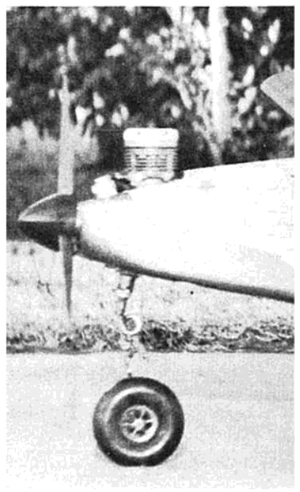
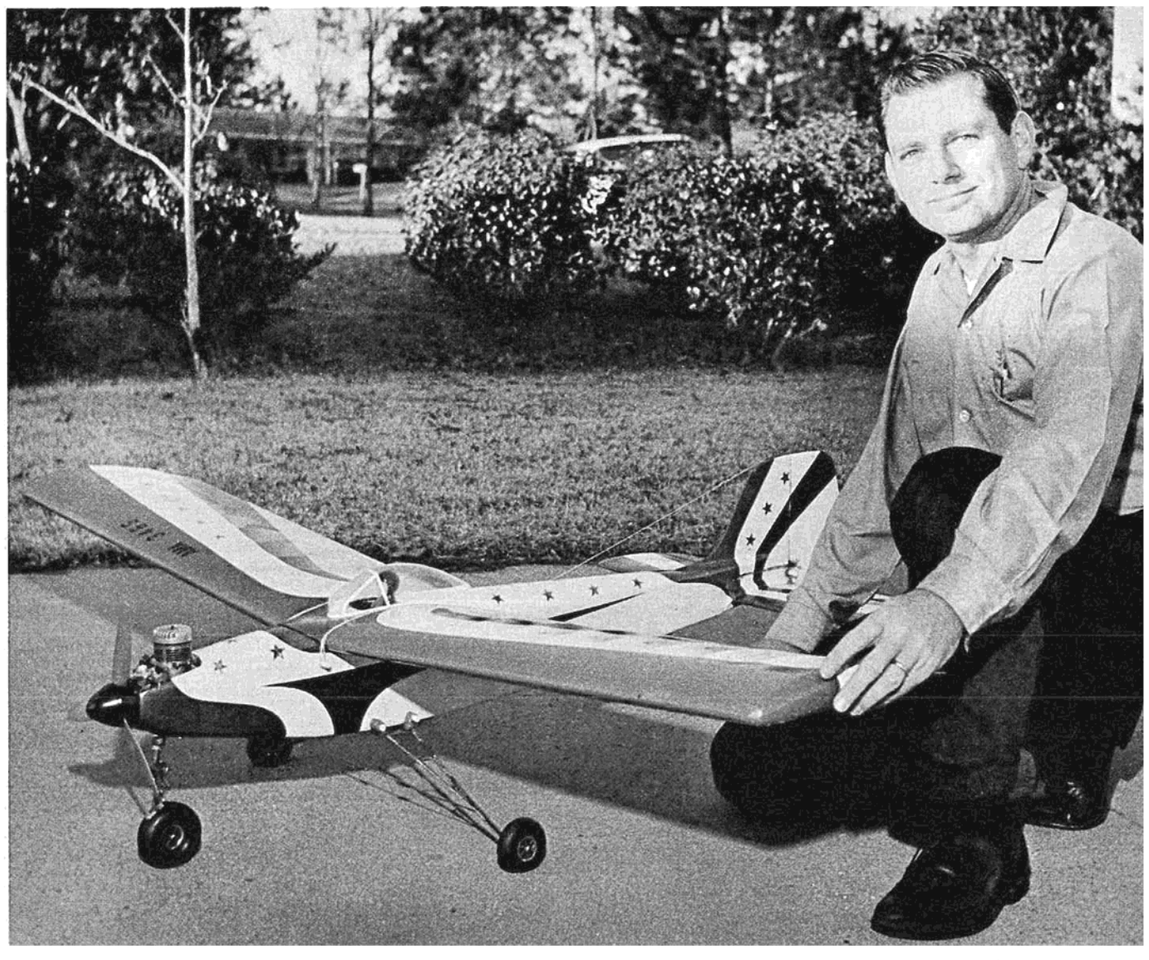
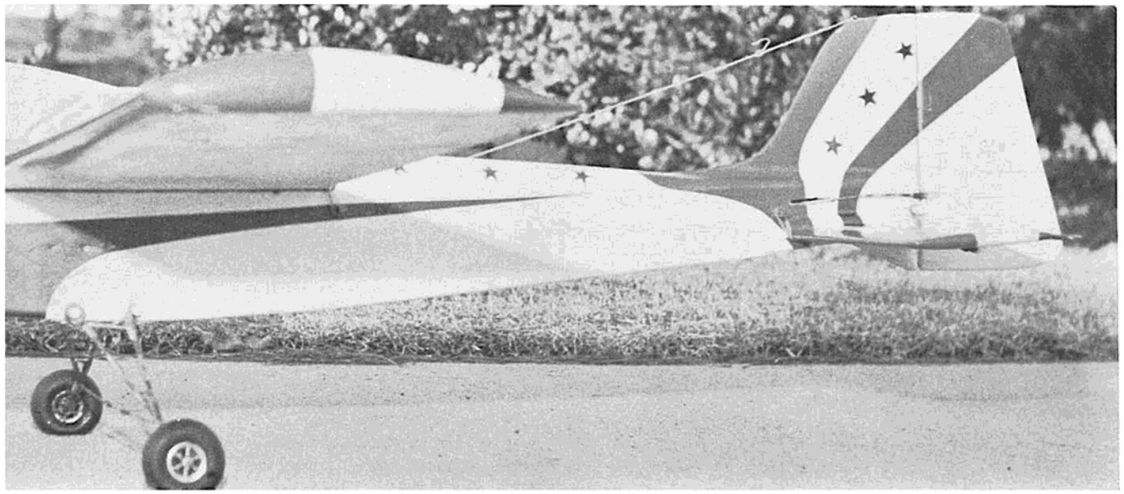
PENETRATOR



The first place winner of sixteen consecutive class I contests, including the 1965 Nationals, reveals the new look in class I . . .

By Jackie Gardner





HE Penetrator, designed to fly as a Class I plane, should also make an cellent Class II model for the Sun- y, or the contest flyer. It has a wing an of 61½ inches, overall area of 738 inches, and a length 45¼ inches. It ighs 6 lbs. and takes a .45 to .61 gine. The Penetrator that I am now ing is powered by a Merco 61, the ra power of the big mill needed for ntest flying.

I designed the Penetrator mainly to ovide a stable ship for the average nday flyer as well as a contest ship the experienced pilot. I also had in nd a ship that would match the auty and sleek lines of many of the ass III models.

The Penetrator is a large ship. This, ng with the overall design, makes a ble ship for the inexperienced RC'er. any flyers have found that some of e smaller designs are actually harder r the inexperienced flyer to handle.

In its intended field, the Penetrator s proven to be an outstanding Class I ntest ship. It is a ship that performs ceptionally well on reeds or propor- nal. I won the Class I event at the ng Orange on reeds; however, since en I have changed to Orbit propor- nal. The wing design has proven to ideal for contest flying, and has minated the excessive ballooning tend- cy found in most Class I ships. With e Penetrator properly trimmed, you ll find that it pulls out of maneuvers aight and level, and does all maneu- rs exceptionally well, including the ins. You will be happy to know that u can get a spin every time, and with a little practice, will find that it pulls out on the proper heading, straight and level. As you know, most model designing is nothing more than trial and error plus past experience. That is what I put into the design of the Penetrator, and believe me, it paid off! The Penetrator flys better than any of my previous Class I models, including the one I used at the 65 NATS.

It is my belief that getting away from the old "box-type" planes will create more interest in Class I. Many flyers want a ship with the lines and beauty of the sleek looking multi jobs. This is another feature that was included in the design of The Penetrator. It is a shoulder wing job that is sure to catch the eye of the spectators.

I'm also hoping that, by designing a plane that can match the features of the Multi, we can create more interest in Class I from all concerned, *especially* the officials of AMA. We have suffered, due to the continued suggestions from some, that we change the Class I event. An AMA council member made this statement and I quote: "Perhaps some of the single channel enthusiasts could come up with a category that could catch on; perhaps they could think in terms such as a weight lifting plane on a slalom course."

Another AMA director made this statement: "Perhaps Class I needs some fresh thinking to make it more distinctive from Class III, an event worthy of itself rather than by comparison to something else."

We don't hear any suggestions from AMA that Class III be turned into a slalom event! I'm sure that all Class I flyers are aware of the fact that Class I has "caught on," even though certain AMA officials may not think so! Last year's Class I event at the NATS was the largest ever! The thing that we Class I flyers are trying to get over to AMA is that we are not looking for some sort of a kite flying contest, that we like the event as it is and that we merely want the same consideration for all Classes. Class I is experiencing continued growth, and with proper support, could grow by leaps and bounds. Most everyone is aware of the fact that there is more of a challenge to flying Class I than any other Class. It is my belief that better looking and better performing Class I planes will create more interest, meaning, and an even more rapid growth than we are now experiencing.

CONSTRUCTION

FUSELAGE AND FIN: The fuselage sides are cut from 3/32" balsa. Be sure to follow plans so as to have approximately 5/16 inch incidence under the front of the wing. The sides extend approximately ⅛" in front of the forward firewall. Mark the location of the ⅛" plywood former before gluing in place the two 3/16" nose doublers on each side of the fuselage. Glue in place the 1/16" fuselage side doublers. Note that the side doublers butt against the 3/16" nose doublers. Mark the location of firewall, the ¼" balsa former behind the wing, and the ¼" sq. braces on the fuselage. Glue in place the ¼" sq. vertical braces on the fuselage, the dowel supports, and the 1/16" landing gear support. Line up

motor mounts with firewall and ⅛" plywood former. Be sure and check to see that an 8 oz. tank will fit between the mounts. After installing mounts assemble the fuselage sides, and glue in place the ¼" balsa former behind the wing. Pull the fuselage sides together and glue at rear, checking for alignment.

Glue in place ¼" sq. braces across the top and bottom of fuselage. Be sure to leave space for ⅜" sq. triangle at the top and bottom of the fuselage. After adding the ⅜" sq. triangle at top and bottom, glue in place ¼" x ½" wing supports. The 3/16" balsa fuselage bottom can then be added between the firewall and plywood former. Add braces behind the firewall and along the fuselage sides. Glue in place the nose block and fuselage nose. Be sure to fiberglass around the nose block for stress. Add the hollow fuselage block and 3/32" balsa for rudder base. Glue the rudder fin in place, but before doing so, draw a line down the center of the fuselage to insure proper alignment. Add ¼" balsa along the sides of the fin for support. Glue braces in front and back of the firewall and at the front of the fuselage. Glue the hollow nose block in place along with the 1/16" plywood. Glue the ⅛" plywood landing gear braces in position. Cover the bottom of the fuselage.

STAB: Very little need be said about the stab, as it is easy to build. The length of the stab (before tips are added) is 21½". Use 1/16" balsa for cap strips and sheeting. The elevator is shown for Class II or III construction. However, I use it as a trim adjustment on my Class I. For a true elevator, build in one piece, add wire, and then cut out the center section. Add the 5/16" balsa stab support to fuselage. The stab should be glued in place. On the original the stab was held on with dowels in the event that it was necessary to make trim adjustments; although none were necessary. Therefore I would suggest eliminating the dowels and glue the stab in place at the time of construction.

WING: The wing construction is also quite simple. Be sure to follow the plans in forming the leading edge, as this has a definite effect on the flying characteristics of the plane. Cut 22 ribs from 3/32" balsa. Space the ribs 3" apart and install 3/16" x ½" spar front and back. Cut three 12" dihedral braces, and one 6"

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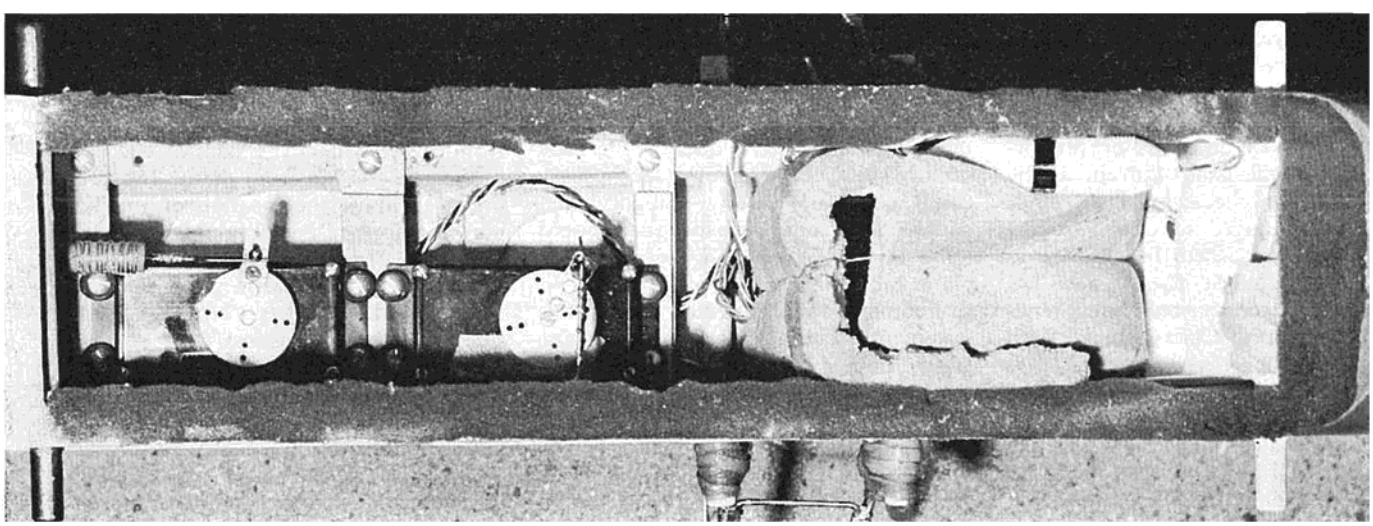
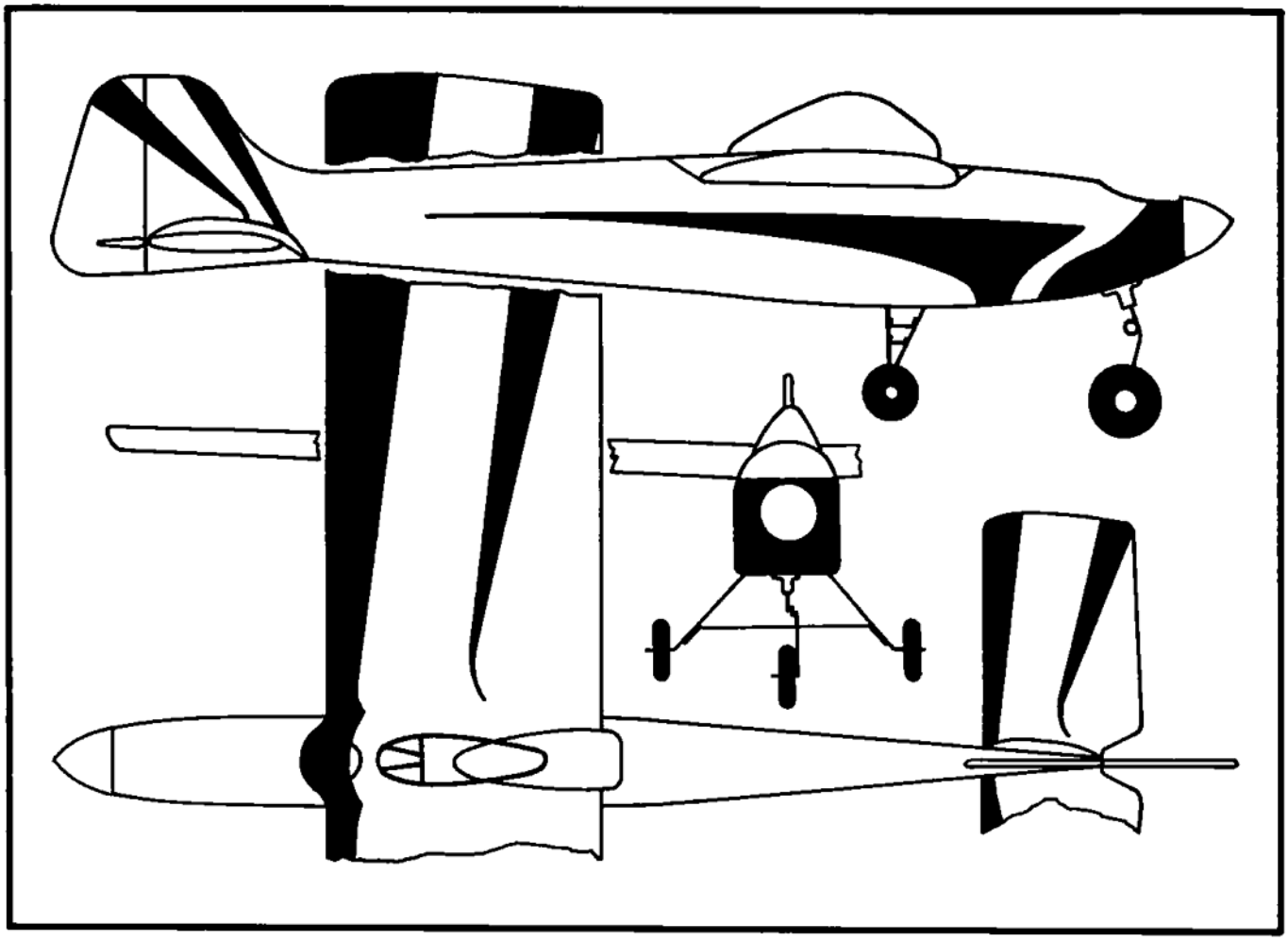


PENETRATOR DATA SHEET



ENGINE

.45 to .60. Prototype used a Merco .60 for contest performance.

DIMENSIONS

Wingspan: 61½"
Total Wing Area: 738 Square inches
Fuselage length: 45¼"
Flying Weight: 5¾ to 6 pounds

RC EQUIPMENT

Reed or proportional equipment for either sports Class II flying or competition Class I.

FLIGHT CHARACTERISTICS

Fast, excellent penetration characteristics, extremely responsive.

MATERIAL LIST

Wings:
- (6) 3/16" x ½" x 36"
- (2) ¾" x 1" x 36"
- (1) 1" x 2" x 36"
- (10) 3/32" x 3" x 36"
- (5) 3/32" x ¼" x 36"
- (3) 3/32" x 3" x 36"
- (1) 6" x 12" x 1/16" ply

Tail Group:
- (1) 1/16" x ¼" x 36"
- (1) 1/16" x 3" x 36"
- (2) 3/16" x 3/8" x 36"
- (1) ½" x 3/8" x 12"
- (1) 3/16" x 2" x 36"
- (1) 3/16" x 6" x 24"

Fuselage:
- (2) 3/32" x 6" x 48"
- (1) 3/16" x 6" x 36"
- (1) ¼" x ¼" x 36"
- (4) 3/8" triangular stock
- (2) 1/16" x 3" x 36"
- (1) 1/16" x 4" x 36" plywood
- (2) 3/8" x ½" x 12" hardwood MM stock
- (2) 3/8" x 3/8" x 12" hardwood servo mounts
- (1) 1/8" x 6" x 12" plywood
- (1) ¼" x 6" x 12" plywood
- (1) 2" x 4" x 12"
- (1) 1" x 4" x 36"
- (1) 5/16" dowel
- (1) 1/8" dowel

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dihedral brace, all from 1/16" plywood. Also cut two small dihedral braces to place behind the rear spar. Use 3/32" sheeting on the wing. Form the two hollow wing blocks, being sure that all blocks are hollowed out as much as possible in order to eliminate excess weight. Use 1/16" plywood on both front and rear wing blocks.

I built two wings for the Penetrator, one of balsa and one from styrofoam. One definite advantage to the styrofoam wing is the fact that you don't worry about warps, which is *very* important in contest flying.

COVERING: We have stressed the point of alignment in the rudder. Of equal importance is the covering. Be sure that the silk, or similar covering, is applied dry to the fin, stab and wing. Silk that is applied wet or stretched will eventually warp the surface. Steam ironing of covering material will make it easy to apply.

LANDING GEAR: The main landing gear is made from 5/32" and 1/8" wire. Be sure to reinforce the gear as shown on the plans to prevent it from bending. For the nose gear, have a welding shop build the plate from at least 3/32" steel. The plate is mounted into 1/4" plywood with sheet metal screws. Thread the plate for a 3/8" bolt, and hold in place with two nuts. Drill a hole in the bolt to accommodate a 5/32" wire. The brake consists of a drag on the nose wheel. A steerable nose gear can be used for Class II.

TRIMMING: Balance slightly nose down, 1/3 back from the leading edge of the wing. The engine should be set straight ahead. Only a slight amount of up thrust should be used until the Penetrator is trimmed to glide properly. My first step in trimming a Class I plane is to cut the engine and adjust until I have a glide that is slightly steep, so that it is necessary to use a little throttle before touching down. I then add washers under the engine until I get the proper amount of up thrust for the maneuvers.

A lot of sandpapering, along with a fancy paint job, and you can be assured that you will have one of the finest looking models in any Class. Your Penetrator will receive many favorable comments as a result of its airborne performance.