

"Near to Zimmerman's allotted space a locomotive of excellent construction is to be seen, and this is the work of Hartmann, also a Saxon, and located at Chemnitz. Opposite to these are portable sawing machines, invaluable to the emigrant in a wooded colony, and these are from Paris, as are some cranes in close proximity to the sawing machines.

"The classification of machinery in this part of the Exhibition is well calculated for the purposes of instruction to mechanical students, and, naturally marine engines stand at the head of the list. For compactness and neat arrangement of parts, the palm must be yielded to Humphry's and Tennant's specimens, by whom engines were supplied to the British, the Brazillian, and other Governments. This firm have evidently studied with success two of the most important points in connection with engines for war steamers and screw propulsion; they have compressed the greatest amount of power into the least possible compass, and contrived so that they shall be placed out of harm's way in the depths of the hold. The pair of 400 H.P. engines by Maudslay, sons, & Field, for H.M.S. Valiant, again, is another proof of the talent of the eminent firm in question. We believe that the Messrs. Maudslay had not the slightest idea, up to within a short time of the opening of the International Exhibition, that these engines were to be placed within it. They were being prepared for the ship for which they were intended, and by no means got up for a show at Kensington. Whatever of merit, therefore, may pertain to the workmanship of the Valiant's engines, is the genuine and legitimate result of Messrs. Maudslay's usual excellence in this branch.

"Todd and MacGregor's direct acting inverted cylinder marine engines have many striking and excellent points about them, as well as some of a peculiar character. Of the last description, is that arrangement by which the two cylinders are made to work vertically over the crank shaft. This firm is remarkable for the general finish and beauty of the work leaving its hands, and the pair of engines now referred to constitute a gem in these respects.

Messrs. George Rennie & Sons, of London and Greenwich, exhibit a pair of marine screw engines for H. M. S. Reindeer. These are of 200 H.P. nominal, and are precisely similar to those of H. M. S. Perseus, a sister vessel. They may be denominated single trunk engines, and for compactness of arrangement rival any in the Exhibition. The projecting trunk, objected to by many, is absent in Rennie's engines, while they have the advantage of a long connecting rod, which one misses in those of Humphrys and Tennant, before referred to. The cylinders are placed close to the condensers, and thus a good vacuum is likely to be ensured. The bottom bearing of the connecting rod, too, is easy of access—a practical point, which those who are acquainted with the working of marine engines will know how to appreciate. The slide valves are double ported, and the pressure of steam at the back is relieved by an arrangement first introduced into marine engines by Messrs. Rennie. These engines are simple in construction, and at the same time possess great strength. They are, therefore, apparently well calculated for the hard work contingent on constant steaming in long

voyages. Similar engines are in actual use, we believe, in H. M. Navy, as well as in those of the Russian, Mexican, Chilian, and Italian governments. The only war steamer as yet possessed by the British colonies—the Australian steamer Victoria—has a pair of similar engines. The same firm are engaged in the construction of a large pair of engines for the Peninsular and Oriental Company. These are on the combined, or high and low pressure principle, and are to have a superheating apparatus and boilers on Lamb's patent plan. It is unfortunate that these engines, which combine the very latest improvements in marine engineering, are not in the Exhibition.

"One of the great objects of this display is to lead us on to suggestions of a practical nature, and which may tend to the public advantage. If the courts and aisles of the palace of industry and art, with their rich and varied contents, are to be regarded only as a show, why then there is little use in their having been prepared at all, and the money and labour lavished in furnishing them had better have been expended in some other way.

"Next in order of disposition in the Western Annexe are to be found machine tools of every kind, and wood-working machinery of very ingenious construction. Perhaps, in the first rank of tool-makers may be placed Whitworth, of Manchester, and in that of machinery for performing operations upon wood for building and other purposes, Worsam, of Chelsea. The ingenuity displayed in the construction of machines for morticing, turning, planing, and dressing wood generally, is, indeed, something marvellous. It is true that Bentham and Brunel were the pioneers in this direction, but it is equally true that they have not found many followers until Mr. Worsam stepped into the field, and, no doubt, he will "marshal others in the way that they should go." The machines for dealing with metals in the Exhibition represent most fairly and completely those employed in the engineering establishments of the United Kingdom, and they undoubtedly display an amazing amount of ingenuity.

"If such men as Smeaton and Rennie, and others of the same school, could only look into a modern engineer's shop, they would, indeed, be astonished at the progress which has been made since their day in the tool department. The hammer, the chisel, and the file constituted the main appliances for carrying on work when they flourished, but now we have changed all that, and machines are made which do all but think and speak, and that, perhaps, is beyond their capabilities. Cotton spinning machinery of the most exquisite delicacy figures largely in the Western Annexe; while, by way of contrast, we have sugar mill work of the most massive description. All alike testify to the skill of the artisans of Britain, and demonstrate that nothing is too minute, nothing too ponderous to be dealt with, and successfully dealt with, by them. Where so many exhibitors have excelled, it seems almost invidious to particularise, and the feeling engendered by a view of the machinery in the Western Annexe is simply one of pride, strongly mingled with admiration. The rapid strides made in mechanical science since this magazine came into being—now some forty years since—is immense. What would a "western annexe" have