between these piers, and upon this a narrow arch or rib of brick is carried over and keyed, using cement, with the oc­casional insertion of ties. The adhesion of the cement to the brick being greater than the cohesion of the brick itself, enables the rib to be carried to any extent of which the strength of the material will admit. When once a sufficient number of such ribs have been successively constructed, side by side, like so many beams stretched between the piers, they will be in a state to receive and support all the other materials necessary to complete the structure.

The bridge of the Santissima Trinita at Florence, though of ruble construction, affords a magnificent example of the strength of cementitious architecture, and of the durability of the materials; the arches being composed of a mass of irregular stones so strongly united by mortar, as to have the consistence of a single stone. It is evidently a matter of perfect indifference whether such arches were square or oblique. A very ancient bridge, said to have been built by the Romans, over the Danube at Ratisbon, has wonder­fully resisted the ravages of time. It consists of gray freestone and thin bricks, firmly united by pozzolano ce­ment.

On several lines of railway, an ingenious mode of con­structing arches of laminated ribs of wood or iron has been introduced by Mr. Green, and is alike applicable to the oblique as to the square arch. At the Ouseburn, close to the east side of the town of Newcastle, is one of the great viaducts constructed in this manner by Mr. Green, on the Shields railway. The piers and abutments are of stone, with large projecting buttresses on each side, whilst the arches, which are circular, are of Memel timber. Each arch is one hundred and sixteen feet in span, and consists of three separate and parallel curved ribs, and each rib, which is four feet in depth by twenty-two inches in thick­ness, is composed of sixteen layers of three-inch planks la­minating over each other, and these again, whilst being bent over a curved frame or centre into the form of the re­quired arch, were firmly fixed together by means of oaken pins and iron straps. The three ribs of each arch are con­nected by diagonal braces, and their ends rest in large iron sockets fixed on the stone piers or abutments. From the upper sides of tl>e ribs a series of very strong struts, braces, and framing, bound with iron straps and bolts, is carried up, filling the spandrils, to support the platform or roadway, which is formed of longitudinal beams ; these again are covered with three-inch planks to carry the rails. Hitherto almost all wooden bridges had been constructed of straight timbers, upon the same principles as are used in roofing ; and on account of the shrinkage from the frequent joggles and the weight of the structure, the roadway and framing generally became bent or crippled. But the ribs constructed by Mr. Green make a very close approach to solid pieces of timber. Their strength is very little impaired by the joining of the planks, which are from twenty to forty-five feet in length by eleven inches in breadth ; particularly since great care has been taken that no two junctions of their ends might occur at the same place. In forming a rib, the first layer of planks consists of two whole deals in breadth, and the next of one whole and two half deals, and so on alter­nately, until the rib is completed. This construction is sup­posed to be better able to resist the load which it may have to bear at a given point, than can be done by the same quantity of materials in a different form. The struts which discharge the weight from the spandril beams upon the ribs, stand at right angles to the latter, and divide them into equal parts. The strength, durability, and beauty, can only be exceeded by arches of stone. The whole of the timber was subjected to Kyan’s process, and between every two deals was introduced a layer of brown paper dipped in tar, to exclude moisture. The bridge across the Ousebum has five wooden arches of one hundred and sixteen feet span, and four of stone of forty-three feet span. Each of the wooden arches required three centres, which were made so light as to admit of being shifted from one arch to another without being taken to pieces. The total length of this bridge is nine hundred and fifty feet, and greatest height one hundred and eight feet. At Willington, four miles farther east, on the same railway, is a still longer bridge of the same construction.

Mr. Green has applied the same principle to the construction of iron bridges with laminated ribs of that metal. Wrought iron bars from 1∙5 to 4 inches square, according to the span of the arch, and from fifteen to twenty-five feet in length, grooved on the under, and tongued on the upper side, are laid one over another, and bent over a centre until the rib is formed. The bars are bound together with iron straps at intervals of from four to six feet apart. A con­siderable saving of expense, and great lightness, as com­pared with stone or ordinary iron bridges, may thus be at­tained.

SKINNER, John, a poet and theologian, was born at Balfour in the parish of Birse and county of Aberdeen, on the third day of October 1721. His father, who bore the same name, was master of the parochial school, and had married Jane the widow of Donald Farquharson, Esq. of Balfour, grandfather to the late Dr. Farquharson of Edin­burgh. The mother, whose maiden name was Gillanders, died about two years after the birth of this their only son ; and Mr. Skinner afterwards removed to the parish of Echt, at the distance of about twelve miles from Aberdeen. Here he continued for fifty years to discharge the duties of a schoolmaster, “to the entire satisfaction of many persons of distinction, whose sons were entrusted to his care and tuition ; and so great was his diligence in the line of his profession, that he fitted out more young men for the uni­versity, than most country schoolmasters of his day.” After having continued a widower for several years, he contract­ed a second marriage, and had a numerous family. His youngest son, Mr. James Skinner, a solicitor of Edinburgh, still survives, and has reached a very advanced age.

For the rudiments of learning, John was indebted to his father’s school, where he made rapid progress in the acqui­sition of the Latin language. At the early age of thir­teen, he was emboldened to present himself at the annual competition in Marischal College ; and there he gained a considerable *bursary,* or exhibition, which served to defray a great proportion of his expenses during the four years of his academical course. After the completion of this period, he was for a few months employed as a teacher in Kemnay school ; from which he transferred his services to the ad­joining parish of Monymusk, as an assistant to the school­master. Lady Grant, admiring some of his poetical effu­sions in the Scotish dialect, “ was pleased to encourage his rustic muse, by affording him in the house of Monymusk every accommodation for prosecuting his studies, and im­proving his mind in the attainment of useful learning. Here it was, that enjoying the conversation, and the bene­fit of reading under the direction of a worthy episcopal clergyman in that neighbourhood, he became a convert to the principles of episcopacy, and united himself to the venerable remains of the old established church of Scot­land.” This *venerable* church was, at that period, chiefly distinguished by a narrow bigotry in politics, as well as re­ligion. In the month of June 1740, he became tutor to the only son of Mr. Sinclair of Scalloway, a gentleman of considerable property in Zetland. Here he only resided for about twelve months, the death of his pupil’s father having occasioned another arrangement. He honoured his memory by an English elegy and a Latin epitaph, both of which were printed by Ruddiman. Here he became intimately acquainted with Mr. Hunter, the only episcopal clergyman in those islands, who not only assisted him in