

# Glimpses of Belgian Framing

**A**FTER ten days wandering around the Netherlands (see TF 116), it was off to Belgium. The only question was whether to go to Bruges or to Ghent. As the town in which I reside in New York state was named after the latter, it seemed only natural to head to Ghent.

**Ghent** Belgians, with plenty of clay, favor brick construction, with their older buildings constructed from stone, and thus their urban timber framing is found primarily in floor-joist systems. (While I'm certain there exist lovely Belgian roof trusses and frames, I could not access them, more's the pity.) Half-timbering is rare in these urban areas. The area around Ghent (Flanders) seems to be linked stylistically to the provinces of North and South Holland and other western Netherlandish provinces, whereas eastern Belgium (part of the original Duchy of Limburg) shows more connection with a Germanic tradition, not unlike the external frames which can be seen in Maastricht. (Limburg is also the easternmost province in Flanders, the Dutch-speaking portion of Belgium, as well as a province in the Netherlands.) I did not make it into the southern French-speaking part, save by car, so I cannot speak to the traditions of the timber framers there.

The interiors of these buildings show a rich tradition of timber framing, which deviates from the Netherlandish tradition. The most obvious deviation is in the disposition of floor joists. In the Netherlands, most floor framing rests on the tie beams of tightly spaced (4 ft. or less on center) crossframes with no interstitial joisting and with the flooring running perpendicular to the bents, called *tussenbalkgebint* construction.

In Belgian framing, major carrying members are spaced much farther apart and have smaller, interstitial joists running perpendicular to the main members, and the flooring runs parallel to the main carrying timbers. The framing I saw in Ghent, timber systems carried by masonry (instead of the Dutch fashion of cladding a timber frame in masonry), relied on projecting masonry corbels to carry the load of the floor into the wall. I had seen this sort of arrangement at both the Oude Kerk and Nieuwe Kerk in Delft, but not often in domestic structures.

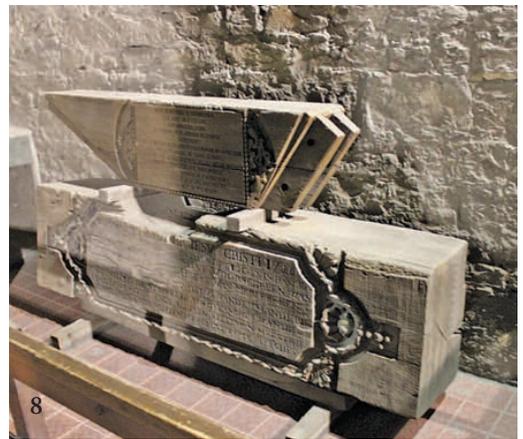
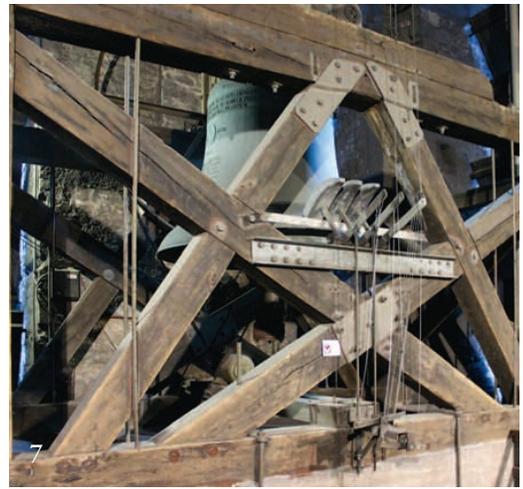
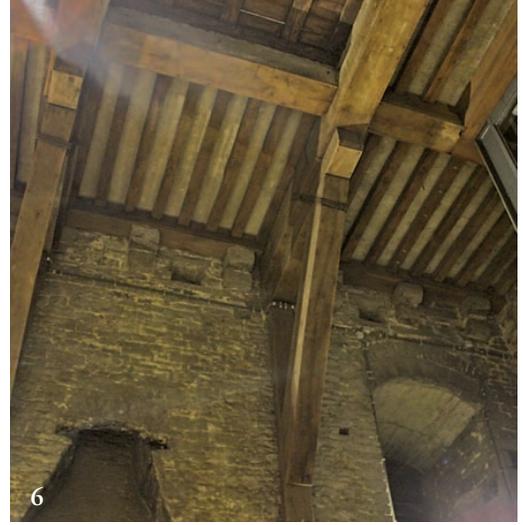
Gravensteen Castle was originally constructed in 1180 of stone on the foundations of an earlier wood-framed castle from the 9th century. The castle fell out of primary service in the 14th century. It was partially restored beginning in 1885, which puts in question the authenticity of the interior framing, especially the more elaborate framing in the Great Hall.

The entrance to Gravensteen (Fig. 1) has a timbered floor above the passage, with two long sill plates and small stub posts that spring from corbels and tenon up into the sills. The sills in turn support large ties that run perpendicular to the masonry walls. The Long Hall (Fig. 2), now used as the entrance to the rest of the keep, has similar framing members, but without posts. The sills appear to have been hewn on three sides, as the interior edges are still rounded. The Great Hall (Fig. 3), now used to exhibit armor, has the most complicated flooring system in the entirety of



Photos Ian Stewart

- 1 Gravensteen Castle, Ghent, Belgium, 1180, entrance passage. Corbels support plate rather than joists directly.
- 2 Gravensteen, looking upward in Long Hall.
- 3 Gravensteen, Great Hall ceiling framing. Three-part strut rises from corbel to support rafter.



Gravensteen. Canted posts rise from masonry corbels to tenon into the tie beams. Bracing extends from the tie beams to the posts, and bolted wood plates cover the connections. Joists run over the ties and small filler blocks between them give the illusion of solid framing. Below the keep is a large chamber, which has evidence of the earlier castle, as well as previous frames (Fig. 4). Below the joisted floor is a row of masonry pockets spaced evenly, apparently to accept joists similar to those in the high ceiling above.

Leaving Gravensteen, we crossed the Leie river to the bell tower of Ghent (locally, Het Belfort van Gent). Standing between Sint-Niklaaskerk and Sint-Baafskathedraal, home of the Ghent Altarpiece, the campanile was constructed 1313–80 and served as a watchtower and municipal archive over the centuries. The long hall attached to the tower has a more ornate form of floor joisting than that found in Gravensteen. The large ties are supported by

elaborate masonry corbels, and long plates or haunches are bolted to their undersides, presumably to stiffen them in shear at the corbels (Fig. 5).

Once within the tower proper, similar framing can be found supporting the various floors, with the addition of long bracing, mortised into posts on the wall that also sit on a masonry corbel (Fig. 6). The carriage for the main alarm bell in the top of the tower is traditionally framed and has been reinforced (Fig. 7). Next to the carriage are several pieces from earlier carriages, one a twin-tenoned and housed brace, which are elaborately carved and inscribed (Fig. 8).

**Antwerp** Safely lodged in the Old Town, we inquired of the concierge as to the best place for *moules frites* (mussels with French fries). He provided the information and we set off, unaware that our



4 Gravensteen Castle, under chamber, ties set directly in masonry. Wall pockets evidence of earlier ceiling.

5 Ghent Bell tower, 1380, Long Hall, now made into gift shop. Ties are haunched with bolted, molded plates.

6 Bell tower, long braces supporting floor timbers.

7 Bell tower, bell carriage with later reinforcing and triple-hammer rigging.

8 Bell tower, salvaged bell carriage pieces from 1857 renewal of framing. Unusual housed twin tenon.

9 Vermoeide Model restaurant, Antwerp, 16th century, solid-haunched carrying timber.

10 Museum Plantin-Moretus, Antwerp, pressroom.

11 Museum Plantin-Moretus, domestic chamber with woodwork ornately carved and painted.

12 Plantin-Moretus, passage with finished ceiling.

restaurant, Het Vermoeide Model, was also a 16th-century house. Its floor joisting was similar to that seen in Ghent, but here I saw for the first time a haunched timber upon a masonry corbel, unlike others where the haunch had been a bolted plate (Fig. 9). Wandering after dinner took us to a small pub (its name unrecorded), which had examples of this floor system as well, with haunched and molded timbers. A masonry projection leading up to the second floor and the presence of large timbers surrounding the terminus of the masonry suggested a hearth.

The next morning saw us at the 17th-century Museum Plantin-Moretus, a house and workshop complex, which among other printing artifacts houses the oldest extant wooden printing presses. During the 18th and 19th centuries, the successful operation moved out of the city, leaving the original premises much as they had looked in the 17th century. The pressroom has

both haunched and plated joists, both molded. Timber braces run down from the joists to the presses to stabilize them in operation (Fig. 10). Iron straps are fitted to the ends of the ties, reinforcing the wall connections. The timbers are highly finished.

Within the complex is also the house of the Plantin and, later, Moretus families, which shows a high degree of sophistication. Rich tapestries and paintings line the walls, and the corbels and tie beam haunches overhead again show a high finish, including carved acanthus leaves and gilding (Fig. 11). This pattern is repeated in several rooms, with differing infill colors. Even the exterior passages exhibit this level of care and finish (Fig. 12). This museum houses a deep collection of books and prints, as well as Rubens paintings, and is well worth the visit. —IAN STEWART  
*Ian Stewart (ian.stewart.preservation@gmail.com) owns and operates New Netherland Timber Framing and Preservation in Ghent, N.Y.*

# TIMBER FRAMING

JOURNAL OF THE TIMBER FRAMERS GUILD

Number 120, June 2016



*Barn Reconstruction in California*

# TIMBER FRAMING

JOURNAL OF THE TIMBER FRAMERS GUILD  
NUMBER 120 JUNE 2016

## CONTENTS

BOOKS: Wooden Bridges Jan Lewandoski	2
TOPICS: Design for Longevity Thomas Dougherty	8
GLIMPSSES OF BELGIAN FRAMING Ian Stewart	9
CALIFORNIA'S COWELL LIME WORKS BARN Bill Hurley, Paul Oatman, Karl Bareis	12
COVER FOR A BRIDGE IN WYOMING Steve Rundquist	18
QUALIFYING CLIENT INQUIRIES Bruce Lindsay	20
DOGLEG FRAMING Ben Brungraber	22
GUILD CONFERENCE SLIDE SHOW 2015 (II)	25

*On the cover, last-minute peg trimming at 2015 raising of reconstructed Cowell Lime Works barn, on what is now the campus of the University of California at Santa Cruz. On the back cover, raising proceeds bent by bent. Note wedges for dovetailed tenons at tie beam ends. Photos by Jack Hursh.*

Copyright © 2016 Timber Framers Guild  
1106 Harris Avenue, Bellingham, WA 98225  
360-746-6571 855-598-1803  
info@tfguild.org

### Editorial Correspondence

PO Box 275, Newbury, VT 05051  
802-866-5684 journal@tfguild.org

### Editor

Kenneth Rower

### Contributing Editors

*History* Jan Lewandoski, Jack A. Sobon  
*Engineering* Ben Brungraber

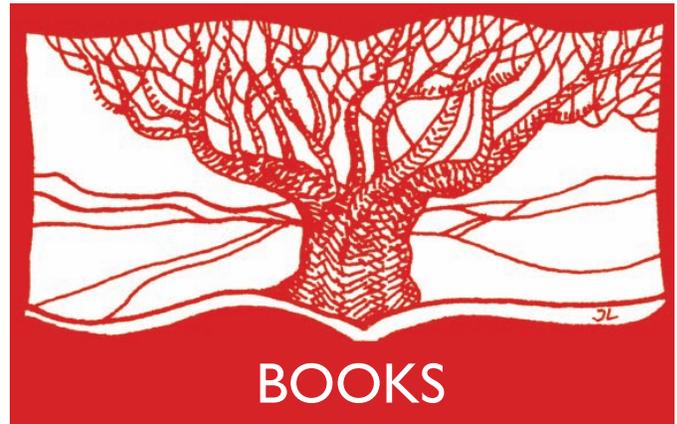
Printed on Anthem Plus, an FSC® certified paper

*TIMBER FRAMING (ISSN 1061-9860) is published quarterly by the Timber Framers Guild, 1106 Harris Avenue, Bellingham, WA 98225. Subscription \$45 annually or by membership in the Guild. Periodicals postage paid at Becket, MA 01223 and additional mailing offices. POSTMASTER: Send address changes to Timber Framers Guild, 1106 Harris Avenue, Bellingham, WA 98225.*

*TIMBER FRAMING, Journal of the Timber Framers Guild, appears in March, June, September and December. The journal is written by its readers and pays for interesting articles by experienced and novice writers alike.*



1 9 8 5



## Wooden Bridges

*John Soane and the Wooden Bridges of Switzerland: Architecture and the Culture of Technology from Palladio to the Grubenmanns*, Angelo Maggi and Nicola Navone, eds. Università della Svizzera italiana, Mendrisio, and Sir John Soane's Museum, London, 2003. 237 pp., copiously illustrated.

THE catalog of an exhibition, this book offers a remarkable set of accompanying essays. John Soane (1753–1837) was an English architect, among the most famous of his time, and professor of architecture at London's Royal Academy, designing public buildings (he spent 45 years on the Bank of England) and churches, the Dulwich Picture Gallery and private houses, but no large wooden bridges. Johannes (1707–1771) and Hans Ulrich (1709–1783) Grubenmann began as village carpenters but gained renown during their lifetimes for their audacious and innovative designs for both wooden bridges and the roof systems and bell towers of churches.

The 84 exhibits are arranged around John Soane's measured drawings and large-format colored illustrations of Grubenmann and other bridges in Switzerland. The exhibits include scale models of the bridges and a great many drawings of extant and extinct bridges, as well as proposals for even grander structures based upon the principles believed to be demonstrated by the Brothers Grubenmann's successful spans. The accompanying essays locate these works in the context of ancient, medieval and particularly 17th- and 18th-century structural engineering and technology. The essayists are mostly architectural historians and historians of science in Italian-speaking academia, but in the volume they are not identified beyond their names.

We all wish we knew more about historic truss design before the 18th century. We do know that while architects and framers in northern Europe struggled with complex roof frames and steep pitches over relatively short spans until the 17th century, builders with almost no trees were framing fully realized, low-pitched kingpost trusses in churches in the Syrian desert as early as the 5th century (Valeriani 14). The opening essay, "From Julius Caesar to the Grubenmann Brothers," begins with Caesar's bridge across the

