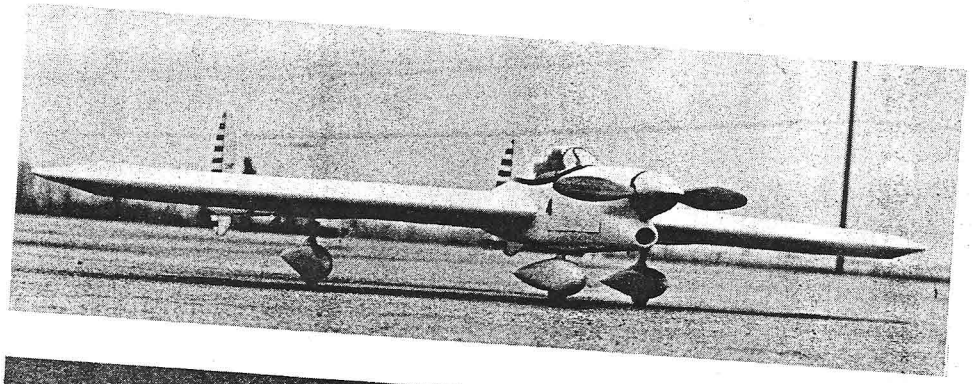
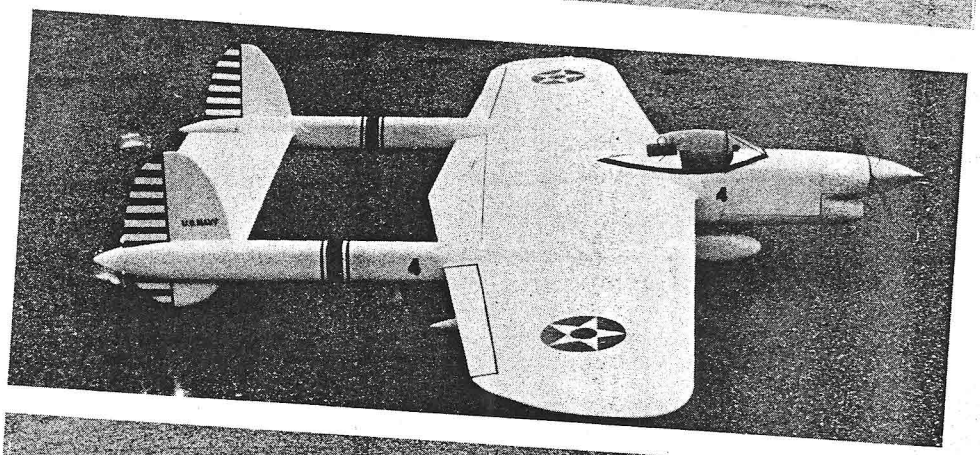
CRUSADER

By Charles A. Mackey

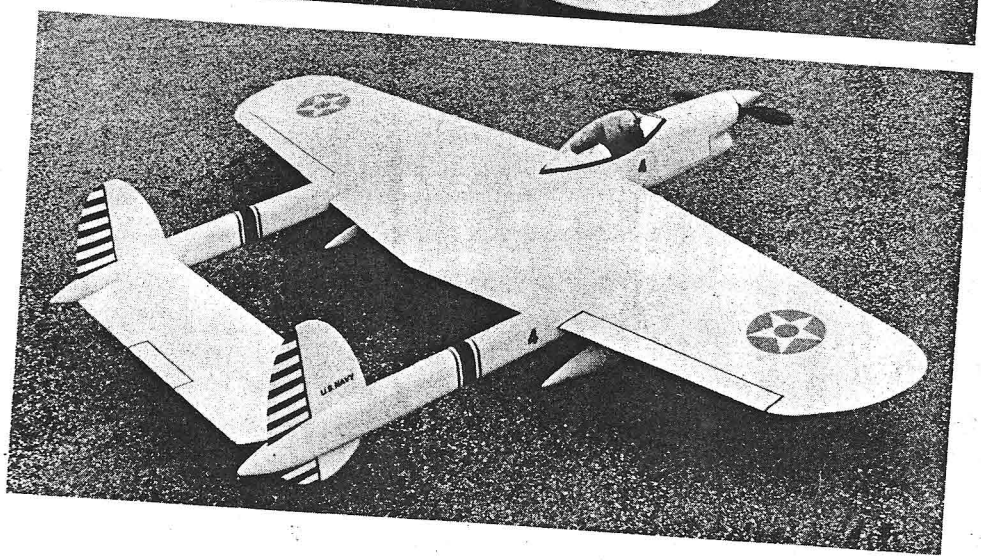
A Twin-boom Hot Stunt Contender



Top: Low level angle—racy and offbeat. Note cooling intake, also the wheel pants. Lower block is removable for access.



Center: Rugged twin booms are easily assembled. Full-size rib patterns are given. Flap area between the booms is actuated.



Bottom: The planform is well tested; design is rugged and stable on ground, and highly maneuverable. The plans are ¼ scale and easily enlarged.

I hope Carl Sieverling won't mind sharing the same name he used for his stuntship in the October 1959 issue of Flying Models. At the time Carl's "Crusader" was published, five twin-boom designs using the same name had been completed and eight to ten were under construction, so it was too late to change the name. O.K. Carl?

The "Crusader" is designed for the competetive flier who wants everything in his stunt ship plus a little more. It's not the last word as there will always be better designs to come, but it should give you all you want for your competetive stunt ship and a little more.

The appearance of the twin-boom design is different, scale-like, and appealing, so most people seem to like the appearance including judges. Judging stunt is very difficult. Try it sometime. You find that as you judge you learn what kind of a flight to expect just by looking at the airplane if you find someone wth a pleasing design that is well built and finished and you think it's tops, you give him maximum points. Then you sit back to take in the flight. You know his ship is different and well built and finished, but how does it fly? Now you have a special interest in this ship that you didn't have when you judged the rest. Naturally, you will be fair and impartial, but you're just going to watch this guy extra close to see if he is as good as his ship looks. After

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CRUSADER

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seeing a few maneuvers, you soon find out.

The "Crusader" is stable enough to make a power on landing, It will start an average sized loop from a given position on the deck, fly the loop, and land on the same spot. As far as maneuverability is concerned, the "Crusader" has flown the five foot radii in the bottom of the hourglass and triangles successfully. Perhaps one of the most outstanding features of the "Crusader" is it's ability to stay out well on the lines. Keep your controls solid enough to stand the high pressure imposed by the wind and you will find yourself hoping for windy days. In calm weather you will do equally well on 65 foot lines with your motor four-cycling. On 70 foot lines in calm air, you should fly a little faster. Sixty-five foot lines will be your best line length for all weather flying. John and Wilbur Schmidt, a father and son team in our area, flew their "Crusader" under some unusual conditions at the Richmond, Indiana meet. The ship weighed in at 50 ozs. and the wind was blowing at a constant speed of 18 m.p.h. We later learned that John was flying on 73 foot lines. I've always considered 50 oz. too heavy for a stunt ship with this wing area, but for some unknown reason, it turned well and still grooved. It's ability to stay out well in the wind cannot be explained by the weight because another "Crusader" flew equally well in the wind and it weighed 43 ozs. The original was built with one eye on the scales. It weighed in at 40 ozs. Yours will probably come out about 45 ozs. due to an improvement on the landing gear and leadouts.

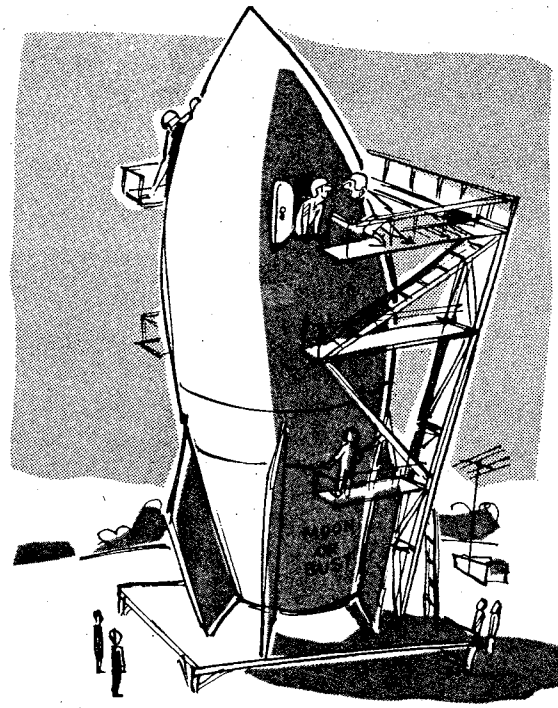
The bellcrank was moved to the outside boom to eliminate tip weight. The less weight used to balance a stunt ship, the lighter and more efficient the ship will be. The 40 oz. "Crusader" requires no balance weight at all. The 40 oz. to 46 oz. ship will require about 1 oz. or more. We have noticed that some builders always come out heavy and others light. If you are the latter, follow the plans. If you're about average, add 1" between former F-1 and F-2. That will make the distance shown on the doublers 4" instead of the 3" indicated. If you build on the heavy side, make the nose 1¾" longer. That would make the gap 4¾" instead of the 3". This should completely eliminate the need for any ballast.

The original ship used cable leadouts that proved fatal when they twisted. The new versions use solid leadouts, staggered enough to allow clearance of the connectors or line clips. If you can't obtain solid leadouts long enough, splice by bending a loop in one piece of wire and put the other end through and twist a loop in it. Then bind with string and cement. This will eliminate the slack.

The landing gear is shown with 2° negative angle of attack on the wing. This was thought best for some time. One "Crusader" featured a positive angle of attack of about 13°. This ship would stick to the asphalt for as many laps as you held down. Take off was accomplished as controls were neutralized. This proved that you can use positive or negative and still work well. Both made beautiful landings unless the pilot goofed. The best set-up seems to be straight ahead. You can still come in tail low and pop down like the jets, or grease in on all three and retain the ability to come off easy. After a lap or two on the deck when you are really rolling, this can be difficult with positive or a negative thrust set-ups.

Start construction with the wing. Mark off parts to be cut on 1/16" medium sheet balsa. Cut 2 of each except No. 13 where only one is required. Cut the trailing edge to 1" width from 1/16" x3"x36". Mark the rib positions with a square. Cement 1/8" sq. to the trailing edge. Pin the ribs to bottom of 1/16" sheet trailing edge and mark the 3/16" sq. spars for rib position by pinning them to a table at the proper angle. The true trailing edge position should be parallel to the edge of the table. Mark the rib angle every 2" with a square from the edge of the

(*Continued on Page* 39)



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CRUSADER

(*Continued from Page 37*)

table. This should give you the proper angle. Make the inside wing 2" longer by using rib No. 13. Slip spars onto the ribs and pin in place. Mark the leading edge and position. Block up wing, check for warps, then cement. Install bellcrank and gear platform cut from a strong piece of 1/8" ply. Cut out tips from 1/8" sheet. Notch wing to take 1/8" sheet brace that fits behind 3/16" sq. spars at center section, top and botom and install.

Bend wing gears from hard 1/8" dia. wire and install with "J" bolts. Mark the ribs for leadout position. Burn out holes, or cut out with a knife. Install bellcrank and leadouts at this time. Cut out wing flap from 1/4" sheet and hinge to the trailing edge of wing. To build the wing true, we suggest you acquire a few pieces of 2"x6"x6" lumber. With these you can block up the leading and trailing edge and allow clearance for your landing gear. Make four boom sides from 1/8" sheet, remove center section and slide the boom sides over the trailing edge into proper position. Cut the sides or shim up if necessary to fit 3/16" sq. spars. Then cement on the center-section you cut out for installation. (Do not cement to trailing edge at this time.)

Cut out stab and elevator. Add special horn as shown and hinge full span. Be sure to keep hinges tight and free from play. Cut out boom formers. Cut holes in outside boom formers for pushrod, cement on 1/16" sheet plywood guides and slide over pushrod. Cement formers to sides, then slip elevator into position and cement. Before anything has time to dry, block up the tail, booms, and wing along the leading and trailing edge. Cover top of wing with 1/16" sheet and capstrip. When dry, turn over and cover the bottom side. You will find it necessary to cut false ribs for the sheeting along the booms. This is easily done by tracing the shape from the wing rib nearest the boom. Double check the controls to see that they are tight, (without play) smooth and free, and have at least 35° movement in each direction. Flap and elevator should neutralize at the same time. While this is still drying, add the 3/8" balsa to booms and allow everything to dry in perfect alignment.

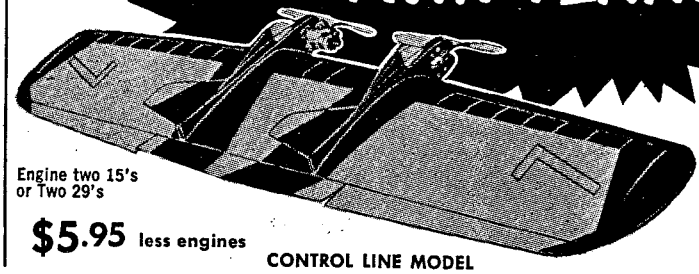
The nose section is made in the conventional manner. 1/8" balsa sides cemented to 1/16" ply doublers with 3/8" x 1/2" hardwood motor mounts and 1/8" ply formers. The landing gear is bent and put on with "J" bolts, but not tightened. The nose section is cemented on with the wing section blocked up. The wing and tail section should be blocked up with the landing gear wire touching a flat surface of the table. Be sure the leading and trailing edges are on the same plane. Attach the nose section, checking alignment from motor mounts to the table. Adjust gear to the proper height and tighten "J" bolts. Cement on nose section, pointing the nose out as plans show. When thoroughly dry, add the remaining formers, pulling the sides of the nose section together as necessary. Plank top and bottom with 1/8" x 1/4" balsa. Mount the motor and build the cowling around it, using the construction shown. Shape the outside to desired shape and hollow the inside. Be sure to make the air exhaust enough or you will have cooling trouble on hot days. Hold the cowling on with a bicycle spoke as shown. Fuelproof tank compartment, cowling interior and motor mounts with fiberglas dope. The tank may be your own choice, most tanks on the market are fine. It's more a matter of installation and proper cleaning that makes the difference.

Finish construction and sand the entire ship down to the proper shape. Use plastic balsa if necessary. Spray on 2 coats of clear Butyrate dope, sand well and repeat procedure. Cover the entire model with Silkspan. Apply two more coats of clear Butyrate and wet sand with No. 360. Next, spray on two more coats of clear and wet sand again. Spray on colored dope until it's well covered, then wet sand. Repeat until you no longer sand through the color. This usually will take 4-5 coats. Then rub out with Simonize Car

(*Continued on Page 49*)

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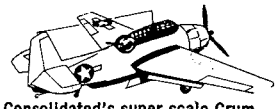
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A new bulletin *The Glow Plug* published by the Edmonton, Alberta, group came our way this month. Editor is **A. J. Robinson,** Suite 5, 1027 116th St., Edmonton. The issue at hand contains many interesting articles on building, motors, and MAAC affairs. The group seems to fly all classes of models.

From the *Hot Head* of the Vancouver group, we learn that **Frank Rutland** has been re-elected Zone Director, beating out **Hans Skadsheim** and **Frank Boden**. It is planned that Rutland shall attend the AGM this month with proxy votes from the Western Zones, pending proposed constitutional revisions to ban proxy voting.

Frank, incidentally, took first-place in the most recent club contest in the combined Rubber-Towline event. Boden copped both Gas events, under .15 and over. 15. **Arto Viiri** was first in H.L.G., while **Al Nicholson** won in R/C.

● EUROPEAN CHAMPIONSHIPS (controline variety) at Brussels was blessed with good weather and marked by a fine degree of organization. In Team Racing, the ever-increasing output of 2.5 cc. motors upped speeds over last year. The top motor is still the Oliver Tiger (worked). Belgian teamster, **Bernard,** scored 4.27 min. to take the ten-kilometer event. With twenty entries ,national standings in his event were as follows: Italy, 16.13; Belgium, 16.52; Hungary, 16.57; Germany, 21.08; England, 22.06; and, Finland, 22.6. **Azor,** the second-place Hungarian, used a new-version Hung diesel.

In Speed, **Rossi,** (Italy) turned 222 kmh. with a brand new Super Tigre Special. **Beck** (Hungary) was second with a Moci 2 motor. Third place went to another **Rossi** at 202 kmh. Beck managed 214 kmh. in this event. Twenty-five entries competed.

In Stunt, Belgium's **Grondal** won with 2010 points. His model was powered by a Fox (presumably a .35). **Dr. Egervary,** Hungary, came second with 1943 points, while the Swiss, **Edinger** was third with 1856 points. In Combat, Germany's **Seeger** and **Doring** were unbeatable.

We are indebted to **Altfried Keinespel** for the excellent pictures of this meet and to *Modellsport* magazine for the details.

On a national basis, Belgum was ahead at the end of the meet with 5217 points, followed by Italy (4699 pts.) and Hungary (3757 pts.). Germany was fourth and England fifth.

● MEMBERS WANTED, PEN PALS, ETC.: *New York Aeros* want experienced FF and ukie competitors and serious beginners. Contact **John Giovine,** 1009 Morris Ave., Bronx 56, N.Y. *Jackson County Propbusters* have the welcome mat out. Contact **Dick Black,** 3214 Ash St., Independence, Mo. *St. Louis Area* modelers between the ages of 12 and 17 should contact **John Harts,** 5433 Gresham, St. Louis 9, Mo. **Roger Todt,** 4962 Bonita, St. Louis, Mo., wants correspondents in their teens. **Brian McCarthy,** 2 Western Ave., Glens Falls, N.Y., is interested in all phases of modeling, has pen, will write.

● Thanks to **June Dyer** for the fine shots of the NCFFC's last meet of 1959. **Ghiorzoe** and **Albright** fought it out for the Hi-Time trophy, Ghiorzoe winning with a fourth flight of 14:14 for a 29:14 in Class A. Albright managed 19:22 in Class C. **Ronnie Dobbins** is a coming Junior who beats out the big boys flying the Gambler design by Dobbins and Adams. ●

CRUSADER

(*Continued from Page* 39)

Cleaner. Regular rubbing compound seems to take off too much dope.

To keep your model looking shipshape, we suggest you give it a good waxing. (Simonize is about the best to use after you have rubbed it out.) Wipe the oil from your ship after every flight and buff the wax with a soft cloth. Wax is not fuelproof so you will find it necessary to re-wax it from time to time. To do this, it is necessary to clean your ship thoroughly. We recommend hot water and a good detergent, such as Tide or Cheer. If you don't clean the oil from the surface, the wax will roll up and smear. We have tried many good waxes with cleaners in them. They do a good job, but eventually they cut through the dope.

We suggest you balance your ship as plans show to start with, then you can make changes to suit your style of flying. Use a flying handle just large enough to give you enough control for the 5 foot radii. When you apply full control, about 30° on the elevator to 45° on the handle is a good start. From there it is up to the individual.

Practice is necessary, but don't wear out your ship. You will have to find out how much practice is necessary for yourself. Some fliers need 50 flights a week, others can get by on two. If you find yourself in the group that needs many flights, we suggest you build a couple of "Crusaders" or a "Profile" from the September '59 issue of Flying Models. You can practice on one, saving the second for your last two practice flights and two officials It will save your ship from wear as well as cut down on the chances of a crack-up. It is necessary that you have a ship with which to practice that flies similiar to your contest ship or you will have a little trouble making the change.

Decals are from Scalemaster's F-4 B-4. Rudder markings are painted. Happy landings! ●

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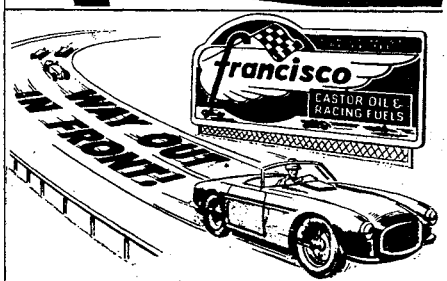
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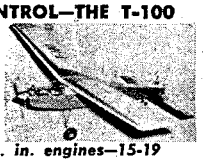
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