

MUNICIPAL ENGINEERS, CONTRACTORS AND MATERIALS

Vault and Arch.

"According to the "Theorie des Construction," by Rondelet, the thrust of a pointed arch compared to that of a semi-circular one is ceteris paribus as three to seven, and, again, the weight of a pointed arch upon its supports as compared with that of a semi-circular arch is as three to four—a result due to the sharp form of its summit and its tapering sides. From these facts it follows that the substitution of the pointed for the semi-circular form rendered it possible to construct churches both lighter and higher than before, without any increase either of expense or of labor, and increased height was the great object of desire. The Orientals, with the exception of the Babylonians, sought to obtain effect by greatness of detail and immense horizontal dimensions; the nations of the west, on the other hand, pinned their faith to grandeur of vertical lines and proportions. Another improvement, not perhaps so striking at first sight, but nevertheless very considerable, contributed to increase the advantage offered by the pointed form of construction. The Romans very frequently employed ribbed vaults; but they did not place the ribs where they were most wanted—along the angles of the diagonal groins so they were compelled to build all their vaults, even minor ones, with heavy materials, the formidable thrust of which demanded walls and piers of great thickness. The introduction of diagonal ribs gave a double advantage—first, it permitted the employment of very light materials; and, secondly, it enabled all the weight to be so arranged as to fall upon four predetermined points.

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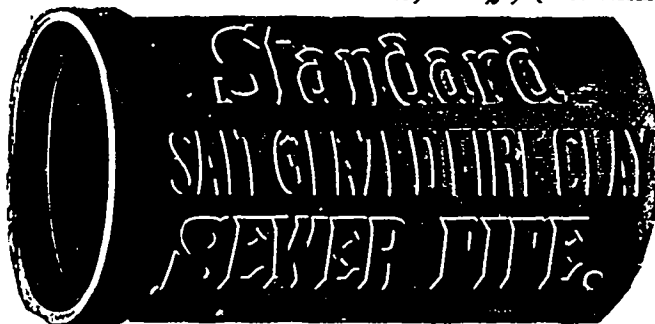


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