

BRICK MAKING.

Perhaps there is no process so easy to describe and yet so hard to execute as the making of brick. The clay is dug, kneaded, moulded, and burned, and each detail appears so simple that it would seem any one ought to be able to transform a little clay into a good brick; but between the pit and kiln stand two characteristics which must be present in order to insure good results—these are experience and skill. No rule can be laid down for the handling of the clay; the routine which in one yard produces first quality would, if transferred without change to another, only cause miserable failure. The method of burning and the degree of heat which in one locality will turn the clay there found into good, hard brick would, in the next yard perhaps, yield only a kiln of spoiled and useless clay. So that it is safe to say that a brickmaker who had only worked one clay in one yard would be compelled to begin anew his apprenticeship if he were thrown in contact with different features.

The quality of a brick can only be ascertained after we know the exact conditions under which it is to be used, for the simple reason that a brick may do well in one place and yet be useless in another. Of course, a first-class hard-burned brick—in this neighborhood, those of a dull, dark red are preferred—will do in any locality; but in some circumstances the work is not harmed, and the cost is reduced, by the judicious use of other kinds. A hard brick which may be saturated

is mixed from one to a little over one bushel of coal dust or screenings. Until recent years, wood alone was used in the burning of brick, which was a slow and, as wood became scarce, an expensive operation. The mixing of fine coal with the clay reduces the time of burning to from three to four days, lessens the cost, and insures a more equal and thorough burning of the entire kiln.

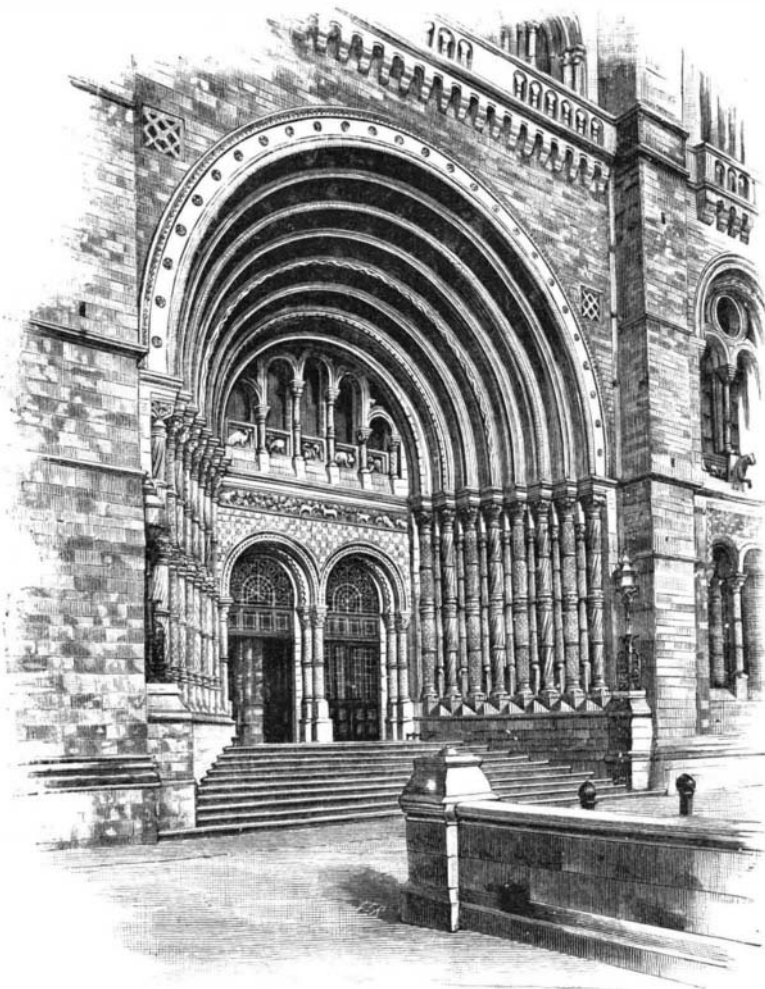
From the tempering pit the clay passes to the grinder, placed just at the edge of the yard. There is a vertically placed box, in which revolves a shaft carrying blades which force the wet clay down and through an opening in the bottom of one of the sides. The mould, which is a frame having spaces the size of the brick, is first sanded and then placed on a platform beneath the opening, when the clay is forced into each space by a descending plunger operated by a short crank on a shaft driven by the main shaft of the grinder. A forward movement of a lever by the moulder draws the filled mould forward, when it is placed on a platform barrow. When full, the barrow is rapidly run to the yard and the moulds emptied, the brick lying flat upon the ground. When partially dried by the sun, they are turned on edge by an edging machine, which resembles the mould in shape, but is not quite so deep. As the bricks leave the mould, their edges are apt to be rough and slightly drawn out or feathered. This is removed by spitting with a light board, of such size as to cover a mould of bricks, attached to the center of one surface of which is a long handle. Where there is plenty of room, the bricks are left in the yard until ready for the kiln. In smaller yards

these cells. The bricks from the center are the most valuable, and are most sought after by builders, although the others, especially the salmon, have their uses, as was explained in the beginning.

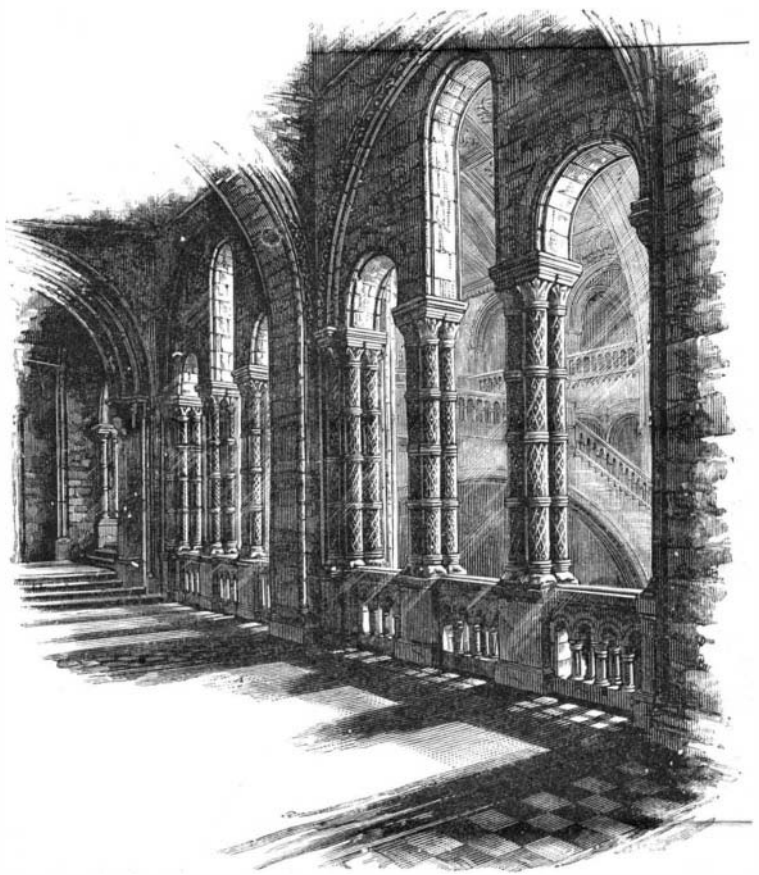
Before the clay can become a brick, it passes, in the most common method of brick making, through the following steps: Digging the clay, shoveling in carts, dumping in the pit, and tempering; shoveling on barrows and wheeling to the grinder; moulding, putting on trucks, carrying to yard and dumping; spitting, turning up, and hacking in the yard; putting on trucks, tossing up in the kiln, setting, tossing out of the kiln, and dumping from the wagon at the place of building. It seems strange that each of a thousand articles can be handled separately so many times and then delivered at a cost of only from six to eight dollars. As one of the oldest and most experienced brick-makers in the country said to the writer: "It is doubtful if any other manufactured article, weighing from four to five pounds, can be handled seventeen different times, moved considerable distances, be subjected to a high temperature for a long time, and be finally delivered, sometimes many miles from the clay bank, at a cost of only a little more than half a penny."

THE SOUTH KENSINGTON MUSEUM.

The great and beautiful building, completed in 1881, for the reception of the overflowing treasures which the British Museum could not conveniently accommodate, has received high commendation for its architectural merits and for its special fitness for the purposes for which it was designed, and is now one of the places which most strangers visiting London make it a point to visit. It contains the



PRINCIPAL ENTRANCE, NATURAL HISTORY MUSEUM, SOUTH KENSINGTON, ENGLAND.



GALLERY AROUND HALLS, SOUTH KENSINGTON MUSEUM.

with water, then frozen, and finally thawed, without showing any signs of being injured may be used almost anywhere. But a softer brick may stand exposure to the weather and yet be disintegrated if exposed to constant moisture underground. Another brick may not be able to endure either moisture or exposure to the weather, and yet may be well suited for inside work, where it will be kept dry. The adaptability of a brick of a certain quality for a certain location can best be determined by the maker, provided he thoroughly understands his business.

A brick yard, as usually laid out, consists of a large and perfectly level piece of ground called the yard, along one side of which are the rough sheds covering the kilns, and along the opposite side of which are the moulding machines, back of and near which are the tempering pits and clay banks.

The clay is first brought to the tempering pit, which is a circular hole sunk three or four feet below the surface of the ground, and from twenty-five to thirty feet in diameter. In the center is a column, pivoted upon the top of which is a long horizontal arm carrying the wheel. This arm is revolved either by horses traveling around the edge of the pit or by steam. The wheel is large enough to rest upon the bottom, and as it rolls around it is gradually moved from the hub to the outside and then back again, so that in its passage the contents of the pit are surely and thoroughly commingled. The clay brought to the pit is mixed with sand, and sometimes with a different clay, this being governed by the quality of the principal clay. In each quantity of clay sufficient to make a thousand bricks

they are put in hack, that is, they are piled up in a long row six or eight bricks high. When there are indications of rain, two boards nailed together along their edges to form a right-angled trough are placed on top, while other boards are rested against the sides of the bricks, which are thus protected from the water.

From here the bricks pass to the kiln, in which they are placed on edge, with the longest dimensions of every alternate row running in the same direction. Between every two bricks there is a small space left for the passage of the heat, which, owing to the alternating arrangement of the rows, is obliged to take a most roundabout road from the arch to the top. The arches extend through the kiln, and in them at each end the wood for the fire is fed. After the bricks have all been set, the outside is covered with a plaster of clay that prevents the escape of heat. The fire in the arches is started gradually and increased in intensity, and continued as long as the experience of the burner dictates. The small particles of coal distributed through the clay assist most materially in producing heat, and render more sure the even burning of the whole kiln.

For convenience, the bricks from a kiln may be placed in three divisions: those subjected to the greatest heat, near the arch, those subjected to the least heat, near the sides and top, and those in between. In the upper bricks—sometimes known as salmon—small particles of unburned coal may be detected; in the middle bricks, only the small cell formed by the coal remains; while the bricks which have been unduly heated are shrunken and glazed sufficiently to close

departments of zoology, geology, mineralogy, and botany of the British Museum, under the style of a Museum of Natural History, and is open to the public free on three days of the week, there being a charge of sixpence on other days.

Some idea of the character of the building may be obtained from the accompanying illustrations, one showing the main entrance and the other a portion of one of the galleries. The principal materials of the building are red brick, buff and gray terra cotta, with greenish gray Cumberland slates and bands of Welsh slate repeating the banding of the terra cotta. The interior, as may be inferred from the portion represented, consists of courts and corridors of graceful proportions, the numerous columns and arches being richly ornamented, a distinctive feature of such ornamentation in panels and arches consisting of representations of many of the varied forms of the organic kingdom. There are many boldly designed animal forms in silhouette along the lines of crests, while in panels under the windows are reptiles and other allied forms in high relief. One of the panels in the entrance hall represents a pair of herons, one of which has just captured a lizard; and a panel on the balustrade has a pair of grouse, with young ones resting in the herbage. The idea of representing, in the decorations, the object for which the structure was erected has been carried out so far as possible in all the details, one enthusiastic critic going so far as to say of the building that "the facade is an open book, whereon are recorded, in a language which all can read and understand, the inexhaustible beauty and