



Many New Deal construction projects were gymnasiums, like this one in the Webster County town of Harcourt (population 300). Whether arches were glued or mechanically fastened, the labor to prepare the planks and bend them into the shape of the rafters was extensive. The Harcourt gymnasium still stands.

Laminated Timber Arches Grace WPA Gymnasium

by Barbara Mitchell

uilt in 1941/42 by the New Deal's Work Projects Administration, the school gymnasium in Harcourt, Iowa, was an example of a new construction method, laminated timber arches.

The graceful curve of laminated and Scandinavia. timber arch construction lends itself Hetzer, of Weimar, received the first patent for a curved laminated beam in well to spanning large open spaces. By 1906. The "Hetzer system" included the late 1800s a few barns began to multiple layers of long wood planks, feature rafters with sawn curves. Bent carefully bent into the proper shape, laminated rafters, bolted or otherwise clamped, and bonded together usmechanically fastened, became popular

in the late 1910s. But bent laminated rafters were not as strong as the sawn curved rafters that preceded them. The solution found for this dilemma was glue.

Glued laminated timber arch construction originated in Germany. Otto ing casein adhesive for strength. The glued lamination allowed roofs to span large open areas without the use of columns or other supports. By World War I, the use of timber arches had spread through Germany, Switzerland,

Max Hanisch, Sr., an employee of Hetzer's firm, brought the construction technique to the United States in 1923. Hanisch teamed up with the Thompson Brothers Boat Manufacturing Company in Peshtigo, Wisconsin,

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to begin building laminated timber arches. The boat builders' familiarity with woodworking made them perfect partners for the business, which incorporated as Unit Structures. The first building to use the arches in North America was a Peshtigo school gymnasium, designed by Hanisch in 1934.

Unsure the glued arches were strong enough, the Wisconsin Industrial Commission required reinforcement with bolts and straps. In late 1934, however, Unit Structures and the USDA-Forest Products Laboratory in Madison began research to prove the strength of the arches held together by glue alone. They also demonstrated that short pieces of wood could be glued together to form long arches.

In Iowa around the same time, Henry Giese worked with the Rock Island Lumber Company on similar tests at the Iowa State College in Ames. His laminated timber arches were used in gymnasiums, barns, churches, recreation halls, and auditoriums across the country.

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