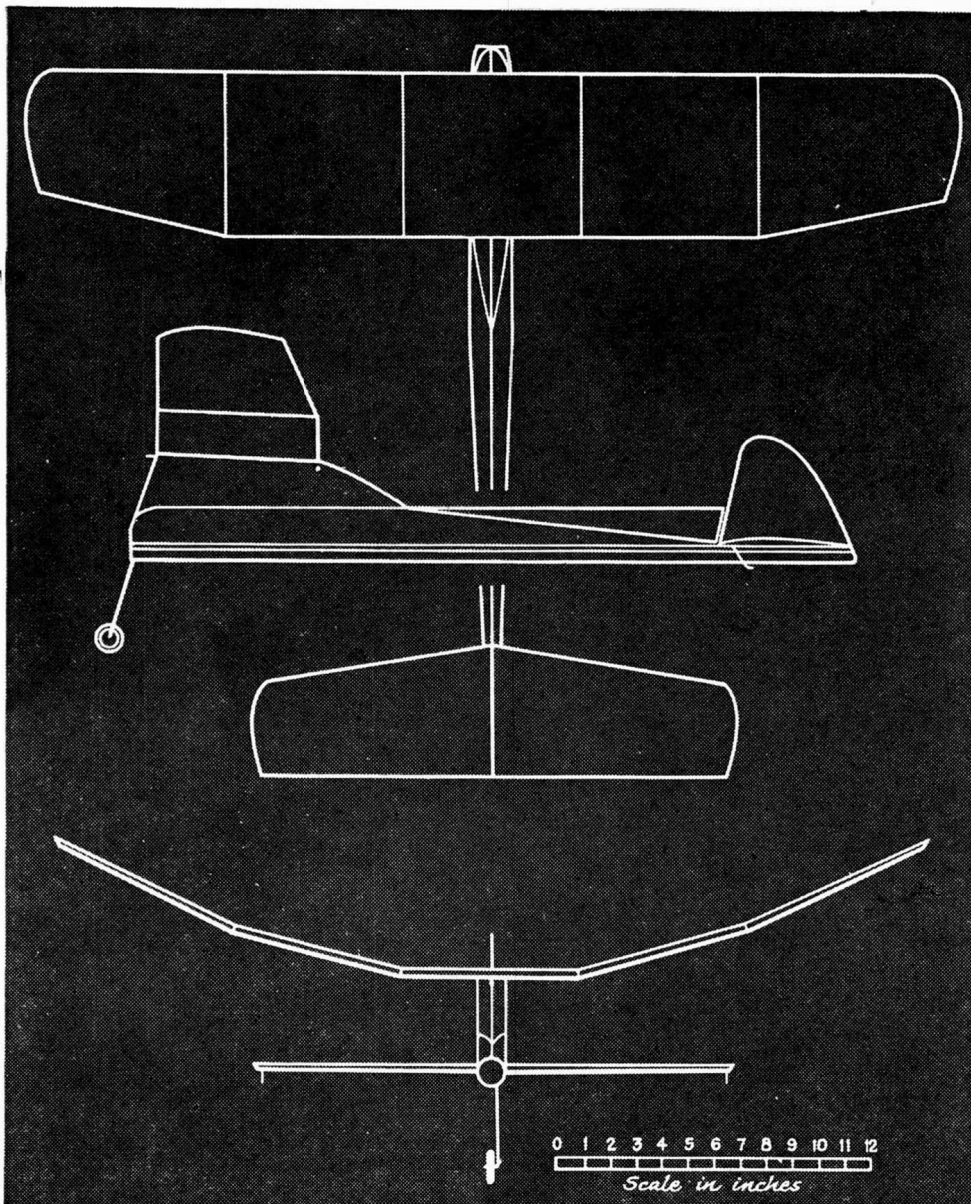


With its cabin built upon a crutch, long fuselage, multi-break polyhedral wing, author's A/2 manages to be distinctive without becoming complicated. Cleaned up lines permitted increase in area.

by FRANK EHLING

Last Nationals Half A payload winner creates special design for the new Pan American rules. Includes info for scaling up as hot Class A job



something NEW in payload

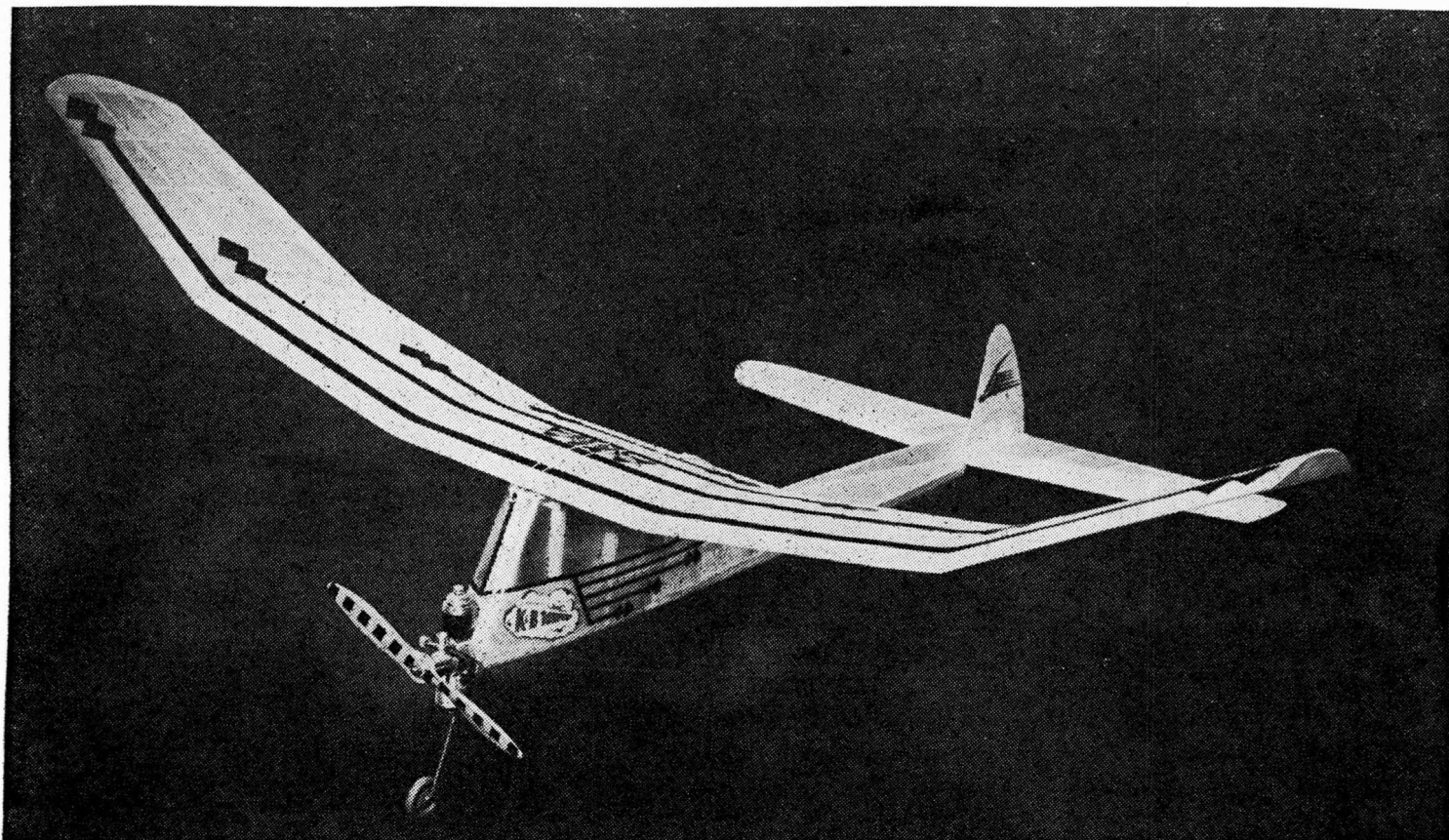
WITH the ever-increasing interest that is being shown in the A/2 Pay Load models, and considering the number that showed up at the *Nationals* last year, this event is bound to become popular. Right now kits are under way. They will be popular since the builder can build a model of this small size quicker, in much less space and using less material. After all, if you do have power to spare, it can be converted into pulling a larger model which can carry the 3 oz. that is required. Don't think for a minute that these models are of the slow moving type, as they can turn in flights that will cause many a pair of legs to tire from running.

Atlas, my 1951 Half A payload job, was designed expressly for competition under the new rules just released by *Pan American World Airways*. Last year I was lucky enough to win the combined-age class Half A payload event at the *Dallas Nationals*, that being a test of the modelers' reaction to the idea of small weight lifters.

The plans for the design which appear with this article are a development of the 1950 airplane, whose bulkiness—due to the old dummy specification which required a 4" deep fuselage—contributed heavily to drag or air resistance. The design shown here could be slimmed down considerably because of the smaller dummies, making possible a cleaner airplane, hence a larger one. The wing area has been increased to about 215 sq. in., or about 200 sq. in. if calculated by projected area.

Its design interprets the rules to the flier's advantage but does not find any questionable loopholes. For example, pod-and-boom construction is out; yet the thin rear of the fuselage, with long dorsal fin, will be classified as normal fuselage construction.

The plans may be scaled up for A/2 or for Class A. Make a ruler using the scale shown on the plan. Under the new rules, Classes A and B will compete as one class, although the B model must carry two dummies rather than one. A small three-view drawing is provided to assist in scaling up to the A job. The A ship would be approximately 50% larger; its area, however, would be in the neighborhood of 475 sq. in., which would work out for a loading of about 8 oz. per sq. foot. Another factor in increasing the size of the Half A *Atlas* is the fact that dummy weights have been increased to 3 oz. this year, so that the gross weight of ship and dummies is about 8 oz. The new dummy, incidentally, is only 3" high, rather than 4 as last year. The height from base to shoulder is 2-1/4", the width



Though a cabin design, fuselage profile allows performance approaching that of a pylon. Dorsal fin compensates for slimmed down fuselage with its concentrated forward area. Powered by K & B .049 shown, ship takes Cub, Wasp, Spitfire, Spitzzy.

1-1/2", and surmounting the whole a head which is a 3/4" cube.

In the *Atlas* we went all out to make a model that is clean and a little larger than the average 1/2A. While the wing is not the thinnest that we have used, it still isn't the thick type. We used the single wheel to cut the drag of the landing gear in half. The fuselage construction is cut to the bone and yet maintains some scale appearance. The long tail moment arm was used to get the weight as far forward as possible and to get the nose short, which has made the model easier to adjust.

We used the cabin to raise the wing location as high as possible and lowered the thrust line, so we would get the pylon effect that has helped all of us so much in competition. The entire cabin was covered with celluloid. (On the A job, use heavy celluloid.) This is one way to avoid the holes that always seem to be punched in when the meet is at its peak. A large leading edge, while it is a little more work, is well worth the effort when the model has to cut its way through the brush on landing. Solid tips were used for the same reason.

Directions. The fuselage is begun with the laying out of the crutch. The upper part of the body is built up in this crutch. To this the firewall is added. Cut out the bottom keel and cement it in position. The top can now be made by adding the side 1/8" x 1/4" strips as shown on the plan. To the top of these, add the 1/8" sheet wing rest making sure that this is cemented well in place. The rear top 1/8" x 1/4" strip is cut and cemented in place at the back of the cabin. Strengthen it with the uprights that are cut from the same size wood. The entire cabin can be covered with celluloid, and the wing pegs can be cemented in place. Do this thoroughly as they are under a strain when the wing hits in a crack-up. Cut out the door and build a frame, re-

covering it with the celluloid that was just cut out. Hinges can be made from bandage. A bent pin will hold the dummy in place.

The wing is next. The leading edge is roughly carved to shape. It is easier to build the wing in one piece, if the construction is laid out, cementing in the ribs with the exception of the ones that come at the dihedral joints. After the wing is dry, sand the leading edge to conform to the wing section. When that has been done, the wing can be cut at the dihedral breaks and the gussets added. These are cut out of sheet balsa and trimmed to follow out the wing section. Rough out the tips first, and then cement them in place. Sand the tips to the tip rib outline finishing off the wing with a smooth sandpaper.

The stabilizer is made in the same manner as the wing; however, there is no dihedral, and there are two center ribs that are used to sandwich the rudder in position. The rudder is cut out of sheet balsa, sanded, then cemented in place, making sure that it is straight. It will be necessary with the one wheel design to use skids which are added to the stabilizer tips. (See these on the plan.)

Sand the entire model. This is the best way to get a good covering job. Be sure that no cement joints have been weakened; if so, recement them. We covered the model with light tissue as this is where weight can be saved. The model was not painted with colored dope. It was dyed to save weight. *Trim Film* was used to trim the model. The model was sprayed, using a 39¢ hand spray. Be sure that the dope is not the kind that will pull the covering and the frame out of shape. Warps insure that the model will fly the way it wants to, not the way you want it to. A little castor oil added here to the dope prevents warpage.

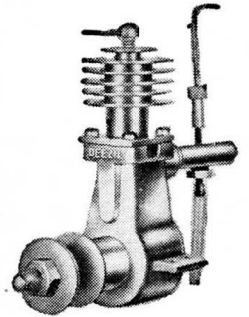
It is impossible to say exactly how much castor oil to add to the dope, be-

cause different kinds of dopes require varying amounts of this plasticizing agent. The best test is to brush your plasticized dope on a square of your covering material. If the material curls up when the dope dries, add more castor oil. Keep adding oil until the material remains flat when dry. Of course, it is assumed that the first several coats of dope are not plasticized. On Jap tissue we use five coats of dope, thinned out with thinner to the ratio of 75% dope and 25% thinner. The final coat should be the one with the castor oil added. Incidentally, well doped and plasticized Jap tissue is quite strong. It is important to use some light tissue, such as *Sky Sail*. Although plasticized dope is used on wing and tail to prevent warpage, it should not be used on the fuselage where maximum rigidity is required to prevent deflection under load, especially in high wind.

Flying the model is no harder than talking about it provided, however, that you have someone to chase it! Put the dummy in place and hand glide the model. It is a good sign if there is a slight indication of a stall, as that will keep any model from spinning in. Start the engine, and with a short power burst 4 to 6 sec., launch it into the breeze, *not wind*. Observe how the model flies. All that can be said is that it should climb to the right, as a pylon tends to do, and glide to the left. However, if it is flying to the left and gliding to the right, let it go at that. It will be wise to be sure that the model can take off, as it will with the right engine and a good prop. A 6"D 3"P is the best, we found. Be sure to balance the prop. A few coats of colored dope will help the balancing. *Atlas* is capable of flights exceeding 2 min.

The fellows who have that big bench and ample wood can make a nice A job. All wood sizes are doubled, but use 3/32" sheet ribs. Be sure to use heavy celluloid

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Something New in Payload

on the cabin here. The spars are eliminated in the 1/2A; however, they are a must in the A. Use 3/16" square for spars. Silkspan or silk will be best on the A, and a few extra coats of dope also will be wise. A 10" x 3-1/2" or 10" x 14" propeller will work well here, and to get maximum performance, be sure that the blades are thin.

Atlas is not adaptable to the new Cargo event being sponsored by Pan American this year. (Complete details of this new event are described in the AMA News section.) Intended to carry a maximum payload for an official flight, or 40 sec. minimum duration, these weight lifters will be nothing like the current A/2 free flights, or even like the Atlas payload job. My new weight lifter has 400 sq. in. of area and continues to glide well with weights of 6 to 8 oz., indicating that still more load may be carried. When carrying an 8 oz. load, the experimental airplane has taken off within 12' indoors. With the benefit of any breeze, it will jump off much sooner when flown outdoors.

It may be well to mention here that the prizes in the various payload meets are fine and worth trying for, remembering that here in free flight, you don't have to be a so-called expert to bring home the bacon!

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