

PIEL
"EMERAUDE"

COURTESY "AVIATION MAGAZINE"

JERRY VAN HEESWYK'S PIEL EMERAUDE

TEN-FOOT EXACT SCALE FRENCH HOMEBUILT – SCALE
POINT WINNER AS WELL AS GRACEFUL FLYER

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EDITOR'S NOTE:

This article by Jerry Van Heeswyk comes as a natural tie-in with Yellow Aircraft Company's CAP-10B ARC Kit Review, by Roger Edwards (elsewhere in this issue). The CAP-10B owes its heritage to the Piel Emeraude, one of the most graceful Homebuilts ever designed.

In order that it does not get lost, at the end of this article, somewhere on the back pages, I think it's important to remind interested modelers that the Emer-

aude Plans and Information Package are available from Jerry at the above address for \$40. His excellent Jodel F-12 Plans also remain available for \$35. He reminds us that T&D Fiberglass Specialties will offer the cowlings, wheel pants and the Emeraude side windows, for your added convenience when building the model. (See our Advertisers' Index to find needed information on T&D Fiberglass Specialties.)



Jeannie Van Heeswyk poses with Jerry's 126-inch Piel to show just how large this aircraft really is.



Van Heeswyk patterned his aircraft after a full-scale Piel, based at his local airport.

PIEL EMERAUDE

I never realized that I had an obsession with anything French. I don't particularly enjoy French wines; I'm not all that fond of Peugeots, and other than a high school crush on Brigitte Bardot, I never really thought too much about the French, one way or another.

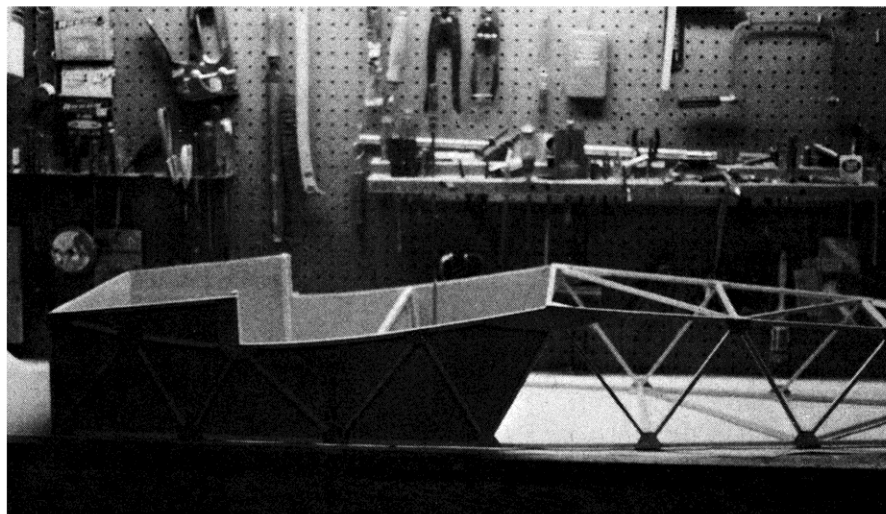
My particular "hot button" in modeling happens to be giant scale — *really* giant scale. So, while looking for a new challenge, I found myself drawn to a 1960s Homebuilt called an Emeraude. It had everything I was looking for, including very pleasing lines, a low wing, a conventional gear, flaps, etc. It also had a haunting similarity to some long-forgotten aircraft which I knew I liked, but couldn't quite place. Last, but certainly not least, it looked like it would have excellent flight characteristics. When they get this big, if the full-scale one flew well, and you're any kind of a designer/builder, the model almost has to fly well too.

After doing a little research, I found that the Emeraude was a French design. This would not seem odd, except that several of my past giant scale projects also turned out to be French. There was a 1/2 scale Druine Turbulent, a 1/3 scale Jodel F-12 (October '86 — *Scale R/C Modeler*), and now, the Emeraude (Jewel).

I spent some time wondering why I was attracted to these particular aircraft. Certainly there were fine aircraft being developed in other countries also. I finally came to the conclusion that these French airplanes of the 40s, 50s, and 60s were really "large model airplanes." They were built primarily from wood and fabric, and when you look at the plans, you can't help but think that the designers had roots in modeling. This characteristic permits the model to be constructed in a manner very similar to the full-scale aircraft.

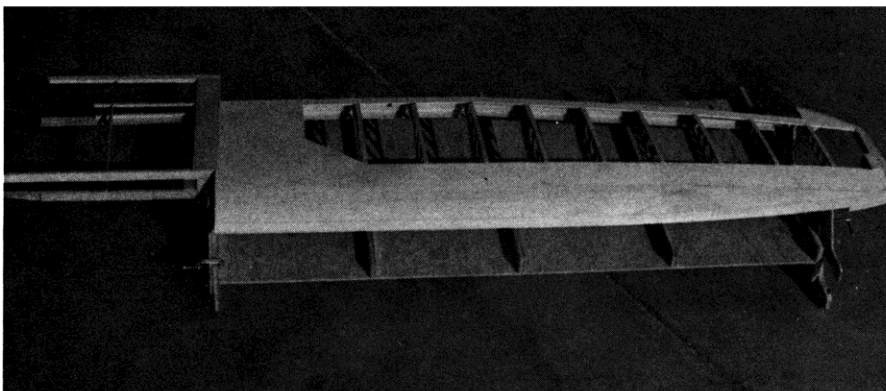
The Emeraude, as presented here, is exact scale in outline, airfoil, rib location, etc. It was designed from full-scale plans with visible modifications only where necessary to ensure structural integrity and accommodate available materials. These modifications consist primarily of the location of sheeting on the flying surfaces.

The Emeraude was designed by the late Claude Piel, the prolific designer responsible for numerous sport, aerobatic, and racing aircraft. The best-known of these was the Emeraude C.P. 30, powered by a 65 hp Continental engine. There have been several modifications to that original Emeraude design, mostly in-



Side view of fuselage being assembled upside down on the building board. Doubler, from firewall to trailing edge, is 1/8 inch Philippine mahogany.

The left wing, with top sheeting in place, is mounted in the jig. The aileron on flap have been removed in this photo.



ternal strengthening to utilize larger engines. However, there were also other, more obvious changes including features such as a tricycle landing gear, retracts, bubble canopy, swept tail, etc. Most of these modifications seemed to me to erode, rather than enhance, the charm of the original design so, being somewhat of a traditionalist, I chose to model an earlier version.

The Emeraude prototype first flew in 1952, and went into limited production the following year. Several hundred Emeraudes of various types have been built, under license, by companies in France, Spain, South Africa, Germany and the U.K. Many more have been constructed by amateur builders, and plans for a Super Emeraude remain available, to this day.

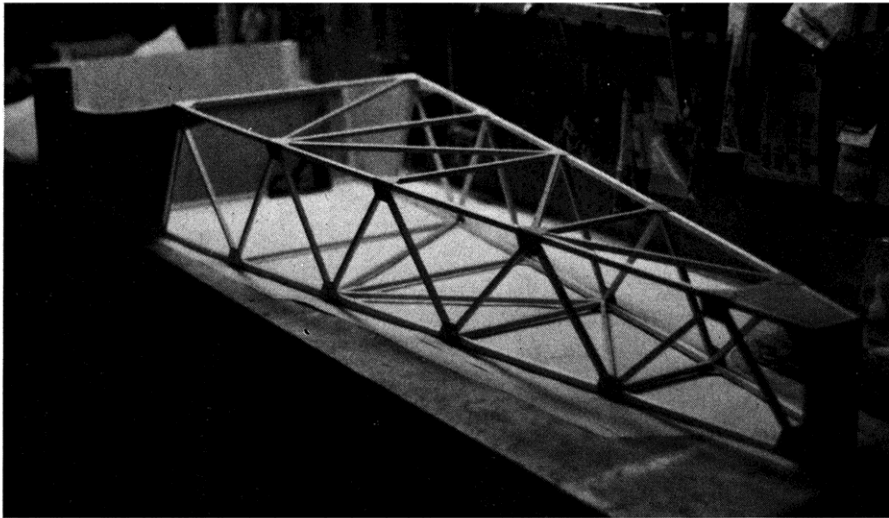
The Emeraude was so successful that it inspired many other aircraft, ranging from single to five-place models. These include the Diamant, the Beryl, the Pinocchio and others. All of these Claude Piel-designed aircraft possess an obvious similarity to the Emeraude. Fortunately, each of these designs was offered in plans form for Homebuilders, so it is pos-

sible to occasionally come across one of these fine aircraft at a local airport.

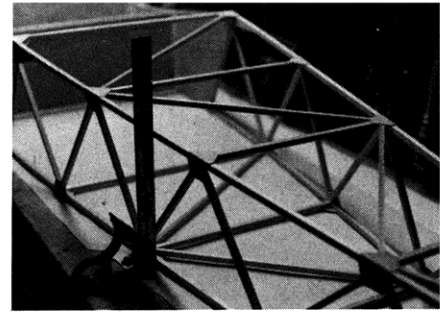
The Emeraude was also the genesis of the CAP series of aerobatic aircraft. The CAP 10 was basically an Emeraude with a 180 hp engine and a bubble canopy. It was first built in 1968 by C.A.A.R.P. and Mudry Aviation. This aircraft, and a series of updated versions, has been used for sport aerobatics and as a military trainer in countries throughout the world. The CAP 10B, which had a ventral fin and a larger rudder, is well known for its use by the aerobatic show team, "The French Connection." It would be relatively easy to build a CAP 10 from these plans, but at 40 percent scale, it would need five or six cubic inches to haul it around in scale-like fashion.

The CAP 10 was modified into a single-seat, fully aerobatic aircraft, designated the CAP 20, which went through even greater evolution to become the well known and often modeled CAP 21. Through the years, with all of these changes, the Emeraude heritage has all but been lost.

The subject of this article (N9441H) is a model C.P. 304, Homebuilt version of the Emeraude built by Wayne Barton, C.P.

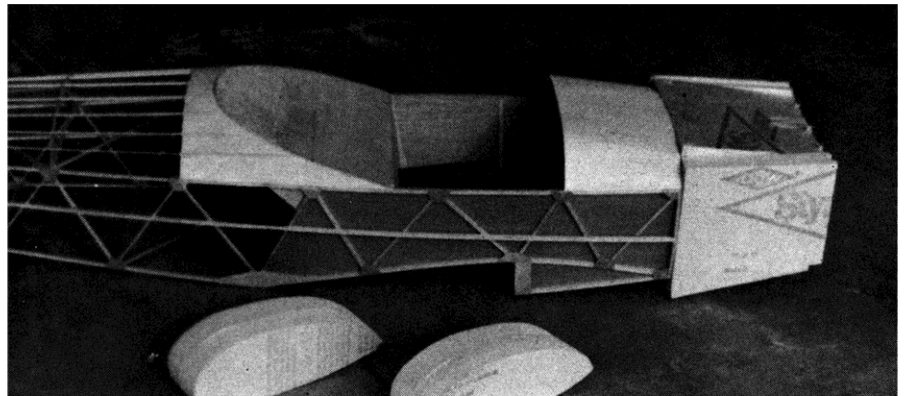


Rear quarter view of fuselage shows basic fuselage structure.



The fuselage sides should be checked at several locations, to ensure that the sides are square.

Two inch foam blocks are glued together to make the blanks for the wheel pants. The foam for the cowling is glued directly to the firewall. A wood rasp does the rough shaping very quickly.



304 is the designation given to aircraft powered by 85 hp Continental engines. N9441H missed being the first Emerald to be built and flown in the U.S. by one week. It was completed in Ruch, New York in 1963, and photos of this aircraft were later used in the original sales brochure for the full-scale plans package. N9441H is now based, quite appropriately, at Wittman Field, the site of the annual EAA Oshkosh Fly In.

Mr. Barton, who now lives in nearby Erie, Colorado, was kind enough to supply me with documentation photos, including the cover of the November 1963 *Sport Aviation* magazine. I was also able to lay my hands on a set of original Emerald plans, the three view drawings which provided the source material for this project.

There are a number of valid reasons why some modelers would not consider a project like the Emerald. Let's get this out of the way, so that the easily discouraged can go on to read something else.

The Emerald is very large, even by giant scale standards and this can present some challenges for transportation.

The wing (126 inch wingspan) is built in one piece. However, the fuselage is slightly over eight feet long, and would not fit in most vehicles anyway. For those

who don't own a moving van, I will offer an alternative later in this article.

This is not a particularly easy plane to build, so you will not throw one together in two or three weekends. There are not many straight lines, and a simple, home-made jig is required to build the wing accurately. Some access to power wood-working tools is also very useful early in construction, to rip the spruce and saw out all of the plywood parts.

Now for the positives. The Emerald, as presented, can be a truly magnificent project. The large size results in majestic flight characteristics. I admit to a strong personal bias, but I believe that the larger the plane, the more realistically and beautifully it flies. Few model aircraft can duplicate the flight realism of the Emerald. And, if you have never flown a tail-dragger of this size, you will not believe the outstanding ground handling. I have logged hundreds of flights on giant tail-draggers, and have never experienced a ground loop.

This model was designed to be as large as practical, while staying within the (then) current AMA engine size restriction of 3.7 cu. in. for scale competition. And, because it can carry a little extra weight, some non-traditional (less expensive) building materials can be utilized.

Detailing a model of this size is also

a pleasure. Features hardly noticeable on a traditional size model are very prominent in 40 percent scale. This allows significant detail to be included without working under a microscope. Covering reinforcement tape, plywood corner gussets, rivets, screws, etc., all are easy to duplicate and can sometimes be functional as well.

Maybe best of all, the Emerald is unique. Models of this size are seldom seen, and Emeralds are rare. Although it is well within the ability of the average experienced modeler to build and fly this airplane, you aren't likely to go out to the flying field and see three of your buddies with one just like it. It does require a certain degree of commitment.

For those of you who have not turned to an article on ARFs, let's go over the specs and some construction details.

SPECIFICATIONS

Wing Span	126 inches
Root Chord	23.5 inches
Wing Area	2689 square inches
Airfoil	NACA 23012
Wing Loading @ 35 lbs	30 oz./sq. ft.
Overall Length	100 inches
Power	3.1+ cu. in.
Weight	33 to 40 pounds