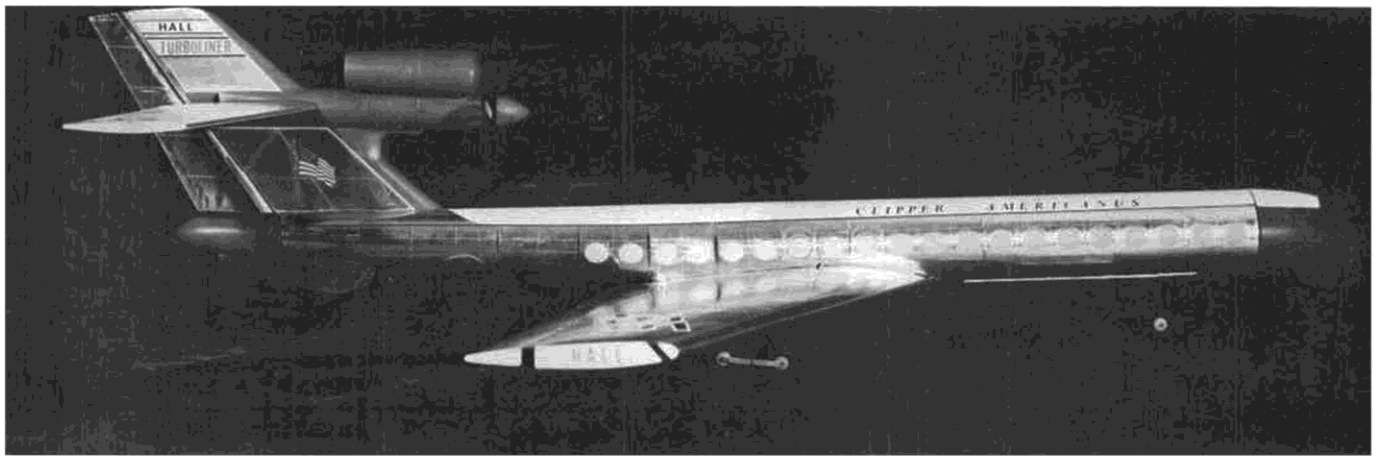
PHOTOS BY THE AUTHOR



CLIPPER AMERICANUS

By ART HALL . . . Something really different for the sport R/C flier who wants a model that looks like an up-to-date aircraft rather than a clougey "trainer" . . . yet has the stability and flying ease of a trainer.

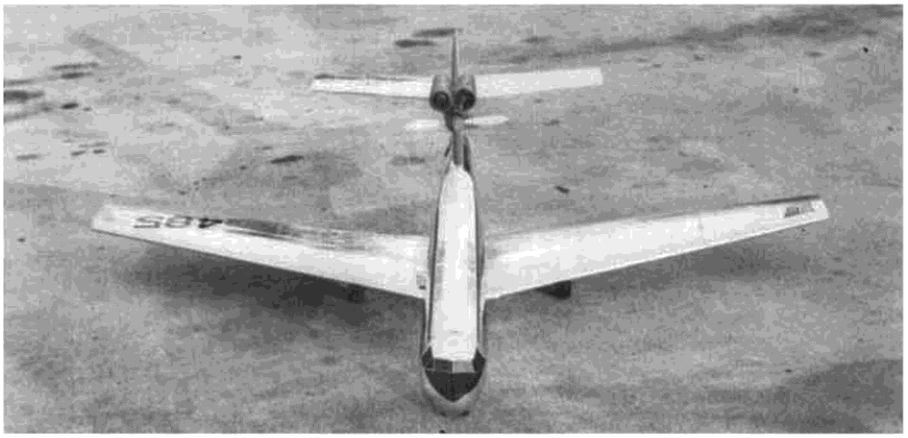
• A-mer-i-ca'nus (-ka'nus). n. One thing American.-Hall. A contribution to promote independent, imaginative and creative design philosophy for model builders and to commemorate the majestic beauty of American-designed, modern jetliners.

With many years experience in free flight/scale designing, building and flying, I am another slow starter in R/C flying. Flying with 1 and 2 channel equipment in .049 powered models was a start. My primary trainer had been an original design, square bodied, transport type model. She has performed for over 22 years as a free-flight, pre-determined control test bed, and R/C trainer. Her career almost equals the Ford Trimotors of Island Airways! The old trusty workhorse was getting heavy and weary so she was "retired" honorably to fly on forever hanging from the ceiling. Time for a new aircraft, and the next logical step was to get into aileron and throttle operation. Attempts to transition on my son's typical .35 low wing "bomb" soon convinced me that I needed a more docile and manageable trainer/workhorse of my very own.

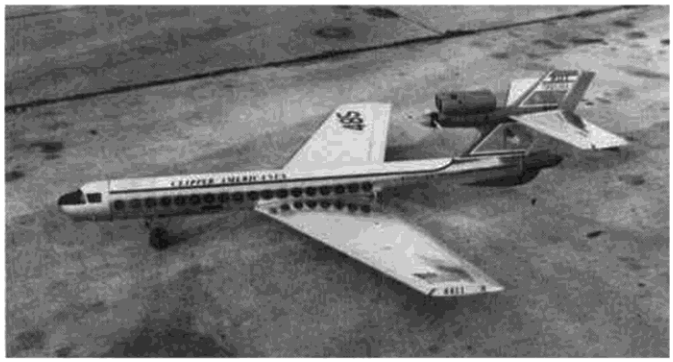
This need for an aileron and throttle trainer was mixed with my old philosophy of designing miniature aircraft types rather than "just models." A keen appreciation of America's sleek and majestic jetliners led to the design and development of the Turboliner "Clipper Americanus." The design of an "any jet" type transport involved a simultaneous solution to the problem of a powerplant since there are no practical and realistic jet engines available. A turbo-prop using standard model engines seemed most workable, yet the muffler sticking out the side was also a problem. With some imaginative design doodling, the twin-turbine, turboprop power package was evolved.

"Clipper Americanus" uses this power package and features the swept-back, sleek modern look accentuated by rivet-detailed metal foil covering and a modern all-flying stabilator.

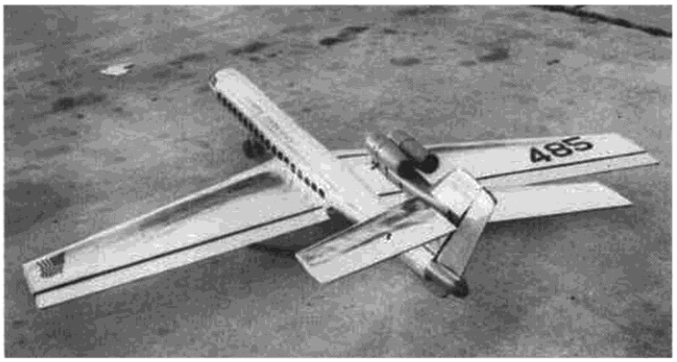
For initial flight tests, the prototype carried 4 channels; the three primary flight controls plus throttle. It was soon determined that it was a stable and controllable aircraft without rudder control. This permitted use of lightweight, 3-



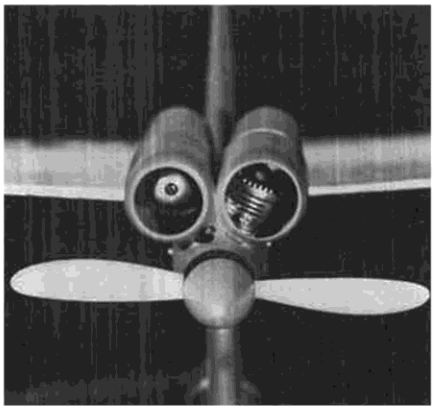
Without that propeller, the "Clipper Americanus" could easily pass for a jet-powered airliner. The metal foil covering completes the image.



The "Clipper" flies well with or without rudder control. The author wanted something easy to fly that looked different. He has it!



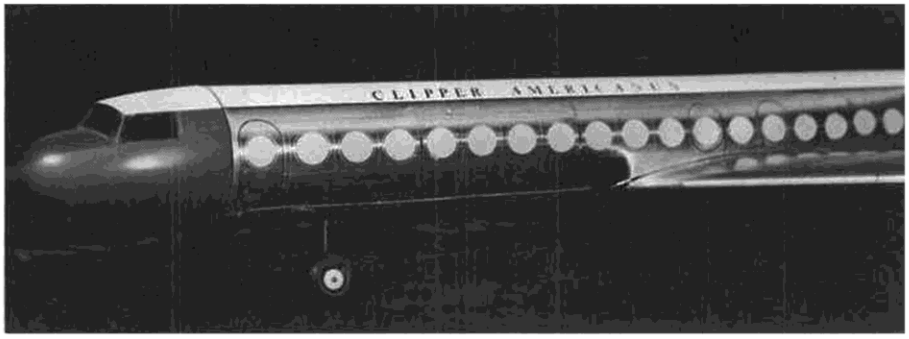
"Guests on this show were flown here by . . . " Horizontal stabilizer is all-moving, but surprisingly non-sensitive.



"Jet pods" house engine cylinder and muffler. Props last a long time!

A boarding passenger's-eye view of the "Clipper" accentuates its realistic lines. Article on next two pages explains the use of metal-foil covering.

Art Hall hoists the "Clipper Americanus", giving an idea of its relative size.



Close-up view of the Clipper's fuselage discloses the riveting pattern. Fuselage is sheet balsa, wet-formed over P.V.C. pipe. Radio hatch on bottom, in front of wing.

channel gear . . . in this case, the Cannon radio. Nosewheel steering was coupled to aileron. With a generous 420 sq. inch wing, a relatively low power .099 engine, and a gross weight of only 3-1/2 to 4 pounds, the design philosophy and objectives of a realistic, manageable trainer were achieved. The stabilator proved to be surprisingly non-sensitive, and pitch control is smooth and positive. Others can develop larger, higher powered versions with full house radio and retracts, which would be interesting, however, this machine is designed just for R/C transition training and sport flying. If I can fly it, anyone should be able to!

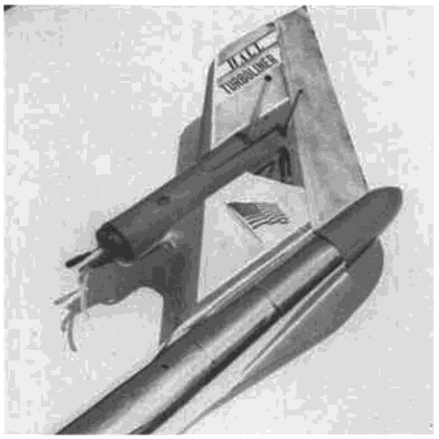
CONSTRUCTION: The full size plans should be self-explanatory for the routine construction details. I show my recommended construction, but "builders' choice" and "modifications" prevail. So these instructions are limited to overall explanations and specific or unique aspects of construction.

FUSELAGE: The basic structure is a sheet balsa box crutch forward, and an "X" crutch aft, the whole covered with a sheet balsa shell. I formed the shell by wrapping water-soaked balsa sheets around a 3-1/2 inch O.D. PVC pipe, covered with newspaper to help absorb the moisture for drying. Use one of these pre-curved sheets as a fixture to cradle the two crutches (top side down) for alignment and joining. Attach all bulkheads and the curved side sheets. Build up the nose wheel shaft unit before covering the forward fuselage top. Leave the shell off the top and bottom of the aft section and work on the fin assembly.

VERTICAL FIN ASSEMBLY: Build the basic fin structure on the "X" crutch noting that F-1, F-2 and F-3 all go through the crutch to the bottom shell and tie into the sub-rudder (SR). Do not cover the fin until one of the last steps, since there must be access to the pivot box to mount the bellcrank and aluminum tubes.

Build up the stabilator pivot box. Use a drill press to accurately drill the bearing hole in the side plastic plates for the front pivot tube. Mock-up the 30° variable bellcrank to the two tubes and drill the holes for the retaining pins. Remove the tubes and bellcrank and mount the pivot box into the fin's frame.

POWER POD: Make the pod shell from two plys of soaked 1/32 balsa sheet, rolled into a tube the diameter of former E-2. Position and cement E-2 in place. Cut out firewall E-1. Flatten the rear of the shell as if to fit against F-3, and the front end will assume the oval shape of E-1 which can then be positioned and temporarily pinned into place, slot the top and bottom of the shell to slide onto the fin structure.



Pod and fin construction is strong and rigid. Bottle tank is directly behind engine.

Cement in place, with E-2 against F-1, and the aft end flattened against F-3 on each side. Locate and drill the pivot tube hole and travel slot each side. Make and attach fillets. Build up the bottle tank onto the firewall and attach the engine mount. Epoxy the firewall assembly into the pod.

FINAL FUSELAGE ASSEMBLY: Now, before covering the aft fuselage or fin, would be a good time to mock up your servo installations and run your Gold-N-Rod through the aft fuselage for elevator, throttle and rudder (if used). The fuselage may now be completed and covered. If rudder control is desired, build and attach it. If fixed rudder is used, build it onto F-3. Slip the bellcrank inside the pivot box and run the aluminum tubes into position; pin and

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Americanus . . . *Continued from page 10*
epoxy them. Now cover the fin sides with 1/32 sheet.

WING AND STABILATORS: Both foam and built-up structures are shown. Recommend either be covered with 1/32 balsa sheet, particularly if the metal-foil covering is used. Note the use of sheet plastic root ribs and screw retainer plates on the stabilator. I used .018 poly-carbonate sheet which is a very tough plastic!

ENGINE COWLING: The mounted engine was wrapped in paper towels with no undercuts, plaster applied, and then shaped for a male mold of the lower cowl. This was used to make a fiberglass cowl. The balsa jet nacelles were then fitted to this and faired with cloth and glass. Pull this off the engine and shape the inside, reinforcing with fiberglass where necessary. (An alternate method of making the cowling is to build up and shape from balsa blocks). The tailpipes are 1/32 sheet tubes, attached with 2-56 screws to the nacelles.

Nose and tail were shaped from urethane foam and lightly glassed. Hollow out the tail cone for weight savings. Ambitious builders may build up a hollow nose section with detailed interior and clear plastic windows. Or, leave it solid and use Monokote black windows. The cabin windows are also patches of black Monokote (sticky-back trim).

RADIO INSTALLATION: Mock-up your particular radio equipment to locate the C.G. near that shown on the plan. Better more forward than aft! (Put the battery in the nose if need be). Installation of the 3 channel Cannon is shown, giving elevator, throttle and aileron, with coupled nose wheel from the aileron servo. If rudder is used, couple nosewheel to it as usual.

CONCLUSION: I preferred shock mounting the wing with rubber bands. Most all other components are attached with screws. The finishing technique is at builder's option, but I used rivet-detailed metal foil covering. *(See separate article in this issue by the same author. wcn)*

This miniature Jetliner takes more time to build than the typical square "ugly" something, but the results usually speak for themselves. With your own ideas, imagination and efforts, you can be a part of the jet age with your own "Clipper Americanus." ●