

*The Sheffield and Manchester Railway.*—It appears the works in the centre tunnel are going on night and day, the men working "shifts." But when we find it is three miles, or 5,280 yards in length, and there are five shafts to sink of the following depths, some time must elapse before this great work is finished:—Shaft No. 1, 180 yards deep; No. 2, 194 yards; No. 3, 169 yards; No. 4, 193 yards, No. 5, 135 yards.

*The Cromford and High Peak Railway.*—The application of the locomotive engine to the purposes of railway transit on this line, was made about a fortnight since, several of the proprietors accompanying the engine. The intention is to construct, as speedily as possible, two more engines to work the two twelve mile levels between Hopton and Buxton, at a rate of from ten to twelve miles per hour, so as to enable the Company to transport goods and passengers to Whalley Bridge in a few hours, instead of two days, which it now usually takes.—*Sheffield Iris.*

*The Taff Vale Railway.*—The operations for finishing the line are going on with great vigour, particularly at the Merthyr Terminus, where a great number of men, carpenters, masons, and labourers, are at present busily employed. The damage caused by the late sudden rise in the river, has, we are glad to hear, been greatly overstated, as a comparatively small sum will suffice to repair it. A wall is now building on the bank of the river, which will be built so strong as to prevent the recurrence of a like calamity, and the void caused by the earth having been carried away is now being filled up.—*Monmouth Gazette.*

*Great North of England Railway.*—Mr. Storey has resigned the office of Engineer-in-chief, who has been succeeded by Mr. Robert Stephenson.

### ENGINEERING WORKS.

*Crown Point Bridge.*—The Commissioners of the Crown Point Bridge and Roads met at the Court-house, in Leeds, on Monday the 15th ult., for the purpose of letting the works of this bridge, when tenders were received from many highly respectable contractors, and the competition was, we are informed, exceedingly close. The bridge is to be thrown over the river Aire, a little above the Nether Mills Weir, or from Chadwick's dye-houses on the south side (part of which will have to be removed in order to make way for it), to Medley's Oil Mill on the north side; and when the roads to and from its site are completed, it will open out a direct communication from Hunslet-lane and the southern parts of the town to York-street and the northern and eastern district of the town. The design for the iron bridge, prepared by Messrs. George Leather and Son, the engineers, of this town, is one of the most tasteful and elegant we have ever seen, combining in a remarkable degree symmetry and lightness with strength. The bridge will be of one arch, including in its span the whole width of the river and the towing path on its side. The span will be 120 feet, (that of Victoria bridge being only 80 feet), the rise of the arch 12 feet, but the height, from the water of the river to the waterside, of the arch at the crown will be 17 feet, and to the roadway of the bridge about 22 feet. The width within the parapets will be 42 feet; there being a Macadamized carriage way of 10 yards wide, with a footpath or causeway of two yards wide on each side. The arch upon which the road is to be constructed will be entirely of iron; the abutments and wing walls will be of stone. The total weight of iron is estimated at about 420 tons. The masonry was let to Messrs. Bray and Duckett, who have executed works in a very creditable and satisfactory manner on the North Midland Railway, and who are also contractors for the works now in progress for the Leeds Waterworks Company, on Woodhouse Moor. The ironwork was let to Messrs. Booth and Co., of Park Ironworks, Sheffield, who are also a firm of the first respectability. The sum at which the bridge let for was, we understand, £8,750, being somewhat lower than the estimate of the engineers, so that the commissioners have every reason to consider the bridge favourably let, not only as regards the respectability of the contracting parties, but also as regards the terms on which it was taken. The work will be commenced forthwith, and the terms of the contracts are such as to ensure its being carried forward with vigour; and it is confidently anticipated that this bridge may be opened for the use of the public at the close of the present year.—*Leeds Mercury.*

*Portsmouth Harbour.*—A most complete survey of the Portsmouth Harbour, with its various lakes and approaches, has recently been made by Lieuts. Sherringham and Otter, and their assistants, including a minute map of the town. The most extraordinary coincidence exists, we understand, between the present survey, with all the improved methods, and still more improved instruments, and the old survey of Mackenzie, made in 1782, and the still more recent one of the late talented and industrious Mr. Park, who was then Master Attendant here; and, still more extraordinary, the soundings, all over, have varied only in the slightest degree in the period alluded to, 60 years. The bar off the Southsea land-marks remains unaltered from its shape and size as recorded in the oldest minutes; and we find it consists of no shifting matter, but is a firm substance of flint and chalk, almost concreted together with gravel; it could be channelled with much ease, but with some expense.

*The Shannon Improvement.*—Two steam dredging machines have commenced operations on the shoals of the river near Banagher. One of the machines it is stated, removed 38 tons of clay intermixed with gravel in 20 minutes. Besides the dredging operation, works have been contracted for at Killaloe, Meeleck, Banagher, and Athlone.

*An Iron Bridge* has been constructed at Nantes, on the same principle as that adopted by M. Polonceau, on the Pont du Carroussel, drawings of which and a description will be found in the 2nd volume of the Journal. The bridge of Nantes is of one arch, about 66 feet span, and the width of the roadway 40 feet.

### MISCELLANEA.

*Artificial Staining of Marble.*—This art was practised by the ancients, and is described by Zosimus: it is now making considerable advance at Verona. The results are as follows:—A solution of nitrate of silver penetrates the marble, and communicates a deep red colour to it. A solution of nitrate of gold penetrates less deeply, and communicates a beautiful purple violet colour. Verdigrise sinks to the depth of a line into the marble, and gives it a fine green colour. A solution of dragon's blood communicates a beautiful red colour, and gamboge a yellow tint. To apply these two colours, it is necessary to polish the marble with a pumice stone, to dissolve the gum resins in hot alcohol, and put them on with a camel-hair pencil. The tinctures obtained from woods, as Brazil wood, logwood, &c., penetrate deeply into marble. Tincture of cochineal, with the addition of a little alum, gives marble a fine scarlet colour, similar to African marble. Artificial orpiment produces, when dissolved in ammonia, a lively yellow colour. If verdigrise be boiled with white wax, and the mixture be applied to the marble, and then removed when it has cooled, it will be to have penetrated five lines, and to have produced a fine emerald colour. When it is wished to apply the different colours in succession, some precautions are necessary. The tinctures prepared by spirit of wine and by the oil of turpentine are to be applied to the marble while it is hot; but the dragon's blood and gamboge are to be used with the marble when cold. For this purpose, it is necessary to dissolve them in alcohol, and employ the solution of gamboge first. This, which is clear, soon becomes turbid, and affords a yellow precipitate. Those parts of the marble which are covered with the tincture are then to be heated, by passing over them, at the distance of half an inch, a red-hot iron plate, or a charcoal chaulfer; it is then allowed to cool, and the iron is to be again passed over those portions where the colour has not penetrated. When the yellow colour has been imbibed, a solution of dragon's blood is to be applied in the same manner; and, while the marble is hot, the other vegetable colour may be communicated. The last colours to be applied are those in union with the wax. These must be used with great caution, because the slightest excess of heat causes them to penetrate deeper than is necessary, which renders them less adapted for delicate work. During the operation, cold water should be occasionally thrown upon them.—*Athenaeum.*

*Height of Waves.*—The highest wave which struck the French ship *Vénus*, during her voyage, was 7.5 metres (23 feet); the longest wave was met with in the south of New Holland, and was three times the length of the frigate, or 150 metres (492 feet).

*The quantity of Air necessary for the Healthful Respiration of the Horse.*—The Committee of the Academy of Paris, to whom this question was referred by the Minister of War, have reported, that in a building where the air is properly renewed, and that result is effected by a skilful and efficient system of ventilation, a horse can never suffer, so long as he has from 25 to 30 cubic metres of air.

*A new method of nailing deck plank* has been adopted in the upper deck of the Driver steamer, the invention of Mr. Blake, by which the expense of copper or composition nails in the deck may be saved, simply by punching the nails down one inch, and filling the hole with a circular plug dipped in white lead.

*Reflecting Telescope.*—Unfortunately Sir William Herschel never made public the means by which he succeeded in giving such gigantic development to this telescope, and the construction of a large reflector is still a perilous adventure. According, however, to a report by Dr. Robinson to the Irish Academy, Lord Oxmantown has overcome the difficulty, and carried to an extent, which even Herschel himself did not venture to contemplate, the illuminating power of this telescope, along with a sharpness of definition little inferior to that of the achromatic; and it is scarcely possible, he observes, to preserve the necessary sobriety of language in speaking of the moon's appearance with this instrument, which Dr. Robinson believes to be the most powerful ever constructed. However, any question about this optical pre-eminence is likely soon to be decided, for Lord Oxmantown is about to construct a telescope of six feet aperture, and fifty feet focus, mounted in the meridian, but with a range of about half an hour on each side of it.

*Hotel de Trémouille.*—All who take an interest in Parisian antiquities, may be glad to know, that the demolition of the Hôtel de Trémouille, in the Rue des Bourdonnais, is not to include that of the beautiful little tower which forms the conspicuous ornament of its principal court. The proprietors have presented this fine relic of the architecture of the 13th century to the city, and it is about to be transported to the Museum of Historical Monuments.

*Head of the Laocoon.*—The following statement has appeared in the French papers, and is professedly contained in a letter from M. Valmore, an artist at Brussels:—"In the gallery of the Duke d'Areberg there are many things which are not known to any but the initiated. Among them is the original head of the Laocoon. This fine group, when first discovered in Italy, was, as is generally known, 'without the head of the father, and an arm of one of the sons. The head was supplied by a celebrated artist, who copied it from an antique bas relief. Some time afterwards, the original was found by some Venetian connoisseurs, and was ultimately sold to the grandfather of the Prince for about 160,000 francs, and brought to Brussels. When Napoleon, during the Consulate, had the group transported into France, he knew that the real head was in possession of the Duke, and offered him his weight in gold for it. This was refused; and as it was known that Napoleon was not scrupulous in gratifying his desires, the Duke d'Areberg sent this *chef-d'œuvre* to Dresden, where it remained concealed for ten years, but was brought back again into Brussels, when Belgium became tranquil. It expresses, in the highest and most admirable degree, moral grief mingled with physical pain. The compression of the teeth and contraction of the lower lip are almost too horrifying to be long contemplated; and yet in this intense expression of suffering there is not the slightest grimace. The pupils of