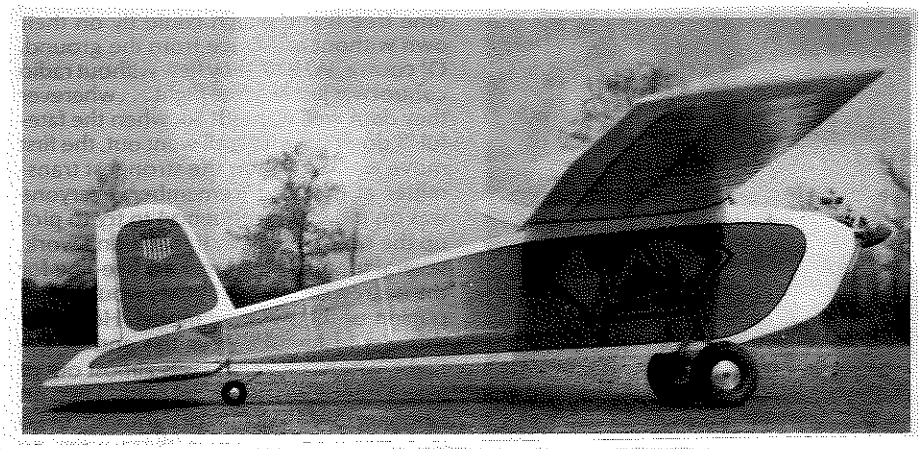


# Walt Good's "WAG" (Without Drag)

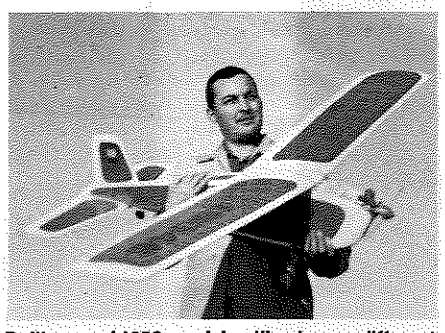
## By BILL NORTHROP ...

• The "WAG" was the second in Walter A. Good's (W.A.G., get it?) "Rudder Bug" series. First came the original Rudder Bug, in 1948, the all-new successor to the historic "Big Guff" (see series of articles beginning August 1988 in *MB*) which had been retired and now resides, on display, in the Smithsonian.

The "Bug" was a "Good" airplane in more ways than one. Having been published as a construction article in the spring of 1949, no less than 11 out of the 32 R/C entries at the 1949 Nats (There was only one category back then . . . "R/C") were Rudder Bugs, and one of them, guess who's, won the event.

The "WAG" was next, designed and built in early 1953 and flown to third place at the 1953 Nats, using rudder-only. It was published in the April 1954 issue of *Air Trails*, and is the subject of this construction article. It retained many of the Rudder Bug design features, including the characteristic, all-important, tip-stall killing, built-in washout in the outer portion of each wing panel.

In late 1953, the "Bug" was scaled from six down to five-foot wingspan, and the first test version, it was to be called the "Royal Rudder Bug," was built by one of being a typical modeler, modified the design to smooth out the fuselage profile, but only after consulting with Walt, who confided that the step really wasn't that effective in curing the ballooning problem. We also switched to a tail-dragger landing gear, preferring the looks and saving of weight. It worked fine on our grass flying field.



**Built around 1956, model outlived many different control systems. Beautiful clear-doped bright green nylon with white trim, black pinstripe. I'm really tempted to build another one!**

As it turned out, the ballooning wasn't that big a deal, and what little there was came in handy when making a dead-stick (normal) landing. By setting up a glide approach that was a little off-center, I would hit right or left rudder when the plane was about five feet off the deck (rudder response was slower in the glide than under power). When the model was about 12 to 18 inches from touchdown and centered on the landing strip, I released the rudder to neutral, then immediately punched in opposite rudder for just a moment. The result of those last two rudder applications was to increase the glide speed, which would lift the nose up into a perfect flare attitude as the wheels made contact. How sweet it was to see the expressions on the faces of the multi reed fliers who had elevator control available, but couldn't do any better!

Incidentally, Howard McEntee, the R/C editor for *Air Trails'*, and writer of the "Everything Under Control" column, dubbed our model the "WAG Without Drag" when its photo was published in the magazine.

One other bit of history on the original WAG. In 1956, Walt developed his famed TTPW radio system, which was one of the first, if not THE first multi-proportional control system. The WAG was selected to be the test bed for this system, which was later published in *Air Trails* for radio experimenters to build their own, and Ace Radio Control offered it in kit form. The TTPW actually stood for Two Tone Pulse Width, but being a little tricky for modelers who weren't too familiar with the intricacies of electronics, the TTPW soon became better known as "Too Tough to Piddle With!"

Our WAG started out as rudder-only with an exhaust slide baffle for throttle control, operated . . . most of the time . . . by Citizen-Ship radio on the little-used 465 mHz frequency (no longer available for R/C). Next, a Kraft single-channel radio, built from an Ace R/C kit, was used, along with two cascaded Bonner Varicomp escapements, giving right and left rudder, and up and down elevator, plus a three-position O.S. escapement for throttle. Yes, Matilda, all of that from a single-channel radio . . . but it took some fancy button-pushing! That was followed still later by Galloping Ghost (proportional and simultaneous rudder and elevator using a crank system that you had to see to believe), with throttle operation from a P.O.D. (Pulse Omission Detector), both of which are a whole story in themselves. Right now I can't recall what finally became of the WAG W/O DRAG, but it had to be just about my most favorite model of that vintage period, and together we must have logged at least several hundred flights in the various control configurations, with only minor, easily repaired mishaps. It may also have been the first ship I flew on six meters when I passed the Technicians License exam (just barely) in 1962.

Construction of the WAG is pretty much conventional. There are a few notes on the plan, with particular reference to following the fuselage construction sequence shown in the sketches, except that somewhere between Steps 2 and 3, it should mention that you build the main crutch, out of 1/4 x 1/2 hard balsa. You can hardly do without it! If you wish to build our W/O Drag version, simply add two 1/4 square longerons to the bottom, running them back to the leading edge of the stab and gluing them to the crutch at that point. Add appropriate 1/8 x 3/8 braces and crosspieces, bowing the longerons slightly toward the front so they fair into the solid block under the nose. You can make a 1/8-inch bulkhead, using the pattern for the 1/4-inch ply main gear mounting bulkhead and cutting notches for the longerons.

It is very important to follow the correct procedure for building the washout into the wing tips. Simply build a rectangular panel, then cut away the tapered trailing edge. Finally, trim the bottom edges of the outer four ribs to fair into the trailing edge, adding the small bottom wedge to fill the gap from the ends of the ribs.

Note that the elevator and rudder trailing edges are left blunt and squared off. This was done purposely to improve control response without requiring much deflection. It was almost overkill, as Walt explains when he applied rudder on the first test hop!

Our ship was covered with light green nylon and clear doped with thinned butyrate. The trim was white, with black pinstriping. It showed up well in the sky, with or without cloud cover, and the white trim made it easier to find that one time we forgot to wind the escapement rubber and the ship took off on its own for a three-day vacation! •