


RADIO CONTROL **MODELER**

JUNE 1969 75c 

the leading publication for the sport and competition flier



COMPLETE FULL SIZE PLANS

Jim Simpson's Sabik Mk 50

NEW ERA I

By Don Dewey

THE SLOPEMASTER

By Ken Willard

A few words about me.

I am Electronic Engineer and this is my day job.

From tender age two things attracted my interest and I managed to have them in my life.

The first was electricity and the second the bluesky.

I've found the model airplanes hobby in October 1973.

I love the wooden structures from scratch airplanes and boats also.

I started collecting plans, articles, books and anything else that could help the hobby of many years ago and have created a very large personal collection of them.

Since 2004 I became involved with the digitization and restoration of them and started to share the plans from public domain with my fellow modelers.

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

Certainly this will be a very long, difficult and tedious task but I believe with the help of all of you I will finish it in a short time.

I apologize in advance because my English is poor. It is not my mother language because I am Greek. I wish all of you who choose to collect and read this my work good enjoyment and enjoy your buildings.

My name is Elijah Efthimiopoulos. (H.E)
My nickname Hlsat.

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



Λίγα λόγια για μένα.

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

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

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

Το χόμπι του αερομοντελισμού το πρωτογνώρισα τον Οκτώβριο του 1973.

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

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

Έχω δημιουργήσει μια πολύ μεγάλη προσωπική συλλογή από αυτά.

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

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

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

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

Δεν είναι η μητρική μου γλώσσα γιατί είμαι Έλληνας.

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

Το όνομα μου είναι Ηλίας Ευθυμίουπουλος.(H.E)
Το ψευδώνυμο μου Hlsat.

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



RCM Magazine Editing and Resampling.

Work Done:

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

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

All Plans can be found here:

Hlsat Blog RCModeler Free Plans and Articles.

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

AeroFred Gallery Free Plans.

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

Hip Pocket Aeronautics Gallery Free Plans.

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

James Hatton Blog Free Plans and Articles.

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

Vintage & Old-Timer RCM Free Plans.

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

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Thanks Elijah from Greece.

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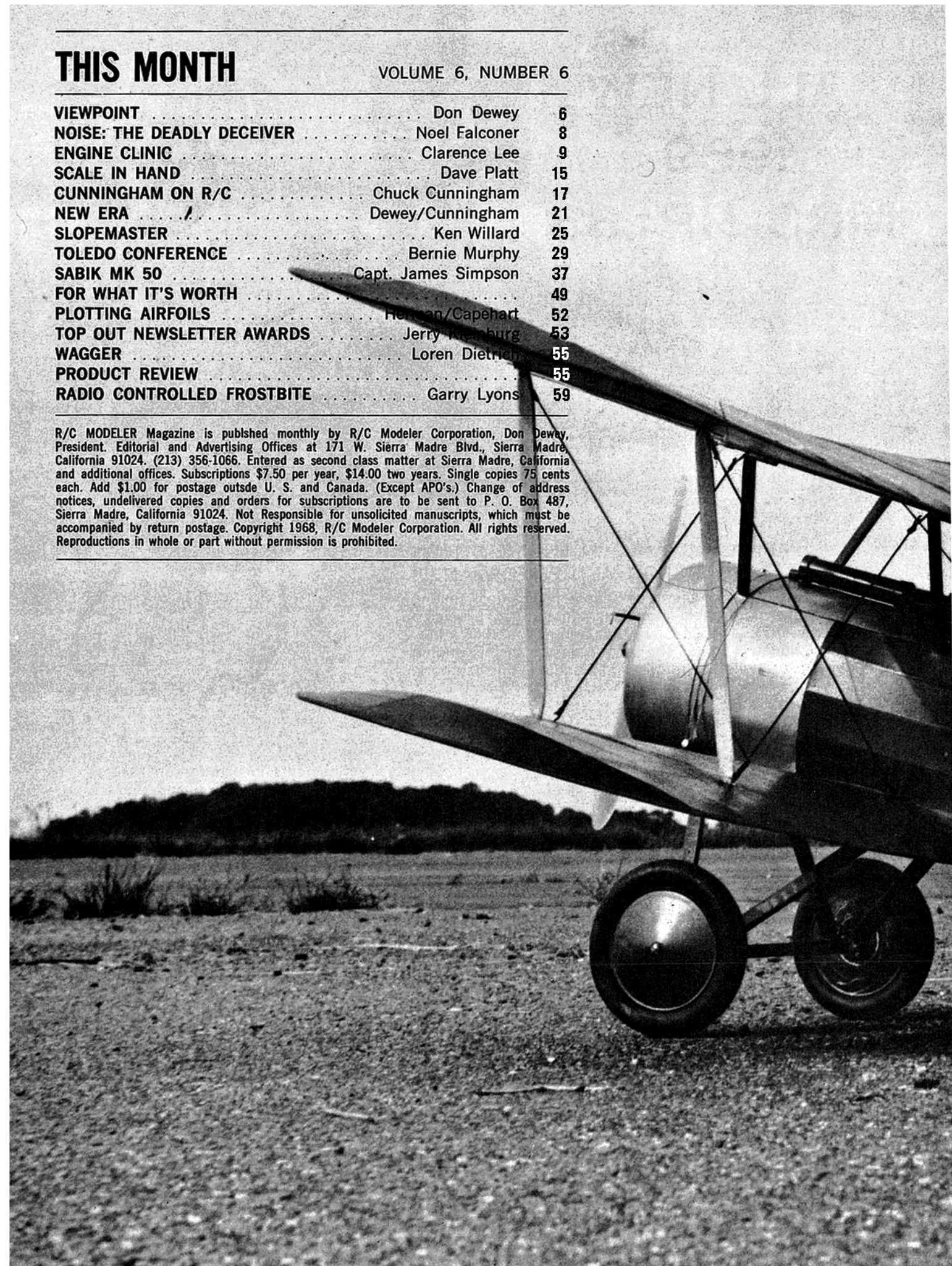
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COVER: Sandy Shields, Miss USAF Security Service for 1968, graces a beautiful landscape and poses with Art Williams' Citabria scaled from factory drawings. Ektachrome transparency furnished by Art Williams and Bill Hollenbach. FRONTSPIECE: Dave Boddington's scale Sopwith Pup, scheduled for publication in a forthcoming issue of RCM.



VIEWPOINT

BY DON DEWEY



The entire staff of R/C Modeler Magazine would like to thank each and every one of you who sent in the Reader Interest Survey Form which ran in one of our recent issues. Thousands of individual replies were individually read, the figures computed, and the final results tallied and computed. This now provides us with one of the most valuable guides available to any publication — a knowledge of what its readers want to see in that publication. These statistics are also being made available to members of the R/C industry as a guide for them to use in the months to come, in order that they may better serve your interests.

Here are but a few of the final statistics compiled from the Reader Interest Survey: RCM's average reader is 33.8 years of age with an annual income of \$10,825. 32% of our readers derive that income from an engineering or technical occupation; 26% from trade and general occupations; 15% from business and executive fields; 11% from the professional field (doctor, lawyer, etc.); 9% are students; and 7% are in the military service.

If you're dead center in the middle of these categories, you've been active in radio control for 5.1 years and in modeling, intermittently, for 18.5 years. Chances are better than even that you belong to an organized RC club as do 52.5% of your fellow

hobbyists. As a matter of record, you spend \$26 per month on your hobby, excluding major purchases.

With respect to your particular interests in R/C, Multi Sport and Sport Scale are your prime interests. Competition Scale is next in line, followed by Pattern Competition and Goodyear Racing. Galloping Ghost and slope or thermal soaring lie within the middle range of interests, with seaplanes, Open Pylon, rudder only and single channel at the bottom of the ladder. Virtually no interest at all was shown in competition power boats, R/C cars and vehicles, sport boating, sail yachts and scale boats.

As a sport and competition flier, you prefer an engine in the .45 to .60 range with the smaller (.19) engine gaining rapidly in popularity as the smaller radio systems begin to make their appearance. 60% of our readers fly a digital proportional system, with the majority of the balance still flying reed equipment.

With regard to R/C Modeler Magazine itself, you prefer aircraft construction articles and special how-to-do-it features, followed closely by RCM Product Reports. Following those, in order of preference, are technical type articles, electronic construction, RCM Visits features, and club and contest news.

With regard to the columnists — the guys who really make this magazine what it is — Clarence Lee and Chuck Cunningham were in the first and second slots for 'Engine Clinic' and 'Cunningham on R/C.' Ken Willard's 'Sunday Flier' was third, followed closely by Bernie Murphy's 'Kits & Pieces.' This was really an unfair question, since all of the staff columnists contribute greatly to the overall presentation of the magazine, and those answering the questionnaire found it equally difficult to rate their efforts.

We are honored to have been selected by 98% of those responding as the leading publication in the model aviation field, and equally honored by the fact that 55.27% of what you purchase for your sport and hobby is

influenced by advertising or editorial material appearing in RCM. Of the balance, 29.71% of what you purchase is influenced by dealer recommendations, word-of-mouth, and geographical preference, and 15% by the other three model aviation publications.

These, then, are the statistics in which we thought you might be interested. Again, we sincerely appreciate the time and trouble you took to complete the two page RIS Form, and trust you will enjoy the changes and additions your responses made in RCM.

Speaking of additions, we have two at our California offices — Trudi and Michele. Trudi is the pleasant voice you'll hear if you have occasion to telephone us, and the equally pleasant smile that will greet you if you stop by in person. Michele is our lovely new circulation assistant and is responsible for subscription changes and the like. All of the RCM girls — Kathleen, Pat, Carol, Sheila, Jean, Trudi, and Michele are here to make sure that the myriad editorial and business details of the magazine run smoothly and efficiently.

There's only one problem... they all run faster than I do.

Our apologies to Oscar Weingart who actually built the beautiful Grumman Widgeon that appeared on the frontpiece of the April issue, and which we mistakenly attributed to Dick Aggers.

THE CASE FOR SINGLE STICK

By HAL deBOLT

I would like to start off with a small bomb shell in the form of a question . . . How many flyers do you know who have switched from two sticks to single? How many have switched from single to two? The answer as I have found it is that there are those who HAVE switched from two to one, but I cannot recall a single case where a single sticker has switched to two and stayed with them! Isn't this food for thought?

The question could be asked . . . why have I not spread the single stick gospel? Frankly, for one reason is that it usually starts an argument among two stickers and I don't particularly enjoy arguing. Then too, long ago I thought this whole thing out and decided that there were advantages to a single stick operation and that I could not afford to operate without these advantages in my favor.

Almost a decade ago now a certain large electronics concern conducted a research project which cost many thousands of dollars, the object being to determine from every aspect exactly what type and form of equipment would be best suited to the flying of R/C models. This was a no-holds-barred sort of thing with the object being to determine the ultimate for R/C. The final report was not to be biased by any consideration such as cost or complexity, rather it was to set the design parameters for the "perfect" system for our purposes. Being a large concern they were used to approaching problems from every possible angle so as to consider every possibility. Naturally one of the prime requests was to make the system as simple and easy to use as it possibly could be, not only for installation and maintenance but also ease of operation while piloting an airplane

(continued on page 14)

model. Also, of course, they wished the most precise control of the airplane as possible.

If you forget about the technicalities of radio methods and consider only the basics involved when flying by remote control several things become obvious. First, you realize that when flying the model a chain of "things" are continuously happening. As an example, consider that the model is in flight with a human at the controls and it is desired to change the flight path in any manner; let's say a wing has dropped and must be raised. First, of course, the human brain must realize that the wing HAS dropped, and the same brain must make up its mind as to WHICH wing is down and WHAT correction is necessary to right the model. Once this has been decided the nerve system must TELL the hands to move the levers, the levers have to MOVE and the transmitter must generate the PROPER signal. Following this, the radio waves must GO OUT to the model and be ACCEPTED by the receiver which DECODES the message and in turn TELLS the servo to move, and when it does, the control finally MOVES. Even after the control has moved the model has to RESPOND to the control movement. Take this statement apart, piece by piece, and it is obvious that quite a number of things had to happen before we actually got the wing raised, as simple a thing as that might be. The point, here, is that whenever anything is done it requires TIME, and in flying our models the time required to get maneuvering done can be extremely critical. Naturally, if you are researching a problem such as this you investigate each individual portion of it.

One of the interesting things which came out of researching the foregoing problem was that the greatest amount of time would be consumed by the HUMAN, NOT the airplane or the R/C equipment. It requires time for us to think and react, especially so when something is new and not completely familiar to us. When we are accustomed to something we react automatically, or without forethought, which reduces the time element. Hence, this research report stated that it was most important that the equipment should be as "natural" to use as possible, the method of operation should adapt itself to a human's natural way of desiring to do

the job. In this way the very minimum of training and practice would be required. The report showed that aviation had found the "joy stick," or control stick, to be the most natural way to fly an airplane. It was suggested that R/C could take advantage of this experience, hence a single stick.

Looking further into the human side of the problem, it is important to have the quickest possible action from the human body, that is, use it to its fullest ability. An example might be that in radio we would use a 1 mfd capacitor in place of a 5 mfd, when possible, simply because the smaller one would react so much faster. In simple terms we are concerned with the human brain and nervous system when reaction is to be concerned. It is elementary that our brain has three parts, a central system plus a right and a left hand portion in layman's language which I must use BECAUSE I KNOW NO OTHER! It is also true that we have a right and left hand nervous system. In operation, what happens is that the central system considers the problem, determines the action to take and then routes the info to the right or left side as the solution which the central portion decided upon would dictate. Then the portion of the brain which got the 'go' signal notifies its particular nervous system what is required and the nerves get after the muscles and we get the action hoped for. It has been said that human reaction time is .02 of a second on the average, and this is an extreme length of time when compared to radio waves and the reaction of our equipment. Thus, whatever our body must do in the course of flying our model is of extreme importance as it is the worse portion of our whole flight system, time-wise! Another example is today's computers which do in seconds the thinking it would take a human days to accomplish.

The best solution to this nasty problem is, of course, to get the quickest possible route through the human body. If you use two hands to do a job it is obvious that "central" has to decide separately what each hand must do and then route the info through two channels. Obviously, if only one hand is used, only one decision must be made, and only one nervous system activated, etc. It should be elementary that this would not only be easier to do, but also quicker. If you happen to be "slow on the up take" as I seem to be, I believe

NOISE THE DEADLY DECEIVER

By NOEL FALCONER

Editor's Note: Since one man's opinion is as valid as the man, himself, we are proud to introduce the author of this, the first in a series of several articles, to RCM readers. Noel Falconer is a Flight Lieutenant in the Royal Air Force. A Scotsman, he has been active in modeling for over 25 years, not only in his native country, but in duty stations from Ireland to Singapore. Serving as treasurer of the Royal Air Force Model Aircraft Association and an active multi RC flier, Noel has modeled across America and Canada, eastwards through the Mediterranean to Malaya, Australia, and New Zealand. RCM is pleased to present this series of articles and urge you to read each one carefully; then to urge your fellow RC'er to read them and, together, to act upon them. The future of model aviation depends upon it.

PART I

We have lost too many flying fields after complaints of noise, and most of us now use silencers on our larger models when we fly near residential areas. A sensible and responsible practice - yet there is a great danger associated with it. The complaints were about noise, and we have reduced noise, so it would seem that we have solved our problem.

But our problem is not noise!

I first realised this when I visited a householder who had written a damaging letter

to the local newspaper. He lived about a mile from our flying site, and I could see my clubmates having a grand time with a couple of multi's. There was not a whisper of model noise, it was all buried in the roar of power mowers and hedge trimmers, go-karts and traffic, pop records and TV. I asked the complainant what we were doing wrong, how we were disturbing him, but he would not talk about this and quickly became angry. Certainly we had offended him somehow, and deeply, for he resented us bitterly.

And he would not say why. It seemed to me that he did not know the reason himself.

Now there was no reasonable cause for complaint that day. Okay, I thought, so try some other days.

I visited that street literally scores of times. From dawn to dusk at weekends and as long as light lasted in the evenings, it was a hell of localized resident noise. Even when our models COULD be heard they were never more than a low buzz against the background cacophony.

There have been many visits since to other complainants. Some were busybodies, nuisances who liked to draw attention to themselves by their grouses. A very few cases of genuine noise nuisance did exist. But the story, above, was repeated time and again. People were against model fliers, and for no obvious reason.

We can only speculate what their motivation might be. My own belief is that the complainer likes the easy life, watching TV with his feet up: He sees us flying, DOING things, PARTICIPATING actively. This gives him the idea that he should get busy too, only he prefers to sit still - but now he feels GUILTY about it. So he RESENTS those who make him feel bad, the model fliers.

There are other possible causes. Outsiders tend to resent a GROUP.

People who are troubled by something against which they are helpless, traffic noise for example, often transfer their opposition over to some other activity which is causing them far less harm, but which they can attack.

Model flying is particularly likely to be resented. It is obtrusive. If your neighbor goes sailing, at least he does it far away, out of sight. The multi's are there in front of your eyes where they cannot be ignored. Modeling - it seems to the casual onlooker - can be done by ANYONE. Neither wealth, age nor physique is critically important, so the average Joe is not confined to admiring some breed of supermen, but is excluded only by his OWN inadequacies. Nor can he IDENTIFY with us. One reason why motor racing is so successful is that the spectator can slip behind his car steering wheel and imagine HE IS Dan Gurney or Graham Hill.

Once it is accepted that this resentment exists, unjustifiable and unfair though it may be, our basic trouble can be defined. We are suffering from a gross failure in community relations. This is the root cause of the complaints, and opposition will not cease till it is rectified. If we could stop noise, totally, the complaints would only switch to model flying HAZARDS. Eliminate these and some other criticism would

ENGINE CLINIC

Your letters are beginning to come in pretty good now. There seem to be two topics that are getting the most requests for information. Fuels and props. We pretty well covered the fuels last month, so let's see if we can clear up some of the confusion regarding propellers this month.

I'm actually very surprised and somewhat puzzled at the number of letters requesting propeller information. All of your engines come with an instruction pamphlet that recommends the correct propeller size for the engine. Right now I have three letters before me that want to know what is the correct size prop for the Veco .61. Right in the instruction pamphlet it says "we recommend either the 11-8 Top Flite or Rev-Up propellers of the wood type." How much clearer could it be stated? This just confirms what I have already known for many years - nobody bothers to read the instruction pamphlets! I guess the manufacturers are going to have to start having center page fold-outs like Playboy to get your attention!

Most of the letters asked relatively

simple questions. However, several really wanted detailed information. Charts and graphs listing thrust and power outputs at various airspeeds with the different engines and props, etc. I'm afraid some of these letters came from the non-flying types who like to study and digest this type of thing. I grant you this would make interesting reading, but I'm pretty sure most of you would rather be told what propeller to use, rather than be presented with charts and graphs that you would have to evaluate and try to figure out for yourself. Chances are, you would end up being more confused than ever. This is a practical application column. We are going to try and tell you what to do, and how to do it. This column is intended for the guy that goes out and flies, not just to provide entertaining reading material. Even though we are dealing with technical material, we are going to give it to you in the simplest and easiest manner to understand. I don't want anybody getting about half way through one of my columns and saying, "what the heck is he talking about?" I'm sure we have all read some of these types of articles in the past. This is not to say that we won't have some technical subjects from time to time, but when we do, they will be presented in an easy to understand manner. I hope you guys go along with me on my thinking here.

We could not possibly present

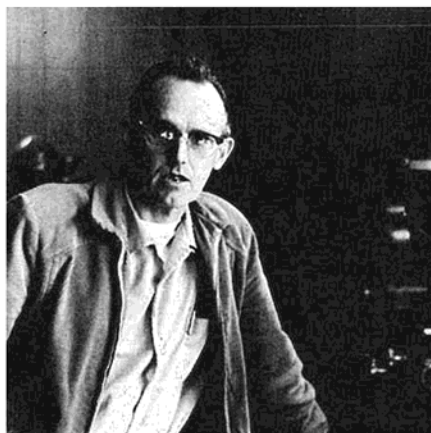
some of the material that has been asked for. In order to measure thrust at various air speeds you are going to have to use a wind tunnel, and neither I nor RCM happens to have one at our disposal. I guess I could sit on the roof of my car while the wife tears down the freeway and try to get some thrust readings, but I am sure we can get all the information we need just from trial and error in the air. Anyhow, I won't even sit INSIDE the car when my wife drives on the freeway!

I frankly wonder if some of the people that sent in questions had ever flown an R/C airplane. One fellow told me that the thinking was all wrong. Instead of turning the smaller propellers fast, we should be turning big ones slowly. He suggested a 13-4 on a real "good lugging" .19. This would be a real "good lugging" .19 all right! A 13-4 is a good job for a .60. Obviously this was one of our theory boys that has never tried a 13-4 on a .19, except possibly on the bench.

Another RC'er wanted power curves plotted that would give the horsepower developed at different rpms with the different engines. Now where has this guy been? This is exactly what my English friend Peter Chinn has been doing in Model Airplane News for years. (Gee, I hope the mention of that name doesn't give Don an Excedrin headache!). I don't intend to try and duplicate Pete's column, so if you want that information I suggest you read his articles.

So let's clear up all this propeller confusion. There isn't really that much to it. I think some of you guys

CLARENCE LEE



are making more out of this prop bit than there really is to it. Propeller sizes are pretty well standardized and have been proven out in the air. Maybe some of you are just being overwhelmed by the dazzling array on the prop board at your hobby shop. We aren't interested in the props for free flight, U-control, etc., so that eliminates two-thirds of the sizes to begin with.

The majority of your .60's will develop their greatest thrust and perform the best with the 11-8 Top Flite or Rev-Up props. On your larger, high-drag ships, such as biplanes and the scale types that have a lot of cowl area, you should use the 12-6 Power prop. The 12-6 works fine on the regular stunt ships as well, but you have less tip clearance which means it is easier to break a prop. Unless you have a long landing gear, the 11-8 is the better bet. The Enya .60 and Super Tigre .56 won't swing quite as much prop, so you should use the 11-7½. On some of the smaller light ships, such as the Kwik-Fli, you can use the 11-7 Top Flite or Rev-Up and let the engine turn up. The air speed will be a little slower and more constant. It's like running your car in second gear. There will be less change in speed between climbing and diving. However, contrary to some thinking, this only works with the lighter airplanes. Some of you think the heavy ships should have lower pitch props to help pull through the maneuvers. This is wrong. Unlike your automobile, you have to maintain airspeed. Because of the higher wing loading your heavier ships have to fly faster and they will not do this with low pitch props. By running a low pitch prop and decreasing the airspeed, they will fall out of the top of loops, etc. The faster they go, the

better they fly, so don't use low pitch props on those eight pound and heavier bombs.

If your mill is getting a little on the tired side and won't swing the 11-8 then drop down to the 11-7½. If it still won't hack that, try the 11-7. If it still won't, you had better have the engine rebuilt!

If you are flying one of those big monster bipes such as Bill Northrop's Big John, Vic's Great Lakes, etc., and it came out a few pounds heavier than expected so that the 12-6 won't pull it, don't strain your .60 by going to a larger size prop. Get a larger engine such as the Super Tigre .71, Fox .74 or OS .80. Don't expect a .60 to do the job of a larger displacement engine by lugging it down with too much prop. This only results in overheating and greatly shortened life. You do not want to lug your engine down below 10,000 rpm, and 10,500 is much better. If you want to swing a 13 or 14 inch prop, then get a larger engine.

The selection is even easier for the smaller size engines as there are less props to choose from. The .45 to .51 engines work best with the 11-6 Top Flite or Rev-Up props. This is pretty much standard for any airplane. The 11-5 just winds up too much, and the 11-7 will lug them down too much. The same goes for the 12-5 Top Flite, it is just too much prop. A good size

here would be a 12-5 Power prop, but it is not made in this size to my knowledge, and the 12-6 Power prop is just a little too much. I should have mentioned earlier in the article, that the Power Prop line is made by Top Flite and has less blade area than the Top Flite or Rev-Up line of propellers. A lot of RC'ers do not seem to be aware of the Power prop line.

The .29 through .35's seem to work the best with the 11-5 Top Flite or Rev-Up. The 10-6 also works very well, but as we get into the smaller sizes, diameter is becoming more critical, and the 11-5 seems to pull a little better. However the 10-6 will be a little faster on the straight and level. Try both. If your ship is small and light the 10-6 will probably be the best.

Next we have the .19's. The Veco .19 will swing more prop than the others and is happiest with the 9-5 Top Flite. If you have a small light ship that you want to move, use the 8-6 Top Flite, but it will not pull through the maneuvers as well as the 9-5 Top Flite. As a lot of beginners start with this size engine in their Falcon .56's, Tauri's, etc., you can use the 10-4 Top Flite which will let the engine turn up, but will hold the airspeed down. However, if you have a ship with a fairly high wing loading (a Falcon 56 over four pounds) stick with the 9-5. If you use the 10-4, and get off a little rich, your airspeed will be too low. If you haul the airplane off too quick on take-off, the chances are very good the ship is going to stall out and cause great unhappiness! This is a common mistake that beginners will make.

CONTINUED ON PAGE 11

CLARENCE LEE



ENGINE CLINIC

(continued from page 10)

The Enya, OS, and Super Tigre .19's work best with the 8-6 Top Flite or Rev-Up props. If the ship is light, the 9-4 also works very well.

I'm afraid I can't give any advice on the engines smaller than .19 displacement, because I have had little experience with them. If you are in real doubt as to what to use, you might write Ken Willard. Ken's bag is the real small ships, and he would be better qualified to give advice than I would.

Several of our readers wanted information on "break-in props." Generally you can use the same size that you intend to fly with when the engine is broken in. Engine technology has improved considerably the last few years and you seldom get the tight little monsters that required hours to break in. If you have problems with the engine overheating, or seizing, even with extra castor oil in the fuel and set rich, you can drop down to a slightly smaller size and take some of the load off of the engine. However, you can't go too small and still expect the airplane to fly. Dropping from an 11-8 to an 11-7 or from a 11-6 to a 11-5 should be all that is necessary. If an engine continues to run abnormally hot, it is better to find the cause and correct this problem. I break in lots of engines, and I always use the same prop that I intend to use when it IS broken

in. However, I also use a fuel that contains enough oil, and add extra lubrication for the first gallon. Too many of you guys just will not add that extra oil, and then gripe your heads off when the engine sags or sticks up on take off.

Okay, now we have the old question "is it all right to use a nylon prop?" I personally wouldn't use one for anything other than stirring paint! The nylon props are less efficient due to the flexing of the blades, cause more vibration, and, in general, are dangerous to use! Two days before the 1967 California Nationals, I stuck my thumb in the prop. It required eight stitches. Being wood, it was shattered. If it had been nylon, I probably wouldn't have had a thumb! However, the real danger is in throwing a blade. You try to save pennies by using nylon props, but HOW MUCH IS ONE OF YOUR EYES WORTH? Have you ever

watched the blades flex around like a couple of wet noodles as you lean your engine in and adjust the needle valve? All this flexing can only lead to eventual fatigue. Some of your big .60's have gotten to the point where they are putting out too much power for a nylon prop. I have seen three nylon props come apart and one of these caught the flier in the shoulder. Fortunately he had on a heavy jacket. Whether these props had been boiled to relieve the stresses, I do not know. Even so, in cold weather the nylon becomes hard and brittle. If you are running a big .60 in cold weather, you're asking for it, buster!

All of your props should be checked for balance. The next time you pick some up at the hobby shop, pull out a key, knife blade, or what have you, and check the balance. A prop that is slightly off can be balanced with a little sanding, but if one blade drops to the bottom like it was leaded, put it back on the rack for the next hacker. This goes over real big with the hobby shop owner, but if you are a good enough customer, he won't yell TOO loud. If some of the hobby shop operators wanted to create customer good will they would check the balance of the props before they put them up for sale. Sure they are going to be stuck with two or three out of every dozen, but isn't this better than having some irate customer storm back because an out of balance prop shook his motor loose or got to a servo and caused him to lose control?

Finally we have the Goodyear racers, or Formula I if you prefer. A lot of you guys are still fanning the air with stunt props and going nowhere. The best prop seems to be the 10-8 Top Flite speed prop cut down. Start with 9 inches, then try 8¾ and 8½. Sometimes chopping a quarter of an inch off the tips will make quite a noticeable jump in speed. Most of the fellas that are turning on are running 8½ to 8¾ inch diameter props. Some of the fliers are trying to go faster by using 9 or even 10 inch pitch props. These only bog the engine down and you end up going slower. These higher pitches on work well in U-control where smaller diameters can be used because the airplanes are also considerably smaller and lighter. Take some sandpaper and sharpen up the trailing edges and wash out the tips slightly. This lets the engine pick up a few hundred rpm, and this means you GO FASTER, dad! Lay a straight edge

on your wing and check the tips of the prop for tracking or runout. If one blade touches the straight edge and the other misses by a quarter of an inch, find out why. The prop may be made crooked, the spool assembly that holds the prop may be off, etc. You want that prop and SPINNER to run dead true. Vibration can knock five or six miles an hour off of the top speed, and a wobbling prop or spinner is a real good cause of vibration! It's paying attention to these small details that make the difference. It isn't just having the hottest engine. Some of you could be given the hottest engine in the world, and still would not win a race because you would not pay attention to the details that are necessary to make it operate properly.

That about winds up all I can think of on props. Sorry if I disappointed the theory and graph boys, but the correct prop sizes have been pretty well proven out by actual application in the air.

The following letter was sent in by Clinton Bazzill who is Secretary of the Wavemasters Radio Control Club in San Jose, Calif., and was originally printed in their newsletter, The Wavemaster News. Although I do not agree completely on everything Mr. Bazzill says, it does make interesting reading. For those of you who want to do a little propeller experimenting on your own and prove to yourself whether the propellers I have recommended are correct or not, you might give Mr. Bazzill's methods a try:

"Der Luft Schraube"

The air screw is a necessity for powered flight. Model propellers are classified by diameter and pitch, both in inches. The diameter is self-explanatory. The pitch is the distance that the prop screws itself through the air for one revolution. For maximum flying efficiency, both diameter and pitch must be matched to a given airplane, engine combination.

Let's make a hypothetical case. The engine turns at 11,500 rpm's and the pitch is 6, therefore, if the prop had no slippage it would pull itself through the air at 65.5 mph.

Formula; speed in mph = rpm X pitch/1056

However, the propeller is far from perfect and we can expect from 10 to as high as 20 percent slippage. Spinning our wheels, so to speak.

Now comes the point of adjusting the engine to the propeller. In order to utilize the maximum power from an airplane

engine, it must be run as close to the maximum hp curve as possible without going over the top.

The prop diameter can be thought of as the load placed on an engine and the pitch the gear ratio. A simple way to test the prop is to fly the airplane in level flight and check its rpm. It should be on the forward side of the maximum hp curve. Now, pull the nose of the plane up and note the change in engine rpm. Second, put the plane in a nose down attitude and note the increase in engine rpm's. If the engine slowed a considerable amount in the climb and then over-revved in the dive, the prop diameter is too large for the engine; and, possibly, the pitch is too small.

The first thing to do is to decrease the prop diameter and see if the engine runs well in all attitudes without large changes in rpm. Once you have this condition satisfied, the engine may be running too fast all the time. This indicates that the engine isn't pulling the plane fast enough. The excessive rpm will cause engine overheating and possible damage. It is like having a car in low gear, lots of power but no speed. The next thing to do is put it in a higher gear and we do this by increasing the prop pitch. An increase in prop pitch will cause the plane to fly faster putting a heavier dynamic load on the engine and preventing it from over-revving.

It is sometimes difficult to get a prop with the right diameter. If necessary, trim some of the blade area off of a larger prop. As far as the pitch is concerned, there are a large variety available in the wood types.

The ideal condition is to use a prop that will allow the engine to run as close to its peak rpm curve as possible (without going over the top) with as little engine speed change as possible with any airplane attitude. Good flying.

Clinton H. Bazzill
San Jose Wavemasters

Here is a letter sent to Don which he forwarded on to me that has an interesting idea:

Dear Don,

I'm writing this letter after reading your editorial in this past issue of RCM. You mentioned that the manufacturers of R/C equipment were interested in what modelers wanted in the way of new products.

Perhaps if you can find space to publish this letter, some manufacturer would be interested in making what I have in mind. I'm 50 years old, a TV technician by trade and have been building R/C models since the days of the old gas tube receivers and one problem that has always bugged me in building a plane and flying it is TORQUE.

Wouldn't it be nice to set up all control surfaces at 0° and engine thrust also 0° and be able to take off and fly straight and true like a jet or glider at all engine speeds?

Anyone trying to perform pattern or stunt flying would also appreciate this.

What I had in mind was some type of unit that could be installed on the front of the engine with a gearing set up that would give us contra-rotating propellers, thus eliminating torque problems. The best bet would probably be hardened steel gears with dry moly powder as lubricant.

With so many types of reliable radio gear and plane kits on the market today, I

believe that every modeler that builds or flies R/C would be interested in buying such a device. As for price, I don't believe anyone would mind paying as much as fifty to seventy-five dollars with no complaints, I know I wouldn't.

Sincerely,
Neil Delafield

Hey Neil, ever hear of the Stormer, Candy, or Kwik Fli? Both the Stormer and Candy use 0 - 0 force set ups. The Kwik Fli uses no thrust offsets but does use a little positive incidence. How are you going to start this thing? It would be a real finger mangler! I doubt if many of the fellas would want to start dragging around electric starters. Any manufacturers interested?

Okay, let's try and solve a few problems now. I've had to cut down the size of a couple of these letters. Some of you guys are getting pretty long winded and asking five or six questions. I received one letter this month that was three pages of "what do I think of this," and "please comment on that," etc. It would have taken the whole magazine to answer. Let's give the necessary details, but keep the letters as short as possible. Hold the questions down to one or two a letter, okay? And PLEASE send your letters through the magazine, not direct to me. How else is the head hacker down there at RCM going to know if this column is a success or not? If the response is big enough, maybe I'll even get a raise.
Sir:

For quite some time, I have been looking forward to something like this, and am very happy to see that RCM has done it again. This Engine Clinic is very much needed, and they got the best man for the job, in this day of more sophisticated engines.

Now for my problem, I bought a .49 Merco two years ago, and am only flying it part of the time since I fly mostly a .19 BB Veco in a smaller ship, which is on its 27th gallon of fuel by the way, and still going strong. Back to the Merco, after 3 gallons of carefully rich break in, mostly in the plane (Challenger) flying in 4 cycle, the engine would not run more than about 20 to 25 secs. before tightening up and slowing to a stop in rich 2 cycle, even on the ground. Upon stopping abruptly, turning over, the engine proves to be stiff, with no roughness felt, and the head is extremely hot. Changing fuels and plugs did not help. The bearing areas do not seem to become too hot.

This engine after 7 gallons was carefully taken apart, the bearings are smooth and free, with no play, the sleeve is glass smooth with no scratches or discoloration except above piston top. The piston skirt shows no signs of wear, the rings are smooth and nice and only a dark spot of burnt oil or carbon deposit inside at the top, on the exhaust port side, shows a hot spot. The top of the

piston and the head had a very heavy carbon deposit coat. This was cleaned, the engine reassembled, and after 20 minutes of very rich running in cold weather with usual fuel, (25% castor oil, 70% methanol and 5% nitro) it was leaned to a 2 cycle breaking to 4 cycle occasionally with an 11-6 Tornado fan (usual) on the test bench. After 60 secs. it started getting tight again and throttle was closed to 1/4 and engine freed up, so it was readjusted to a rich setting for another 30 mins., with no improvements.

Here is the question; what do I do with it, beside buying another Veco. (I own a .45, no problems after 4th gallon.) I just hate losing that engine since the budget is you know what. . .

Thank you and keep up the good work. Please excuse my French Canadian English.
J.C. Blouin

Now here is a gentleman who appreciates talent. I've had to do a little deep thinking on this one. My first thought was varnish, but the sleeves in ringed engines seldom varnish because of the scrubbing action of the rings. You would be able to see varnish on the piston because it would have turned brown. Tight bearings will knock heck off of the top end, but won't bring an engine to a stop. The only thing it could be is a tight piston or rings. Actually, this engine should have been returned to the manufacturer a long time ago. However, if you want to check it out yourself, I'll tell you how to go about it.

The correct clearance between the piston and sleeve from the bottom ring down is .003", and from the bottom ring up .004" to .005". If you have a micrometer and telescoping gauge, there will be no problem checking the fit. Most likely you don't, but there is still no big deal. Go to your nearest auto parts supply and get some brass shim stock. It comes in large rolls about four inches wide, and the dealer will cut off any length you want. Get a small piece of .002", .003", and .004". The cost for the whole bit shouldn't run over fifty cents. Carefully remove the rings from the piston. Be sure and note which is the top, and which is the bottom. You want to put them back exactly as they came off. Be very careful, as Merco rings are extremely brittle. Cut yourself a strip of each of the pieces of shim stock about a quarter of an inch wide and a couple of inches long. Try to slip the .002" strip between the piston and sleeve. If it won't go, you will know right away that you have found the trouble. If the .002" does go, try the .003". This should be a snug fit. Now try slipping the .004" shim just between the head of the

piston and the sleeve. If it won't go, you have found some more of the problem. In fact, I wouldn't be surprised if you don't find that it is the head of the piston that is giving the trouble. If you have access to a lathe, you know what to do, if you don't, you are going to have to go after it with some No. 360 grit emery paper. Dip the emery in kerosene, light oil, or something similar. Keep sanding until the .003" shim will fit between the skirt of the piston and the sleeve, and the .004" will fit between the head and the sleeve. Before you put the engine back together, slip each ring into the sleeve using the bottom of the piston to square it, and check the ring gap. You want at least .004" here, or the ends of the ring will butt together when the engine gets hot and cause it to stick up just like a lapped piston. If you have less than .004", carefully file the ends with a jeweler's file. More than .004 is okay. Many engines run as much as .010". You may have some reservations about doing this job, but the engine was useless as it was, so what do you have to lose?

Some of the fellas with the first of the new Fox .60's experienced this same problem because of rather tight pistons. However, Duke will take care of this if you return the engine to him. This is one of the advantages of buying an American engine!

Dear Mr. Lee:

In your recent RCM column on breaking in engines you mentioned the Veco 45 - this struck a sensitive nerve since I have had three of these engines while trying to get one which I could lean out (not all out either as you mention in your column). The first engine lost all compression after about 2½ hours (1½ hour break-in on a hardwood mount with extra castor oil in the fuel) and could not be leaned out at all or it would sag in the air after less than minute of running. This engine was returned to my dealer who gave me a new one and sent the old one back to his supplier. The same problem occurred with the new engine - sagging in flight, and loss of compression after about 2½ hours total time. This engine was sent to Veco and LOST by them. After a long distance call to Jack Henry, I received a new engine which he said had the original design piston and sleeve. (He explained that manufacturing had tried to simulate break in by grinding the tops of the pistons which he said was the reason for the quick wear out.) This engine would also sag after break in but did not lose compression. I subsequently wrapped up my ship and bent the shaft and housing in the process. When I disassembled the engine, I found that the crank pin was not ground as were the main bearing surfaces. I purchased a replacement housing and shaft and noticed that the crank pin was also not ground.

When the engine was run on a bench it again sagged (but not seized) when leaned out. I examined the crank pins on my other engine (Enya 45, and 60) and these were finely ground.

Thus, I wonder if the crank pin binds when the engine heats up under high speed running causing the engine to sag and stop? I have spent almost 60 dollars on this engine between original cost, replacement parts, and a long distance phone call and I ask you if I have to resign myself to the fact that I have an expensive paperweight, or is the problem solvable? Should the crank pin be ground or not? If so, how do I get a good one? Does the finish of the pin contribute to the engine sagging and stopping? Finally, should I try rubbing compound or toothpaste and run the engine in on an electric drill? Since you are the engine's designer, I hope you can answer my questions and recommend a solution.

Thank you for your help.

Yours sincerely,
Peter Goldblatt

I'm not one to beat around the bush, so I'm going to lay it on the line and hope you won't be too offended.

After experiencing the same problem with three engines, it should begin to become obvious before long that maybe the fault is not entirely with the engines! I'll grant you that not every engine that leaves a manufacturer is the little precision jewel you might hope for, and occasionally a real dog will get out. This is the price we pay for mass production. However, to get three lemons in a row is a little hard to believe. Especially when the last engine came direct from Jack Henry. (For you fellas who don't know, Jack Henry was in charge of Veco Products, the modeling section of Henry Engineering Co.) Any complaints of this nature returned to the factory were given very careful attention, and many of them were forwarded to me to take care of personally. Many times the customer had a legitimate complaint. The majority of the times the engines were just plainly abused. Run too lean - run in the dirt - and many times, bounced off of the ground causing them to bind up.

What some of you fellas don't seem to realize is, break-in is a WEARING process. If an engine is going to have a LONG LIFE, then it is also going to take longer to BREAK-IN. If it comes in right away, it is also going over the hill, right? The swing to ringed engines has almost eliminated this problem, but there are still plenty of lapped engines available, especially in the smaller sizes. The Veco .45's did have a rather lengthy break-in period of three to five hours. However, if broken-in properly, they

were then good for several years of flying, and many are still going strong. I'll be willing to bet you are trying to run yours too lean, too soon. Saying it still sticks up after two and a half hours sort of backs up my point. All you have to do is stick it up two or three times, and the piston is permanently scored. The piston is still tight, but the compression is gone. This is probably what has happened in your case.

We did try to simulate a broken-in piston by grinding the same taper on the piston that a broken-in one has. This was very difficult to do, but worked extremely well. It dropped the break-in period to less than an hour. It DID NOT shorten the life of the engine. Possibly you misunderstood what Jack was saying. It shortened the BREAK-IN, NOT the life.

As for the crank pin, grinding is a production method of achieving a good finish and close tolerance. However, it is not necessary if the tolerance can be held with regular machining methods. The ground pin looks pretty, and sometimes your lathe turned ones appear a little rough. What most of you guys don't realize is, that those grooves and lines help retain oil and the bearing will actually run cooler. Providing it is not so rough that you cut your finger on it naturally. So forget the crank pin as the cause of your trouble.

The first thing you should do is change fuels. There are several fuels on the market right now that do not contain enough lubrication and fellas are burning their engines up by using them. 20% castor oil is not enough lubrication if you use more than 5% nitro methane, and yet several of your fuels contain less than 20% oil. There are only three fuels that I will recommend: Fox Superfuel for break-in; Supersonic 100 for break-in and sport flying; and Cox Blue label which is the hottest of the three for your engine after it is broken in and you want a little more steam. If there are any other fuel manufacturers out there in R/C land that have fuels containing 22% or more castor, let me know and I'll be glad to add them to the list.

(continued on page 14)

I sort of got off on a little tangent there, so getting back to Mr. Goldblatt - be sure you add extra castor oil to your fuel during the break-in and don't bench run the engine out in the dirt somewhere. I'll bet, that somewhere along the line that one of these things is going to fit your case.

Never run any abrasive material through an engine. While you are loosening up the tight parts you are wearing out the correctly fit or loose ones.

Dear Mr. Lee:

My K&B 35 R/C with 12-4 nylon prop overheats occasionally while bench running. Am I using too much prop? Could you recommend a suitable size? Could you also recommend a good 'Ucon' type fuel mixture that would run cooler? I've run 3/4 gallons of fuel through it with the 12-4. Is it low on oil? Old mixture was - 5% nitro, 15% Ucon oil, 80% methyl alcohol.

What percentage oil should a BB 46 have as compared to a BB 23 or sleeve 35? . . .

Thank you,
Jim Markowicz

Your K&B .35 shouldn't have any trouble turning a 12-4 nylon prop. However, this is not a size you would want to use in the air. The engine turns up okay, but the plane doesn't go anywhere. Your overheating problem comes from using only 15% lubrication, and Ucon oil at that. I hope you read last month's article about the Ucons. One of the purposes of the oil in your fuel is cooling. It helps to carry away the heat. There is no such thing as a cool running Ucon. They will run 15 to 25 degrees hotter at a normal setting than castor oil. This was all covered in last month's article - be sure you read it.

There is no need to use different percentages of oil with the different size engines other than the 1/2A up to .15 sizes. Oil drag will reduce their power considerably. They also run cooler, so you can get away with less oil.

That's it for another month gang. Keep the letters and any useful ideas coming in. If you like this column, and want to see it continue, I've got to have material to work with. The old bean is beginning to run dry of ideas of my own. I've been conducting tests on mufflers since last fall, so we'll fill you in on the results next month.

PERSPECTIVE

(continued from page 8)

emerge - remember the glue sniffing nonsense?

We must win the friendship and esteem of both the public and the authorities, and quickly, for we have very little time left. Every day the world population increases, squeezing all activities that use large open areas. Not only will houses appear near our flying fields, other sports, expanding or perhaps already displaced from their own grounds, will try to force their way on to our sites and eventually push us out. Even the boom in modeling that is increasing our numbers and giving us the strength we must have, is not an unmixed blessing. More modelers mean more flying, more disturbances, and more complaints.

Silencers are as essential as ever, but silencers alone will not cure our troubles. We must behave exceedingly well, minimizing every legitimate cause for complaint, flying responsibly and safely, helping the community whenever we can; and even this is NOT ENOUGH. We have to display our virtues, to make the public aware that we are decent, sensible people. None of this is easy. It will take thought and work, and tact, and delicacy, and restraint, and not merely for a few weeks or months but for as far ahead as any of us can foresee, not by some mysterious THEM but by YOU and ME and every modeler everywhere.

This is a request for a massive investment of time and effort by the entire modeling movement, and such an investment must be justified by the promise of a great reward. The prize here is nothing less than a future for aeromodeling. We can go on as we are for a few seasons, perhaps even for a decade in less populated areas. Beyond that the future is black. Unless something is done, unless each one of us is prepared to place the long-term good of modeling ahead of this season's flying pleasures, our grandchildren will never see a model aeroplane outside a museum.

We CAN win through. All we have to do is WANT to enough - and WORK for it.

THE CASE FOR SINGLE STICK

By HAL deBOLT

(continued from page 7)

you can see the advantage here.

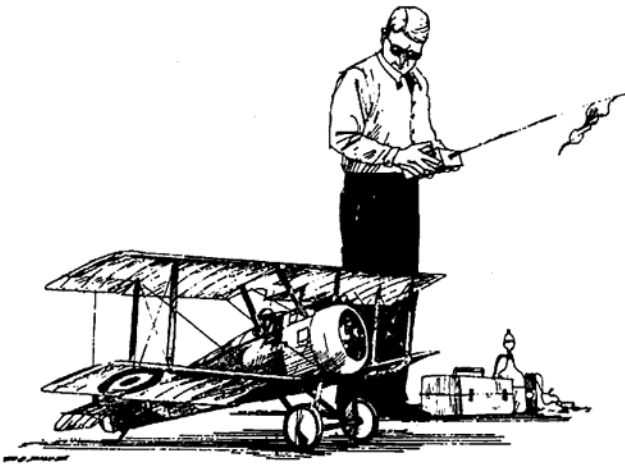
In addition to the above it is said that of the two right and left portions of our cranium the right hand portion is much more highly developed than is the other, left handers excepted, of course. Obviously, it could be an advantage to use the best available, if possible.

Speaking again of the research project, the report stated emphatically that, from a medical viewpoint, a "single stick" operation using only one hand for main control actions would be superior to any other, and you very well can take it from there.

Another point which is seldom considered when discussing single stick flying is that you actually fly with BOTH hands at all times. The right hand flies the airplane as desired, medically, and the left takes care of the trim and engine speed. Fortunately trim "time" and engine change time seldom are as critical as are the other controls. More important is that while flying with the right hand you can retrim the airplane without having to disturb whatever the right hand may be doing. There are times when this advantage can get you out of some nasty problems. Another factor which I have continuously used in competition is that you can easily trim the model right up to the last instant before a maneuver, which is rather difficult to do with two sticks.

by DAVE PLATT

(Designer — Top Flite Models)



SCALE IN HAND...

Airbrush Art explained. . . .

The annual Symposium of the DCRC Club is an event looked forward to by those modelers who are interested in the more technical aspects of the hobby. Each year ten modelers are invited to prepare papers and give a lecture (what a fearsome word! — think I like the sound of “Teach In” much better), and this year yours truly will be there to deliver a talk on “Adding Realism to R/C Scale;” wherein it is intended to go into the “secrets” of taking a perfectly nice looking and respectable scale model and completely ruining it by making it battered and filthy. Anyone interested in such a rotten idea is cordially invited. Better make up your mind fast, though; dates of the Symposium are May 17 and 18.

Scale World Champs

Last month we reported on the likelihood of a World Championship for R/C and C/L Scale in 1970, and offered speculations as to the effects of this on AMA members. Very briefly, our thoughts at the time can be summarized thusly:—

- 1) The said Scale World Championship meet will go ahead.
- 2) The AMA will send teams.
- 3) The eliminator for this meeting will be this year's Nat's.
- 4) The Nat's will be run according to FAI rules.
- 5) Contestants will be able to enter over-FAI but within-AMA rule models, but no team place could go to such a model.

At the time of writing those predictions, the AMA's decision on these matters was not known. The first item, of course, is still uncertain

(but not very) but the others have been confirmed by the AMA Executive who has decided to handle the affair along the lines we predicted.

Since this is the case, it would seem a good idea for anyone who intends to enter the Nats in these classes hoping to get on the U.S. World Championship Team, to get acquainted with the FAI rules. We do not intend to print them here, as they were fully covered in a recent American Aircraft Modeler (October, 1968). However, since that printing, there have been a couple of alterations which have not so far appeared in print, and which are worth reporting, since one of them is of considerable importance.

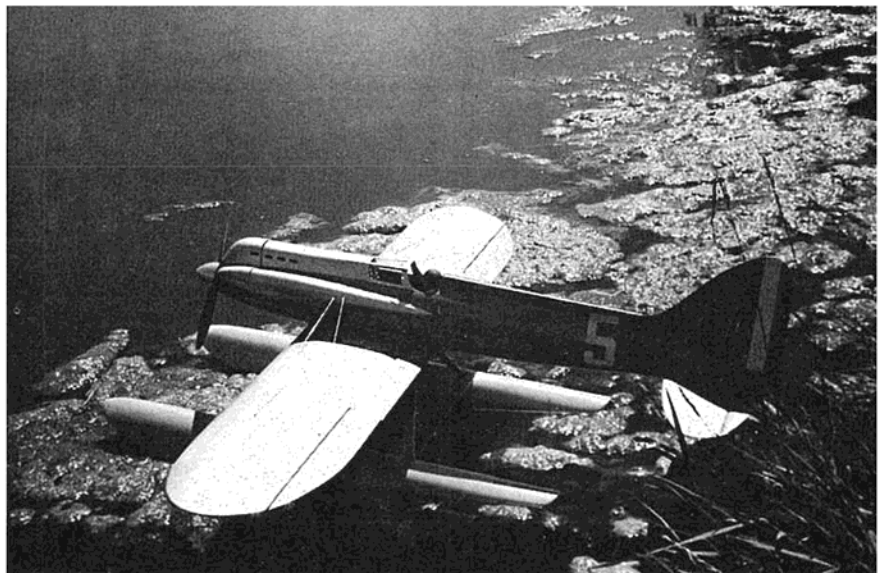
This is the introduction of the so-called “Scale Factor.” In the future, the flying points achieved will be balanced by the Scale Points earned.

Let's explain. In a scale contest, a contestant's score is made up of three columns of figures. First are the

Flying Points earned on the qualifying flight. Having thus qualified to be judged for Static points, the model then has two sets of points earned “on the ground.” One is Fidelity (how *scale* the model is) and the other is Craftsmanship (how *well executed* the model is).

The Scale Factor idea works like so: —Suppose Bill gets 400 points for his flight. Later on, when the model is judged for Fidelity, suppose he gets 187 points. This 187 is 75% of the maximum (250) that can be obtained in the Fidelity column. The flight points he attained will now be subjected to the same percentage, i.e., 75% of 400 = 300. So Bill lost 100 of his flying points because his model was less scale than it might have been.

Sounds a bit hard on poor Bill? Well, it isn't really. Consider this: Everyone knows a model can be made to fly better by changing this and that. (Everyone? Stick around friend — we intend to prove otherwise!) Anyhow, Bill thought so, and he changed things. But where do we draw the line and say



"That airplane is not scale and so is not qualified to enter against scale models?" We could paint a Taurus to look like a P-51, but would this be fair to the rest of the contestants?

Of course not. But at what *point* of alteration is a model no longer scale? Nobody can say. And no judge wants to have to tell a guy he's disqualified.

So, bearing these considerations in mind, the Scale Factor starts to look like a really fine idea, mainly because it is so fair to all. A modeler loses his flight points to the exact degree he deserves. No more and no less.

Obviously, under FAI rules the thing to aim for is a true scale model which flies as well as any. This is the name of the game - Flying Scale. Making a museum piece which won't fly isn't difficult. Neither is making an altered abortion that flies like a Class 3. The *clever* thing is to combine the two better than anyone else did. And if the rules make this entrant the winner, they sound like pretty good rules to us.

We mentioned earlier that maximum points for Fidelity is 250. Used to be 260. The reason for the slight change is that it makes it a simple mental arithmetic job for the judge to get the percentage of maximum earned. Multiply the points received by 4 and divide by 10 and you have it.

Judge Now - Fly Later

Once upon a time, scale contests were run on the procedure that models were flown *after* judging. This led to some unfortunate situations where many of the entries could not qualify by flying, having taken up the judge's valuable time in the scale judging. This irked the judges and slowed up the contest; it was, in short, a waste of effort.

Consequently the rules were altered and only those who flew could be judged - so, reversing the order. For a while this worked satisfactorily and did separate the men from the boys. But all of this was in the "bad old days" of single channel, reeds, limited skills and experience, etc. Out of 25 entries we could end up with 10 qualifiers.

Times change. Nowadays, with our reliable equipment and engines, and the improvement in the standards that they have brought, it is common to get 23 or even 24 qualifiers out of 25 entries. For some time those of us who have recognized this change have pressed for a return to "judge-first."

Team Entry is Out - Official

The question of team entry was clarified too. Actually a team entry in a Flying Scale contest was never allowed, but the rules didn't say so in words. Now they do.

Opinions vary on this subject, and many modelers consider it a shame when a guy with little flying skill creams a really beautiful model which would have flown well if given the knowledgeable touch on the transmitter. Anyone would be saddened by such a sight, but it seems to me that this evil is less than the alternative. Like any other, this branch of our hobby depends on new blood entering the fray of competition. Many a newcomer to Scale R/C doesn't mind trying to match the superb craftsmanship of Claude McCullough, or the flying skill of Granger Williams; but a combination of the two - WOW!

There's also a more sinister aspect to Team Entry, it literally opens the door to the "commissioned model."

By throwing out the idea of Team Entry, the FAI has made a good stab at keeping the thing on a fair and equal footing.

Personal

If Glen S. who I met at Toledo will send me his address, I will answer his question. Sorry Glen, I lost your card.

Gallery

Let's take a look at our pictures. The fine Supermarine S6B was designed and built by Gary Flandro for .19 power and flies beautifully. Tell me, how does a guy fly one of these at the Nats? Do you get the AMA to make a lake at Willow Grove? There has to be an easier way - maybe he has wheels buried in the floats! Gary's from Salt Lake City. I get the feeling that there's a pun in there somewhere . . . about flying seaplanes from Salt Lakes, but never mind!

Should be just great flying off the snow! Watch for the plans in RCM.

The canopy with an airplane attached to the bottom is the work of George Hahn. The Super-Tigre .56 pulls the Victa Airtourer at very realistic flying speed. Any problem finding room for the R/C equipment, George?

Incidentally, you can get plans for an R/C Victa Airtourer and a whole lot more good R/C scale jobs from Aeromodeller Plans Service, 13-35 Bridge Street, Hemel Hempstead, Herts, England. Might be a good idea



CUNNINGHAM ON RC



Every time I travel to California to get in a little work, (and just a tiny bit of flying with Uncle Don), something happens. One time Don and I were flying the Li'l Swinger and he conveniently flew from the hillside flying site up to the top of the mountain and landed amidst the sharp spines of a yucca plant! Guess who scaled the peak, all of the time keeping a wary eye cocked for sunning sidewinder rattlesnakes? Yep, you guessed it! Another time, flying from the carved out mountainside field, the radio that we were testing decided to go on the blink, and the aircraft settled gently to earth deep in a canyon, way below the field level. While Don and Dick Sonheim shouted directions, Dick Ludden and I worked our way down to the bottom and ultimately found the aircraft. This last time Don and I were flying from a school ground, the hill flying site being lost forever. Don was flying one of the prototypes of the New Era that I had shipped out to California. At just about the time that Don allowed as how he couldn't tell just which side of the far trees the aircraft was flying, he landed gently in the top branches!

Now, take one tall skinn California tree, mix with one broad Texan and you get "I ain't gonna climb that tree, and besides, it's your radio in the bird, Dewey!" A spectating late-teener finally scaled the tree and poked the New Era out with a long branch. (For five bucks! -Ed.) Next time, Dewey will probably land on top of a truck cruising down the freeway! (Anything to lean out the wide Texan . . . Ed.)

Flying within the confines of a city always brings home to me the great need that we have for a really good muffler system for our engines. Where we fly, at the Thunderbird field in Fort Worth, we can let engines roar with great abandon, and we only use mufflers for something "different." But, a well designed muffler can aid the operation of the engine, and make

the noise much more pleasant for everybody concerned. I brought home the new Silence-Aire muffler made in Germany, and imported by TechniSales in Los Angeles. This is a very lightweight muffler that fits very tightly over the engine exhaust stack. This model was simply a sound can with two exhaust stacks jutting out of the side of the sound chamber. It is simple, but it WORKS! I gave it to Dan Carey to test and he flew it on his beautiful "Thunderbird" and could detect NO LOSS OF POWER OR PERFORMANCE from his engine. Another muffler that I haven't had a chance to try out yet is the other import from Germany, the open end, venturi principle muffler imported by Gerry Nelson. From all reports this muffler does a great job of stopping the noise, and yet loses little power. Perhaps we are on the threshold of finding a really good workable system. Another advance in the muffler business has been in England where a muffler has been coupled to a tuned pipe to give a reported 25% increase in power. Actually it is a "detuned pipe" since the tuning is not critical. It has been worked out for the smaller engines, and may soon be available for the .60 mills. The only drawback is that you appear to be flying an airplane sporting an engine with a banana crammed on to it! If you like bananas, well, you'll like this muffler.

I've long felt that the individual flier could do a lot of experimenting with mufflers and could advance the state of the art a great deal. The basic idea in muffling is to reduce the sound of the exhaust coming out of the engine. I recently experimented with exhaust stacks on my K&B RR .40 engine used in my Formula I racer. The engine, out of the box, has a very short exhaust stack. In any kind of a cowl this short stack dumps a great amount of fuel back into the engine compartment. By adding a stack you can duct this residue away, but I

found that when I added the stack, at a certain length, the noise of the engine was so high-pitched and penetrating that it was very painful to be near the engine when it was running. The point is that the length of the exhaust stack may vastly increase the noise rather than diminish it. But, enclosing the sound in some sort of a can or sound chamber will dampen down the noise to a much more acceptable level. For quite a long time it was thought that by swirling the gasses escaping from the engine the sound level would be lowered, but now, after experimenting with several home designed mufflers, presented in these pages about three years ago, I believe that the best muffler is simply a big expansion chamber with no restrictions. If you take a normal engine, stop down the exhaust with a too-small muffler, then pack the expansion chamber of the muffler with steel wool, then you are bound to get a large loss of power, and an overheating engine. The easiest way to build one at home is to secure a piece of Reynolds do-it-yourself aluminum tubing. Make an exhaust extension from a piece of sheet aluminum bent to fit over the engine exhaust stack. Stick this extension into a hole cut into the aluminum tube with a razor saw and use automobile epoxy muffler seal to close up all of the cracks. The front end of the muffler can be closed off either with a flat plate, or by cutting through the tube in four places, rounding the nose of each section and then bending them in to form a cone and again sealing with epoxy muffler seal. At the back end you can leave it open, or stop it down to a piece of brass tube held into the end by an aluminum plug. This end takes a real beating, both from heat and vibration, and therefore needs to be extra strong. The main thing to remember is to keep the exhaust area LARGE. Really, the larger the better. In flying with a muffler you will soon find that a great quantity of exhaust residue has been deposited on your model, much more than is normal. This is the beauty of the Silence-Aire muffler model with the exhaust stacks sticking away from the aircraft, a lot of the junk is lost in the form of air pollution. With the straight-back design, most of the stuff is slobbered all over the aircraft. John Tatone has recently introduced a flexible extension that you can add to your muffler to duct the fuel away from the

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oven, open the door, and hold the covered section inside. The heat causes the material at first to expand, then to shrink to a tight fit over the balsa. It's easy, fast and cheap! The Electron can very easily be built in two evenings. Flying is much the same as any large multi aircraft. I think that the ailerons could be a bit wider, as they seem to be a little on the small side. Watch the alignment between the wing saddle and the stab saddle, and make sure that these two are parallel when you are building. Landing is really where this ship excels. It comes in for a landing just like a Boeing 707 and touches down more easily and gently than any other aircraft that I have flown. The Fox .74 was tested in this aircraft with my two year old PCS. (Incidentally, I also have a PCS that is three and one half years old, one of the first to be produced, and it is still going strong.)

A letter from John Stubben of Carlsbad, California serves to point up the interesting situation that exists wherever modelers are dedicated to one type of radio or another. John's letter reads . . . "With Phil Kraft moving down to the area of Vista, everyone here is buying Kraft. My question is this. Is Logictrol any good? I've never seen anyone flying it, except in the magazines. I've got a chance to get one of the new sets at a decent price, but naturally all the guys at the field using Kraft or Orbit just put down the idea. Can you help me?"

Well, the converse is true in the central Texas area, or has been up until the past few months. This has been "Red Box" country ever since Logictrol moved from California and someone flying another type set was looked down on, as being "not quite right in the head." Well, the answer is "Hog Wash!" Almost all of today's radio sets are good. I haven't had a chance to fly all of them, and some I've never seen, but from reports from around the country, it's evident that they all work pretty well. Any radio set will give trouble and need work done on it from time to time. None are perfect. Just the vibration from the engine alone will work over a radio set wing. I think that the best system would be one that carries the residue clear out past the tail. Just think what a joy it would be to have a clean

aircraft after every flight! Within the next few years we will probably have systems that will exhaust the spent fuel just like a car does now. Think what the family auto would be like if the exhaust came out of the top of the hood right back toward the windshield!

Several other items have been in the testing stage since returning from the last California trip. One of these is Duke Fox's new .74 engine. This engine is similar to Duke's earlier .74 engines with two very positive exceptions: The price has been SUBSTANTIALLY lowered, and this time the engine runs, and RUNS WELL. The earlier .74's were a beast to break-in, in fact, almost impossible. To make this test really a test, this .74 was removed from the box, bolted into a brand new aircraft, fueled up, the prop flipped, and flown. No break-in time, no hard starting, and no messing around with the carburetor. It started on the third flip, ran beautifully, and took the new aircraft right into the sky, like RIGHT NOW! It's got PLENTY of power. Duke recommends that standard fuels be used rather than the low castor fuels that were to be used on the earlier version. The carburetor on this engine has an adjustment for high, medium, and low setting, and once set, should maintain great operation through the full speed range. The idle is very low, just barely ticking over, and the top-end is great, even with large props. This is a fine engine for that scale aircraft or that big biplane.

Another new product tried out is the Dee Bee Electron, almost ready-to-fly plastic aircraft. This airplane is a brother to the famous Dee Bee Stinger, and employs the same fuselage, tail section and wing airfoil, but the wing sweep is confined to sweep in the leading edge only. The fuselage is molded of vinyl, in several bright colors. The wings and tail sections are covered with vinyl sheet, and the overall effect is a very sparkling clean model. The ailerons, rudder and elevator come uncovered, and this must be done by the modeler. Being lazy, and also in a hurry, I covered these with the same method I've used for quickie ships for several years. I purchases a yard of contact vinyl at the dime store for 49 cents and covered the surfaces with this. Rather than iron-on to take out the wrinkles and bubbles, I turn on the

pretty well over a long period of time. Dirt, fuel, grit, etc., in the transmitter pots will cause trouble, just as will a breakdown of an electrical component. But, in answer to your question, John, yep, the Logictrol radio is VERY good. So is the Kraft, the PCS, the Orbit, etc. But frankly, if I were you, I'd go ahead and get a Kraft or PCS since this is what's being flown in your area. Then, if you have trouble, no one will be able to come up and tell you "I told you so." Just as I'd tell someone in Orbit country to buy an Orbit if he doesn't want to be different, or in Logictrol country to buy a Red Box.

EK Products has just announced their new "Pro Series" radio sets, and I feel that this may possibly need some explanation. The first reaction of the prospective purchaser when considering whether to buy the Pro Series or the standard Logictrol might be a question of "should I buy that cheap old rig, or should I dig deep for more cash?" Well, the standard Logictrol radio ISN'T "a cheap old rig." It has the same standard of workmanship and design that made the Log II and Log III famous around the world. The difference is that the Pro Series has just that little touch of refinement that makes it cost slightly more. Some of the components are more expensive, the guarantee period is twice as long, and the design is more expensive to build. It is similar to General Motors charging more for a Cadillac than for a Buick. Both are great cars, but the Cad has that "something extra" that commands a higher price.

Now, for a plug for an old friend of mine, Gary Pannell. Gary has taken on the servicing and distribution for both Kraft and PCS in the Texas area, and is doing an outstanding job. His service and repair work is fast and accurate and dependable. If you live in Texas or the surrounding area and need work on your Kraft or PCS rig, contact Gary at Gary's Hobby Service, 2013 Melissa St., Arlington, Texas 76010. (Right between Dallas and Fort Worth.)

YESTERDAY'S FLIGHT

*Paul put the plane into a shallow dive,
A tinge of panic went through him —
What if the grenade went off too soon?*

By PHIL HELLER

Lt. Peters turned slowly and stared at Paul. He tapped his fingers thoughtfully on the report on his desk. "How?" he asked.

"I'll need my equipment." Paul answered quickly.

"Sir, I don't think..." the Sergeant started to say.

"You're not supposed to!" Lt. Peters snapped. He reached for the phone and called to have Paul's car and gear sent over.

"Come on," he said, heading for the door. "I may be nuts, but your stuff will be out front in a few minutes!"

Paul rose and followed the Lieutenant. "I hope your boys haven't torn things up," he said. Apprehension filled him as he thought about the electrical disturbance that had brought him here and he wondered if the radio would still work.

Outside, Paul's old wagon was already waiting for them. It took Paul about three minutes to re-connect all the servos and check out the radio. A feeling of relief filled him as the servos came alive and buzzed to center.

"O.K.," he thought to himself, "that's half the battle!" He turned to the Lieutenant, "Let's get as close to the shack as we can and still have some cover."

"Let's go!" The Lieutenant jumped behind the wheel of the wagon and Paul got in beside him. The Sergeant followed behind in the Jeep.

They pulled up to a group of men huddled at the corner of a hanger at the end of the flight line. Paul could make out the bomb depot and the bombsight shack in the distance. The shack looked awfully small from this distance, again that feeling of apprehension started to well up inside of Paul.

"Does anyone have any binoculars?" he asked. An MP with a rifle and scope looked questioningly at Lt. Peters. "It's O.K.," Peters said.

"Give it to him."

Paul checked the shack through the scope. No windows! His heart sank, but then he noticed the door was broken in and off the hinges. "That's it!" he said. "Now let's get to work!"

Paul assembled the wing and fuselage and fueled the tank. He then reached into his field kit and took out a couple of spare propellers, two old rubber wheels without hubs, some plastic tape, and some foam rubber. He carefully aligned the props on adjacent sides of the Cherokee's fuselage and wound some tape between them and around the model's fuselage. When he was finished the two prop blades stuck up like stakes on either side of the fuselage, as an afterthought he taped a strip of foam rubber on the fuselage top between them.

"Lieutenant," Paul said, "let me have one of your tear gas grenades." By this time everyone was caught up in what Paul was doing.

"Here." Lt. Peters took a cannister from one of the MP's and handed it to Paul. Paul took the two hubless wheels and wound the plastic tape through their centers and around the grenade so that when he was finished, the two wheels stuck out from the sides like Dumbo's ears. He wiggled the wheels to test their rigidity and, satisfied they would hold, set the grenade on top of the plane's fuselage so that both wheels slipped over the upright prop blades that were already taped to the fuselage sides. Paul slipped the doctored grenade up and down a few times to make sure it would slide freely, and then turned to the Lieutenant. "O.K., let's see how close we can get to the shack without getting our heads blown off!"

Lt. Peters came alive. "Toss your stuff in the back of the Jeep," he said to Paul, "the rest of you guys stand ready to move out as soon as that gas goes off!"

With the assembled Cherokee sitting in the back of the Jeep, his

transmitter and starting battery in his lap, Paul Bradley and Lt. Peters headed directly for the shack as fast as the Jeep would travel. About a hundred yards out, two bullet holes appeared in the windshield.

"That's it!" the Lieutenant shouted and hit the brakes. The Jeep skidded sideways and came to a stop, both men jumped out and crouched behind the Jeep. Paul reached up and lifted the small aircraft to the ground as another bullet ricocheted off the Jeep's hood. Hooking up the starting battery, he turned to the officer. "How much time have I got after the pin is pulled?"

"Eighteen seconds, more or less," the Lieutenant answered.

"Good," Paul answered, "you pull the pin when I signal and start counting, loud and clear!"

Paul choked the .60 once, and gave the prop a quick flip. The engine roared to life and then settled down to a quiet hum as Paul retarded the throttle. He checked the controls to make sure everything was working and then glanced at Lt. Peters who was holding the airplane. "All set?" he asked.

"Just say the word."

Paul's hands were trembling now; he took a quick look toward the shack and then turned back to meet the Lieutenant's glance... "Let her go!"

Lt. Peters pulled the pin on the tear gas grenade and released the airplane simultaneously. Paul eased the throttle forward and took off at a right angle to a line between the Jeep and the shack.

"Easy," Paul thought to himself, "don't want to lose that load too quickly." He flew out a few hundred yards and then started a right hand turn away from the shack.

"...6...7...8..."

Paul could hear Jeff Peters counting off the seconds as they both crouched behind the Jeep. He continued the right hand turn gaining altitude all the time until the Cherokee was about 150 feet up and directly over the hanger they had just left. Now it was coming directly towards them on a straight line toward the shack.

"...10...11...12..."

Paul put the plane into a shallow dive. A tinge of panic swept through him — what if the grenade went off too soon? The Cherokee passed over the Jeep at an altitude of about 15 feet and traveling about 90 mph heading

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straight for the shack. Paul fed in a little rudder to line up with the open door. The saboteurs were firing wildly at the onrushing model now.

"...13...14...15..."

Now! Paul rolled the Cherokee over on its back and pushed full down elevator. He could see the makeshift bomb part company from the airplane as he zoomed up and over the top of the bombsight shack. "What's happening?" he yelled to Lt. Peters.

"You missed!" Peters exclaimed.

Paul rolled the airplane upright and shot a quick glance at his target, just in time to see the grenade hit about six feet in front of the shack and skip bounce right through the open door.

"Just like I planned it!" Paul exclaimed in true Goldklank fashion. The dull 'thump' of the grenade going off was accompanied by the roar of two Jeeps full of MP's heading past them.

The two saboteurs came staggering out of the shack and practically fell into the waiting arms of the MP's. Paul brought his airplane around and over the runway in front of the MP's and their prisoners, pulling up in a series of victory rolls. He was feeling pretty good now. The weather was fine and the bird felt right, so Paul proceeded to put on a demonstration of his flying skill that had the spectators gaping.

Much later, as Paul was cleaning the last pieces of tape from the airplane and stowing it in the rear of the wagon, Jeff Peters came over and leaned against the side of the car, watching with interest. Paul looked up and asked, "Did you finish your business with the saboteurs?"

"Yes," replied Lt. Peters, "however, I'm still left with one problem - you!"

I couldn't have caused you too much concern if you trusted me enough to let me try what I did." Paul said.

Lt. Peters scratched his head, "Actually, it was more curiosity than anything else. You see, I'm a modeler myself and when the bomb squad reported your gear as a 'highly sophisticated toy model airplane,' my anxiety to see what you had, overpowered my better judgement!"

Paul couldn't help but laugh. "My wife has another name for it," he chuckled. Suddenly the thought of

Anne made him feel very depressed. "I wonder if I will ever see my family again - I wonder if there is a way back," he said to Lt. Peters.

The Lieutenant looked at him searchingly. "You still maintain you are from a time in the future?" he asked.

"Yes," Paul replied. "Look, I've been giving it a lot of thought and maybe I have some sort of an answer," he continued. "Time, in itself, must be compared to a current of electricity that flows along a wire. Somehow an electrical disturbance caused that current to reverse itself in one spot - the area I just happened to have been in, and pushed me back along that wire these twenty-five years."

Lt. Peters spoke up, "And do you think that 'spot' is still there?"

"I don't know," Paul said, "but sooner or later it would have to reverse itself again." He looked at his watch for the first time since his episode began. It jolted him to realize that less than an hour had passed.

Lt. Peters took Paul's wallet out of his jacket. He opened it, stared at the contents for a few minutes and then tossed it over to Paul. "Here, you may need this," he said, "I won't say I'm buying your story completely, but let's go find this so-called short circuit!"

Paul Bradley and Lt. Jeff Peters drove back the road they had traveled just a short while before. Their conversation bridged any gap of time or misunderstanding that might have existed between them. The phenomenon that takes place between two model builders meeting and recognizing in each other a common interest; the immediate comradeship that exists regardless of any of the so-called social barriers of race, religion, age or language, had happened between them as Paul related to Jeff Peters the manner in which their mutual hobby would grow during the next twenty-five years.

Paul's dissertation came to an end as they approached the area on Power Line Road where he had first noticed an unfamiliarity in the scenery. He slowed the car and drove slowly as they both scanned the area looking for something - yet not really knowing what they were looking for.

"Over there!" Lt. Peters tapped Paul on the shoulder. Paul stopped the car and they both sat looking at what appeared to be a wavy, out-of-focus bright area off the side of the road in a small field.

"What do you think?" Lt. Peters

asked.

"I don't know," Paul replied. "It could be it, or it could be a small thermal area, in either case, I have to try. It looks like it's getting weaker."

Jeff Peters got out of the car and came around to Paul's side. He gave Paul a friendly tap on the shoulder. "Good luck," he said.

Paul drove off the road and into the field. The area grew brighter as he entered it. The light grew in intensity until it blocked out everything else in his view. Once again his arms tingled to the electrical vibrations around him. The light continued to grow brighter until it made his head throb. Then it gradually diminished, finally breaking itself up into orderly little squares of light that lined up in neat little rows.

Paul Bradley raised his head from the steering wheel and winced in pain as he felt the lump on his forehead. The lighted windows of the Power Plant illuminated his car as it sat by the side of the road with its left front fender pushed up against a telephone pole.

Paul got out and checked the damage. He found the car still driveable so he backed out on the road and headed for home. As he drove he rubbed the lump on his head occasionally and parts of a fantastic dream flashed back to him. "Probably would make a good story," he thought as he pulled into his driveway. He made a mental note to write it down at a later date.

Anne came to the door as he was unloading the car. "Get caught in the rain?" she asked.

"Yes," Paul replied, "had a small accident too. Nothing serious, just a bump."

Anne looked concerned. "Better let me put something on it." She turned and started back into the house. "Oh, by the way," she stopped and turned, "there's been someone trying to reach you for the past hour, says he knew you during the war. I believe he said his name was Colonel Jeff Peters."

FOR PHENOMENAL PERFORMANCE
YOU WON'T BELIEVE UNTIL
YOU FLY IT, HERE'S YOUR
INTRODUCTION
TO THE

NEW ERA



Don Dewey & Chuck Cunningham

excellent trainer for the pilot who has competent instruction, or who has adequate proportional flying under his belt and wants to become experienced and proficient with a low wing ship. You might ask why the New Era fits the bill for these particular requirements. The answer is simply because it is small, easy and economical to build, flies for 10 minutes on a 4 ounce tank of fuel, is virtually indestructible, requires only a modest investment in the engine and yet is designed just like its larger brothers. It has the full capability and potential to do the complete FAI pattern, including knife edge flight, eight point rolls, Top Hat and so on. It is also an excellent trainer for the New Quarter Midget class, since it has a big wing area and a higher drag wing section. The only requirement that differs from the larger competition aircraft is that it needs one of the new, small radio systems. This design has been thoroughly field tested, and has demonstrated its capability of competing on an equal footing with the larger competition ships.

The first prototype of the New Era



The New Era was designed almost two years ago in anticipation of the miniaturized digital proportional systems. At that time, however, these systems had not yet been introduced by our industry and thus this particular design was shelved for several months. The introduction of the Bonner 4RS system heralded the advent of the light-weight proportional era. We then went back to work on the first prototype of this design. A joint effort between the two authors, the New Era was shuttled back and forth between California and Texas. Modifications were made to the original design concept in order that the aircraft would be capable of performing the entire stunt pattern. More recently, certain changes were incorporated in this design so that the craft would do the entire FAI competition pattern. As design changes became necessary, they were tried and tested, then incorporated into the final design as presented here.

The New Era is an ideal small field aircraft for the sport flier as well. A great deal of the flying with the several prototypes has been done from a large vacant lot in Texas, bordered by power lines, a railroad track and a busy street on one side, a 140 unit apartment on another, a freeway on the third side and at least for the time being, another vacant lot on the fourth. This flying site has since fallen to the carpenter's hammer and additional flight testing was done from somewhat more conventional fields. The California prototypes were flown from the latter type of airstrip, as well as from the rough terrain of The Hill.

This aircraft can make sport flying a lot of fun and is a good change of pace for the experienced multi pilot. We really don't feel that this is in any way a good ship for the beginner with no proportional experience, but it is an was outfitted with E. K. Products new Logictrol III. This rig fits into the limited interior of the aircraft with very little room to spare. You do have to mount the servos and the receiver in the conventional manner and cannot use the new KEK servo mounting tray. The completed aircraft, ready to fly, weighs in at 3¼ pounds. For the sport flyer, a .15 size engine for this little bird. For the competition flyer who

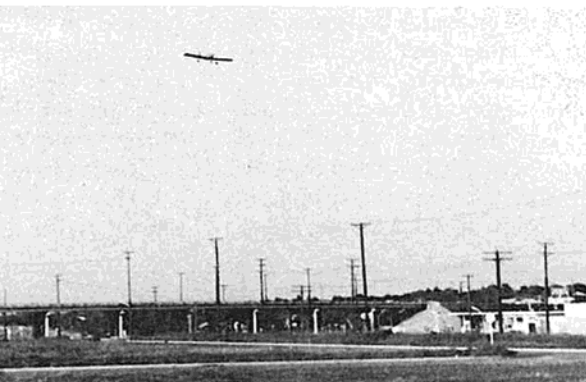
needs a maximum in performance, a .19 engine is definitely recommended. In testing its sport flying capabilities and with an Enya .15 installed in one of the prototypes, it proved its ability to take off easily from a freshly bladed vacant lot. It was also flown from a grass field and although the run was just a bit longer, it still evidenced no hesitation in getting off the ground in a hurry. A good method for insuring that this small size ship will take off from a less than smooth field, is to set it just a bit positive on the landing gear. This places the wing at a positive angle of attack and thus creates lift prior to pulling the nose off of the ground. This same procedure, by the way, holds true for a larger size ship as well.

The construction of the New Era is very simple and is as conventional as that used in the larger models. The wing on the first prototype is foam with balsa covering. The plans show a built-up wing which was used on other prototypes, so you may take your choice.

The fuselage utilizes 1/32" plywood doublers, which gives a body of tremendous strength. The tail surfaces are constructed of sheet balsa. Since this is a simple ship to build, we will not go deeply into the construction details, but rather, just touch upon the high spots. If you elect to use a foam wing, then cover it with either balsa, or cardboard. Install the landing gear blocks with epoxy glue, glue on the tip blocks with epoxy, join the wings at the center section of the wing with a 4" wide band of fiberglass cloth applied to the wing with epoxy resin. If you prefer, you can substitute a 4" wide band of Celastic for the fiberglass. We realize that the thinner soaked Celastic will dissolve the foam if it should contact it, but since you are working outside of the covering, don't worry about it.

If you choose to build up the wing from balsa, you can follow the plans and build a very strong wing with the modified egg crate construction and

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NEW ERA

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using the RCM wing jig. If you prefer, the wing can be built on a flat building surface by pinning the main spar in place over the plan, followed by the rear spar and blocking the latter up to the correct height with scrap balsa. Slip the ribs over the spars, pin in place, glue on the leading edge and the trailing edge, check all alignment and then glue the spars to the ribs. After this has dried, build the other half of the wing, then join the two halves together. When dry, add the top and bottom sheeting, the center section sheeting, cap strips, extra landing gear plywood braces, trunion blocks, tip blocks and dihedral brace. When all is dry, sand with fine paper, give the framework two coats of clear dope, then set it aside to age while you build the remainder of the model.

The fuselage is commenced by cutting out two sides from 1/8" sheet balsa. Glue in place the 1/32" plywood doublers with contact cement. Make sure that you have a right and left side. Cut out the formers and mark a vertical line on each one. Next, pin these formers perpendicular to the top view of the plan. Pin them so that the center line of the former is exactly over the center line on the plan top view. Be sure and angle the firewall to give right thrust. Glue the fuselage sides to the formers. Do not glue the tail together at this point. When the sides and formers are dry, bring together the two sides at the tail right over the center line. If you are careful, at this point, you can build a fuselage that has perfect alignment. Remove from the building board when dry and glue on the top block, the bottom sheeting and the nose block. Sand the blocks to give a round cross section.

Cut the tail surfaces from medium hard sheet and sand to shape. Use RK, Rand, or DuBro hinges for the elevator and rudder. You can hinge these surfaces either before or after paint-



ing. Just keep the paint out of the hinges!

After the fuselage has been sanded to shape, glue the tail surfaces to the fuselage with epoxy. Use a bit of epoxy on your finger to form fillets between surfaces. Epoxy Bond putty is excellent for this purpose.

Cover the wing with either silkspan or silk. Two layers of silkspan is excellent for this size of aircraft. The fuselage and tail surfaces do not need any covering, although two of our prototypes were covered with silk throughout. The wings do not need any extra covering, either, if you used foam and balsa construction. You can use the tried and true dope method of painting if you wish, or HobbyPoxy, but if you really want a light finish with a minimum of work, try this: Give all of the sheeted surfaced two coats of dope and when dry, sand with 400 garnet paper. The dope is more to strengthen the wood than it is to fill the pores. Next, apply two coats of sanding sealer, sanding between each coat with 400 garnet paper. When dry, go over all of the ship with a tack rag to remove any loose dust. Now, here comes the clincher. Put on one coat of Sears Acrylic Enamel, interior-exterior kind. This product sells for 79c per half pint and is available in a wide variety of colors. The red was used on one of the original prototypes. You can either brush or spray this material on your model, but brushing it is good enough. Put it on just as it comes from the can and let it dry overnight. The next day, very lightly sand the surface with 400 garnet paper, wipe it off with a tack rag and finish with a coat of Aero Gloss Fuel Proofer. That's all there is to it. Actually, the enamel is fuel proof and will go on either over or under the butyrate dope with no trouble at all. The only reason for the coat of fuel proofer is to bring out a "cheap" shine

after you have gently sanded the one coat of paint. The trim is accomplished with pieces of 3M decorator tape. This entire paint job can be completed in one evening, plus a small amount of trim work which can be done the following night. The weight gain from this method of painting is virtually nothing.

The landing gears are bent from 1/8" wire. The nose gear may be either a cut down 5/32" nose gear, or a commercial 1/8" nose gear with the right angle bend removed so that it can be used in a Top Flite bracket. If you don't like the sloppy fit of the 1/8" wire in the 5/32" hole in the nylon bracket, simply slip a piece of 5/32" brass tubing over the 1/8" wire and solder in place.

There really isn't much to be said about flying the New Era, except to make sure that all surfaces are aligned correctly and that the aircraft balances at the point shown on the plans. Fire up the engine, aim the nose in the wind and hang on — you're in for a lot of fun and if you can interest your small boy in a try at the stick, you can't imagine just how much fun you both will have. When you take one small boy, stir in a large helping of a fine flying small sized R/C ship, add a dash of miniaturized proportional radio, sprinkle in a bit of glow fuel, take the mixture to one oversized vacant lot, top off with a great quantity of other admiring small fry and what have you got?

FUN — that's what you've got — and a chance to make your special small boy a part of our hobby.

One interesting feature of the New Era is its fantastic ability to slow down for a landing — you can almost hover it ala helicopter style. This has been one of the less enchanting features of the smaller competition aircraft — they have a tendency to land like Goodyear racers! Not so the New Era which can be slowed down to a point where you can literally walk alongside of it. Yet, it displays no snap-rolling tendencies at these slow speeds.

As a final addendum, foam wing cores for the New Era are available for \$5.95 from International Models, P.O. Box 16154, Fort Worth, Texas 76133.

Good flying and we hope you like the New Era.



The Slopemaster about to capture second place in its first contest. Note stabilizer on top of boom — before modification. Note pot on Chief Sunday Flier. This picture also taken before he got streamlined!

SLOPEMASTER

By KEN WILLARD

Sailplanes, in the world of aviation, are to power planes as sailboats are to power cruisers in the marine world. The true sailplane enthusiast intensely dislikes having to put an auxiliary motor on his ship - it stinks up the air and dirties up the plane. Sailboat enthusiasts are just the same.

The big difference, of course, is that sailplanes, although great sport, do not have a high degree of practical utility, whereas sailboats can cruise in seas that power cruisers would not dare to challenge. Also, sailboats can "ride the wind" around the world - their cruising range is limited mainly by the provisions that can be stored aboard.

But the basic similarity, in the sporting world, is the skill required to

make maximum use of natural forces - the wind, thermal currents, and gravity - without having to rely on man made power sources. And that's why sailplane enthusiasts have such a great kindred feeling for sailboaters.

A little over a year ago I was introduced to the silent world of R/C sailplane flying, after many years of participation in R/C power plane activities. Since that first introduction, I've become a dedicated enthusiast for sailplanes, although I've never lost my original interest in power planes. I find both fields have their own problems and, correspondingly, their own rewards.

The Slopemaster was my first sailplane design - and like all 'first' designs, by the time I finished

modifying it, it still looks like the first version but is considerably different in aerodynamic details. Here's the way the changes came about.

First, as always, I wanted a comparatively small model. But the very nature of sailplanes is such that even a small model has a pretty good wingspread compared to power models. With a seven inch chord, a power plane would have an aspect ratio of about five - maybe six, and the span would be 35 to 40 inches. A sailplane should have at least an aspect ratio of eight - and preferably higher - so I compromised at nine - and that gave me a span of 63 inches - a whopper, for me.

I wanted a nice appearing model,
(continued on page 27)



Final version of the Slopemaster.

SLOPEMASTER

(continued from page 25)

and like the pod and boom design, but that created some construction problems. So I figured out a way to give the pod and boom appearance, and still use the old "slab sided" construction technique. Just shape the side to look like a pod and boom, then add 3/16" square longerons which can be rounded off after the top and bottom sheeting has been added. Looks very authentic from ten feet away.

Since I didn't have a lot of experience in glider designs for R/C, I sought some expert advice. Whitey Pritchard had built and flown several, so I asked him what wing section to use, bearing in mind that all I wanted was a good all around model that could handle both light and moderately strong winds. I wasn't looking for something that would fly in a gale - I'm a Sunday flier, not a storm trooper!

"Flat bottom sections are always good when it comes to general purpose gliders," Whitey opined. That satisfied me - particularly since they are so easy to build right on the bench. So, I zip-zipped a modified Clark Y section, and built a conventional type wing - no taper (some time later, my aerodynamicist friend Bob Andris informed me that at the Reynolds number I was operating at, the constant chord wing is just as efficient as a taper wing) and with about 4° dihedral. I was figuring that by keeping the dihedral down the effective lift would be improved. As later events proved, this was a mistake.

Drawing upon some limited experience with a soaring version of the "Double Feature" twin pusher which I "honked up" to fly as a glider, only to find out that the rudder area was insufficient, I made a pretty big rudder for the Slopemaster - or so I

thought. Once again, later events showed that there's nothing like a flight test to prove the adequacy of a design.

Finally, for simplicity, I put the sheet stab right on top of the "boom" where it was in line with the wing. I had seen so many gliders that seemed to follow that design layout that I figured it would work all right. Once again - it worked, but not to my satisfaction as I gained experience with the model.

The first flight of the original version of the Slopemaster was pretty disappointing. I drove the 55 miles to Sunset Beach, and on arriving found a group of fellows flying in almost ideal conditions - wind right against the slope at about 12 miles per hour. Three soarers were majestically swooping along the hill, and a fourth was riding the updraft several hundred feet up, and doing all sorts of maneuvers. It was beautiful. I could hardly wait to toss the Slopemaster into the wind.

After checking everything and finding it in good order, I launched the model. It rose immediately, gaining about seventy feet, at which point I gave it right rudder to start riding along the hill. Very slowly it turned and started along, then as it picked up speed it started to drift back over the hill, so I gave it left rudder to turn it into the wind. Nothing. Then gradually a skidding turn. As I held full rudder, it came around and headed back in the other direction, but the wind had gotten under the right wing. The left turn continued, even though I gave full right. The model went over to the back side of the hill, lost the lift, and dumped unceremoniously.

It was apparent that I didn't have enough directional control. There were two ways to improve it; increase the size of the rudder, and increase the dihedral. As it turned out, I did both, increasing the maximum width of the rudder to that shown on the plans, and increasing the dihedral to 7½° as shown.

For a while I thought that took care of the design layout. But the more I flew it, the less I liked the sharp way it fell off the 'step' when an updraft hit it. The stab was critical. So, back to the old favorite trick - lower it from the wing wake. That meant putting it on the bottom of the 'boom' so I added a little sub-fin to help protect the stab on landings.

Finally I experimented with the

decalage, and wound up using the incidence setting shown on the plans as the best all around combination.

There are no tricks in the construction of the Slopemaster. It qualifies as an 'old fashioned' model when viewed as a construction project. The fuselage is slab-sided sheet balsa, with longerons for strength. Rounding the corners of the fuselage gives it an appearance of roundness, especially in the tail 'boom' section. The wing is standard spar and rib, with sheeted leading edge on top. The prototype only has the center spar, and although it is strong enough, it was pretty flexible before the covering was applied, and this made it necessary to use considerable care when shrinking the MonoKote tight to be sure that no warp got into the wing except for a slight amount of washout in each tip. The plans show two extra spars which should have enough stiffness to take away the critical element in covering. The additional strength is a bonus factor.

The sheet balsa stab, fin, and control surfaces are cut from medium grade balsa, and have plenty of strength for everyday flying.

The canopy is purely for appearance. With a little Williams Bros. pilot in there, it lends a touch of realism. It's a little tricky to cut the canopy to fit, but worth it. The canopy is held on with a rubber band to the wing dowel.

For access to the battery and receiver compartment, the top of the fuselage forward of the wing is covered by a 1/32" piece of plywood which is held in place with wood screws through the corner braces.

The receiver, servo, and battery compartments are ample for today's equipment. I've shown a typical installation of the Kraft unit; however, during the year of testing and flying, the Slopemaster has carried Bonner receiver and servos, and the combination of Bonner receiver and Wintronix servos, which give a little more control movement. Also, the latest equipment to be tested in the Slopemaster is CitizenShip's DP-2 two channel system. Although it is slightly heavier than the Kraft, you can't tell the difference in performance of the Slopemaster. In my own case, it took a few minutes to change over from single stick to two stick control - I kept trying to pull the rudder stick back at first. Otherwise the DP-2 works great!

If you use the DP-2 system, be sure to modify the left stick so that it centers. The instructions tell you how to change from the rudder and motor control setup, which is the way it comes, to the spring centered rudder and elevator combo.

I have not tried the Slopemaster with single pulse galloping ghost, but I doubt if it would be very satisfactory, since you only have half the effective throw for the rudder, and if you set up the linkage to get more throw, it probably would make the model fishtail through the air. However, dual pulse should work fine, although be sure your battery life is up for the game.

The placement of the tow-hook gives the Slopemaster a good solid climb either on winch or hi-start. There's plenty of clearance from the landing wheel, but if you won't be in

always land within a few feet of the spot. In the four contests the Slopemaster entered, it won two, placed second in two.

Not bad for a Sunday glider.



Slopemaster and "Skinnysocks" after both had completed modifications.

an area where the wheel is useful, then you can leave it off. Again, I like it for the realism of appearance.

Flying the Slopemaster is one of the biggest kicks I get out of R/C modeling. Although it was not designed for contest work, I've entered it in four contests where the final standing depended upon both duration and spot landing. The duration of the Slopemaster is not as good as some of the big jobs, but it's deadly on spot landings, and unless there's a really gusty wind you can





TOLEDO CONFERENCE TOLEDO CONFERENCE TOLEDO CONFERENCE TOLEDO CONFERENCE

By BERNIE MURPHY

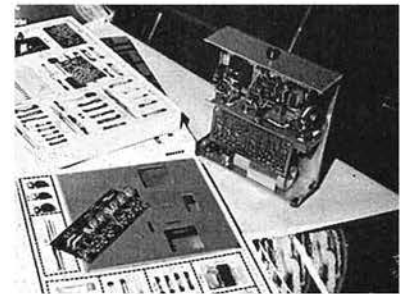
PACING THE PHENOMENAL GROWTH OF R/C, THE ANNUAL WEAK SIGNALS MIDWINTER CONFERENCE GIVES THOUSANDS OF AVID HOBBYISTS AND SPORTSMEN AN EXCITING PREVIEW OF THE YEAR'S NEW PRODUCTS. RCM TAKES YOU ON A CLOSE-UP TOUR OF THE

TOLEDO CONFERENCE

For those of you who were unable to attend the 15th Annual Weak Signals Conference, we shall endeavor to take you on a quick tour, noting a few of the points of interest along the way. Any attempt to completely cover this tremendous show must be considered futile, as evidenced by the fact that even the Weak Signals Club was unable to get a complete tally on the number of manufacturers represented. Their Post-Conference release indicates 73 manufacturers participating, while our count was 75. This number should be increased to 79 if manufacturers such as Kraft Systems, Inc., and Kraft-Hayes Products, Inc., were considered as 2 rather than 1 as in our count.

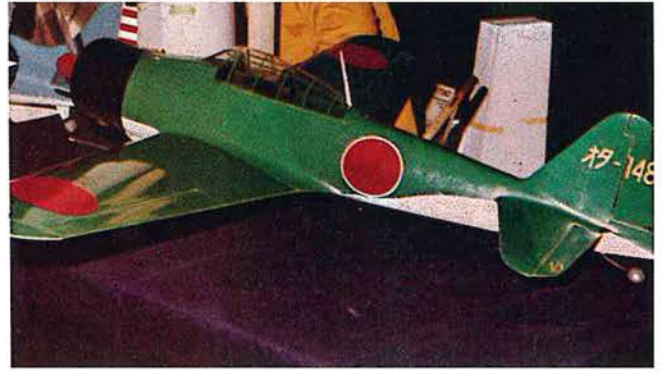
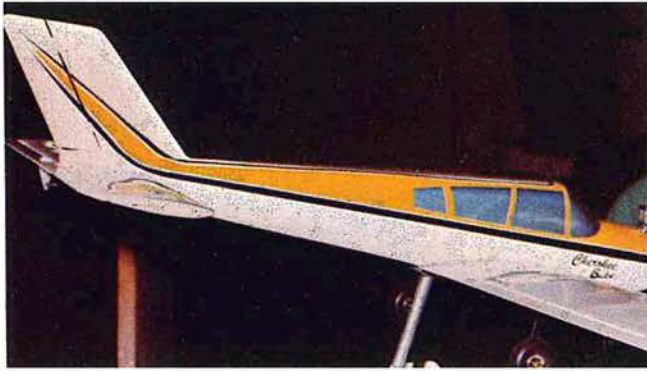
As we arrive at the Lucas County Recreation Hall early Saturday morning, we notice that the parking lot is already beginning to fill. At the ticket window, we stop so that everyone can purchase a ticket - \$1. Everyone have a ticket? Then let's go!

As we enter the door, the first display on our left is that of F & M Electronics Inc. Here we pause to talk briefly with Dick Thompson and John Cline about the new Quasar System, and admire the packaging job they have done on the Quasar Kit.



We move along to Meyers Models for a few words with Daley Meyers and Frank Skelley who are more than happy to show us their latest Dutchboy and Dutchgirl ready to fly trainers.

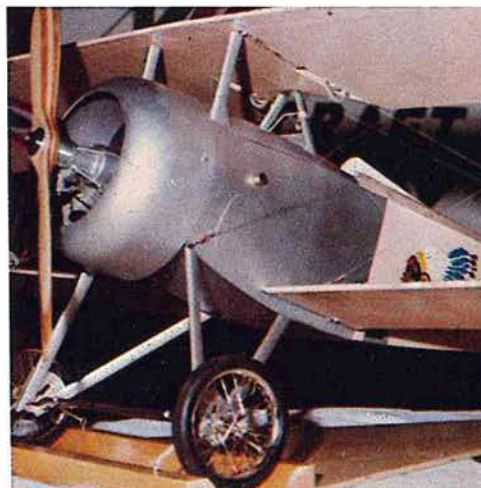




At the Pettit Paint booth, we see the familiar profile of Bev Smith, ably assisted by Bill King and Rusty Nelson. New items here included a faster curing epoxy resin and Glo Paint Orange HobbyPoxy. This trio was kept busy discussing techniques for molding, coating and covering with epoxy resins.



Next we stop for a few words with Dick Riggs of Orbit Electronics. Orbit's latest is their PS-4D miniature servos which are compatible with any of the IC systems. Also new for '69 are lower prices!

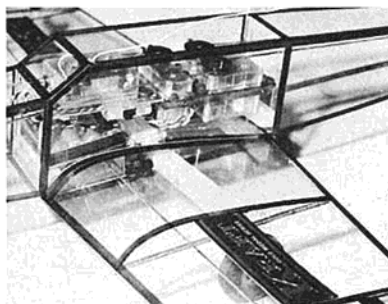


Pappy deBolt tells us of the success of his Cobra II, and its acceptance by R/C'ers. We must admit, it is a sharp little machine.

(continued on next page)



Next on the tour is the Kraft-Hayes; Kraft Systems display. Here we have a chance to get the "feel" of the new single stick transmitter, and inspect the latest Kraft and PCS systems. A unique plexiglass airplane, complete with clear cased gear demonstrates the workings of an R/C system. Cliff Weirick was noncommittal on its flight performance - the airplane, not the radio, about which he was quite confident.



Paul Benkner, Russ Brown and Lou Klotter staffed World Engines' display. Here we have a look at the M.A.N. system, the small S4a servo, and World Engines "Brick," as well as the popular OS and Supertigre engines.



At "Big Frank" Garcher's Midwest booth we see the forthcoming Flea Fli, also a new line of small gliders and rubber powered ships. No these are not R/C - yet!



One Design Electronic Models display is the first of the R/C boat displays on our tour. Dave Berry is proud of these kits, as well he should be. The "Half Meter" is a 67 inch high performance racing sail yacht, while the "Moppie" is a one sixth

scale version of Bertram Nautec Corp's 31 foot ocean racer. This is a "really big" power boat - watch for more on this one in RCM.



"Mister Modelling," Carl Goldberg, greets us as we approach the CG booth. Carl is attracting a lot of attention with his latest contribution to the "state of the art." His Ranger 41 is a "ready to fly" of molded foam, well designed for strength and simplicity. This little ship requires only a few minutes to install your radio and fly - rudder only to full house! We expect to see a lot of these showing up on the field this summer, as well as on the local school yards.



Next step, Ace Radio, with their display of "goodies." Of particular interest was the emphasis on small R/C, with a number of ships shown using reduced power TD. 010's and sub miniature pulse radios. These little ships are small and light enough for indoor R/C!



At Royal Products and Royal Electronics we are welcomed by the smiling faces of Ron Murray and Bob Maritz. RCM's Classic in passionate purple



draw considerable interest, undoubtedly due to the color, as did Royal's new Retractable landing gear. Also displayed were many of the hundreds of items that Royal distributes to the hobby industry.

At Sterling Models, we stop to admire their 40 inch span S.E.5 - WWI scale. Also, following the success of the F51 profile ship, Ed Manulkin was happily showing the next in this series - the Messerschmitt ME 109, done in a bright red plastic. Impressive Ed!



Matty Sullivan, of Sullivan Products, is on hand to show us his latest in tanks and accessories, including a nylon pushrod package.

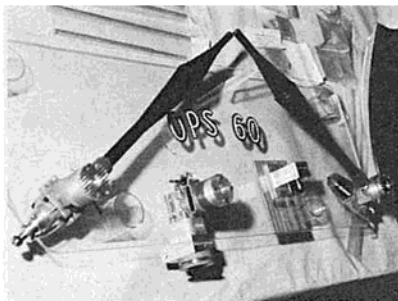
Next stop, Lanier Industries and a chat with Len Purdy. Len shows us the latest addition, the Aero 600, a low wing all out competition model with a scale-like appearance. Also new from Lanierville are two gliders, the Eagle 750 and the Condor 1000. Watch for more of these in a future RCM.



CitizenShip's Bill Welker points out the changes in their new systems for '69. New closed sticks and vinyl covered cases are featured on the "top of the line" 4 and 6 channel digital systems. Also new from CitizenShip is a transparent heat sealed shrink type covering material. This is a plastic material which can be painted after application.

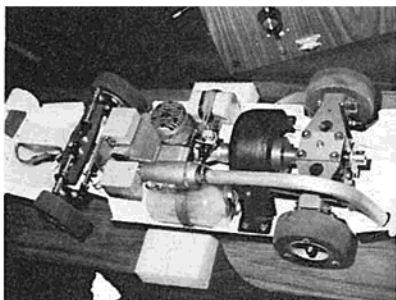


At CCProducts, a little "Locker Room" discussion undoubtedly on the performance characteristics of the OPS 60 engine with tuned pipe exhaust.

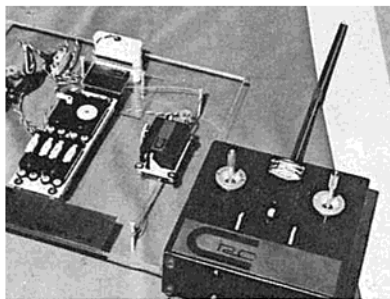


Next a chat with Jim Gouge of Champion Electronics. Jim shows us the prototypes of their forthcoming "Pattern Master" digital propo system. A light weight mini system, to be available in 3, 6 and 9 channel versions.

Our next stop is our introduction to another facet of the R/C sport, power race cars. Bill & Ken Campbell and Dennis Karner of Delta Systems tell us of the thrills and spills of power racing, and we cannot help the desire to run one of these little Hot Rods.



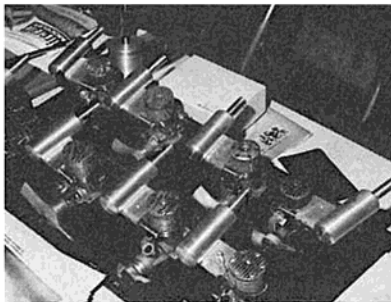
Len Klebanoff and Dick Pikul of CRC Electronics entertain visitors with an excellent R/C robot, - about 4½ feet tall, completely operable and abounding with flashing lights - a great attraction, constantly drawing the crowd close enough for Len to expound on the merits of the CRC radio gear.



PB Inc.'s display is true to their initials- "Pumps & Boxes." Storage and carrying boxes and rapid filling (or emptying) electric fuel pumps of high quality are their specialty. Could it be that PB comes from chief cook and bottler, Paul Bartels rather than Pumps & Boxes?

With the increased number of clubs

requiring mufflers on their fields, is it any wonder that Norm Rosenstock is happy? Norm heads up B & N Model Accessories, whose product is mufflers. From the looks of things, he has a muffler to fit most any engine. A new addition to the line is the power recovery version which runs cooler with less power loss.



Gary and Marianne Preusse of GEM Models will gladly show us their latest in R/C boats and accessories, and if we can pause a few minutes to watch a short film of R/C boating activities, we just might get the urge to venture into another phase of R/C.



Paul Warner, of Warner Industries, shows us a few of their quality foam wing cores, and advises that if they don't have what we need, he will make any core custom, if we but supply root and tip templates. New from Warner, the Warner Jig-it, a fuselage construction jig, allowing fuselage construction time to be cut drastically while insuring true alignment. Completely adjustable for any size model.



Dwight Hartman discusses his ever expanding fiberglass line, which now includes the Zeus MK5 fuselage which is compatible with the New Orleansian.



A newcomer to the Toledo scene greets us on our next stop, John Tatone of Tatone Products. This is John's first year at Toledo, but the Tatone name has been with model aviation for many, many years. John shows us a few of his new products, including the upright and side mount engine mounts with integral steerable nose gear. Also the extended "Peace Pipe" which will allow mounting without reworking the hatch block on your ship.



Our next visit is with Bill Cannon, of Cannon Electronics. Bill gives us a chance to really dig into his digital kit. Manning a booth like this one is a real test of a man's physical and mental ability. R/C'ers can really ask some way out questions!

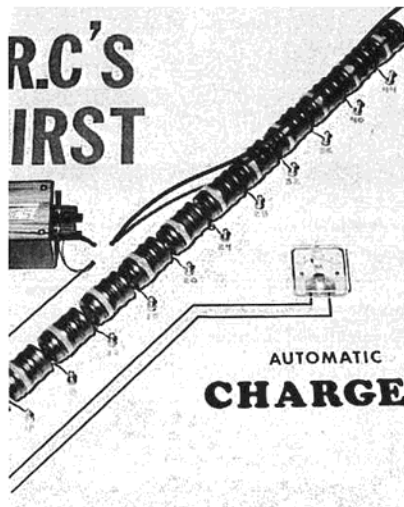


Dave McCullough and Ken Delt are busily answering questions as we arrive at the A-Justo-Jig display. This wing building jig has come a long way since our first encounter four years ago. The maple rails have been replaced with extruded

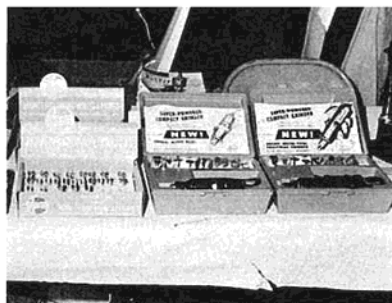


aluminum, and now the machined wood jig blocks have been replaced with molded plastic, assuring uniformity. Virtually all of our multi-wings have been built on one of these jigs during the last four years - we like 'em!

Next along our tour is a visit with two old friends, Hank Hankinson of Sonic Tronics and Milt Miller of Coverite. While Milt is telling us of the improvements which have been made in Coverite, Hank is busily expounding the features of their new charger. Okay! One at a time! Milt explains that the new Coverite fabric is lighter, and coated with a new dry adhesive which is unaffected by finishes - a great step forward! Now it's Hank's turn to show us the Sonic Tronics Charger. This is an automatic charger, in that for a given rate - say 20 ma, it will charge at nominal 20 ma regardless of the number of cells being charged. Note in the photo that the charge rate has dropped only 2 ma on 48 cells, eliminating all adjustments. Sonic Tronics is also offering a new complete GG or Pulse Proportional outfit.



Ed Erdman, Bob Martin and Ed Whitman are on hand at the Dremel booth to answer questions and demonstrate the use of their hobby tools.

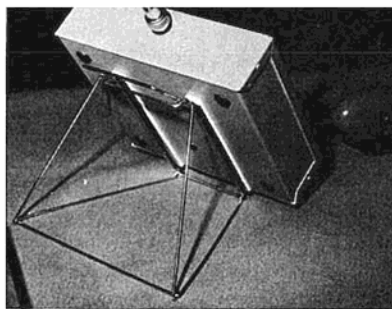


Ken Sparr of Quick 'N Easy Products greets us as we approach his elaborate display of cloth emblems. Ken recently made RCM emblems for the staff, and we can attest to their quality. Also of importance, they are reasonably priced. Also of interest at the Quick-N-Easy Products booth is a new plastic covering

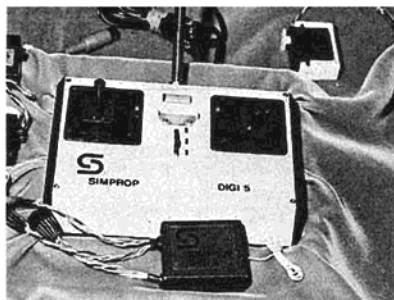
material, available in either clear or satin chrome. This material, Top Cote, is applied with heat, and is PAINTABLE.



Our next stop is with Stuart Jester of Trans Stand. We have seen Stu's product at several previous stops. As the name implies, Stu's product is a transmitter stand. Made primarily of wire, with welded brackets, this stand attaches to the back of the transmitter and supports it firmly. No more dirty charge plugs or crumpled antennas!



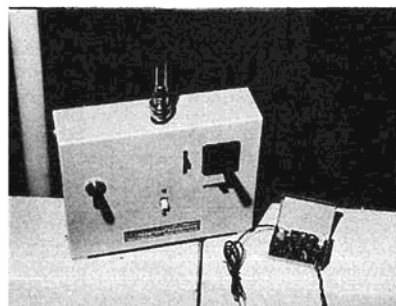
At Nelson Model Products, Jerry Nelson and Al Coomber point out the features of the Simprop Digi 5 system which they are importing. Jerry also imports many accessory items, all of which we found interesting. Of special interest is the KO Muffler - rated as one of the best. Nelson Model Products is also the source for the Ready Built KA6E glider.



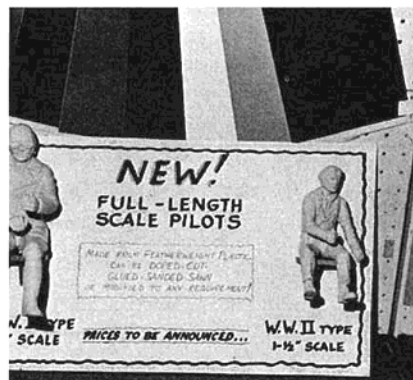
At the Sig booth we chat with Hazel Sigafosse and Maxey Hester while dismantling one of their Citabria kits. This appears to be a well designed kit. Sig is distributor for just about anything in model and wood fields.



It's always pleasant to visit with Herb & Ruth Abrams of Rand Manufacturing. Herb is a forward thinking, model building, businessman. He is the man who made Galloping Ghost respectable, even to the extent that it is now becoming "Pulse Proportional." Forthcoming from Rand is a completely new "Pulse Proportional" system with either fast or slow pulse rates. This system will not end here, however, as it is an expandable system. It can be expanded in three steps to a 2, 3, or 4 channel digital system - Great for the newcomer to R/C.



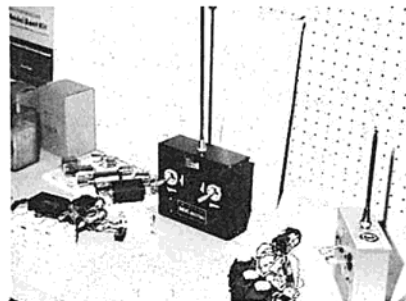
Sid MonoKote - sorry - Axelrod of Top Flite doesn't notice us as we approach. Could be he's too busy ironing that new metallic green monokote on his coat collar. While he's not looking, maybe we can get that roll of Black that we need for Snoopy's doghouse. Oh! Now he sees us! If we can get him to put down his travel iron for a few moments, maybe we can get him to show us his new SE5 prototype, and the new full length 2 inch scale WWI pilot, and 1 1/2 inch scale WWII pilot prototypes. Watch for these from Top Flite, they look good to us.



Dan Pruss and Dick George of Su-Pr-Line Products display their popular Nyrod and accessory linkage fittings, while Hal Roush points with pride to his giant flying wing glider - Nyrod controls of course!



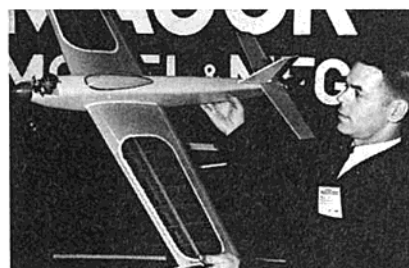
At the Aristocraft booth, we meet Gil Rose as he grabs a quick hot dog and coffee lunch. Aristocraft imports a number of scale airplane kits as well as the MK and Aristo radios.



At E. K. Products we are greeted by Bob Elliott who is busily explaining the merits of the new Pro-series to Frank Schwartz. The new Logictrol's for '69 feature a new closed control stick assembly - the first with an adjustable centering pressure - you set it the way you like it, hard or soft. Incidentally, the Pro Series are individually test flown!



Major Model & Manufacturing in the person of Nick Zirolis is our next stop. Nick is relatively new at kit manufacturing, but already enjoys an enviable reputation. Major's kits of the Moraine and Eindecker have won immediate approval. Their newest, the "Mirage" is a 42 inch sport or competition model designed for the new smaller radios. A real quick-built beauty we'll have one in our stable soon!



At the Wing Mfg. display, Ralph and Lynda Andre, Gary Leonard and Norm Pace show us their new Wildcat F4F kit in foam and fibreglass, a beauty. Also displayed are their Zero and Avenger competition ship, as well as the Posi Tract retractable gear.



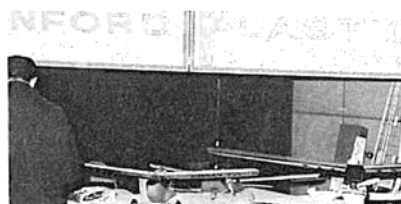
Judging from the expression on Chuck Waas' face, as we approach the Micro Avionics booth, it would appear that he is about to launch a radio controlled fly. Their new XL-IC gear is small, however, not quite that small - yet!



The Angel Mini Flite display is a real attention getter! Fred Angel has set up two Aerial merry-go-rounds, one with the Blue Max Series, the other with the new fly for fun series. We are falling in love with the Citabria on floats. Dennis Sawyer and Dick Trudeau appear to be hiding the Supermarine prototype from us. Hope to see that one in a kit!



At Penford Plastics, Russ Hughes demonstrates their Auto-Start for us, as well as introducing a few of the ARF airplanes. The Auto-Start is capable of



turning over and starting any size engine. Available with or without rechargeable 12 volt motorcycle battery.

From the late '20's, the American Eagle, in the form of a 55 inch span kit from Aero Precision. Tom Collins is happy to show us the kit parts for our inspection, and we must say that the samples shown were excellent.



The newest addition to Vic's Custom Models Line is the Son-O-Jet, a sharp looking ARF (almost ready to fly) with a lightweight fibreglass fuselage.



John Tudor and George Shacklett, of Aerotronics, show us the features of their "Engine-Loks." These are designed for mounting an engine to a mounting plate. Molded of Delrin, the "Loks" eliminate blind nuts, and hold securely against vibration. Aerotronics is also one of World Engines' service stations.

Two clean looking, well made ARF's from Willie Burns of Burns Industries, are the Mustang and P40. These are semi scale type ships capable, according to Willie, of the entire AMA pattern.



TOLEDO CONFERENCE

(continued from page 27)

At ARK Products, Aldon Kelly introduces us to an old friend - Y & O props. These fellows make excellent props in sizes from 7 inch diameter to 18 inch diameter. Say, are you looking for a large prop for that WWI ship?

Skip Damotte of Lancer Engineering has a tremendous display of multi cylinder engines, primarily marine. Interest in these engines makes it almost impossible to get any good photos.

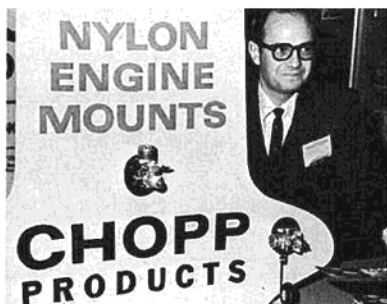
A gentleman that we haven't seen since last summer is Paul Sherlock. Paul is the builder of that giant 747 jumbo jet. Now he is making some of his know-how available to the average R/C'er via his new Learjet kit. The kit features stressed skin construction of the toughest, most impact resistant plastic. Tony Bonette looks interested.



At North American Hobbies, we have a chance to control some small electric powered R/C cars. These are great for keeping "in touch" during foul weather, as they are easily run indoors - no fuel fumes!



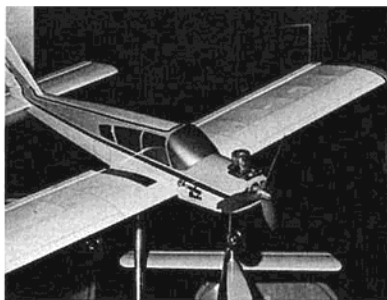
Cal Chopp's contribution to the Toledo Conference is his nylon engine mounts, which are currently being tested by RCM. Watch for more on these in Clarence Lee's



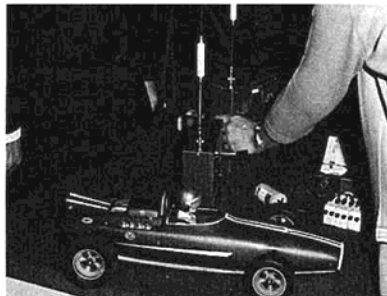
column.

Palco Hats offers us an opportunity to advertise our frequency, and at the same time, create a little shade in that hot summer sun. Palco has a hat for every frequency color.

At the VK Models display we cannot help but be impressed with Vern Krehbiel's new Cherokee Babe, a 53 inch span full house miniature of his popular Cherokee. This one is designed for intermediate and small size proportional gear. Available sometime this summer. We expect to be reviewing this one in K & P.



Sam Peterson of Min-X claims to have just the radio for VK's little Cherokee. The latest in the Astromite series utilizes the Kraft KPS9 servo mechanics and features unusually fine workmanship.

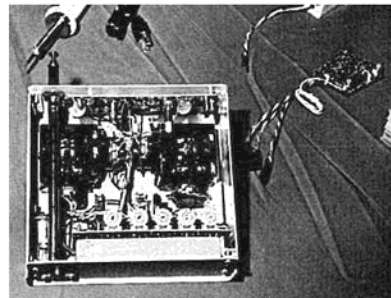


George Siposs of RA/CAR is trying to convince us to come ROAR with him. The clear body on his exhibit model gives us a good look at the "guts" of his Indy racer. Note finished model of the same car at the Min-X booth. It would appear that Sam has accepted the invitation. Must admit, we're interested!



The new Heathkit GD-19 Digital system is the latest offering from Bill Hannah of Heath Co. This is truly a deluxe kit, with Kraft-Hayes control sticks and servo mechanics. The kit even includes a small soldering iron. The receiver is all new and

miniaturized (no more big box), with three ceramic filter IF's that require no alignment. No IF cans! Available on all three bands. Also forthcoming from Heath is the Thumb Tach an electronic tachometer - just the ticket for checking on muffler effects. Watch for reviews on these!

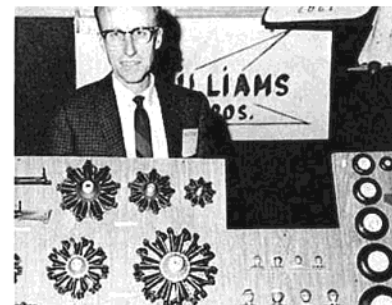


At Octura Models, we have a chance to check out the latest White Heat 4-60, a four point hydroplane - that's a boat not an AEROPLANE! Tom Perzentka also offers an excellent line of boating accessories.

Ray Davis of Model Engineering shows us his static prop balancer. A balanced prop can greatly increase the life of your radio, engine and airframe. Also available from Ray is a high volume (12 oz. in 13 sec. at 12V) fuel pump, and a smoke generator that can be turned on or off via throttle trim or auxiliary servo. Look out Rhinebeck!



With our avid interest in WWI scale, we must stop for a brief visit with Larry and Granger Williams, known as Williams Bros. Of special interest is their new Vickers gun, and vintage engine cylinders. Hope to see some fine crankcases someday!



Bill Hall is always willing to answer questions about the Hallco line of radio systems, and demonstrate their performance. The specialty here is pulse proportional, and reduced prices are the order of the day.

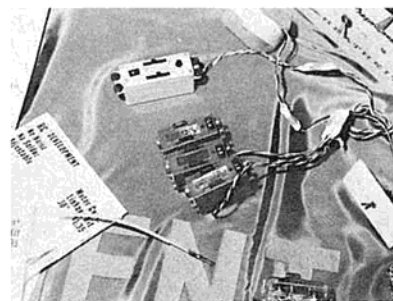


A stop at the Franklin Glue table nets us a sample of Titebond from Bob Cole. Bob tells us that he has been kept pretty busy handing out samples. In between times he has to set his display board back up - seems as though the display is composed of RCM copy about the merits of Titebond and each time a certain gentleman from a competitive magazine passes he turns down the display. That's a No-No, Norm!

Our next stop is the display of Simul-Logic Systems. Dave Sileo points out a few of the features of this system, 14 ounce flying weight, triple tuned receiver front end, four IF stages and an IC encoder in the transmitter. We were impressed by the neat workmanship in the sample shown.



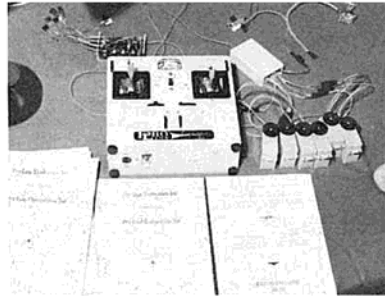
Allen Booth and Dave Kray of R/C Development always manage to come up with something new. These are the fellows who pioneered the current style of single stick control (pot in the control stick). Now they have a new servo, which they say is universal. Wouldn't it be nice if all servos were interchangeable?



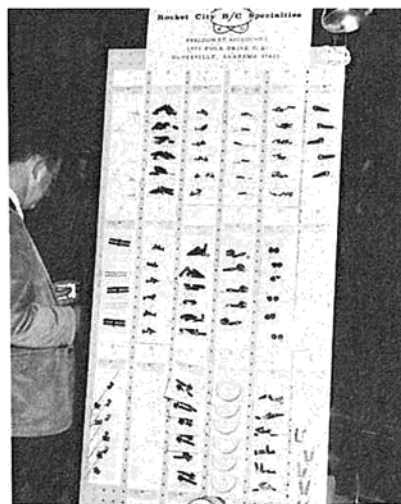
At the Gould National display, we find

Bob Degel busily answering questions about Nicad batteries, and passing out informative literature. Nicad's have added tremendously to the advancement of R/C!

Around the corner, we find Jim Whitley introducing a new radio system. This system, the Pro-Line Competition Six, boasts many features, such as being operable at 1/2 normal battery voltage, and a noise rejection circuit capable of rejecting virtually all noise pulses anywhere in the signal waveform. One claim which is immediately apparent is high servo thrust - we could not stall them! Just the thing for them what build sticky controls!



Adjacent to Pro Line we find the Rocket City display board, with most of their R/C accessories. Would have liked to pick up a couple of their throttle override fittings, since they have been unavailable locally - looked at that darn board for several minutes without seeing them - one glance at the photo - !



Dumas products display, gives us a choice, boats or airplanes. The Dumas name has been around for quite a while, and if wood boats is your "bag" you're sure to find something here. Also new from Dumas is the Trident, a new multi ship - air that is.

Lou Andrews of AAMCO is showing his new release, the A Ray, a high wing advanced design, along with the already popular Trainermaster, the ever popular Aeromaster, and his very, very latest Trixter Beam - that's the latest from 1953. For those who don't remember 1953, the Beam is a 50% inch rudder only for .09 engines.

Kit features die cut parts, formed gear, hardware, two colors of covering and celluloid for windows. Price? - \$7.50 - How about that Lou? P.S. The Beam is no longer available, it's a collectors item!



At the Airtrol booth, it is apparent that Airtrol is growing. The simple mini pulse systems of a few years ago have given way to sophisticated equipment, from rudder only through Galloping Ghost and up to 4 channel digital. In addition, a new line of plastic and foam, quick assembly, airplanes have been added to the line. Dave Gray and Tom Johnson have planned these new kits well, and have even gone so far as to make available hardware packages which include wheels, tank, links, etc. for each of the kits. Sure will save a lot of hunting!



Dewey Broberg, the Dew and Bro of DuBro introduced his Aerocommander 100 at last year's show. This year, another new one, a semi scale Cherokee Arrow. Mighty pretty, and quick build ARF as well - full house too!



The last stop on our tour is at the MRC display where we find Bernie Sadof and Bob Foshay discussing the new MRC 5 channel digital system with Paul Runge of Ace Radio. This is another mini propo set with European style Tx case - a sign of things to come? MRC's display also includes the popular Enya and Webra engines, and a new addition to the line, the H.P. engines.

(continued on page 58)

SABIK MK 50



Capt. Jim Simpson, once arrested in Vietnam by the VC on a vagrancy charge (later released back to duty for the good of the service — theirs!), proves, once again, that anybody can design an airplane. RCM presents the full size plans for this miniature competition model with full size performance.

By CAPT. JAMES SIMPSON, USAF

FULL SIZE PLANS

He did it again! Ole FL is getting senile with old age. For some reason known (or unknown) only to him another of my many anti-gravity devices now graces the pages of one issue of this magazine. Well, Dewey, as per our telephone conversation prior to the Winter Nats here is another .19 powered radio controlled miniature aircraft for your edification and amusement.

Unlike most authors/designers of this era I am going into my usual ramble and babble because I figure if I can get enough of these words together and FL buys this hogwash, I'll have enough money (that is provided RCM doesn't fold until after I'm paid) to pay about 10% of my bill for hobby supplies!

Oh yeah, I almost forgot about the Sabik. That's the name of a star way out in space somewhere which is where I got this design to begin with. It's heritage is delineated in RCM (Nov. '68) in the XF-226 article so I won't repeat it here. Mark 50? Yes, there have been that many - actually, I have built 59 Sabiks but 9 of 'em were exact replicas of previous models!

A quick glance at the plans will tell you there isn't much there and if you think about that you'll discover that it also means the cost is less. And while we're on this subject I'd like to tell you how inexpensive it is to run a Veco .19 BBRC on Cox Blue Label but you wouldn't believe how long it'll run on a 4 oz. tank so go try it yourself!

A bill of materials is included so if you live in South Dakota or out in the sticks and have to order your supplies you can get them all at once. Mostly it's included because I wrote it to figure out that I can tell you that this plane costs only \$9.29 ready to cover and only \$21.29 ready to fly and these are mail order retail prices!

So, throw your 60's and analog gear away and go get a Veco .19 BBRC and a Royal Classic radio and build this bird. If you use other brandsthan these the guarantee is void. But worse than that you'll have to drill all the holes and stuff!

Following are specific instructions which are written for procedures which enable me to build one of these from scratch in two days. The fact that the next one is number 60 has nothing to do with it, Clark!

Cut a sheet of 1/4 x 3 x 36 into two 18" pieces and glue together edgewise by taping one side then turn it over, bend it back on the tape hinge, glue it, then tape this side also. Cut the horizontal stab and elevators to top view from this and let it dry. Cut the vertical fin, dorsal fin, and rudder from 3/16" sheet to the shape shown at the side view.

Cut the top block to outline and draw a centerline and the former locations on it. Slot the rear end to accept the rudder then carve the top edges round and sand to shape at least the last 10" (the rest may be done later).

Cut two identical fuselage sides of 3/32" x 4" x 36" balsa and add all stiffeners and braces (I use contact cement for this). Cut fuselage bottom planking (grain lengthwise) from remainder of the side pieces, splicing together with tape in the same fashion as the elevator.

Cut firewall and the No. 1 bulkhead from 1/8" plywood. I mount the Veco .19 and the nosegear block to the firewall, so drill all the necessary holes including fuel line and throttle pushrod holes at this time. Also, drill 2 each 1/4" dia. holes (wing hold down dowels) and the throttle and nose gear pushrod holes in the No. 1 bulkhead at this time.

Set a roll of masking tape close by and, using your favorite adhesive (I prefer Titebond), rapidly glue and tape into position the firewall, No. 1 bulkhead, fuselage sides, rear crosspieces and rear planking in that order.

Now sand the tail surfaces to shape and carefully align and glue the horizontal and vertical stabilizers before or after the hinges are installed - set the completed assembly aside to dry now and we'll do the wing next.

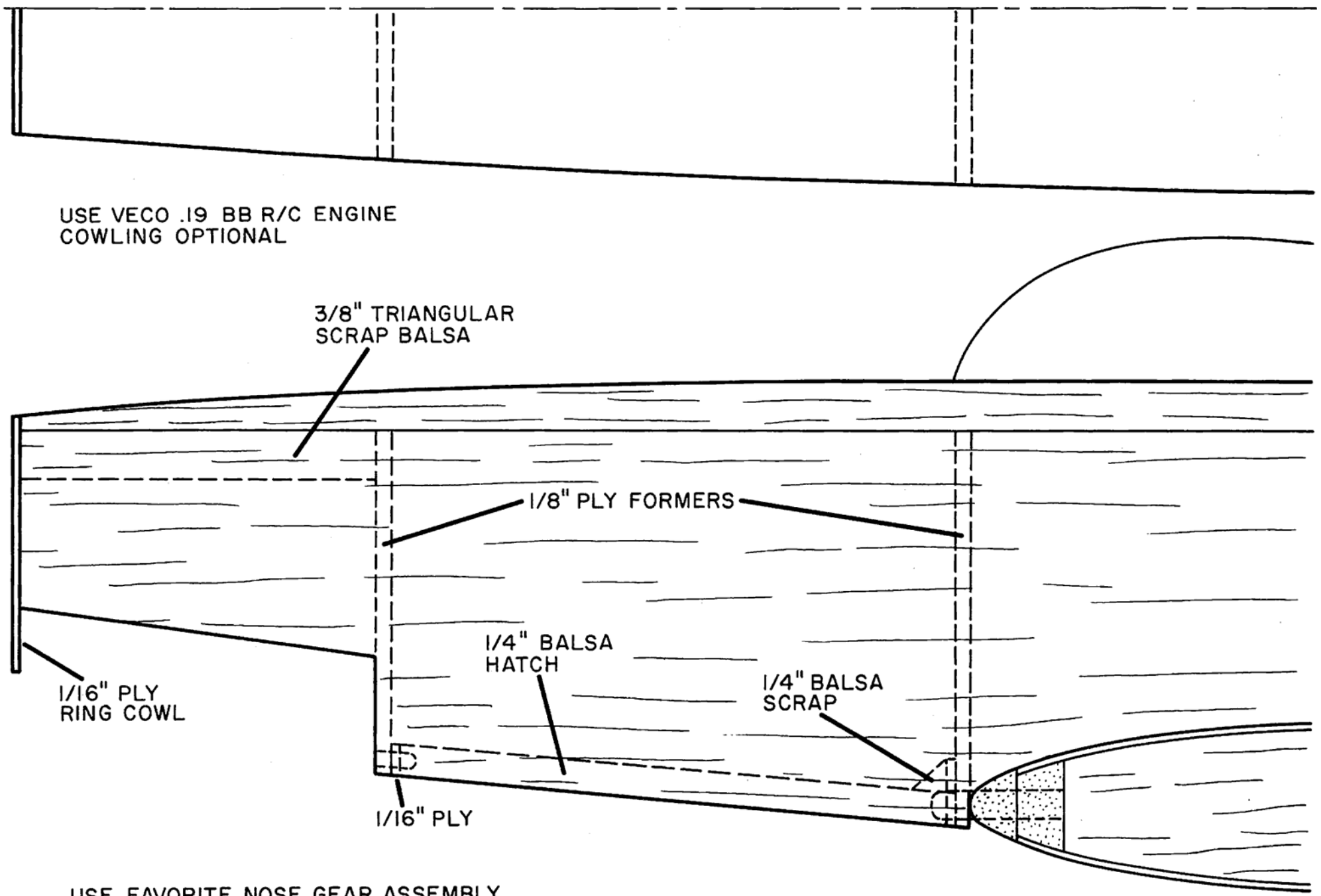
Cut all the leading and trailing edge planking from 1/16" sheet balsa and then use the excess to cut out the ribs in pairs, cut the spars from 3/32" sheet and 1/4" square.

Draw a center line on the first, middle, and last ribs of each wing panel and the rib and spar locations on the bottom leading edge planking. Now check all these parts for a proper fit. Once that's done get the glue and tape ready. Starting with the left wing

panel (I'm left-handed) and working as fast as possible and without interruption until done, do this; glue the full depth spar to the bottom leading edge planking and the ribs into their slots in the spar. Glue the 1/4" sq. spar in place to hold the rib spacing. Run a bead of glue along the marks for rib location on the bottom leading edge planking and also along the top of all ribs from the spar forward, and along the top of the full depth spar. Quickly put the top leading edge planking in place and tape the entire mess together with short pieces of tape, between the ribs along the spar and at the ribs along the leading edge. Now put glue along the top of the 1/4" sq. spar and all ribs aft of it. Turn the panel over and slap it down on the trailing edge planking. Now, quickly glue the bottom trailing edge planking in place and pin it all down flat and solid. Now you can stop for a breather!

Really, unless you've done that at least once you won't believe it takes longer to read it than it does to do it. Another advantage of this method is it builds in a slight amount of washout, which eliminates the need for "stall strips." If you use the alternate method - that is; glue the ribs into the full depth spar then use a 1/4" sq. balsa "jig strip" under the ribs behind the spar to hold the centerline drawn on the ribs parallel to the work surface while adding the remainder of the wing structure, or if you're fortunate enough to have an A-Justo-Jig . . . aw nuts - if you come out with a straight panel then by all means use the stall strips as shown. The point here is washout and stall strips are both good but NOT together.

So, back to my "country method" of wing structure - gee, I can't help but think how nice an A-Justo-Jig would be! Oh well, while the panel is upside down, add the capstrips and center section planking after installing the gear mounts, bellcrank platforms, pushrods, linkage, etc. (oh yes, that does take more time to do than to read about, ha!). After both panels have dried long enough to be considered "cured" take them up, remove the tape, and join them at the center, then add one leading edge, the center section brace, and then the other leading edge. Next on the agenda are the tip blocks, top capstrips, and top center section planking. Sand the resulting mess to an airfoil (same for each panel) add pinked tape to the center section then put wing in place



USE FAVORITE NOSE GEAR ASSEMBLY
BOLT TO BACK OF FIREWALL.
NOTE: 1/8" DIA. WIRE IS SUFFICIENT-
BEND MAIN GEAR LENGTH TO MATCH NOSE GEAR.

⊕

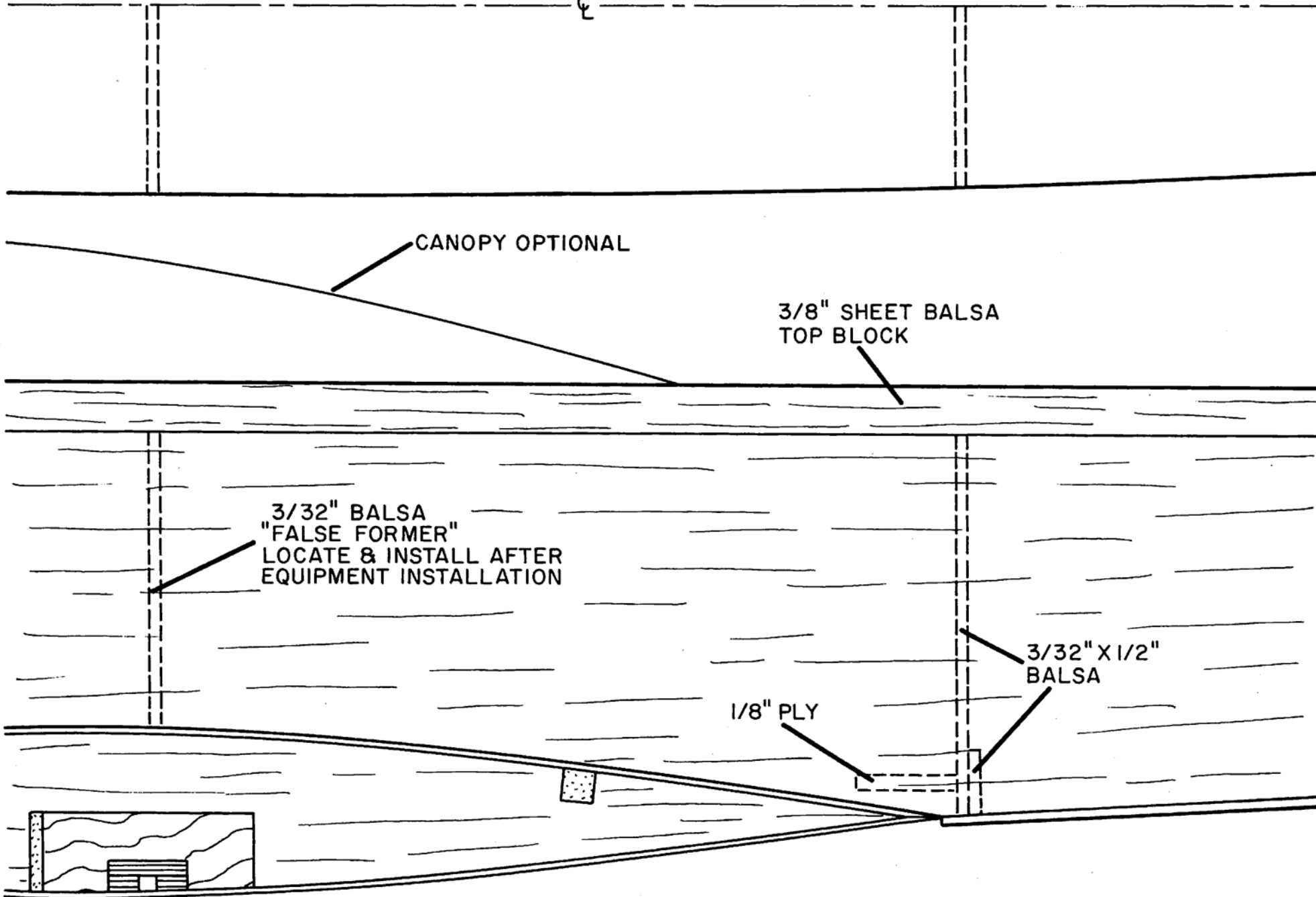
CANOPY OPTIONAL

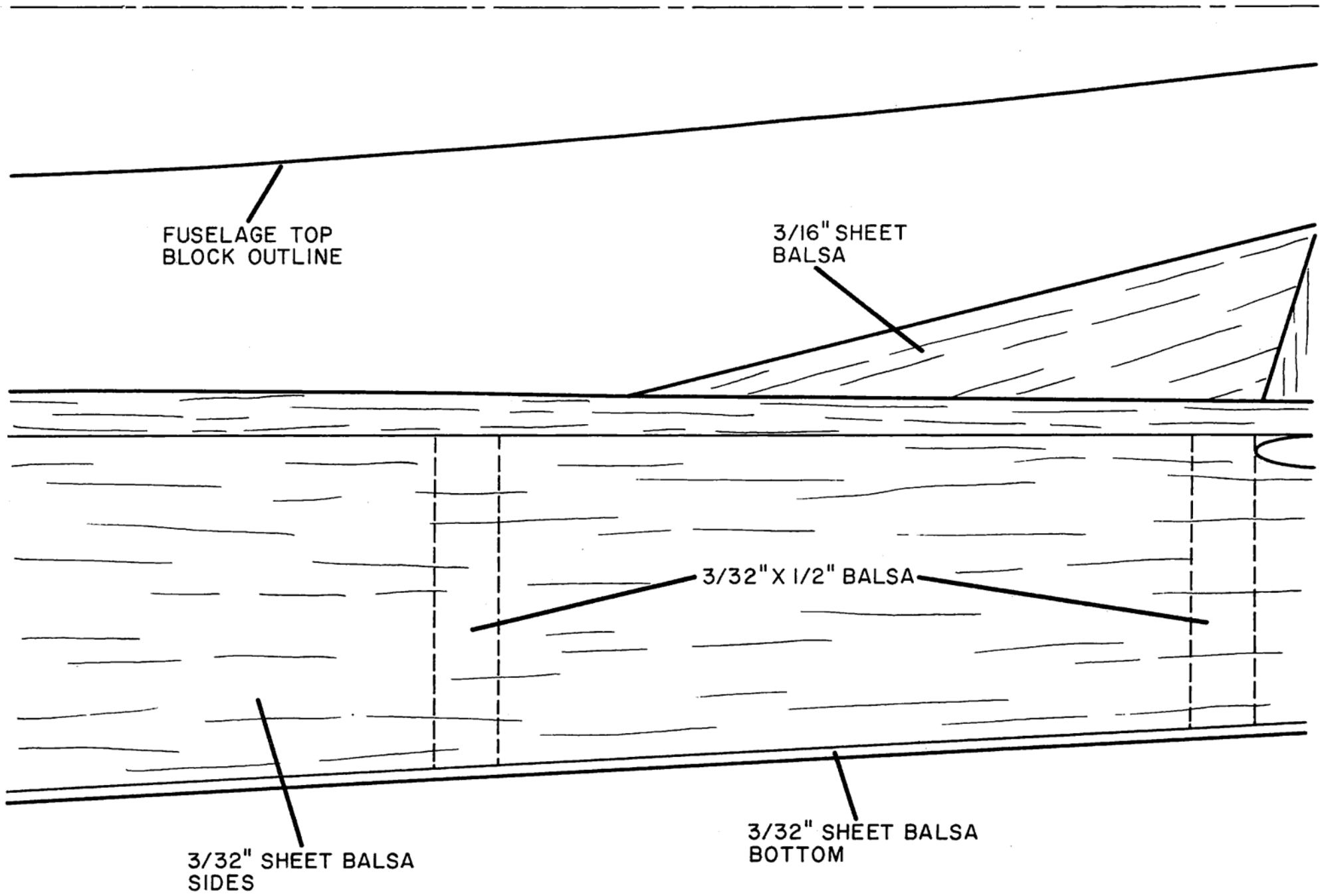
3/8" SHEET Balsa
TOP BLOCK

3/32" Balsa
"FALSE FORMER"
LOCATE & INSTALL AFTER
EQUIPMENT INSTALLATION

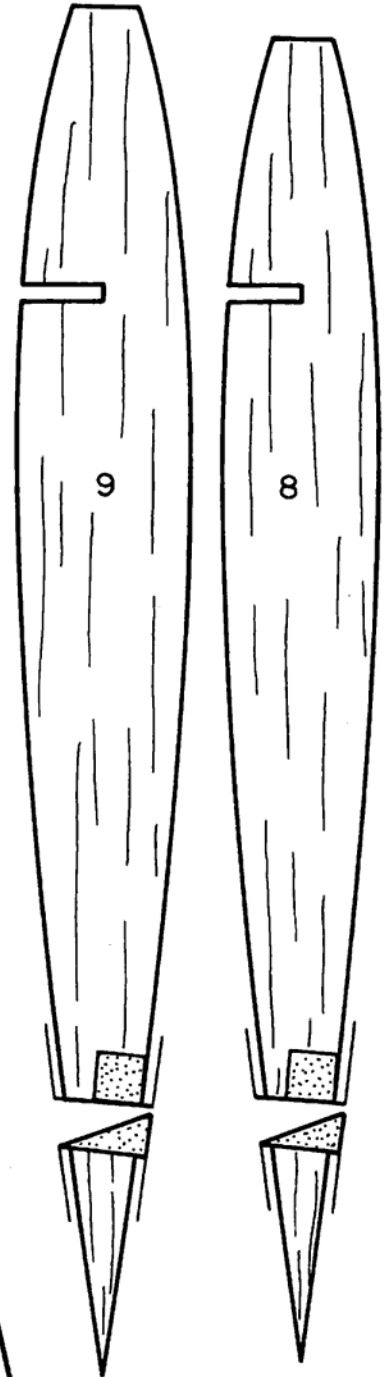
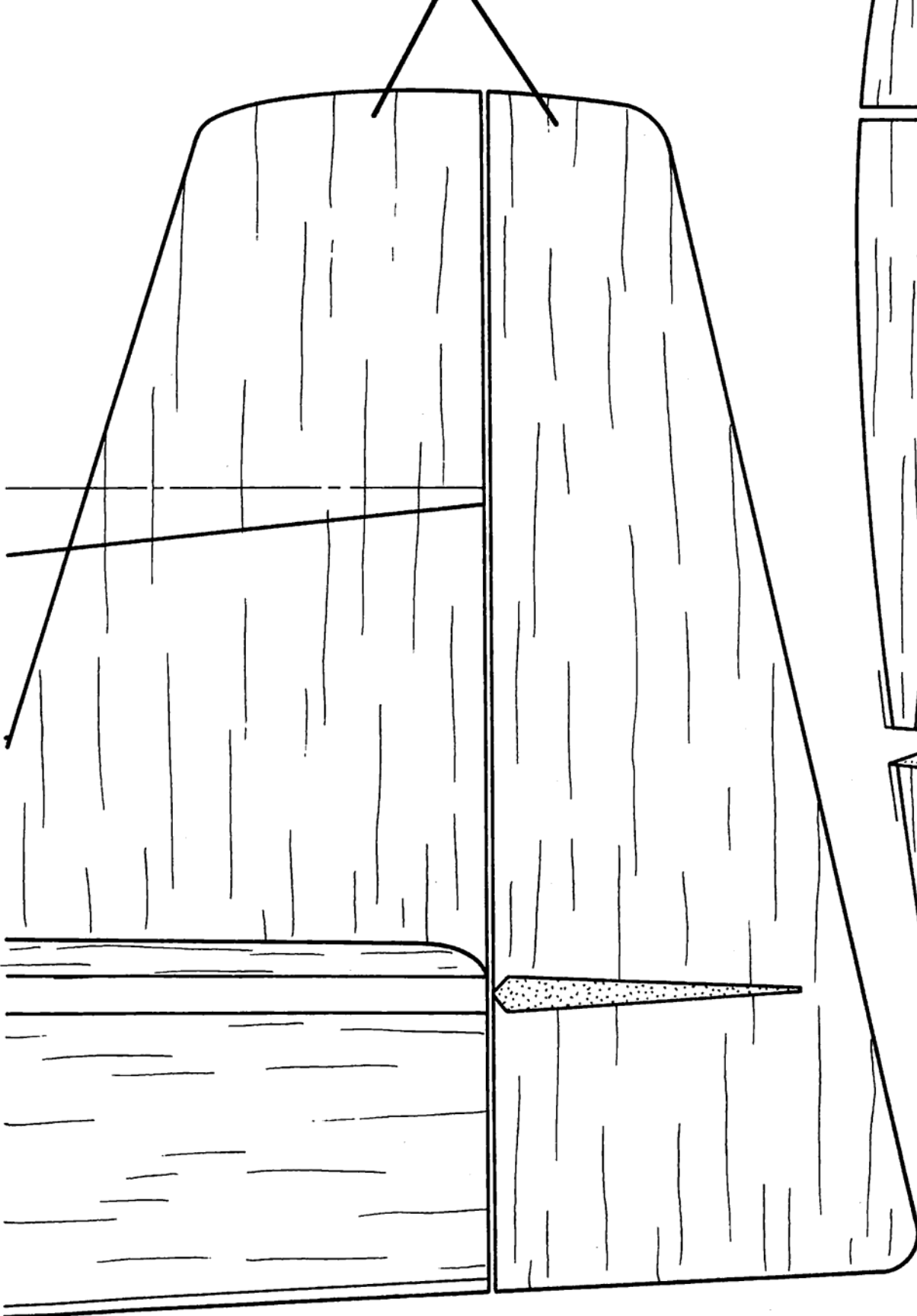
3/32" X 1/2"
Balsa

1/8" PLY

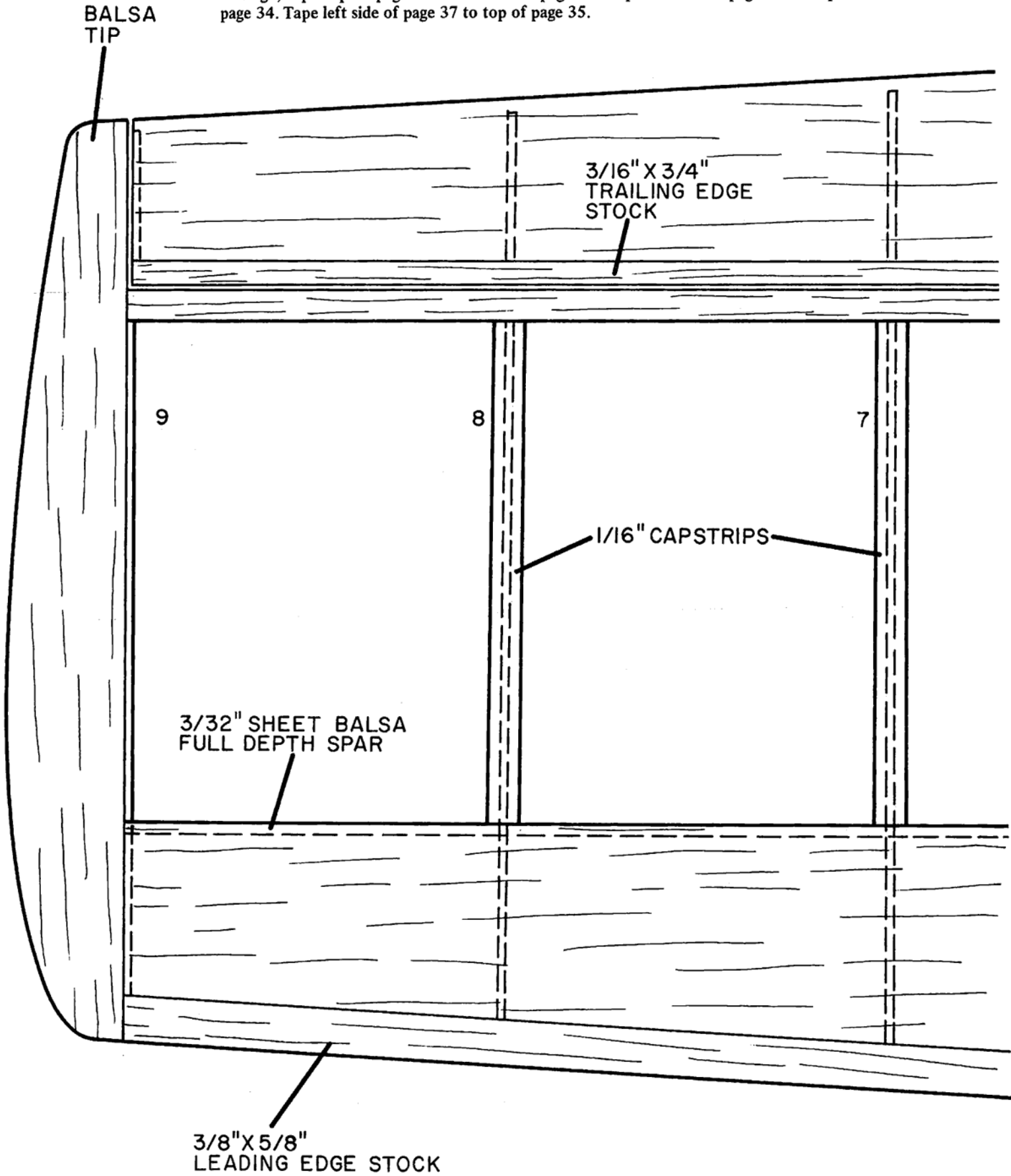


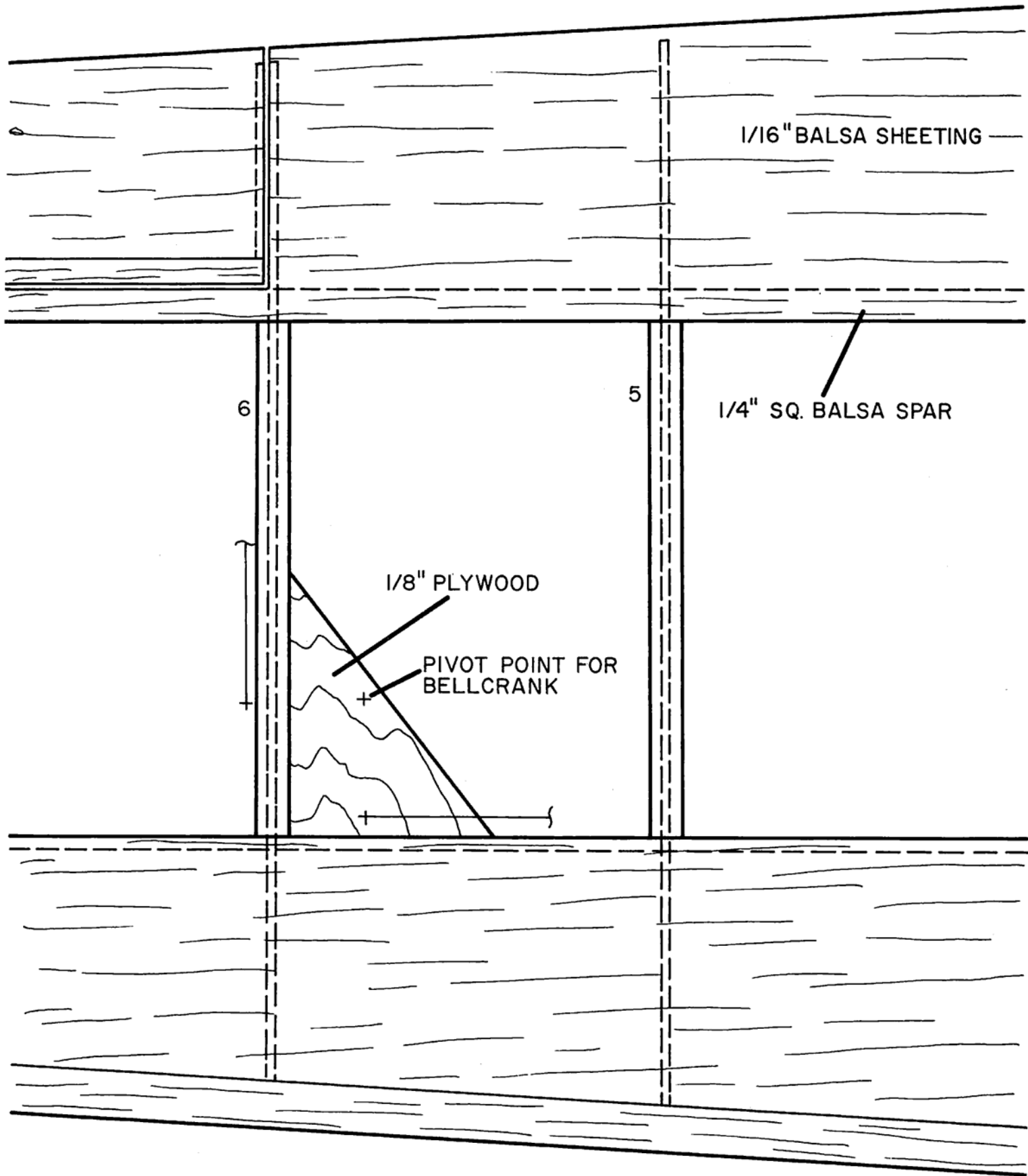


3/16" SHEET
BALSA



To join wing plan, remove page 33 from magazine and tape to page 31. To construct fuselage, tape top of page 34 to bottom of page 32. Tape bottom of page 35 to top of page 34. Tape left side of page 37 to top of page 35.





1/16" Balsa SHEETING

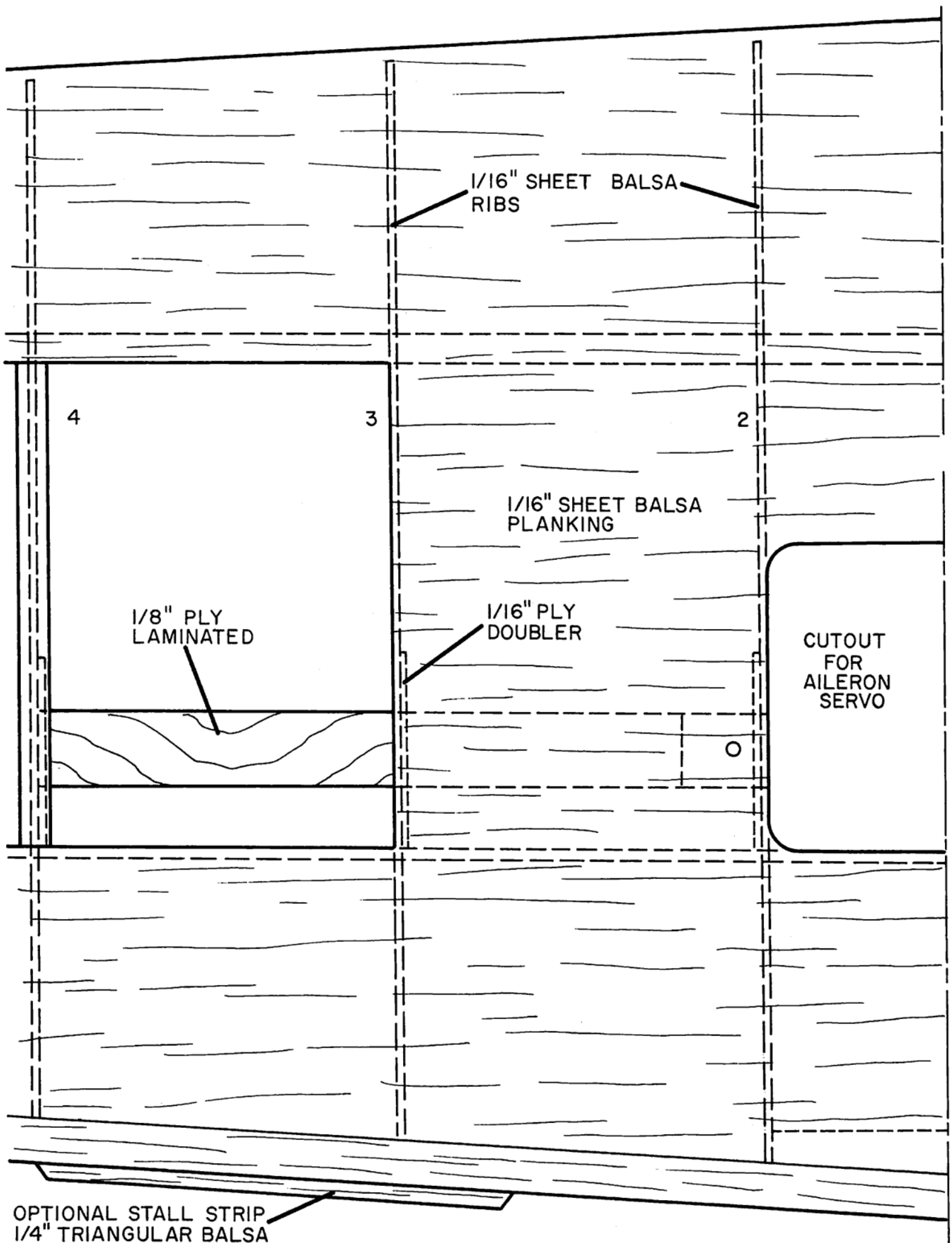
1/4" SQ. Balsa SPAR

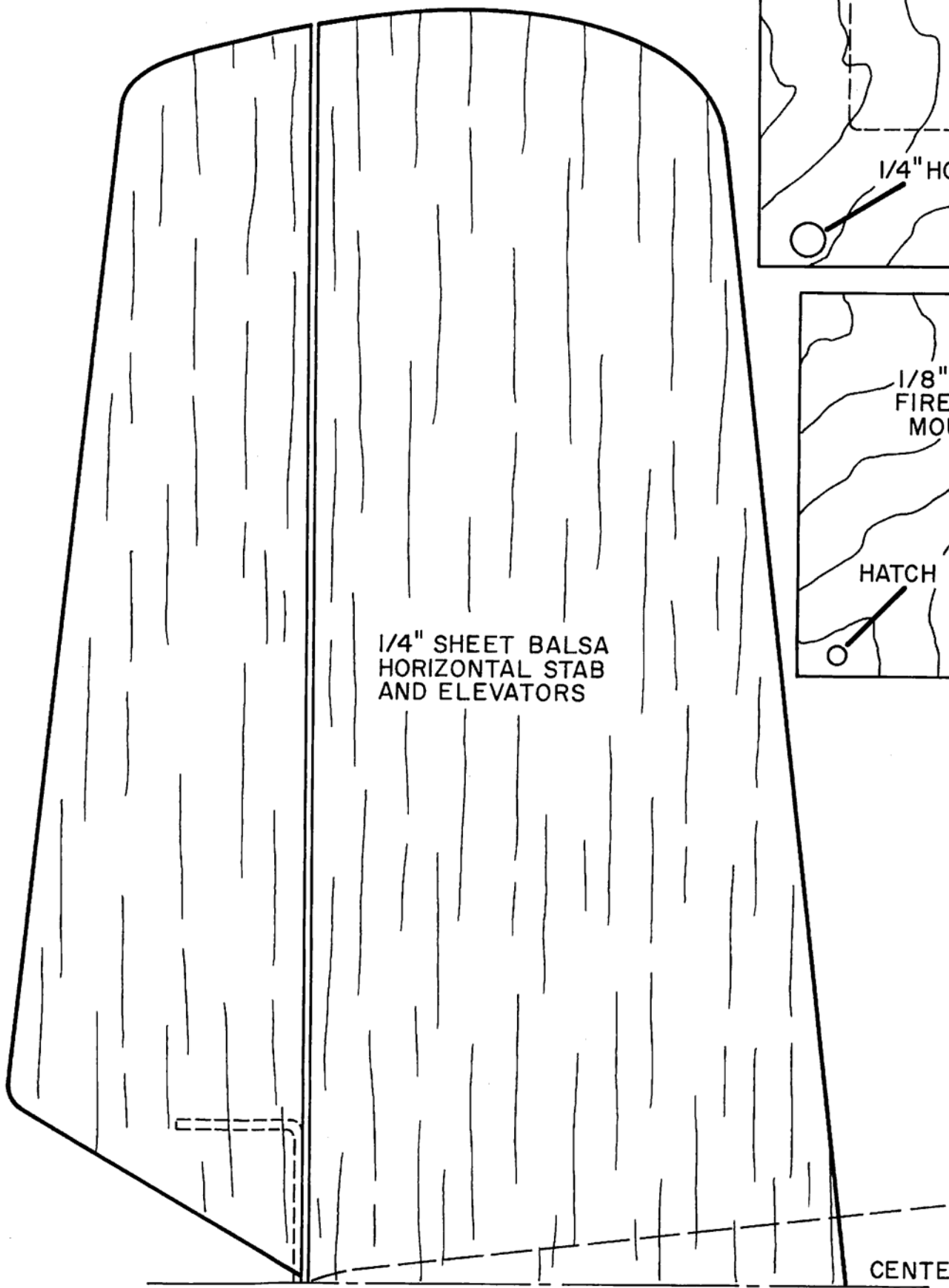
1/8" PLYWOOD

PIVOT POINT FOR BELLCRANK

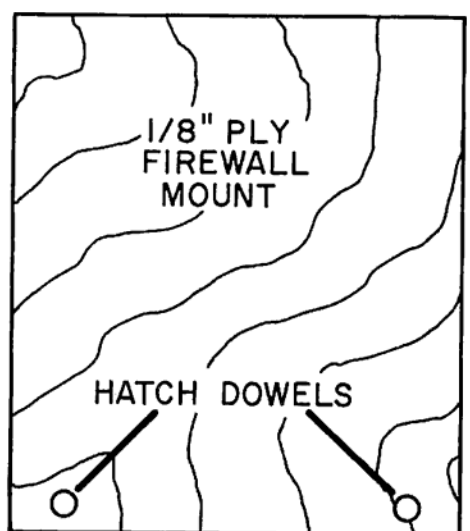
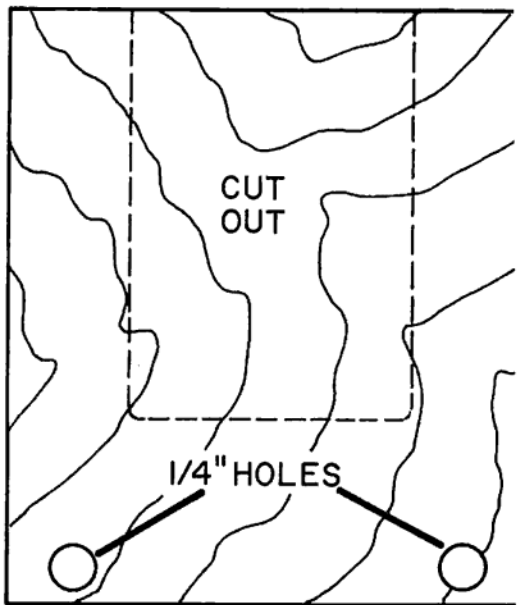
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5

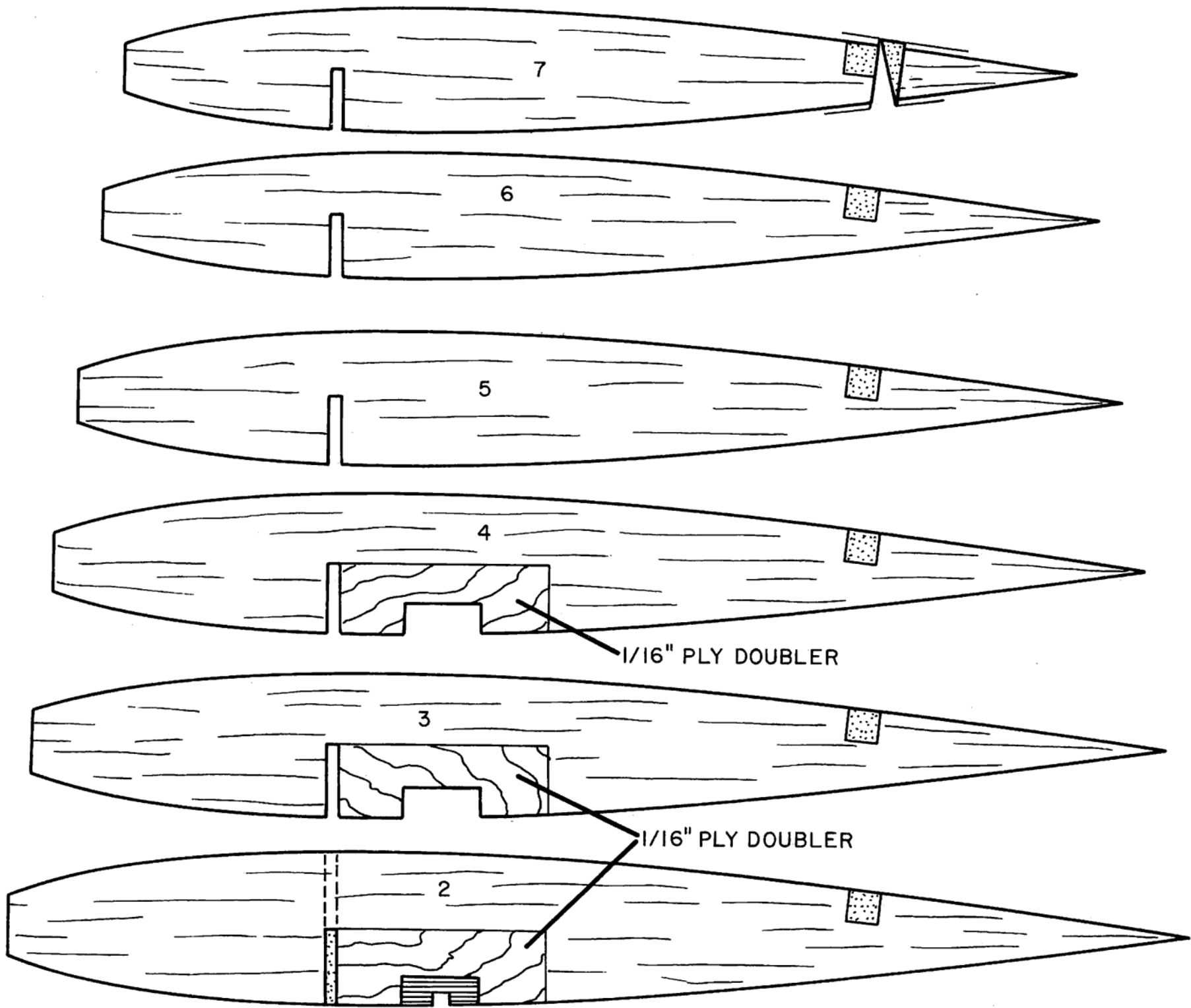




1/4" SHEET Balsa
HORIZONTAL STAB
AND ELEVATORS



CENTER LINE



on the fuselage, drill and install hold down dowels. Leave the hold down dowels 1/4" too long as this excess will also hold the hatch in place. With the wing in place drill a tap size hole through the trailing edge and the hold down plate. Now tap the plate for your favorite nylon screw and enlarge the wing hole to accommodate this screw! MonoKote the wing, install the landing ear and the servo, and put it aside for now.

Back to the fuselage. Where was it? Oh yes, remove all the tape, glue the triangular stock in front of the firewall, and bolt the engine in place. Align and install the 1/16" ply ring former to allow clearance for the spinner, install the throttle linkage, and the nose gear with its linkage. Now install the tank with its plumbing, (aren't those Sullivan SS tanks great?) and leave room for the battery pack. Now with all this garbage in place cut a piece of 1/4" sheet balsa to fit in the opening and clear the nose strut. Add the 1/4" scrap crosspiece and 1/16" ply at each end of the hatch. Now remove the engine, tank, battery, nose gear, etc., set the hatch in place and drill 2 each 1/8" diameter holes through the firewall into the hatch leading edge. Drill 1/4" holes in the hatch to match the wing hold down dowel holes. Now remove the hatch and glue the 1/8" dowels in the firewall so 1/8" sticks through to engage the hatch leading edge. How 'bout that? Now sand this mess and add MonoKote to the outside and HobbyPox to the engine and tank compartments and radio room.

The prototype MK 50 I built just before I left Rapid City, S.D., to go to the Winter Nationals. The completed airplane weighed (less engine and RC gear) a scant 17 oz. Its all-up flying weight with a full fuel tank is less than three pounds! I installed the radio gear and finished the plane in motel rooms enroute to the Winter Nats at Tucson, Arizona, and test hopped the plane at Marana Air Park the day before the big contest. Good ole' Don Sump was there as well as Tony Bonette, Dan Santich and a bunch of the Tucson Radio Control Club. With this crowd of notables around I cranked up the MK 50 and let her go and go she did! Almost straight up! The Veco .19 BBRC is a great little powerplant and at less than 3 pounds the Sabik is no slouch! Bob Angus saw this display and allowed it was tail heavy. Bob and I have been at a couple of contests

together but he doesn't know I'm renowned for carelessness or he'd a' said, "Didja align the control surfaces in neutral before the first flight?" to which I would have replied, "Certainly not, if I had, where would the challenge lie?" So, anyhow, I flew it around for a couple of minutes holding full down elevator then pulled the power off and landed still holding full down elevator! I quickly turned the Kwik link 11 full turns to align the elevator in neutral! As usual the second and all subsequent flights were at least flawless and the consecutive vertical eights the old way (i.e. from the bottom up) leave no doubt about Class C performance.

And then the next day! Boy, what a contest. And everybody who was anybody was there, weren't they, Dewey? You guessed it! Dewey wasn't! I had heard that he chickened out but there was no fear as Jerry Kleinburg and Joe Bridi were covering things well (as usual)! I did get a most pleasant surprise though as I crouched down in front of my La Jollita Formula I racer trying to outstare the Donald Duck head I had installed in the cockpit. A sweet feminine voice not unlike that of an angel said, "Excuse me, are you Jim Simpson?" Well that crossed the duck's eyes so I considered the question and answered in the affirmative! Then I looked up and was face to face with the real brains behind RCM. No kidding, fellas, Don Dewey is a front! Just a loud mouthpiece and I suspect - related to Pinocchio, the wooden headed puppet! The voice belonged to Kathleen Acton. And so do the brains. And ole Dewey had to stay at the office and empty wastebaskets! And I got to talk to someone from RCM who

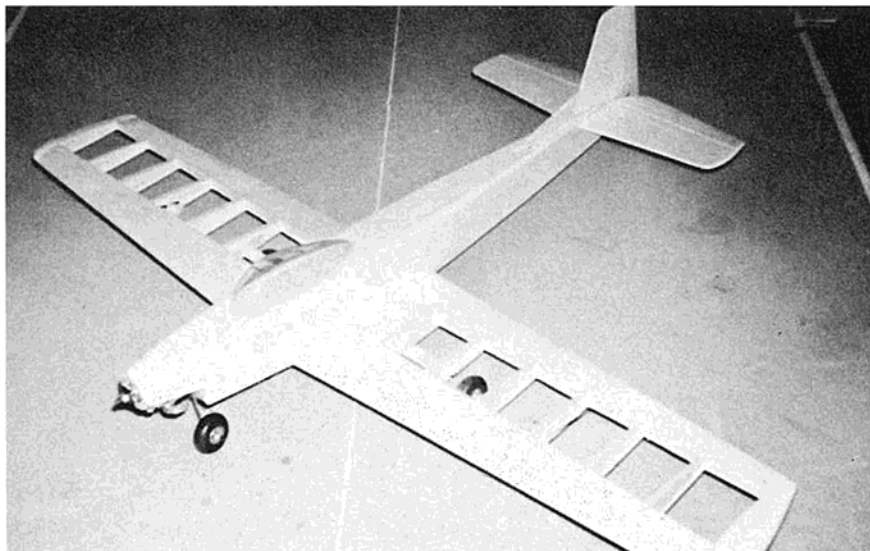
was kind and intelligent, and THAT was a delightful change! I explained to Kathleen why the plans weren't finished and why there were no construction pictures and that as soon as this "fly-in" was over I'd go back to the North Pole (didn't know it was adjacent to Rapid City, South Dakota, did'ja Dewey?) and draw the plans for it.

So here they are, Kathleen, and again I'm sorry I wasn't finished with them at Tucson. I hope you can still use them. If you keep Dewey out of the wastebaskets and up off the floor, I bet you'll have a lot less trouble with his answering your mail and all that sort of thing!

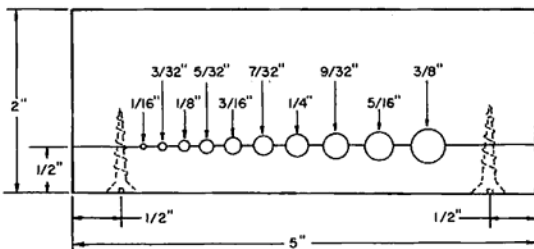
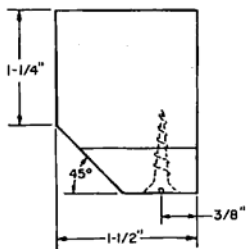
To all you good flyers and builders who read through all this drivel about Dewey, I wish every success in the world and don't worry about RCM's future. As long as Kathleen Acton is there - there'll be an RCM!

Bill of Materials

- 1 ea. 1/4" x 3" x 36" - stab, elevator
- 1 ea. 3/16" x 3" x 36" - rudder, fin
- 2 ea. 3/32" x 4" x 36" - fuse sides
- 2 ea. 3/8" x 3" x 36" - fuse top, wing LE
- 1 ea. 1/8" x 6" x 12" - firewall, No. 1 bkhd., ldg. gear
- 8 ea. 1/16" x 3" x 48" - wing planking, ribs
- 1 ea. 3/32" x 3" x 36" - wing spars
- 4 ea. 1/4" x 1/4" x 36" - spars, pushrods
- 1 ea. 1" x 1" x 18" - wing tips
- 1 ea. 1/4" dowel & 1/8" dowel
- 1 ea. 3/16" x 3/4" x 36" TE stock
- 1/16" ply scrap, Titebond & HobbyPox II, MonoKote, wheels, horns, wire, etc.

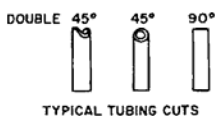


FOR WHAT IT'S WORTH

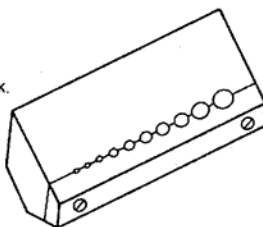


HARDWOOD BLOCKS

1. CLAMP BLOCKS TOGETHER.
2. DRILL HOLES FOR SCREWS AND SCREW BLOCKS TOGETHER.
3. LAY OUT HOLE LOCATIONS.
4. DRILL VARIOUS SIZE HOLES THRU BLOCK. (USE DRILL PRESS IF POSSIBLE)
5. CUT 45° ANGLE ON BLOCK.



TYPICAL TUBING CUTS



Merle Miller of Pasadena, California, submitted this versatile tube and wire holding block which insures accurate tubing cuts as well as being a good holding fixture for wire, tubes, landing gears, etc., while soldering washers to them. Simply insert the rough cut tube into the proper hole and tighten the screws in the block. Hold the block in a vice, or by hand, and file the tube end with a flat file. Next, deburr the inside diameter of the tube and remove, then deburr the outside diameter. To build this jig fixture, clamp blocks together, then drill holes for screws and screw blocks together. Lay out hole locations, then drill various size holes through the block, using a drill press if possible. Finally, cut a 45 degree angle on the block.

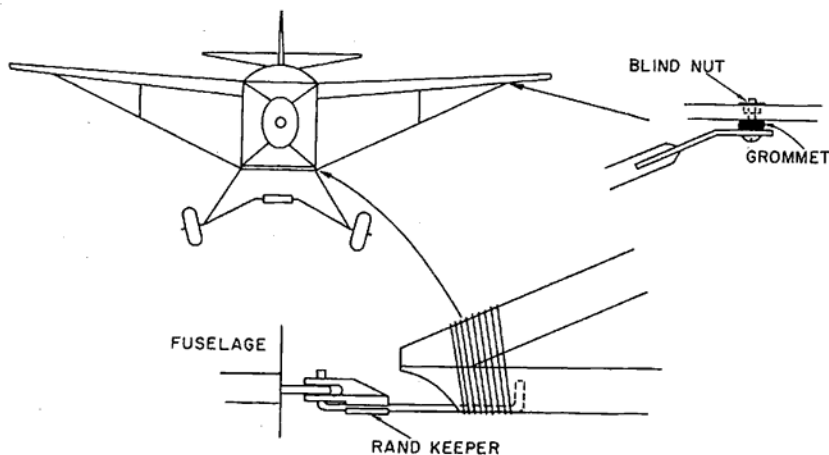
Skip Hirschman, writing in the Lincoln Sky Knights "Clanking Armor" offers the following method for installing hardwood mounts for nylon wing bolts, usually a tedious, trial-and-error chore. First, cut the hardwood bearers to desired length, usually one to one-and-a-half inches, using 3/8" x 3/4" engine bearer material. Second, place the hardwood in a vise and drill 5/32" hole in the center of the 3/8" side of the material. Then, while still in the vise, use a 1/4-20 tap. (Wood will cut easily using a 5/32" starter hole, yet leave sufficient thread for the bolt.) Finally, glue the hardwood blocks in place in the plane so that the tapped hole is 1" or 1 1/2"

forward of the trailing edge. Use epoxy. After the glue is dry, cut off a 1/4" bolt to 1 1/2" length. File one end to a sharp point and insert the other end into the hardwood blocks, leaving approximately 1/4" to 3/8" of the sharpened end extending above the wing saddle. Naturally you will have previously installed 1/4" dowels into the leading edge of the wing and drilled corresponding holes for them in the fuselage bulkhead. Simply place the wing in the saddle, with the forward keying dowels in their holes, then check alignment carefully and press down firmly. The sharpened screws will indent the wing in the exact spot for the nylon hold down bolt. Drill 1/4" holes through the wing at these indentations and your bolts are lined up with the hardwood bearers. Place 1" squares of 1/16" plywood over the hole in the wing, on the bottom, to take up the stress of the bolt.

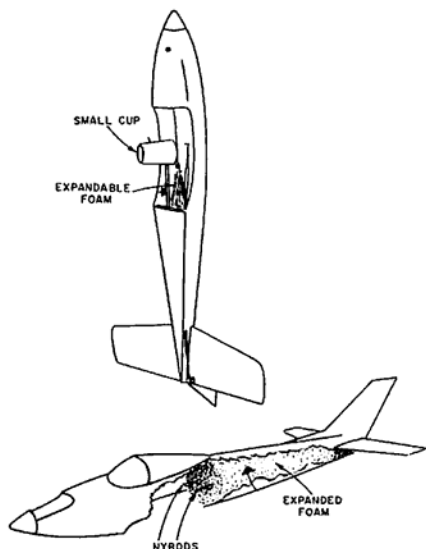
Want to use a large spray outfit but only have a small quantity of paint to spray? Follow the suggestion of Major John D. Woods, of Mountain Home AFB, Idaho, and use a baby food jar small enough to slip into the mouth of the sprayer's cup. Punch a hole in the jar lid to accept the paint pick-up tube, fill the baby food jar with paint, and place it inside of the cup with the sprayers pick up tube in the baby food jar. Screw the cup on the gun and have at it! A rag under the baby food jar will help hold it up so that all but the very last drop or two of paint will be used. Clean-up is a snap — throw the baby food jar away and spray thinner through the gun.

Dick Franco of Fremont, California, was tired of having the wing struts come loose on his J-3 Cub so resolved to remedy the problem so that it would never happen again. The attached diagram shows his clever solution.

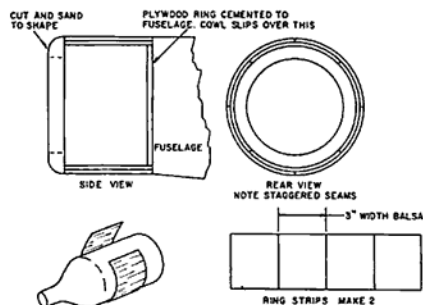
Jerry D. Chopp, Tinley Park, Illinois, suggests that if you want to improve the strength of the aft section of your Lanier model, as well as facilitate the installation of Ny-Rods, here is a method for using expandable foam. The first step is to make your normal NyRod installation. Then mix the foam as per the manufacturers instructions. Hold your fuselage in a vertical position, such as shown in the illustration, mix, and pour in, through the wing saddle, as shown in the cut-away illustration. The last step is to remove the inner tubing of NyRod and trim off the excess material from



the larger tubing. By using this method only about 1½ ounces is gained in weight. On the plus side, the tail cones are sturdy and the NyRods are securely anchored. Expandable liquid styrofoam is available at most local hobby shops.

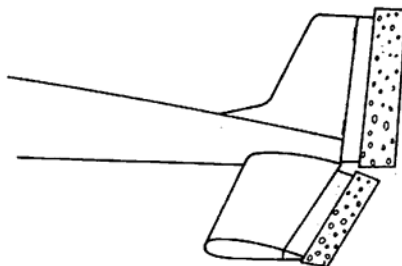


Did you ever need a round cowling for your favorite model but hated to start it because it meant using cloth and fibreglass or, alternately, making it from balsa blocks only to lose valuable engine space? The following method from the 'Minitalk' of the Mini Air Modelers, Beaver Dam, Wisconsin, then, is for you. These cowls are light, rigid, and strong, as well as neat looking. The drawings are completely self-explanatory. One note, however — when the first sheet is glued around the form, let it dry overnight. Then glue on the second sheet. Hold this in place with rubber bands. Use 1/16" sheet balsa for large cowls and 1/32" balsa for small ones.

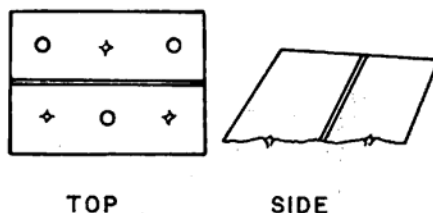


Many hours of labor are spent building and finishing model airplanes, but little thought is put into the transportation of these aircraft to and from the flying field. Did you ever take one out of the trunk of your car and find the trailing edge of your rudder and/or elevators looking like a

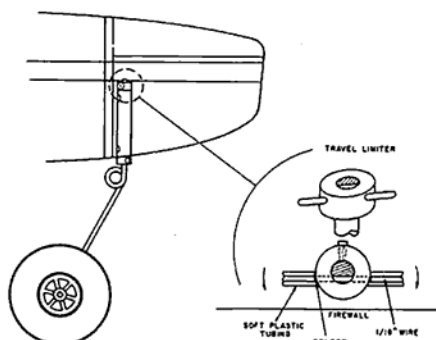
saw blade from nicks? To make a long story short, John Steinkamp of Rensselaer, Indiana, took scraps of styrofoam and made slits in them and installed them on the trailing edges. Just don't forget to take them off before you fly!



Walt Staff of Salt Lake City, Utah, suggests that if you use the strip nylon hinges, use a 4 penny nail and drive in three holes from each side. The nail leaves a burr at each hole which should NOT be removed. The hinges can now be epoxied in the hinge slots without the necessity for for pinning and no fear of them pulling out in flight.

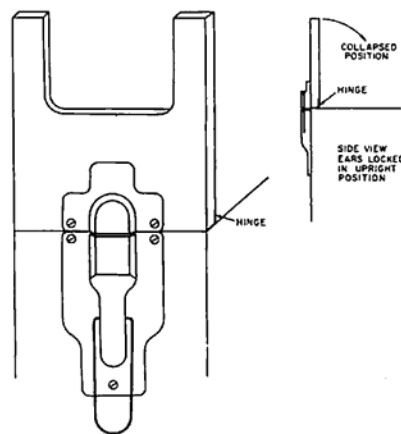


Having enough trouble learning to stay airborne without fighting a steerable nose wheel, Andy Waitowicz of Ontario, Canada, devised a self-centering nosegear for his RCM Trainer which allowed him to take off and land without worrying about ground control. With this unit, all you have to do is point the nose down the runway and you're off to an arrow straight take off. Landings are a breeze, and even if you come in at an angle, the nose gear will straighten out the model on roll out. Here's how it works: The coil on your gear is bent back to provide the self-centering effect and a nylon nose bracket is used



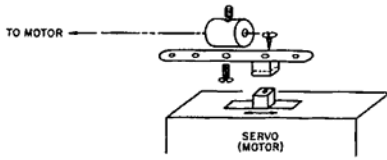
to provide a friction-free bearing. The Du Bro retainer is drilled out for 1/16" wire and the wire soldered on with care being taken to keep solder out of the inside of the retainer. A notch will have to be filed into the top of the gear wire to let the retainer slip in place. Soft plastic tubing is slipped onto the wire to keep it from digging into the firewall.

H. J. Vandiver of Carmel, Indiana, didn't care too much for the fuselage carrier available on most commercial field boxes, wanting to have the carrier fold flat on top of the flight box so that it could be used as a seat or carried without the ears of the carrier upright. As pictured, he uses a suitcase locking device, available at most hardware stores, to lock the carrier in the upright position. This makes a sturdy, compact, and inexpensive method of locking the carrier in this position, as well as being fast to erect and collapse without the need for tightening wing nuts, etc. In addition, by filling in the spaces between the ears with the same thickness wood, it becomes a seat when collapsed.

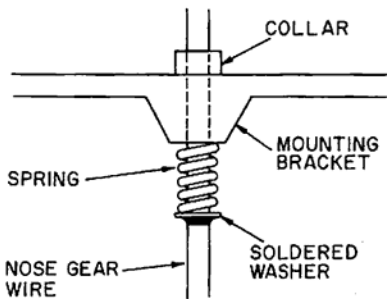


Dr. Jacques Metford of Hyde Park, Ontario, Canada, while not professing to be the neatest of builders at any time, found that connecting the flexible throttle cable to his Orbit servo usually resulted in a remarkably untidy installation. The following sketch illustrates Jacques' solution to the problem. Items needed are one each 1/16" wheel retainer, Orbit-type linkage fitting, 4-40 bolt. Secure the retainer to the fitting with the 4-40 bolt, drilling out any protruding excess in the center hole of the retainer. Remove enough of the base of fitting to insure it does not jam up on top of the servo case when snugged up. Feed the flexible cable through the center of the retainer and secure

with the Allen-head bolt provided. Retainer may be swiveled left or right if the servo has to be mounted off center.

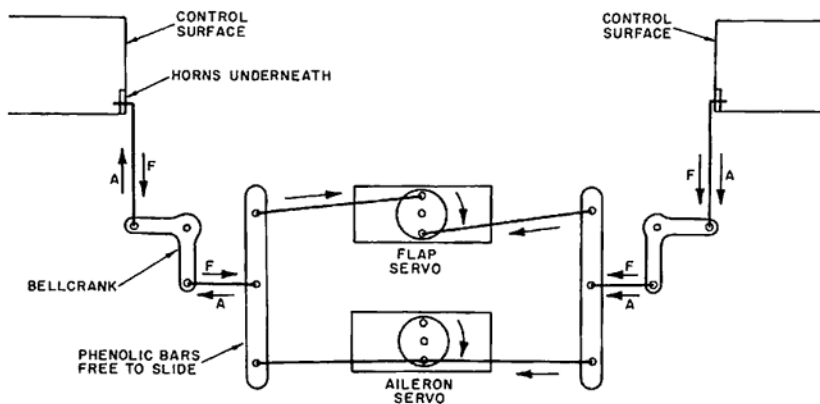


A shock-absorbing nose gear on a trike-gear ship can help keep the nosewheel on the ground for improved steering when using rough runways. A very simple method of fabricating such a gear is to put a washer and spring over the top end of the nose gear wire before inserting up into the retaining bracket. The plane is then leveled and the washer soldered to the wire. Choose the strength of the spring based upon the weight of your plane. This idea was submitted by Max D. Klotz, Hutchinson, Kansas.



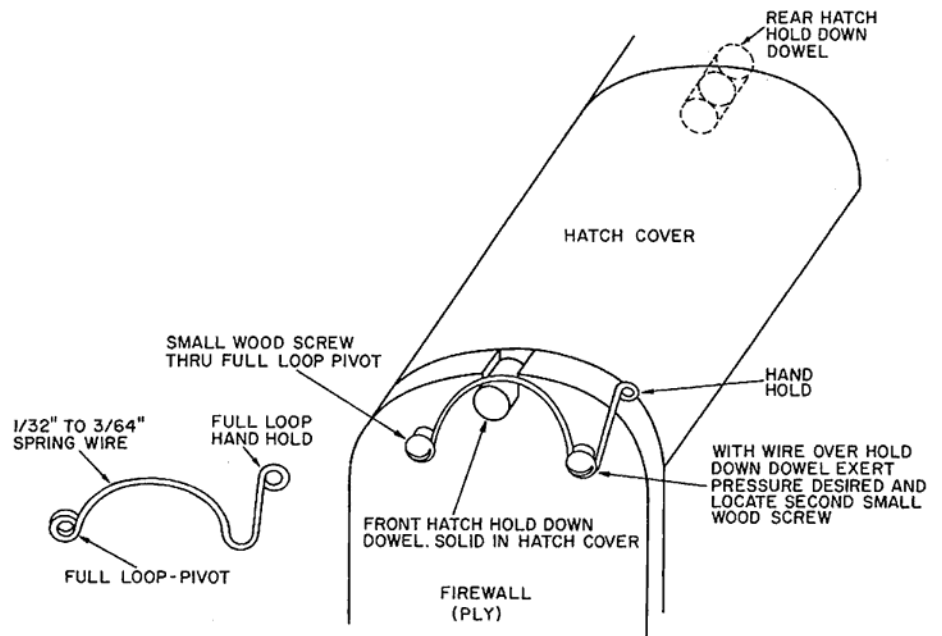
Our own Contributing Editor, Dave Platt, suggested this successful method for coupled flaps and ailerons. Make absolutely certain that the phenolic bars move easily in their slides.

Randy Payton of Portsmouth, Ohio, suggests that the next time you use HobbyPoxxy II for making cowls, wheel pants, or other Easy Does It items, mix a color agent right into the HobbyPoxxy. This agent is from Montgomery Ward's and designed for



off the hatch. This idea was submitted by Dick Blake of Mason City, Iowa.

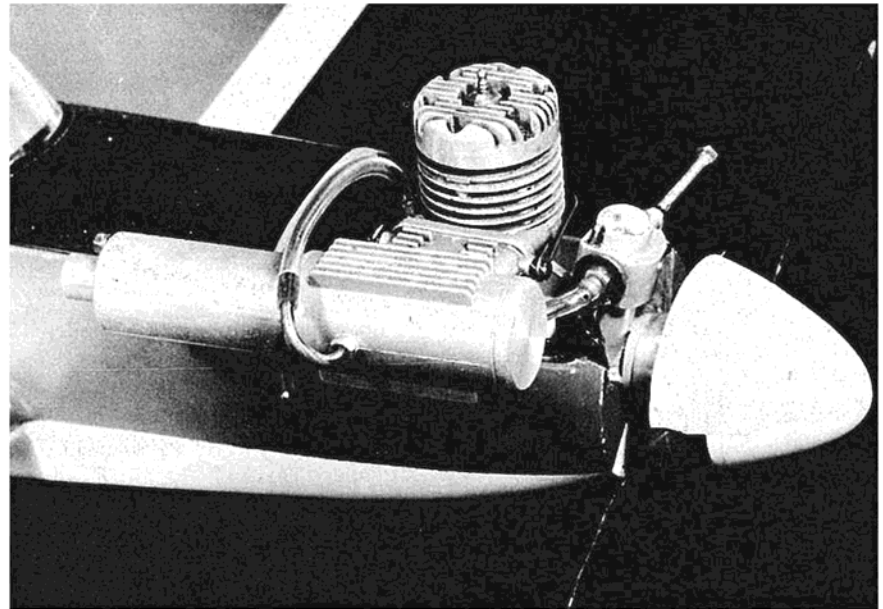
Nick Zirola, well known contributor to model magazines, and head of Major Model and Manufacturing, Hauppauge, N.Y. has been using exhaust pressurization on his engines for some time. The photo illustrates how easy it is to use when a Super Tigre muffler is employed. Simply turn the priming port around so the tube is on the outside. Next, run a piece of fuel line to the tank vent and



use in their fibreglass boat kits. Retailing for 49 cents a tube, it is available in green, white, red, or blue. Be careful, though, as it doesn't take much coloring to do the job.

In the "perplexing problem" department is the battery and fuel

compartment hatch. The following hatch cover latch is very effective and simple to make, and eliminates the unsightly rubber bands. To dis-engage, simply press down on the hand-hold loop which allows the wire to release from under the screwhead. Then, swing the latch out of the way and lift



you have pressurization. To choke the engine, simply hold your finger over the exhaust and give a couple of flips, which is much simpler than trying to hold a finger over both the intake and the air bleed. With this method, Nick found that he can get a complete tank run even though the carburetor is almost 1" above the tank outlet.

Jack Menzies of Owensboro, Kentucky suggests that Derusto Clear Silicon Spray, manufactured by Master Bronze Powder Co., Inc., Chicago Heights, Illinois, and available at most hardware stores, is a most useful item for the RC shop. Available in one pound aerosol cans, and designated Clear No. 1011, this material is suggested for use wherever you want to minimize friction. Suggested areas are on axles and the inside of wheel hubs; on control surface hinge pins, etc. Be sure to follow the directions on the can carefully.

Francis Reynolds, Redmond, Washington, has found a "cure" for areas you can't reach with an iron when MonoKoting your model. When using Top Flite Super MonoKote in such areas, lay the blade of a clean pocket knife or kitchen paring knife flat against the iron for 15 seconds or so to heat it up to the working temperature of the material. Now use the knife blade as a miniature iron to seal down and shrink the recesses. Reheat the knife blade as often as necessary. You don't need to change the setting on the iron thermostat. If you are using a plastic sealing iron, such as the Sealectric unit marketed by Hobby Lobby International, put the knife blade against the Teflon base. The temperature will not hurt the temper of the knife.

From Ken Curtis, writing in the DCRC Newsletter, comes a method of attaching a canopy so it will stay on permanently and still look good. First, glue the canopy to the fuselage with HobbyPox II. Next, run a strip of Celastic, about 1/4" wide, over the joint, equally overlapping the canopy and the fuselage. This should be applied with dope thinner in the normal procedure. The thinner bonds to the plastic canopy. Next, use Epoxylite to fill in the Celastic and to form a smooth fillet between the canopy and the fuselage.

C-VUES

PLOTTING AIRFOILS

YOU CAN PLOT YOUR OWN AIRFOILS
FROM COORDINATES. HERE'S HOW . . .

By BEN HERMAN & JACK CAPEHART

PART II

Last month we started a discussion of airfoils, and described the NACA 4 digit symmetrical series. We'd like to take some time here to describe the nomenclature of the non-symmetrical foils. As an example, we will use the once popular NACA 2415 airfoil (does anyone use non-symmetrical airfoils anymore?). To understand the nomenclature of the non-symmetrical airfoil, we must first understand what is meant by a mean line, and of course, the chord line. Let us consider the semi-symmetrical section illustrated in fig. II.

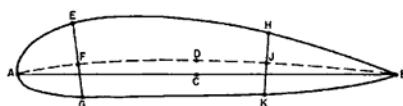


FIGURE 2

In the above figure, the dashed line, ADB is the mean line for the airfoil section. It is a line drawn such that the distances perpendicular to it, to the upper and lower surfaces are, at every point equal. Putting it another way, it divides the thickness of the airfoil in half, at every point. Thus in the figure, the lines E-F-G and H-J-K are drawn perpendicular to the mean line, and the distance EF=FG, and HJ=JK. The chord line is defined as the straight line connecting the two points of intersection of the mean line with the airfoil, points A and B in the figure. From the above, it should be obvious that, for a symmetrical airfoil, the mean line and the chord line are identical. The concept of the mean line was developed in conjunction with early NACA testing (1929). This group started systematically checking the effects introduced in two very well-known airfoils, the Clark Y (USA) and Gottingen (Germany). The original thickness distribution of these airfoils was maintained, but was plotted about a varying series of mean lines. In later tests, the thickness distribution itself was varied. Now,

back to the 2415 airfoil. The first digit (a 2 in this case) indicates the maximum value of the mean line ordinate (the y-value) in percent of the chord (note as indicated last month, all values are given in percent of the chord). In this case, the 2 indicates that the maximum distance of the mean line above the chord line is two percent. The larger this first number is, the greater the camber, or non-symmetry of the airfoil. For the 0015 section discussed last month, the first zero indicates that the maximum distance of the mean line above the chord line is zero percent, or in other words, the two lines coincide, as they must for a symmetrical section.

The second digit, a four in this case, indicates that the maximum distance of the mean line above the chord line occurs at a distance along the chord of 40% of the chord length measured from the leading edge. This is illustrated in the following figure.

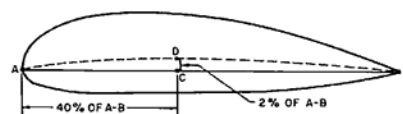


FIGURE 3

In this figure ACB is the chord line and ADB is the mean line, as in figure II. The point C is plotted at 40% of the chord line measured from point A. At this distance back from the leading edge, the mean line (ADB) of the 2415 airfoil is at a maximum distance above the chord line, in this case 2%. These first two digits in the four digit series of airfoils are not at all involved in plotting the airfoils, but do give an indication of its general characteristics.

Finally, the last two digits (15) indicate again, as with the 0015 airfoil discussed last month, the maximum thickness of the section in percent of the chord. Thus, the 2415 airfoil has a
(continued on page 53)

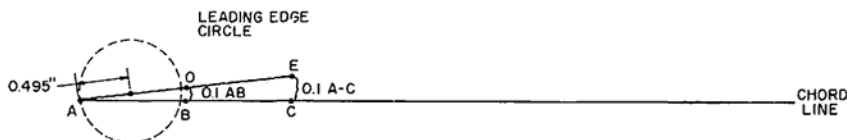


FIGURE 4

maximum thickness of 15% of the chord, and the maximum height of the mean line above the chord line is 2% of the chord, located at 40% of the chord from the leading edge.

Table I presents the coordinates for the 2415 section. We note here that both an upper and lower surface ordinate are given, as opposed to the 0015 section presented last month, which just gave one ordinate for each station. This difference is due, of course, to the fact that the 0015 section is symmetrical and therefore the upper and lower ordinates are equal. For the non-symmetrical 2415 section, they are not equal and thus both must be given. The minus sign in front of the lower surface ordinates indicates that the point is plotted the given distance ELOW the chord line. We also note that this section has a leading edge radius of 2.48 percent of the chord, with a slope of 0.10. As explained last month, this means that the leading edge circle has a radius of 2.48 percent of the chord. For the symmetrical case discussed last month, the center of the leading edge circle was plotted on the chord line, a distance from the leading edge equal to the radius of the circle. However, for a non-symmetrical airfoil, the center of the leading edge will not lie on the chord line, and this is where the slope of the leading edge circle comes in. For a slope of 0.10 as in the 2415 section, this means that the center of the leading edge circle lies on a line having a slope of 0.10 with respect to the chord. This means that for 1 inch along the chord, the line rises 0.10 inch, or 1/10 inch above the chord. The center of the leading edge circle will lie on this line, a distance of 2.48% of the chord back from the leading edge. This is illustrated in a blown up view, in fig IV.

In this figure, points A, B, and C are plotted 1 inch apart on the chord line. Point D is 0.10 of the length A-B above B, or 1/10 inch above B. Point E is 0.10 the length A-C above point C, or 2/10 of an inch above C. Only one of these points is required, but as many as desired may be plotted, since they will all lie along a straight line.

Now, let's suppose we desire our chord to be 20 inches long (admittedly big for a model, but convenient for illustration). Since the leading edge radius is 2.48 percent of the chord, this means the radius is $.0248 \times 20$ inches = 0.496 inches, or good enough, 1/2 inch. Thus, our 1/2 inch leading edge circle will have its center on the line A-D-E, 1/2 inch from the leading edge. This is point O in figure IV. The leading edge circle may now be drawn. Once the circle is drawn, the line A-D-E is no longer required, and is not used again for the plotting of the remaining stations. The remainder of the airfoil is now plotted as discussed last month except noting that upper and lower stations are not the same, as previously indicated.

Next month (perhaps for the next several months) we'll give the coordinates for many airfoils that have been used for RC work, as well as many that have not been tried, but look interesting. We'll present several thicknesses of the same basic airfoil for those who wish to experiment with variable sections spanwise. Also, we'll present overall characteristics of the various NACA families of airfoil sections.

TABLE I
NACA 2415

Station	Upper Surface	Lower Surface
0	—	0
1.25	2.71	-2.06
2.5	3.71	-2.86
5.0	5.07	-3.84
7.5	6.06	-4.47
10	6.83	-4.90
15	7.97	-5.42
20	8.70	-5.66
25	9.17	-5.70
30	9.38	-5.62
40	9.25	-5.25
50	8.57	-4.67
60	7.50	-3.90
70	6.10	-3.05
80	4.41	-2.15
90	2.45	-1.17
95	1.34	-0.68
100	0.16	-0.16

L.E. radius = 2.48
Slope of radius through leading edge = 0.10.



TOP OUT

BY JERRY KLEINBURG

R/C MODELER MAGAZINES

1968 NEWSLETTER AWARDS

Heartiest personal congratulations to each of the 33 editors named in RCM's 1968 Newsletter Awards for Excellence. Listed elsewhere is a complete rundown of the award winning newsletters and their editors who were recognized for achievements in a dozen categories. Newsletter Editor of the Year was Dr. E. Nino Campana, editor of GLITCH which is published by the Soo Radio Modellers of Sault Ste. Marie, Ontario and Soo, Michigan. Nino and GLITCH were tops in the "News" category and received Honorable Mention in 3 other categories; Technical, Humor, and Literary.

In another major award, Phil Heller received the Most Significant Newsletter Achievement Award for RC CUE and for his work in sparkplugging formation of NEWS, the first Society of newsletter editors and writers.

As in most achievements of this nature, all the editors and their award winning newsletters had a good deal of help from contributors or staff associates. It's fitting therefore to recognize as many of the individuals as possible who aided most conspicuously in bringing honors and recognition to their club and newsletter:

For "Best Contribution," Bror Faber helped Betty Stream in BIRDS EYE VIEWS with his outstanding report on the use of MonoKote which appeared also in RCM and many other newsletters. It was the "re-use" factor

that brought Bror this distinction; as it was an important element in picking many other winners in this 1968 contest. Honorable Mention in "Best Contribution" went to OMAHAWKS and Lloyd Wood based upon the work of Bob Elias whose dissertation on antennas was widely reprinted. Jim Brittain similarly aided the ADVISOR of the Kansas Hi-Plains RC Club which is edited by the able Jim Mowrey. Brittain's excellent technical article dealt with RC brake methods. Pulse electronic art was advanced through the contributions of Don Dickerson in the McDonnell MAC's CARRIER WAVE edited by Al Signorino. Incidentally, Jim Brittain's brake essay was also a special RCM feature during 1968.

In the "ART" department, it was Don Paquette's abundant talent that dressed each of the epic issues of F.B.I. News that's published by the Montreal RC Club with Jean Rivard as its hard working editor. Jean and the F.B.I. News were also selected as the best "First Year" publication and an Honorable Mention in the Editorial category, an auspicious start for the new club and newsletter. Along with artwork, many newsletters dress their efforts with photographs which are perhaps the most desired feature, generally, in newsletters. In this category Chuck Watkins, who edits the Phoenix ARCS newsheet, handled the photo task as well. In Honorable Mention, Don Butman of the VALLEY FLYERS was greatly aided by Reed Packard's sharp pictures which also were re-rinted in RCM and other national magazines. Outstanding reproduction was seen in the MILE-HI and RC BEES newsletters which were also named to Honorable Mention awards in this category.

Possibly most anonymous contributions occurred in the "Humor" department, but one notable item was by-lined by Mary Angus in the tongue-in-cheek NOISE opus of the Tucson RC Club edited by the equally fun team of Ben Herman and Ken McDaniel. Mary's topic, as readers here may recall, dealt with the care, understanding - and harrassment - of RC husbands, a popular female topic in many newsletters. The girls were important contributors in other ways - recipes, clothes hints, poetry, etc. - and more of their literary efforts are anticipated during 1969.

Special satisfaction went with the top award in the "Association"

category which was given to the Digest of the National Free Flight Society. Newsletters were grouped in this category that are published by organizations of national or regional scope or those of combined clubs having free-flight, or U-control and RC. The Digest, under the initial editorship of Dave Lindstrum in 1967, was given a high standard of technical content well balanced with contest and organizational coverage. Walt Rozelle carried on this tradition during 1968 and enlarged the respect earned by Dave's efforts. Bill Gieskieng Jr. and his wife Annie, have

taken up the reins of the DIGEST for 1969 and they are wished well on their rewarding task.

Space limits further deserved recognition, but to all the dedicated editors and newsletter contributors - and dedicated is the right word for your voluntary service - the editors of RCM wish to collectively raise a toast to recognize and applaud your efforts. The spirit of your work guides and gives inspiration to much of what is written within RCM's pages as well as helping to create a bond among flyers that starts with RC and goes beyond. Long may your pens wave!

RCM - TOP OUT Newsletter Awards for 1968

For excellence of content and significant service to Aeromodeling:

Newsletter Editor of the Year:

Dr. E. Nino Campana - GLITCH - Soo Radio Modellers

BEST Newsletter Awards in various categories:

News Coverage - GLITCH - E. N. Campana - Soo Radio Modellers
Editorial Content - SQUAWK SHEET - Bob Talley - Pt. Arthur Oily Boids
Technical Presentations - CARRIER WAVE - Al Signorino - McDonnell MAC
Original Art - BUZZER-D - Forrest Waller - Canal Zone Modelers
Humor - AERONAUTS CHATTER - Roger Breedlove - Eugene RC Club
Literary Excellence - HEAR YE - Bob Lamey - Valley Forge Sig. Seekers
Photography - PHOENIX ARCS - Chuck Watkins - Arizona RC Society
Production & Layout - DELAWARE RC - Bob Veazey - Delaware RC Club
Best Single Contribution - BIRDS EYE VIEW - Betty Stream - Signal Hill MAC
Best First Year - FBI NEWS - Jean Rivard - Montreal RC Club
Best Single Issue - FEEDBACK - Jim Deckert - N. Virginia RC Club
Association Newsletter FREE FLIGHT - Walt Rozelle - Nat'l Free Flight Assoc.

SPECIAL AWARD for Most Significant Newsletter Development;

Phil Heller - RC CUE - Newsletter Editors and Writers Society (NEWS)

HONORABLE MENTION:

News: RC SPIRITS - Travis McGinnis; SCRAM - Charles Johnson; FAI RECORD - Red Gunning
Editorial: PRINTED CIRCUITS - Bill Antoine; FBI NEWS - J. Rivard; PROP BUSTERS - C. Besancon
Technical: TRI-VALLEY - Jerry Smith; NORAIR - Jack Headley; GLITCH - E. N. Campana
Art: FBI NEWS - J. Rivard; NORAIR - Jack Headley; DELAWARE RC - Bob Veazey
Humor: GLITCH - E. N. Campana; NOISE - Herman/McDaniel; WRAMS HORN - Art Byers
Literary: GLITCH - E. N. Campana; FEEDBACK - Jim Deckert; IMPERIAL ACES - Joan Alyea
Photography: VALLEY FLYERS - Don Butman; MILE-HI - Bob Ulanoski; RC BEES - Jack Rhonda
Production: HEAR YE - Bob Lamey; FEEDBACK - Jim Deckert; MILE-HI - Bob Ulanoski
Contribution: OMAHAWKS - Lloyd Wood; ADVISOR - Jim Mowrey; CARRIER WAVE - Al Signorino
First Year: MEMPHIS MONITOR - Buddy Hord Jr.; OMAHAWKS - Lloyd Wood
Single Issue: NORAIR - Jack Headley; RIVER CITY NEWS - K. Renner
Association: NMPRA NEWS - Ed Shipe; RC CUE - Phil Heller; DOPE BUCKET - Lin Haslam



"Hey, Wagger!" called a club member from the middle of the runway, thus causing the remarkable dog's head to swivel. "Can you fly Mode II with elevator and aileron on right stick? If so, come out and give this beginner a hand with getting his ship down, will you?"

"Oh, mash my Milk-Bones," muttered Wagger as he trotted away from his Flea Fli toward the trouble area. "The last time I did this I grabbed the transmitter and crunched the airplane. To this day neither of us knows whether the equipment malfunctioned or whether I just couldn't get it back in control. Well, 'once burned and twice shy' as they say. THIS one I am going to TALK down!"

By this time Wagger had arrived at the troubled beginner's side where he came to a squat and cast his bloodshot eyes skyward.

"Doing fine," he encouraged the flier. "Now, it's a little far out so give it some left stick to bring it home . . . good. Steady as she goes . . . now turn left again . . . use left stick . . . hold that nose up in a turn because you are using some lift to turn . . . good. A little down stick as you come out because you have all your lift back again . . . it's going away from you so now use a little left stick to bring it home . . ."

Five minutes later, following a creditable landing on the runway, Wagger and his new friend were trotting to retrieve the aircraft.

"Mr. Wagger," blurted the beginner, "that was my first solo flight with this equipment and I want to thank you for your help. My biggest problem is knowing which control to use when I get confused; I think I learned a LOT more than if you HAD grabbed the transmitter! I really appreciated being 'talked down'."

"Don't call me Mister," growled the Bassett. "Save the titles for that

klutzy master of mine. Now, about not grabbing transmitters: I don't think it should be necessary if EXPERIENCED club members would do three things to help new members.

"One," Wagger enumerated. "Test fly the beginner's new aircraft and make sure that necessary trim changes are made. Two, let the beginner handle the controls during a flight but put your arms around him and keep YOUR thumbs on top of HIS thumbs. It may be embarrassing but it's less expensive than a transmitter grab! Use a 'buddy box' if you have one, of course. Three, pick a day for a solo and then talk him gently and quietly through that solo. Now, would you agree?"

"I think I agree, Mister . . . er, Wagger," said the new enthusiast. "At least, I'm anxious to take it up again solo right now."

"You know," he went on as they trudged back to the starting pits, "there IS something else you should tell the old-timers. Tell them that a beginner is terrified, self-conscious, and afraid of being laughed at. All he needs to be driven from the hobby FOREVER is a look of derision, condescending comments about his single channel rig, laughter about his crackup, or having someone doing slow rolls around this creation he is so proud of. Tell them, for God's sake, to act like FRIENDS rather than OPPONENTS! Like my friends HERE, I might add, and not the place I just came from."

"Amen, my young friend," said Wagger as he stumbled over his Flea Fli and jabbed his paw through one wing. "Now do me a favor; can I watch YOU fly again?"

**WHAT DO
YOU THINK?**

Send Your Comments To:

WAGGER
598 W. MANNING AVE.
REEDLEY, CALIF. 93654

SHOP & FIELD PRODUCT NEWS

Products News Releases and/or Products for Evaluation should be addressed to . . .

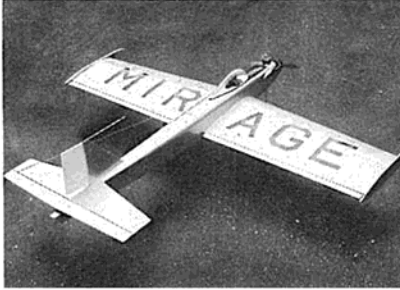
PRODUCTS NEWS EDITOR,
R/C Modeler Magazine,
P.O. Box 487, Sierra Madre,
Calif. 91024



Taylor-Made, Box 316, Mocksville, N.C. 27028, has produced an exceptionally attractive, durable, and useful Transmitter Bag, which looks somewhat like a miniature bowling ball bag. Made of imitation leather, and available in black and white, green, brown, with black trim or solid, each unit is double and triple stitched for long, rugged service. Two pleats are designed into the front of the bag to accommodate the sticks on your transmitter. Each bag is deliberately designed oversize to permit the use of foam padding if you so desire. These bags zipper up completely for maximum protection of your proportional transmitter. Price is \$4.95 each. Tested, approved, and recommended by RCM.

Major Model and Manufacturing, 333 Terry Road, Hauppauge, N.Y. 11787, renowned for their high quality Eidecker and Saulnier kits, are now in production on their newest model, the 'Mirage.' This is a .19 size sport and competition model, and the photograph shows a prototype with O.S. Max .19, Controlaire 4 proportional with S-4 servos, and completely covered with Super MonoKote. Weight of the model, ready-to-fly, is 2 pounds 13 ounces.

For further information, contact Major Model and Manufacturing, or see your local dealer.



Tyg-Aire, 13122 129 Street, Edmonton 44, Alberta, Canada, is currently producing two aircraft that are bound to become widely popular. The first is Phil Kraft's Flea-Fli, and the second is a semi-scale 44" span P-51 Mustang for .19 size engines. These aircraft are Ready To Fly less radio, engine, and wheels. Featuring extremely light weight fibreglass fuselages, they also include Teflon-lined motor mounts, and Ny-Rods installed. Wings are foam cores covered with balsa. Price of each is \$49.95 plus duty and postage from Canada. Prototypes provided by the manufacturer have been tested, and are approved and recommended by RCM. Also available from Tyg-Aire are the imported Robbe fibreglass propellers, currently available in 11-8 size only at \$2.25 each plus postage and duty, and the complete line of the extremely lightweight, but durable, Robbe wheels. For further information on the complete line, contact Tyg-Aire.

The Brookstone Company, 103R River Road, Worthington, Massachusetts 01098, has released their 1969 catalog containing, in addition to their standard line of specialized and hard-to-find tools, over 100 new items, plus hundreds more in the complete ForeDom line of flexible shaft machines and accessories which Brookstone now offers through sub-catalogs. This catalog is a must for the serious RC'er, and we urge you to write for your copy of this newest release of specialized tools for the modeler and craftsman.

Su-Pr-Line Products, 34B Copper Drive, Plainfield, Ill. 60544, has re-packaged their popular Ny-Rods in a most attractive red, yellow, and black scheme. But you can't tell a book by it's cover, so you cannot appreciate the ease and versatility of a Ny-Rod installation until you try it. Available at all major hobby shops,

along with a complete packaged line of Ny-Rod accessories, you should try Ny-Rod's on your next aircraft. You'd be surprised at how easy and neat, not to mention practical, your next installation can be.

Angel Mini-Flite Co. of Fitchburg, Mass., announces the release of the second model in their new "Fly-For-Fun" series. This new 90% scale, A.R.F. plastic "Fly Baby" has been designed for the intermediate and advanced pilot and comes equipped with moulded ailerons, floats, skis and scale accessories. With a wing span of 53" and an overall length of 33" the model has an outstanding performance on engines from .29 to .49 displacement.

A long-time favorite of light-plane homebuilders, the "Fly Baby" has been faithfully duplicated and features a one-piece cowl, factory-covered machine-cut wings, a fully assembled body, exclusive "smooth outline" tail units with full length piano hinges, a complete hardware package including aluminum motor mounts, die-cut firewalls and wing braces, welded landing gear, bolts, screws, cement, dowels, formed windshield and a giant plan sheet showing detailed drawings of all assemblies.

Parts are formed with a special formulation ABS white plastic to permit doping, painting and/or lacquering. Like its sister ship, the "Citabria", this new model is a plane for all seasons and performs equally well on land, water or snow.

The third model soon to be released in the "Fly-For-Fun" series is the acrobatic "Pro" recently unveiled by Champion Aircraft Co.

Models list for \$39.95 each and are available at all leading hobby dealers or direct from Angel Mini-Flite Co., 340 Broad St. Fitchburg, Mass. 01420. Descriptive brochures are available.



Product 60 Hobbies, P.O. Box 19133, Salt Lake City, Utah 84119, announces the second in a series of their new crash resistant R/C models. These new models utilize a completely new, tough resilient plastic preformed fuselage. Guaranteed by the

manufacturer to be tougher than fibreglass and more survivable under impact than any other known plastic currently being used in preformed planes.

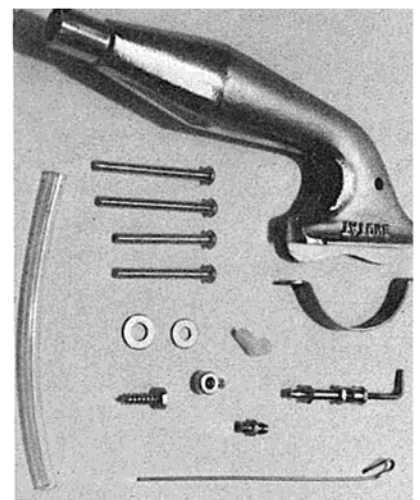
This new Comanche B is what most R/C flyers have been waiting for. The scale appearance, with a performance capability from scale into the range of a Goodyear racer depending on the engine you choose. Manufacturer recommends .15 to .35 with stipulation that .35 be used only by top experts. Manufacturer offers you a choice of motor mounts (vertical, horizontal or inverted). Specify when ordering.

All surfaces are covered and hinged. A new miracle covering is used on styrofoam wing and stab which triples the wing strength.

This new tough Comanche B is available at your leading hobby dealer. For additional details and brochures write directly to Product 60.



Model Engineering, 3655 Calumet Road, Decatur, Georgia 30034, has produced a smoke generator that produces a large, lingering smoke trail and can be turned off and on as you so desire, providing eight to fifteen minutes of solid smoke depending on tank size. Throttle or throttle trim activated, it fits all engines .45 to .61, easy to attach, features free flow stack by Tatone, and burns a very inexpensive, easily obtainable fluid. Complete hardware and detailed instructions. Be the first to fly



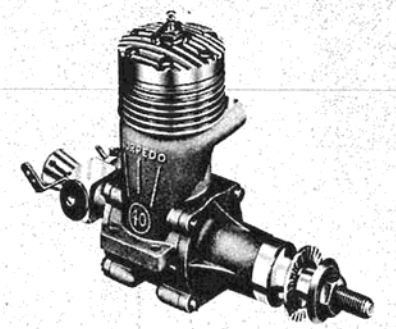
(continued on page 57)

PRODUCT REVIEW

(continued from page 56)

"Smokey Joe." It's wild! Price \$14.50 with postage paid on prepaid orders.

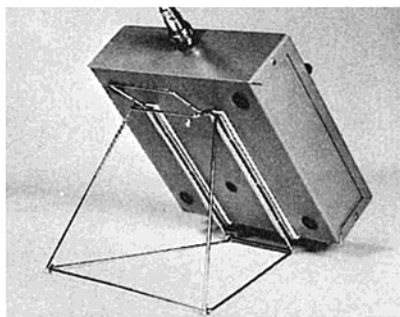
In their constant search to produce championship engines K & B Manufacturing Co., 12152 Woodruff Ave., Downey, Calif., 90241, has developed four new Torpedo .40 engines. They are classified as "Series 69" engines and include the Torpedo .40 "Series 69F" and Torpedo .40RC "Series 69F" (the F designating front rotor); and the Torpedo .40 "Series 69R" and the Torpedo .40RC "Series 69R" (the R designating rear rotor). All four are equipped with an all new milled by-pass and large throat carburetor for better performance and increased horse power. The exclusive K & B no-tension, single ring and aluminum piston is standard. The front rotor engines are \$26.95 and \$30.95, and the rear rotor, \$28.95 and \$32.95, respectively. All are in production and available at your local hobby shop.



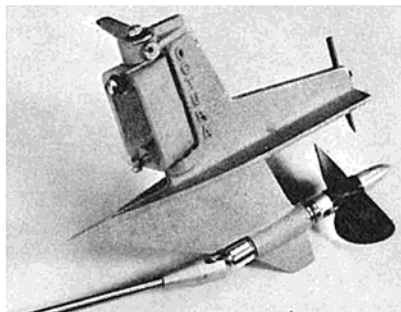
Trans-Stand, P.O. Box 144, Wyckoff, N.J. 07481, the first portable stand for your transmitter, keeps the transmitter off the ground, high, dry, and clean and eliminates tx.



damage due to tipping or falling. This unit fits all transmitters and is equipped with a convenient carrying handle and attaches easily to neck strap. No drilling, nuts, bolts, or screws are required. Completely collapsible for easy storage, the Trans-Stand is extremely light weight and strong, and attractively chrome plated. Price is \$6.95. Dealer inquiries invited, send check, cash or money orders to Trans-Stand.



It has been eight years since Octura Models, 8148 Milwaukee Ave., Niles, Ill. 60648, designed the first steering strut, for the White Heat V. The Octura 60 and 30 steering struts followed soon after. Now there is a new steering strut available from Octura. Combining the depth of the 60 strut with the smaller mounting bracket of the 30 strut, it also has the water pickup incorporated. The tiller arm is mounted at right angles to the prop shaft permitting direct linking to servos. Diameter of prop shaft housing has been increased permitting use of needle bearings, if desired. Anti-cavitation plate follows same pattern as the Octura 30 steering strut. Some hulls and installation require the anti-cavitation plate so it is incorporated on the new strut but can be trimmed to fit. As with other Octura struts, the drive shaft and propeller are included in the price. The price to be announced soon.



to send them a buck for their illustrated catalog of available plans. Also in the same book: a list of scale drawings of many hundreds of aircraft. The Aeromodeller's scale drawings are, on the average, as accurate, or more so, than can be obtained anywhere.

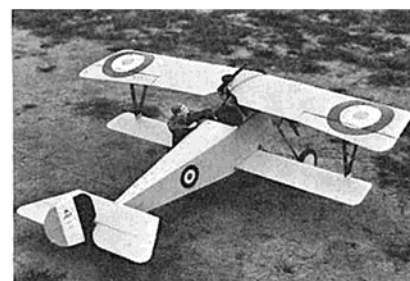
No trouble recognizing a Nieuport when we see one - but this is a Nieuport with a difference. Bryce Petersen's .19 powered scale uses a unique foam and balsa construction throughout the entire model - will be featured in RC Modeler.

Flat Styrene Sheet

Quite honestly, it surprises me some that more scale fans are not aware of the myriad uses of styrene in their models. One of its greatest attributes is that it requires no finishing - a coat of final color and that's it! True, it's a bit heavy, if used in 1/16" thickness or more.

The flaps in my Focke Wulf 190 A-7 are made of 1/16" and 1/32" styrene - the internal flap detail would be next to impossible to grain-fill. Cockpit details can be made from .010" or even .005" thick sheet, which weighs next to nothing. Styrene is cheap, too. A piece of 1/16" x 96" x 50", enough to last forever, recently cost me \$8.00. Thinner sheet is proportionately cheaper. The white and clear are the most useful to us.

Styrene is joined with any plastic cement, but in my experience the liquid types are easier to work with and dry faster. I use Testor's Liquid



Cement and join pieces by holding the two parts together and "painting" the crack with the cement. The liquid runs into the crack forming an instant bond. As fast as you can cut pieces, you can build. Cut it in the same way as butyrate sheet - score one side, fold back, and that's it.

About the only problem with styrene, from our point of view, is that it has to be painted with enamels and these are not fuelproof. However, one answer is to use polyurethane paints which will work with styrene and *are* fuelproof. The other trick, and one I often use, is to paint with normal dopes *BUT* applied at 98% air and 2% paint with an airbrush. The paint is dry as it hits the styrene, so no solvents are present to attack the plastic. This is a technique requiring practice, so don't be disappointed if it won't work for you at first. Don't try it with a brush. It *can't* be done.

Listen and Learn

Oddly enough, though unfamiliar to aeromodelers, modeling with styrene, like "weathering," is a very familiar practice to model railroad fans. There's a moral here, and it's this: Next time you run across a guy who builds a different kind of model from us (or has a completely different hobby altogether) don't walk away. Engage him in conversation! We can all learn from each other in this world, and the chances are fair that he can tell you something useful that you didn't know.

All of which leads us nicely into our

Tip of the Month

Who's got ten bucks to spend on a toy?

It'd have to be some toy you say. It is, fellas, it is.

The Mattel Vac-U-Form is a "toy" vacuum forming machine which will mould styrene sheet up to .020" or more thick, over (or into) any form made of clay, wood, plaster, etc. The size of the plastic sheet that the Vac-U-Form will handle is limited to about 3" x 3 1/2", but for small parts it is ideal. Larger sections can, of course, be built up by gluing. Even so, there are quite a few small parts in a typical R/C scale model. head hacker down there at RCM going to know if this column is a success or not? If the response is big enough, maybe I'll even get a raise. landing lamp, and I haven't finished yet finding more jobs for it.



At this point, our formal tour ends. We have visited each manufacturer, and you are now free to roam on your own through the modelers' displays, take in a talk or two, or venture outside to watch the demonstration flying. You may even be able to see Snoopy take off after the Red Baron, with an assist from Al Signorino. Perhaps you would rather wait and watch the power race cars run.

As for me, I think I must be at least a foot shorter than when I arrived, at least my legs feel that way. I'm gonna put on the feed bag and take a break!

A word about the photos, - you will undoubtedly notice that some of the pix show ships with portions cut off, noses - tails, etc. - this was due to the shutter on my Nikon not synchronizing with the electronic flash. Every picture had the first 1/3 of the left side underexposed, which required extensive cropping. Moral - don't take a new camera to Toledo! Sorry!

To the manufacturers, many of whom traveled a great distance at considerable expense, we are grateful, and sincerely appreciate your efforts. We have honestly tried to meet each and every one of you, no small task, in a crowd so enormous.

To the Weak Signals Club, we can only say a heartfelt - THANKS for making the Conference possible. In addition, a very special Thank You to a few of the "SPARK PLUGS," (or is that "GLOW") who really make the show GO, among these, who usually remain nameless are Larry Snedeker, Don Belote, Howard Reash, John Schell, Ted Rohweder, Gary Deem, Paul Schmitz, Ken Borrer and Al Betkey. A special THANKS from us and the AMA to Joe Vislay and Roxanne & Bob Grabestetter who handled the raffle, which incidentally netted \$568.50 to the AMA frequency fund.

The Toledo Conference has been instrumental in furthering the advancement of R/C. Wouldn't it be nice if everyone who has taken our "quickie tour," would send in their \$1 admission? Sure would start '70 plans with a boost!

As an added first, we are listing the names and addresses of the participating manufacturers for your convenience. Should you desire further information, please drop 'em a line - Tell 'em Bernie sent ya!

See YOU at the field!



RADIO CONTROLLED FROSTBITE

RCM VISITS THE ALASKA R/C SOCIETY

By GARRY LYON



Lt. Col. John Harris, member of ARCS demo team with Marksman.



CMSgt. Bob Rich with J-3 and Spad. Bob appears with Angel Mini-Flite Spad in P.61.



Busy --- busy --- busy --- busy ---

Photos by EVAN JORGENSEN

If you haven't flown R/C in Alaska, you have missed something. You've missed sharing your flying site with a moose; you've missed the thrill of flying at midnight without benefit of lights; you've missed the strange flight characteristics of a plane with a quarter inch of ice on the wings and prop; you've missed the frustration of trying to keep up with the latest goodies from the "lower 48." But most of all, you've missed the comraderie of one of modeling's all-time fun groups - The Alaska Radio Control Society.

The club's history reads much the same as any other. A small, dedicated group of flyers made a struggling beginning in the mid '50's when two successful flights and one successful landing was considered a great day at the field. In 1959, a serious attempt at organization was made with the Alaska Pole-Katz Modeling Club. The group embraced all phases of modeling and it wasn't long before that proved futile. So, in 1963, under the guiding hand of Burt Goldberg, the R/C enthusiasts broke away from the group and became the Alaska Radio Control Society. That first year was a real struggle. Burt and two stalwart companions comprised the entire membership. Their efforts bore fruit, however, and today the ARCS boasts twenty-five ACTIVE members.

The term 'active' really doesn't tell the story. Being in Alaska makes it a little difficult (loot-wise) to sally forth into the midst of the fray sponsored by our Southern brethren. So, about all we do is fly airplanes. And . . . fly we do! In the summer, about 85% of the group comes to the field every week-end. Not only do they come but they bring a plane and fly. In the winter the figure drops to about 45%,

and then in temperatures of zero to 30 degrees above zero! Aside from the winter cold, rain and snow have also done their share to try to quell the ARCS desire to fly. Said efforts have been unsuccessful. VERY high winds, VERY low clouds and VERY dense fog are about the only things we haven't learned to cope with. It seems reasonable to assume, however, that there are a couple of nuts in the group who will have that whipped before long.

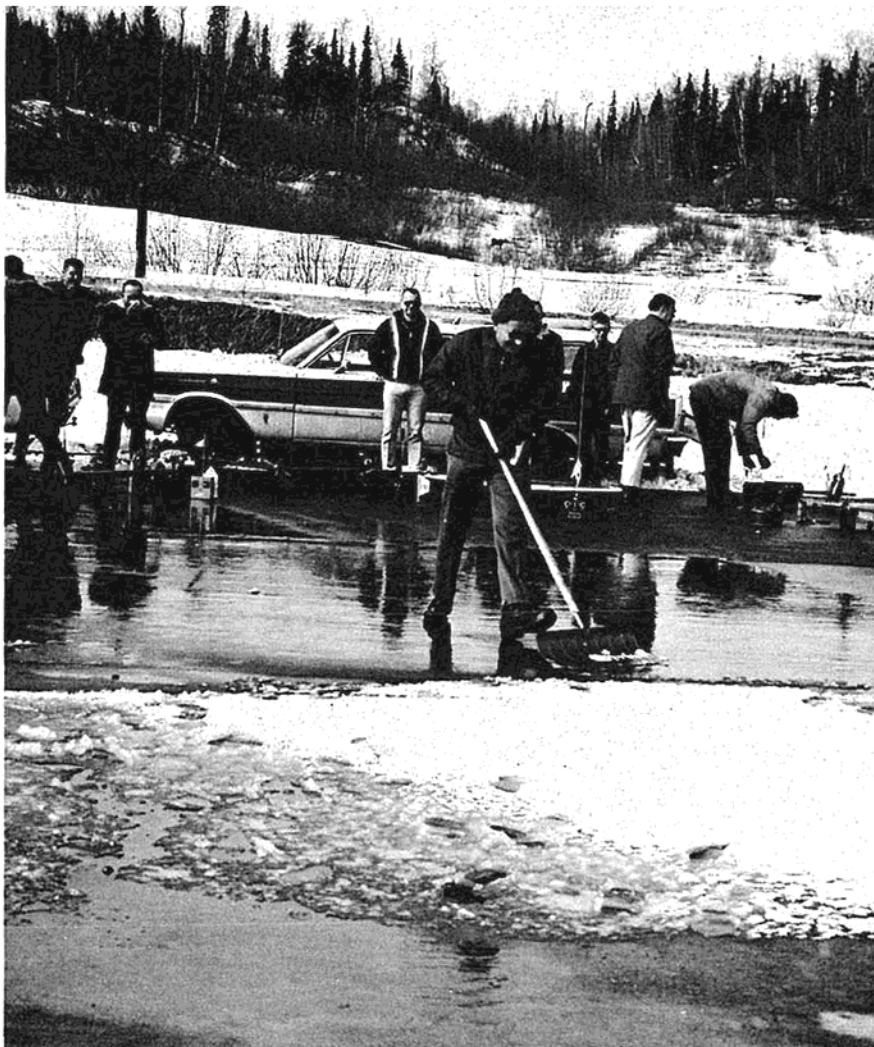
Solving the problems of winter flying is really one of the ARCS main claims to fame. With a summer flying season that is only about four months long (rain wipes out a portion of that), one either learns to fly in the cold or not at all. Now, before you call the men in the white coats, we must admit that it isn't REALLY that bad.

At the first mention of Alaska, most people envision nothing but icebergs, igloos, polar bears, Eskimos, dog sleds and blizzards. Well, there ARE parts of the state where these things abound. Not so in Anchorage where the club is headquartered. The average temperature in the winter is about 10 degrees above zero and the mid-days are in the mid-20's. Daylight is the big restricting factor. In December and January, there are only about three hours of flyable light. But, getting back to the temperatures, if you apply the old saw "If you can't beat 'em, join 'em," we have used the cold as a tool for learning. We have discovered, for instance, that manufacturers' claims concerning operating range of radio equipment generally fall short at the low end. Operating at anything below 30 degrees above zero will usually require some retuning of receivers. Then, comes spring, and the necessity of retuning again. We also find that





Above: Major Jack Aycock gives first aid to his Marksman after the latter threw tire in pile of slush. Took 30 minutes to "de-ice!" Below: Guess who drew the short straw as the Major plays snowplow! Note moose over Jack's head — another one just to left.



standard fuels have to be beefed up with about 10% nitro during the winter. Then there is the problem of keeping the engines warm enough to start. In the 'olden' days, the boys used to run the piston up to the top of the cylinder, fill the exhaust port with fuel and light it. This made a pretty effective heater, even if it was a little hazardous! We modern types have advanced to the use of auto exhaust, catalytic heaters in the back of a station wagon, propane torches, and some have even left a battery on the glow plug while in the pits. The only other real problem is trying to keep the fingers from going numb BEFORE entering the landing pattern! You can be assured that every type of glove ever made has been tested by the ARCS! The general consensus is that plain wool gloves are as good as anything. These things have all been learned only after the manufacture of many, many balsa toothpicks. But, learn we did. This past winter there were only two weekends when there were no brave souls to challenge the skies. The mercury on those days had fallen far below zero.

Summer flying in Alaska is much the same as anywhere else, unless you consider water injected carburetion worthy of mention. It rains a lot in these parts. But, it's a weird rain. The drops are very small, fall very slowly and are dry. (If we try to explain that, we'll be back to the men in the white coats, so please take our word for it.) There is seldom enough moisture in the rain even to dampen the spirits (sorry about that). Of course, we do have the advantage of the long summer nights which allow for much 'in the evening after supper' type flying. It also provides the setting for our one big family outing of the year. On the weekend of the longest day of the year, we have an all night fly-in/picnic. This starts at about 7:00 PM on Saturday and lasts until no one can keep his eyes open. . . generally around 7:00 AM on Sunday. Except for a short time out to inhale a piece of chicken or help put the kids to bed in the back seat of the car (would you believe putting mother to bed in the back seat of the car?), there is flying every minute of the time.

While we do spend a great deal of time flying for our own amusement and amazement, we have made a concerted effort to become a part of the community. In 1964, the club was invited to fly as a part of the Armed Forces Day activities at Elmendorf

AFB, adjacent to Anchorage. Since that time, the community has been more and more aware of our existence and has, on many occasions, taken advantage of same. We've participated in every Armed Forces Day since, put on a three-hour show during Aviation Week of the Alaska Purchase Centennial year, put on a show for the State Fair (we're planning another show for this year) and have had members of the club on several television programs explaining the many facets of the sport. Our latest venture is the organization of the first all Alaska R/C get-together which will be known as the 'Far North Fly-In.' It is planned for 21-23 June, in conjunction with our all-night do. By the by. . . if you just happen to be passing through Anchorage at that time, you are most certainly invited to participate.

By now, we hope to have given you the impression that the ARCS is a pretty busy group. Well, we are! And, we manage to stay busy because there is a lot of interest. There is a lot of interest because there is always new blood in the group. There is always new blood in the group because about 65% of the membership is military. (For my next trick!!!) This transient makeup does have some advantages, the most important of which is the constant introduction of new ideas and opinions which are the life blood of any hobby. Military types generally bring with them a wide variety of skills and, in many cases, have been able to use and evaluate some of the newest goodies from the 'land of the big hobby shops.'

Speaking of hobby shops, we must acknowledge the outstanding effort on the part of the Anchorage hobby dealers. They do everything possible to keep pace with a rapidly growing and changing industry and, almost without exception, have everything you NEED and most of what you WANT.

At this point, we would like very much to give you a rundown on equipment reliability and engine performance in the far north. We'd like to . . . but we won't. The ARCS is of the collective opinion that the only 'good' radio, engine, fuel, glow plug, finishing material or linkage connector is the one that works best for the individual. We will say that everyone is either using propo or saving his coins for proportional and

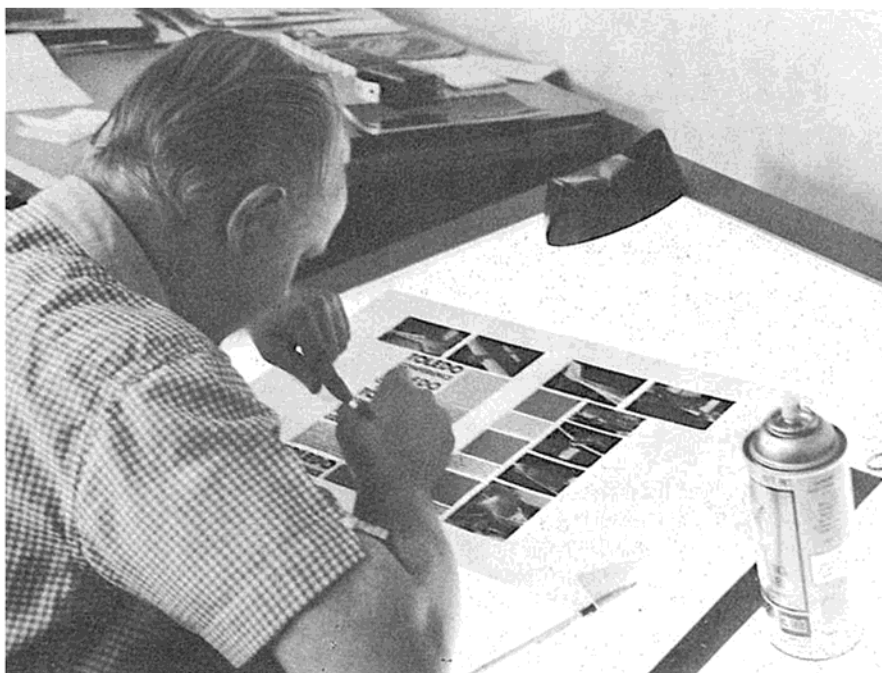
the trend to the big engines has reached Alaska with all the accompanying noise and fuel gulping. The pictures show pretty well the scope of models being flown and the weird collection of characters flying them. Again, nothing too different from any other club.

One final thought. A visit to any flying session conducted by the Alaska Radio Control Society will disclose two things. First, it is a very busy, noisy, happy place. Second, it is a superlative study in sportsmanship. Successful R/Cing in Alaska is a group success. No one in the club, from the rank beginner to the old pro, has failed to use the knowledge or seek the assistance of someone else in the club. And, we might add, no quest for help is ever ignored. As a result of this cooperative spirit, there is never any jealousy, never any bickering, never any air-hogging and . . . even the crashes don't seem to hurt quite so badly.

So, if you ever meet a button pusher with frost-bitten fingers and a propane torch in his field box . . . you will know you have met a gentleman.

Come on up and see us now . . . y'hear!





MEET

DON DEWEY

RCM Editor and Publisher

*It's 1:00 A.M. Sunday morning and he's
designing the Toledo layout for this issue!*

You will probably never see Don at a contest, trade show, or club meeting, for his work day begins at 8:00 A.M. and usually ends at midnight or later. And it's been that way, seven days a week, since he founded RCM in 1963.

A writer and artist, his job begins with a basic idea, or concept, of an issue, and ends only when he has finished the final layout of the last article. In between, he coordinates the assignments of the Contributing and Associate editors with the myriad deadlines RCM has to meet each month. When these assignments are completed, he is responsible for rewriting and editing, as well as writing all of the "non-byline" material that appears in the magazine each month. Then, Don designs the magazine, does the graphic art work, and lays out the entire issue, doing the "paste-up", or mechanical, himself. And, during the course of the month, he answers hundreds of letters and phone calls from readers and advertisers; builds portion of each aircraft considered for publication in order to check the accuracy of the author's plans; tests new products for evaluation; designs aircraft for future issues; and once in a while, manages to test fly a new model (which he sometimes even manages to get down in one piece!).

As the captain of a dedicated team of editors and writers whose influence reaches every part of the world where the sport and hobby of R/C is practiced, Don is quite often outspoken, and frequently the center of controversy, due to his insistence that every member of the team call a "spade a spade."

So you may never see Don Dewey — but he's as close as the next issue of R/C MODELER MAGAZINE, — the world's most widely read, quoted, and imitated model aviation publication with a staff that takes YOU to wherever the action is happening!

By KATHLEEN ACTON



Savannach VG



Savannach VG



Savannach TM



Savannach TM



Savannach ADV



Savannach ADV



Savannach Bingo



Savannach Bingo