



This immense scratchbuilt ore concentrator on Brian Ellerby's Sn3 (1/64 scale) Copper River & Yukon RR is made almost entirely from styrene sheet and strip. Brian used Grandt Line plastic window castings, and the crib work retaining walls on both sides of the structure were made from wood dowels. Photo by Paul Scoles.

## Chapter 1

# The Case for Styrene, 40 years later!

**F**OUR DECADES AGO this how-to book would have begun with a selling job. Before we could begin to show you how to build models from styrene, we would have had to convince you doing so made sense at all.

Back then, wood and metal were what “real” models were built from – hey, at least we weren’t using stone! – and plastic was considered suspect. Although injection-molded plastic kits had been around for more than a decade, many established modelers

saw them as toylike compared to the “true” craftsmanship of working with basswood or brass.

All that has changed, and for the better.

Styrene is now universally accepted as the modern material for building



James Kloek converted a Hasegawa 1/700 scale WWII Essex-class aircraft carrier kit to build a precise replica of U.S.S. *Hornet* (CV-12). He opened the hanger doors in the side of the ship, added a sheet styrene hanger deck, and scratchbuilt a hangar-deck catapult extension from styrene strip.



This diminutive 1/35 scale vehicle started as a Commanders kit of the World War II Hungarian Csaba armored car. Armor modeler Joe Morgan scratchbuilt the turret hatch, toolboxes on the rear fenders, and the antenna mounts from Evergreen styrene. The yet-to-be-painted model shows off his modifications.

models – all kinds of models. It's inexpensive, widely available, and above all, easy to work with. It brings the workability of clear soft wood to your workbench – but without the problems of wood grain, fuzz, or splinters – and combines that workability with the crisp precision of metal.

Modelbuilding with styrene is faster and easier than with any other material. Styrene is easy to fabricate using only hand tools, easy to cement, and equally easy to paint and finish to represent a variety of materials. And because molded styrene is the overwhelming choice for commercially

produced model kits and detail parts, it's the perfect scratchbuilding and detailing medium to complement them.

Styrene won't warp or swell due to changes in humidity, and normal household temperature variations don't affect it. It is durable, stable, and bonds almost instantly. Styrene takes most hobby paints well, and does not require sanding or priming before applying finish coats.

#### Scratchbuilding with styrene

Many modelers are needlessly intimidated by the term scratchbuilding. The basic techniques for model-

building with styrene are extremely simple, and anyone who has built basic wood or plastic kits is ready to try a scratchbuilding project. The transition is easy and logical – from building kits, to kit modification, to building without a kit at all. The chapters that follow provide all the techniques you'll need, plus step-by-step examples.

Styrene may be combined with wood, metal, and other plastics using the appropriate adhesives. Acrylic plastic (Plexiglas, Acrylite, and other brands) can be bonded to styrene using acrylic solvent cement. This is a fast and easy way to build big models, particularly architectural models with large areas of glass. Many top professional modelbuilders use this technique for most of their work.

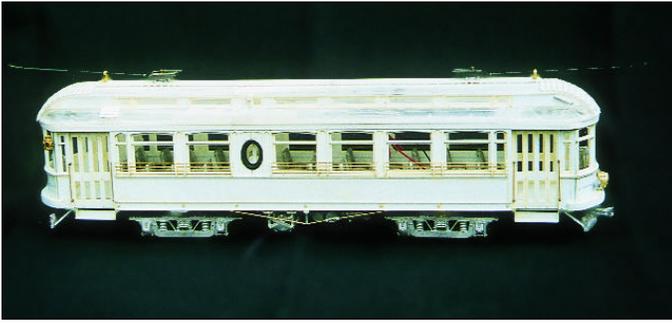
Even though styrene is the material of choice for most modelbuilding, it's important to understand its limitations and select other materials when they are better for your application. One example is thin, free-standing details such as hand grabs or antennas: Brass wire or photoetched parts offer superior strength for these. Another is unpainted wood structures such as pilings and timber bridges; they're easier to build and color if you use pre-stained wood.

#### About the Case Studies

Throughout this book we'll depart frequently from straight how-to



Bob Steinbrunn uses styrene extensively for both aircraft and ship models. His 1/48 scale Trimaster kit of the Heinkel He 162 Volksjager has been extensively modified and detailed with parts made from Evergreen sheet, strip, and rod.



Before and after! The unpainted model (above) shows the interesting mix of materials that Bob Robbins employed to build Illinois Traction System car No. 203 in O scale. The predominant material is white Evergreen styrene, augmented with



brass wire and detail parts and white-metal castings (including the truck sideframes). The roof is a clear styrene part manufactured by Vane Jones. Construction of car No. 200 is identical; the model was painted by Dennis Love.

description of techniques to show you projects called “Case Studies in Styrene.” The idea is not that you’ll build the same model the same way the writer did – that’s unlikely – but

that you’ll have a chance to look over the shoulders of experienced builders as they work. It’s a great way for you to learn new ideas and techniques.

Now let’s get going. As pioneer

styrene modeler Alan Armitage wrote over forty years ago, “The things you can do with styrene are limited only by your imagination and ingenuity.”



Styrene is used extensively in architectural display and planning models. Replica Scale Models of Auburn, Washington, built this 1/96 scale model (1/8” = 1’) of One Pacific Tower for architects Curtis Beattie & Associates and developer Hammond Pacific Corp.



### WHAT IS STYRENE, ANYHOW?

One of the most important plastics, polystyrene is found all around us – in automobiles, housewares, toys, and packaging. The basic material is derived from gases recovered in refining petroleum. It first came into widespread use in the 1950s, and one of those uses was to make model kits.

Polystyrene is a thermoplastic, which means it can be repeatedly softened with heat and formed or molded. Plastic kits and detail parts are made by heating styrene pellets (usually with a coloring agent) and forcing the taffy-like molten material into a mold, or die, under high pressure. The same process, called injection molding, is used to make everything from pill bottles to television cases and furniture.

The other common form of styrene is Evergreen strips, sheets, and shapes. This opaque white material is the same styrene used in molded plastic kits and parts. Evergreen has been manufacturing precision styrene for over 25 years.

Styrene is nontoxic, and is impervious to many chemicals, including water. It can be pliable or brittle depending on its formulation. Clear styrene is brittle and unsuitable for heat- or vacuum-forming, but makes good flat window glazing.

Ultraviolet (UV) light embrittles and degrades unpainted styrene, so it must be protected with paint for use outdoors where it will be exposed to sunlight. The much weaker levels of UV found indoors do not affect it. – Bob Hayden