

Panel-Back Stretchers and Backing Boards

By Mary Holland
Paintings Apprentice

In the nineteenth century, technical innovations in artists' materials introduced an increased array of commercially manufactured products to the United States. Pre-prepared canvases and artist's boards, synthetic pigments and paint in tubes, and portable studio supplies to better facilitate plein air painting excursions were all marketed for their ease of use and purported improvement upon more traditional methods and materials. These "new and improved" tools of the trade sometimes had disastrous consequences, such as the irreversible ground staining that blights some nineteenth-century paintings, the result of badly primed commercial canvases.

But progress did not always result in unintended harm. The panel-back stretcher, another invention of the time, is a prime example of careful forethought and consideration regarding the stability and longevity of paintings. Studying the history and application of this auxiliary support can help us better understand and care for paintings in our present-day collections management and conservation practices.

Panel-back stretchers, also known as panel stretchers or blind stretchers, were typically wooden stretchers adapted with the addition of panel inserts between stretcher members. The stretcher was fitted with a rail system allowing thin wooden panels to be fitted inside the stretcher frame, adding a protective layer for the back of the painting. The panels do not come into contact with the canvas, and these composite stretchers were typically produced by cabinetmakers and highly skilled woodworkers. While the exact circumstances of its invention are lost, the panel-back stretcher is probably American in origin, appearing sometime around the turn of the nineteenth century.¹



Figure 1: Jasper Cropsey, *Greenwood Lake, before treatment.*

and Gardner.³ The cost of panel-back stretchers was quite high compared to that of traditional stretchers. In one documented instance, Thomas Cole paid \$15.00 for a panel stretcher when the average cost of a basic stretcher used by Cole was \$1.25.⁴ Despite this increased financial expense, artists continued using panel stretchers for a very prudent reason: they were highly effective in protecting paintings.

During the nineteenth century, an increased understanding of painting methods and materials persuaded artists to apply new technical innovations to their practices so as to preserve their

These unusual stretchers were favored by artists of the Hudson River School, having first gained popularity with Thomas Cole on his oversize landscapes of the 1830s–1840s.² Via mentorship and apprenticeship, the use of paneled stretchers moved from artist to artist in the group, to include Asher B. Durand, Frederic Church, Albert Bierstadt, and Jasper Cropsey [Fig. 1], among others. As their usage increased, various design improvements appeared from manufacturers and purveyors like Parker & Clover, Charles C. Schmitt, and Wright

artworks into the future. Cleaning campaigns of paintings at the National Gallery in London during the 1840s offered insights into how artworks age. Likewise, newly published manuals and books emphasized the importance of proper technique.⁵ An active exchange of ideas between artists, scholars, collectors, and museum and gallery staff encouraged new practices in the guardianship of artworks. Albert Bierstadt, an avid user of the panel-back stretcher, was keenly aware of the various theories and procedures in art conservation in his time. In a letter dated June 27, 1877 to William MacLeod, curator of the Corcoran Gallery, Bierstadt highlighted his key concerns regarding the preservation of paintings:

Figure 2



Figure 3

My Dear Sir,

I have had a talk with Mr. Volmering, who in my opinion is as well informed as any man I know in this country upon the matters connected with the restoration and preservation of pictures.

He says that in Berlin and Vienna the principle [sic] galleries have had the backs of the stretcher frames covered with calico or thin cloth and then covered with shellac and glue. This keeps out all moisture and dust and preserves the canvas. The panel back does the same and I generally have both sides covered with shellac before the canvas is put on. This prevents the wood from absorbing moisture in any way and I think it very rare that even in dry times the canvas remains tight whereas in the ordinary stretcher the canvas is tight or loose according to the weather.

This must be bad. The colors we use are not elastic like rubber, and consequently the picture must crack in time.

I think it would pay you to have Mr. Volmering come down for a day or two and give the picture we talked about an overhauling. He has a preparation of varnish that does not “bloom,” which as you know is a very desirable thing to guard [?] against. He would not charge you any more than a tenfh [sic] above his expenses.

It stands to reason that dirt in any form is bad for a picture, it is sure to rot the canvas in time and I have known of so much dirt collecting upon the back of a canvas as to sustain vegetable [sic] life. You can understand this when a picture hangs against a damp wall. I enclose [?] Mr. Volmering’s address and if I can serve you in any way please command me.

Sincerely Yours,
A. Bierstadt⁶

Bierstadt’s direct reference to panel-back stretchers in this letter and his understanding of their abilities to protect paintings from dirt and dampness were well founded. Assessments of panel stretchers by conservators today have revealed that their benefits are numerous. Panel stretchers act as barriers to environmental pollutants such as dirt, mold spores, smoke, etc., diminishing the deteriorating effects these agents have on textile supports. Panel stretchers also shield the reverse

of paintings from water, and buffer the effects of relative humidity, a result of wood's intrinsic hygroscopicity, the ability to absorb water vapor. This protection from moisture reduces expansion and contraction of the canvas that can cause cracks and cupping of the ground and paint layers. The addition of panels also mitigates stretcher-bar marks by diminishing the phenomenon of two distinct microclimates that affect the canvas verso —one, where the canvas is exposed to the elements, and a second, where the canvas is covered by stretcher bars. The transition point between these two zones is where stretcher-bar marks occur; however, a panel-back stretcher eliminates this. Damage from physical impact on the face or back of a painting can be prevented or lessened by panel stretchers, and vibrations from travel or improper handling can be reduced.⁷ Although preservation theories of the nineteenth century were amiss in other ways, they hit the mark with the creation of the panel-back stretcher.

A landscape by Jasper Cropsey recently brought to the Williamstown Art Conservation Center offered an opportunity to examine an original nineteenth-century panel-back stretcher. The 1869 painting, titled *Greenwood Lake*, is mounted to its original panel-back stretcher and awaits treatment by our conservators. Measuring 45.5 by 64.5 inches, the painting's auxiliary support consists of a seven-member, four-panel stretcher with mitered corners, two horizontal rails, and tenoned vertical braces. The pine panels are inserted into channels in the rails and vertical braces [Fig. 2]. The channel on the bottom rail of the stretcher is detached and the groove wall rests against the canvas. The proper right panel has shifted out of its channel, pushing against the canvas and creating distortions along the proper right edge of the painting. Another panel is slightly bowed, and the stretcher is missing the majority of its necessary keys. Last, but not least, one of the four panels is missing, leaving a section of the canvas verso exposed [Fig 3]. The section of exposed canvas offers a revealing insight into how well panels protected an artwork, a point made obvious after inspection of the damage on that part of the painting corresponding with the missing panel.

Inspection of the face of the painting reveal that the paint layer has a very fine network of drying cracks across much of it, hardly distracting to the eye. The most concentrated area of these drying cracks covers the sky, creating a coral-toned pattern from underlayers that introduces a warmer wash over the setting sun. A closer look at the sun and its halo, however, reveals instances of heavier cracking through the ground and paint layers in addition to the drying cracks [Fig. 4]. These age cracks display cupping and lifting of the paint, which without intervention risks further detachment and eventual losses. It is no coincidence that this area of increased damage to the ground and paint layers corresponds to the missing stretcher panel. The gap in protection has exposed the canvas to fluctuations in temperature and relative humidity that in turn disrupted the stability of the painting.

The current condition of Cropsey's *Greenwood Lake* highlights the complex pros and cons of panel-back stretchers. The limitations are most notable when the stretchers are compromised. Damage to the stretcher's structure has introduced planar distortions in the support, and the missing panel has increased the risk of environmental agents affecting the canvas, ground, and paint layers. Yet the painting also testifies to the panels' potential, when kept properly intact, to protect paintings from intervening agents and minimize the effects of aging. The condition of



Figure 4

nineteenth-century paintings that have maintained their original panel stretchers can be truly impressive. The distinct lack of stretcher bar marks, craquelure, planar distortions, and canvas deterioration can be admired on such well-preserved paintings, especially when compared to other paintings of similar age on conventional stretchers.

Unfortunately, the instances of pristine paintings with intact panel-stretchers are limited. Numerous past restorations of paintings with panel stretcher supports resulted in the replacement of said stretchers. These stretchers were most likely discarded due to their substantial weight and inconvenient handling, especially so on the oversized Hudson River School landscapes. While not without inherent risks, the preventive preservation abilities and historic importance of original panel-back stretchers presents a strong argument for keeping this type of auxiliary support intact.⁸ The treatment proposed for the Cropsey at WACC includes repairing the panel-back stretcher to secure the channels and replace the missing panel, in addition to stabilizing the painting itself.

While panel-back stretchers may not be appropriate for all paintings on textile supports, the contemporary practice of applying backing boards to the verso of stretchers is an effective substitute. A variety of materials have been used as backing boards over the years, such as cardboard, foam core, and mat board, though these materials all have their own set of inherent drawbacks. Currently, the best option available is Coroplast®, a type of rigid, corrugated plastic sheet. Heat resistant and chemically stable, this material provides an excellent shield from physical impact. If applied properly without gaps or “ventilation holes,” this type of backing board prevents contaminants and dirt from accumulating on the canvas verso. While backing boards may be dismissed as undue or optional, the efficacy of panel-back stretchers and their important role in early preventive conservation provide a convincing argument that backing boards are a basic necessity for most paintings. 

1. Katlan, Alexander W., “Panel-Stretchers.” *American Artists’ Materials, Vol. II: A Guide to Stretchers, Panels, Millboards, and Stencil Marks*. Madison, CT: Sound View Press, 1992. 37–40.

2. Katlan, 1992. 37–38.

3. Hartwell, Dare Myers with Ross Merrill. “Panel Stretchers.” 2007. *Paintings Conservation Catalog, Vol. 2: Stretchers and Strainers*. Barbara A. Buckley, compiler. Washington, D.C.: The Paintings Specialty Group of the American Institute for Conservation, 2008. 186–187.

4. Katlan, 1992. 497–500.

5. Mayer, Lance and Gay Myers. “Bierstadt and Other 19th-Century American Painters in Context.” *Journal of the American Institute for Conservation* 38.2 (1999). 62–67.

6. Transcription of original letter as it appears in fig. 267–269 of “A Note on the Materials Used by Albert Bierstadt in his Late Paintings” by Dare Myers Hartwell in Katlan, 1992. 520–522.

7. Prins, Steven. “Panel-Stretcher Design for Conservation.” *Postprints of Papers Presented at the Seventeenth Annual Meeting, Cincinnati, Ohio, May 31–June 4, 1989*. Washington, D.C.: The Paintings Specialty Group of the American Institute for Conservation, 1989. 24–25.

8. Hartwell and Merrill, 2007. 189–191.



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