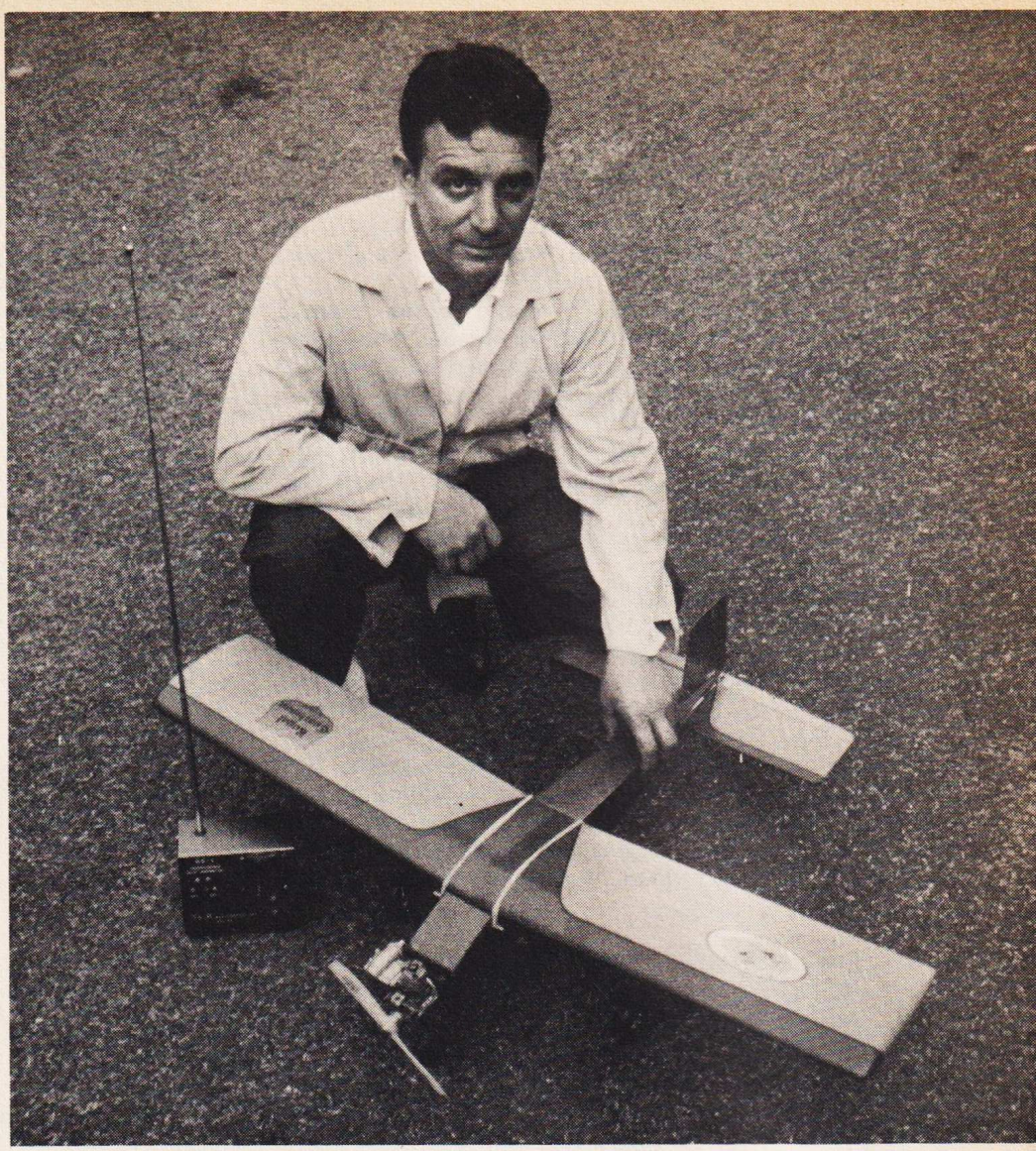
FIELD AND BENCH



Al (Fred) DeBona poses with his portion of this Field and Bench project—well-finished plane.

► There are certain things that because of their peculiar homeliness attain, paradoxically, a certain attractiveness that is unique unto themselves. We have all witnessed this phenomena with regard to people—particularly with respect to women, who incidentally, are people too. Indeed, the "ugly syndrome" has created an economic miracle in the guise of a bug-like automobile, the manufacturers of which, not only admit to its classical inelegance, but have pumped millions of advertising dollars into extolling its aesthetic deficiencies. Of course, ugliness in and of itself will not sell . . . it must be a unique ugliness, a sublime ugliness, a classic ugliness!

Thus we are led to the subject of this month's Field and Bench, Sterling's Royal Coachman, which paralleling its bug-like confrére, also performs its function to a degree which equals in excellence its lack of beauty. When it first appeared as a magazine subject, the Coachman was "hyped" as an easy to build, durable trainer. It is all of these, and yet, possibly none of them, depending on how you go about attaining the results you desire. Previous to the advent of the Sterling Kit, I built two Coachman from plans. These were flown with equipment which ranged from six channel reeds to GG, with a brief stop at rudder only. More of this later.

I was delighted to have an opportunity to compare my findings with those of Al De Bona, whose building and flying of the Sterling Kit forms the nucleous of this Field and Bench. Al's assignment was to build and fly the Coachman with the F & M Vanguard relay receiver (which he was obliged to convert to relayless), F & M GG1 transmitter, and a Rand Pak.

The kit, according to Al, left little to be desired, the wood being of high quality and cleanly cut. Included in Sterling's box were little niceties, such as celastic for wing reinforcement, phenolic engine mount, hinge material, and adequate hardware.

A feature of the Coachman is its all balsa sheet construction which lends ease of construction, durability and, alas, weight. The plans are most complete and a "blow by blow" is not necessary. A few tips have, however, been passed along by Al and will save some time and some aggravation. The eye bolt method of attaching the nose gear left inadequate room for tightening the bolts due to interference by the hardwood tank platform mount. As an alternative, aluminum straps were successfully utilized. You may well have your own favorite method which will work equally well. In building the wing, extending the ribs on the plan proved easier than attempting to transfer rib positions to the bottom sheeting. Construction proceeded without a hitch.

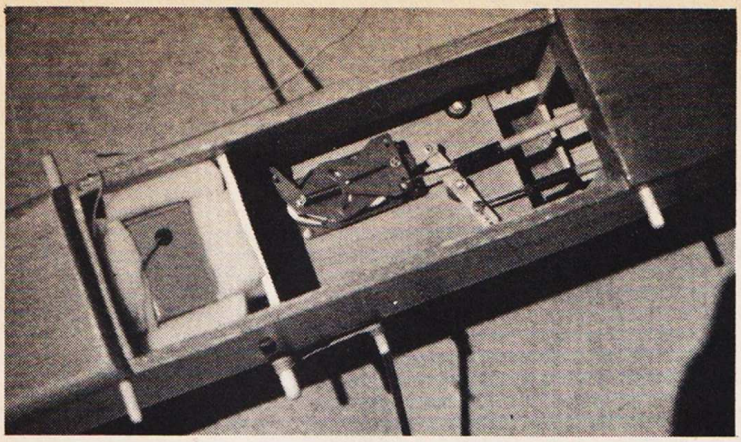
My own efforts to fly GG with a relay receiver have always resulted in catastrophe due to vibration and/or loss of centering. It was not until I acquired relayless gear that I was able to fully exploit the potential of GG. Herb Abrams, the "Rand-man" has recognized the virtues of relayless equipment for use with the Rand actuators and urges the use of such equipment with the Rand Pak (which has a switching circuit built in). Al took heed of Herb's advice and following the instructions of Mr. John Cline of F & M adapted the Vanguard receiver for relayless operation with the Rand Pak. The steps were as follows:

Remove the screw from the underside of the P.C. board, which holds the relay to the board. Unsolder the leads at P.C. board, which feed the relay coil, and solder in place of the relay, a ¼ watt 100 OHM carbon resister.

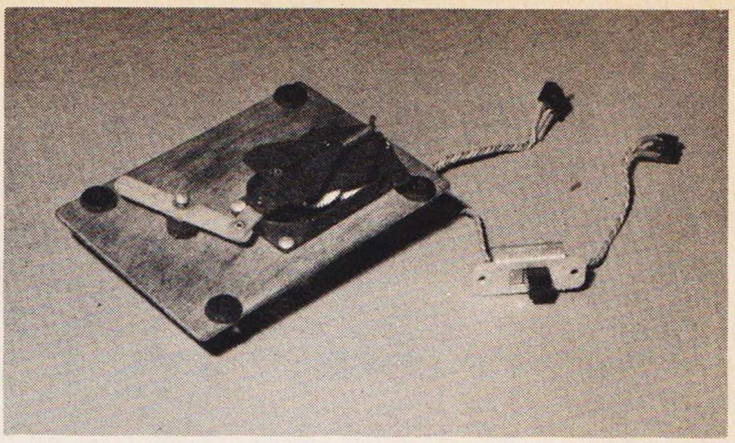
Solder a white wire in place of the short wire, which had connected one end of the relay coil to the output transister of the receiver and reassemble the receiver. The three wires, one orange (+3v) one brown (−3v), and one white, which is the receiver output, are now soldered to the plug, which is supplied with the "Rand Pak," (See instruction sheet Fig. 2 relayless operations).

On the underside (side opposite gears and cams) of the Rand GG Pak actuater, locate the 100 OHM carbon resister (color bands Brown, Black, Brown). It will be on the right hand side furthest from the motor. Reach in with small cutters and cut the wire into the top of this resister, making sure that the leads no longer make contact. This now completes all the changes necessary for an intergrated Rand GG Pak and F & M Vanguard superhet relayless receiver.

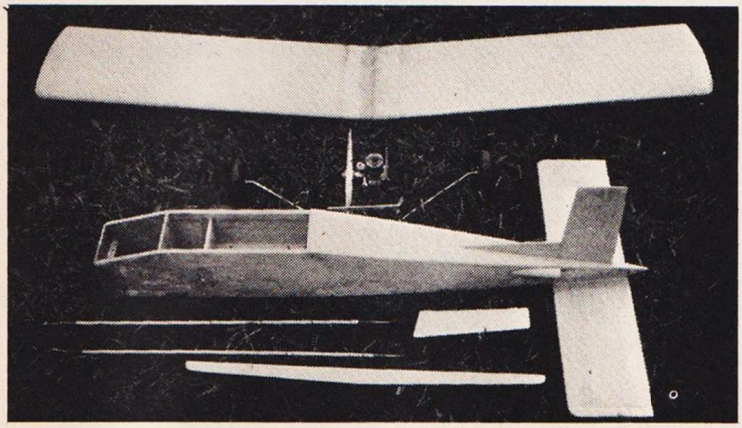
The Rand Pak actuator was mounted



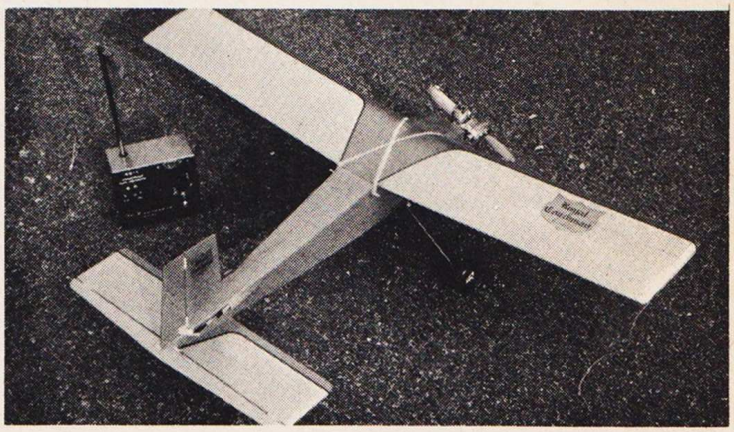
Acres of room is the best way to describe the inner section of the Coachman-receiver packed firmly in foam with Rand actuator to the rear.



Plywood actuator mounting board utilizes rubber grommets to cushion out vibration. Note bellcrank used to translate elevator movement control.



Al's Royal Coachman in its stripped down form prior to covering and finishing. Note balsa fairing for elevator linkage at rear of fuselage.



Another view of Al's Coachman with the F&M GG1 Pulse Transmitter. Out our way, we do all of our flying with mufflers, even down to .10 size eng.

ROYAL COACHMAN, F&M GG1 XMTR. VANGUARD RCVR, RAND PAK.

By ALFRED DE BONA and ALAN SIEGAL . . . between them, our authors put together 3 Royal Coachmen which gives them the right to extol its virtues as well as the F & M GG1 Pulse transmitter and F & M Vanguard receiver combined with the Rand Pak. Outstanding combination.

on 1/16 plywood pursuant to the manufacturer's instructions (see accompanying photo). A bell crank was also mounted on the plywood board so as to provide reversal of elevator motion, thus permitting the elevator control horn to be mounted topside. The mounting board was shock mounted, using rubber grommets, on hard wood rails cemented to the fuselage sides. Al applied the conventional silk and dope finish with the very handsome results testified to by the photos. His Coachman was powered by a supertigre .19 equipped with an Enya muffler. Al's notes with respect to the final adjustment and initial flights read as follows:

> . . . the elevator push rod was connected to the center hole of the control horn. At the reversing bell crank, (on the actuator board), the push rod was connected to the hole closest to the pivot point of the bell crank.
>
> This position allows only about half the elevator travel that the Rand is capable of. I now adjusted the elevator for equal travel up and down when the system was pulsing at neutral.

The rudder push road was set to the extreme position on the Rand actuator and again, the center hole on the rudder control horn, and centered when the Rand actuator was at rest in its neutral position.

The engine thrust line was given a final adjustment of three degrees down and two degrees right thrust by means of screws on the phenolic firewall which hold firewall to airplane.

CG of ship was as recommended on plans and batteries were charged up overnight. Total weight of this rig came to 3½ lbs .

At the flying sight, the system was range checked to about 150 yds. and we were all set to go. Engine was started and checked for high and low engine speeds; everything was working fine. The first try was an ROG, which went barreling down the runway about 70 or 80 feet, and veered off to the right, into the boondocks, while I held full up and left stick. The right thrust of the engine was taken out and the push rod on the reversing bell crank was moved out to the one to one ratio position. On the next attempt, Coachman lifted off the ground without trouble.

It must be noted that in relocating the push rod to the new position, the kwik-link was adjusted so as to get about ⅛" down elevator. Left and right turns were smooth, up and down was not sensitive at all, and the only evidence of galloping occurred when a loop was tried and not accomplished. This has since been corrected by taking out the engine down thrust, which permits looping (with gallop).

It must also be noted that at 3½ lbs, the ship didn't waste any time coming down. This proved no problem however since it flared out very nicely on up control. Subsequent flights proved gratifying.

At all times the F & M equipment worked well and no system difficulty was experienced. Al's findings are in no way inconsistent with mine.

The following is a summary of my personal experiences with various Royal Coachman. It might very well be subtitled "Coachman I Have Known."

Coachman Number 1—O.S. .15, muffler, Con-

Field and Bench

trolaire six channel reeds. This ship required a catapult to launch; but once air borne, it was like a P-38. Ship performed all maneuvers, except outside rolls, at a scale speed of about 700 miles an hour. Definitely not a trainer.

Coachman Number 2—Same ship equipped with Rand actuator using rudder and motor only. Surprisingly good rudder only airplane provided "up elevator" was cranked in before flying. Much lower wing loading due to equipment change resulted in much more docile performance.

Coachman Number 3—My second Coachman was built as light as possible and equipped with galloping ghost. System flew extremely well with muffled QS. 15. Required additional rudder area for positive control. Added drag of flopping surfaces rendered this a much slower airplane than the reed equipped version nothwithstanding the lighter weight. Ship would loop and roll although not with the agility and speed of the reed version or the rudder only version. All in all, an excellent combination for a Sunday flyer.

Coachman Number 4—This was a Coachman built from a Sterling Kit and equipped with the Bonner 4 RS system and an Enya .15 engine. I was present during the initial test flights and adjustments. About the only way to describe the combination is to say that it is "cute as h—." As a matter of fact, my surviving Coachman has been refurbished and is awaiting the installation of one of the miniaturized proportional systems and I am looking forward to this for school yard use for which purpose it should be close to ideal.

In general, I offer the following observations:

The ugly duckling is a fine airplane which can endure the most severe prangs and fly again the same afternoon. On one occasion, my Coachman hit a tree, bounced off, rolled, and completed its flight successfully. The net damage was a dented leading edge. I would not have the guts to print this if your editor were not present at the time and witnessed it. On other occasion, when using relay galloping ghost equipment, the airplane dove in from various altitudes, suffering damage only to the engine. If you find, as Al and I have, that the Coachman is no "floater" and wish to improve the glide, remove the stab and replace it after adding 1/16 shim between the fuselage and the leading edge. I discovered this quite accidentally when I noticed a marked improvement in the glide after replacing a stab which became separated from the fuselage during an uncontrolled landing. Examination of the stabilizer indicated that when regluing it, I had unwittingly included 1/16 positive incidence. I have since incorporated this modification in my second Coachman and others have also profited from this minor adjustment. Try to make your Coachman as light as possible. Keep sanding the 3/32 wing sheeting until it is as close to 1/16 as you can make it. Indeed, if I were building from a plan again, I would start with 1/16 and thus save some weight.

I have seen only two Coachmen powered by engines of displacement less than .15. These were both .09. One never became air borne and the other was marginal. Unless you find a kit with very light wood, I would strongly recommend that you plan on using a minimum of a .15, especially with galloping ghost equipment.

One thrill that I guarantee any builder of a Coachman is its ROG ability. It tracks down the runway straight and true, responding to the slightest rudder movement as if it were possessed of steerable nose gear. The slightest tap of up elevator results in immediate and precise lift off.

One writer, whose name I cannot remember, once stated that the ultimate and most rewarding act of charity was to smile at a homely girl . . . so why not give the Coachman a whirl?

F & M's GG1 transmitter is a neatly packaged 6 volt pulse unit employing a single stick for up-down, left-right control with two "red" in-flight trim levers located to the top and right of the stick opening. These levers move in the direction

of the desired trim.

Also provided on the front panel are two push button switches, one above the other and located below the stick opening. The top push button is for high engine control and the bottom push button is for low engine control. Located to the left of the stick opening is the on-off slide switch.

Power for this transmitter is a 6 volt lantern battery such as Burgess F4BP or Eveready 510S. If desired, the GG1 is designed to accept 5 size "C" 1.2 volt ni-cads in place of the 6 volt lantern dry cell.

The only thing one has to do to put this rig into operation is to insert the crystal into its socket, install the antenna, and connect the battery to the proper leads (+ to red and — to black). This transmitter has a pulse rate of 4 to 12 P.P.S. (as shipped from factory). Provision for adjusting this rate has been provided for by means of a trim pot located on P.C. board.

Left to right stick movement allows approximately a 30 to 70 per cent ratio change of width. Provision for centering this width change on the stick has been provided for by means of a trim pot located next to the rate trim pot on the inside.

Rand's GG pak consists of one Rand actuator for simultaneous rudder and elevator control and also engine control. One 3.6V. .600 amp. battery power supply is all pre-wired with a slide on-off switch. Battery and receiver are wired through connectors. Also supplied with the Pak is the connector, half of which is to be soldered to the leads of the receiver to be used. Upon checking, I found that Rands GG pak, in conjunction with F & M's Vanguard Superhet Receiver, in operation draws about .400 amps at 3.6 volts. This means that you can expect better than one hour of flying time per charging.

The GG Pak instruction sheet indicates that with battery voltage below 3.3 volts. one should not atempt to fly.