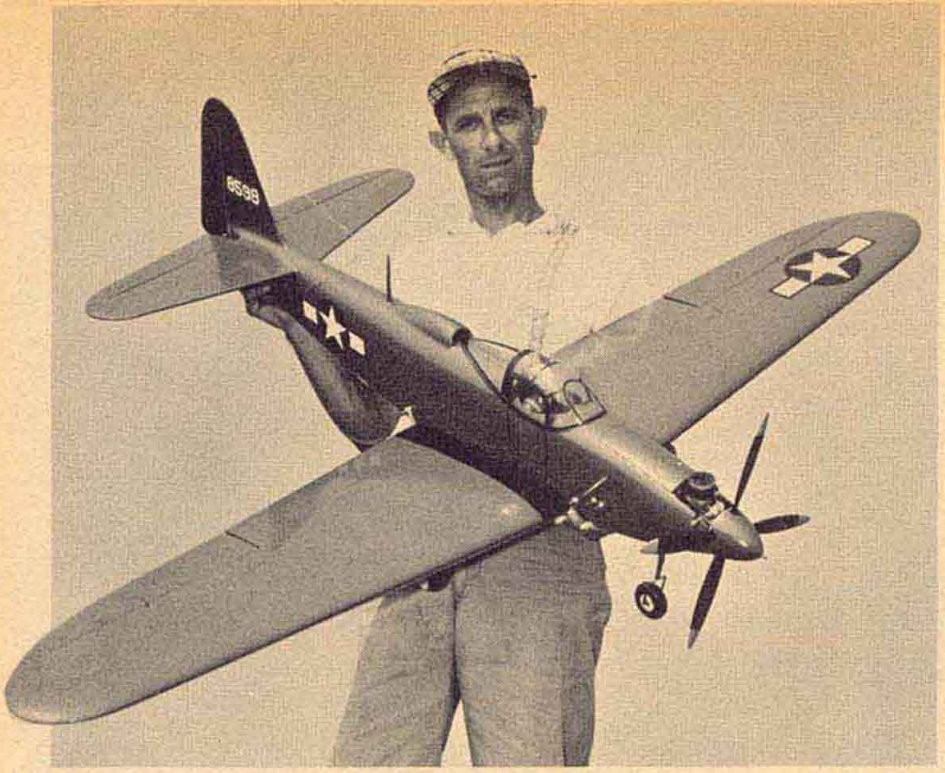


Author Maxey Hester of Des Moines, Iowa, with his radio controlled near-scale Bell P-63 Kingcobra "multi" job.

maxey's marvelous

■ At the 1960 Dallas Nationals, while waiting in the ready line at the hotly contested (in more ways than one!) multi R/C event, I was struck by the similarity of most entries. While there was a small variety of configurations, the majority were pretty much the same in shape, ranging from plain to downright ugly. At that moment the concentration required in competitive flying didn't allow further speculation, but after the meet on the long drive home, I got to thinking about what to build for the following season. Seemed to me that a good "pattern airplane" could be designed that would be realistic in appearance without sacrificing stunting performance.

Since the trend at Dallas indicated trike gear was the only way to get top points for take-off and landing, I began looking up full scale designs so equipped. It didn't take very long to narrow the field, because my preference was for a military aircraft and there just weren't many in the pre-jet age that had tricycle gear. Of the few I was able to turn up, only the Bell Airacobra P-39 seemed a likely candidate. Later I was to discover that Harold deBolt and others had arrived at the same conclusion.

Shortly after the Nats I was visiting fellow clubman Claude McCullough, having taken on the test piloting of his Martin Mauler R/C job. He's a scale fiend from way back with a large collection of magazines, books and 3-views. We got to digging around for material on the P-39 and turned up plans and photos of it as well as a later development, the P-63 "Kingcobra." Its lines were more appealing and I was not long deciding that here was the configuration I was seeking—the ideal layout for a fully stuntable multi that could be near scale in outline.

I worked out specs that tied the lines of the P-63 to well-proven multi construction practices; Claude (a big-time Iowa farmer also known as "Mac," "Flint" and/or "Flyaway") drew up the plans. Turned out during one winter month, the plane was an instant hit with everyone who saw it. As soon as the weather broke in the spring, out came the Kingcobra and proving the point that airplanes which look right generally fly right, performed perfectly on the first attempt, only minor trimming being required.

The model was an impressive stunter, fast yet extremely smooth. But there was one large ant in the oatmeal. Wanting a fine finish to go along with the sharp appearance, I applied what has come to be known in these parts as a "McCullough" finish. This is measured not in coats, but in gallons. It turned out plastic-smooth (note photos) but I found out that you never get something for nothing . . . the finished product weighed nearly 8 lbs., at least one more than planned.

This extra weight was carried fairly well by the model, nevertheless there were a couple of maneuvers where the "McCulloughnizing" had its effect. Since contests are won or lost on such little matters as half a point, I concluded that my lighter, modified Orion would have to be my main multi competition ship; the Cobra would serve as my scale entry.

No scale contests were scheduled before the 1961 Nationals but the P-63 made its mark as a demonstration airplane, flying at noon-hour contest breaks all over the midwest. For an experiment, at the Lincoln, Neb., meet the Cobra performed after the regular events before the same set of judges as my 1st place multi-winning Orion. The P-63 was only two points less than the winning flight in spite of that weight disadvantgae. There's no doubt but that "K.C." consistently copped the prize for interest throughout the season . . . always it was the airplane everyone asked to photograph and see fly. Cliff Bennett got good movie shots of it in action at a big Chicago contest. He showed these during the Nationals (I didn't get to see them).

At the Nationals scale event, it seemed the Cobra would really be in its element as a thoroughly checked and proven model. But fate and Murphy's law (i.e. —*If it can happen, it will*) ruled otherwise. Just after completing the straight flight back from a procedure turn during the first round, transmitter failure transformed the Cobra and my hopes into a heap of pieces . . . luckily, at least, off the concrete runway or there would have been radio and servo shards among the balsa shreds. Up to this catastrophe I had collected 25.5 flight points, which added to my scale judging score of 67.66 gave a fairly respectable for fourth place . . . not too bad for a nearly Kaput airplane.

Another Murphy (Joe) with 60.33 scale points plus 53.2 points for flying went home to California with the trophy. His mantle might have been bit less loaded if our Cobra had been in the air a couple of minutes longer before the Xmtr antenna lead let go!

After a busy contest schedule (over 10,000 miles of driving, some flying) when the weather turned "sour" I got to looking at the pieces. England's Henry J. Nicholls and Claude had helped me gather up most of them, though we missed a few of the smaller ones embedded in the landing crater. World Engines' John Maloney later found the nose hatch cover. Actually for such a spectacular plunge the remains were in fairly good shape—most vertical full power bashes don't leave much repair-

able. So I began hooking it back together. In re-covering the whole ship and using a minimum rather than a maximum amount of dope, I dropped a full pound of weight—this in spite of the fact that jig-saw puzzle repair jobs invariably make the structure weigh more than it did originally. It looks nearly as good as it did at first and flies even better at the lower loading. I took it down to the last contest of our midwest season in Topeka on Nov. 11-12 and finished on a high note—first place in the scale event.

The construction, along proven lines, should not require much explanation to a builder with R/C experience. And certainly you should have some experience, preferably with low-wing, aileron-controlled planes before tackling a project like this P-63.

Take time selecting your wood before beginning. About the only place for hard balsa is in the elevator and wing spars. Longerons and stringers are medium. Use harder balsa for ribs near the center, graduate to light balsa at the tips. Planking and fin and rudder are Sig Contest (very light) balsa; all blocks are soft.

The fuselage is a combination of square longeron built up and sheet side construction. Assemble ¼" side frames and install formers before covering sides with 3/32" sheet—doubled in areas indicated. Take particular care around the mounts and nose blocks to get everything solidly fastened. I used Ambroid on the entire job, pre-gluing all joints for greater strength. Leave nose squared off until construction is completed then carve to shape with spinner and motor installed (but not running).

Note fuselage has slight curvature between F-1 and F-2. Reproduce this by allowing stringers to protrude slightly, sanding them to conform to this contour.

The nose wheel gear designed by Dale Nutter, used because of its scale appearance, works effectively. (Available from Perfection Model Co., 827 22nd St., Santa Monica, California, $7.50, ready-made, chrome plated.) I had home-made wheel hubs and drums but Space Control brakes and wheels, now available, are quite similar.

The control rod for the L.G. is not shown on the plan since its positioning is dependent on type and placement of your R/C equipment and batteries. Some over-and-under bends are required to clear things. Near the gear bend a "V" into the wire to allow adjustments (by spreading or narrowing); this serves as a shock device to take some of the landing strain off of the servo. Very little wheel movement is required for making taxi turns—most fliers use too much ending up with overly-sensitive response.

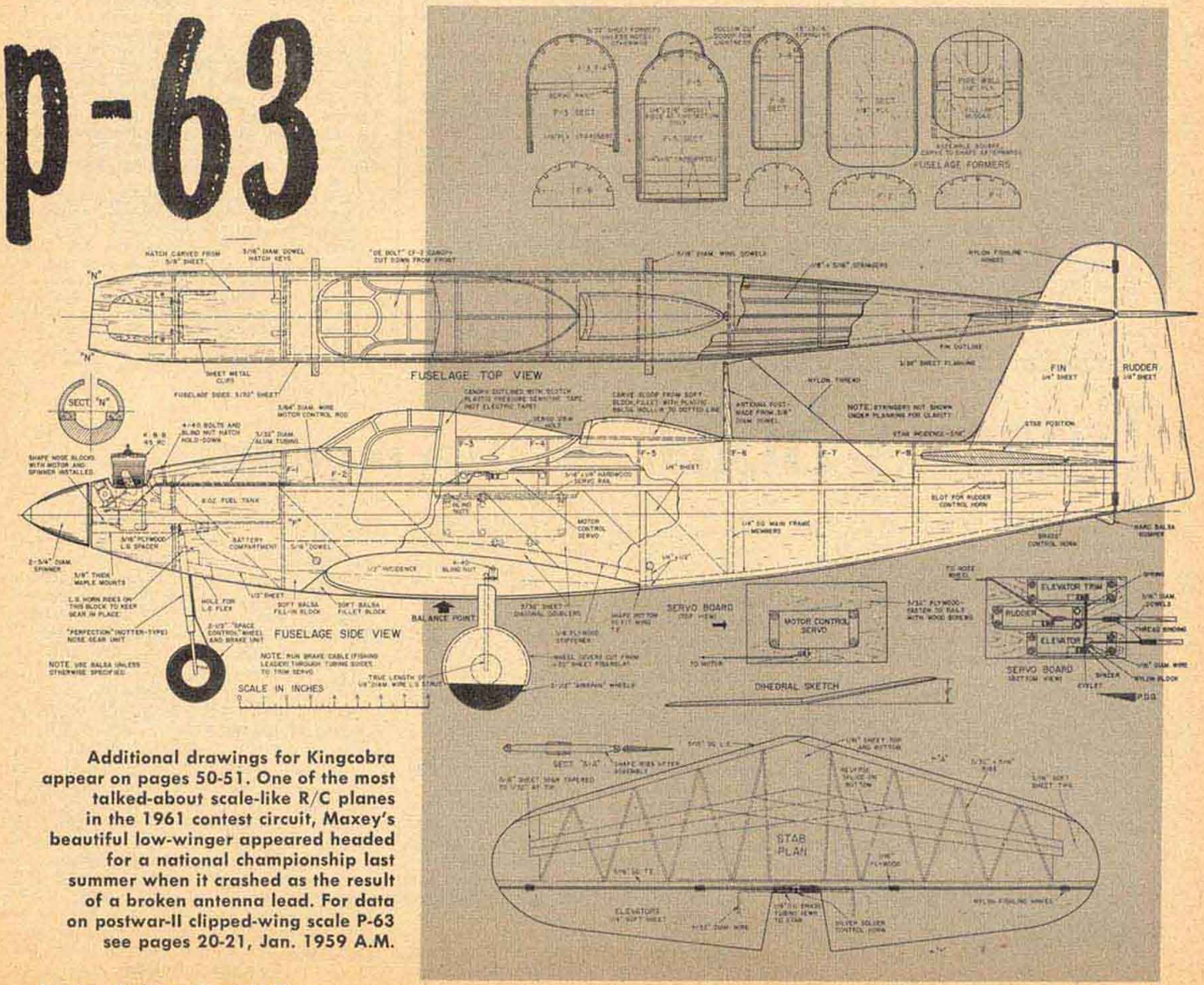
While the usual keepers are used to attach the control rods to the servos, the motor control rod has none so the servo board may be removed from the airplane. It is so close to the guide that the wire stiffness holds it in place without a keeper. A vision hole is cut in the fuselage planking just above the servo horn hole so that you can see to guide the wire back into position when replacing the servo board. Use flat head screws to mount the motor control servo so that they will not hit the bottoms of the 3 other servos on the other side.

I use dowels for elevator and rudder control rods considering them more trustworthy than balsa. A Bonner nylon control horn is on the rudder. It is a good idea to make a removable hatch on the bottom of the fuselage just below the elevator horn so that changes in movement may be made easily.

The elevator trim deal, a very workable setup suggested to me by Ed Kazmirski, couldn't be much simpler. I've used it on all of my airplanes. To change the degree of trim just insert a larger or smaller spacer as required. To be noted particularly—the nylon block should be solid and non-flexible. I made mine from ¼" thick nylon ⅜" sq. The spring is not necessary once amount of trim is established, since the block could then

(*Continued on page 50*)

P-63



Additional drawings for Kingcobra appear on pages 50-51. One of the most talked-about scale-like R/C planes in the 1961 contest circuit, Maxey's beautiful low-winger appeared headed for a national championship last summer when it crashed as the result of a broken antenna lead. For data on postwar-II clipped-wing scale P-63 see pages 20-21, Jan. 1959 A.M.

Maxey's P-63

(*Continued from page* 31)

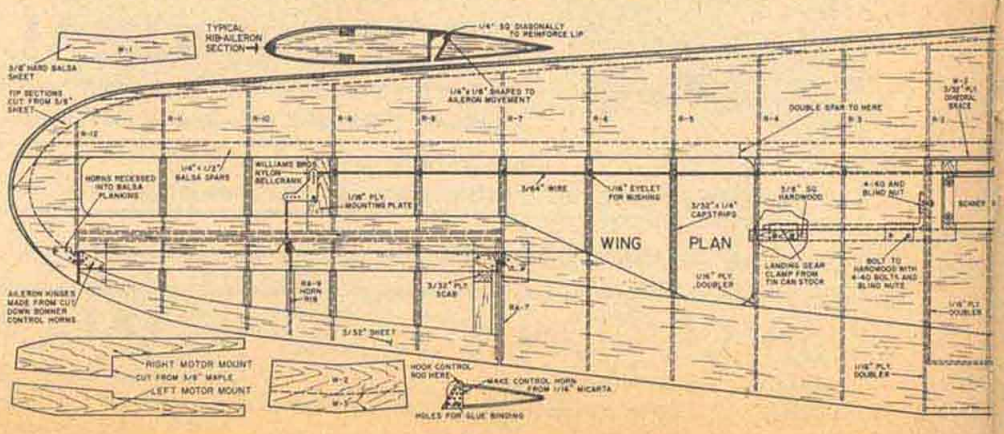
be solidly fastened, but it makes it handy to move the unit to another airplane and have it always ready for adjustment.

The canopy is the deBolt CF-2 World War II job which must be cut down, mainly from the front, to get the shape peculiar to the Cobra. The framing is outlined with Scotch Plastic Tape. This is *not* the familiar electric tape; very resistant to being soaked loose by oil it must be applied to a clean surface and can even be doped over for a better seal. (It is not advisable to dope the entire canopy, it may distort or warp.) The tape is obtainable from hardware stores from a rack of colors and widths.

The wing and stab of conventional construction should give no difficulty. Care should be taken to get the wing assembled perfectly true . . . these fast flying ships aren't happy with sloppy alignment. I have a construction jig and the number of wings which have gone through it make the extra effort well worth while. Similarly, double check the angles of incidence of the wing and stab. A flat section of fuselage is provided as a stab mount; wing angle may be measured from the ¼" sq. main longeron.

The scale finish of the Cobra was matt (non-glossy), but this does not mean crude. I can't emprasize too strongly that your final finish depends mainly on its base. Fill all those little cracks and nicks that collect during construction with Plastic Balsa and fillet where necessary—as on the scoop and fin—with the same material. Then caress everything *velvet* smooth with fine sandpaper; it will take time and patience, plus a lot of elbow grease.

Next, give the entire framework a coat of Sig Balsa Filler. Sand most of this off, so that the remaining filler is mainly in the pores of the wood. Cover

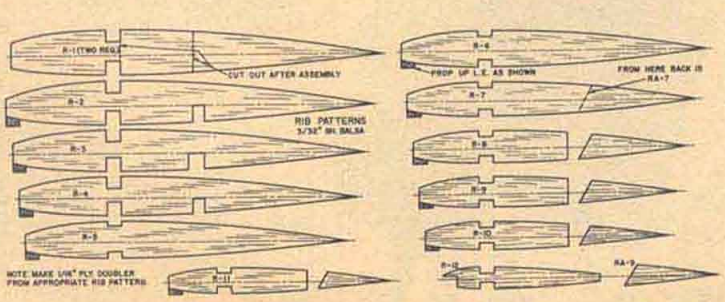


entire airplane with silk, applied wet, sticking it on with dope on all balsa parts. After drying, dope all of the exposed silk parts with one coat of clear butyrate, follow with two more coats on the complete model. Sand lightly with 400 wet-or-dry paper. Brush on one coat of Aero Gloss Filler Coat over the entire model. Sand thoroughly. Spray on two coats of thin color dope, Olive Drab on top, Light Gray on the bottom. One coat of clear is then *brushed* on (to avoid over-spray traces) with a large fine-haired brush, on top of the color. After several days drying, sand with 400. Try not to sand through the clear into the color. Then one more coat of brushed clear. Rub with very fine rubbing compound (I used the white variety) to dull the glitter of the last coat of clear. Final step is waxing with Aero Gloss wax. This is not quite as striking as my original gallon-and-a-half job, but it is fully presentable and doesn't add surplus weight.

Originally the airforce insignia was handpainted. On the refinishing job, decals from the Sterling Mustang kit were found to be just right. After attaching the decals and removing all bubbles, I applied a thin coat of decal setting liquid to stick them down. For scale accuracy, the red stripe should be removed by covering the bar with a piece of white decal material cut to the same shape. Tail numbers were cut from Sig decal material, I used my AMA number.

Since the Kingcobra wasn't used in combat by the U.S. you can't find any authentic fancy paint jobs. All of the photos we have found show it in stock olive drab top, light gray bottom, black wing walks with white or yellow tail numbers or un-painted bare metal with black tail numbers. Many P-63's were supplied to the Russians with a red star in a white circle, same size as the U.S. star and circle (including border) but with no border or bar and on both wings,

(*Continued on page 52*)



Full-size working drawings for Hester's P-63 radio controlled Kingcobra are a part of Group Plan #362 from Hobby Helpers (1543 Stillwell Ave., New York 61, N. Y.), 85c. Model has made numerous demonstration flights at top contests.

Otarion's Receiver is Powerful Mite

■ A receiver smaller than the tiniest flashlight cells that will operate it—that's super-regen Model 0-21 by Otarion Electronics (Ossining, N. Y.). The "relayless" set which will give many flights on pair of "N" size cells operates an escapement directly. For 27-mc R/C spots, diminutive outfit is a natural for Quarter-A and Eighth-A size planes. But it does the same job as sets much larger, so don't class it as only for "backyard planes."

The smallest production R/C set's circuit is quite straightforward. Parts really nestle together—not surprising considering that its maker has specialized in tiny hearing aids for years. New feature is a tiny tuning lamp—standard on many transmitters for tuning up. Low drain bulb adds about 40 ma to current drain when tone is coming in). Users won't need a meter or headphones for tuning and checking.

Parts are on a sturdy epoxy base. After factory assembly base is cleaned supersonically. Bottom then is coated with a polyurethane material which serves as insulation and moistureproofing. If repairs are required, you solder through the coating—it doesn't have to be removed. With this coating, it's okay to cement set bottom to foam rubber shock mounting in model.

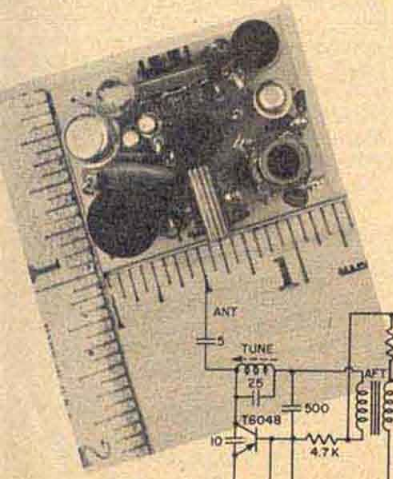
All Otarion receivers are tested for sensitivity with the 1 foot antenna that comes attached. Makers have never found it necessary to use a longer antenna—but another foot may be added if you have real "feeble" transmitter. Several hundred yards range is normal with a 25 milliwatt transmitter. Despite high sensitivity, it has not been found necessary to bond torque rods and other linkage, though this might be needed in certain installations.

Set, temperature compensated from zero to 120 degrees F, will drive any escapement from 7 ohms on up. If used with N size cells, higher resistance escapements such as Citizenship will give longest battery life. Receiver pulses at high rates, should give good results with quick-blip motor control escapements, or proportional systems.

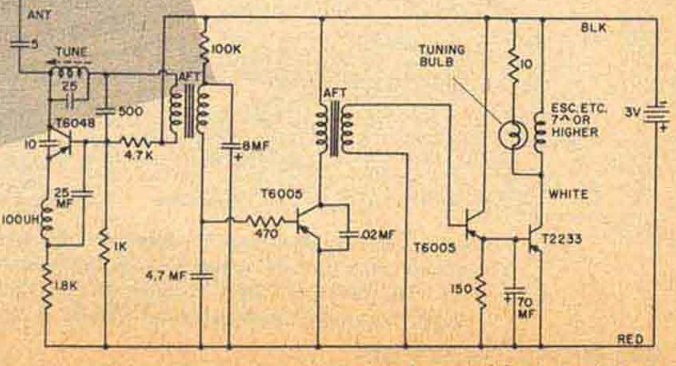
Otarion has marketed a tiny switch ideal for use with this set, is busy working on midget actuators, since latter are the bulky link in any sub-miniature R/C system.

Specifications: Otarion Model 0-21 tone receiver for 27-mc. Four transistors, single tuning adjustment. AF at 90% modulation or higher is required, at 300 to 1000 cycles; optimum tone about 600 cycles. Size 1 x 1¼ x ⅝", weight ½ oz.

Power Requirements: Operates on 2.2 to 3.3 volts; same battery supplies both receiver and escapement or actuator. Idling current (no signal) 15 ma; with CW signal, 4 ma. Current with tone depends upon resistance of actuator, will be about same as with latter connected direct to battery.



Actual size photo is Otarion Receiver



Maxey's P-63

(*Continued from page* 51)

top and bottom. A number were used as *piloted* target planes (now there was an assignment!), some painted orange-yellow overall, with a bull's- eye on the cockpit sides and such names as "Pin-Ball Special" on the nose. So if you want to be different, look up these off-beat color schemes.

You'll be better off not trying to cut corners on the equipment installation—the higher quality items are the cheapest in the long run. I used Bonner Transmite Servos and have flown the Cobra with C. G., Klinetronics and Min-X outfits.

A word on flying: First of all, it goes without saying (but I'll say it anyway) that the first flights are not even attempted until *everything* — alignment, C.G. position, operation of the motor and all radio gear — is 100%. Then, if you are not a fully qualified multi low-wing flier with a log book showing hours of flying time, forego the thrill (?) of first flight and get an experienced R/C'er to do the test flying. Until completely checked out, there is no substitute for a skilled hand on the box. Once over the hurdle of initial flights, have your test pilot take off the ship and get up to altitude before giving you the box to get the feel of the plane and standing by to take over should you develop a nervous twitch—a normal reaction that even top fliers develop on occasion.

I've test flown a couple of dozen airplanes this past season, some of them really wild, and only automatic reactions built up by hundreds of flights saved many of them from piling in on the first time up. I recently worked up a linked transmitters affair that allows the test pilot to take over control of the airplane at a drop of the switch, to better handle a testing or training assignment. Having a club test pilot is getting to be a common practice in many sections and a sensible one considering the amount of work and money tied up in a multi R/C.

Adjust so even full-down trim will hold the plane level while in inverted flight. Up-trim should be set for the best normal glide for landing. The P-63 should have a rather fast glide, nose slightly down. If you try to slow the glide down too much, there won't be good control reaction and she will stall out too easily and settle too soon. It's better to come in fast, clean and steady than galloping around.

Every airplane has its own individual characteristics which must be learned, but the Kingcobra is fairly free of idiosyncrancies. I do advise ailerons-only and not using up-elevator during spiral dives, for she twists quite spectacularly what with the large fin area. It is best not to chance stalling out the ailerons delaying recovery.

The interest shown by both spectator and modelers in the P-63 has amply verified my thought that a realistic appearing model was the ticket. It is a topnotch pattern performer. With enthusiasm for R/C scale increasing she should make a good building project.

Next Issue . . .
Adding R/C to F/F Kits!