

1094



entr

H ←

H ←



S. front

c. 1948

"Lustron" steel-panel & porcelain enamel pre-fab house
1105 Harrison Ave., Huntsville, AL photos Jan. '93 H.P. Jones



H ←

entry

St. →

P.S. Feb 94 - 1 1/2 days dismantled & re-erected in Norway vicinity by Jesse Dangle for his daughter. Interior metal discarded - H.S.

S. front

"Lustron"
1949 steel
pre-fab. HSE





N. Rear

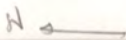


E. Side



2024

tree
dent
met. shingle
at N.W. corner



L.R.



394



DIN. (KIT. beyond) AN



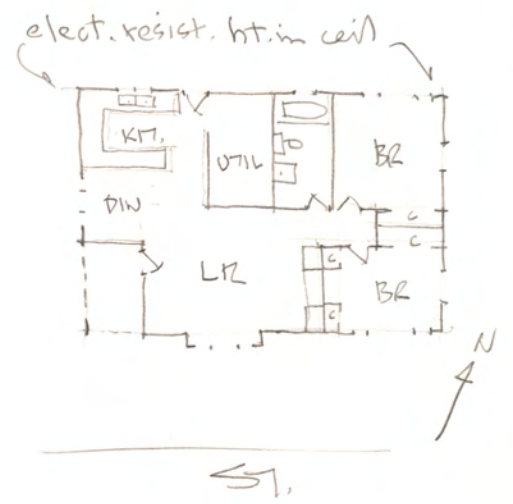
→ N



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↑ Lynn Jones ↑ S.E. B.R., W. wall

↑ Linda Allen ↑ Ralph Allen A/D



← photo in util km. on wall south

↓



Steel
air

→ N



Steel cabinets of sink

→ N

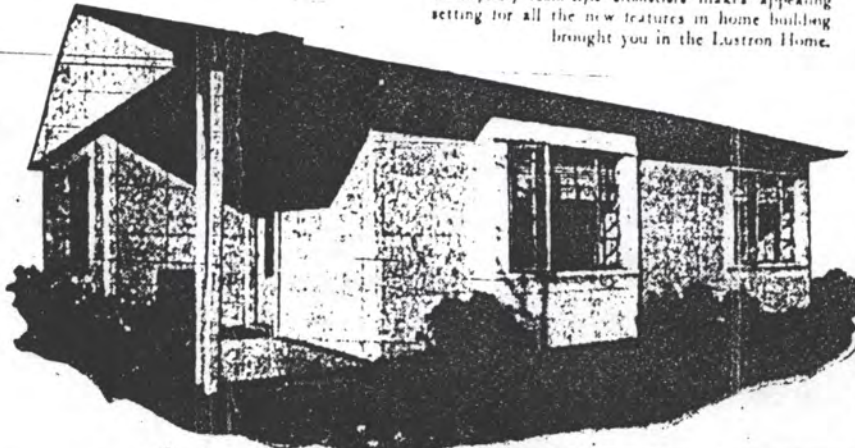
KIT.

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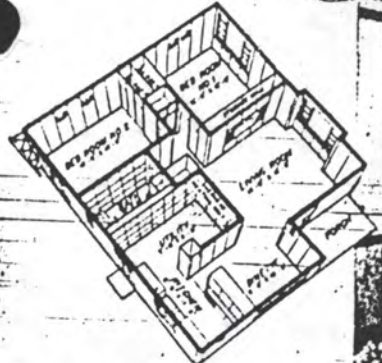
You get a home with the strength and permanence of steel and the lifetime beauty of porcelain enamel built with precision engineering techniques applied for the first time to home construction.

Your only cleaning materials are soap, water and a damp cloth. Neither sunlight, salt water, chemical fumes, nor smoke can fade or stain the finish.

Women will appreciate the many features that make this "the home of cheerful convenience." Big closets and ample storage space are contained in working walls without sacrifice of floor space. Radiant panel heating offers the last word in comfort, cleanliness, and even distribution of heat.

Remember, the Lustron Home comes to you complete, including built-in bookcase and cabinets, combination dishwasher-clotheswasher sink, radiant panel heating system, exhaust fan, complete bathroom fixtures, closets, drawers, cabinets, shelves. All you need to buy is your own range and refrigerator, and, of course, your own home furnishings.

Don't put off seeing this new contribution to the art of living. Visit the Lustron demonstration home now.



See how designers have arranged maximum space for each room in this functional floor plan.



Master-bedroom includes this working wall of drawers, shelves, and closets; big mirrored dressing table is feature women exclaim over. Both bedrooms take twin beds, have cross ventilation.



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June 21 '93 Harvie P. Jones, F.A.I.A.

Mrs. Milly Wright
Florence, Al.

Dear Milly - Several of us
are trying to locate "Lustron"
1940's steel houses in Al.

I hear there may be 4 in
your area. Could you send
addresses, if convenient,
photos? There is 1 in Hsv.,
3 in Blm, 1 in Tracalooza, &
a few others we know of.

Thanks -
Harvie

phone: 764-1852

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c/AD

JONES & HERRIN

Architecture/Interior Design

Mar 8 '96 Harvie P. Jones, FAIA

Gene Ford

Moundville

Gene - here is some info on Lustrons in N. Al.

I have the rego of the ... in Mr. J. ...
Linda Allen has slides of the 4 in Florence area.
Last no know if of use.

Harvie

Gary (not)
Linda Allen

104 Jefferson Street
Huntsville, Alabama 35801
Telephone 205/539-0764
Fax 205/534-2289

Lustron



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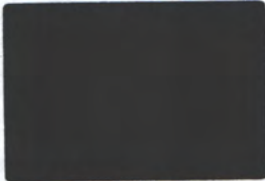
doing statewide multiple-rebores
now to Nat. Regio of Hist. Place
Mar 96 H Jones

Lustron (Beverly Ave) - Florence



Milly Wright 78

Lustron (Ridge Ave) - Florence



Milly Wright 80

(Sheffield)



Milly Wright 21

Royal Sulf
(Prestwick Dr.)
(Sheffield)



Milly Wright

4 Lustron houses
in Quad Cities.

Slides sent to
Linda Allen
4 Aug 93 HJ

NOTE - SEE LINDA ALLEN ARCHIVES
FOR SCANS OF THESE SLIDES AND
EXTENSIVE COLLECTION OF LUSTRON
INFO.

R. ALLEN

June 28, 1993

FAX Memo

To: Harvie Jones

From: Milly Wright 767-1883

Dear Harvie,

There are at least four Lustron houses in Florence and two in Sheffield. I have taken pictures of five of them -- the other is said to be imbedded within Elton Darby's lake home. Mr. Darby and Mr. King were distributors of the houses in this area and supplied all the aluminum windows for them.

Gene Ford, who is with the Museum of Natural History at Moundville, asked me to help locate the houses for Tom Fetters, who is writing a book on them that is due to be published before long. Gene's number is 371-2266 if you would like to talk with him. Mark McDonald, who is with the Mobile Historic Development Commission, is searching for any that may be there. Gene says that there is one in Clark County.

I have slides of the five houses in this area that I will be glad to send you if you can use them. I'll also look up the addresses and get them to you right away.

I'm planning to meet with Nancy Gonce this afternoon to review the Rosenbaum house measurement project. Let me know how I can help.

Best regards,

Milly

MILLY WRIGHT, FLORENCE, AL.

(Tel: she will send slides & addresses)

Copy: Linda Allen
Planning Commission

430 Columbiana Rd.
35209

2420 Cahaba Rd.

2424 Cahaba Rd.
35223

1802 East Ash St

27530
Goldsboro, N.C.

Ohio Historic Preservation
Office
Ohio Historical Society
Lustron Survey
1985 Velma Ave.
Columbus, Ohio 43211
(614)-297-2300

Harrie -

3 Lustron houses in Birmingham and
one in Goldsboro NC.

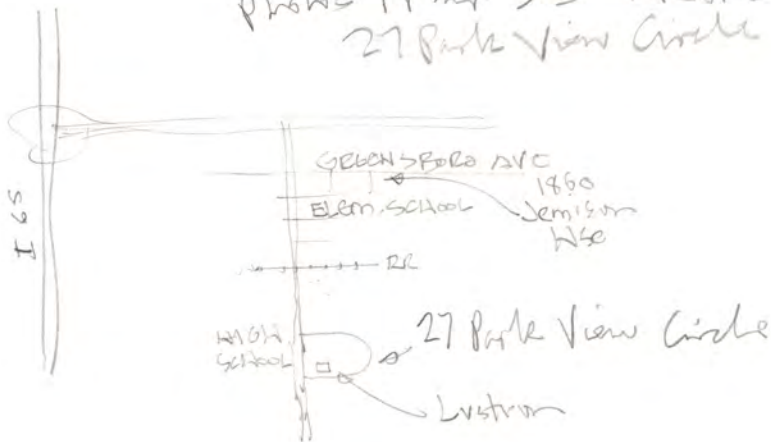
+ note about survey conducted by
Ohio Historic Preservation office.
Keep me posted! Alice



Lustron Hse in Tuscaloosa - 1940's

photo Mar. '93 W Jones
27 Park View Circle

Same model as
one in Hillville



The pink trim on this Hagerstown, Maryland modern house would not have been unusual. Note the 1950s details of a flat roof, steel window sash, carport, and attached garage.



hodge-podge of cabinets, worktables, sinks, and stoves on porcelain legs. Walls and ceilings gleamed with glossy enamel paints in all the fresh new colors, generally somewhat softer than the primary hues of the '20s and the dark tones of the '30s and '40s.

(Remember avocado green and harvest gold?) Work areas were well thought out and illuminated with recessed ceiling fixtures or fluorescent tubes, undercounter lights, and big windows. Peninsula and island counters made work easier.

Clean-burning, closet-size, whole-house heaters were standard, and air conditioners soon became nearly so. This eliminated the need for the basement altogether or freed the space for other activities. Smaller laundry machines were generally moved to a more accessible space in first-floor utility rooms.

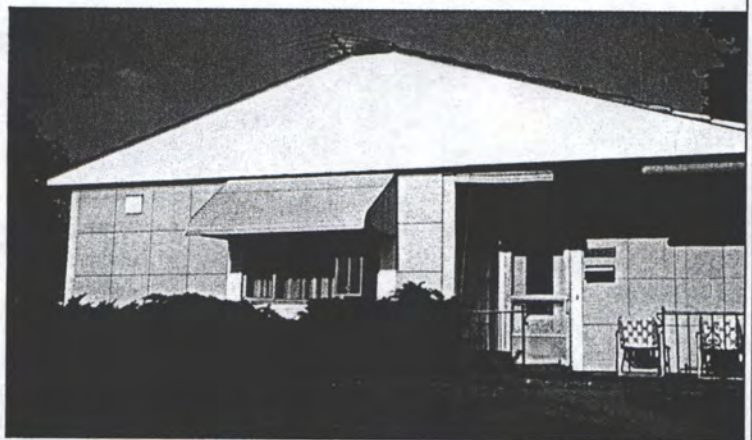
The car, which had become a de facto family member with the move to the suburbs, now took up a place of honor at the front of the house in its own room, a carport or attached two-car garage on the side of the house. Indeed, the carport (a descendant of the more stately porte-cochere) was perhaps the most typical feature of the postwar house. This versatile space wound up serving a multitude of purposes, from toddler's play yard to outdoor kitchen for the charcoal grill to storage area.

PREFABS OF THE FUTURE

CONSTRUCTION METHODS AND MATERIALS were also undergoing change. The prefabricated house — particularly the prefabricated metal house — had been heralded as the wave of the future by architectural pundits during the long building hiatus of the Depression and war years. The most famous postwar name in the prefab metal building industry was Lustron, which manufactured an all-steel house that it boasted could be sold for \$7,000 (although it turned out to cost \$9,000). All interior and exterior surfaces, except for the aluminum window frames, were porcelainized steel. The radiant heating systems supplied with these houses were satisfactory in moderate climates, but was not adequate for colder temperatures due to the uninsulated concrete slab floors, minimal wall insulation, and single-glazed windows. A skilled

crew assembled each house on site using 3,000 factory-made pieces. The procedure took 350 hours, more than twice the hoped-for time. Eventually, Lustron failed because of its inability to make the project profitable. Although they were not entirely maintenance free after all, owners tended to like the steel buildings.

In the postwar period as in other eras, the man-in-the-suburban-street didn't much care what the architects were arguing about. He just wanted his house — and quickly. He wanted it to look traditional but to act modern. He craved comfort, convenience, and familiarity enclosed in a traditional building envelope with up-to-the-minute materials, kitchens, bathrooms, heating and cooling systems, insulation, siding, roofing, and windows. And he got what he wanted. Small as they were, postwar buildings were remarkably well-made and well-equipped. They took advantage of technology and materials to make up for the fact that America's already tiny servant class had now been siphoned off into factories, offices, college classrooms — and the middle class.



In Brookfield, Illinois, the roof, walls (interior and exterior), and ceilings of this prefabricated Lustron house are made of porcelain enamel-finished steel panels.

LETTERS

Brooklyn grandfather's whimsical pastime.

— JON DEMBER
Spencer, New York

ON THE LOOK OUT FOR LUSTRONS

Dear OHJ,

The recent story that concerned the Lustron houses [*"Postwar Houses,"* July/August 1992 *OHJ*] is a pet project of mine. I have been working on the complete Lustron story for the past five years and have completed a book manuscript that should get into print next year.

One of the important phases of



Heralded as the wave of the future, prefabricated Lustron houses were made of porcelainized steel.

the project was to discover and record as many of the remaining houses as possible. I have found and documented as many as 700 of the Lustrons, with the

vast majority being the common 02 model Westchester. The 03 three bedroom Westchester is found in many locations, but is not as common as the 02 model. And, there are a very few of the 023 and 033 Newport economy models out there, but I have only found two, both in Eastern Iowa.

I welcome your readers participation in the search for unrecorded Lustron houses. Most of the houses on the East Coast have not been documented, although a very few in Clarks Summit, Allentown, and Philadelphia have been found. Here is what is needed: the address of the

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LETTERS

house, the model type, the basic tile color, the roof color, any architectural modifications, and, if possible, the serial number, which is found on an oval plate on the back wall of the utility room. A photograph of record would be a big help.

Lustrons were built in northern New Jersey, on Long Island, in suburban Connecticut, and in upstate New York near Buffalo. These are mostly all unknown and waiting for the researcher to find them. Volunteers can report their finds to me at Lustron Research, 545 S. Elizabeth Dr., Lombard, IL 60148.

Hopefully, we can enlarge the list of known houses before publication to 50% of the 2,495 that were built.

— TOM FETTERS
Lombard, Ill.

FASTEN-ATING RECOMMENDATIONS

Dear OHJ,

I wish to add two recommendations to Gordon Bock's article on fasteners that appeared in the May/June 1992 issue of *OHJ*. Before buying anchoring devices for masonry fastening projects, readers should experiment with sheet metal screws. After selecting the correct size bit and drilling a hole, attempt to slowly drive the screw into the masonry. The ability of the screws to "bite" into the material is determined by the hardness of the masonry. (This method has worked on concrete block and a variety of different bricks.) When the material is too hard for this technique, the screws will

break off. When the masonry can be successfully "threaded" with the screws, a superior and inexpensive method of light-to-medium duty fastening will result.

One note on expansion devices for historic masonry: Do not use them. Significant amounts of pressure are concentrated within the masonry unit. When expansion bolts are employed, cracking and spalling are the possible consequences. Bolts that utilize epoxy glue (for example, Hilti "restoration" products) rather than expansion, are the preferred method of attachment for important or historic masonry. Thank you for an informative publication.

— KEN MARKUNAS

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That's something, isn't it? And, it's past the imagination stage. Read further! Then, you'll want to take the first opportunity—if you haven't already—to look at the Lustron Home. We think that you'll agree that we've brought Mr. Average American's dream right down to earth—within his reach.

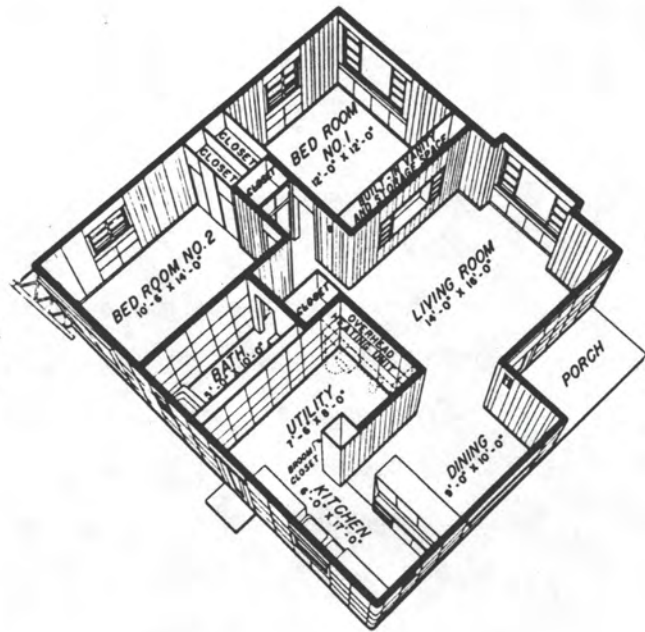
A promotional brochure for the Lustron house

The idea of a prefabricated, all-steel dwelling did not originate with the Lustron house; indeed, demountable corrugated metal structures had appeared nearly 100 years earlier in boom towns both in the United States and abroad. And fairgoers at Chicago's Century of Progress Exposition in 1933 had been introduced to steel-clad residences in two model houses: the Armco-Ferro Enamel House, designed by Robert Smith, Jr., and sponsored by the Insulated Steel Construction Corporation; and the Stran-Steel House, designed by O'Dell and Rowland and sponsored by the Stran-Steel Corporation. Both of these blocklike structures featured walls constructed of enameled metal panels that were bolted or screwed together. It took the genius of Carl Gunnard Strandlund, however, to see the potential for such construction and to market it nationally in an aggressive and systematic manner.

In 1946 Strandlund, a middle-aged, \$100,000-a-year vice president and general manager of the Chicago Vitreous Enamel Products Company, traveled to Washington, D.C., in search of steel to build more gas stations. World War II had made steel scarce, and the federal government regulated the distribution of the precious material to private industry.

*Carl Strandlund, c. 1947, stands
outside the Lustron plant in
Columbus, Ohio.
(Architectural Forum)*

Floor plan of the Lustron.
Rooms, while not large,
were well laid out; built-ins
and closets abounded.
 (Ohio Historical Society)



Strandlund quickly found that Washington Fair Dealers were not interested in gas stations, but they were eager to help reduce the severe housing shortage that was beginning to arise as American GIs returned home from Europe and the Pacific.

Since the mid-1930s Chicago Vitreous had been manufacturing porcelain-enameled steel panels for gas stations in the Midwest, including those of Standard Oil of Indiana. The panels simplified gas-station construction, proved easy to clean, retained their fresh appearance, and seemed almost indestructible. A consummate entrepreneur and promoter, Strandlund was quick to grasp the panels' possibilities in residential construction and he made some preliminary sketches for a steel-and-enamel house that he took with him to Washington.

Before this fateful trip, Strandlund claimed not even to have known the name of his congressman. He had trained as an industrial engineer and had been in business in the Midwest all his life; before joining Chicago Vitreous he had run a farm equipment company. Over the next several years, however, Strandlund would catch up for lost time, making many influential friends. One of these was Wilson Wyatt, Truman's dynamic young housing administrator; another was Henry A. Wallace, the secretary of commerce. Strandlund



Exterior view of the two-bedroom Lustron.
This was Lustron's most popular model,
available in a variety of pastel colors.
 (Ohio Historical Society)

captured Washington's interest when he pulled out his sketches for an all-metal house and boldly promised full production of 100 houses a day within nine months at the affordable retail price of \$7,000 per house!

With encouragement from key members of the Truman administration, Strandlund returned home to draw up detailed plans. Using the technology perfected at Chicago Vitreous, a small team of architects and stylists came up with a complete set of working drawings within a few months. The man responsible for the actual design that became the Lustron house was Morris H. Beckman, a young architect who had graduated from MIT in 1938 and had served as chief draftsman at Skidmore, Owings and Merrill. Beckman and his partner, Roy Burton Blass, had recently opened their own office in Chicago, and Blass, through his connections with Chicago Vitreous, landed the job. Beckman, despite his lack of experience with prefabricated housing, took on the design assignment.

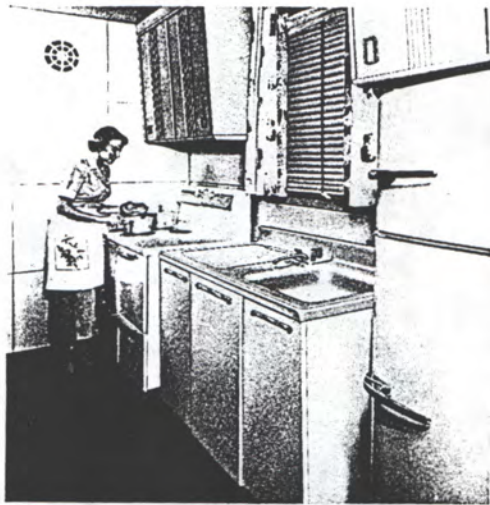
What emerged in short order from the drafting table was a rectangular, one-story, two-bedroom house with a low-pitched roof and a recessed front porch. Stylistically it was on the conservative side: contemporary in appearance yet conventional in most respects save its materials. Standard features included four large picture windows (one in each bedroom and in the living and dining rooms), radiant heating panels in the ceiling, plenty of closets, and built-ins galore: cabinets in the kitchen, bookcases in the living room, and a

vanity for the master bedroom. With the exception of the floor, which was asphalt tile on a concrete slab, all surfaces were of porcelain enamel on steel.



The Lustron living room and built-in bookcase. Pictures were hung with magnets rather than nails. (Ohio Historical Society)

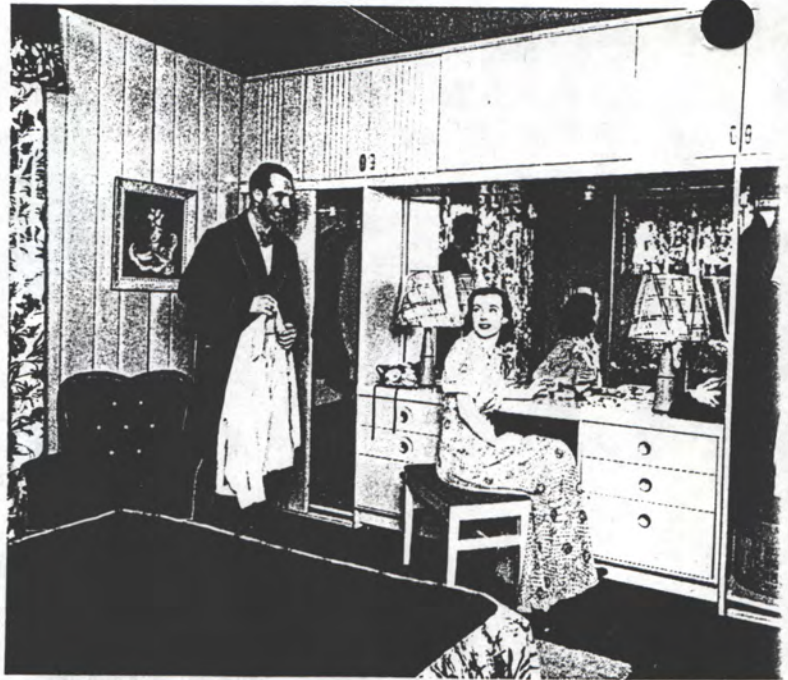
View of the Lustron's all-electric kitchen, with its combination dishwasher and washing machine. The kitchen was efficiently organized to make maximum use of the limited space. (Ohio Historical Society)



The Lustron dining room, with a pass-through to the kitchen. The pass-through became a common feature in houses built after World War II. (Harold Denton)

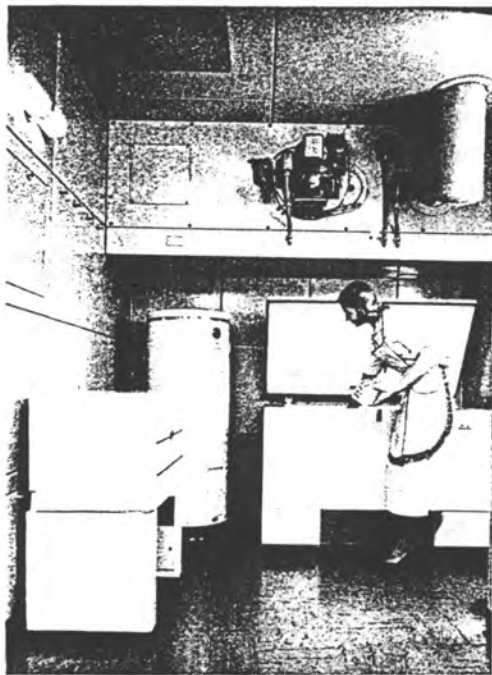


The plan itself made excellent use of rather limited space—slightly more than 1,000 square feet. A feeling of spaciousness was achieved by opening a dining alcove off the 14-by-16-foot living room. Food prepared in the fully equipped galley kitchen could be passed across a built-in counter into the din-



View of the master bedroom, with its wall of built-in closets and mirrored vanity table, both popular features with first-time home buyers. (Ohio Historical Society)

ing area. Both bedrooms featured large closets with sliding doors, and one wall of the master bedroom was taken up with a built-in vanity flanked by drawers. To conserve space, interior doors slid into pockets in the walls. The need for a basement was eliminated by creating a utility room off the kitchen;



*View of the utility room, with the heating unit below the roof and a handy deep freezer.
(Ohio Historical Society)*

here ironing and sewing could be done, and miscellaneous items could be stored. Access to the radiant heating equipment in the attic was also through this room.

With detailed plans and a whopping \$52 million budget (to permit full-scale production) in hand, Strandlund returned to Wilson Wyatt in Washington. Wyatt, impressed with Strandlund's rapid progress and undaunted by the price tag, used his influence to help find a plant suitable for production of 100 houses a day. When it turned out that Strandlund's first choice, a Dodge aircraft-engine plant in Chicago, had already been leased to the ill-fated Tucker Motor Company, Wyatt persuaded the War Assets Administration to lease an almost new aircraft plant in Columbus, Ohio, for \$425,000 a year to the Lustron Corporation. The plant, which had been used briefly to build Curtiss-Wright fighter planes for the war effort, fit Strandlund's needs beautifully; it covered more than 23 acres, was modern in design, and was centrally located in a major city.

Next, Wyatt approached George Allen, head of the Reconstruction Finance Corporation, for the capital required to begin production. The RFC had been set up after the war

to facilitate the country's transition from a wartime to a peacetime economy. Allen balked when he learned that Strandlund had no personal assets invested in the project other than his infectious optimism and determination, but Allen promised to reconsider if Strandlund could raise \$3.6 million on his own.

Over the next few months the Chicago-based firm of Hornblower and Weeks mobilized to sell stock in the new company. Sales, however, were slow: only \$840,000 were raised, mostly from would-be suppliers to Lustron. *Fortune* magazine reported that Strandlund himself put up only \$1,000, for which he got all 86,000 shares of the voting stock. (His substantial stock in Chicago Vitreous was exchanged for the Lustron patents, according to his colleague Harold Denton.)

Despite the sluggish stock sales, Wyatt continued to press Lustron's case within the Truman administration, eventually forcing a showdown at the White House between the Federal Housing Administration and the recalcitrant RFC. Allen came away the winner in the skirmish. Wyatt resigned his position shortly

thereafter, citing the termination of guaranteed markets for factory-produced housing.

With Wyatt out of the picture, and no new doors opening to him, a discouraged Strandlund was packing his bags for the trip home to Chicago when a friend, Lewis E. Starr, national commander of the Veterans of Foreign Wars, called and urged him to see just one more man. That individual was Sen. Ralph Flanders of Vermont, who turned out to be a fellow engineer and an enthusiastic supporter of prefabricated housing. Flanders's immediate support for the venture set the stage for a full review by the Senate Banking and Currency Committee.

Overnight Strandlund's luck began to change. The White House discreetly made known its interest in having the Lustron project proceed. George Allen—Strandlund's primary detractor—unexpectedly resigned his post as head of the RFC. And banking committees in both the Senate and the House lined up in support of Lustron. In June 1947 hastily drafted legislation was passed authorizing the RFC to issue up to \$50 million in loans specifically for prefabricated housing. Acting on a note from the White House, on June 30 the RFC passed a \$15.5 million loan

for Lustron, just 15 minutes before its emergency lending powers were to expire. The significance of the event did not go unnoticed in the press: it marked the first time since the war that the federal government had appropriated money specifically for private venture capital. Strandlund had his start-up capital at last.

The fledgling Lustron Corporation moved quickly to build on the momentum. Strandlund wanted to show Washington skeptics—and the general public—that an all-steel house was, in fact, within reach. Assembled from parts manufactured at the Chicago Vitreous plant in Cicero, Illinois, the first Lustron had been constructed in Hinsdale, a suburb of Chicago, in late 1946. Appropriately enough, the house's occupant was a former Seabee who was now a horticulture student at Michigan State College—reinforcing Strandlund's claim that Lustron would make homeownership affordable to returning veterans.

Determined to model Lustron's operations on those of General Motors and the Ford Corporation, Strandlund hired many veterans of the automobile industry to fill jobs as stylists, production managers, machinists, and salesmen. The complex machinery needed to fabricate the Lustron was designed and tooled, and the huge factory in Columbus was fitted out with conveyor belts, welding rigs, punching and stamping machines, sheet-metal presses, frit grinders, enamel sprayers, and drying ovens. Lustron and the labor unions signed a contract to cover the complete manufacturing process, and a work force—reaching a peak of 3,400 in mid-1949—was hired to run the complex machinery.

Rather than starting slowly in one region of the country, Lustron took the bold step of marketing its product nationwide, and publicists began the important job of promoting the Lustron home in major magazines and newspapers.

Again taking his cue from the automobile industry, Strandlund set out to establish a network of qualified builder-dealers. Rather than setting new dealers up in business (Lustron apparently received more than 10,000 requests for franchises), the company made the wise decision to work with known commodities. Lustron's franchise policy was

incorporated into advertising aimed specifically at architects and contractors: "It is the policy of Lustron to enfranchise well-established construction organizations capable of demonstrating to Lustron their financial, construction, merchandising, and land development qualifications." The advertisement went on to note that thousands of applications had been received and were under consideration. By May 1949 some 143 dealers—concentrated in the eastern two-thirds of the country—held Lustron franchises.



Advertisement that appeared in color for Lustron houses in the November 1, 1948, issue of *Life* magazine.

Forum noted that on opening day in Chicago, "lines formed early, were four abreast, four blocks long when police were asked to limit [the] crowd since all could not go through before closing time." In Milwaukee, according



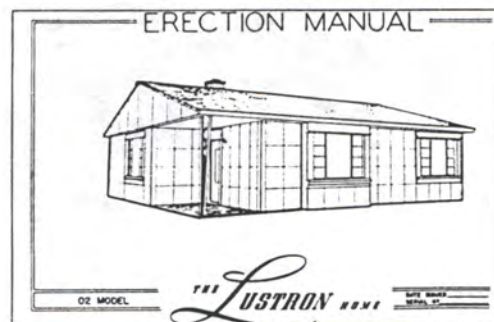
Assembly of a Lustron house in Bradford, Pennsylvania. (Vincent Kohler)

In 1947 demonstration houses began to open; eventually they reached some 100 cities and attracted long lines of potential buyers. Thanks to an all-out advertising campaign in *Life*, *McCall's*, and other magazines and newspapers, the level of interest was extraordinarily high. A January 1949 ad in *Architectural*

to the same ad, "They came...they saw...they liked it! More than 90% of [the] people interviewed approved new advantages of Lustron's basic ideas." And in Miami: "Florida likes the idea of a house impervious to scorching sunlight, salt air, [and] termites. Lustron's porcelain enamel steel construction is a

'natural' here." Visitors were intrigued by the all-metal construction that required magnets to hang pictures and were enticed by the prospect of low maintenance. What other house could be washed clean with a garden hose and never needed painting? The kitchen, equipped with numerous built-ins, was also an attention-getter, and it was particularly popular with first-time homeowners.

Despite the enormous interest generated by Lustron's demonstration houses, the new company encountered serious problems

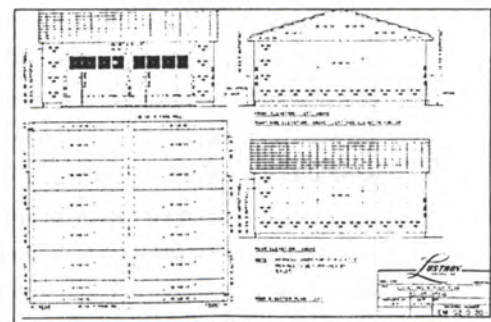


Lustron's erection manuals were highly detailed; this manual for the 02 model contained more than 160 drawings. (Vincent Kohler)

Lustron's Colors

According to one of the Lustron Corporation's promotional leaflets, the colors of the Lustron house were chosen by leading designers and color experts. The exterior colors were distinctive pastels: pink, surf blue, dove gray, desert tan, maize yellow, blue-green, green, and white. Interior colors were chosen to make furnishing and decorating easy, "permitting the widest possible variation in choice of draperies, rugs, and individual decorating schemes." Prospective owners were encouraged to make their selections carefully: the colors, baked onto the steel panels, were permanent.

almost immediately. Not surprisingly, given Strandlund's proposed \$52 million budget, the initial \$15.5 million loan from the RFC proved inadequate to underwrite start-up costs. It turned out that more than 3,000 parts, totaling more than 12 tons of steel, were needed for each Lustron house produced,



This sheet shows three elevations of the Lustron two-car garage and the roof plan. The design made use of existing Lustron parts. (Vincent Kohler)

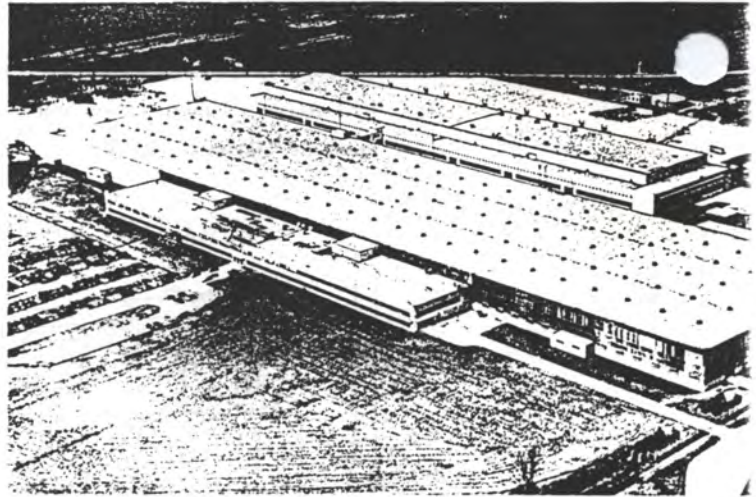
and the job of tooling up the plant proved more difficult and costly than production managers had anticipated.

Equally troublesome were the obstacles facing the newly franchised Lustron dealers; according to a story in the November 1949 issue of *Fortune* magazine, dealers needed sufficient capital up front to purchase lots, pour concrete foundations, and bring in utilities. In addition, houses that cost the dealer \$6,000 wholesale had to be purchased in large lots from the factory. From the outset Strandlund recognized that steel and steel-working machinery were profitable only in volume production; single-house orders did not fit this scheme. This meant that dealers needed between \$50,000 and \$100,000 in working capital to get started. Rigidity of FHA financing procedures slowed mortgage approvals, making it difficult for dealers to turn over houses quickly. Adding to Lustron's woes were the conservative building codes and deed restrictions in some communities that proved impossible to overcome.

Production costs had raised the retail price of a Lustron house from \$7,000 to \$9,000 or \$10,000, depending on location. While the price (particularly given the large number of standard features in a Lustron) was competi-



Metal panels emerge from the drying ovens in this interior view of the Lustron plant. (Ohio Historical Society)



The Lustron plant at Columbus, Ohio, formerly built Curtiss-Wright fighter planes. (Ohio Historical Society)

tive with the prices of tract houses being built at the same time, the Lustron was not within reach of all first-time home buyers. Nonetheless, back orders for the new houses quickly piled up, and prospective owners experienced long delivery delays.

Thanks to friends in the right places, the troubled Lustron Corporation succeeded in obtaining two additional loans from the RFC—\$10 million in 1948 and \$7 million in early 1949, bringing the company's total indebtedness to the federal government to a staggering \$37,500,000. Having made a substantial financial commitment to the project, the government was not eager to see Lustron flounder.

Although the first Lustron house rolled off the assembly line in Columbus in March 1948, the enormous plant did not become fully operational until November of that year. At its peak, the factory was able to produce 26 houses a day—a number far short of the 100 envisioned by the optimistic Strandlund in 1946 and far short of the 50 a day needed to break even.

Production problems plagued Lustron throughout its four-year history, but the scale of the Columbus operations was awe-inspiring. The architect Carl Koch, one of the country's leading experts in prefabricated housing, stated: "I remember...our first tour

through the premises on a motor wagon, gazing at acres of machinery. Even by American mass-production standards, it was an impressive layout. With everything going at once, [the factory] used as much electric current as Columbus proper. The houses themselves started at one end as rolls of steel, bar stock, or other elementary shapes, and from there were moved by conveyor; sliced, punched, stamped, or otherwise bashed; welded, riveted, bolted as the case might be; or sprayed and backed—finally issuing at the other end as packages of 3,000 component parts, loaded on special trailers and ready to go."¹

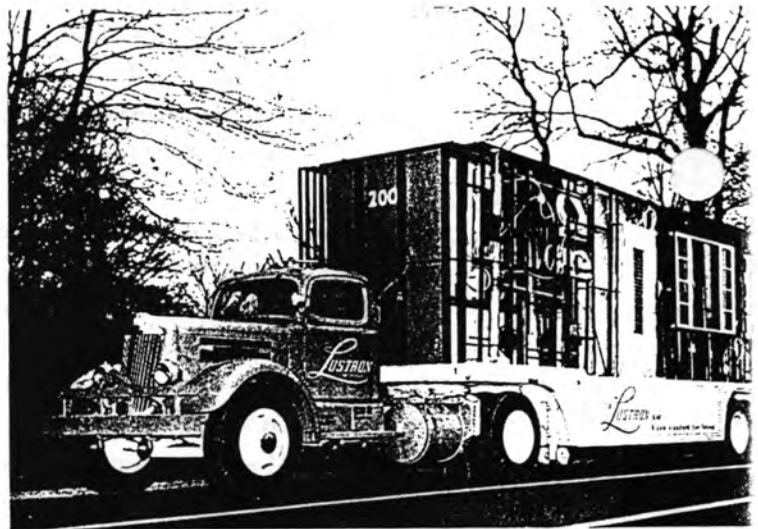
Technologically, the Lustron house was remarkable in a number of respects, most notably its all-steel design. All surfaces, exterior and interior, were covered with porcelainized sheet-metal panels with a matte finish. Exterior panels and those comprising the bathroom and utility room walls were two feet square and had a one-inch-thick layer of fiberglass insulation glued to their inner face. Ceiling panels were four feet square, and all other interior walls consisted of two-by-eight-foot vertical panels. Pinched channel wall studs that supported the panels were spaced on two-foot centers. Rather than spanning the full depth of the wall, the studs were paired in

such a way as to provide a needed thermal break between exterior and interior walls. Diagonal braces between the studs provided racking resistance. Panels were screwed into the studs, and joints were sealed with plastic gaskets at the construction site. A series of specially designed roof trusses eliminated the need for rafters and ceiling joists. The roof consisted of overlapping porcelainized steel shingles. Only the window frames were not steel: these were aluminum and were manufactured off-site.

Another innovation in the Lustron house was its radiant heating system, which consisted of two basic components: a forced-air furnace located in the utility room and a plenum nearly seven inches thick that hung from the roof trusses above the ceiling. The plenum was insulated from above by both rigid insulation board and six inches of poured insulation. Heat radiated through uninsulated ceiling panels to the rooms below. In moderate climates the system worked as planned, spreading heat evenly. In colder climates, however, the system proved less effective, given the minimal wall insulation, the concrete-slab floor, and single-glazed windows.



Lustron components were carefully loaded onto a flatbed truck for delivery to the building site. Assembly took approximately 350 hours. (Ohio Historical Society)



A Lustron home on its way from the factory to the building site. (Ohio Historical Society)

A curious feature of the Lustron house that attracted great attention, at least initially, was the combination dishwasher and clothes washer that was installed next to the sink in every kitchen. In 1947 automatic dishwashers were still considered novelties, and few homes contained one. Unfortunately, the new appliance, which was specially manufactured by the Hurley Company, performed neither of its tasks well.

The completed building components were loaded onto a tractor trailer in reverse order of assembly and driven directly to the construction site, where a concrete slab had already been poured. (In theory, the process eliminated the need for an extensive warehouse; as soon as a house rolled off the assembly line, it was sped to a new owner.) On-site the builder-dealer took over, assembling walls and roof trusses first, then exterior panels and the roof. Interior panels, built-ins, and mechanical equipment came last.

Preliminary estimates called for 150 hours of labor to construct a single house; in reality, the job took a skilled crew closer to 350 hours. Lustron provided training at its Columbus plant in how to erect the houses quickly and efficiently; the goal was to have a core of skilled workers at each dealership. But some of the local workmen lacked experience and were unaccustomed to the precise tolerances of machine-made parts; in such situations, construction inevitably took longer than it should. Even so, assembly time—once the various components were delivered to the site—was still far less than for a conventional wood-frame or masonry house.

Initially Lustron marketed only one basic model: the two-bedroom, five-room house that

had been designed in 1946. Company officials recognized, however, that a three-bedroom model would be more practical for larger families, and Lustron began offering a larger version in late 1949. "Standard" and "Deluxe" versions (Models 021 and 02) were offered of the Westchester, the 31-by-35-foot house. Two smaller models, the Newport and the Meadowbrook (Models 032 and 022), were 23 by 31 feet and 25 by 31 feet, respectively; these were also offered in three-bedroom versions. A later offering by Lustron featured a matching garage and an optional connecting breezeway. Both were designed to use existing Lustron panels, but the garage had a wood (rather than steel) frame; apparently no additional tooling was needed for their fabrication.

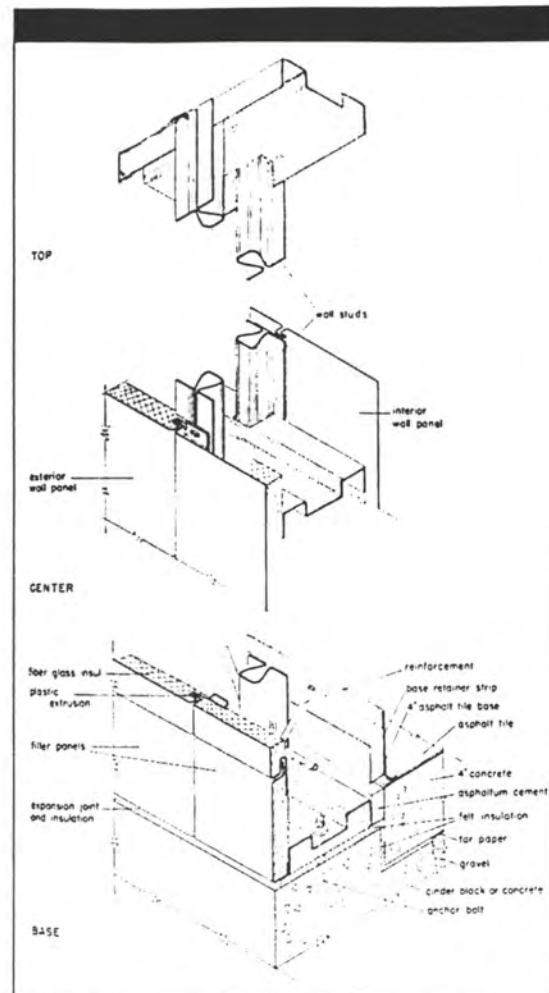


A Lustron house with matching garage. The Lustron garage used building components from other models. (Collection of Harold Denton)

Lustron recognized that one of the reasons the automobile industry was successful was that it offered the public new, improved models practically every year. In an effort to emulate this approach, in 1949 Lustron officials invited Carl Koch and several of his associates to revamp the Lustron. Although impressed with the scale of Lustron's operations, Koch was appalled that so little serious thought had apparently been given to the preassembly of parts at the factory. He and his associates began to question the quantity and the overdesigned quality of some of the house's parts, which complicated and slowed production. Koch described one such part in his book *At Home with Tomorrow*:

The bathtub machine, a giant press, set square in the middle of the works. It was the largest contrivance I had ever seen, reaching about three stories above ground and two below. What it did, as you might suppose, was to take a single, flat piece of metal, make preliminary whirring sounds, and then wallop it decisively into a complete bathtub shape. Its music was impressive.

This press had been procured at enormous expense to turn out individual tubs very cheaply, something like \$15 as opposed to a



Details of the Lustron's all-metal wall. Twelve tons of steel went into every Lustron house. (Architectural Forum)

wholesale lot price of around \$15. But it soon developed that in order to operate efficiently, and amortize its original cost, it would have to turn out 120,000 tubs a year—10,000 of them for Lustron houses, the rest to be sold on the open market. However, the tubs it made to fit the Lustron house were five feet, one and a half inches long. And almost nowhere in the world can you sell a bathtub of that size. Five feet even, yes. Five feet, one and a half inches, no. At that point, as at several others, Lustron experienced a change of production managers.

Other weaknesses in the original Lustron design were also identified. Although steel itself is a structural material with great strength in both tension and compression, the Lustron system of two-foot-square exterior panels wasted its strength. Koch was convinced that the house used far more steel than it needed, needlessly jacking up the price. Some of his first recommendations were to increase the size of the standard exterior panel to two by eight feet—the size of the interior panels—and to roll the panels out and cut them to lengths in a continuous-line process. These modifications alone would reduce the amount of steel needed from 12 to nine tons and save the company precious time and money. Koch also designed a system of vertical creasing, or ribbing, that would increase the strength of the panels as load-bearing members and do away with the steel studs. Because of the ribbing, joints would be concealed and the need for gaskets eliminated.

Other recommendations followed: Reduce the four different window sizes to a single unit interchangeable with the wall panels. Offer a variety of interior floor plans by rearranging the component parts. Undertake more assembly work at the factory (cutting the number of components arriving at the construction site from 3,000 to 37). Make the interior wall col-



Model of Carl Koch's revamped Lustron house, which was never built. Standard panels were increased to two by eight feet, joints were concealed, and window units were simplified. (Carl Koch)

ors as unobtrusive as possible, so that the decorating motif of the house could be readily changed.

The Lustron model that Koch and his team devised for introduction in 1950 was a clear improvement over the original; it reflected a sophisticated understanding of the fabrication process and exploited the positive qualities of steel as a building material. In addition to being handsomer than its predecessor, the Koch design was simpler and more versatile. Unfortunately, Koch's ideas for Lustron never got beyond the drawing board.

With available capital quickly drying up and Lustron losing upwards of \$1 million per month, Strandlund found himself in Washington defending his floundering corporation and pleading for more time and money. This time, however, he faced an unfriendly Congress and an increasingly nervous Reconstruction Finance Corporation. Close scrutiny of Lustron's finances by a congressional subcommittee in 1948 had revealed several disturbing irregularities, among them the fact that Strandlund had never bothered to file a financial statement with the RFC. Also damaging were rumors of Lustron payoffs to key players in Washington, including none other than Sen. Joseph R. McCarthy. Strandlund's initial promise to

Congress of 17,000 houses by January 1949 came back to haunt him as Congress turned down an appropriation that would have helped solve Lustron's dealer-financing problems.

The press, which had been generally enthusiastic about the Lustron venture, began to publish less-than-glowing reports. In its July 4, 1949, issue *Time* magazine published an article entitled "Bathtub Blues" that detailed some of Lustron's production and financial problems and concluded that the company was far from a success. Other magazines and newspapers followed suit, questioning the future of the company with headlines such as "Whither Lustron?" (*Newsweek*, February 27, 1950) and "What's Stalling Lustron?" (*Business Week*, October 29, 1949).

As if these problems were not enough, Lustron's management suffered a series of devastating losses. *Business Week* reported that more than a half-dozen Lustron vice presidents, including Joseph Tucker, Strandlund's right-hand man, had come and gone in a two-year period, and concluded that Lustron was "up to its neck in trouble." In late 1949, the RFC issued an ultimatum to Lustron: reorganize immediately or face foreclosure.

Plans to sell 60,000 shares of Lustron stock held by Strandlund failed as negotiations with interested parties broke down. In February

1950 the RFC ordered its lawyers to file foreclosure action against Lustron. In March a court-appointed receiver unceremoniously ousted Strandlund and other top officials. By summer the huge plant in Columbus, Ohio, lay idle.

In its three years of operation, Lustron produced approximately 2,500 homes, many of which are still standing in towns across the country. The vast majority were two-bedroom models; several hundred three-bedroom models were constructed in late 1949 and early 1950. Sixty Lustrons, representing the company's largest single order, continue to be inhabited at Quantico Naval Base in Virginia. Two Lustrons, included within the boundaries of the Indiana Dunes National Lakeshore, form part of a historic district listed in the National Register. Lustron building components purchased after the company closed its doors were used to build the Top of the Mark, a motel in Canton, Ohio, which, although greatly altered, is still standing. Other Lustrons have reportedly been cannibalized for spare parts to aid in remodeling projects.

While not as maintenance-free or indestructible as promised in the promotional literature, Lustron houses have held up

remarkably well. Owners today praise many of the same features that captivated America in the late 1940s: the compact, open plan; the sturdy steel construction; the numerous built-ins and closets; and surfaces that can be washed down with soap and water.

Perhaps the most eloquent epitaph for the Lustron house was written at the height of the political battle to save the company from bankruptcy; it came in the form of a letter to the editor of *Business Week*, published in the February 25, 1950, issue from a reader in Cuba City, Wisconsin:

The fury of the press and political circles of Washington is focused on the failure of Lustron Corporation to meet its RFC obligations. The general attitude is vindictive: another government venture has failed.

Lustron enabled the home buyer in small towns and villages to obtain a home with construction qualities beyond the scope of a few local builders. No congressmen have contacted Lustron home owners to obtain these sentiments...Lustron has improved the lot of many an American family. I bought one of the first 3 bedroom models in this section of the country...absolute satisfaction is my verdict on every count.