

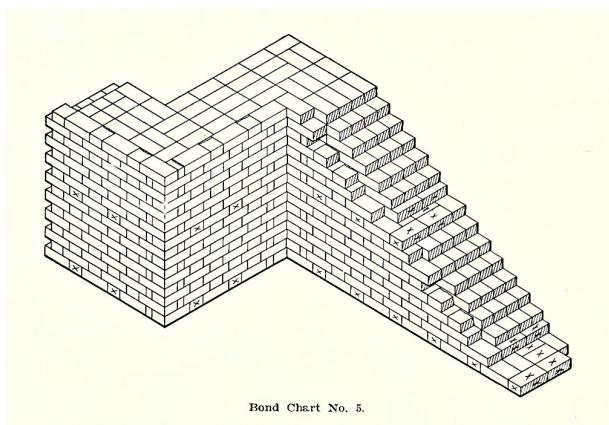
Beauty & the Bricks

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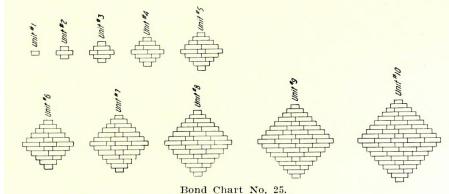
Brick patterns have fascinated me for a long time. There is an inner beauty to the rhythm of a plain brick wall, but with a little color added, it feels like a symphony. Decorative patterns are commonly found on the facade of brick houses built from the Victorian era to the 1930s. They look deceptively simple, yet they present similarities and variations from facade to facade that make them constantly escape a growing scrutiny.

Let's consider the facade of a typical brick wall. Apart from the edges, two shapes are repeated endlessly: a long rectangle called a stretcher, and a small rectangle, about half shorter, called a header. Headers give strength to a wall, but they don't come cheap. Facade bricks are more expensive than the bricks used behind. A header brick covers only half of the surface of a stretcher brick, and thus costs more. The economy of the bricks explains the relative rarity of header bricks, in different degrees depending on the kind of wall.

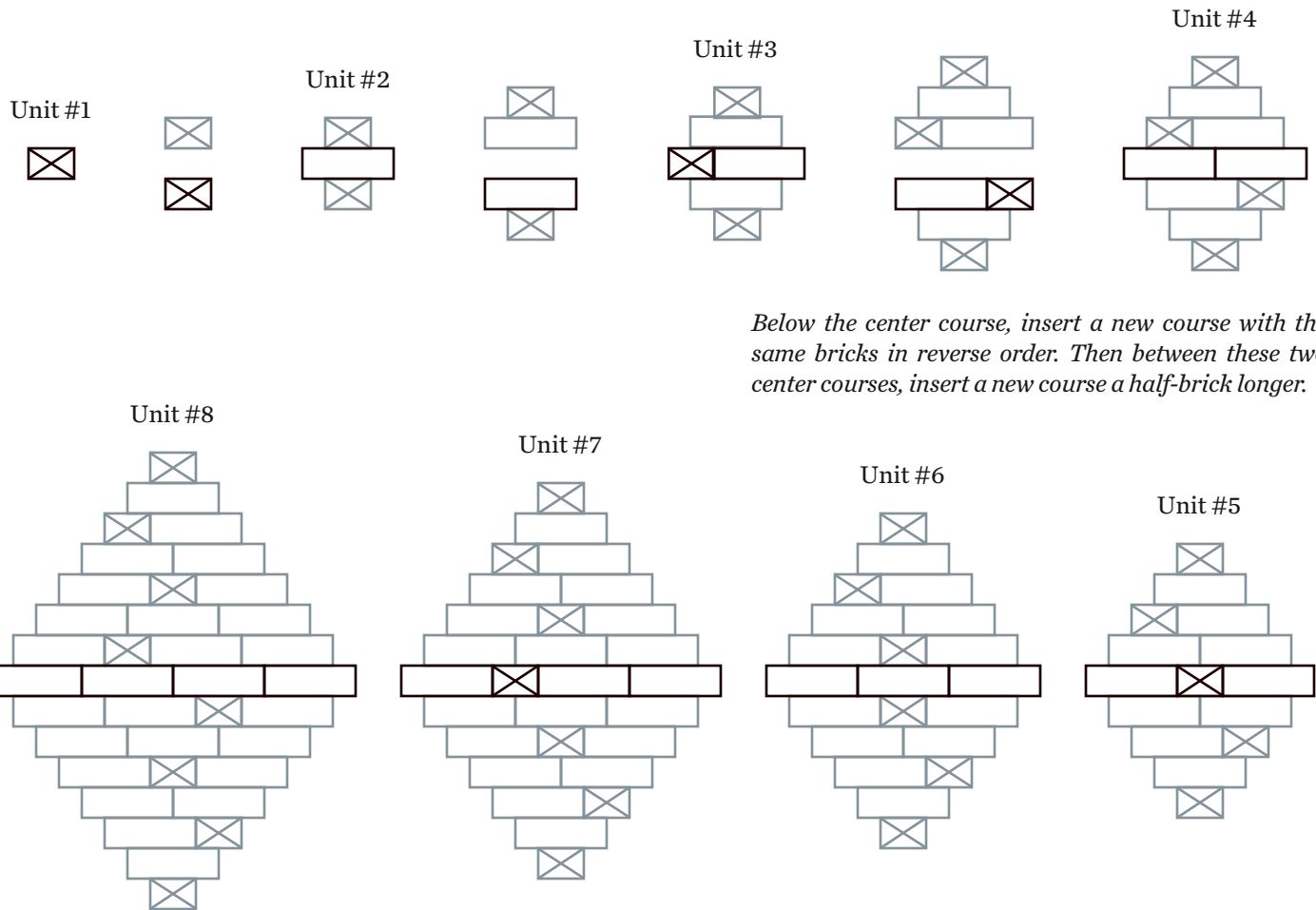


The classic novel "Cheaper by the Dozen" tells the story of a family with twelve kids. The parents, Lillian and Frank B. Gilbreth, were efficiency experts and early pioneers of motion study which they first applied to bricklaying. In their book, "Bricklaying System", published in 1909, they describe best practices and innovative methods to help bricklayers to stay competitive against the growing use of concrete by laying more bricks faster.

The book covers all the aspects of bricklaying, including a rational description of bonds and decorative patterns. It describes a system of 10 base units, which grow sequentially from a single header brick to produce larger and larger patterns. From these 10 units, I have inferred a method which creates the next unit from the previous one, indefinitely. But its description is too large to fit in the margin.



Bond Chart No. 25 shows ten units. Each successive one is a half brick wider and two courses higher than the one that precedes it.



Below the center course, insert a new course with the same bricks in reverse order. Then between these two center courses, insert a new course a half-brick longer.

Unit #6

Unit #5

That is, if the center course used to contain a header, replace it with a stretcher. Otherwise, add a header, right in the center, or just off-center, one step to the left.

Writing a header as 1 and a stretcher as 2, we can represent the sequence of courses starting from the header at the top towards an ever-expanding center course as an infinite list of integers starting with 1, 2, 12, 22, 212, 222, ...

Searching the On-line Encyclopedia of Integer Sequences, I found a related sequence, A094626. After the initial 0, all terms are identical apart from a permutation. In A094626, the digit 1 is located in the leftmost position, which would not look as beautiful.

