

reckoning the cost of construction it is one of those small items of cost which are very frequently lost sight of; and other items of cost present themselves as we write, of which are the charges always necessitated by the finding of room, light, warmth, etc., so as to enable the workman to labor, and although taxation is trifling it is something.

Many of these items appear at first to be merely trivial; but collectively they represent no inconsiderable portion of the finished article.

But we have sufficiently argued upon the impossibility of arriving at the exact cost of the home made production. Possibly, the manufacturer, who makes and sells joinery work wholesale, cannot—although he is continually occupying himself with estimating the cost of production—accurately arrive at the cost. That he can gauge it much more accurately than the builder will, of course be admitted.

We have then to inquire what are the probabilities, or rather what are the certainties, which assure us that the wholesale maker can produce a joinery article at a less cost than the builder? No doubt the most powerful help to the production of cheap joinery work is an abundance of machinery immediately applicable to the various required purposes. For instance, there is the steam mortising machine, which, in the hands of a boy trained to its constant working, gets through an immense amount of work; and there is the tenoning machine, the cross-cut circular saw, the trying-up machine, and the heavy planing-machine, most or all of which may be found in the workshops of the larger joiners, but most or the greater part of which are not to be found in the workshops of the smaller or even moderate-sized builders. When the machines are possessed by the large builders, they are rarely kept in full work, and when worked they are usually worked by men. At the large joinery establishments, boys can be trained to the service of particular machines, in the use of which by constant and undivided practice they become remarkably expert.

Large joinery factories are, or at any rate they certainly should be, established at one of the ports.

When this event is secured, two advantages arising therefrom become apparent. The first of these is that the considerable expense of carrying into the country a quantity of waste wood is avoided, inasmuch that one-sixth, or possibly, all things considered, one-fourth, of the cost of carriage of the wood is saved. On this head, however, some portion of the advantage gained is lost to the consumer by reason of the extra rate charged by the railway companies for carrying joinery. At the ports there are always special parcels of stock, say middle quality stuff, which possess peculiar fitness for the making of joinery work, and these parcels the watchful and intelligent manufacturer, being on the spot, secures. As a rule, too, the wholesale maker can take larger quantities of stock than can a builder, and some cost is saved in this respect.

One thing is quite certain, and that is that he can devote his undivided attention to the economical production of the work, and this is what a builder cannot do. He has to relegate the duty to a sort of half-foreman.

Economy in the production of a manufactured article, if secured, is secured by the weight of a number of collective savings, the possibility of securing which rests entirely, in the case of joinery work, with those establishments which are conducted upon an extensive scale, and which are situated at the ports.

The question of the comparative quality of the joinery work made by builders, and that turned out of the large joinery factories need not be discussed, because the factories turn out precisely the quality which is desired by the buyer, and this quality is no doubt in all cases regulated by the price paid for it.

Our argument is that at these large works the joinery articles can be produced at a cheaper rate than they can be manufactured at by the average builder, and our further contention is that, inasmuch as the multifarious duties of a builder's business sufficiently occupy his attention in other branches of his calling, he will do well, for economical as well as for other reasons, to delegate the making of the greater part of his joinery work into the hands of those who, having an abundance of machinery at their disposal, and who, being able to devote their entire energies to its economical production, are in every respect the best fitted and most likely to produce it at the cheapest possible rate.—*The Timber Trades Journal.*

THE LATE MR. G. E. STREET.

The funeral of this distinguished architect, in Westminster Abbey, was attended, with every sign of personal esteem, and of regret for his death, by many of his professional brethren, and by personages of social or official rank. Mr. George Edmund Street, whose Portrait is presented in this number, was born at Woodford, Essex, in 1824, and educated at the Collegiate School, Camberwell. His architectural studies were begun under Mr. Owen Carter at Winchester, and completed under the late Sir Gilbert Scott, with whom he remained five years. Like his master, Mr. Street adopted the Gothic style in the buildings he designed, and the numerous essays and lectures which he has written upon architecture have all been directed to illustrate the history and principles and promote the progress of that style. His principal literary efforts are "The Brick and Marble Architecture of North Italy in the Middle Ages," 1855; and "Some Account of Gothic Architecture in Spain," 1865. Mr. Street has for many years been largely engaged in the work of erecting and restoring churches and other ecclesiastical buildings all over the country. To mention only the most prominent among his architectural works, he was the architect of the Cuddesden Theological College, of the new chapel and school-rooms of Uppingham College, and of new churches at Bournemouth, Garden-street, Westminster; St. Philip and St. James's, Oxford; St. John's, Torquay; All Saints', Clifton; St. Saviour's, Eastbourne; St. Margaret's, Liverpool; and St. Mary Magdalen, Paddington. Among his restorations may be noticed the churches of Eccleshall, Wantage, Uffington, in Berks, and Stone, in Kent, and Jesus College Chapel, Oxford. He was also the architect of the Earl of Crawford and Balcarres' house at Dnnecht. Perhaps his most considerable work in church building was the erection of the nave of Bristol Cathedral in the Early English style. He was engaged upon the restoration of the nave and building of a new choir in Christ Church Cathedral, Dublin, and on building a new synod-house in connection with the Cathedral for the Irish Church. But in London, Mr. Street's reputation will mainly rest upon the Royal Courts of Justice in the Strand, now approaching completion. He was appointed architect for this gigantic undertaking in 1868, after a competition in which the most famous architects of the day, including Sir Gilbert Scott and Mr. E. M. Barry, took part. Although a great deal still requires to be done before the interior of the building is finished, the outer shell is fairly complete, and the public are able to judge of the imposing effect which the New Law Courts will present as they are approached from the Strand. Mr. Street was appointed in 1850 diocesan architect to the diocese of Oxford, and he subsequently filled similar posts in the dioceses of York, Ripon, and Winchester. He was a Fellow of the Institute of Architects, of which he has been a Vice-President, and a Fellow of the Society of Antiquaries, and of other societies. In 1866 he was elected an Associate of the Royal Academy, and was advanced to be a Royal Academician on June 29, 1871. He was also a member of the Imperial and Royal Academy of the Fine Arts at Vienna and a Knight of the Legion of Honour.

Our engraving of the Portrait of Mr. Street is from a photograph by Messrs. Lock and Whitfield of London, England.

THE STRENGTH OF WOODEN COLUMNS.

Some important tests of the strength of wooden columns, such as are in common use in the construction of cotton and woolen mills, have lately been made at the instance of Mr. Atkinson, President of the Boston Manufacturer's Mutual Fire Insurance Company. The tests were made with the testing machine at the Watertown Arsenal. The formulas in use for computing the strength of wooden columns are based on tests applied to columns of pine and oak of the size and length used in actual construction. All but two were round, hollow columns of from eight to eleven inches diameter, the two being about nine inches square. The greatest amount of pressure exerted in any case was about 265,000 pounds. The tests have disclosed frequent instances of defective boring in the columns. The object in boring is to open an air passage through the heart of the stick for the prevention of dry rot after it is in position in the building. It is essential, of course, that the bore should extend from end to end, but this has not always been effected. The sticks were bored first from one end and then from the other, and the borings have sometimes failed to meet in the middle of the stick. The tests also show that to taper the stick is a mistake, inasmuch as it weakens the column more than has heretofore been estimated.

ONE of the features of the Electrical Exhibition at the Crystal Palace was a Christmas-tree, on the branches of which were hung Edison's incandescent lamps.