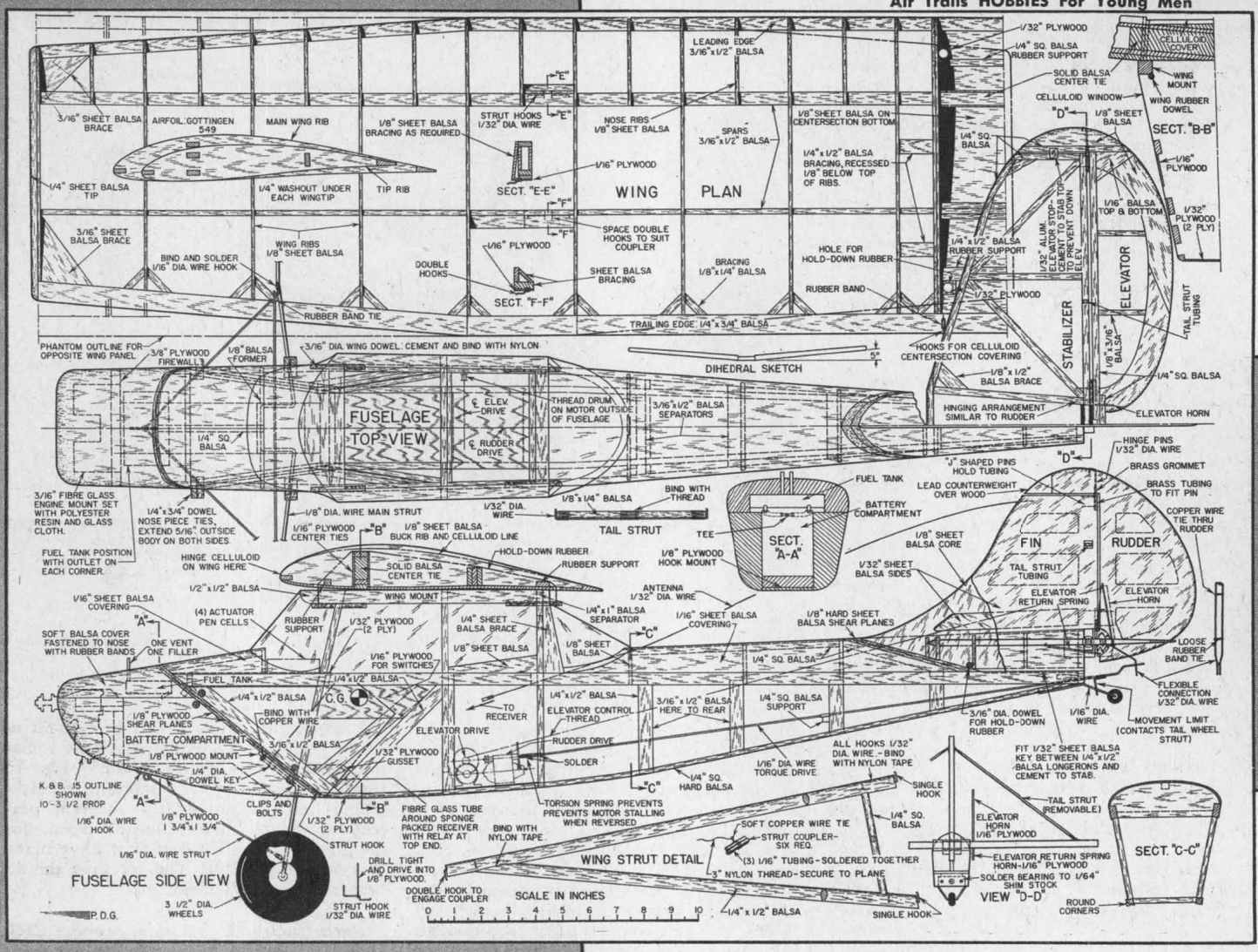
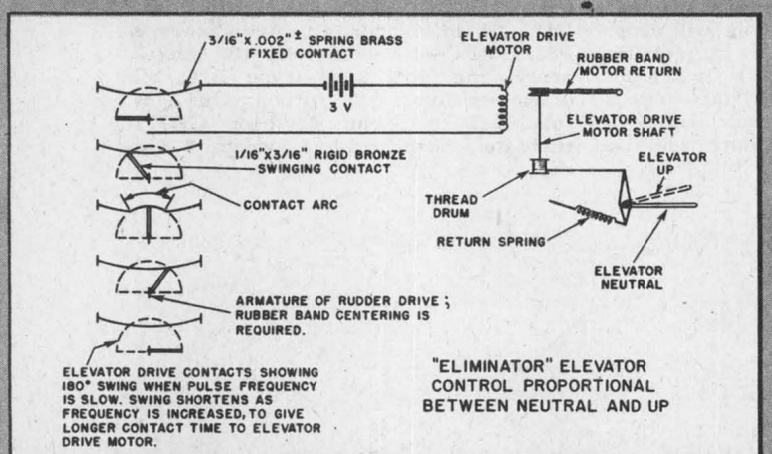
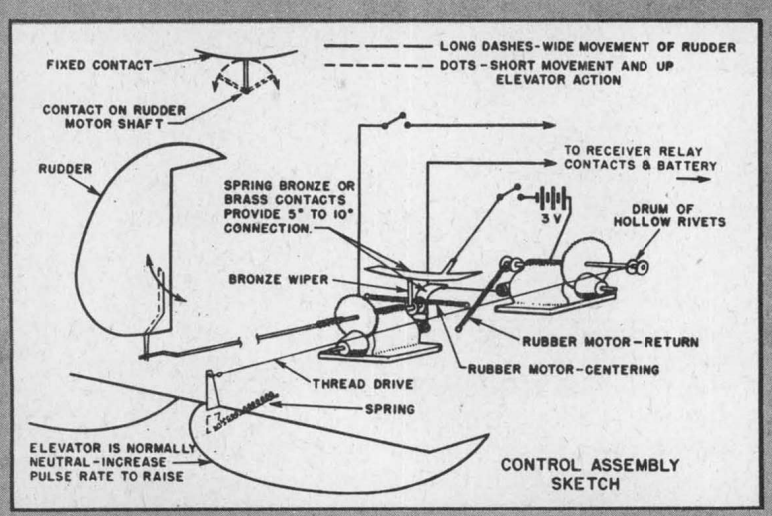






■ Beautiful day, let's go flying. Check the batteries, check plate current, distance check—check and double check. All's well, pour in the fuel and away we go!

Left—right—straight ahead . . . she flies like a dream. Oops. Missed a beat? Out of range? Escapement sticking? Batteries older than we thought? Interference? Something's wrong. Hard left rudder—hit the panic button—call for another transmitter . . . too late!

Let's hurry over and look at the damage. Can't be too much, we hope. Oh-oh, total loss from the rear of the cabin door forward. Left half of wing splintered. Radio looks like a truck ran over it. B battery shot. Aw, what the heck, with 20 or 30 hours' work all will be ready again. Might make it by next week-end!

If all this sounds familiar and you don't like it, you might be interested in building the *Eliminator*. For me, this ship has eliminated most of my pile-in troubles—and believe me, I've had my share.

The ideas behind the design of this model were several. First, I wanted an airplane to survive crash landings; second, I wanted a near-scale model for appearance (no offense intended to you non-scale flyers) and third, I have very modest hopes of competing with Walt Good and others in the International Endurance contests.

After considerable thought, the plans as shown in this article were developed to take the "crash" out of crash landings. The nose assembly was made solid and rugged since it is usually the first part to contact terra firma. A shear plane was provided just aft of the nose assembly, at which point the rest of the body is attached. The shear plane surfaces are made of ⅛" plywood to stand the gaff. In a similar manner, the tail assembly is arranged to come off with ease, fore or aft. A large seat was provided for the wing in order to eliminate the need for dozens of

Eliminator

By JAMES V. REED, DC/RC Club

SAFETY ENGINEERED

SEMI-SCALE

RADIO CONTROL ENDURANCE PLANE

Sort of L-19'ish in appearance, Jim's king-size 6-footer can take real punishment and still keep right on flying!

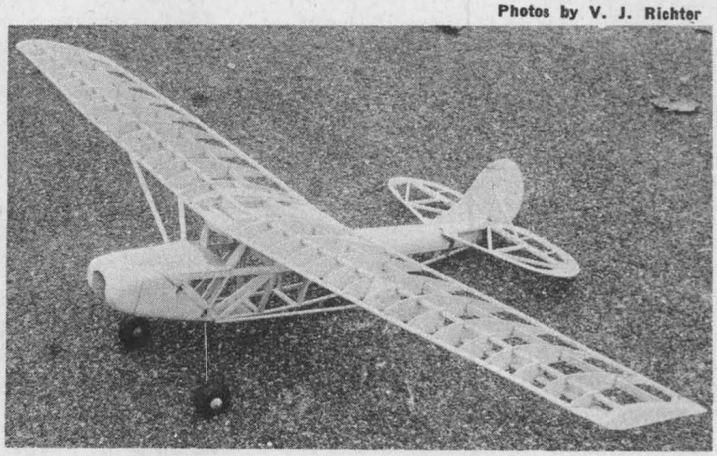
rubber bands, which incidentally, often will not let go in time when the model is flying through trees or landing on a wing tip.

Further, by locating the heavy A and B batteries in the rugged nose section, possible damage to the batteries was reduced and damage to the body from flying batteries eliminated. In a last full effort to reduce crash damage, the plane was made as light as possible, (4½ lbs. flying weight) and the radio receiver (Walt Good's three-tuber in this case) was rebuilt in circular form and bottled up in sponge rubber and a fiberglass tube. No more radio damage. Also, by mounting the radio container at an angle and securing the sensitive relay on top of it, damage to the relay has been reduced to a minimum.

Now, as to my desire for a scale or near-scale airplane, I've had the bug ever since my first ship. I was adequately warned about the differences in aerodynamics between scale models and their parent counterparts; in short, they usually don't work worth a darn. Nevertheless, I proceeded to violate some of the ground rules, in the interest of scale appearance. The stab is small and the tail moment short, but I have been able to recover from all dives so far. The wing is average, making the finished job a little on the umbrella side. However, the whole rig has good wind penetration and gets off fairly rough ground at about 12 to 15 miles per hour. In short, I have found no objections to the semi-scale construction. A 10" chord x 5' wing would be near scale for this ship. I hope to try it someday soon. Should make a real stunt job.

The *Eliminator* should work out well for endurance. With a little effort, the weight could be whittled down to 4 lbs. by using Silvercels instead of dry cells for the rudder actuator, and by leaving out the elevator servo. The K. & B. 15 is a real workhorse and it pulls well with

Photos by V. J. Richter



Framework of JVR's plane; upon impact it separates into half-dozen pieces. Receiver is "canned" for crash protection (see copy).

Tony Grishes' 10 x 3½ RC Tornado props. Fuel mileage is good too.

While other types of control would work well, I am a proportional man—have been ever since the 1952 Selinsgrove get-together when Howard McEntee demonstrated the ease and smoothness of operation in using a circular-magnet actuator. I use a Mighty Midget Motor made by Victory Industries, Guildford, England. This little fellow retails for $3.50 in this country and $2.50 overseas, less duty, etc. A real fine motor that always goes, and which produces terrific torque on 1½ volts (2 pen cells in parallel.)

I have had some luck with a semi-proportional neutral-to-up elevator, which is shown on the plans. A rheostat in the pulse box motor circuit gives elevator action by changing the pulse rate, thus shortening or increasing the rudder drive motor swing, and thereby increasing or decreasing the total elevator drive motor energy, to raise or lower the elevator. The elevator is spring loaded to neutral with just enough tension to hold position when upside down, and the drive motor is

Eliminator

rubber band loaded to return to neutral. One shortcoming is that the rudder must be operating in neutral for the elevator to operate.

A few words about construction of the fuselage. Each side panel is pinned and assembled flat on the layout board over the plan, wood sizes as indicated. The forward ⅛" plywood shear plane is cut out and left a little large all around to allow disk sanding later on. The two side panels are glued to the scribed lines on the plywood. Finishing off the rest of the body is only a matter of cutting and fitting the ¼ x ½" and 3/16 x ½" separators. The curved top section behind the cabin is 1/16" balsa warped over the formers. Hand-pick the wood for this to get a smooth curve. That portion of the tail assembly which is part of the body line should be constructed while it's spot-glued to the fuselage, in order to obtain a smooth continuous line from cabin to tail. Note that the stab is adjustable for trim, independent of the elevator. This construction requires building the whole tail as a single unit. No covering is provided over the center section of the stabilizer. The rudder size has frightened a few people, but the spring-loaded arrangement imparts just enough energy to do the job. Sharper turns in flight can be made by tightening the rubber band rudder linkage ties which hold the lower ends of the 1/32" flexible connectors on the rudder. This type connection requires that the rudder be counterbalanced to float level with the fuselage held at any angle.

The nose assembly is straightforward except for the motor mount which is 3/16" polyester resin-impregnated fiberglass set in place with polyester resin. ¼" plywood should do about as well. If the fiberglass is used, I would suggest 3/16" or ¼" through dowels, for a good bond to the balsa. The elevated gas tank requires starting the engine immediately after filling, or your fuel winds up on the ground.

The battery department in the nose section was first fitted with a plug and jack that made disconnection easy, and was expected to allow the nose to pull free in a crash. It did not work out this way, though; it was found that the wires usually tore off instead. So two sets of three pins were added to the sides of the nose and fuselage, and connections made between them by stiff wire springs (if put inside they would probably stay cleaner). This system allows instant disconnect, and also makes it easy to check the battery voltages.

The wing too, is simple, with no special notes required. The wing struts are attached in a manner which allows knocking off either to the front or rear. Struts are not required except for violent maneuvers. They can also save the wing should the plane flip over on its back when landing or ground looping.

The whole plane is covered with lightweight Nylon. I used three coats of clear butyrate brushed on, and two coats of colored, sprayed on.

After the plane is completed and ready for its first test glide, keep in mind that it is very light and equipped with a big high-lift wing. A gentle push from knee height is in order or you might wind up in a stall 50 feet up. (I did). If you use the struts, expect them to break on occasion; they are the only really fragile parts of the plane. A little glue, a couple of pins and a tightly wrapped rubber band, and you should be back in business.

My flying experience with this model has been extremely pleasant. ROG's in particular are very smooth. Landings on smooth ground tend to be bouncy because of the highly efficient L. G. design.