

7. Although a long time must elapse before our coal fires can be superseded as the general source of heat in our sitting-rooms, I do not doubt that for occasional fires in bed-rooms, libraries, offices, &c. gas will come into immediate use.

D. O. EDWARDS.

THE HISTORY OF TOOLS.

PROFESSOR WILLIS'S lecture at the Society of Arts, Jan. 28 last, has brought to light several errors in my statements inserted in *The Builder*, of 23rd March, 1850, as respecting the block machinery at Portsmouth. Those errors arose from my having confined myself to official documents, instead of having consulted also General Bentham's patents, and from a determination to give the late Sir Isambard Brunel the credit of every part of that machinery which the documents before me did not prove to have been the inventions of others. I now subjoin corrections of my former paper, trusting that you will kindly give them place in some early number of your valuable publication.

First, as to the circular saw. I had given the invention of this useful tool to the Messrs. Taylor. Professor Willis says, "Where, or by whom, the woodcutters' saw was put into the form of a rotating disk has not been recorded." This point may be considered as having been cleared up by Mr. George Smart in the year 1813, but in evidence that is little known of. It was before arbitrators appointed in conformity to an Act of Parliament, 20th April, 1812. Mr. Smart deposed to these arbitrators as follows:—"He conceived he had the first circular saw that was made from a Mr. Mainwaring, from whom he purchased it about thirty-four years ago." (About the year 1779.) Mr. Smart added that he never used the circular saw till he heard of its improvements by General Bentham. Some of these improvements were particularised in the above-mentioned number of *The Builder*.

As to the first operations, those of cutting out the wood from the rough logs, and further preparing it of proper scantlings and lengths for the shells of blocks, it was already stated in my former communication, that they were all performed by machines of Bentham's invention.

Article 2 of my paper stated that Mr. Brunel had probably made some alterations in Bentham's boring-machine to suit it particularly to the boring of block-shells; but Professor Willis pointed out that "the same specification (that of Bentham's patent, 1793) describes boring-machines, some of which are similar in their arrangements to those of the block series." Thus it appears that Brunel did no more than select that engine of Bentham's which was the most suitable for boring block-shells.

Article 3.—to Mortise.—Professor Willis says, in regard to the machine for performing this operation, "Thus the self-acting mortising-machine is distinctly described in Bentham's specification of 1793, so completely as to entitle him to full credit for the invention of mortising-machines, whether by the process of boring a hole first, and then elongating it by a chisel travelling up and down vertically, or by the process of causing the hole to be elongated by the rotation of the boring bit during the travelling of the work."

Article 4.—cutting off Corners.—Has already stated this engine to have been Bentham's.

Article 5.—to Shape.—In the former communication credit was given to Brunel for the invention of the machine which performs this operation, and it was spoken of as being "amongst the most important of his contrivances;" but Professor Willis, in addition to his other observations on Bentham's patent, adds that it specifies "also the tubular gauge which is employed in the shaping-machine."

Articles 2 and 3, under the head of—Shieves, to bore and round, and to prepare for work.—The Professor, in addition to other observations on the tubular gauge of Bentham, says it is employed for "the formation of recesses by a revolving and travelling tool for the embedding of the works." The crown saw is

distinctly specified in Bentham's patent, for the use of the tubular gauge. "It may be necessary that the stem should be an entire tube," and that "instead of a cutter or cutters, the end of the tube itself may be cut into teeth like a saw." Thus it is evident that the machines were of Bentham's invention, by which were performed the second and third operations in making sheaves.

Without entering further into particulars, it may be said that the modes of operating in drilling for rivets and broaching for pins, may also be found in Bentham's specifications. These specifications were given in full in the "Repertory," vols. 5 and 10, and may be worth the study of persons having in view the application of machinery to the working not only of wood, but also metals and materials of all kinds that are neither plastic nor fusible, nor requiring to be further wrought after having been moulded or cast.

Professor Willis assigns to Brunel "the merit of completing and organising a system of machine-tools so connected in series that each in turn should take up the work from a previous one, and carry it on another step towards completion." The Professor could not have been aware that the arrangement of the block-machinery was as to that sequence also Bentham's, for it is only in long-forgotten official documents that this was from the first provided for. When Bentham, in his official letter to the Secretary of the Admiralty, 15th April, 1802, recommended the adoption of Mr. Brunel's proposal for making the shells of blocks by machinery, Bentham advised it as to be "a part of the system of machinery to be worked by the steam-engine already provided in Portsmouth dockyard," and that "Mr. Brunel should be directed to concert with the machinist in my office respecting the best mode of fitting up the different engines and apparatus which may appear requisite for the manufacture of the different sorts and sizes of blocks, so that this apparatus should combine with the other machinery already provided, or which it may seem advisable to erect in that dockyard." Admiralty orders were given in conformity to that recommendation; and it was under Bentham's direction and superintendence that the details of the arrangement of the block-machinery were contrived, either at his office in town or at Portsmouth, and in conformity to his determination as officially stated, "that the block-machinery should be placed to the best advantage in point of appearance as well as use."

M. S. B.

FOREIGN ARCHITECTURAL AND ARTISTICAL INTELLIGENCE.

M. Landry's Ville Modèle, and other recent Architectural Plans at Paris.—This architect is not content with the plans of new palaces, temples, and theatres, or a new system of architecture; he attempts the systematization of whole towns—*villes modèle*. According to M. Landry, the present towns are but the effect of chance—*villes hasards*: first formed by the fortuitous grouping of some huts on a river bank, successively extended and enlarged according to some other equally fortuitous and arbitrary accident or whim of circumstances. Unfortunately, these monitors have never been thought of being improved and systematised, but until they have acquired their perfect growth. What expense and pains are thus required for opening across these masses of construction, soldered to each other, some new passage and line of street, converting our cities for some more or less time into a heap of ruins? To what exorbitant sum (concludes M. Landry) will not the mere *alignement* of the city of Paris come, if it be ever accomplished? And why should man not employ his logic in the formation of new towns, on those many fine spaces where they are now erecting? Why should the same synthesis of thought not be applied to the ulterior development of villages, likely to become townships, and townships which will very likely one become great towns. Mankind, which has so long lived at *hasard*, feels now the necessity of applying reason and system towards the regularisation of its vast

domains, and to economise its forms and power, hitherto so egregiously squandered away. Under this point of view, also, the architectural function of the town-idea is most desirable. "A logically erected town would be by far cheaper than one built on the principle of ancient error." The programme of M. Landry comprises air and sun for all, sights, hygienic regulations, highest value of land, with a minimum distance, &c. Whether this new system should be based on the figure of the triangle or the square, is a question of difficult solution. Besides these studies and plans of M. Landry, M. Constant Dupin, who had won the first architectural prize for Rome, has made the plan of a *hôtel des invalides civiles*, to be constructed on the site of the ancient park of Montrouge. Messrs. Godebœuf and Gallard have treated the same ideas relative to a house of retreat for the invalids and old of the industrial classes. M. Jnmelin has made the plan for a granary, to preserve grain for an indefinite time by appropriating to our climate the system of silos.

The Raphael and Michelangelo Designs of the Town-Museum of Lille.—It was a fortunate occurrence for the above establishment, that the painter, M. Wicar, one of the members of the Art-Commission sent by the Emperor Napoleon to Italy, was a native of Lille. At his demise, he bequeathed to that city, what may be called rather a museum than a collection of original designs, collected by him in that country. This set of drawings contains 1,200 specimens, viz.: 86 Raphaels, 197 Michelangelos, 6 Andrea del Sarto, 9 Bandinellis, 1 Jean Bellini, 8 Annibal Carracci, 2 Correggios, 17 Carlo Dolci, 10 Fra Bartolomeos, 15 Francios, 6 Guercinos, 8 Guido Renis, 5 Ghirlandais, 3 Julio Romanos, 5 Leonardo da Vincis, 13 Masaccios, 1 Palma Vecchio, 5 Parmesanos, 1 Paul Veronesi, 1 Perugino, 6 Poussins, 2 Tintoretcos, 8 Titians, 2 Albert Durers, 3 Lucas de Leydens, 1 Rembrandt &c.—a collection unmatched, as the circumstances under which it was made will not occur again. Amongst the finest of the fine are the first pen and ink sketches of the Madonna della Sedia, by Raphael, as well as the Madonnas della Casa d'Alba, and de la Perla; the sketches for the frescos, the School of Athens, the Parnassus and the Zodiac. We find of the same master the original sketch of the St. Nicola di Tolentino, a picture which was subsequently made by Raphael for the Augustine Church of Civita di Castello. Most interesting is another sketch on a sheet of paper on the rear of which is an autograph letter addressed by Raphael to his friend Domenico Paris Alfani, a painter of Perugia, and in which he requests him to execute it on canvass. Astounding is a collection of 200 leaves from the architectural *cahiers* of Michelangelo; further, a drawing of the cupola of St. Peter's of Rome, a sketch of the Prometheus, and the sketches for his "Last Judgment." Other great curiosities of this collection are a first sketch of the picture, "La Continenza de Scipion," by Julio Romano, showing the figures in their naked position, which were subsequently covered with drapery. Of Leonardo da Vinci are some studies in pen and ink and watercolour, of an extreme fineness and delicacy of touch. The most extraordinary, however, because unique specimen of the collection Wicar at Lille, is the bust of a young woman, modelled in wax and coloured. Its appearance is described as bewitching and surprising, and thence and from the rich sources which M. W. seems to have possessed, it has been generally ascribed to Raphael—as only he has portrayed figures intermediate between earth and heaven, the woman and the angel. It is further conjectured, that as the Romans, in the times of the emperors, were in the habit of exhibiting in the vestibule of their palaces during their festivals wax busts of their ancestors, so Raphael might have thought of imitating this custom in modelling the head of this Roman patrician of his time.

A NEW BRIDGE is to be built at Tallinstown, in the Glyde drainage district, by the Commissioners of Public Works.