featured the Triton and several new fun boats; Andrews forthcoming Minimaster would appear to be a sure fire winner and a quality kit; Sig's display was most impressive, and Maxey Hesters Zlin Akrobat, which had left us somewhat cold from photos, turns out to be a beautiful ship; Dan Pruss tells us of the improvements that have been made to NyRod and Frank Stuhlman tells of the advantages of his hand crank engine starter.

Sid Axelrod of Top Flite showed their new sealing iron, MonoKote markings, and R/C Nobler – all fine items; EK Products were on hand to tell us why they think their system is the best, and introduce a new economy line of equipment; Jerry Nelson's display of imported kits and accessories constantly drew a large crowd – very realistic prices on most of the imports; Sterlings' Ed Manulkin expounded the features to be found in their new kits, the Lancer Trainer, the Schweizer glider, and the Emma C Berry ship – the Schweizer, particularly, caught my eye; Heathkit has taken another step into the model field with the introduction of their Spectre R/C car kit and new 3-channel propo system. I'm sure you will hear more about these in a future issue. Sonictronics "Nifty" starter is just that – turns an .80 like the glo plug was out; Control Technology Inc., showed the only electric race cars – fast, as well as the only control system capable of running three cars on the same frequency.

New from Min-X is an audio tachometer. The big feature here is that RPM readings can be taken in flight (an engine will turn up more in flight); Vortex Model Engineering showed a fine line of glass fuselages and a very nice Santa Barbara sailboat; G Products Co's G Doo x 2 is an intriguing airboat (on pontoons) convertible to a snow machine on skis. Also from G Products several ARF airplanes; Citizenship's expanded line now includes an R/C car and boat.

Shamrock Competition Imports is a ready source for imported OPS engines

Nicholson & Gates, Royal Electronics.

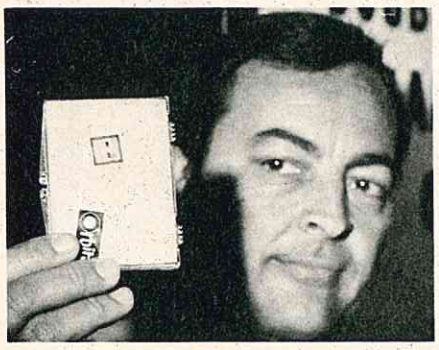
Fox Engine exhibit and Pete Petri.

John Elliott with no place to go.

Jim Martin of Hobby Lobby International.

Warner Industries & John Warner.

New giants from Sherlock Models.



Bill Northrop with Micro Avionics IC.

Shamrock competition Imports display.

Myco with tough new foam wing covering.

Jerry Krause of E.K. Products.

and Flight Link R/C. For the boat enthusiast, Octura's display was a must. Dee Bee Models is another new-old timer. Don Brown is back, bigger than ever, with a series of clean ARF ships that will be seen on many fields this summer; VK Model Aircraft was on hand with prototypes of their WWI scale Fokker Triplane – due out this fall, it should be another winner. (I'd like to say more, but I can't since I had a hand in it.) Quick & Easy Products is a diverse outfit, making felt emblems and also marketing a paintable plastic covering material – Top Cote. Nick Ziroli's ships were covered with Top Cote and painted, and the results were excellent; Mar Kel Model Co. showed the Aero J, a 52 inch multi ship. This one's wood, 'ya gotta' build it! Model Engineerings' Smokey Joe is just the thing for those smoke trails at Rhinebeck, and Woodcraft Products has those laminated vintage props you need to get a couple of extra points.

Model Rectifier Corp (MRC) was getting a lot of action on their propo systems, and also on the Webra Engines which they import; A-justo-jig offers a simple method to build a true wing – we've used one for five years and think they are great! Last – but far from least – is Dubro's new Sea Bird. I for one am a builder –that is, I like sticking all those little wood pieces together. Plastics and ARF's in general are not **my** bag – BUT this one I gotta build! Here is a case where the practicality of plastic outweighs the joy of building – besides it's an excellent kit.

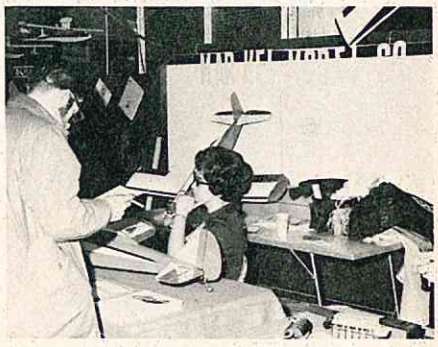
Throughout the day, Saturday, there were R/C films, numerous meetings, and talks on diverse subjects by prominent people in the various fields. During the afternoon flight demonstrations were present behind the Recreation Center.

On Sunday, Shirley spent the day at the show, and seemed to enjoy it. On the return flight home she conceded that it was really an enjoyable weekend, and that airline travel was just great. Before we landed at home, I had heard words like "Bermuda", Hawaii, etc. In all, I think that this years trip to Toledo is going to prove to be very expensive!

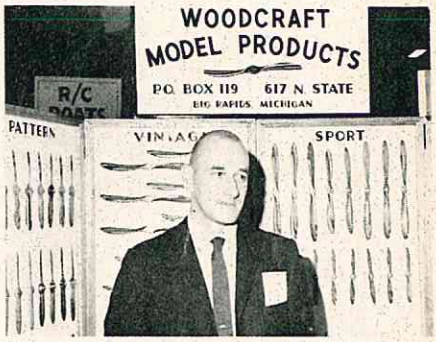
Our thanks, on behalf of R/C'ers everywhere, to the Weak Signals Club, for another tremendous "Conference". If **you** didn't make this one, why not plan **now** to make it next year – bring the wife along, she might even enjoy it – !

See **you** at the field – Rhinebeck – Toledo – Kits and Pieces – whichever comes first! ●

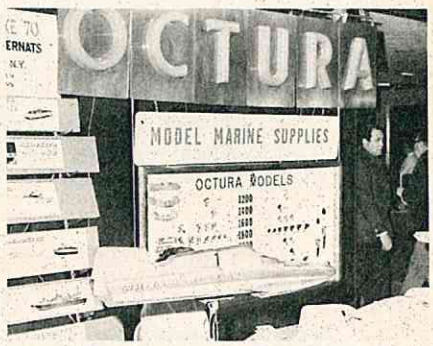
Bill & Audrey Cannon of C & S.



M. Malone at Market booth.



Woodcraft's fabulous laminated props.



Octura's complete boating line.

Sid Axelrod of Top Flite Models.

dart cart III

Designed by Bill Warner, this Easy-To-Build profile stunt and sport design is truly phenomenal. Capable of all maneuvers, its slow speed and landing characteristics are fantastic.

By JOE BRIDI

Are you flying more, but enjoying it less? Try this little model and see if your outlook doesn't improve. Airline Captain Bill Warner expressly designed this model to fly from small confined areas. Its easy handling characteristics at slow speeds is fantastic, yet it is gentle and forgiving enough for the beginner. It is also capable of all maneuvers that the pilot is proficient in accomplishing. All of the flight testing on the Dart Cart was done at the local schoolyard where room is at a premium, but for the Dart Cart there was room to spare!

This airplane is especially great for the beginner because of it's slow speed approaches. Due to it's light weight there is a mimimum of damage from hard landings. Its power-to-weight ratio will keep you out of trouble as long as the model is built and kept light.

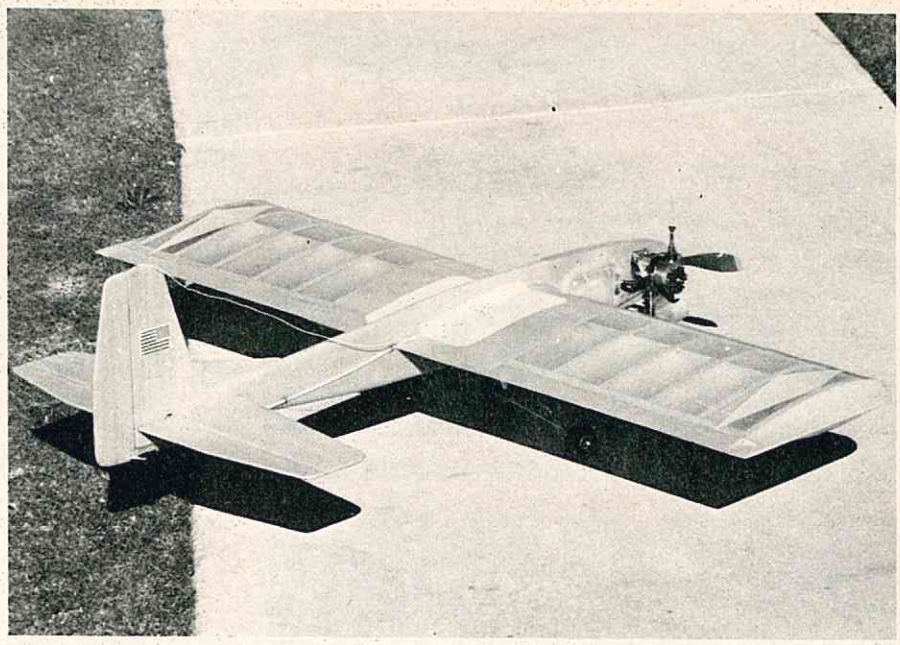
I recommend a good .35 engine for your Dart Cart. We used an O.S. .35 with a Perry carburetor and found that to be ample power. If you use a .40 you are almost assured of V.T.O.'s! This model could also be used as a test bed for some of you Formula I flyers that want to break-in that hot engine you're going to use in racing.

The model is simple to construct, but here are a few tips that might be helpful. Make sure that all surfaces are covered with silk or silkspan prior to assembly. This adds strength where strength is needed. The wing structure is strong enough for some of the new iron-on coverings if you desire, but I suggest silk (sorry, Sid) on the fuselage and fin area.

Mount all servos on aileron type mounts to soak up the engine vibration. The battery & receiver of course, are always packed in foam for protection. Always protect your radio equipment as best as possible to minimize the possibility of damage due to crashes. When using a .35 engine, vibration shouldn't be any problem on fuel, but we noticed that when a hot .40 was used the fuel had a tendency to foam when the tank was partially depleted. Be especially careful in mounting the fuel tank loosely and it won't give you any trouble.

We used a 10-6 Top Flite prop for the .40 pound version and a 10-5 or a 10-4 for the .35 prototypes.

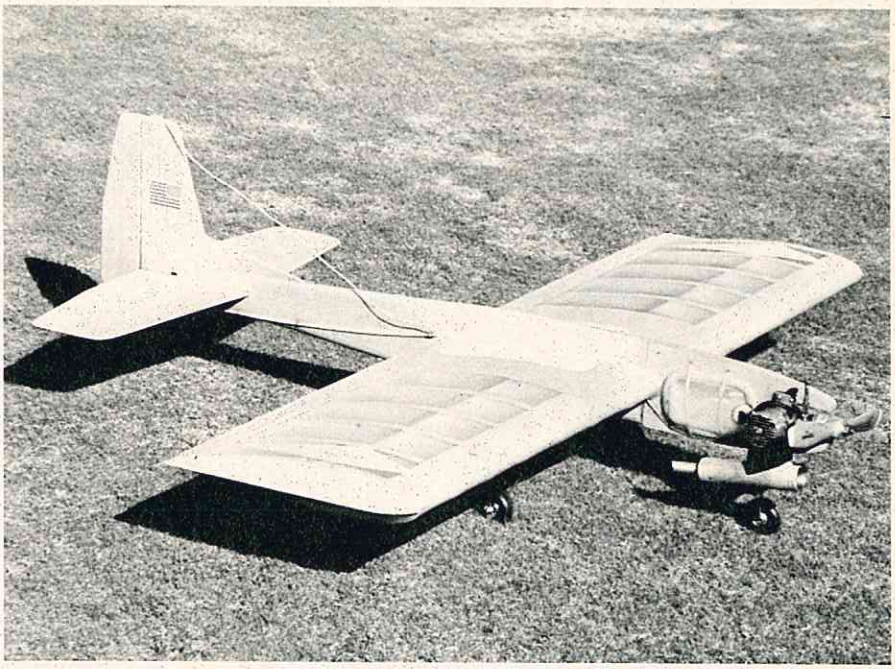
Another nice feature is that the engine and fuel system is right out front where you can see it and work on it as necessary. Your fuel supply is always visible for fueling and you can detect any leaks that might occur. The ease of cleaning and the removal of the tanks when you're done flying is simple. The tank can be removed so you don't soil the car upholstery with fuel!

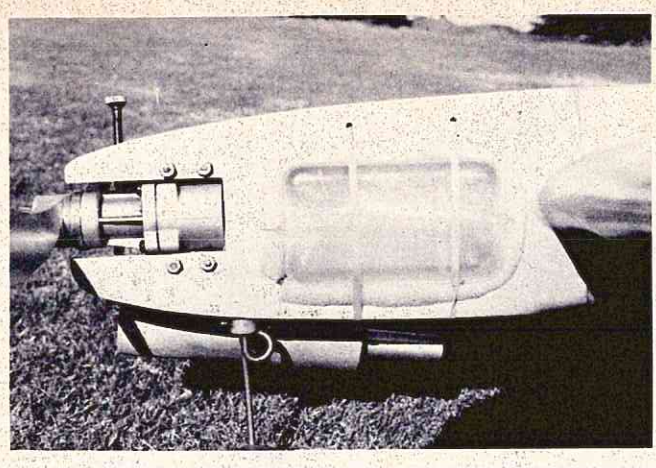


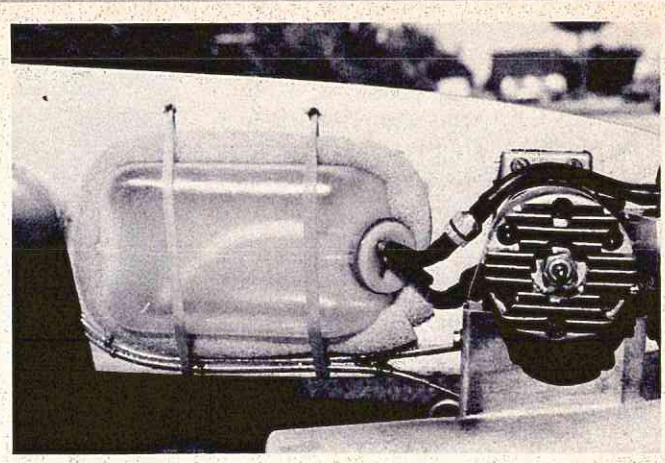
The ground handling is phenomenal. Even when the wind is blowing hard, and the big ones are having difficulty returning to the pit area, the Dart Cart can return in any direction and taxi back with ease, much like steering a car. Spins, like 70 to 80, are accomplished with ease. On one occasion we turned 101 spins without really trying. Limbo is a piece of cake, either inverted or upright.

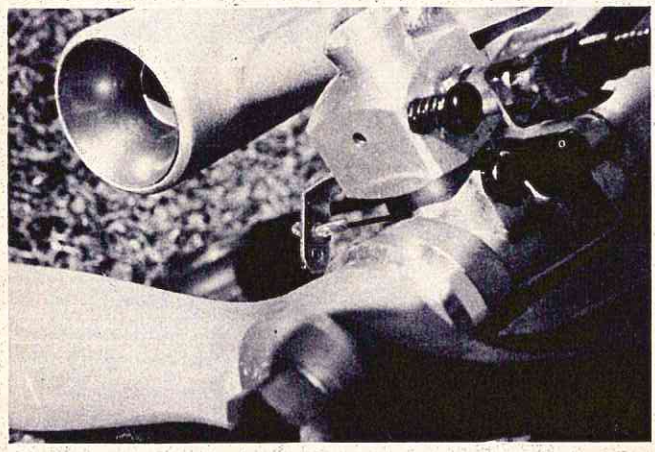
The battery should be located forward of the C.G. when using a .35 and to the rear of the C.G. when using a .40. You'll have to play with this since engine weight and installation of equipment will vary with each builder. For the throttle and nose steering, we used flex cable and NyRod tubing. For the pushrods I used 1/32" music wire soldered into 1/16" O.D. brass tube running inside the inner tube of a large size NyRod. This works beautifully and is very simple.

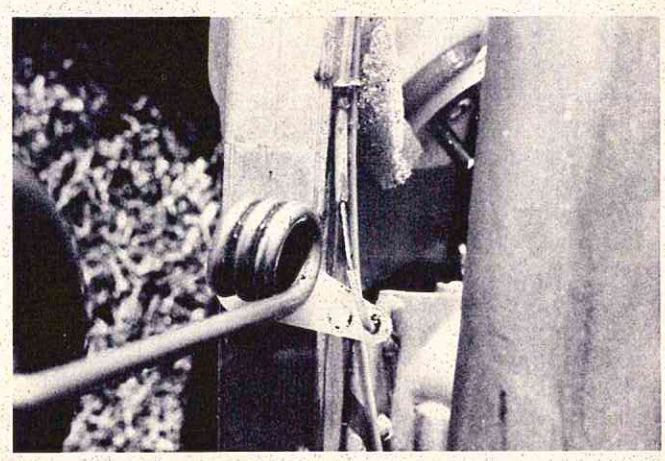
We have built and extensively flown six Dart Carts to date, using various engines, airfoils, conventional and trike gear, and each one has been a pleasure to fly. We've had more fun with these "Profiles" than any other type so far. On all models we used the Orbit 6/12 I.C. radio without any problems. Give this model a try and I'm sure you'll agree with us that it's fun and easy to construct, and sheer pleasure to fly. ●

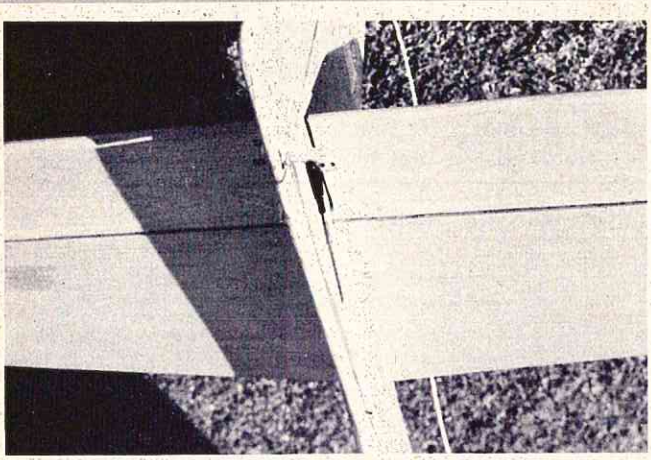


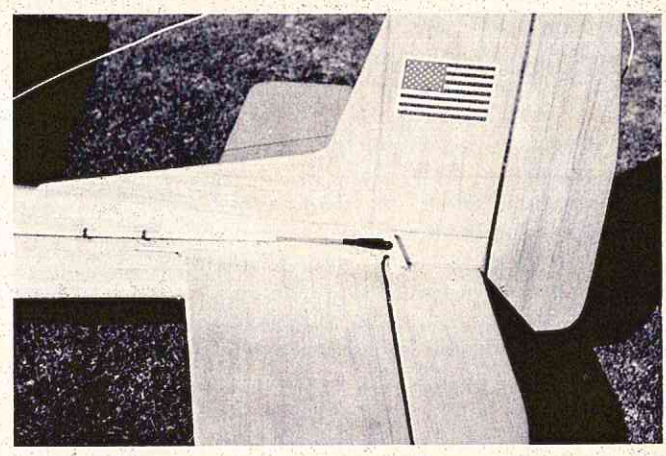


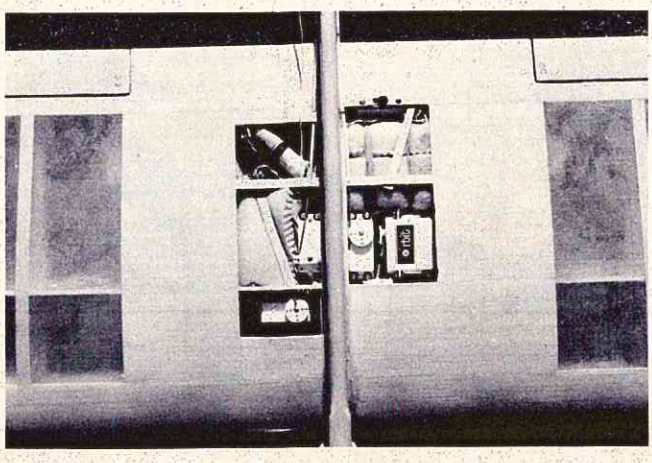




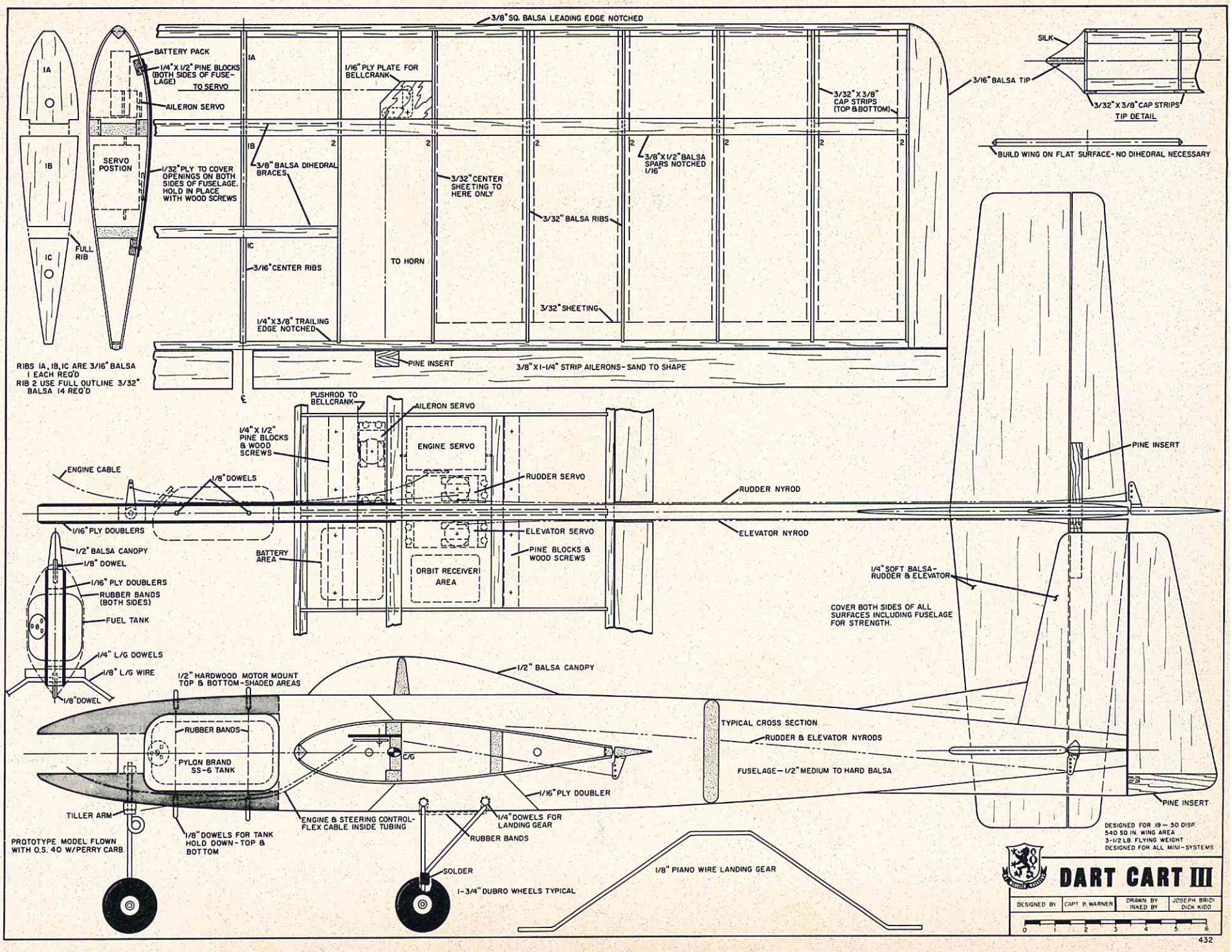








FULL SIZE PLANS AVAILABLE – SEE PAGE 57



Reconnoitering . . . A winter patrol. Snow didn't stop the M–47 Patton tank on its mission. . .

R/C REALISM

By JERRY KLEINBURG

Ever since RC creations started exciting the modeling world and its immediate fringes with miniature reproductions bordering on artistry never seen before (Dave Platt's extraordinary Douglas Dauntless is one prime example) movie makers and other miniature world specialists have increasingly watched the work of RC'ers throughout the world. TV and movie makers have learned to sense the potential for practical realism made possible from the home workbenches of talented hobbyists who use remote electronics to bring life to their masterful creations. And the commercial users haven't been disappointed by the results or the nominal costs either . . .

The latest master impressionist to join the growing select group of artists is Sergio Martini of Trieste, Italy, with his virtually perfect rendition of a WW II Patton M-47 tank. Before reading the details of his masterpiece, enjoy a good look at the set of pictures received by our Italian intermediary Dr. E. Nino Campana who also helped in the translation of the notes received from Italy . . .

And here are the details of Sergio's spare time 2 year labor of love:

The tank body is hand beaten from 05mm brass. Copper (1/24") was the material for hand fashioning the fully rotating turret. Cast plastic bogey wheels and undercarriage was used to help hold down the weight which reached 6.6 kilos. Internal springs take care of various mounting and alignment needs, while two Super Special 6V Monoperm motors drawing 200 ma. current supply forward and reverse drive power. Independent control is achieved by using two rheostats that adjust power consumption. Sonnenschein Dryfit 3G x 3F batteries provide actuating energy.

The 10-channel Graupner-Grundig Variophon has channels 1 and 2 set for right and left turns. The cannon employs channels 3 and 4 for azmith control while channels 5 and 6 take care of turret traversing. Forward and reverse of the drive motors are selected by the 7th and 8th channels which leaves the last two channels to adjust the rheostats which give the tank a very realistic scale speed ranging from zero to 33 metres per minute which closely approximates the original M-47's as they clipped along at 32 kilometers per hour during WW II armour penetrations.

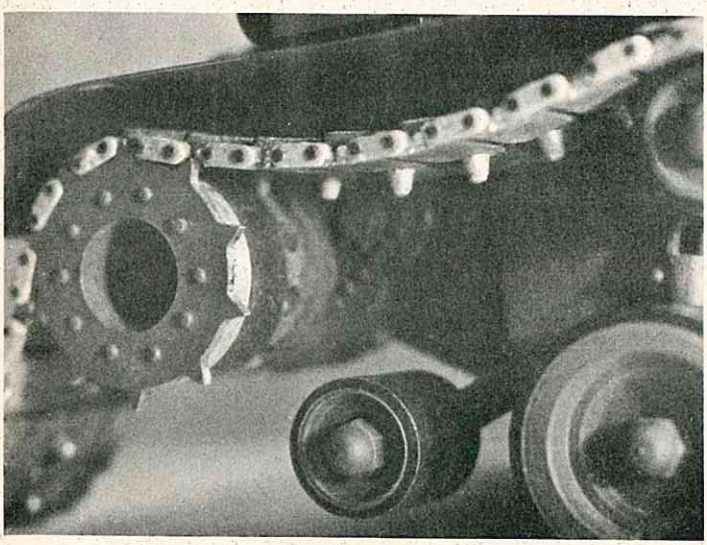
No blueprints were used by Sergio Martini in bringing forth his creation. Instead, calipering from "Armour in Profile" (a publication of Great Bookham of Surrey, England) was used to make the 1:16 scale tank that finally measured 35.5mm long by 20.2mm wide. Many of the details that grace the final product result from Sergio's close association with the real weapon since he had the opportunity to drive them as well as to learn to appreciate their capability in getting a job done in efficient military style.

Future modifications or improvements on Sergio's tank call for electro-mechanical firing of the small flare that is used to simulate the actual cannon fire. Scale figures to man the vehicle are also on the agenda for increased realism. In the meantime, Martini, who's been RCing for 5 years, continues to spend part of his RC hours flying his aerobatic planes which includes a new successfully tested 40" Mini-Kwik Fli aerobatic contest ship. And just to be sure he doesn't miss any RC facet, Sergio also has some boats he tries out in a quiet moment or two . . .

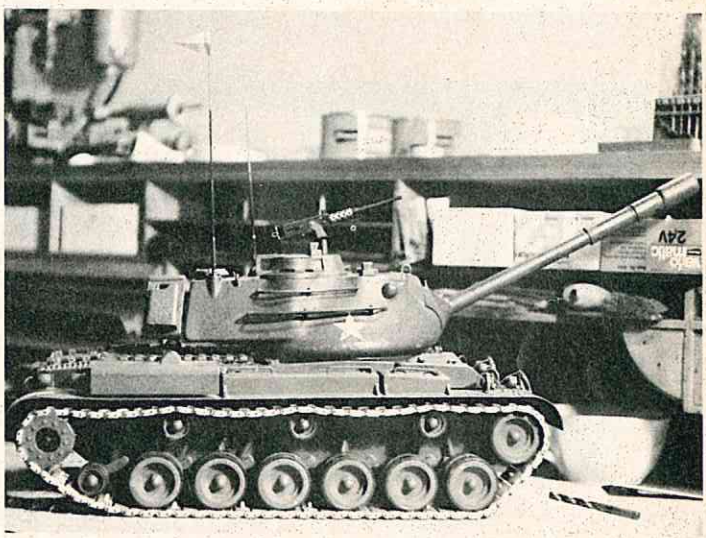
●

An aerial view. . . Turret traversed for action in any direction.

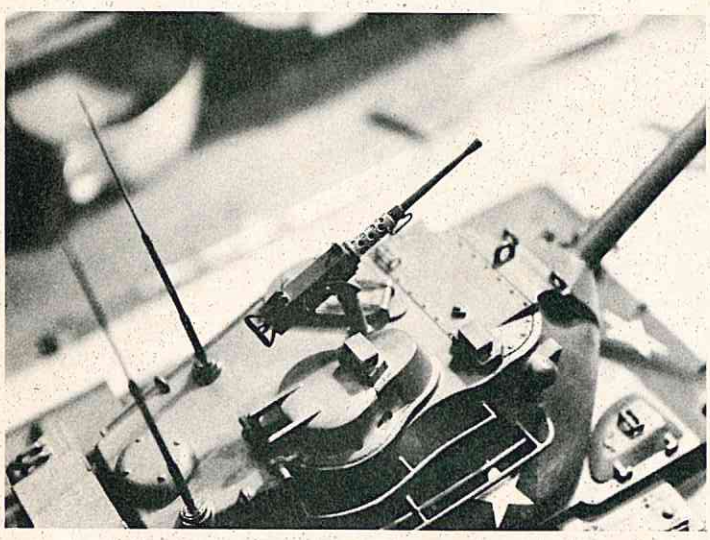
A night patrol. . . A medium range target lob with the 75 mm rifle traces through the dark. . .



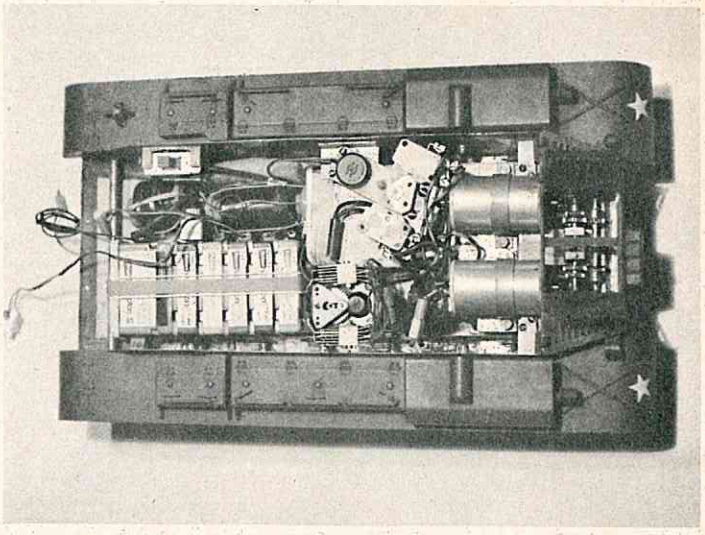
Bogey wheel and drive mechanism details. Treads are individual aluminum links. Drive mechanics are plastic to reduce weight.



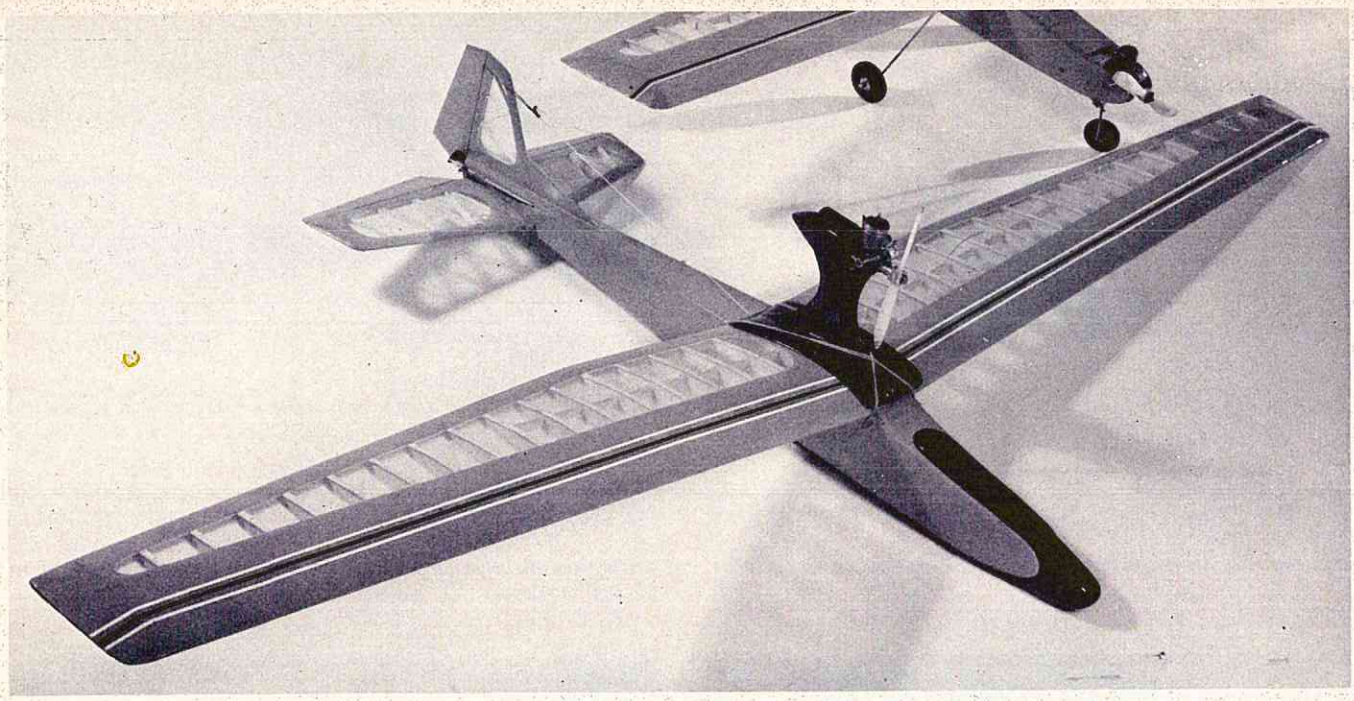
A perspective. . . The 14 x 8 inch chassis on the work bench. Body hand beaten from .5mm brass, the turret of 1mm copper.



More turret detail. . . All ports open, weapons aim, accurate gunsights. Periscopes included also.



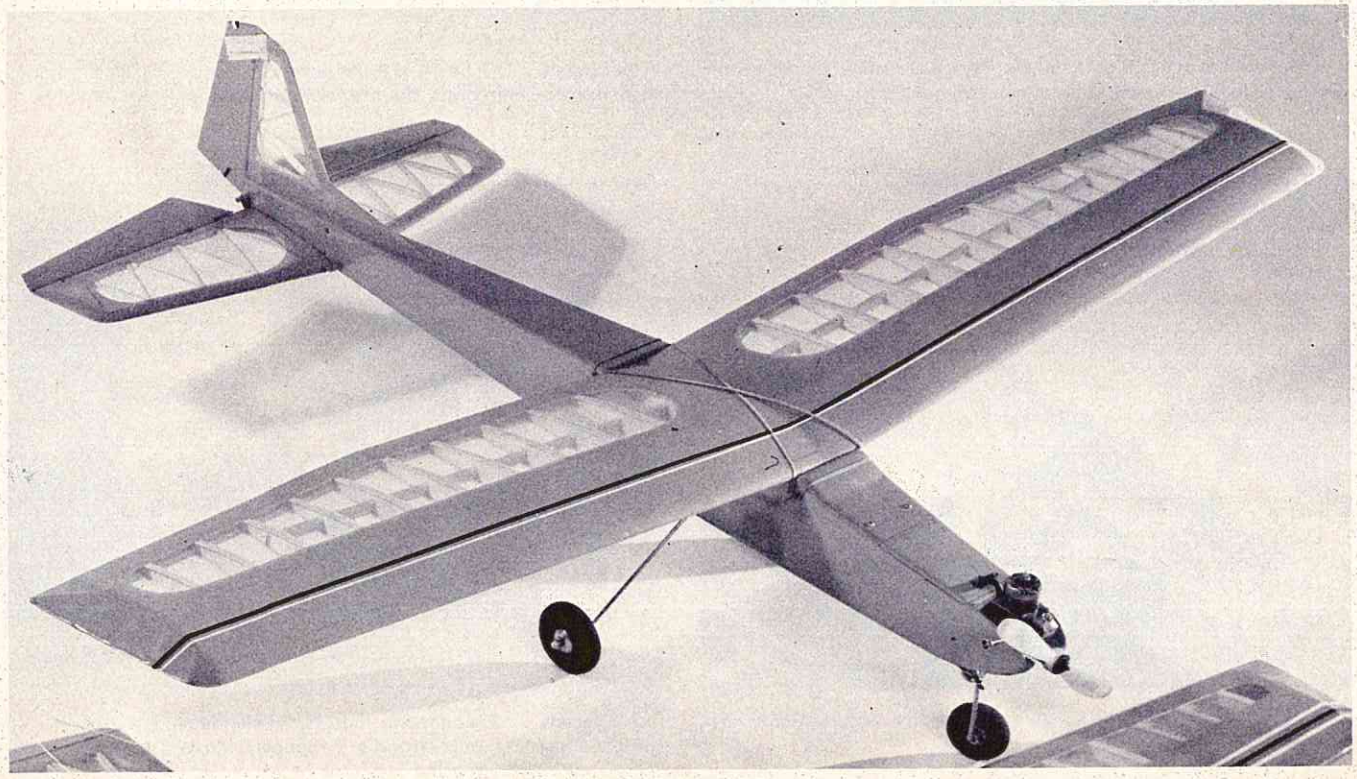
Inside secrets. . . 2 Monoperm motors, Sonnenschein 6V, 6A cells. Radio is 10-channel Graupner-Grundig Veriophon. Micro TO 5 motor actuates cannon with 485:1 gearing.



EVOLUTION

SEVEN AIRCRAFT IN ONE, THE EVOLUTION IS ONE OF THE MOST VERSATILE AND GENTLE AIRCRAFT YOU'LL EVER FLY. IDEAL FOR THE R/C TYRO.

By BOB BRUGGER



Laziness is the mother of expediency. Poverty is the father of economy. The combination of the above produced "EVOLUTION". (You archaeologists and paleontologists, please don't throw stones at this theory. It was rock-bustin' that caused my need for a new airplane!)

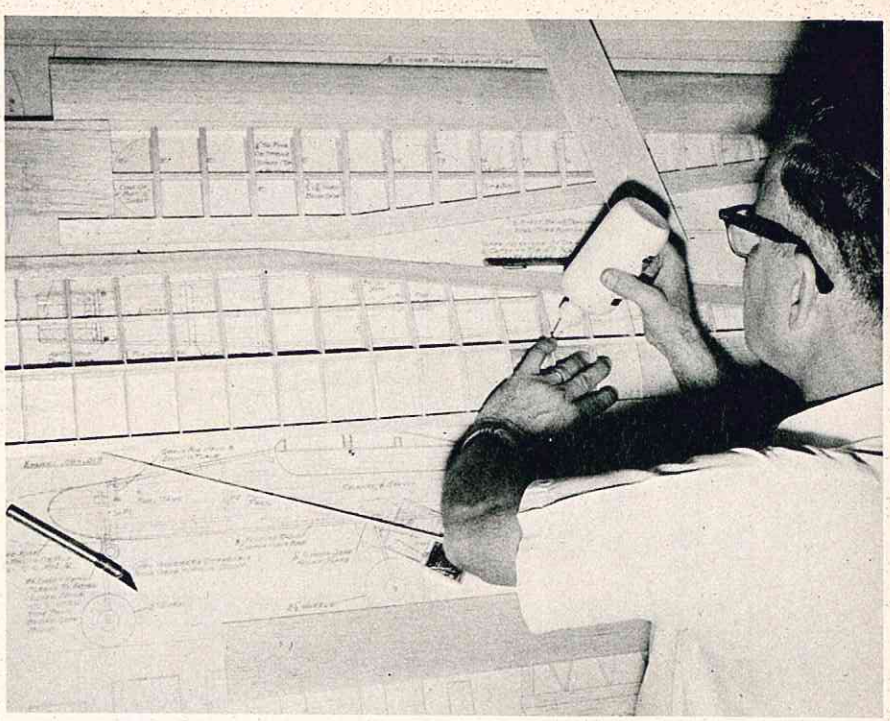
Living in Tucson, the sun city, where it can get quite windy (as well as nice and calm and hot, hot, hot!), and having a mountain top, with a beautiful amphitheater about one-half mile across, just ten minutes away (go ahead and weep, you lovers of the green and snow country) I wanted to be able to fly any way, with one airplane, and not have to change radio gear back and forth. A friend of mine, Bill Painter, who now lives in Stockton, California, built a very nice flying seven foot glider with .049 power assist that not only had appealing lines, but showed great possibilities for other types of flying.

Plans of composite or multi-purpose planes had been published before, but I didn't know of any that could be set up for the wide range of configurations I desired without each one looking like a compromise of another. The next step, therefore, was to see what correlation there was between the proportions of various designs of the desired types.

Four tested designs of shoulder wing trainer-sport planes and three soaring type gliders were chosen for review. All dimensions of each category were mathematically correlated and then the two categories cross-proportioned. It was surprising to see how narrow the dimensional gap was between the two. After several hours of engineering (that's the word for 10% design calculation and 90% doodling) the result was "EVOLUTION", a machine with seven configurations. Start out with a powered sport plane and a few parts, and in five minutes or less you can be set up to fly a very stable trainer (try to stall out **your** plane four feet off the ground and recover to a smooth landing or go around again), a slope soarer (or put it up with tow-line or high-start and fly the thermals). If that's too much trouble, leave the engine in the nose, or strap on the power pod, and reach for the thermals the easy way.

Basically, this airplane is for beginners. Yet, when you tire of its gentleness and want something hotter, you don't have to start all over building again. You just change parts.

So choose your pleasure. Build one set-up and have a ball flying while you're trying to find time to build the other parts. If you are new at R/C start



out with the six foot wing on the sport configuration and an .09 or .10 up front. Please accept this as a challenge to find another design as gentle to help you learn. Then, as your prowess develops, change to the short wing. Then try a .15 engine. Follow the same procedure until you graduate to using a .19.

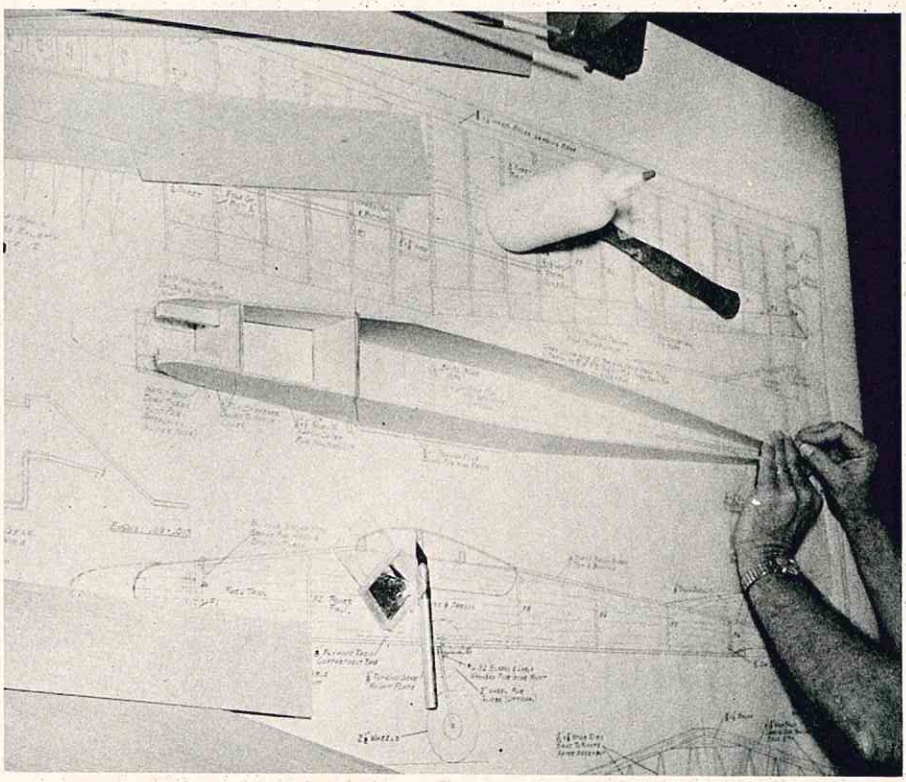
But if you want some real flying, then unbolt that dirty, noisy old engine and jerk off that ugly landing gear. Strap on that gracefully long wing, give her a streamlined nose up front, and toss her off the top of a hill. Ah, such quiet serenity! All this and just one airplane!

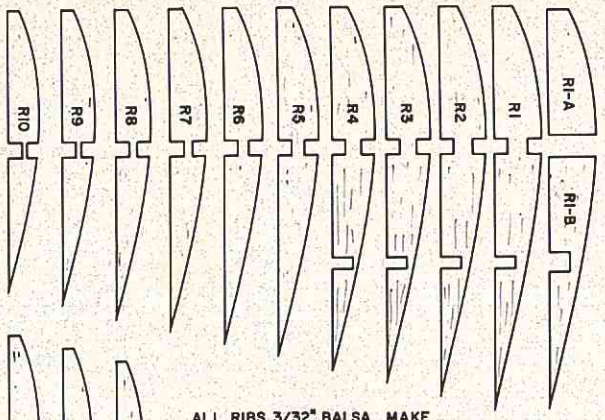
But, times a-wastin'. Let's get with it. Most of the construction is fundamental, but some of the following information may help you save time and prevent your working yourself into a corner.

FUSELAGE

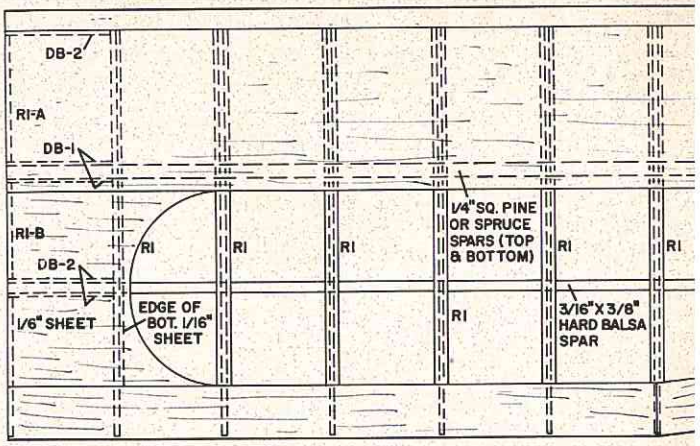
Epoxy all the nose section plywood parts first, being careful to maintain

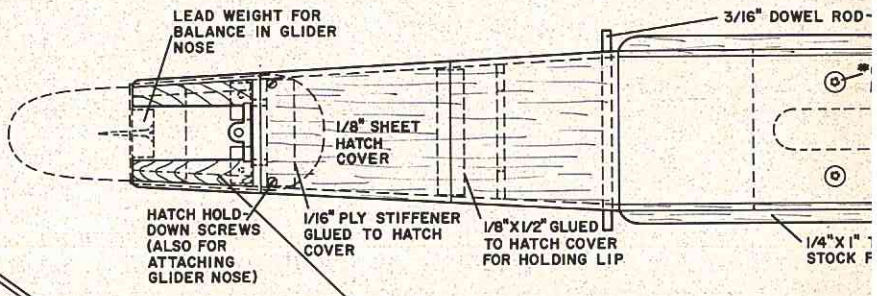
(continued on page 56)

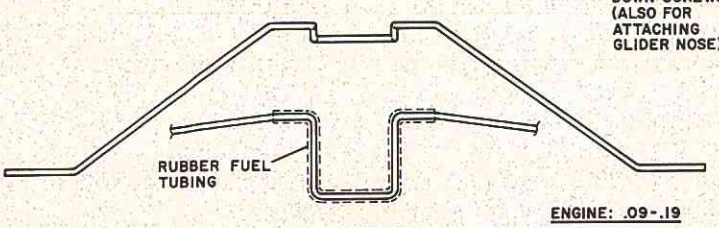




ALL RIBS 3/32" BALSA. MAKE 2 EA. OF ALL RIBS, EXCEPT R1, OF WHICH MAKE 12.



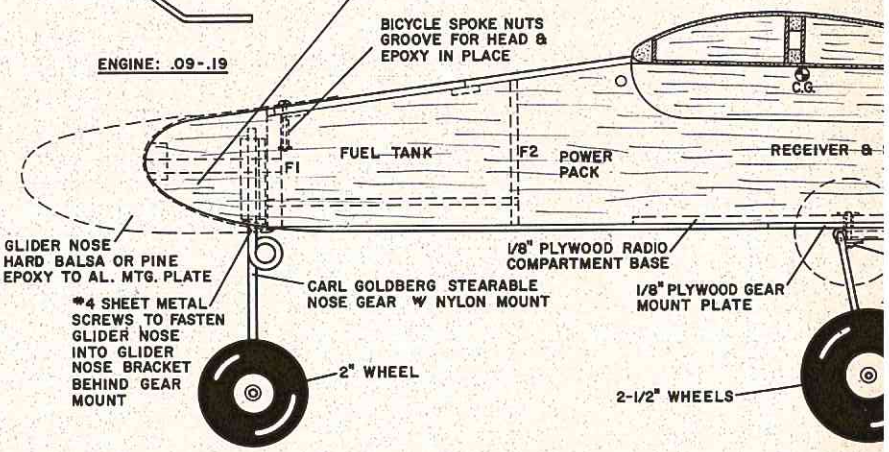


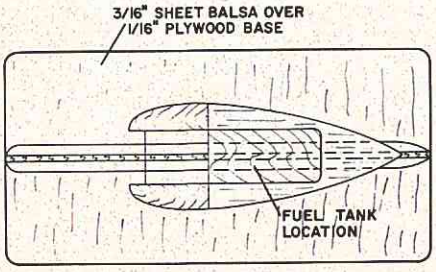


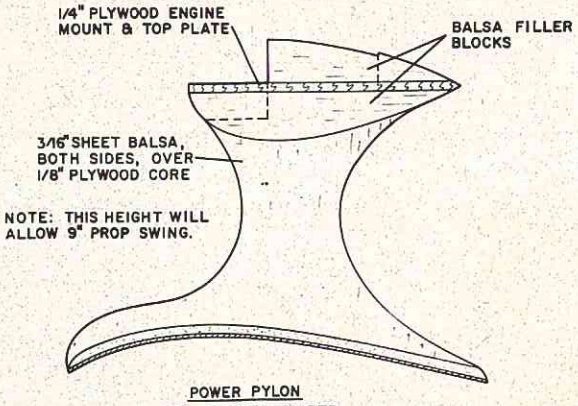
LANDING GEAR
1/8" MUSIC WIRE

3/16" HARD BALSA DOUBLERS BELOW ENGINE MOUNTS. NOTCH AROUND GLIDER NOSE BRKT. & ENG. MTG. NUTS.

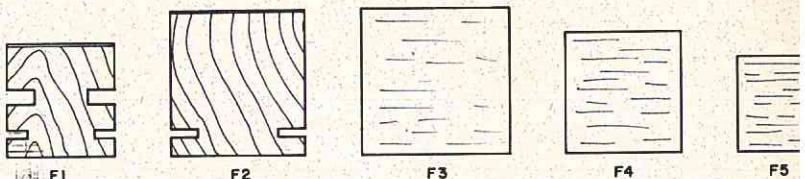
ENGINE: .09-.19

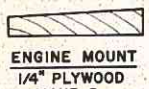




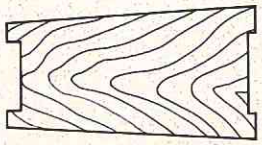


POWER PYLON
FOR POWERED GLIDER
MOUNT OVER WING & W/TIE-DOWN BANDS

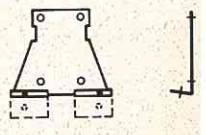




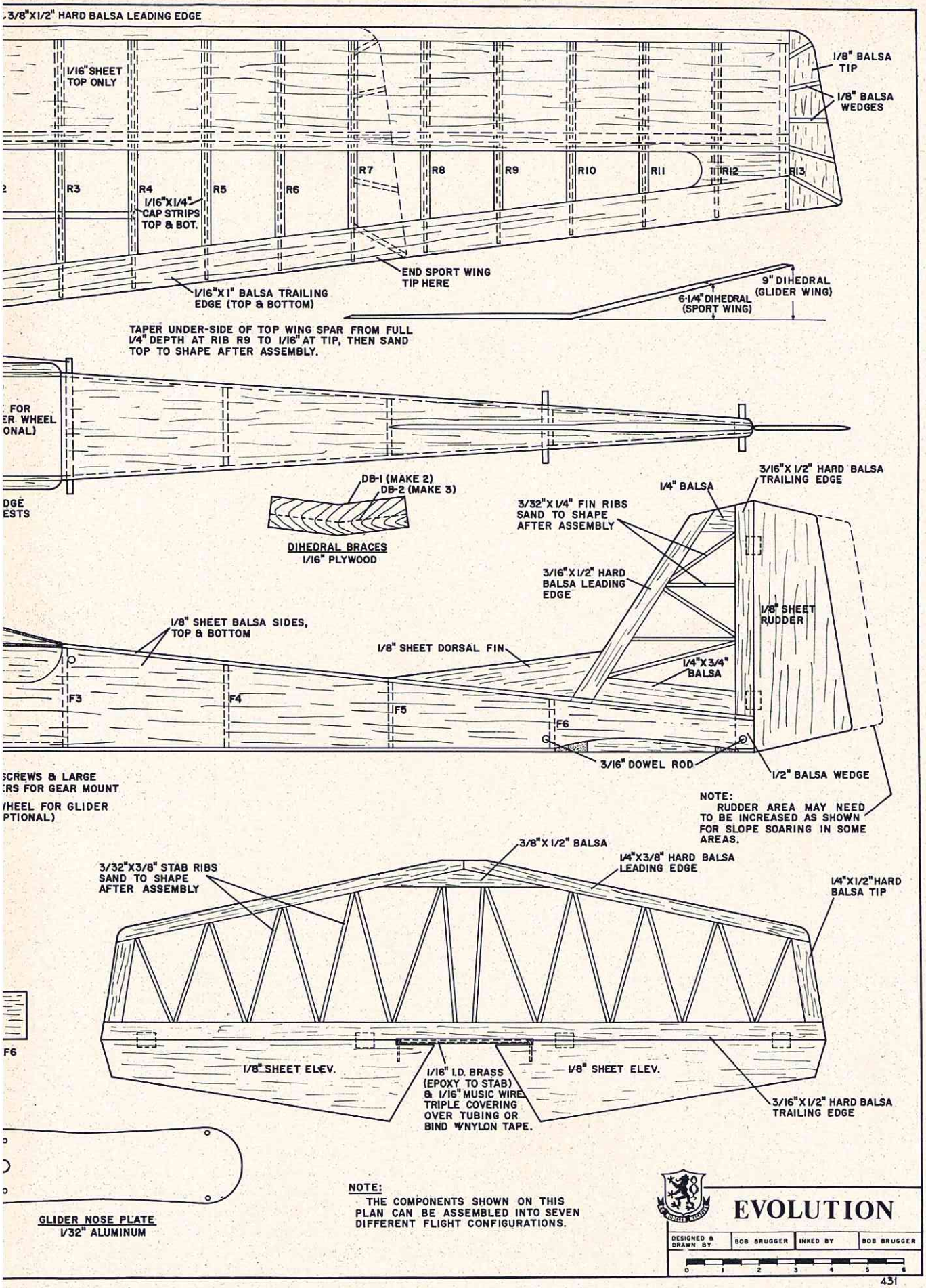
ENGINE MOUNT
1/4" PLYWOOD
MAKE 2



FUEL TANK COMP. BOTTOM
1/8" PLYWOOD

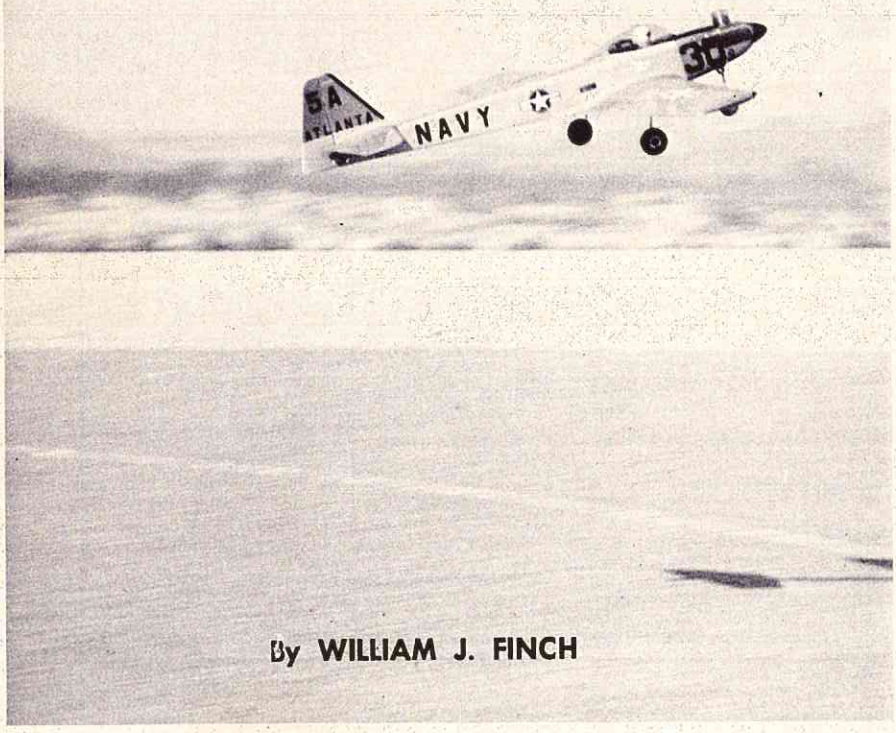


GLIDER NOSE BRACKET
1/32" ALUMINUM



FULL SIZE PLANS AVAILABLE — SEE PAGE 57

SOUTHWESTERN REGIONALS



By WILLIAM J. FINCH

The 20th annual Southwestern Regionals got off to a gusty start at the Buckeye, Arizona airport on February 21 and 22. The weatherman predicted rain for the weekend but the Buckeye Chamber of Commerce demanded sunshine. A compromise was reached and a healthy breeze stirred the high clouds as the sun poked its eye through the spaces between them.

Buckeye's claim to be the western gateway to the Valley of the Sun was substantiated. Sponsored jointly by the Phoenix M.A.C., AIR-ZONA M.A.C. and the Phoenix Radio Control Society, the Southwesterns were on!

When top RC competition pilots get together the end result is a sure-fire show that holds the spectator's interest and makes each contestant pay close attention. The 1970 Southwesterns had plenty to offer visitors on both side of the rope barrier. The tricky winds kept everyone honed to a fine edge.

Activity began both days with RC Scale, and when it was all over, it was Bob Green of Denver, Colorado who stepped up to claim the trophy that proved he had topped all the others in his class. Following close behind, in second place, was Fogelston with Sadler settling for third. Three flight lines were kept busy as each pilot took his turn to display his flying skill.

Never before has the Southwesterns had so many entries with retractable landing gear. It was Ted White, though, who caused ripples of comment to flow through spectators and fellow pilots, alike, as he waited until the last moment to drop his wheels for a perfect touchdown. The trend is evident as is the ever expanding use of mufflers. Both items are apparently here to stay. The hard surface landing area and the gusty wind provided an opportunity for each pilot to prove his ability.

Class A champ Tom Grey nosed Orville Brixey, Jr. by a few points and the Long Beach youth proved that 13 years of age isn't a handicap when it comes to leading the field in RC flying. Third and fourth places went to Dennis Dunn and Chuck Hebestriet, respectively.

Judging was done by 19 jet pilot students from nearby Luke Air Force Base. The student pilots are from the German Air Force and the German Navy. Pre-contest orienting of the judges paid off as many compliments resulted from their efforts. Equality was the word and many contestants praised the careful judging. Most model flyers noted an improvement in judging over last year. A similar group, without model flying orientation, had served in '69.

One of the German students watched Ted White putting his model through an outside loop. He was asked if he could do that with his jet. He frowned, shook his head and explained, "Too many G's."

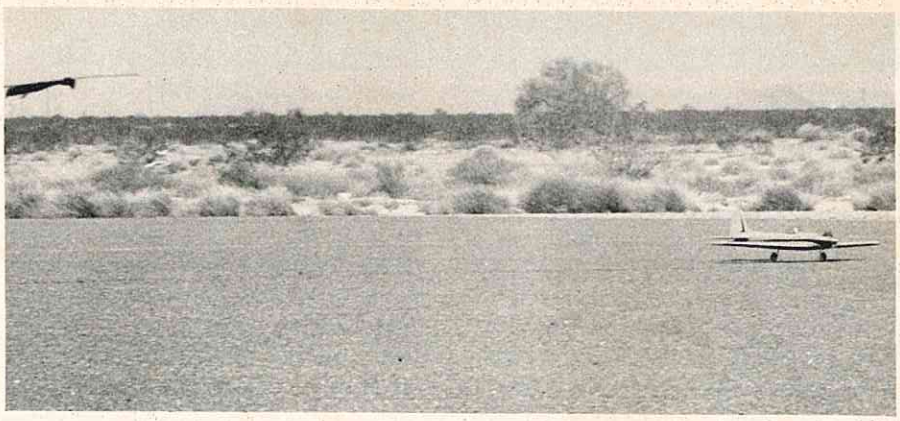
Using the foreign student pilots provides the additional advantage of increasing international good will. It is certain that when they get home, and some are going in just a few weeks, that RC model airplane flying will be one of the many things they will discuss in their conversations about the U.S.A. Snoopy and the Red Baron are known to them and a wide smile indicated recognition when one of them sighted the famous beagle stuffed in the cockpit of a model.

Scottsdale, on the other side of the valley, is the home of Steve Buck who won the Class B award. A member of the sponsoring ARCS group, Steve outpointed Dan Oray, Bob Angus and John Greenshield, in that order.

Bob Angus told of a recent trip by air from Phoenix to Yuma, Arizona. He traveled via Air West and the pilot of the turbo prop Fairchild was Hector Guzman. Bob won't say for sure but he hinted the suspicion that Hector was flying Class A pattern most of the way!

Jim Witt was giving the top boys a run for the trophy with his "Henchman." It was Dick Schofield who offered the qualified opinion that Witt was likely to be one of the top contenders. A few minutes later Jim ploughed in and the Henchman was out of the running.

Whit Stockwell proved that his 1969 Nat's Championship was well deserved by taking an early lead in the C Novice event and then going all the way. His KAOS performed like an extended hand making his Dad, Bob, more than



Left: Jim Oddino shows what it took to win the CX Fly-Off. Above: Oddino's 'Californian' touches down next to spot.

Right: Ted White, Albuquerque, N.M., explains his modified 'El Gringo' to Ted Gunther. Below: White's 'El Gringo' drops its wheels as it comes home from the CX first place win.

Lt: ARCS President Lavoy Henry gives CN trophy and handshake to Whit Stockwell. Rt: Joe Bridi (L) and his 'KAOS' gets the hot scoop from carb expert John Perry. Below: Flight line 2 ready to go at Southwestern Regionals. 'El Gringo' in foreground.

proud of him. Bob also pointed out that Whit holds the Grand Championship for racing as well. Pushing Whit in his successful bid was Bill Hebestreit who had to be content with second place. They were followed by third spot Dennis Kohlman, with George Reese hanging his hat on the fourth peg.

Again it was proven that age is no barrier as Whit is only 16. Older pilots congratulated him as they watched his smooth handling of the KAOS. Many expressed the opinion that the CX boys were going to get a run for their money when Whit joins them.

Catching everyone's eye was the two upswept wing tip models made and flown by Dick Schofield of Tucson, Arizona. His "Sweeper", with its Enya powerplant features detachable elevators and stabilizer.

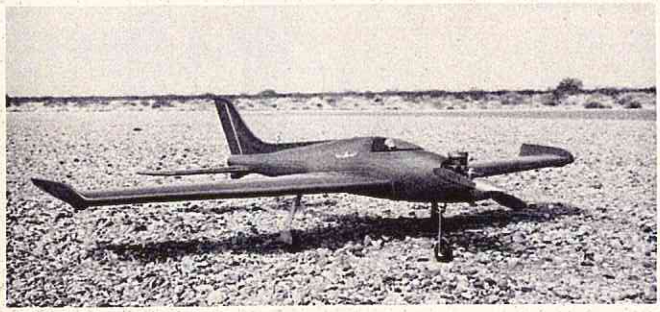
Dick, this year's president of the Tucson RCC, also displayed his "Holler" featuring full flaps. Dick said that if there is a good wind the Holler can fly backwards with the flaps down. The wing and tail are midway from centerline.

"It is the easiest plane to fly that I have ever seen," reports the TRCC prexy.

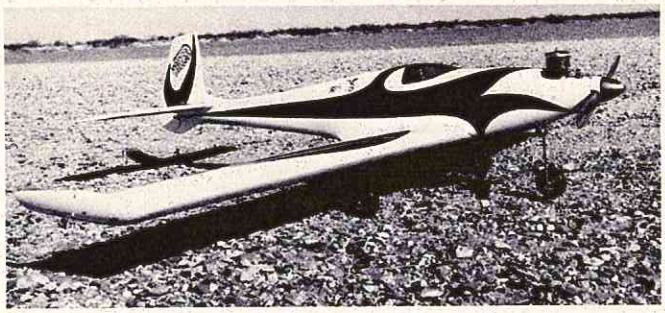
Over 200 flights have proven the point and the Holler makes a good model for learning to handle RC equipment. The flaps permit a slow flight giving the beginner time to correct errors common to students of RC flying. Dick uses Kraft radio equipment in both models.

CX pattern was a slugfest between Jim Oddino, Bill Salkowski and Ted White. It was anyones' chance until the final talley gave the checkered flag to Ted White, followed in order by Salkowski, Oddino, and Lloyd Nicholsen.

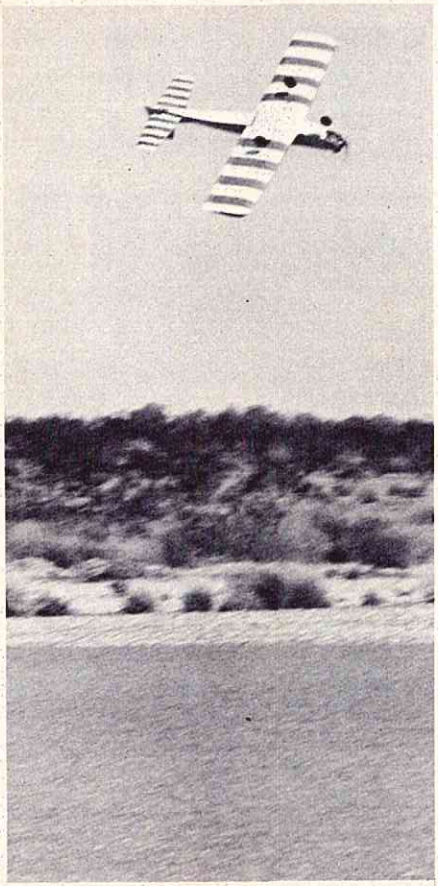
Only one mid-air collision occurred during the contest bringing one participant to a sudden conclusion and causing emergency repairs to be made by Dennis Kohlman who was able to complete his competition flying with his "Trygon." Ted White also found out



"Sweeper" has detachable elevator and stab acrylic finish, up swept tips to prevent tip stall. RC model by Dick Scholefield Tucson, Ariz.

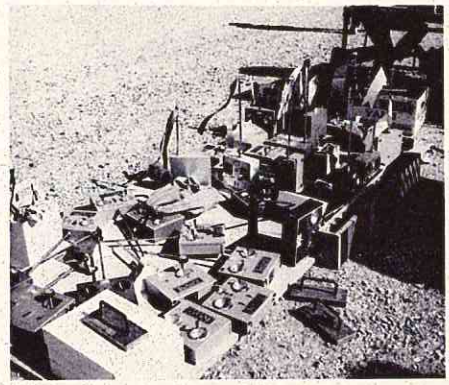


"Holler" by Dick Scholefield, Tucson. Full flaps, upswept tips, wings and tail midway from centerline. Over 200 flights logged.



An unidentified Sun–Fli does a successful roll shortly off the deck.

This Comanche scale tangled with the desert floor and lost in another after-the-show splatter.



Transmitter impound. Look at all those $$$$$!

Jim Witt learns his "Henchman" won't fly in gopher goles.

that leaving the mounting screws out when servos are hastily installed can create problems. A successful landing was followed by an inspection that revealed a servo hanging in mid-air.

The Southerwestern's featured fly-off by the top three CX pilots was a true thriller. The usual rearrangement in the finish order prevailed again this year. A casual glance at the scoreboard showed how close Ted came to cleaning it all the way. With the final score of 152 it was Jim Oddino who walked off with the big trophy to take back to Woodland Hills, California. Ted followed close enough to be breathing exhaust with his 151.3 and that is cutting it pretty fine. Bill Salkowski was third with 145.7 points.

As a crowd pleaser, Ted performed with great ease. His waiting until he was about two feet off the runway before dropping his wheels raised a few eyebrows and considerable speculation as to whether or not he had forgotten to lower his gear. His flight drew a big hand from the crowd.

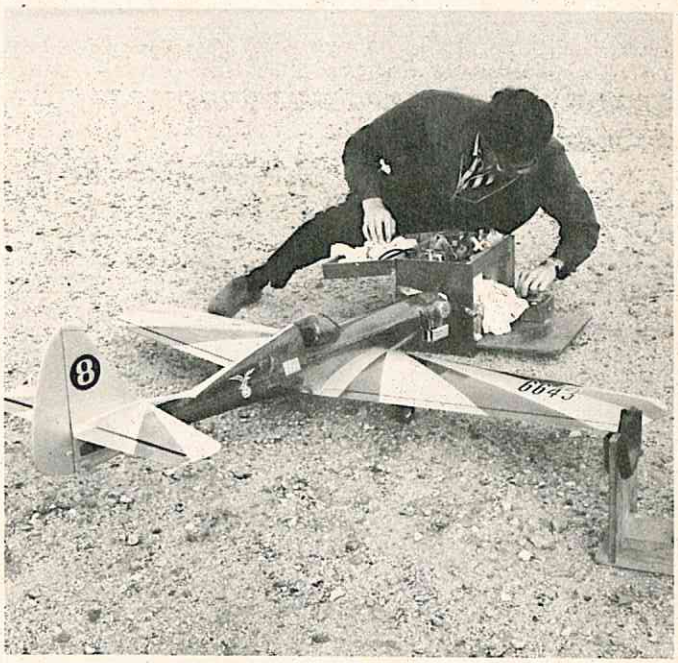
Of course Jim was the recipient of an explosion of palm slapping following his performance and no one was more surprised, or pleased, than Mr. Oddino who suddenly noticed what a nice day it was.

Joe Valenta of the Phoenix M.A.C. did yoeman duty as Contest Director for the entire event which included control line and free flight events in addition to RC. Keeping tabs on the RC event was Lavoy Henry, President of the Phoenix ARCS.

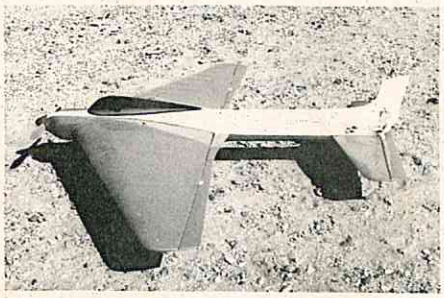
A first glance at the transmitter impound could make the observer think he was looking at a Kraft assembly line, although it was Pro-Line equipment that led Jim Oddino to the final high spot. A loud voice told Jim to keep his thumb off the label while pictures were being taken. Jim Fosgate of Pro-Line Radio was among the photographers.

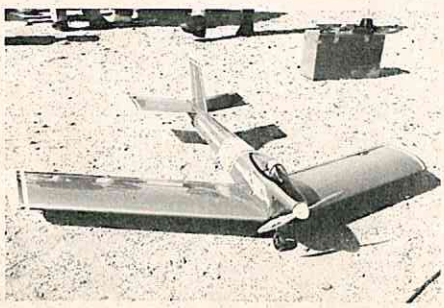
The Regional meet was declared a success by all. Some who flew without mishap had the crackup blues as post-contest flying took over. The trophy winners have departed with their loot, and the rest have vowed vengeance at the next Southwestern, if not sooner. ●

Hector Guzman inspects RC Scale entry by Denver's Bob Green. The 1928 Gypsy DH60M was a British trainer.



Lloyd Nicholson of Royal Products, Denver, makes a quick grab in the tool kit. Royal Classic Radio.





Upper Lt: Dennis Kohlman's 'Trigon' repaired after mid-air tangle. Went on to 3rd, then wiped out in an "After-the-show" ouch. Lower Lt: Mark 8' original by Jim Graham. Phoenix design has Enya .60, Kraft radio. Below, Lt: George Reis, Jr. gets helping hand with his KAOS from Ted White. Below Rt: CD Joe Valenta gives directions to the chow-line at banquet at Buckeye V.F.W. hall.

TIGER NOSE GEAR

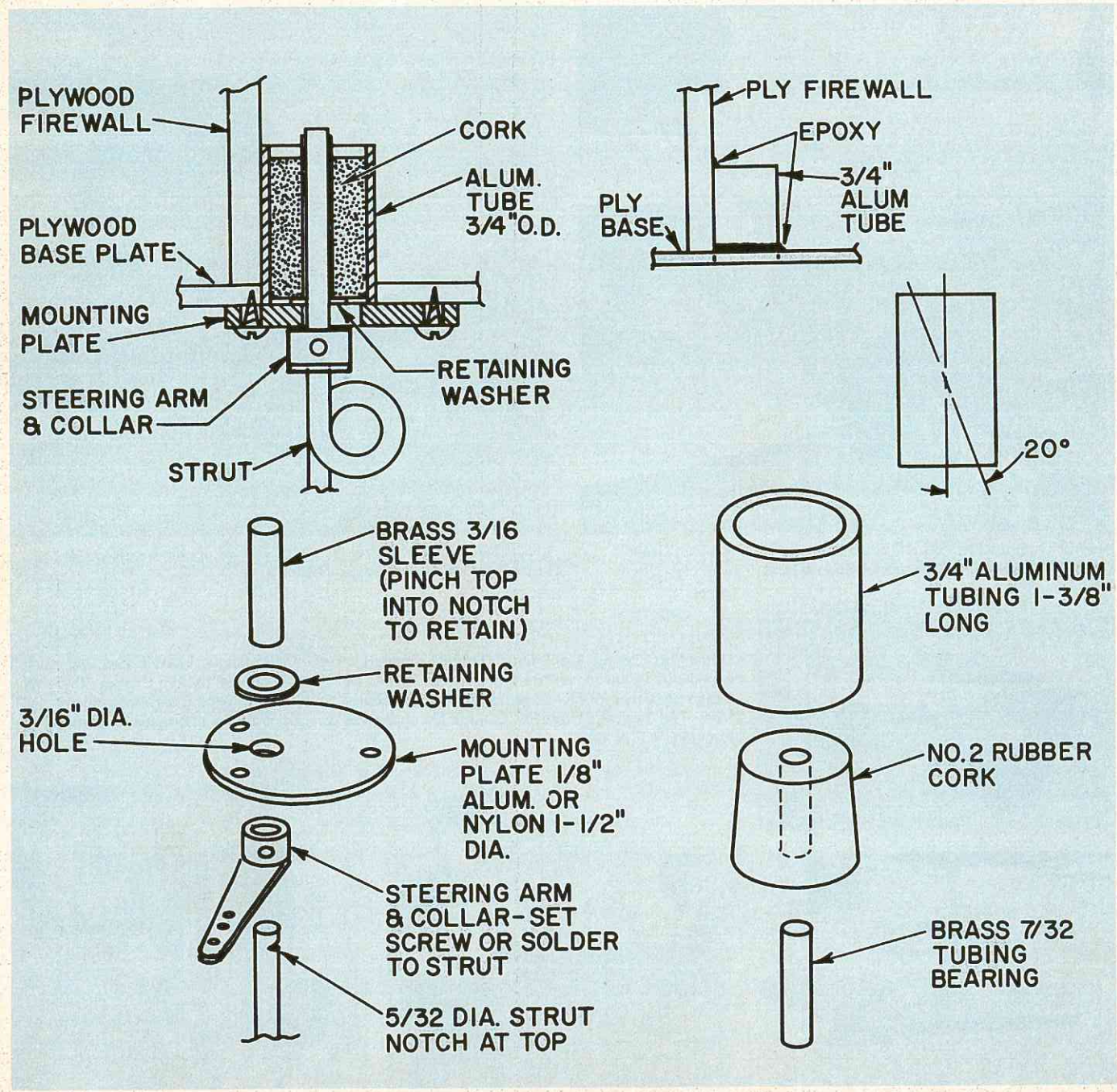
By DEAN LEWIS

The following sketches illustrate a rubber cushioned nose gear that has seen quite extensive service on several different models and will provide you with one of the finest nose gears you have ever used with only a minimum of construction time.

Although the sketches are self explanatory, a few notes are in order. The cork bushing allows the nose gear strut to hex up to 20 degrees to cushion and absorb the shock from those frequent hard landings. The installation procedure is as follows:

(1)Epoxy the ¾" diameter tube to the firewall and base plate.
(2)Insert the cork into the tube and press the bearing sleeve into the cork.
(3)Slide the steering collar, mounting plate, and retaining washer on the strut and solder the sleeve to lock the assembly to the strut. An alternate method would be to pinch into the notch.
(4)Slide the strut into the bearing and attach the mounting plate to your aircraft using wood screws or blind nuts.

Although somewhat more complex than simply bolting on a standard commercial nose gear, you will find that you will spend more time flying, and less time rebending those bent-under nose struts!

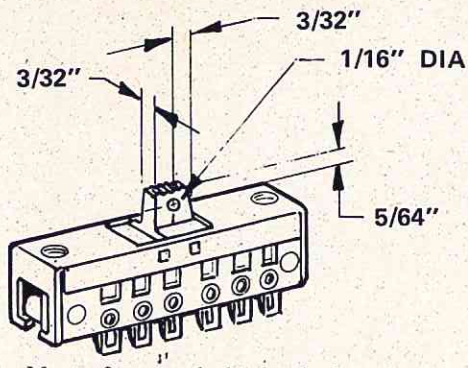


SLIDE SWITCH MOUNT

By JERRY SMITH

(REPRINTED FROM TRI-VALLEY R/C NEWS)

SWITCH MODIFICATION



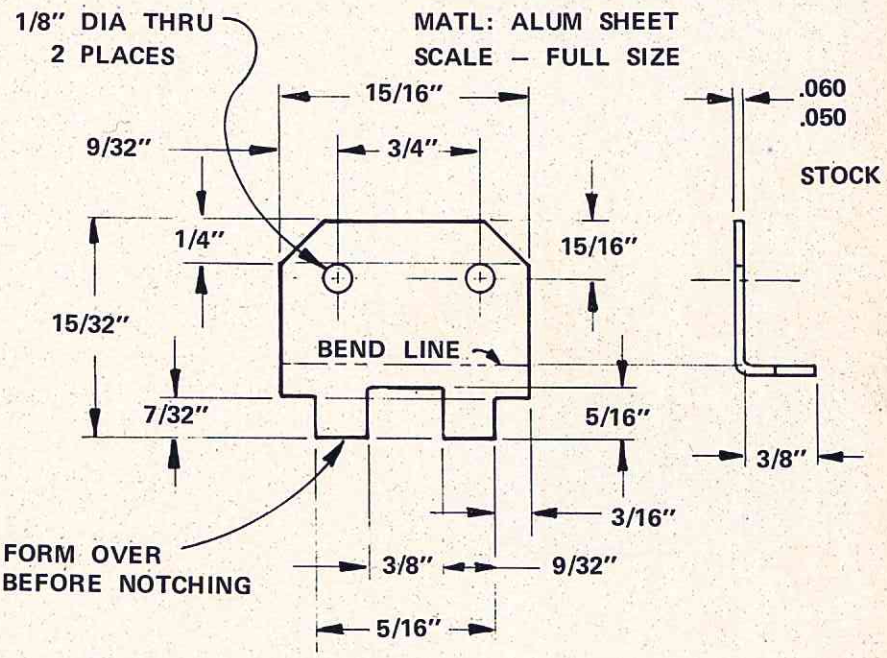
Most of us simply hack a hole in the side of our fuselage in order to install the switch for our airborne radio system. This is "quick and dirty," but the switch is a very important component in the RC system and deserves a better home. You might like to try this idea on your next project – hiding the switch inside where it is protected from outside dirt and dust, not to mention the overspray of exhaust residue. This is also a must for the serious scale builder.

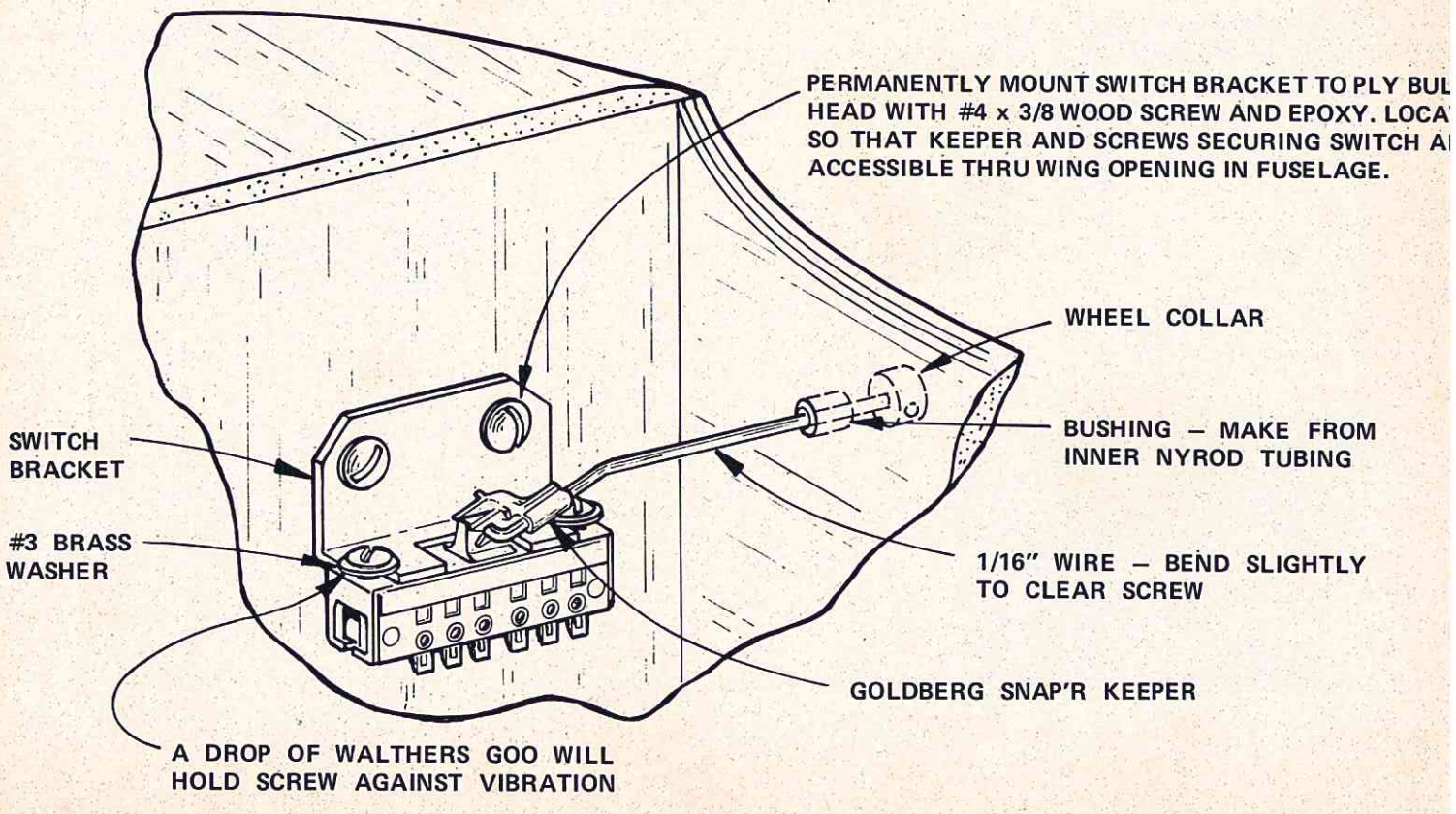
It will be necessary to modify the switch lever as shown in the accompanying sketch. The best way is to make two parallel cuts down to the switch mounting face with an X-Acto Razor Saw. Next, cut inward, from each side and flush with the mounting face. File to smooth up, mark the hole location, and drill.

You'll find that this method works extremely well and will provide you with a neat and simple switch installation.

SWITCH BRACKET

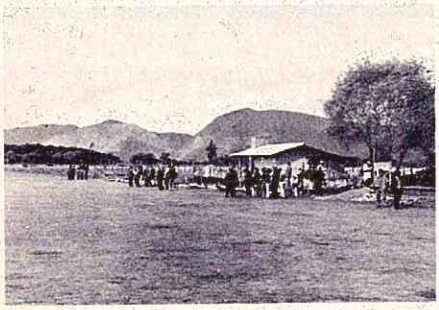
MATL: ALUM SHEET
SCALE – FULL SIZE





RCM VISITS THE
COLOMBIAN R/C NATIONALS

CLUB COLOMBIANO DE AEROMODELISMO OF BOGOTA SPONSORS FIRST RC MODEL AIRPLANE NATIONAL COMPETITION



General view of the club's private airport, "Aeropuerto El Morado" before the Nationals began. Small clubhouse under construction can be seen.

Colombian National Champion, Marco Antonio Lalinde with club president Benito Lopez. Enya .60 powered Kwik-Fli.

Jaime Gutierrez with judges at the competition. Enya, Kwik-Fli, Kraft radio.

General line-up of aircraft at Colombian Nationals.

At eight thousand six hundred feet above sea level, on a chilly cloudy morning, Bogota, the Capital of Colombia witnessed the First RC Model Airplane National Competition, with the assistance of over three hundred spectators. At 1:00 sharp the contest got under way with 31 entries of colorful and well-constructed models ranging from full-house Aeromaster's, Skylanes, Kwik-Fli's, Sun-Fli's, beautiful original designs, etc., to large rudder/elevator and small rudder only models.

Two well-experienced model fliers judged and classified the flight patterns and maneuvers in a very clear and precise manner, in order to determine the four Cup Winners for each of the three categories competing. News commentaries indicated that "excellent performance of high standard of flying was evidenced with great enthusiasm and interest from the many people that were gathered at this well organized competition".

The event took place at the Club Colombiano De Aeromodelismo's own private airport, "Aeropuerto El Morado", which has two run-ways that form a figure similar to the letter "Y", both with an extension of 180 meters by 56 meters wide.

The funds received from inscriptions, admission fees, and sales at the bazaar prepared by the wives of every Club Member, which by-the-way, were very fruitful, will be spent on the termination of their clubhouse as well as other necessary installations.

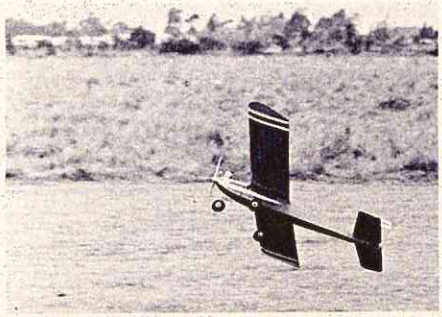
Benito Lopez Uribe, Club President, stated: "We are very proud to participate in Radio Control Modeler Magazine, and with the enthusiasm of our Club, which is today one year old, expect to have a brilliant future of progress in this sport which is, today, considered in Colombia as one of the most sound, interesting and educational activities."

The accompaning photographs will further illustrate the standard of their achievements, and gives a clear account of their first competition event. ●

Eduardo Barriga and Orlando/Regui judging Captain Ferro.

Trophies for the first Nationals donated by PAA, BOAC, Varig, AAL, Viasa, and Avianca Airlines.

A smooth touchdown . . . . .



. . . . .And a rather rough one!

SUNDAY FLIER

KEN WILLARD

A quiet flying acoustic research aircraft developed by Lockheed Missiles & Space Co., Sunnyvale, Calif., wings silently over the California's central valley. Called Q–Star, aircraft has been developed from unpowered Schweizer SGS 2-32 sailplane. Lockheed is using Q – Star in tests of aircraft acoustics and airborne equipment.

Boy, has this been a busy month! There's been so much going on that it's hard to pick which items to tell you about. However, I think I'll begin by invading Clarence Lee's province and tell you about an engine.

Back in 1966, Lockheed Missiles and Space Co. began experimenting with designs for a quiet-flying acoustic research aircraft. The studies led to the selection of a Schweitzer SGS2-32 sailplane as a basic airframe, which was modified to accomodate an engine just aft of the cockpit, which was geared down and drives a huge six-bladed prop up front by means of a long drive shaft going over the cockpit to a pylon up front, which was required to keep the blade ends clear of the ground. Also, a "tail-dragger" gear was added to replace the single wheel of the glider configuration.

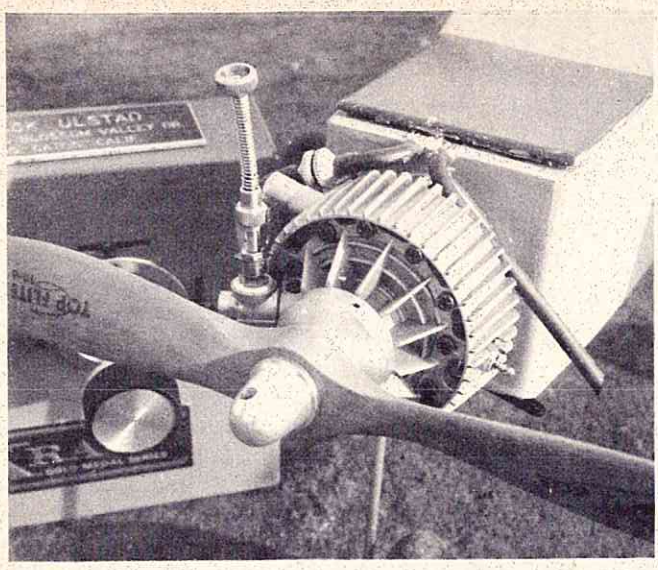
Various experiments were made with different engines, and the most recent tests included use of a Wankel-type rotary combustion engine manufactured by Curtiss-Wright Corp. Curtiss-Wright owns the North American rights to the Wankel-type engine – and that includes all displacements. Thus, the model engine, currently manufactured by O.S. in Japan under license from Graupner, who controls distribution now being made in Europe, is not yet available for purchase in the United States until all the complex agreements are worked out. You've all seen World Engines ads in RCM showing pictures of the Wankel-type engine, and John Maloney is working towards the day when he hopes he may be authorized to handle the Wankel-type engine made by O.S. (John already has the O.S. rights for other engines, but the details on the rotary engine haven't been completed).

Anyway, as of the time of this writing, you can't buy an O.S.-Graupner-Curtiss-Wright-World Engines Wankel-type in the U.S. A few have been purchased abroad and brought in, but they're scarce – and expensive. Also, one has been made here, and was demonstrated as long ago as 1960. It was about a .60 size job.

But Curtiss-Wright Corp. received a few for evaluation from O.S., and let Lockheed Missiles & Space Co. have one in conjunction with the joint testing program of the Q-Star, or "Quiet Star". It was handy for discussions, but there were no plans or requirements for running it. However, a friend of mine, Jim Wade, who was involved in the sales promotion program, knew of my modeling activities and arranged for me to get the engine for mounting and test flying. I was delighted, and promptly got a clearance from Lockheed and Curtiss-Wright to tell you the results.

Time was short, and I needed a good test bed. As luck would have it, Jack Ulstad, a fellow member of the Pioneers, had an RCM Trainer in his stable of models, so I conned him into mounting the Wankel on the nose. That's Jack in picture number one with the Trainer. Note how the Wankel dresses up the front end (the Trainer's,

RCM's own tests of the Wankel engine. Jack Ulstad's RCM Trainer makes a flyby with the Wankel at cruise power.



Close up of Wankel installation on RCM Trainer.

Paul Wong and Jim Sunday start the Wankel.

not Jack's).

Picture number two shows a closeup of the installation. It is simplicity, itself. The backplate of the engine mounts to the firewall, and if you want to remove the engine, you unscrew three bolts which hold the engine to the backplate, and you can then leave the backplate in place on the firewall.

Naturally, when word got around that we were going to fly a Wankel-type engine, quite a few modelers were on hand. Also, quite naturally, they were very willing to help with suggestions. However, I had had the opportunity to read the review of the engine which appeared in an English magazine, and heeded the advice, which was to the effect that starting should be done with the engine very "wet" or it wouldn't start at all. And that was the way it turned out. You can't start the Wankel with the needle valve in running position. Unless you have a powered starter, that is. To hand crank it, you open the needle valve about a full turn from running position, flood the engine through the exhaust, then flip it sharply and rapidly, using the old U-control technique of timing your flips so the engine is in continuous rotation until it starts. You don't have to worry about it coming up on compression, particularly when it's hot, and kicking back on you. As Jack says, "It's a 'non-chicken-stick' engine."

The engine has the equivalent displacement of a .30 reciprocating type, and puts out about the same power, as near as we could tell. It turned a 10-6 Top Flite prop at 10,500 rpm, and after Jack got used to it, we able to throttle it down and have it run reliably at 2600 rpm. It's response to throttle reminded Jack of the difference between carburetor and fuel injection response in full size engines. The Wankel takes throttle changes very smoothly.

But the outstanding feature of the engine is the extremely low level of the vibration. You have to feel it to believe it.

Other features are its shape, which lends itself to cowling, and, at least on the test engine which we had, it runs "clean." Although starts are "wet" the actual running seemed to leave a lot less exhaust mess on the plane.

The only feature that may be objectionable to some modelers is the fact that it weighs almost twelve ounces with prop, compared to about seven and a half for a reciprocating .30. However, in these days of eight ounce full house radio gear, compared to the sixteen to twenty of a couple of years back, that four ounces doesn't look so important. In fact, I know many modelers who carry much more than that in lead ballast in the nose of their ships.

Admittedly, starting is different, and somewhat more difficult, but with more experience it would appear that that can be overcome.

Actually, the only real problem that I can foresee is the one of price. Tolerances must be kept close, and that means precision workmanship, and that means money. Personally, I was very favorably impressed.

Oh, one other thing. The noise level, even without muffling, seems to be lower. Actually, there is a different sound to it. I have no knowledge as to the feasibility of further muffling.

Somewhat selfishly, I suppose, I made the first flight. After all, it was the first flight of a Wankel-type engine in Northern California.

The engine power was perfect for the RCM Trainer, and the added weight didn't cause any problem because the Trainer had been a little tail heavy anyway, and this fixed it. After about a five minute flight, during which the model performed rolls, loops, spins, inverted flight, and various combinations of those maneuvers, without any engine malfunction no matter what attitude the plane took, I brought the model in for a landing. Then we fired it up again, and Jack had a turn. That's Jack, making a fly-by, in picture number four.

So the Wankel-type engine gets an up-check, with minor reservations – you'll have to learn the starting technique, and the price may be a problem. Hopefully, production techniques will be developed which solve both.

The other activity that's been keeping me busy is a new sailplane. Like I told you earlier, I wasn't able to arouse any interest in a75" class, so if I wanted to stay in the same league with the others, I had to build a "monster." And it is a monster, for me, yet even while I was building it, others were building even larger ones – so now mine is just about average in size.

For some time I had been eyeing the fiberglass fuselage design which Jack Weirshauser developed for Francis Products in Santa Clara. It's clean, smooth, and rugged – and I was in a hurry. So I got one of Bob Francis' "Del Gavilan" fuselages, and then designed

my own wing and tail combination, using an Eppler 387 airfoil, root chord 9½", tip chord 4½", tip plates, straight leading edge wing, and the stab is slightly lifting, with flat bottom and slightly curved top. Dihedral 6°.

First test flights showed two things – the increased taper and the slight decrease in dihedral from the wing originally designed – necessitated a significant increase in rudder area to get the response I wanted. However, after adding the rudder area (about a 40% increase) I had a really responsive glider that looks like it will do all right both in thermals and on the slope, which is what the Eppler 387 is supposed to do.

So, if you want a good fuselage to work around and make your own design, the Del Gavilan fills the bill. Also, if you prefer, you can build right to the plans which are provided, and you'll have a beautiful machine that performs right along with the others. I'm very pleased with the way mine is turning out.

Picture number five shows Lynn Robinson holding Jack Weirshauser's original "Del Gavilan." Beautiful lines, right? Since I changed the wing and stab, I thought I'd better give mine a different name, yet keep the relationship, so mine is called the "Led Nalivag." Facetious, when you consider that I managed to keep the weight below three pounds!

★ ★ ★ ★ ★

And the next activity that I'll have room to talk about for a bit is the way you fellows have responded to my beginners' questionnaire. Your letters have been great, and I've answered all those that included return envelopes, plus a few from service men that didn't. It's not that I'm ignoring the rest of you, but the number of letters is just too great for me to reply unless you make it easy for me by enclosing a stamped, self-addressed envelope. OK? And next month I'll give you a detailed rundown on the results, which now have taken a significant pattern. Later on, as time and space permits, I'll publish some of the letters and answer the questions.

★ ★ ★ ★ ★

Now I'd like to wind up with some remarks about one of the most unusual R/C models I have seen in a long time. A couple of weeks ago I was driving out to the Pioneers' field to test my new little low wing design, and on the way I saw a car with two big fins sticking out the rear end, and what looked like a jet exhaust in between them. Well, that's just what it was – almost. Turned out to be E.D. Bridges with his huge ducted fan delta, an eleven pound giant driven by an Enya .60 which turns a six-bladed fan inside the duct. He's been working on the design for months, in collaboration with Charlie Peake, the Australian enthusiast, and they were going out to put in a few flights.

Lynn Robinson displays 'Del Gavilan.' Weirhauser design kitted by Francis Products.

Charlie Peake puts E.D. Bridges' ducted fan delta thru its paces.

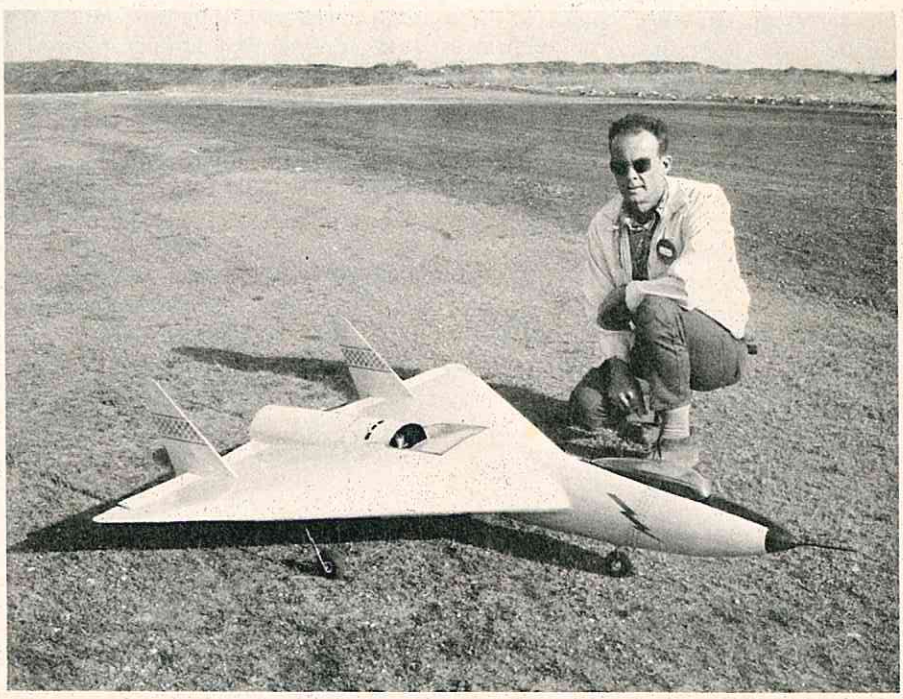
I was fascinated by the starting technique. Just like flipping a prop – but boy, you'd better be quick about it, because those six blades come spinning around fast! Yet old E.D. went about it like he'd been doing it for years, and the engine fired up right now. Then he closed the access hatch, and Charlie Peake, cool as can be, taxied the model out, poured the coal to the Enya, and away she went. The only word I can think of to describe it is "majestic!"

Once in the air, it was apparent that the model had no bad characteristics. The only limitation I noticed was that the elevator control wasn't quite enough to keep it inverted, but that can be corrected by some changes in trim and control travel.

Later on, or maybe at the same time this item appears, depending on the schedule, RCM will be publishing plans for the model. I'll make a prediction that if you build one, you'll have a model that will stop any show you want to participate in. If you build it to the plans, you'll find it flies quite conventionally, and the only cause for jitters will be your own confidence.

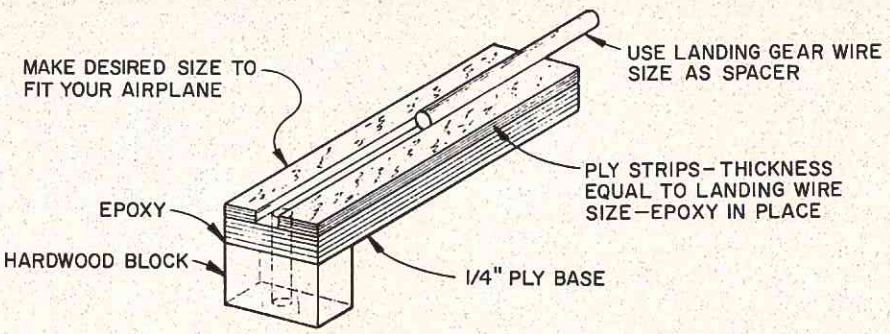
But shucks – that's the way it always is, ain't it? ●

E.D. Bridges' Delta Ducted Fan. Enya .60 turns a 6-bladed fan. 11 pounds. Flown by Charles Peake from Australia. To be featured in RCM.

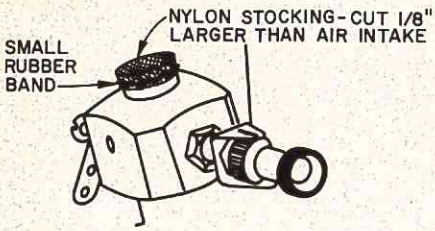


FOR WHAT IT'S WORTH

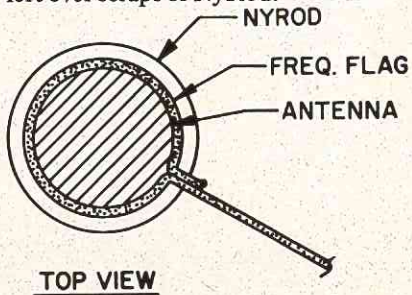
Landing gear mounts for low wing aircraft are usually purchased as commercial units. If you happen to have some scrap wood on hand they can also be built-up quite economically. The assembly shown by Jerry Smith of Wishawaka, Indiana, may be quickly built and installed in either foam or built-up wings.



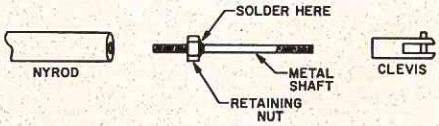
If you have flown from grass strips for any length of time you have probably noticed the grass seeds and small flakes of grass that accumulate in the air intake of your engine. John Black, of Humphrey, Washington, cut a circle of nylon stocking, stretched it over the air intake, and held it in place with a small rubber band over the top and against the side of the venturi. The circle of nylon should be 1/8" larger than the diameter of the venturi. John has used this on engines from .19 to .60 with complete success.



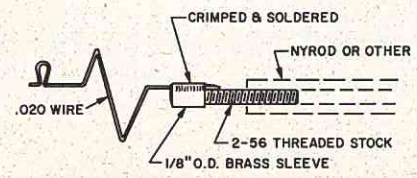
Neil Liptak of Joliet, Illinois, suggests a simple clamp for your transmitter frequency flag which can be made from a left over scrap of NyRod. Cut this from the outer tubing to the approximate width of your frequency flag. Cut a slit down the side of the NyRod. Then, simply wrap your frequency flag around your antenna as shown in the top view of the sketch. Pry the NyRod open at the slit and push around the top portion of your antenna. This eliminates the need to tape or wire the frequency flag to you antenna while providing another use for left over scraps of NyRod.



While on the subject of NyRods, you may have discovered that it is quite difficult to thread the metal shaft into this material. However, if the retaining nut supplied with the NyRod package is first soldered to the shaft, a wrench can now be used as a aid in installing the shaft in the NyRod tubing. For maximum strength, use a high-melt type of solder. This idea was submitted by Frank Toch of Urbana, Illinois.



G.J. Thompson of Arlington, Texas, suggested the following throttle over-ride linkage. He has built and used three such linkages and has over a hundred flights with no difficulties encountered. First, bend a length of .020 spring steel wire as shown in the sketch. The loop at the end should be a snap fit into the carburetor throttle arm. Make a 1/8" O.D. sleeve from a brass tubing and slip onto a piece of 2-56 threaded stock or Kwik-Link shaft. Slightly "egg-shape" the brass tubing by crimping with pliers. This will allow the .020 wire to snug-fit under the brass sleeve. Solder the wire, sleeve, and threaded shaft together. Silver solder will make a stronger joint. Thread the assembled link onto NyRod or your favorite pushrod end. Adjust the servo throw to exceed the carburetor throttle arm throw by 1/32" on either end. If the carburetor is set so that it stops at full open at one end and minimum idle stop at the other, the linkage will insure that both these positions are reached at all times without placing undue strain on the throttle servo.

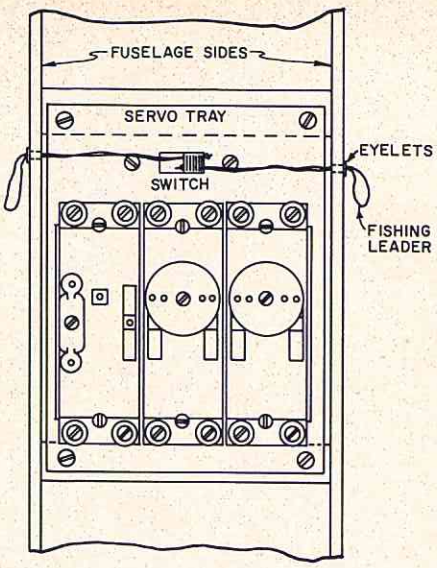


THROTTLE OVERRIDE LINKAGE

If you still have a few scraps of NyRod left over, take a scrap of this inner tube and slightly taper one end. This will provide you with a glue nozzle which will fit Ambroid's four ounce tube. It fits very tightly and any length may be used. Capping is accomplished by a ½" piece of 1/16" diameter music wire. The glue will not stick to the NyRod and any length of scrap may be used to fit your requirements. This idea was sent in by Jon Dokken of Winsted, Minnesota.

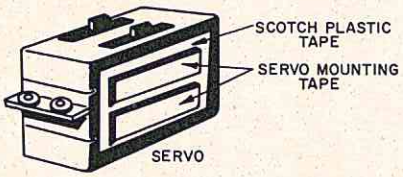
One of the most difficult problems in radio installation is the linkage from the throttle servo to the carburetor arm. Often times it is impossible to obtain a direct run on this linkage. H.D. Apgar of Frenchtown, New Jersey, uses a camera cable shutter release, available at all camera supply stores for a nominal sum. These cables can be bent around sharp angles and still work quite freely. The particular cable he used was easily threaded on each end and standard RC linkages were used. Extension wires can also be soldered on if a longer run is required, although camera release cables are available in lengths up to 6 feet.

Here is a simple, yet fool-proof, method of operating a tray-mounted on-off switch in your model. Attach flexible string (fish line leader works quite well) as shown in the sketch. Then simply pull the string from the appropriate side of the model to perform the desired function, either on or off. This method has two distinct advantages; in a crash, servo trays go forward

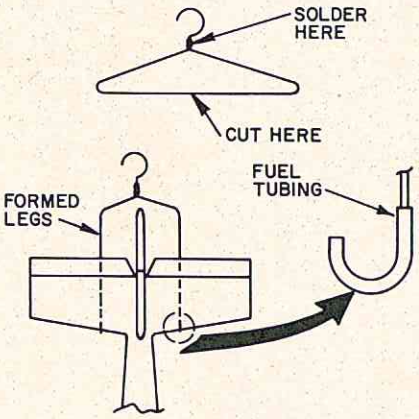


and rigid push-pull linkage often breaks the switch. The strings will simply be pulled through the holes in the fuselage side without damaging the switch. The second benefit is in transferring the servos and tray to another model, all you need to do is pull the strip through the eyelets to remove the tray and thread them through eyelets in the next model. This idea was submitted by Cliff Shelor of Covington, Virginia.

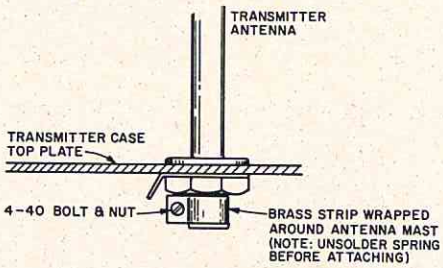
If, like most RC'ers, you mount servos with servo mounting tape, you have undoubtedly discovered some problems in peeling the old tape off the servo when it is removed from the aircraft. To overcome this James S. Miura places a piece of Scotch plastic tape (or scotch monofilament tape) onto the servo. He then sticks the servo mounting tape onto the plastic tape and the servo is then mounted in the plane. In the event that you have to remove the servo, the servo mounting tape will separate cleanly from the servo by simply peeling off the Scotch plastic tape. By mounting in this fashion you keep the surface of the servo clean. This has been thoroughly flight tested and proven quite successful.



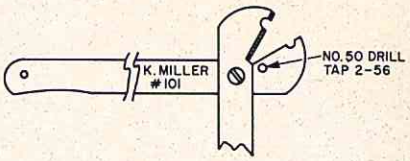
Doug Mielenz of Milwaukee, Wisconsin, stores his model aircraft fuselages by using modified wire coat hangers. He takes an ordinary wire coat hanger, wire brushes the paint from the twisted area below the hook, solders this area, then repaints it. He then cuts the horizontal member of the hanger in the middle and forms the two legs as shown in the sketch. A short length of plastic fuel tubing is slipped onto the end of each leg, and then the ends are formed into hooks to cradle the stabilizer (the fuel tubing protects the stabilizer finish). Now all that is required is to pound a nail in a floor joist and hang up the aircraft.



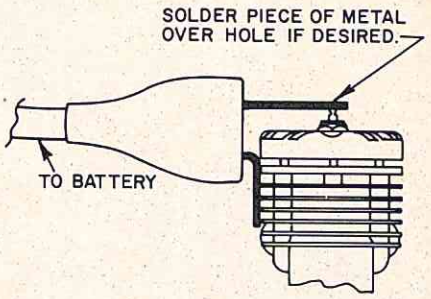
Owners of Heathkit GD47 or GD19 digital systems, experiencing intermitant range problems, might find the cause to be looseness in the transmitter antenna. Jim Miura of Honolulu, Hawaii solved this problem by wrapping a strap of brass around the antenna mast and securing with a 4-40 bolt and nut. Tighten just enough to give a good solid drag when pulling out the antenna as per the attached illustration. Since making this modification all range problems have disappeared.



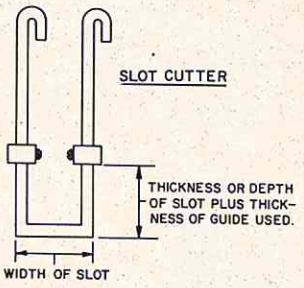
H.D. Apgar of Frenchtown, New Jersey, found that most makes of bolt cutters do not cut bolts smaller than 4-40, while in many cases modelers have a need to cut the popular 2-56 and still have a usable starting thread. By drilling and tapping a standard pair of K. Miller No. 101 wire strippers, a very handy pair of bolt cutters is obtained. Start by holding one of the stripper handles in a small vise and heating the cutting end until it is cherry red in order to remove the temper. Allow the end to cool naturally. Center punch and drill with a No. 50 drill and then tap for a 2-56 thread. Re-heat to almost cherry red and quench in cold water to restore the temper. Other sizes can be had but it is best to stay under a 4-40 unless used on brass screws only.

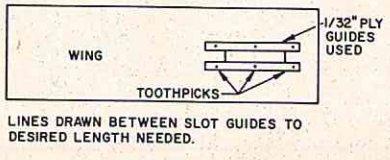


Phillip P. Catanzaro of Oakdale, Pa., submitted an idea that he and Wayne Dempler developed. This is to simply take the cord from a lamp or other appliance, providing it has the molded male end on it, and bend one of the ends as shown in the sketch to make your own glow plug hang-on switch. The cords are also available as replacements for lamps from most hardware stores.



Gene DeCook of Canandaigua, New York, suggested an adjustable foam wing slot cutter. No. 10 copper wire, flattened before making bends in order to provide square corners, is used to fabricate the unit. The wire length is approximately 7 inches. Wheel collars are used to adjust the depth of the cut. 4-40 bolts were used to secure the cutter to the electric soldering gun. ●





TOP OUT

JERRY KLEINBURG

Jerry Kleinburg with Top Out files of club newsletters.

The Jefco RC Club of Denver. Cliff Ammons picture reflects many of the 26 members. Club will have 1970 Air Frolics to intermix fun and competition.

Each year the contest picture seems to emerge as a complete new RC vista. While most activity repeats, still a fresh part appears regularly to keep the picture bright and attractive. It's true some pieces fade, but they are more than replaced by new enthusiasm and growth and expanding dedication. Such is the present vitality of RC. Long may it continue . . .

And these are the realities as competition shapes for 1970. Many of the standards will be there: Buckeye Southwesterns, the BIRDS Annual, Nashville, Wright Bros. Memorial, the West Coast Championships, Kansas City, Wichita, Syracuse, the Iris Invitational, and the Nats of course, to name only a handful that have been the mainstay and backbone – and pioneers – of RC competition. New 'standards' such as Tacoma, the Central Jersey giant meet, Tangerine International, along with many, many more will be joined by a host of hosts who'll be offering brand new contests for the growing number of RCers. San Antonio, Layfayette, the National Fun Fly Championships in Ft. Worth, Greensboro, the Jefco RC Program in Denver, and the Spokane Internats are a sampling of fresh talent bringing a broad range of action to new and old fliers alike.

It's obvious the newcomers aren't allowing the experience of the older meets to be lost or wasted in staging their new affairs. It's also true new ground is being plowed to attract fliers. Contest management is being recognized as the key to success and satisfaction all the way around and to insuring contestants will come back again. That's one of the reasons the DCRC Symposium this year will be devoted entirely to the subject. Much is heard about the volunteer effort with AMA, but it still requires action by the greatest bunch of volunteers of all, the contestants, to make or break contests. Their sincerity is measured by the hard dollars they plunk down in attending contests. They deserve the best organization and effort possible in every sanctioned contest and show their own faith by traveling many miles for a few rounds of flying. And it appears the 1970 crop of contests will not disappoint them. We wish them all – fliers and contest managers alike – the best of luck and we look forward to being on the scene in many places to join the action . . .

HERE 'N THERE

While many fliers were hibernating and may just be emerging to sodden fields, there's been much action elsewhere. Here's a few quick looks:

El Paso – The El Paso RCers staged their usual January Sun Carnival Fly-In where Ted White usually reigns supreme. He did it again, despite the wind, and copped enough wins to take over-all top hardware. Among his wins was a new one – to show that Ted's not muscle-bound in old events – was an ETA glider event. Target was a spot within 4 minutes as close as possible. Ted zero'd it, on the spot in EXACTLY 240 seconds! Bob Brown and Don "Lucky" Gibson, both of El Paso, shared honors with the Wild Man from Albuquerque. This was the 9th annual affair Ken Walton reminds . . .

Trenton – The Mercer Co. RC Society climaxed its 12 year existence with a banquet to honor its recent accomplishments. Club showed leadership in obtaining flying field under the federal "Greenacres" recreational program. We visited their field during the Nats and found it impressive. George Woodward, Hank Clark and Mike Winters were presented trophies for club accomplishments in 1969. Mike is the president of the Club and won the annual Joseph Pisquito Memorial Craftsmanship Contest. Warren Kruse, who sparked effort that successfully obtained the new flying site, was named "Mr. MCRC" and surprised with a new Enya 60 in appreciation for his work.

Billings – Willie King, Speed Leckie, and Dean Koger led A, B, and C, respectively in the Fall pattern meet of the Flying Mustangs. The contest drew from St. Paul (900 miles) and Ft. McLeod in Canada although normal for

the meet is Montana, Colorado, and Wyoming, a mere 600 mile radius! BIG COUNTRY, Allen Chapman tells you. Lloyd Nicholson and Simon Dreese gave Dean the main competition and expect to do the same in Spokane in June at the Internats. Aubrey Darnelle CD'd the meet with big help from Dale Cowger and excellent judging.

LaFayette, La. – The Acadian RC Club (remember their Crawdad Boil?) in conjunction with the Lafayette Exchange Club is campaigning to sell modeling to the public. They reason that with the RC growing as it is, community awareness needs to be a positive effort to assure direct effective response. Flying safety and encouraging new fliers is the main goal of their education program. The Southwest Louisiana Home and Trade Show was the scene of the Winter project, where floor space provided by the Exchange Club was used by the ARCC to display models and equipment. It paid off, at least the club's treasury benefited from raffling a PCS-Lanier Cessna-Enya 19 combination at $1 a chance. Chance included club membership and flying lessons. The ARCC will hold the 2nd installment of their Crawfish Open on May 23-24 this year, a Class AA affair which will include ABC Stunt and Scale. UC will also be flown in 3 events.

Oklahoma City – One of the best shows we didn't get to last year was the 1st Hobby Fair last October. We promise not to make the same mistake this year and we're calling attention to the 1970 Hobby Show set for October 17-18 so as to get in on my own calendar early enough this time. The 1969 Show was mighty impressive with a whole spectrum of modeling seen in 29 displays as well as flying shows. Awards abounded, they even had a Goldclank Award in recognition of the Brooklyn Great and the SOB's (although frankly, it confused the non-RCers). Scene of all the excitement was the Oklahoma Science and Arts Foundation. Randy McGee of the TORKS and Dale Johnson of the Foundation say, "Come".

Eugene, Ore. – Representatives of the Eugene RC Club staged an RC demonstration for the Drain grade school as a part of bringing awareness of the potential of modeling to students and teachers alike. School officials were delighted at the volunteer cooperation and time given by the RC'ers. Mike Bailor and Roger Breedlove handled the project explaining FF, UC, and rocket displays in the gymnasium and showing the flying of RC on the sport field. From the 3rd grade on – about 400 students in all – and their teachers were amazed at what modeling has become . . .

Tokyo – The Japanese RC Nat's for 1969 was strictly for the Japanese this time. U.S. fliers were disappointed but went to see the flying anyway. The cold weather didn't stop the flying although presentations went indoors. Top flier was Mr. Y. Sugawara and his original Wan-chan design which Larry Hoffman says means Puppy-dog. Radio was an OS DP-4 digital and an OS .60GP. Sugawara, expectedly, works for OS and comes from Osaka where all the fine OS merchandise is made. We look forward to future Japanese National meets and hope fliers from other countries will be able to join in the flying in the same way all Japanese fliers are made welcome at our Nats. Why, we even look for their champ to lead the U.S. show sometime . . .

PEOPLE 'N PLANES

Over in the Philippines Major Larry Beason took time out from runs over Vietnam to compete in the December

Tops in Scale. Simon Dreese in 1969 win at 1st Spokane Internats. 1970 affair set for June 13-14. Washington ANG sponsors meet. Should be 1970 highlight.

B/Gen. R.F. Bob King, Washington ANG, who will host installation of 1970 Hall of Modeling Fame. Dick Korda, Al Lewis and Bill Winter to be honored . . .

9th Annual El Paso Sun Carnival Fly-In found perennial winner Ted White starting 1970 with a handful of trophies. Type of event no barrier to Ted's skill . . .

Event judges – Will Sample and Jim Wimsatt of the El Paso RC Club, made the decisions during 9th Annual affair. Contestants from Texas, New Mex. & Ariz.

RC sailplane got power lift from stunt ship. Ted White zero'd event with glider on the spot at exactly 4 min. Al Casey holds White entry.

Floyd Idom came from Hobbs for El Paso January outing. Flew a rapid Gringo II with an Enya 60. Galatron radio . . .

Mail Pick-up was event in El Paso Annual. Ken Walton picture catches moment just before snatch of styrofoam ball. Ted White Bandito stole show . . .

meet of the 1st RC Modelers Club. He was happy to garner a second place for his familiar red and yellow airplanes. The trophies were worth the effort. We, along with many, many friends of the genial Beasons, Martha and Larry, look for their return to the states in the near future.

NEW CLIPS from the NEWSLETTER ROUTE

The Shreveport SHARKS are fortunate to have a "Kooky Kontest Korrespondent" who keeps the folks at home filled in on contests in the more exotic places. Here's a sample of his latest from the SHARKS SPARKS edited by J.D. Alexander:

Cario, Egypt

Dear Sharks,

Just a little note to catch you up on my latest activities. The past few weeks I've been abroad to various European air shows promoting world-wide sales of the Flyberger Digi-Glitch propo radio. My first demonstration at the Paris AIR SHOW didn't quite come off. My rudder-only scale model of the Concorde SST was unfortunately painted a bright gold and was promptly impounded by French customs agents. Oi, these French! Lucky I don't have any gold teeth . . .

My next stop was the Italian Nationals in sunny Napoli where I was somewhat surprised at being awarded 1st in Scale. My float mounted model of the Machhi-Castoldi 97 crashed on take-off in Naples harbor – this being my only flight. The Italian judges lean heavily to true-to-life scale flights and I found out the original M-C 97 did the exact same thing when fitted with floats.

Next on the agenda, the Egyptian Nats at Cairo, where this letter is being written. Pattern flying began and ended the same day – or to be more exact – the same hour. The first flight up was bounced by a flight of Israeli Phantom jets who departed after strafing the field. The meet ended on an equally disastrous note as my unfortunate choice for scale was an F4 Phantom which was promptly shot down by the trigger-happy Egyptian anti-aircraft guns. And now Sharks, it's on to the Israeli Nats at Tel Aviv. I could use some suggestion, the only model left is a Mig 21 . .

Gloplug Flyberger

Poetry Corner:

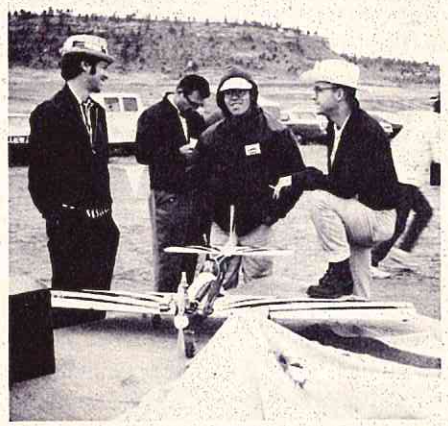
(From The SIGNAL News, Bob Underwood, Editor)

There was once a brave modeler named Pace,
Who only flew with the wind in his face,
When his plane was quite high
How well he could fly,
But his landings were just a disgrace!

RAMM TALK – Larry Witherington, Editor: Safety. I can now vouch that nylon props do come apart. Mine did on take-off; the plane rose 20 feet and all h— broke loose. With a great deal of luck, I got it back on the ground nicely.

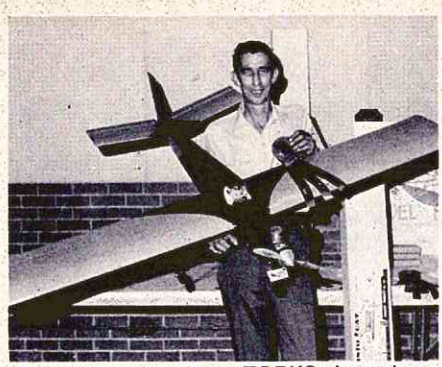
Mercer Co. RC Society banquet saw trophies go to Geo. Woodward, Hank Clark, Mike Winters. Mike, club pres. was winner of annual J. Pisquito Memorial Award. Dr. Harold Harger, does honors.

John Chapman shows club sign at entrance to site of Billings annual meets. John also shows his dad, Al, a few pattern tricks occasionally . . .Billings RC hub for nearly 1000 mile radius.



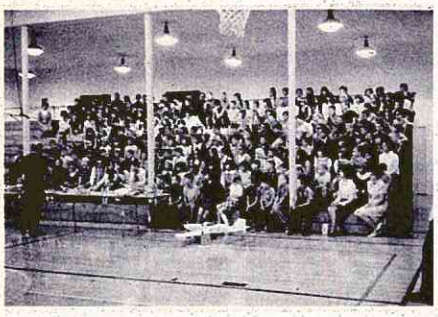
Dean Koger in the center won top Class C event at Billings stunt meet. Lloyd Nicholson grins over his Skeeter while genial Tom Walker gets ready to drop ashes on it.

Acadian RC Club exhibit at Southwest Louisiana Home and Trade Show helped in PR educational effort.



Homer Darnell of the TORKS showed an original pattern ship at the 1st Oklahoma City Hobby Fair for a 1st. Metalic purple, did the trick. 1970 show set for 17–18 October.

RC Old Timer was won by Hank Payton with Buzzard Bombshell. Oklahoma City Science and Arts Foundation and TORKS had great 1969 show. 1970 to be bigger.



The Drain, Ore. gym was the scene of FF, UC, and rocket displays where Mike Bailor and Roger Breedlove showed latest techniques. School official were delighted at RCers cooperation.

Japanese RC Nats winner . . . Y. Sugawara and Wan-chan (Puppy-dog) used OS DP4 digital and OS 60 GP engine in original ship. Sugawara from Osaka, OS home.

But what that vibration did, you won't believe! Motor almost torn out, tail assembly almost completely separated from the cracked fuselage, etc. Needless to say, I have flown with my last nylon prop. They say experience is the best teacher . . .

Yah, and it could have been some damage to the flyer too . . . We've been stressing the dangers of nylon props for some time, only we've been saying it's dangerous to the FLYER. Could be the stress has been misdirected. Maybe if fliers see the danger to their equipment they will sit up and take notice!

Retract Gears (Dallas RC N/L - by Vic Baney)

"A system that comes very close to the ideal is the Never-Fail-Landing-Gear-System (yes, that's the REAL name) manufactured by Leonard Hudson of Houston, Texas. (P.O. Box 7167). Operation of this gear is a case for simplicity itself. Air pressure from the engine crankcase is fed to the slide valve which in turn feeds pressure to the air cylinder in each gear when set in the "retract" position. The air cylinders contain small pistons which are forced backwards by air pressure and in turn pull the gear up in "lock" position. As long as air is in the system, the gear will stay up. To lower the gear the slide moves to release air pressure and the gear drops down into a simple locking device, and no amount of force short of total destruction will unlock the gear. Operation is simple and reliable, no switch contacts, no electric motors, no battery problems, no limiting the number of cycles, and no electrical noise to cause radio interference. Mechanically, this gear is nearly as strong as conventional multi gear . . .

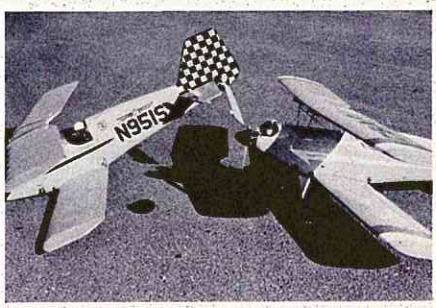
"I have one criticism which I feel is justified. Since the gear required gravity to drop into the down position, this may present a problem for the nose gear when the plane is moving at a high rate of speed. The slipstream could possibly keep the nose gear from extending fully. However, the correct solution is to simply slow down somewhat before extending the gear. After all, that's how it's done on full scale airplanes. If you slow down, the gear will lock every time. Check by flying inverted. If all's OK, the gear stays down; if not, it retracts. (Think about THAT for a minute!)"

PROP BITE RE-VISITED. (The Indianapolis Fly By – Louis Tate, Editor)

"Bruck Peck . . . passed this along so

Roger Breedlove of the Eugene Ore. RC Club gives the upper grades of the Drain Ore. school an RC demonstration. PCS and Lanier Citron proved effective tools.

Maj. Larry Beason was 2nd in 1st Philippine RC meet. Staged by PRCC, show was scene of good competition. Larry used Orbit and ST. in old ships.



"Tight" formation results . . . Red Scholefield (N951S) found prop blade in his stab and no elevator response. Art Azlin's Aeromaster spit-S'd dead stick.

Dick and Sue Hill and "monster". Idylic N.J. model family includes enormous Basset hound, teenagers who RC too.

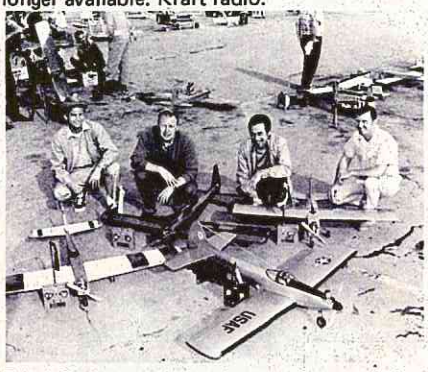
that we'd all know what to do about a bit of prop bite. 'The symptoms of prop bite are so obvious and well known to modelers that there is usually little doubt as to whether one has it or not. Treatment begins immediately by saying something appropriate to the engine that did the biting. Exact words depend on the ingenuity of the victim, and should be directed proportional to the degree of guilt felt by the victim for allowing such a stupid thing to happen in the first place. Next step in treatment is to find someone who has a bandaid. Ask someone who uses a chicken stick, since they are generally immune to injury. Place the bandaid firmly across the mouth and wrap the injury in an oily rag after showing everyone to generate adequate sympathy. Then, if emergency field repairs appear satisfactory, go back to the guy with the chicken stick and BORROW it!"

Bob "PopTop" Arnet fuels Fearless Pussycat at Ellinwood, KS. outing. Hi-Plains RCer "inventer" of famous Omnimount nose gear (It doesn't matter what way it's put in!).

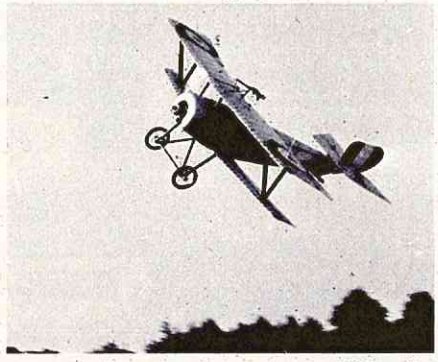
Jim Mowrey and orig. Jayhawker. Merco 61, 25° sweep wing & stab, 60" span, split rudder. EK radio, ship took 2nd in Oklahoma City Hobby Fair.

Roscoe Hibbard and his Proctor Nieuport II. Enya 60 swings 20" laminated prop, easily hauls 7½ lb. beauty. Wheels by E.B. no longer available. Kraft radio.

C.A. Crenshaw spent 3 years on scale Sammy Mason stunt replica. Sterling PT-17 was basis for gem. ST 71, 14 x 6 prop, Kraft. Flies with full rigging.



Reed Packard caught the new brass of the Valley Flyers in a smiling mood. Bob Smith, Dick Sonheim, Les Kesner, Bob Davison are Treasurer, Prexy, VP & sec. Valley Flyers possible No. 1 club in the country, members are Who's Who of RC.



Ken Simmons' picture of Roscoe Hibbard's Nieuport shows it's a steady flyer. "Proctor kit unsurpassed", Roscoe says. Servo linkage change has servo in wing.

The MARKS lineup in Victoria, Australia for RCM's camera. Ken Bowden is President, Chris Kaye, sec. Bill Abbott does bright newsletter. Booming down under. November is summer - scene was conclusion of Peoples' Flying Day Annual.

Cause for Divorce. (S. Alemeda Co. RCers N/L – Dick Franco, Editor)

"Dorothy Franco has her Heathkit finished . . . no great help from hubby who wired up the battery pack incorrectly! Many thanks to Elmer Hooker who found the problem."

Question: *Is alienation of RC affections legal grounds?*

* * * Welcome to the Derry Flyers who meet in their clubhouse containing an Olympic-size swimming pool, sauna, well stocked bar, fireplace and furniture that's easy to sit upon. Club member Gord Leliever makes it all possible. Meetings are WELL attended in THAT club. No flying, just meetings . . .

How Much? (The Glitch – Dr. E. Nino Campana, RCM Editor-of-the-Year 1968)

"Word from Stan Lyons – Often we become so engrossed in our own hobby that we forget its relation to the rest of the hobby industry. Some figures from the Hobby Industry Assn. of America points this up: plastic kits amount to $224,000,000.00; model airplanes including RC amount to only $49,000,000.00, or roughly 20% of the plastics! Even model vehicles amounted to 60 million dollars. Model railroads came to a figure of 56 million dollars. What makes these figures strange to me is the number of magazines devoted to model aircraft, contests, etc., as compared to some of the other hobbies in relation to dollar volume."

Shhh, Stan. Some of the others still prefer railroads . . .

SOLDERING TROUBLE? (Top of the Rock by Bill Haywood – from Birmingham RC News)

For those who find it difficult to sucessfully solder piano wire or make any of those other difficult soldering joints so important to the safe operation of your RC model, there is a simple answer to your problem. The solution comes in a tube labeled SAL-MET-FLUX. This compound, when applied to metal parts can do miracles. Believe it or not, even aluminum can be soldered successfully with

regular solder using SAL-MET according to directions on the tube. SAL-MET may be obtained at electronic supply houses."

We haven't tried this ourselves, so we fly with slipping piano wire. Anyone else who has tried this stuff or others that give a tight job on the illusive wire?

NEW ENGINES? (SMRCC FEEDBACK – Denny Purduski, Editor)

Regarding a recent visit from Meyer Gutman, Fox Engines' representative we hear:

"Meyer says that Fox's new engines include a new 36X. The old standby Fox 59 is being fitted with a new carburetor and the new 60's and 74's are real goers too. Standing in the wings are two new ones: a racing 40, and – hang on to your props – a 90! Yes, a .90."

Knew all along Duke Fox was out there somewhere. Now we'll start watching those prices on foreign engines start to re-align . . .

EH? (The FLIGHTMASTERS - Fernando Ramos, Editor)

"Have you noticed that while using the new Testors mustard scented glue that you develop a tremendous craving for hot-dogs?"

Now that you mention it . . . But seriously, have you called this latest development to the attention of your city council who passed an anti-glue law? They don't know about the change unless you tell them. It's been found law makers really like reducing the number of laws on the books. Here's your chance to be a good citizen . . .

RC and the BIG BOYS. An Editorial by Stew Vance (DCRC Newsletter – Stew Vance, Editor)

"That minority group – those who attended the October meeting – remember our President, Tom Rankin's warning to us of complaints that our RC planes have been observed flying close to full scale planes at the flying site. Our president did not go into the law and rules involved but pointed out that while we may regard our rights under FCC and FAA rules as somewhat our own, it certainly does not pay to argue with the big boys. As he said it, "it will never matter whether we consider ourselves right or the full scale plane wrong in being down at our level, if we have an accident we will come out at the wrong end of the argument."

"Up till now we have no idea who flew the plane within sight of the full scale plane from which we have heard.

We don't even want to know. We suspect, though, that all of us have been tempted to fly alongside when the big planes come over low. There's something exciting and fulfilling about guiding your plane in that direction. Perhaps, in the excitement we forget . . . We forget we are able to get some very exciting and violent maneuvers out of our models which are not seen in full scale planes. One reason is that we aren't hazarding the pilot's life. We get very brave about our aerial maneuvers. Sometimes we forget that someone else may be involved. We forget that in the big plane in the sky are pilot and passengers. A six-pound model plane colliding with a full scale plane can be lethal. We suspect that a few of us have forgotten the crash near the Baltimore-Washington Parkway a few years ago caused by a migrating swan. More than 30 people were killed then . . .

"So, here it is. Let us resolve that along with our concern for people on the ground in the area of our flying fields, let us be careful of those who are also in the air. A good rule (not in our rule book) is: When a full scale plane is seen in the area at an altitude coinciding with our maneuvering range, we go immediately to altitudes of less than 100 feet and scrupulously avoid the full scale plane's line of flight. This, of course, includes the glider guiders whose altitude and area far exceeds that of our powered planes."

Well, la-de-da! We've taken you through Stew's longish way of putting things and hope you're still reading with us because we've just unbuttoned our shirt to get a few things off our chest! This column has been the lone champion of recognizing the realities of penetrating the airspace of the Big Boys, as Stew calls them. So now it looks like apple pie, the Red-White and-Blue, and Motherhood, we have another item to talk platitudes about and to lie to each other while we go on doing just what we want to; mainly not really thinking seriously about anything not directly connected with getting a plane in the air. And we're happy to see Stew mention the nasty facts of life in an area that is known for having tunnel vision when it has its attention called to areas other than its own interest.

We think it's important to know just who's acting like a fool and isn't adult enough to deserve the PRIVILEGE of flying Radio controlled aircraft. We think it's time for impatience with those who "forget" all the facts Stew pointed out. With RC growing as it is, who needs knotheads who have to be TOLD there are PEOPLE in those there airyplanes? Those airplanes that you see, that is. Stews last comments about the glider flyers attracts our attention mostly because when flying one of these big birds at 6000 to 8000 feet as the DCRC chaps boast about – while having binoculars screwed to their faces – who can see those 100 passenger jets letting down into the crowded sky over Washington as they sweep from cloud to cloud on instruments? (While the President of AMA, along with THE Executive Director and sundry AMA hero types – volunteers, that is – watch! Nuts! Sounds like more of the same old apple sauce we've heard before when RCers try to talk out of the adult side of their minds while continuing to act out the role that they continually deny they're doing – acting like a bunch of kids.

Why isn't an altitude rule on your books DCRC? Or yours XYZRC? Let's go on acting like infants if that's what we want but let's not kid ourselves

about what's happening. Adults don't need reminding that the "Big Boys" have the power to wipe RC off the map if we stumble. If you aren't concerned about the faceless people in the unseen airline any Freudian headshrinker will understand that they do not represent a reality to you. So you have an excuse. But what about that expensive radio of yours and that pretty plane you've really got trimmed out? If it's the adolescent route you prefer, think of your expensive investment and what the devil your patient wife will say if you powder it against that intangible (till then) air obstacle! Then as you mature as the pieces start to fall, then start thinking about the insurance you DON'T HAVE to cover such a disaster! (Yes, go ahead and ask AMA . . .) Friends, 300,000 bucks won't even start to pay for a scratch you might inflict on one of those metal monsters these day, so don't kid yourself if you start getting some of the impish impulses Stew allows we might still allow ourselves to be influenced by.

A recent letter from Ed Henry, who is putting together AMA's Safety Code, assures us our two-year effort to get some language in the books to limit altitude may see fruition in the Code when it's published. We can be thankful for some progress but at this snail's pace will we ever start catching up? Not if we act Casper Milchtoast about safety, especially air-to-air safety. Just ask the RCers of the late 40's when RC was made illegal by the simple expedient of withdrawing use of public frequencies for such use. No hearings, no appeals, no nonsense! At that time we were out and it took some fancy talking and promises to get us back in the air, back in business, back to buying all the things the future held for us where we were wise enough to be prudent about the present and mature enough to know there is a tomorrow that has to be lived, to be paid for, to be enjoyed. (That's what makes us different from the other animals of nature, fellows . . .)

And we sincerely hope we haven't bruised any feelings; yours, dear reader; or yours, DCRC stalwarts; or yours, AMA, when we air our impatience; or yours, Stew Vance, for taking advantage of the good intentioned words from your newsletter we enjoy reading so much each month . . . Now we'll button that shirt back up . . .

So as to not end the column on a down beat, we'd like to nominate Duke Fox as the manufacturer with the most modesty about his great products. We carried a small item a few lines back about the enduring Duke, but it took a trip to Toledo (of a friend, since we were in a hospital!) to get the story of Grover Lowery who flew his Fox 74 powered original 8' span ship 2,086 miles down the Alcan highway in some 10 days of flying. One day he made a 311 mile non-stop hop, and the temperature was only a mere -45°! He used Fox Missile Mist, naturally, but added an anti-freeze additive. Now, that's a new wrinkle to us California-Texas types . . . Grover's daughter Regina did the driving which also has to be a considerable feat since the task took 58 hours to do. By the way, the temperature did get down to a **minus 62** on January the 14th, but that didn't stop Grover and Regina from making 203 miles that day in 4 hops. And the Fox 74 engine went on and on like cold was natural. Congratulations, Duke. We'll be looking for all those new goodies in the shape of those new engines Meyer says are coming down the pike from Ft. Smith . . .

Next month, the 1969 RCM "BEST N/L EDITOR" Awards . . . ●

EVOLUTION

(continued from page 29)

good alignment. To this box section glue the sheet sides, pull the tail ends together, and glue in the rest of the formers.

It helps a lot to make razor saw cuts in the side pieces to aid in bending the sides below the leading edge and the trailing edge of the wing. Make these cuts on the inside, the full width of the sheet, but do not saw clear through. Then crack the sheet toward the inside enough to give a good bend. During assembly of the fuselage fill these cracks with glue.

Assembling the above over the fuselage top view will assure a true alignment. Next, install the nose gear mounting nuts, after which the bottom sheets may be glued on. Be sure to install your tail surface controls before gluing on the top sheet. (I used large size plastic soda straws, glued into the fuselage to contain my control arrangement installed later.) Also, cut out the fin slot in the rear top sheet before gluing it to the fuselage.

WING

Pin the leading edge and the bottom trailing edge strip to the plan. Glue in the bottom center section sheeting, then all the bottom cap strips. Using scattered ribs loosely for guides, glue the lower front spar and the rear spar to the lower sheeting and cap strips. Now glue in all the ribs except the R1-A's and R1-B's. Since the ribs are cap stripped, 1/16" sheets may be used for making on the stripping and sheeting. Taper the top spar as noted on the plan and glue it in place.

At this point, (if you haven't built two wing panels of the same side!) you should trim the center sections so both panels fit together with the proper dihedral, then glue them together. Glue in the 1/16" plywood dihedral braces and the R1-A's and R1-B's. When the dihedral joint is dry you may glue on the top front sheeting, top trailing edge strip, center section, tip sheeting, and the cap strips, in that order. This top work should be done on one side of the wing at a time (right or left side) while that side is pinned down. (When you lift the glider-length wing off the work board you will notice a built-in twist with the leading edge warped down at the tip about one to two degrees. This is desirable and should be maintained when covering since it will prevent tip-stall while in flight.) Glue the wing tip on while that side is pinned down.

EMPENNAGE

Construct the fin and stabilizer over the plan. When pinning down the leading and trailing edge of the fin, slip a strip of 1/32" sheet under them to compensate for the difference in the wood thicknesses. Do not glue the dorsal fin to the main fin until you assemble both to the fuselage.

Epoxy the elevator coupling mechanism to the stabilizer before covering. The notch for the tubing should be just deep enough to insure the centerline of the wire being right on the elevator hinge line to prevent binding. Cover all surfaces before hinging together. Use your favorite hinge arrangement. I prefer figure 8 thread stitching, using braided nylon fishing line, 15 lb. wood, but not around hinging area.

PYLON

Tape aluminum foil smoothly over the center section of the finished wing. With the surface grain running wing span-wise, cut and trim the 1/16" plywood base plates so there is a good fit at the dihedral joint when curved to the airfoil section. To hold these plates securely in place, run a dowel under the wing chord-wise below the centerline of each plate to enable the use of rubber bands. Now epoxy the joint. Next, epoxy the 1/8" plywood upright core to the base. To keep it straight while drying, I used a long piece of Scotch tape stuck to the wing about a foot from the centerline, passed over and stuck to the top of the upright and stuck to the opposite wing panel. When cement is set, epoxy the 1/4" plywood engine mount and top plate in place and allow to set. Then glue on the balsa pieces in the following order: upright side pieces, base pieces, engine mount filler blocks. Better choose your fuel tank and get the proper sized cut-out before gluing on the top block. Observe all grain directions.

GLIDER NOSE

Cut and form all pieces for a good, smooth fit around the curves. Bend the aluminum nose plate over the radius blocks so that no sharp bends result. It might be wise to drill a few random holes in the plate to insure better epoxy bonding of the wood nose to the plate. Have the plate screwed in place when epoxying the wood nose to it. If you expect the nose to receive much pounding on landings, it would be wise to fit the lead weight so there is very little

clearance between it and the engine mounts. If you should possibly not need weight, then substitute a wood block. This will discourage lateral movement of the nose tip.

FINISHING

Now what do you intend to do with this masterpiece, stand back and look at it, or fly it? It was designed for flying, so for this part, I tried to do it fast and easy. Here's how. You critics choose you own punishment.

First, shape and sand all parts to a good smooth surface. Next, heavily dope, resin or epoxy all wood parts that will be exposed, such as the engine section, fuel tank compartment, radio compartment, surface hold-down dowels, etc. (If you use resin, be sure to wipe these portions with an acetone moistened cloth before applying anything else over it. If you don't, the wax on the surface will prevent bonding.)

Next, cover all parts, except the pylon and nose piece, with "MonoKote" or similar material. I used "FasCal", a mylar put out by Fasson Products, of Painseville, Ohio, using the clear and then doping on one color coat, using "FasCal" for masking. A final coat of clear dope seals and protects the job. Of course, with a colored covering you need no dope.

Sometimes, when using these plastic coverings, some parts are so tightly sealed that when heat is applied, the trapped air expands and won't allow the covering to tighten. To solve this problem, merely prick a hole with a straight pin through the covering in each troublesome panel near the trailing edge on the under side. Start out with one or two holes, then prick more if necessary.

Another tip. Perhaps, you know about this, too, but if you don't . . . Sometimes panels that have compound curves won't draw tight without leaving a few wrinkles. If so, lay your iron onto the surface as flat as possible. Then move an edge of the iron across the panel, moving slowly toward a corner allowing the wrinkles to follow to that corner and then disappear. It may take two or more tries before you accomplish the trick, but it will work.

Some may wish to mylar the pylon and glider nose. However, for those who are new at this, it may be easier to give them a few coats of clear dope to a nicely glazed seal, and then color dope. If you do any finishing on the aluminum parts, start out with a primer recommended for that purpose, or the

dope will probably flake off.

The rest is up to you. If you do not know how to install the radio gear or engine, then in all probability, you will need help and guidance when flying it, at first. Even though this model is extremely easy to fly, if you have no previous experience, ASK FOR HELP FROM AN EXPERIENCED PERSON, and save yourself a lot of discouraging moments. He will also help you with any construction problems.

However, if you insist on doing it alone (be selfish about it), here are a few suggestions.

Make sure the C.G. is at least 35% of the chord behind the leading edge. Set all controls at neutral using the outermost holes on the horns.

Start out by taxiing on the ground, back and forth, literally driving it like a car, getting the feel of the controls. Do this slowly at first. Then line "yourself" (the airplane, unless you have wings) up with the runway and try to "drive" in a straight line, doing it faster and faster, giving forward pressure on the stick to hold it to the ground. On one of these fast runs, when you have finally been able to do this with full power, you will very easily allow the pressure on the stick to ease back, and – surprise! You're airborne! Don't panic now! Just chop the throttle and let it come down again. Soon you will want to continue on around.

After you are in the air check your trim. Let's not get lengthy about this here, but if the plane insists on climbing with the engine at a cruising setting, then put in a little down-thrust, enough to maintain good level flight. This, of

R/C MODELER MAGAZINE and FORT WORTH THUNDERBIRDS NATIONAL FUN FLY CHAMPIONSHIPS

WHEN: June 20 & 21, 1970 **AMA Sanction No. 63**

WHERE: Thunderbird Field on the West shore of Benbrook Lake, Southwest of Fort Worth, Texas.

WHY: To provide National competition for pilots who are not interested in pattern or racing competition.

PRIZES: Trophis 1 thru 10 in Open. 1 thru 5 in Junior Senior combined. Merchandise awards to be given all during the flying days.

COST: $3.00 pre-registration fee. $5.00 on-site registration.

HOW: Entry blanks may be secured by writing to: Chuck Cunningham, 5333 Wooten Dr., Fort Worth, Texas 76133. Pre-registration closes June 5, 1970.

course, will have to be correlated with any elevator trim necessary to attain a good glide with engine at idle. You will find other valuable trimming suggestions in previous issues of this magazine. However, if you use care in construction, it may not be necessary for further trimming. When you become more sure of yourself and want more control, then start moving your controls toward the inner holes in the horns.

So there is your tinker-toy airplane, "EVOLUTION". Although two of the seven configurations we have figured out so far seemed pretty wild, we have found out that they will be just the set-up for a very important use. But, that is another story . . .

CUNNINGHAM ON R/C

(continued from page 14)

to protect the battery from vibration (more deadly than fuel). The outside layer of Saran Wrap is to protect the foam from fuel, otherwise you'll have a wonderful little sponge lying in the nose sopping up all of that spilled fuel! This outside layer of wrap also allows pushrods to slip past the battery pack without dragging and causing an extra load on the servo. This is especially true of the nosegear pushrod. It carries a pretty big load anyhow, so why load it down with a foam rubber brake?

Now that the battery has been inspected, and properly wrapped (if not done so earlier), it's time to plan the installation of the radio equipment within the fuselage of your new bird. Almost all plans give you some idea of the location of the radio equipment. Many kits even provide more details, in the form of exploded drawings, and instruction booklets. The problem is that the instructions were generally built around one set of radio equipment. If you're flying that equipment, you're home free, just go ahead and follow the instructions. If you're using another type of gear, or perhaps an older, larger radio set, then you have to make compensations to get the correct balance point on the finished model. A point, here: If you are flying a larger set of radio equipment than the new mini rigs please be sure your gear will fit into the model before you start to build it. You can do this by positioning your servos, receiver, batteries, etc. on the side and top views on the plans. If it is too small, build something else. If it will work, but will be a tight fit, go ahead and build the bird of your choice, but as you build it, widen the fuselage here and there to allow you to cram your radio inside of it when finished. This is more important than you may realize. Always, plan ahead!

Planning is also necessary even when you are installing a set of radio gear that you **know** will fit. Take time out while you are building the fuselage to install the servo rails in such a position that there is no doubt that the aileron servo will not bind on the elevator and rudder servos. Make sure that the aileron horns will have clearance at the pushrods. Draw an outline of your servos on the side view of the plans. Draw in the aileron servo in the position that it will occupy. Be sure that everything has good clearance. This is something to always consider when designing you own aircraft. Be sure that you have allowed room for the radio equipment, and the fuel tank.

The newer type radios have another wonderful feature going for them: Servo boards. All major brands of radio equipment have their own servo mount-

(continued on page 72)

PIT STOP®

You Can Build George Siposs' Spectacular One-Eighth Scale R/C Car . . . . Winner Of 1970 M.A.T.S. And Toledo Awards.

THE "ULTIMATE" R/C CAR . . .

LOLA-GT / McLAREN

For "Show" or "Go," This Le Mans Racer Won Best Car in Show Trophies at 1970 M.A.T.S. and Toledo Conference.

By GEORGE SIPOSS

There comes a time in every hobbyist's life when he wants to do the "ultimate". This could be a 25-foot wingspan glider, a WWI plane built exactly like the full scale prototype, an operating submarine or, a steam engine.

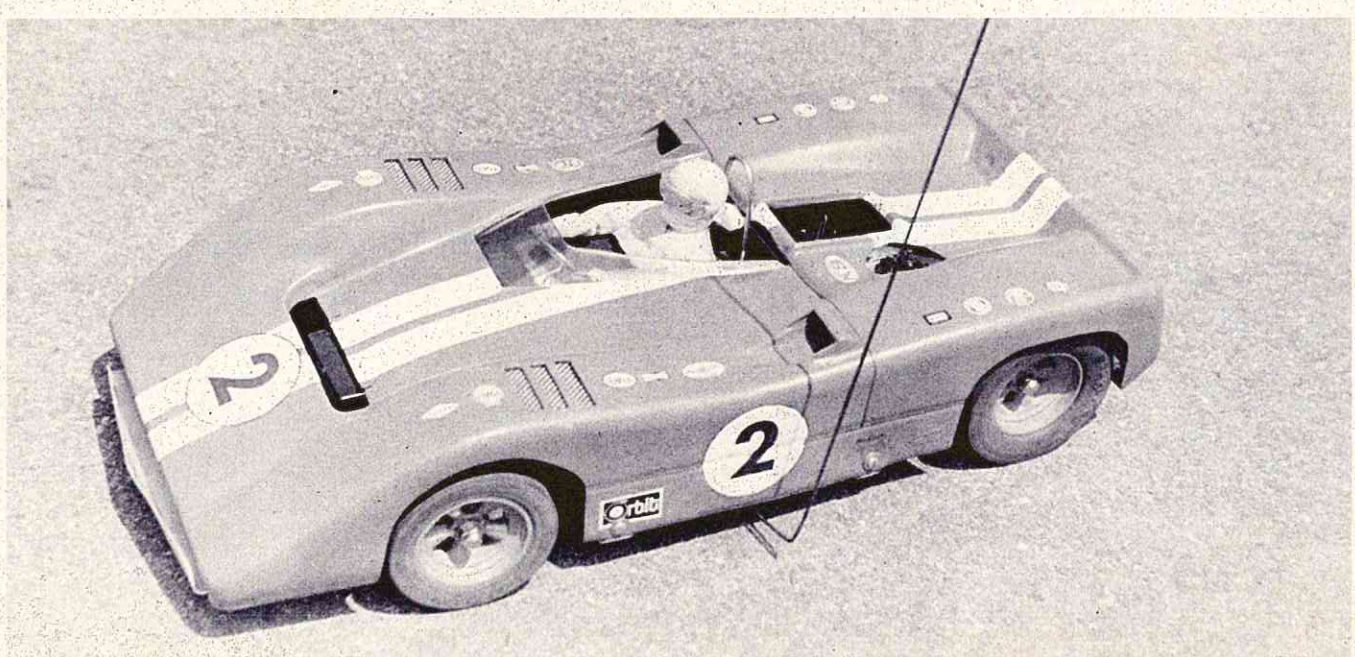
In my case it was to be a real race car scaled down to meet ROAR competition rules, with all operating features controlled by radio. I wanted to make a car which would do everything the real LeMans racer did but in 1:8 scale.

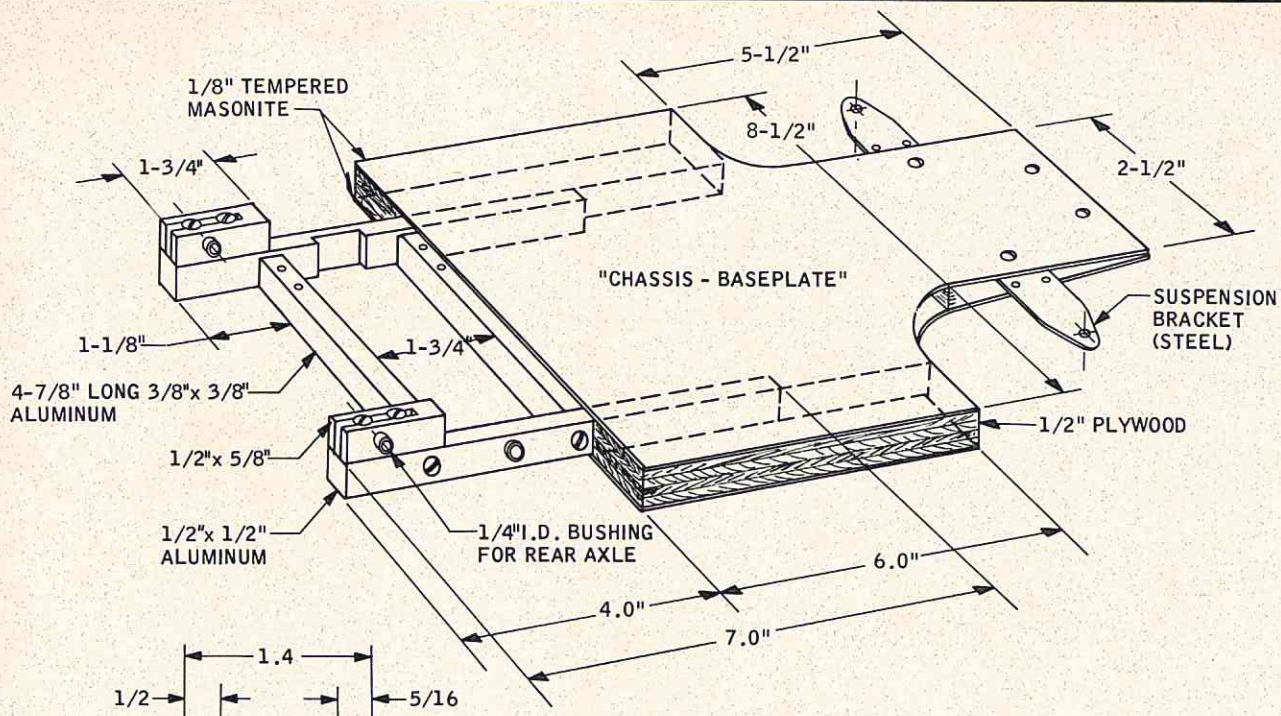
Where do you start when you want to climb Mt. Everest? Where do you launch your boat when you want to circumnavigate the world? How do you start a project of this magnitude? The Chinese proverb says: "Every journey starts with one step". And so it was that I built a simple car at first, steering under proportional control. Then a second one, this time with throttle under separate control. The third car had an honest-to-goodness working gearbox in it and the car described in this project represents my fourth effort. I used commercially available components, to be sure, where extensive machining was indicated. But the configuration is totally new and I have yet to see another car laid out in the same fashion and with so many operating features.

The basic chassis layout is a derivation of the famous Lamborghini-Miura with its transverse engine layout. This permits one to use an engine, clutch and gearbox powertrain in a straight line close to the rear axle for proper weight distribution and uncluttered cockpit space.

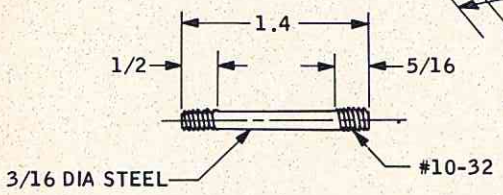
If you want to build another car just like this, or similar but with your own ideas incorporated, you can refer to the drawings and go from there. Obviously this is not a project for beginners, however, anyone with a great deal of common sense, patience, and a set of tools should be able to complete the car without too much trouble. As I mentioned before, the hard to make parts can be purchased commercially. The wheels, tires, clutch, gearbox and engine can be ordered from Ra/Car Developments, 338 W. Lincoln, Anaheim, California 92805. The chassis bars are also available from Ra/Car, in fact you should order their (now obsolete) SPORTSMAN kit which has this chassis in it and only slight modifications will be required. There are enough dimensions on the drawings so that you can proceed on your own if you do not want to purchase the chassis components. The front suspension is entirely scratch built from 1/16 thick cold rolled stock, and you should be able to

Upper Rt: Mary Hively displays the operating gullwing doors of the "Show" version. Below, the "Go" version is straightforward with a McLaren body. At full throttle the car roars down the straightaway at 28 M.P.H. - - - a scale speed of 228 M.P.H.!

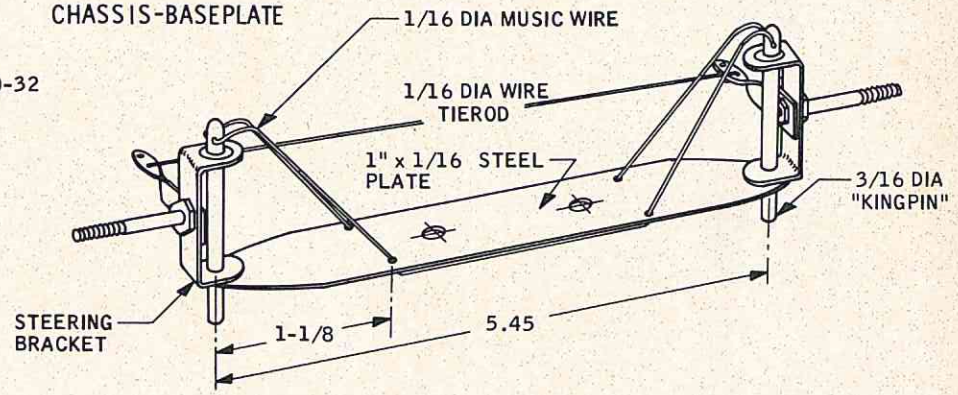




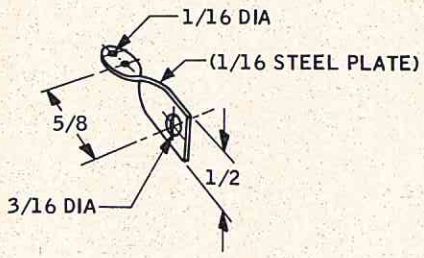
CHASSIS-BASEPLATE



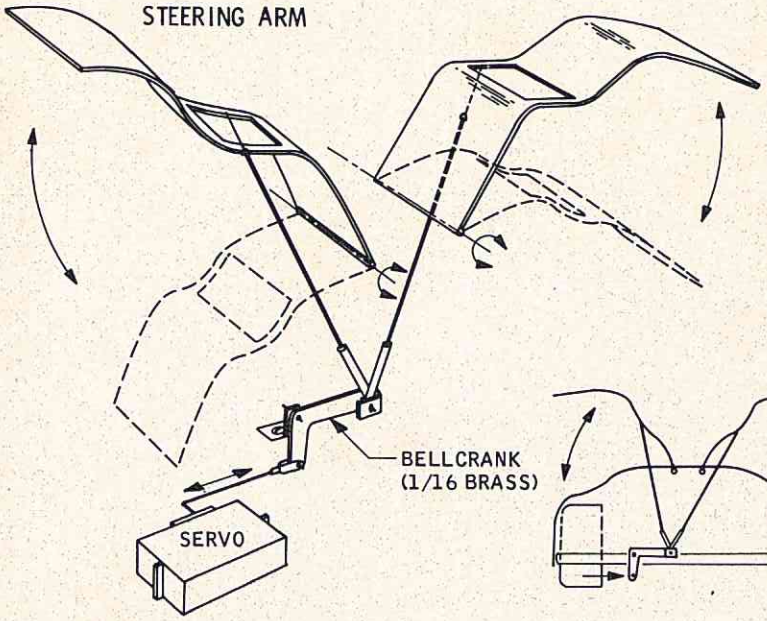
FRONT AXLE



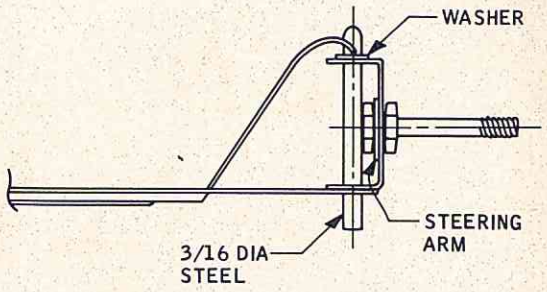
INDEPENDENT FRONT SUSPENSION ASSEMBLY



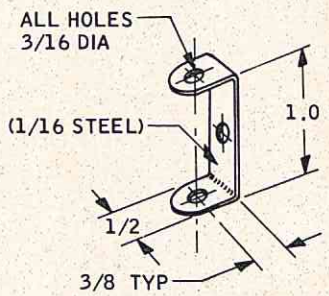
STEERING ARM



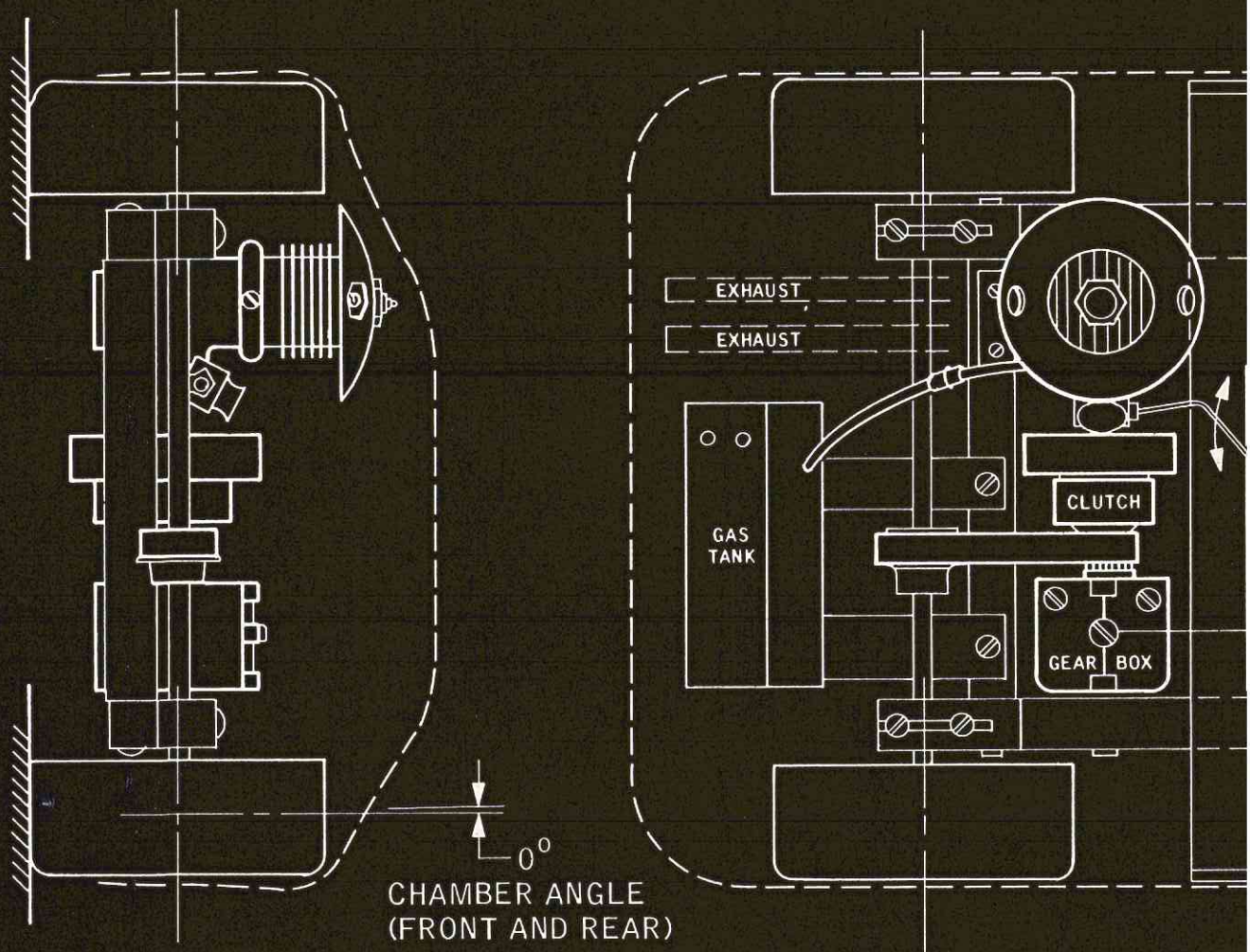
"GULLWING" DOOR OPERATING MECHANISM



SUSPENSION ASSEMBLY



STEERING BRACKET



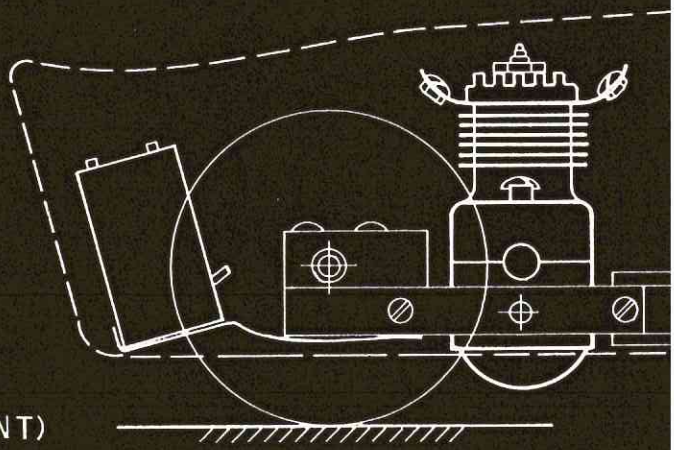
OPERATING FEATURES:

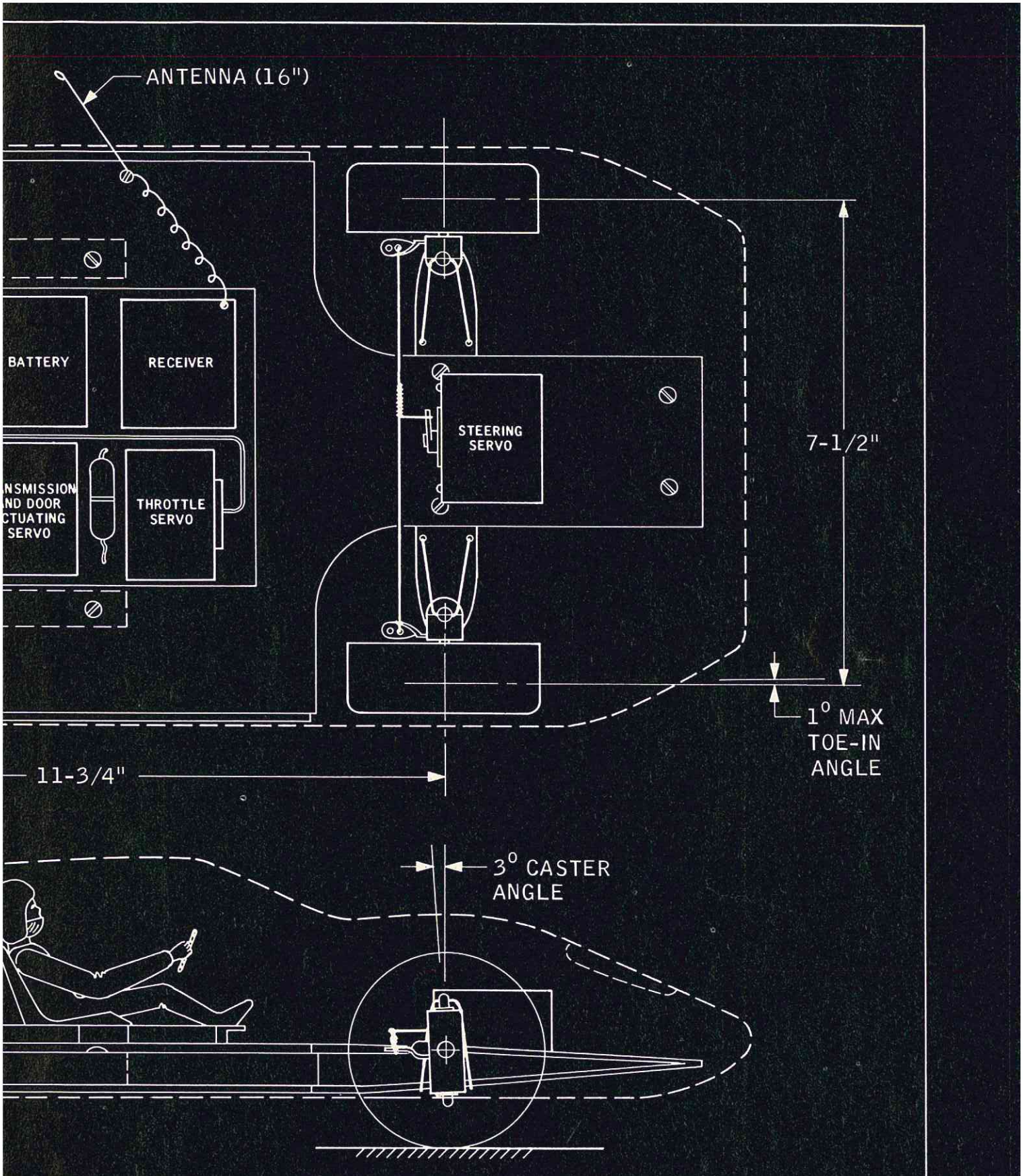
PROPORTIONAL STEERING, THROTTLE, 2 SPEED GEARBOX (WITH NEUTRAL), GULLWING DOORS, CENTRIFUGAL CLUTCH, INDEPENDENT FRONT SUSPENSION.

3-SERVO DIGITAL PROPORTIONAL RADIO BY "ORBIT".

ENGINE = .19 cu in. "MC COY"

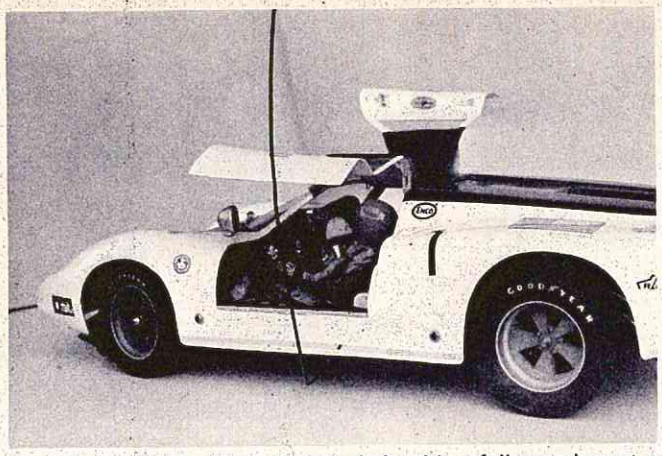
WEIGHT = 5.9 lbs (62% REAR, 38% FRONT)
FUEL TANK CAPACITY = 2.5 liq oz.
TOP SPEED = 28 mph ACTUAL



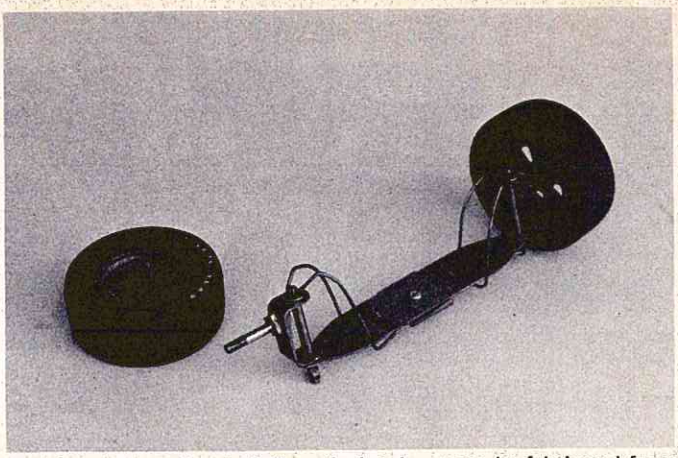


"LOLA-GT" RADIO CONTROLLED 1/8-SCALE RACE CAR

DESIGNED AND BUILT BY: GEORGE G. SIPOSS
SCALE OF DRAWING = 1:2



Operating gullwing doors and a cockpit with a full complement of instruments add much to the proud beauty of the Lola—GT.



The front suspension is fully articulated yet can be fabricated from simple parts in your own workshop.

duplicate it without too much trouble.

Let us discuss the various subassemblies so that you may see what is important and what is not.

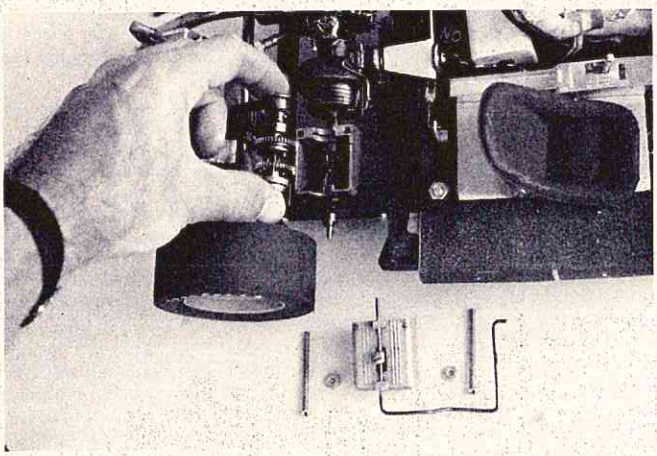
FRONT SUSPENSION

Fabricate a set of parts from cold rolled steel plate and round stock. Use regular No. 10-32 nuts to hold the steering bracket, steering arm, and front axle together. The steering arm can be twisted after it is assembled and small holes drilled on one end to accept the tierods and/or plastic clevises. 1/16" dia. music wire is used as the spring element which is bent to the shape shown. The spring pressure has to be such that the steering bracket is pressed firmly against the long plate. In this manner there is some preload on the individual axles and they will not flop around when hitting every little pebble on your "racetrack". The wires are led to the bottom of the long plate where they are held by a small plate until the whole front suspension assembly is mounted on the

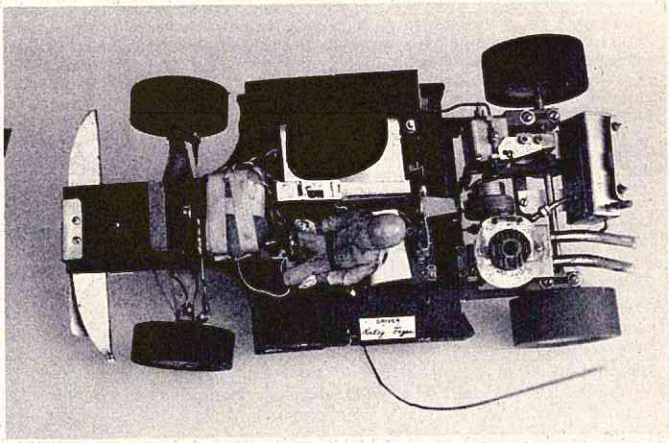
CHASSIS

which is made of tempered Mason-

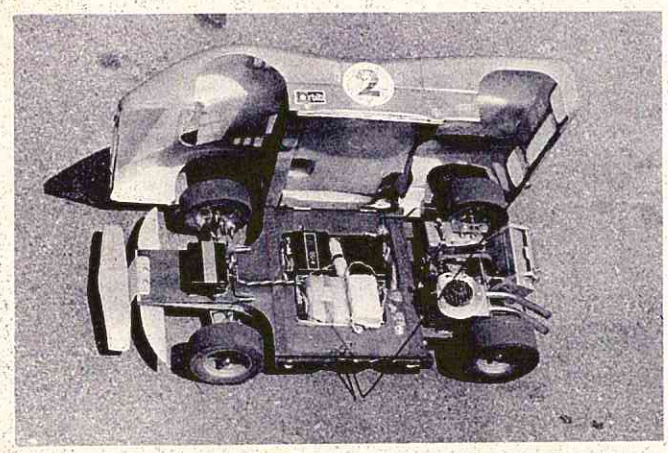
(continued on page 82)



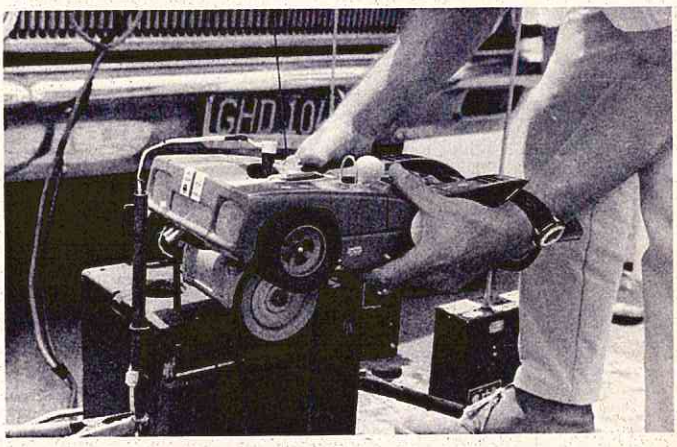
The gears in the gearbox are in constant mesh. Maintenance is quite simple. The rear axle is driven by a cogged belt.



The overall layout of the "Show" car is simple. Note gas tank location and fuel filter. Receiver is behind steering servo.



In this view, cockpit detail has been removed from the car. Driver sits on a platform. McLaren body is held on by hinges and spring clips.



The engine is started by rubbing the exposed bottom of the flywheel against a fast rotating rubber faced wheel.

PIT STOP

BY: DON DEWE

Control Technology's 1/8 scale, all-electric Scorpion hits a top speed of 20 M.P.H. and scales to the performance of a full-size Formula I.

RC car racing is presently one of the most rapidly growing facets of the sport and hobby of radio control. For this reason, RCM is commencing a new monthly segment of its publication entitled *Pit Stop*, which will be devoted to radio controlled car racing in the United States, and throughout the world. RCM readers interested in this aspect of our sport are urged to submit their hints and kinks, how-to-do-it feature articles, construction articles, and letters and photos of individual as well as club activities. We hope that you will accept this invitation to share your ideas – your activities – with your fellow RC car enthusiasts. Submit all material to RC Modeler Magazine, Pit Stop, P.O. Box 487, Sierra Madre, California 91024.

★ ★ ★ ★ ★

With respect to the rapid growth of RC car racing, nowhere is this growth more apparent than in the Midwest. Originating in California, the first cars were seen in the Midwest in early 1968. Some informal parking lot sessions were held that year among the people in anytown large enough to have more than one enthusiast. In 1969 formal races were held in the Midwest in four different cities – Ft. Wayne, Indiana; Chicago; St. Louis; and Indianapolis.

For 1970 it has been decided to expand these events into a series to determine a 1970 Midwest RC Car Champion. The official designation is "Series 70." The schedule is as follows:

June 21, Ft. Wayne, Indiana – contact David W. Palmeter, 5728 Fontana Drive, Fort Wayne, Ind. 46805; **July 12**, South Chicago (Flossmoor) – contact Roy Moody, 755 Ash Street, Flossmoor, Ill. 60422; **August 9**, Indianapolis – contact Dan Powers, P.O. Box 297, Westfield, Ind. 46074; **September 13**, North Chicago – contact Ken Ito, c/o Speedway Hobby, 6023 Dempster Avenue, Morton Grove, Ill. 60053; **October 11**, St. Louis – contact Bill Campbell, c/o Delta Systems, Box 754, Bridgeton, Missouri 63042; **November 8**, Milwaukee – contact Larry Hilmoe, 9419 Caddy Lane, Caledonia, Wisconsin 53108.

All races are confirmed with the exception of the Milwaukee Event which is tentatively planned as an indoor event at the State Fairgrounds. The races will be for 1/8 scale, gas-powered cars conforming to the rules of the Radio Operated Auto Racing Association (ROAR), 2855 Velasco Lane, Costa Mesa, California 92626.

★ ★ ★ ★ ★

As the ROAR Eastern Representative, Robert E. Valyou, Jr., 42 High St., No. Billerica, Mass. 01862, is trying to organize groups of interested ROAR members who would like to get together and race their 1/8 scale, radio controlled cars, or just see what cars other members are racing, building, or planning to build. For those members who have yet to build or are presently building a car, this would give them the opportunity to see cars in action and get first hand time-saving advice from those who have built, tuned, and raced their cars. These groups would be centered around the larger cities of New England so that members could get together on a regular schedule to race, swap ideas, etc., without having to travel great distances. Then, during the good weather months, they could meet, monthly, at centralized locations throughout New England to race and see what the other groups have been doing since the last meeting.

If you are a RC racing car enthusiast on the Eastern seaboard, you are urged to contact Bob so that groups of racing car enthusiasts can be organized with races set on a regular schedule. In this fashion, more people will see and hear about this new hobby-sport, and before you know it, 1/8 scale, RC auto racing will become one of the most popular leisure time activities in that area. Once you have seen one of these cars in action, or better yet, several cars racing against each other, you'll realize how popular this new activity is going to become. The New England racing season runs from April to October with formal monthly races planned plus informal weekly practice races. As local groups are formed and more cars built, these races can, and will, be held in several different locations of New England during the racing season. If you are seriously interested in this fascinating and challenging sport, drop a letter to Bob, become a member of ROAR, and start building your own 1/8 scale, gas powered, radio controlled racing car.

Hy Johnson of Dynamic Models.

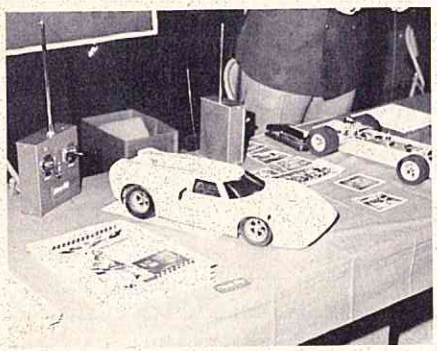
Len Zaro at RaCar booth.

Shot of Dynamic's car bodies.

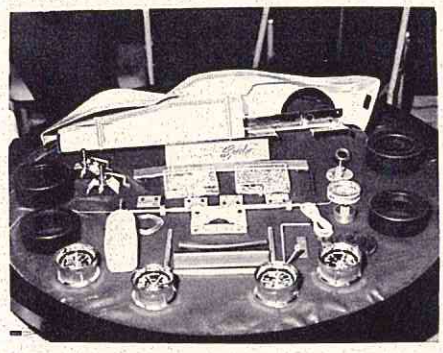
Indy R/C Specialties with complete line.

Wenzel Engineering with Wen-Car.

Control Technology's electric Scorpion.



CitizenShip's new R/C car.



Heath Spectre in kit form.

Completed Spectre from Heath Co.

R/C AUTO RACING AT TOLEDO

The Heath Company, Benton Harbor, Michigan 49022, announces its entry into the exciting realm of radio controlled model car racing with the introduction of their "Spectre" race car. The philosophy begind this new product from one of the nation's largest electronic firms, is that the cost of enjoying RC car racing need not be excessive. This is proven by the new Heathkit GD-101 RC car kit. Although it costs half as much as others, the "Spectre" is completely equipped and needs no modifications before accepting any proper size RC engine and any any proportional radio system.

The Heathkit "Spectre" 1/8 scale car body measures 19-3/4" in length. This snap-on body is a single piece of white high impact plastic – almost indestructible – with GT-Sports styling. The car reaches scale speeds of up to 200 mph.

The design of the "Spectre" incorporates many proven automotive principles that combine to give it much of the appearance, tracking, cornering, and overall handling of its full-size Grand Prix counterpart. It features independent front wheel coil spring suspension with adjustable toe-in and caster, live rear axle, chrome plated chassis and special rubber tires that fit on nylon "mag" type wheels.

The car's "sidewinder"-type engine mount accepts any .15 to .23 cubic inch R/C engine. Other features of the car include an adjustable centrifugal clutch, gear train with a 5.5:1 ratio, automatic brake and an exclusive Heath molded plastic radio equipment case to keep electronics clean and free from dirt.

The Heathkit GD-101 "Spectre" car kit includes the car body, chassis, wheels & tires, 4 oz. fuel tank & tubing, equipment case & protective foam, centrifugal clutch & gears, axles, servo linkages & mounting tape, all hardward, decals, numbers and a comprehensive manual.

The mail order price of the Heathkit GD-101 is $49.95 F.O.B. factory. For more details and complete specifications write Heath Company, Benton Harbon, Michigan 49022.

★ ★ ★ ★ ★

Did you ever wonder why it is that automobile conoisseurs prefer to buy Ferrari, Jaguar, Lotus or Aston Martin products? It is simply because that those cars have a race-breed heritage which guarantees success.

Ra/Car Development Company has the most extensive experience with RC race cars in the country. After all, they pioneered this sport over four years ago,

and today has the most active racing team in the country. Their cars have won two National Championships and several Trade Show awards both for performance and appearance. If you want a model car chassis which looks like a full size car scaled down we recommend that you purchase a plastic shelf model kit. But if you want an RC car, which best performs on your parking lot Grand Prix track there is nothing better than a Ra/Car. Yes, there have been comments on their "ugly-duckling" Winnah . . . but they know that under its brutally efficient looking body is a car which allows you to spend maximum time on the track and minimum time in the pits. All parts are accessible and serviceable. Ra/Car pioneered the two speed suspension and the cooling fin as well. And that goes for cast mag wheels. And Goodyear sidewall tires. And their clutches are still the standard of the industry.

That's why, for lowest prices and the most in performance you cannot lose when you go with Ra/Car. Complete kits and parts are available for the scratch builder. Indy, Formula, GT, sports and stock car bodies are also available, retail, mail order, or wholesale. Basic car kits begin at $69.95 from Ra/Car Developments, 338 West Lincoln, Anaheim, California 92805.

★ ★ ★ ★ ★

The first complete all-metal race car kit ever offered in the RC field has been produced in 1/8 scale by Dynamic Models, 13309 Saticoy Street, No. Hollywood, California 91605. This is a precision husky aluminum, adjustable, vibration free chassis with all necessary holes drilled and tapped for screwdriver and wrench assembly. The kit includes

(continued on page 85)

RADIO OPERATED AUTO RACING ASSOCIATION
2855 Velasco Lane, Costa Mesa, California 92626
Application for Membership

Name: _____

Address: _____ Zip: _____

Phone: _____ Age: 20-30, 30-40, 40 Plus

Occupation: _____

I understand that ROAR or its officers are not liable for any damage caused by me or my equipment or cars during races or practice whether organized by ROAR or not. I also understand that my membership may be revoked for unsportsmanlike conduct. Enclosed is my cheque for $5. made out to ROAR. Overseas members: 7.50 per year.

_____ _____
Signature Date

Make your check or M.O. payable to R.O.A.R. CALIF. and mail to: 2855 Velasco Lane, Costa Mesa, Calif. 92626

RCM 6-70

Send your R/C auto racing ideas, photos, and articles to R/C Modeler Magazine, Pit Stop, P.O. Box 487, Sierra Madre, Calif. 91024.

CUNNINGHAM ON R/C

(continued from page 59)

ing boards, as well as some specialized boards that are on the market. If you are not using one, dig up the small cost to get a set of servo boards for your equipment. This will make your installation work much more simple, from the first aircraft to the last. Install your radio equipment on the board, and follow the directions to the letter. Tighten down where the instructions tell you, and keep it loose where you should. Never, never, never clamp down on the servo grommets. They are there to help absorb vibration, and a tightly clamped grommet is an invitation to disaster. Stay loose!

If you have pre-positioned your servo rails, then set about the business of mounting the servo board to these rails. I usually glue a piece of hard ¼" square balsa along each fuselage wall. I always mark the layout on the sheet fuselage sides as I'm building the structure, and quite often glue in the rails at the same time that I am constructing everything else. Position the servo board correctly in the fuselage, and then to support each end, glue in cross pieces of 1/8" aircraft plywood. These need only be ½" wide. I usually use Devcon 5-minute epoxy for this. When complete, screw the servo board down to these cross braces.

The next area to work on is the installation of elevator and rudder horns and pushrods. Of course it depends upon the size of your aircraft to determine what type of horns to use, as well as the size of the pushrods. If you're building a .19 to .35 ship you can be a bit more carefree in your selection of horns and pushrods, than, say, with a Formula I racer, or a screaming seven pound .61 powered aircraft. For small airplanes I usually use nylon control horns bolted to the elevator and rudder. I use a piece of plywood (1/32", or a piece of plastic sheet, or something similar, on the head side of the attaching bolts. Drill holes through this small gusset plate, through the balsa of the control surface, and into the nylon control horn. Tap the horn for a 3-56 or a 4-40 bolt and fasten all of this together with a couple of bolts. If you are building a large aircraft it is a good idea to build a piece of plywood into the surface of the control surface, or use a 1/16" thick piece of plywood for a mount both top and bottom of the elevator surface. Make sure that the control horn is rigidly mounted. If the horn pulls out of the elevator during a violent maneuver, that's the last flight for your airplane. The rudder horn can be mounted in the same manner as the elevator.

Pushrods should be planned to avoid any binding between rods, or with the fuselage side, or conflicting with another servo. If you are building a small aircraft then you can allow yourself the luxury of a bend in your elevator linkage. If a large aircraft or a fast one, the elevator rod should be in a straight line from the servo to the control horn, with no bends. Do any needed bending on the rudder push rod. But even here, the rods are best left unbent.

The size of the pushrods again depend upon the size of the aircraft. On the smaller ships, use a pushrod of ¼" hard balsa. On larger models use pushrods of 3/8" hard balsa, or fiberglass rods, or fiberglass arrow shafts, or ¼" wood dowels, plastic hookups, such as NyRods, or any similar type material. The best pushrod is one that is stiff, strong, and accurately made.

At the servo end of the pushrod use a

piece of 1/16" music wire. Bend a right angle bend in one end, about ¼" from the end of the wire. Lay this wire along the pushrod for about three inches, mark this location and drill a 1/16" hole in the pushrod. Insert the bent wire in the hole and then lash the remaining length of the wire to the pushrod. This lashing can be done with thread, or fish line. I use the simplest method of all and wrap the wire to the pushrod with plastic electricians tape. Make sure that the wire is firmly attached to the rod. At the servo, again bend the wire in a right angle bend, for insertion into the hole in the servo connection. Use any of the commercial "keepers" to firmly attach the pushrod to the servo. The end of the pushrod attached to the control surface is made in much the same way, except that, at this end, use one of the many types of commercial clevises to make the connection between the pushrod and the control horn. Wrap the wire-to-pushrod connection in the same manner that you did the other end. As a matter of actual practice, I always make the control surface rod end first, then measure the rod against the fuselage, and the servo location, cut the wood portion to length, then attach the wire for the forward end. Do not make the last right angle bend in the wire until you have completed the pushrod. Always "center" the clevis on its threads at the control horn end. This will allow you maximum adjustment in either direction if you have made the rod a little too long, or a little too short.

After these pushrods are complete and installed, move on to the nosegear pushrod. Each modeler has his own way of installing pushrods, and especially so at the nose gear and throttle. The method that I like is simple, and quick and easy to make. From the rudder servo to the nose gear tiller, there should be as straight a line as possible, with one double right angle bend for adjustment, and to take up the shock of a tough landing. Use a piece of 1/16" wire with a right angle bend at the servo, go to the tiller (putting a small "dog leg" in the wire at some point) make another right angle bend to go through the tiller, and use a small keeper at each end. If the nose wheel is just a little out of parallel with the rudder, adjust by bending on the dog leg with a pair of pliers until the two track together. Just a little thought here . . . if you're flying from a rough grass or sod field you

should brace this pushrod at some point between the servo and the tiller. Make a brace of balsa and plastic tube at the center point and glue this brace firmly to the fuselage side. This will keep the pushrod from flexing and causing the nose wheel to kick over out of position. At the point where the tiller set screw bears against the nose wheel wire, grind a little flat spot. This will give the set screw a good seat, and help prevent the wheel from twisting in the tiller. You can grind this flat spot with a file, or a bench grinder, but the best all around tool to have is a Dremel Moto tool. The latter can't be beat as an aid to the model builder.

The same type of connection is made to the throttle. Run a straight piece of wire between the throttle and the servo. The exception is that, at the engine end, the connection should be with a nylon clevis. Again, center the clevis on its thread prior to fastening the clevis to the throttle. Run this wire back through a small hole in the firewall toward the throttle servo. If this wire is not long enough to go all of the way, splice on a piece of 1/16" wire. Make the splice by cutting a one inch piece of brass tube, slip each end of the wire half way into the tube, and solder in place. Make a right angle bend at the servo, slip on a keeper, and then you're done. Turn on your radio and check to see that all controls are working properly, and that the nose wheel turns in the same direction as the rudder.

Ailerons are made in the same manner, especially if your aircraft has strip ailerons. Use a clevis at the aileron connection, and a right angle bend at the servo. Again, don't forget the keeper. When making these hook-ups always be sure that you have centered each surface with its main surface. By that I mean make sure that the ailerons are actually projections of the airfoil, not cocked up, or drooped. Try and line up the ailerons as extensions of the wing, and be sure that they are in the same plane relative to one another. Don't make a hook-up with one aileron up and the other down. Try and hook them up correctly, again with the clevises centered, so that any field and flying adjustments will be to correct slight faults in the aircraft, not major boo-boos in the finishing department.

Fuel tank installations I'll leave up to the engine man, C. Lee, but, be sure that you take special pains with your tank set up so as not to build-in a kink in the fuel line. Aircraft without hatches look simply great at the flying field, but if you're new to this sport, use a hatch to

allow easy access to your fuel system. You will note that the most popular pattern aircraft of all, the Kwik Fli, uses a big old ugly hatch right up front. And this is just so that any tank problems can be corrected without a major overhaul. The location of the tank to the engine is critical. Try and keep the center of the pickup tubes about 3/8" below the center of the needle valve. If they are higher up, it will cause many headaches trying to start, 'cause your engine will always be flooded. Lower settings can be tolerated much easier. Allow the tank to float in a bed of foam within the tank compartment. Don't pack it in tightly as this will cause the fuel to foam in the tank, and result in engine running problems.

This, then, is what is meant by "installing your radio gear". Once you have developed your own system it becomes second nature to you, and you will, no doubt, develop shortcuts of your own. By cutting out some of the frills, you can get out and get flying sooner. Good luck, and Happy Landings. ●

ENGINE CLINIC

(continued from page 12)

& B. Since both of these engines are supposedly the same size and made by well known companies, why does the Veco out perform the K & B? Is there any other reason than just a plain "it's better"?

If you can come up with some kind of an answer I'd appreciate it.

Many thanks,
Ernest L. DeBardeleben
Orlando, Florida

As simple as your question is Ernest, it is a little hard to answer, but I'll give it a try.

A lot of people have tried to get into the model engine business over the years. Some have had design experience, a knowledge of the correct materials, etc., and others have not. Many of these engines fail before they are on the market any length of time. Your post WW II era was a good example of this. Many machine shops that had been doing defense work suddenly found themselves with nothing to make. The hobby industry was booming and this looked like a good field to get into. However as many of them found out, having a machine shop and designing a good dependable engine were two different things. The development of an engine takes many years of trial and error. There are only a handful of people in the country today who can tell you

which material has been proven to be the best piston-sleeve combination, is best for crankshafts, etc. You will not find it in text books.

Then there is always the difference of opinion between engine designers themselves. One has his idea of timing, port differential, compression ratio, etc., and another has his. The end result is the designer whose ideas prove to be the best. All engines do not have the same timing, use the same material, have the same bore-stroke ratio, etc. The variables that can affect the performance of an engine are many. Thus, the fact that one engine will be better than another.

I would like to say that if your K & B .45 will only swing a 10-6 prop, then there is something wrong with that engine. Most likely it is over the hill. It should swing an 11-6 right along with the Veco.

★ ★ ★ ★ ★

Dear Clarence:

Since Super Tigre engines are the cat's "meow" here, almost exclusively where I fly, I thought it would be nice for someone to shed some light on the new ST carburetor. We've had very poor results with them in spite of doing exactly what the instructions tell us to about regulating the fuel mixture for high and low speeds. The result is that as fine as the engine is, we always wind up, as in my case with my new ST.56 with Kavan carbs and muffler's, usually the Mini-Vox.

I refer you to a picture of an ST type equipped with the new carburetor and exhaust restrictor on the back cover of M.A.N., June 69 issue. It clearly shows the exhaust restrictor mounted in very normal fashion. However, we have found it is almost impossible to mount the baffle so as not to get full throttle with it closed and idle with it open! The throttle works exactly opposite to any of the one's I've ever used. Some fellows have even gone to the trouble of changing servo polarity in order to have the proper TX setup. Unless I missed one of your articles entitled "How To Run An Engine On Only Backpressure", the carburetor is definitely a bit of a mystery.

Sincerely,
John Fiorito
West Germany

Quite a few fellows have written about this, John. I am afraid Super Tigre pulled a boo-boo. Super Tigres new carburetor requires a pull rather than a push motion for high throttle. Yet the exhaust baffle is set up for the old carburetor that did have a push motion for full throttle. The result is, the baffle is open at idle and closed at full throttle as you have found out. The cure is very simple though. Just turn the baffle over and bend a kink in the link to shorten it. The carburetor and baffle will then work together as they should, but high throttle will still be a pull motion.

★ ★ ★ ★ ★

Dear Clarence:

Have you heard of an oil called Castrol? It is made in England. They make several different grades. It's a Castor Oil based racing oil for cars, motorcycles, etc. I can't find Castor Oil here in the Canal Zone.

The Fiat dealer in Panama City sells this Castrol and one of the grades is called M-SAE 50 and he showed me in the specification book that this grade is for two stroke racing engines and model airplane engines. The cost is $3.11 per gal. which is reasonable. I'd like to know if this is a good oil to use?

Thank You,
Sgt. William R. McManus
APO N.Y.

I have received quite a few inquiries from fliers outside the U.S. asking about Castrol. Castrol M is a castor oil lubricant and perfectly suited for model engine fuels.

It is a very strange thing, but in Europe, and outside the U.S., the Castrol people sponsor contests and generally promote their oil for model fuel use. In the U.S. they seem to have no interest. Many months ago when I was preparing the article on fuels, I sent a letter to the Castrol distributor in Los Angeles asking for some information about their product, availability in the U.S., etc. They didn't have the courtesy to answer. Maybe they are just too big. However similar letters to Baker Castor Oil and Union Carbide who make Ucon oil brought technical catalogs, answers to all questions, and their indication that they were only too happy to be of service to the modeling world. So if you have a choice between Baker AA and Castrol M, gang, you know which to use!

MODEL WIFE

(continued from page 6)

critical point in building my new Tach."

"Did she tell you that? . . . Did she also tell you that she wouldn't give me any lunch until I brought in the coffee cups and dirty dishes from Saturday? Now, I ask you, what kind of wife is that?"

"I didn't yell at her. I may have raised my voice when she told me to take the summer clothes up to the attic just when I was testing out my Tach, but I did not use violent language."

"She gets everything wrong. I didn't start building a new airplane after that. It was a glider I started months ago and she's been wanting to see a glider fly."

"O.K., so I forgot we invited the Hall's over for drinks. I wasn't rude to

them; I showed them where the bar was and said I'd see them in an hour. How did I know they were going to go home before I finished covering the wing?"

"Listen, Mom, you talk to her. I'm getting tired of eating TV dinners and there isn't a clean dish left in the house. And tell her I love her and miss her and the children very much. What did she say? She said she'd come back? Great; wonderful. When does she want me to pick her up . . . Saturday! Gee — I can't Saturday. I promised Bob I'd pick him up early to go flying." ●

VIEWPOINT

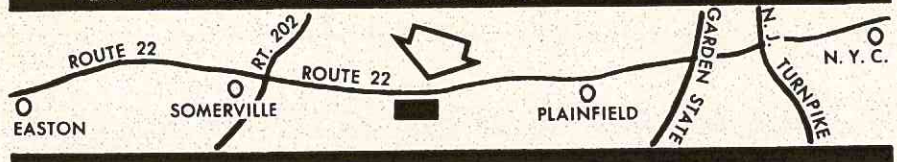
(continued from page 5)

World War I scale and semi-scale fly-for-fun events which will also be competitive and prize awards will be given for those events as well.

There is also a possibility of holding an Antique Vintage and WW I freeflight rubber powered event and a similar u-control event the same day and at the same site which will be Buder Park in Valleypark near St. Louis, Mo. . . . sort of an AAA WW I fly-for-fun!

We'd like to close off this month with two items — one is to welcome the new column in RCM entitled *Pit Stop*, devoted entirely to RC car racing, which is rapidly gaining popularity throughout the United States. We hope you will enjoy this segment and particularly the presentation of George Siposs's Toledo and Mats award winning 1/8 scale car which is presented in this issue. All RCM readers are invited to participate in this column.

We'd also like to extend our apolo-



gies to Carl Goldberg Models for a printing error which occurred in the March and April issue. Unfortunately, our printer picked up an older ad which did not reflect the recent price increases in the CG line of kits. Don't blame Carl – blame us, and we'll blame our printer, and it will be his problem to find someone else to whom to pass the buck!

By the way, did you hear the one about the British European Airways Captain who noted his radar wasn't giving him high quality signals and asked maintenance to look at it? When he returned to his aircraft the Captain found the inspection tag read as follows: "Captain reports dirty pictures on radar." ●

LOLA–GT

(continued from page 68)

ite, 1/8" thick. Two identical chassis plates are used, the top one has a large cutout in it to accomodate your radio gear. The servos, etc., can be mounted by the two-sided servo mounting tape but be sure to pack the receiver in foam to prevent damage to it. The Masonite plates are held apart by the

CROSSBARS

which are made from aluminum, or steel, or purchased from Ra/Car. A small recess may have to be made to accomodate the engine crankcase. Like any other project you just lay out your components and see what needs to be done. Small mounting plates make it easy to mount the engine on the 3/8" square crossbars. The two small blocks hold the

REAR AXLE

which is make from ¼" cold rolled round stock. The rear wheels are threaded and held on with jamb nuts.

THE CLUTCH

is commercially available but may have to be recessed to sit "deeper" on the engine so that the power train will not be so long. The clutch bell has a 1/8" dia. shaft protruding from it which doubles as input for the

TRANSMISSION

The standard Ra/Car transmission is used but the front end is cut off with a hacksaw because we do not need a housing for the bevel gear drive. The bevel gears are not used in this car. Instead, the top shaft protrudes out towards the engine and has a small sprocket (timing gear pulley) attached

to it to drive a timing (cogged) belt commonly used for movie projectors, etc. The belt is ¼ inch wide and drives a larger toothed wheel which is fastened to the rear axle. The two pulleys are in the ratio of 2:1 which is the same ratio as the discarded bevel gears so that the final gear reduction of the power train is 7:1 and 5.2:1. The transmission also has a neutral in the center position to permit free revving of the engine in the pits. A simple bracket from the crossbars leads to the

Gastank which has a 2.5 oz. capacity.

A handmade **exhaust system** keeps the car free of oil. I recommend the use of an air filter on the engine (steelwool wired on the intake) and a filter in the gas line. It should be pointed out that those modelers who do not want to use a gearbox, which is shiftable, can build the car without the gearbox but, instead of a belt drive, the output of the clutch goes through the ½ inch aluminum bar and has a 16 or 20 tooth gear fastened to it. The rear axle in this case must have a 96 tooth gear fastened on the outside of the block which holds the axle and in this case the car is a simple "sidewinder" but still with very remarkable performance.

The **engine** has a cooling head fastened under the head, made from 1/16" aluminum to serve as a heat sink. I have never yet "cooked" an engine with this heat sink.

I chose the **Lola-GT body** because it is low and has gorgeous lines that lend themselves to customizing. The windows were cut out with an X-Acto knife and small wire hinges on the top serve as pivot points. When the car is used for "show" instead of "GO" I simply disconnect the gearbox linkage and connect the door operating pushrods to the bellcrank which is actuated by the gearshift servo. In this manner the doors can be raised and lowered in a true scale effect. The gearbox can be locked in low or high gear and the car will still start up smoothly (it has a centrifugal clutch like go-karts) and so its operation is not really hindered but when it comes to a halt in front of a group of people you should hear the gasps as the doors gradually raise up on both sides.

The **antenna** is a coat hanger wire appropriately fastened to the underside of the car. The receiver wire should be as straightforward and short as possible. The receiver and battery should be well protected by foam rubber loosely wrapped around the components. The servos should be mounted on rubber

grommeted mounts but in a pinch double backed servo tape will do.

Some seasoned R/C hobbyists had doubts during the construction of this car regarding radio interference caused by metal parts rubbing against each other. Unless you are a very sloppy worker there is absolutely no problem in this regard. Just make sure that the components are securely mounted. Wires must not be kinked lest they break under vibration. I recommend that you bench test the engine before installing so that unnecessary fuel spillage, staining of components, do not make a mess of an otherwise well finished car.

LINKAGES

The radio in the car is the substitute for the human driver. The servos are substitutes for your arms and legs. Obviously, in a race car all controls have to work without backlash to insure smooth driving, the essence of high speed.

The steering servo is mounted over the front suspension assembly. Use an aileron mount with rubber grommets and fasten it to the chassis with servo (double backed) tape. Use thy rotary output because the linear output rack may jump cogs in a bad crackup. With the servo fully rotated the front wheels should not swivel more than 10 (ten) degrees. This is contrary to what most beginners want to do but after all you do not want to do 3-foot circles . . . you want to move fast on the straightaway and a sensitive steering setup will result in a car that runs like a cockeyed snake.

The throttle servo is located in the forward part of the chassis and actuates the engine throttle via a long U-shaped wire arm. This is intentional to allow you to deflect the engine throttle to rev up the engine in the pits without the use of the radio. The 1/16" dia. wire arm twists sufficiently to permit an "over-riding" action of the throttle.

The transmission actuating servo is connected to the transmission by a stiff wire which works very reliably since the gearbox does not stick (due to vibration) when the car is in operation. For the "show" version I disconnect the gearbox and reconnect the servo to the bell crank arrangement which operates the gullwing doors. If you still want to operate the car you can lock the gearbox in first gear and not use the servo for shifting at all. In this case, the centrifugal clutch still permits smooth starts (just like a mini-bike) albeit without the use of the gearshift feature. Ah well, when you pull up to someone

and operate the gullwing doors . . . the look on his face is your reward!

No project of this kind is complete without a driver in the cockpit. I hand made mine using the Williams military driver and a dummy body covered with blue coverall material. The dashboard is fully detailed with the driver's hands resting casually on the steering wheel. I suppose that a simple lever arrangement would make it possible to rotate the steering wheel whenever the steering servo moves the front wheels. You should be warned, however, against loading up the car with unnecessary features that will be knocked out of line in the heat of competition. In fact you may want to make a simple cockpit arrangement for the sports body when you enter the car in all-out competition.

The transmitter layout should be simple. You should use one stick for steering and the same stick should be used for shifting gears. Make a simple throw-limiting device on the transmitter to limit the movement of the stick in the up and down direction (akin to elevator) so that the servo output will correspond to the exact amount of movement required by the gearbox in the car. In this manner the servo will not "bottom out" before its full stroke is reached and excessive battery drain will be prevented. The other stick on the transmitter should be spring loaded in a dead-stick position so that the throttle will be deflected all the way when the engine is idling. Moving the control stick against the spring load will give you a feel much like pushing the accelerator in your family car.

So there you are. A car which is completely functional yet capable of winning a Concourse d'Elegance award just like mine did at the Toledo and M.A.T.S. shows so far. To me, this is the ULTIMATE! ●

PIT STOP

(continued from page 71)

spring shock suspension, new torque converter (transmission) that eliminates the need for a clutch; realistic scale wheels; tires that give maximum traction performance; Dynamic super detailed handling body in .060 Butyrate. Currently available are the Matra Ford Formula kit at $119.95 complete; the McLaren MK8A Sport kit at $127.50 complete; and a Rolling Frame Econo kit at $99.95. The latter is less body, gear box, and outriggers. All components are also sold separately. ●

Delta Systems, Race Car Division, Box 754 Bridgeton, Mo. 63044, offers their Delta Dash II, an RC contest winner which is available in kit form from $79.95. For further information send $1.00 for the 1970 illustrated catalog and design manual for a complete listing of kits and supplies.

★ ★ ★ ★ ★

The Scorpion from Control Technology, Inc., 344 Hamilton, Birmingham, Michigan 48011, is an all electric RC race car with an actual top speed of 20 mph. It is 1/8 scale with a 12 inch wheelbase and scales to the performance of a real Formula I. Two gear sets are available. Each Scorpion has proportional steering and throttle. Reverse and brakes are optional. The unit and all electronics are powered by high energy rechargable batteries. Just flip the switch and race. Available with a unique Scorpion radio system, or without, prices range from $139.95 including drive motor electronics, to $299.95 complete with car, transmitter, and charger. The unique Scorpion electronics system allows each transmitter to control three Scorpions at one time. Fifteen Scorpions may be raced together on the 27MHz band.

For further information write for Control Technology's catalog and complete details.

★ ★ ★ ★ ★

Just as this issue was going to press, Orbit Electronics, Inc., 11601 Anabel Ave., Garden Grove, Calif. 92640, announced the production of their new 3-channel digital system designed especially for R/C cars. Features include a soft neutral around steering with separate steering trim. A "Deadman's" spring-loaded throttle is provided as is an auxilliary channel for gears, etc.

The highlight of the system is, in our opinion, instant frequency changes which can be performed in a matter of seconds, right at the track, by simply plugging in new receiver and transmitter crystals.

Suggested retail price is $195.00, with optional nickel cadmium rally pack. The system will operate quite satisfactorily from standard pencells.

★ ★ ★ ★ ★

We'll look forward next month to seeing some photos and details of your latest RC car project and/or your club's activities. Whatever material you send in, you'll be helping this challenging and exciting new sport to grow by sharing your ideas, projects, and activities with other enthusiasts. ●