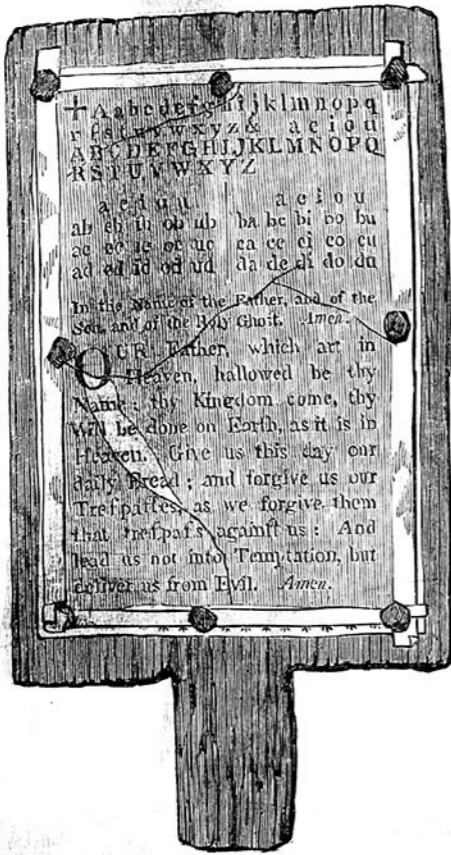


POPULAR EDUCATION.

Books have been called the tools of Education. Dr. Watts defines them as "a sort of dumb teachers: they cannot answer sudden questions, or explain present doubts; this is, properly, the work of a living instructor."



to the reader, viz. a "Hornbook" of the last century, with which, however, we can readily imagine the whining school-boy, with his satchel, And shining morning face, creeping like snail Unwillingly to school.

The specimen before us was lately found among the old stock of a bookseller at Peterborough, in Lincolnshire: it is about double the size here represented in fac simile. The alphabet, &c. are printed upon white paper, which is laid upon a thin piece of oak, and is covered with a sheet of horn, secured in its place by eight tacks, driven through a border or mounting of brass; the object of this horn covering being to keep the "book," or rather leaf, unsoiled.

He hearkens after prophecies and dreams, And from the cross-row plucks the letter G; And says a wretch, and reads:— His issue disinherited should be.—Richard III.

Again, in "Love's Labour Lost," act v., scene 1, Moth, the page to Armado, says, in describing Holofernes, the schoolmaster: "He teaches boys the Hornbook."

In the library of the British Museum is a specimen of the Hornbook, generally resembling that engraved above: the press-mark is 828 a 55; and it is described in the Catalogue as "Hornbook, the Alphabet, Syllabarium, Lord's Prayer, &c., written in black-letters, in imitation of the type and orthography employed in the first half of the 16th century."

In "Notices of Fugitive Tracts and Chap-books," by James Orchard Halliwell, Esq., F.R.S. (printed for the Percy Society, 1849), is engraved a Hornbook, in black letter, of the time of Queen Elizabeth. "Hornbooks are now so completely out of use," says Mr. Halliwell, "that few persons are acquainted with their precise nature. The present one, which appears to be at least as ancient as 1570, is mounted on wood, and protected with transparent horn. There is a large cross, the cross-cross, and then the alphabet, in large and small letters. The vowels follow next, and their combinations with the consonants, and the whole is concluded with the Lord's Prayer, and the Roman numerals. The Arabic numerals are not given. The Hornbook is mentioned by Shakespeare in "Love's Labour Lost," v. 1; and we have here the ba, the a, e, i, o, u, and the horn; everything, in fact, alluded to by Moth. It is also described by Ben Jonson:—

The letters may be read, through the horn, That make the story perfect.

Cotgrave has, "La Croix de par Dieu, the Christ's-crosse-rowe, or horne-booke, wherein a child learns it;" and Florio, ed. 1611, p. 93, "Centuruaola, a childes horne-booke hanging at his girdle."

"Commeth, Billy Chubb, an bring the hornen book. Gee ma the vester in tha windor, you Pal Came!—what I be asleep—I'll wake ye. Now Lillie, there's a good boy! Ston still there, and mind what I da za to ye, an whaur I da point. Now; cris-cross, girt, a little b—e—d. That's right Billy; you'll soon lorn tha criss-cross-lain—you'll soon auvergit Bobby Jiftry—you'll soon be a scholar. A's a pirty clubby bway—Lord love'n!"—Specimens of the West Country Dialect.

"Hornbooks are now," concludes Mr. Halliwell, "of great rarity; and even modern ones are very seldom seen. I have been told, on good authority, that an advertisement, many times repeated, offering a considerable sum for a specimen, failed in producing an answer. A tale, illustrative of Lord Erskine's readiness, relates, that, when asked by a judge if a single sheet could be called a book, he replied, 'The common Hornbook, my Lord.'"

At the meeting of the Archaeological Institute, held at Oxford, last summer, in the Museum at the Taylor Gallery, there were exhibited two genuine Hornbooks, of the reigns of Charles I. and II. These curious relics were from the collection of Sir Thomas Phillips, at Middlehill.

Locke, in his "Treatise on Education," speaks of the "ordinary road of the Hornbook and Primer." We find both mentioned in one of the lists of the old booksellers on London-bridge: "Edward Winter, at the Looking Glass:"—"Testaments, Primers, Psalters, Hornbooks, Grammars. And also all sorts of Garlands, and old Ballads, Three-sheet, and sheet-and-half Histories, and Godly Books." The title of Hornbook has also been otherwise applied than to a school book; thus, we have Dekker's "Gull's Hornbook" (1609), a satiric guide to the fashionable follies of the town, and showing, among other things, "How a gallant should behave himself in Paul's Walk." And we find one W. T. Playtes issuing a prospectus of "The Hornbook for the Remembrance of the Signs of Salvation," in 12 vols. 8vo., with 365,000 marginal references, or 1000 for every day in the year.

Shenstone, who was taught to read at a dame-school, near Halesowen, in Shropshire, in his delightfully quaint poem of the "Schoolmistress," commemorating his venerable preceptress, thus records the use of the Hornbook:—

Lo; now with state she utters her command; Ribsoun the urchins to their tasks repair; Their books of stature small they take in hand, Which with pellucid horns secured are, To save from finger wet the letters fair.

We have somewhere read a story of a mother tempting her son along the cross-row by giving him an apple for each letter he learnt. This brings us to the gingerbread alphabet of our own time, which appears to have been common a century and a half since:—

To Master John the English maid A Hornbook gives of gingerbread; And, that the child may learn the letter, As he can name, he eats the letter.—PRIORITY.

In the original picture, by Schidone, and formerly in the Gallery of the Earl of Ashburnham, we see the Italian Hornbook of the sixteenth and seventeenth centuries, at which period the painter lived. In this fine composition, the girl in the foreground holds a hornbook, which has, beneath the cross-row, the Lord's Prayer in Latin, &c., the whole within a border of pleasing design. The sandalled feet and flowing robe of the girl give the picture a classical character: a chubby boy is looking over her right shoulder; and in the distance, beneath the arcade of a temple, are two other learners,

who, by their studious air, are interesting accessories to the main design. The picture is popularly known as "the Hornbook;" and was beautifully engraved, in 1816, by Robert Cooper, the impressions being in the schedule of Prizes in Tomkins's Picture Lottery.

The Hornbook was not always mounted on a board, as in the illustration: many were printed on the horn only, or pasted to its back, like one used forty years ago by a friend, when a boy, at Bristol. We have indulged in this bibliographic ramble, mainly to show the rudeness of the "dumb teacher" formerly employed at the dame-school and elsewhere. The specimen before us is not of any considerable age, as the fashion of the letters denotes; and, in rural districts, such a Hornbook may not long have passed out of use. It was, in all probability, superseded by the "Battle-door" and "Reading made Easy," with which came the Alphabet illustration; though the Spelling-book is considerably older than either. The Battle-door, by the way, reminds us of a strategy of tuition mentioned by Locke: "by pasting the vowels and consonants on the sides of four dice, he has made this a play for his children, whereby his eldest son in coats has played himself into spelling."

In the majority of these early means of teaching children, the illustrations appear to have been not only wretchedly engraved, but drawn without any regard to character or accurate form of the objects represented. Hence the child became thus early familiar with uncouth figures; and to unlearn this erroneous education of the eye, became the business of after life. But the spread of art has in our days assumed a character as useful as its range is extensive; and well-drawn figures are no longer exclusively to be sought in costly pictures or illustrated books; for this artistic improvement has been extended to the purposes of every-day life. In place of the uninviting Hornbook, we have our school-books filled with well-drawn engravings; and the paper and printing of such works present a bright contrast with the small letters seen through the sheet of horn. Three volumes before us furnish abundant evidence of this advancement in "the tools of Education;" and their plan is being extended to other branches of elementary education than Spelling, Reading, and Elocution, to which the present books are devoted.

The Illustrated London Spelling Book contains no fewer than one hundred and seventy wood-cuts, well executed; and, what is still more important, well chosen as to subject, of a cheerful and practical character, instead of the fantastic, may cabalistic forms which disgraced our earliest educational books. Even the alphabet subjects will be suggestive to the little learner, and such as will induce him to ask questions relating to them: this is the moment for imparting information with effect, for it is never so strongly impressed upon the mind as when given the moment it is asked for. At the same time, the progressive plan of the book is closely watched: the child is not frightened by impossibilities at its tender age; but, both in the spelling and reading, the progress of the scholar is consulted by the gradual increase in the length of the words. The reading lessons are pretty little narratives, mostly original, and of just such incidents of amusement and instruction as are most likely to attract the attention of a child: they are cheerful throughout, although "the good seed" is not forgotten to be thrown in the path of childhood—a priceless feature in its first lessons, in spite of the secular cant and coldness of the day. Among the pictures, subjects of natural history predominate; and there cannot be a reader means of leading children to understand the beauty of earth and all that therein is, than by well-drawn figures of striking objects in the kingdoms of Nature.

The Illustrated London Reading Book is the next stage in the series. It contains some hundred and fifty lessons, mostly selected from standard authors. The subjects are not of the old "Tommy and Harry" class, or of a hackneyed character; but of actual living interest, in many instances describing wonders which are at the moment arising around us. Historiettes are sprinkled throughout the book. Its leading recommendation is the vivacity as well as variety of its contents: they are, to quote a common, and often misused phrase, "highly graphic;" the events and incidents have a certain picturesqueness of character, which must prove highly attractive to all growths; and both teacher and learner may profit in their progress, though in a different ratio. The engravings are of higher pretensions than those of the Spelling-book: some are from pictures by eminent living painters; and not unfrequently they take the reader to remote corners of the earth, as well as familiarise him with the wonders of his own country. Appended is a vocabulary of words used in the volume, and rendered necessary by the somewhat advanced nature of certain of the information conveyed in the descriptive lessons.

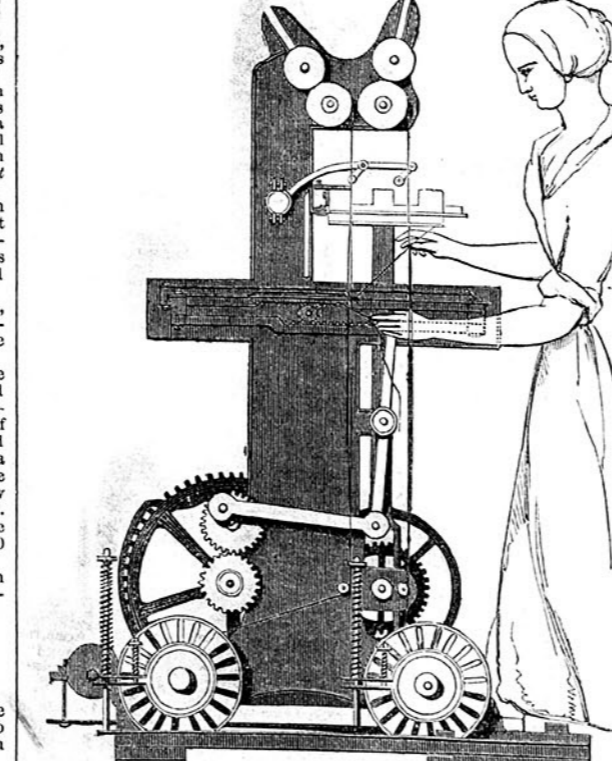
The Illustrated London Instructor, the third volume of the series, has a still higher aim than its predecessors—the teaching of the Art of Elocution, by "selections from the best ancient and modern authors in every branch of English composition, most fitted for the purpose of eliciting and strengthening the powers of reading and speaking." The contents are less discursive than those of the Reading Book; and the Instructor, as its name implies, is more directly educational. The plan commences with an Essay on Elocution and Composition; though the author does not fail to enforce the importance of "the oral example of a competent teacher—without which, all books professing to give instruction in Elocution are comparatively of little value." The selections, about one hundred in number, consist of Moral and Miscellaneous Essays; Historical and Biographical Readings; Ancient Eloquence; Natural History; and Dramatic and Poetic Readings. The masterpieces of English literature, by the elder authors, have supplied the staple of the volume; although there is an almost equal proportion of graceful compositions by living writers. These impart much novelty, whilst they do not impair the soundness of the papers, many of which treat of the higher branches of study. The illustrations are tasteful, various, and appropriate; and are, perhaps, of more artistic design than the Engravings of the "Reading Book."

We now take leave of these attractive books, the characteristics of which we have sought to place before the reader in juxtaposition with the dull and dingy by the change, would be no easy inquiry; but could not fail to prompt universal gratitude for the advantages which we enjoy over our immediate predecessors in everything that aids the growth of the goodly tree, and the gathering of its golden fruit. For, as old Playtes says, in his "Hornbook" prospectus, "the Cow of the Church of Knowledge giveth abundance of Milk for the Babes of Knowledge."

NEW PLAN OF POWER WEAVING.

The shortening of the hours of labour by act of Parliament renders every improvement towards a greater quantity of work being turned off by machinery of more consequence than formerly.

The advantages aimed at by the above Loom are—enabling the weaver to attend with greater facility the weaving of four pieces at once, by two looms having two pieces each, in place of two single-piece looms, as is the usual method; and, by the greater quantity turned out, a reduction in expense of manufacture.



REID'S PATENT VERTICAL POWER-LOOM (INTERIOR SECTION).

The vertical position is the best for viewing two pieces at once, while weaving, and gives a greater facility of taking in the broken threads of warp of the broken piece, as is shown by the Sketch—the weaver is in the act of taking in the broken thread of warp of the back piece.

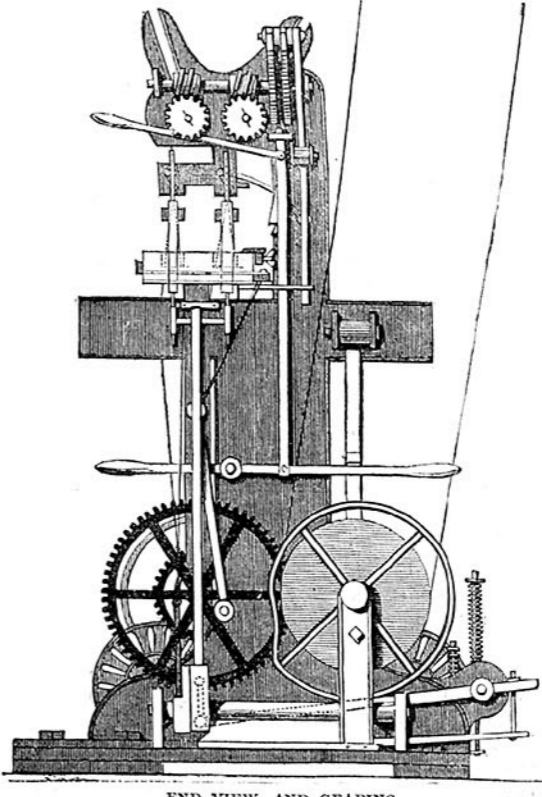
A division of labour might be carried out (if thought advantageous to keep the loom more constantly at work), by placing a young hand to keep up the warp, with a relay of shuttles, the loom being made to stop instantly of itself when the web thread breaks or runs out, and stops only when the shuttle is lodged at the gearing end of the loom; so that a young person, standing at the corner of four looms, could command the web of eight pieces, leaving for the

weaver of each four pieces only the warp yarn to attend to; and, besides, by this employment a constant training up of new weavers would be going on.

This Loom takes no more (perhaps less) house-room than the usual single-piece loom. By the vertical position, a smaller shed, or opening of the warp for the shuttle, can be applied, or a larger shuttle may be used for coarser, stout fabrics, and even enable the use of the throstle bobbin in some kinds of work, as in the worsted for muslin-de-laine, or a smaller shuttle for fine yarns.

The Loom being capable of quick speed, a fly-wheel can be used to greater advantage, owing to the back speed by which the Loom is constructed: say when, at 150 throws of the shuttle per minute, the fly of the Loom is 300 revolutions per minute, it might be more.

The Loom is also adapted for other than plain cloth weaving, as in variety of twills, &c.



END VIEW, AND GEARING.

The weight of the batton, or lay, is nicely balanced by the turn of a nut-screw against a spring, as shewn under, at back of Loom. The batton, or lay, rises and falls, and the shuttle traverses the reed, to suit the vertical position.

THE GREAT EXHIBITION OF 1851.

PROGRESS OF THE BUILDING IN HYDE-PARK.

We have on previous occasions furnished our readers with views and various statistics respecting the Great Industrial Palace, now rapidly progressing under the direction of those persevering and enterprising contractors, Messrs. Fox and Henderson. In the present Number, we shall commence a series of interesting details with regard to the construction of the building; and also with respect to the perfect mechanical arrangements, by which alone the stupendous undertaking could be accomplished within the prescribed time; and, in order to show the modus operandi in laying down the first ground-plan, we may suppose the whole surface of ground to be built upon, divided into perfectly geometrical squares, of eight feet each; and, further, that every principal dimension in the ground-plan is an exact multiple of the figure eight, which may, therefore, in the present instance, be called the magic number; thus, in the total length of the building, there are two hundred and thirty-one imaginary squares, and in the whole width of the building fifty-one imaginary squares, the actual length being 1848, and the actual width 408 feet, respectively. Having a clear view of this main point in designing so large a structure to be executed in so short a time, the details will be rendered more easy of comprehension. The main features of the interior of the building are the central aisle and the transept, the former extending the whole length of the structure, and being 72 feet, or nine squares, wide, and the latter extending the whole width of the structure, and of the same width as the principal aisle. The height of the main aisle to the under side of the gutter is 62 feet 3 inches, and in the transept 66 feet 6 inches, both from the level of the floor. On either side of the main aisle are five additional walks running parallel therewith, and of the respective widths of 24 feet (or three squares), 48 feet (or six squares), 24 feet, 48 feet, and 24 feet. Over two of these walks it is intended to construct galleries, in order to obtain altogether about five acres of additional space on the first floor. The details of these galleries we shall give on a future occasion. It is necessary here to state that the principal materials used in the construction of the building are wrought and cast iron, oak and fir woods, and glass, but no bricks whatever, except in the main drains for carrying the whole of the water from the roofs: thus, the columns, trussed girders, and rain-water pipes, are of cast iron; the iron ties in the gutter trusses, bolts, rivets, screws, and nuts, of wrought iron; the gutters, ridge-pieces, frame ribs for the roof of the transept, sham trussed girders, flooring, and external walls on the ground level, of wood; and the skylights, and external sides of the main aisle, transept, and galleries, chiefly of glass.

In our View of the Transept, looking North (at page 393), are seen the stately trees for whose especial protection the transept was added to Mr. Paxton's original design. This transept will be roofed in by means of twelve massive semicircular ribs of timber, which are prominently shown lying on the ground in the central part of the General View of the Works, looking East (at page 389): there will be a clear space above the trees of about 18 feet 6 inches. Each of these ribs is made up of six sections of wood, three being placed horizontal in section (at springing), and three vertically, the whole depth being 17 inches, and the width 8 inches; the flanch at back, made up of two-inch deals, projecting 1 1/2 inch on either side.

In front of each rib is a moulded piece of wood 1 1/2 inch in thickness, corresponding with the segmental face of the iron columns by which the ribs are to be sustained; an iron plate, 3 1/2 inches by 3/8ths of an inch, both in front and behind the girder, runs throughout its whole length, by means of which, and proper screw-bolts and nuts at intervals of 22 inches, the whole is firmly secured together.

In the View of the Building Works looking East—which was taken from an elevated position on the south side of the building—are seen the different stages of construction; thus, the three tiers of columns and trussed girders of the great aisle and transept are prominently shewn. In the foreground are lying the four largest trussed girders, for connecting the angles of the great aisle and transept, and carrying the roof of the transept: each of these girders is 72 feet long. The ribs of the roof of the transept, already described, are also seen; and also a truck, drawn by two horses, by which the girders are conveyed to their destination. On the right of the picture are seen the carpenters busily engaged in laying the floors.

In the view shewing the glazing of the roof (at page 396), three bays, each eight feet wide, and co-extensive with one 24-feet trussed girder, are clearly shewn. Seven workmen are seen at different parts of a picture; on the left, is a labourer ascending a ladder, with a supply of putty; and on the right, another man is carrying up part of a other men are fitting and putting in the glass. In the three bays shewn, there are three ridge-pieces and four gutters, which latter also answer the purpose of plates, on to which the lower ends of the sash-bars are notched and nailed after the fashion of common rafters in an ordinary roof, the upper ends of the sash-bars being nailed to the longitudinal ridge-pieces. Each piece of crown glass extends from the ridge-piece to the gutter, and is 50 inches long, 10 inches wide, and 1-10th

(Continued on page 396.)



THE BUILDING IN HYDE PARK FOR THE GREAT EXHIBITION OF 1851.—GENERAL VIEW OF THE WORKS.

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Illustrated London News: 'Great Exhibition of 1851 - Progress of the Building in Hyde Park'

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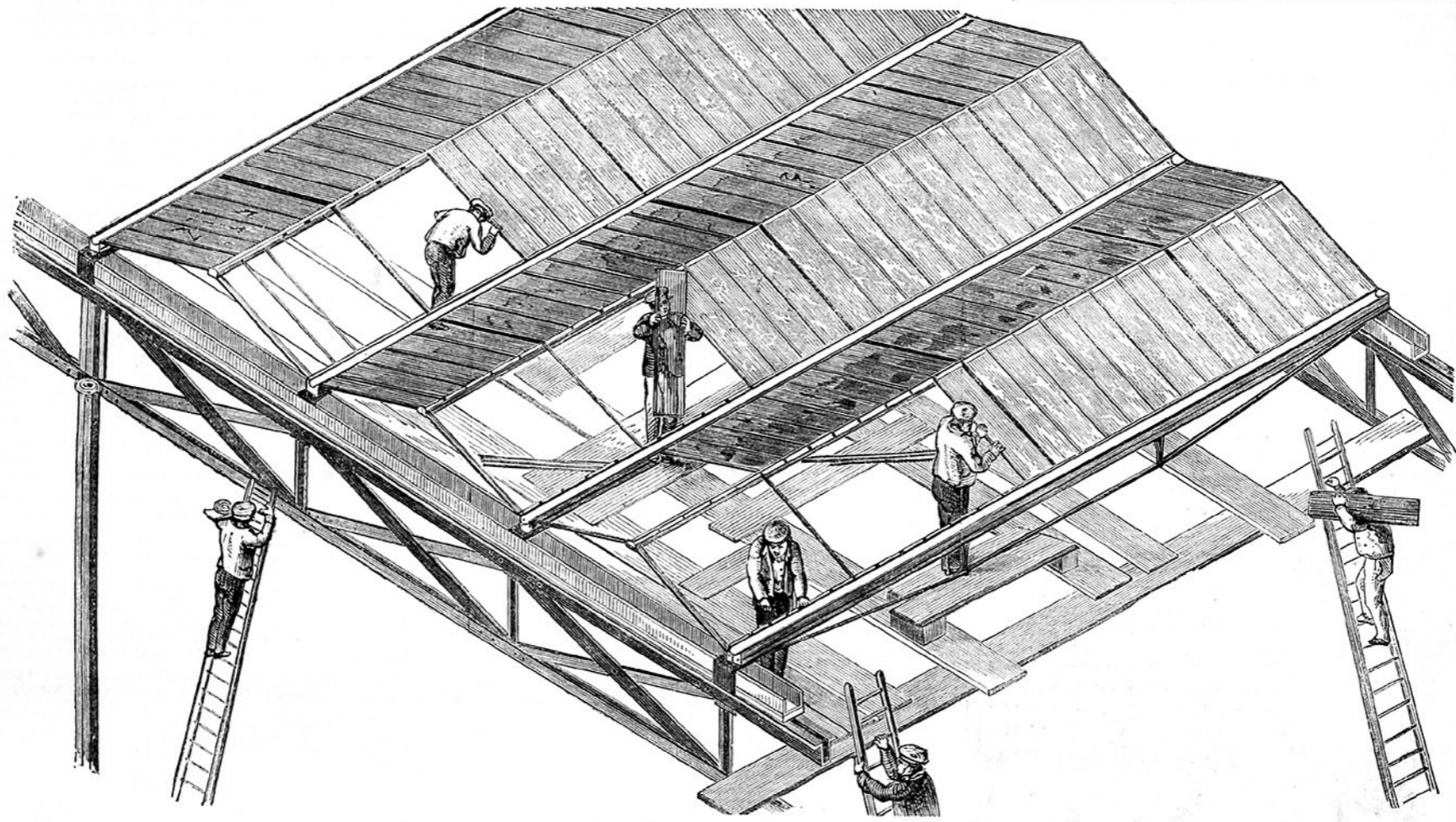


THE BUILDING IN HYDE PARK FOR THE GREAT EXHIBITION OF 1851.—THE TRANSEPT.—(COOKING WORKS)

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Illustrated London News: 'Great Exhibition of 1851 - Progress of the Building in Hyde Park'

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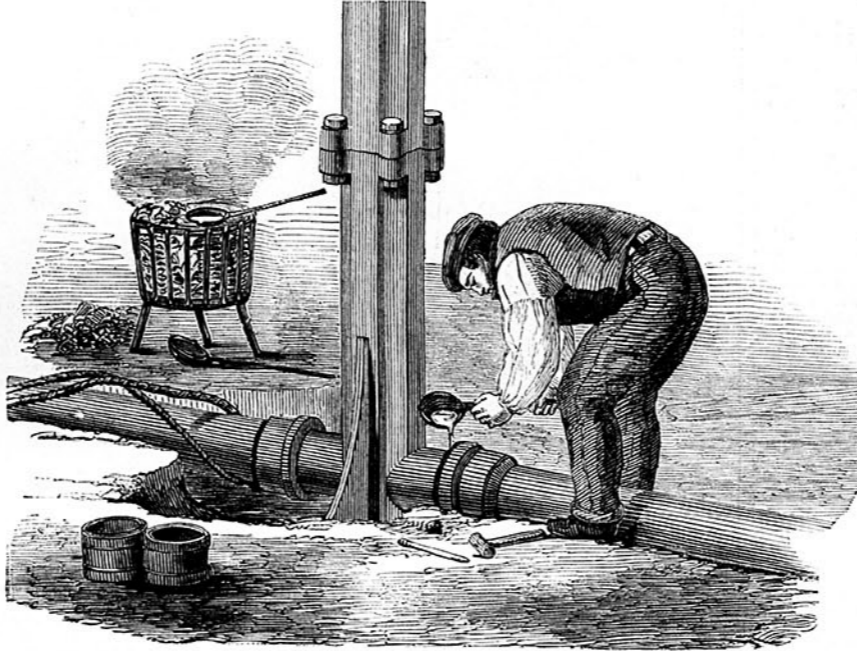
THE BUILDING IN HYDE PARK, FOR THE GREAT EXHIBITION OF 1851.—GLAZING THE ROOF.

THE GREAT EXHIBITION OF 1851.  
PROGRESS OF THE BUILDING IN HYDE PARK.

(Continued from page 391.)

inch in thickness. The longitudinal gutter-plates, or troughs, are formed out of solid fir scantling, the hollow being effected by machinery away from the works; but the ends are cut off, and the hollows to receive the rain-water heads are formed by machinery on the works, which will be given on a future occasion, as also the ingenious movable platform, for facilitating the operation of glazing the sashes. The water from the longitudinal troughs runs into the transverse gutters, which are framed on the premises, and are fixed on the top of the transverse trussed girders.

In the View of the Base of one of the Columns, the construction of drainage is shown. On the left is seen the melting-pot containing the lead for making the joints of the horizontal water-pipes, which are 6 inches internal diameter, and running underground in the direction of the length of the building, towards the brick culvert at the east end thereof. These horizontal pipes will receive the water from the gutters through the cast-iron columns which support the roofs of the building. A man is seen in the act of pouring in the lead to make the joints. The columns are each placed in sockets, which are constructed with bases five-eighths of an inch thick 3 feet 1 inch long, and 18 inches wide, the whole being strengthened with vertical flanges: the internal diameter of the socket is 6 inches, and on its surface is enlarged at its four angles for 1 1/4 inch bolt holes, which correspond with similar perforated pro-

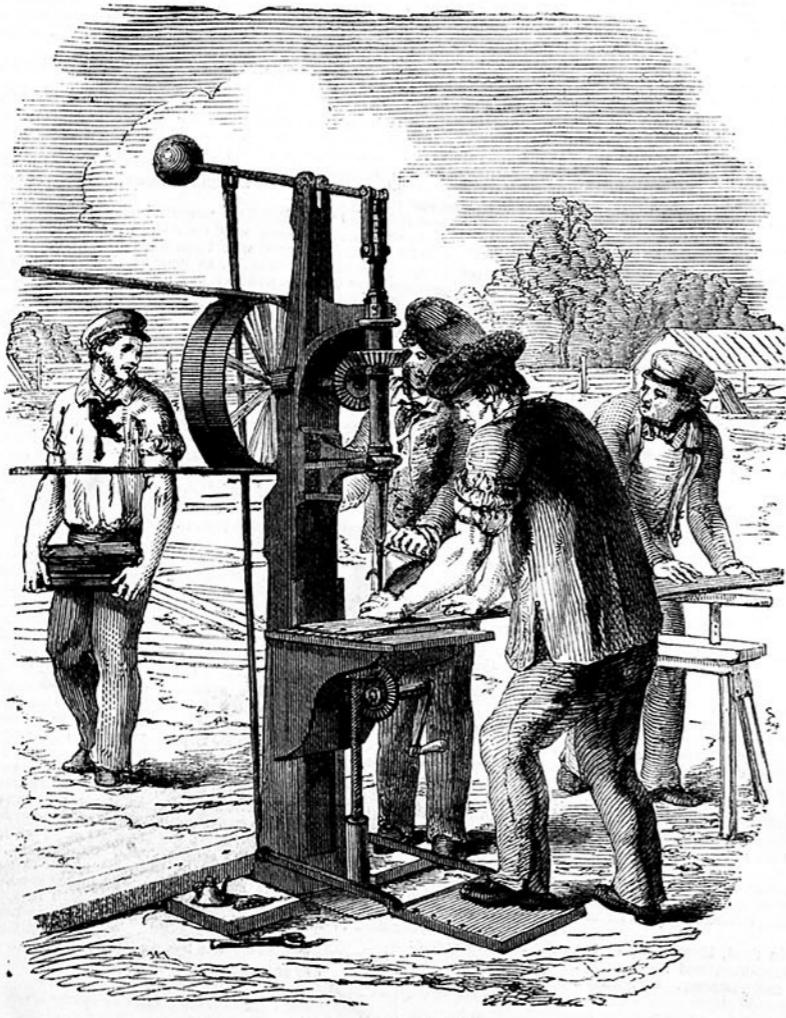


BASE OF COLUMN.

jections at the lower end of each column; so that, by screw bolts and nuts, the two are firmly secured to each other. The height of the sockets varies with the ground, which has a fall, from west to east, of 1 in 280. The base of the socket rests on a bed of concrete, made of gravel and lime—the former material being entirely dug from pits sunk at the west end of the building ground: the thickness of concrete varies with the depth of the bed of gravel, which extends under the whole of the ground; thus a very firm natural foundation is obtained.

One of Nathan Gough's four-horse vertical high-pressure engines is used for giving motion to the drilling and punching machines, which are placed one on either side at convenient distances. We have introduced a view of each of these machines. On the horizontal shaft of the engine, which passes through the top of the boiler, are three pulleys of various diameters, from which two gutta percha and one leather band pass to the two machines already mentioned. The Drilling Machine, which is one of Nasmyth's construction, is shown in the operation of perforating iron bars for the rivets. Two of the men are attending to place the bar under the drill; and a third is pouring oil into the drill-hole, to keep the drill cool.

In the View of the Punching Machine are shown the operations of punching bolt-holes in the bars of iron, and cutting off the ends by the shears. These modes of substituting mechanical for manual labour are to be seen in every large mechanical establishment in the kingdom. It may be mentioned here, that about 3000 holes are punched during the present working day of ten hours.



DRILLING MACHINE.



PUNCHING MACHINE.

London: Printed and Published at the office, 198, Strand, in the Parish of St. Clement Danes, in the County of Middlesex, by WILLIAM LITTLE, 198, Strand, aforesaid.—SATURDAY, NOVEMBER 16, 1850.—SUPPLEMENT.—GRATIS.