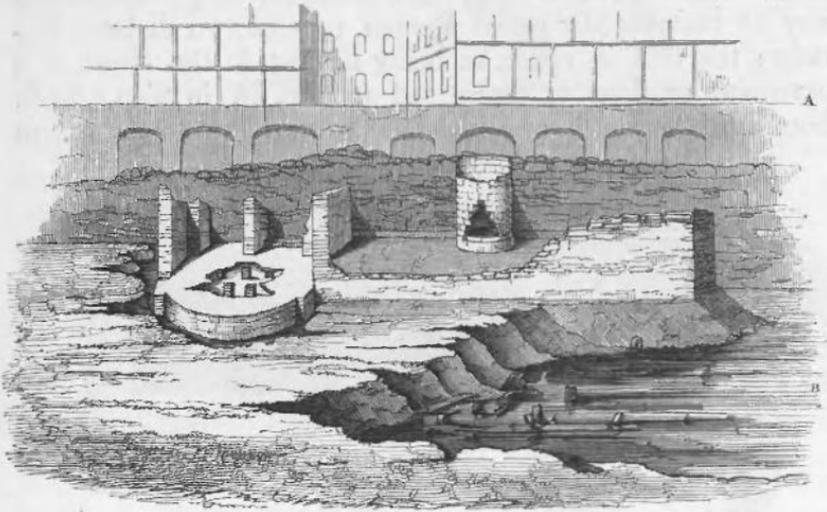


NOTICE OF THE ROMAN REMAINS LATELY DISCOVERED IN LOWER THAMES STREET.

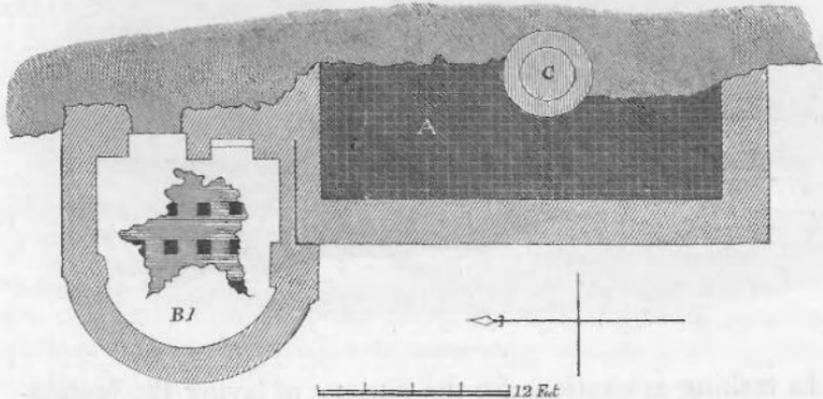


GENERAL VIEW.

IN making excavations for the purpose of laying the foundations of the new Coal Exchange for the city of London, the workmen have met with some remains of Roman constructions of an interesting kind, which I have examined with some care, as far as practicable, but unfortunately, a much larger portion is unexplored from the impossibility of extending the excavations under the adjoining vast piles of warehouses and which belong to a different property. The parts laid bare are evidently portions of a more extensive edifice, which constituted either a private residence of a wealthy Roman, who had his own baths, or, which seems far more probable, formed a small public establishment of baths, equivalent though on a smaller scale to the *thermæ* of ancient Rome, and very similar to such as have been excavated at Pompeii.

The scite of the excavations is on the north side of Lower Thames Street, opposite to the iron gates of entrance to the Custom House quay, at the end next Billingsgate, and behind the position of the old Coal Exchange recently demolished, to the south of Cross-lane, and between St. Mary's Hill on the west, and St. Dunstan's Hill and Idol-lane on the east, midway between old London Bridge and the Tower, thus nearly in the centre of Roman London. The remains exposed to view are situate on the extreme east of the large area now

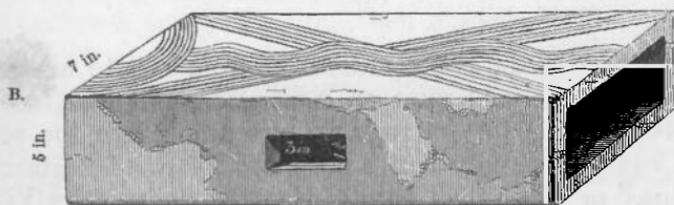
disencumbered of buildings, about 60 ft. back from the line of Thames Street, and nearly 14 ft. below the level of the pavement. Such parts, as from their materials and construction may be undoubtedly called Roman, present two distinct features; the first in order, as being nearest to the street, is a pavement or floor of coarse red mosaic, (A in plan,) 23 ft. from north to south, and laid bare in one part to the extent



of 8 ft. eastward, and in another part to about 5 ft., and inclosed at the north and south as far as opened and along the whole of its western side by a compactly constructed brick wall 3 ft. in thickness, formed entirely of flat bricks, chiefly "tegulæ sesquipedales," and cement or mortar, without any admixture or layers of rubble or bonding courses. When the workmen first opened the ground this wall was 4 ft. 6 in. high, but the greater part of the west side had been broken down to about 1 ft. before I saw it; from the solidity of this wall I am induced to believe that it was an outside wall of the edifice in this direction, and indeed there is no opening through it on the west; the foundations have been laid open down to the piles of black oak on which it is based, and as close adjoining are exposed to view other similar piles with cross timbers, planks, &c., having apparently formed a wharf or quay, and from various indications in the soil, there can be little doubt that the building stood on the then strand or bank of the Thames, the thick wall being precautionary against the tide and river.

Be this as it may, the coarseness of the mosaic pavement, which is of that kind called by Vitruvius "ruderatio,"

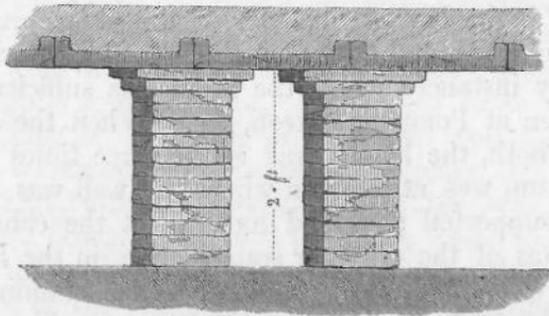
and the evident traces of its being much worn down by exposure to the atmosphere and constant trampling, seem to prove it to have been the floor of the open atrium or court of the establishment whether public or private, and its applicability, from its position, to that use will be presently pointed out. The tesserae are nearly all red, (a very few being of the light coloured brick indiscriminately placed without any attempt at pattern,) each is about $1\frac{3}{8}$ in. by 1 in. square, formed by chipping, not moulded, and about 2 in. long, set compactly in a bed of concrete; the whole pavement has sunk much towards the centre from the giving way of the substratum; the marks of constant attrition are evident in all parts, as far as it is exposed; extensive pavements of exactly similar construction have at various times been found at Colchester, one of considerable extent was open in 1845, 6. It is to be observed there is no communication from the inclosure above described to that portion next to be mentioned, which is the feature of the greatest interest of the two, and what I believe to be the end walls and lower portion of the construction of that kind of bath called by the Romans a "laconicum" or "concamerata sudatio;" it is marked B. I, on the plan. This chamber was warmed by a hypocaustum underneath, thus forming a sudatorium or hot chamber. As the size of it appears to be only 10 ft. 8 in. in its largest diameter, it was most probably the "laconicum" only, and did not include the "calidarium" also, as in many instances where the room was sufficiently large, may be seen at Pompeii, Puteoli, &c. When the apartment contained both, the length was about three times its width, the laconicum was at one end where the wall was hemispherical and supported a domed roof, whilst the calidarium or hot bath was at the other or square end; in the latter case, the water was contained in a large vessel standing on the floor, called a "labrum," with a widely curving lip or edge, on



1 ft. 5½ in.
FLUE TILE, see p. 13

which the bathers could sit or rest; it was sometimes sunk

in the floor. In either case there were seats round by the wall, formed of two steps, the upper one called the "pulvinus," the lower one "gradus inferior," measuring together two feet in height. Presuming these remains to be those of a laconicum only, we find it formed exactly according to the directions of Vitruvius. The parts that remain entire are, the "suspensura," or suspended floor, and the hypocaustum beneath; the concrete floor was entire when first discovered, but being broken through by the workmen exposed the hypocaustum beneath; see plans B. I, and B. II. The upper walls are 2 ft. thick, these remain only at the east with a portion of the return wall at either angle, and when first opened were about 4 ft. 6 in. in height; in one part of the end is a seat in a recess 2 ft. 6 in. long, in another part is the opening through which was the access to the apartment, about 4 ft. wide, and recessed back 14 in.; the hypocaustum below is surrounded by walls about 2 ft. thick, except where it joins the wall of the atrium, and there only one foot, and inclosing an area of 10 ft. 8 in. by 9 ft. or thereabouts, and 2 ft. high; the floor formed by a bed of concrete and flat tiles laid irregularly on it; on this floor rest a number of dwarf pillars, "pilæ," ranging in rows east and west and north and south,

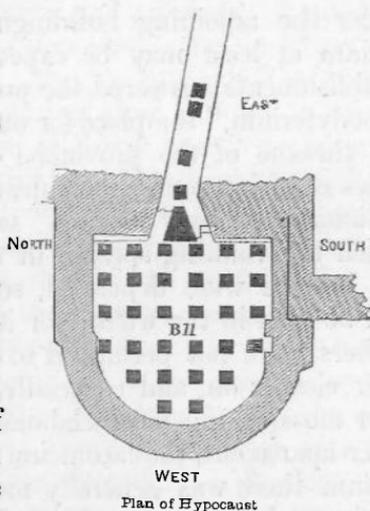


PILÆ.

there being six in the two middle rows from east to west, and five in each of the next rows on either side, and four in each of the two others, the longer rows extending into the semi-circular end, all being about 8 in. square, formed "laterculus bessalibus," or with small tiles of 8 in., as directed by Vitruvius, the spaces between them being about 14 in. each way, one of each in the outer rows touching the walls but none of the others, thus leaving free access for the hot air rushing in

from the furnace. Each "pila" is formed of twelve "laterculæ bessales," with loam or fine mortar between them, and two capping tiles, one about 11 in. square and the other about 12 in., all 1½ in. thick, so that by extending the top of the pila in form of a capital, better support is given to the "tegulæ bipedales," or tiles of 2 ft., which thus obtained a good bearing on the pilæ, four tiles met in the centre of each pillar with the flanged edges upwards, (see drawing A,) these being imbedded in the super-incumbent stratum of concrete^a 4 in. thick, formed a solid surface to receive the decorated mosaic floor, and one which in its materials formed a strong conductor of heat. The mosaics here are wanting. The situation and measurement of these parts were ascertained by a workman creeping in amongst them.

The floor on which the pilæ rest has not been bored through, but it is of concrete, with many of the sesquipedales tegulæ or tiles of 1½ ft.; it inclines slightly to the east, on the centre of which side behind two of the pilæ projects a triangular mass of brickwork, 3 ft. on each side, with the eastern point cut off to about 1 ft. in width, thus forming two narrow passages or flues 15 in. in width, and communicating with a wider passage which extends beyond it, the roof supported by pilæ of similar construction to those in the hypocaustum, the passage is about 3 ft. wide and 2 ft. high, the first pilæ is almost close to the blunt end of the triangle, then occurs a space of 14 in., then a second pila followed by



Plan of Hypocaust

^a Piranesi in his *Antiquities of Rome*, published in 1756, names several sorts of concrete, viz.:

"Lastrico composto di minute scaglie, tavolozza, e calce, il quale è coperto da un' altro lastrico piu liscio composto della stessa materia molto piu fina." Also,

"Lastrico grosso palmo 1. 3. sopra posto ai tegoloni."

"Lastrico composto di calce, pozzolana, e scaglie di Selci."

"Lastrico composto di testacei contusi."

"Un tal lastrico è di tre corsi, il primo è composto di scaglie di pietra con calce e pozzolana, il secondo è di testacei, scaglie, calce, e pozzolana, ed il terzo è di testacei finissimi parimente con calce, e con pozzolana crivellata."

another space of 14 in., and then a double pier, much beyond which the workman could not proceed for the wet and slush; the passage turns slightly southward and declines rapidly and no doubt communicates with the actual furnace, which for the sake of the draught would be on a lower level; this slope or inclination agrees also with the instructions of Vitruvius. The doorway at the east end of the laconicum would communicate with the calidarium, or if the room in question had been large enough for both purposes, then with the tepidarium, from which again would be a doorway to the frigidarium. The other portion of the east end with its recess served for the pulvinus, this most probably also extended round the alcove at the west end.

I have thus attempted to give to those who have not had the opportunity of viewing these curious remains a rather minute description, and I add here some suggestions as to what in all probability are the chambers that remain hidden under the adjoining buildings. The tepidarium and frigidarium at least may be expected, either of these in small establishments answered the purpose of the "spoliatorium" or "apodyterium," the place for undressing. In the tepidarium of the thermæ of the provincial city of Pompeii there were a series of niches round the sides of the chamber formed by projections faced by "atlantes" supporting a deep cornice from which the vaulting sprang, in these recesses the garments of the bathers were deposited, some of the bronze hooks may still be seen in the walls; for it is to be remembered that the bathers were not permitted to go into the inner rooms with their clothes on, and especially with sandals or shoes on the finer mosaics, the most elaborate of which was always in the inner apartment, the laconicum and calidarium. To the frigidarium there was generally more than one access from the portico and atrium, but the only access to the interior rooms was through the outer ones, in order to be able to graduate the temperature for those retiring from bathing, and also more easily to keep the inner room at the required heat; in the laconicum this was assisted by the "clypeus," or shield of bronze used for closing the aperture in the domed ceiling, and moved up and down by a bronze chain. Supposing therefore the other rooms mentioned to have extended eastward behind the laconicum in the order named and of proportionate size, it may be calculated that the series would require 40 ft. at least in

extent; and supposing that the outer atrium, where the pavement has been exposed, to have been commensurate with such an establishment, there would be an atrium of from 40 ft. to 50 ft. long from east to west, which would be a very good proportion to the width of 23 ft., which is that now found between the north and south walls, and at the middle or towards the eastern portion would be found the entrance to the frigidarium, the furnace, &c. This arrangement would agree singularly with that of the thermæ near the forum at Pompeii, and would also provide space for the furnace, or true hypocaustum, for a "vestibulum balneorum," a "latrina," a room for the balneator, and also the præfurnium or propnigeum, for the use of the fornacatores who attended to the fires. In the floor or "suspensura" in Thames Street, there is no appearance of any pipes or other process by which the labrum would have been supplied with water, nor are there any traces of the "schola" or platform, the "pluteus" or parapet, or the "alveus" or space between the pluteus and pulvinus; it must be assumed therefore that it was a laconicum only, and that the calidarium was separate from it: the "unctuarium" or "eleothesium," an apartment for anointing after bathing, is also to be seen in all the larger thermæ at Rome, and is represented too in the very curious fresco painting, found on the walls of the baths of Titus, and so repeatedly engraved as to be familiar to most people. As there was no appearance or traces of soot or fire in the hypocaustum, it is fair to presume that the furnace was at the extremity of the passage above described; this would strengthen the argument in favour of there being a separate calidarium, underneath which the furnace would have been placed to heat the water, and from thence the currents of hot air would be forced along the passage into the cells of the hypocaustum before described. It does not appear that either the tepidarium or frigidarium was furnished with a pulvinus.

The situation near the Thames would have afforded great facility for filling the "natatio" if the establishment possessed one. A fine spring of water has made its way from under the foundations of the remains.

Before closing this account, it is requisite to mention a third object of interest laid open to view during these excavations, which although not Roman, is a curious remain of the domestic economy of our Norman forefathers. A large mass of

a ponderous rubble wall crosses the parts above described from north to south, far below the foundations of the modern buildings above, which partially rest on it, and attached to this wall is a curious hollow shaft or cylinder 2 ft. $4\frac{1}{2}$ in. in internal diameter, (C in plan,) thus formed; at the bottom, resting on the red mosaic, is a layer of white concrete about 9 in. thick, on this is a layer of fine reddish concrete, $1\frac{1}{2}$ in. thick, and on this rests a circular curb of elm timber sound and not discoloured, $8\frac{1}{2}$ in. wide and rather more than 2 in. thick; on this again rests a very neatly and compactly formed wall of seven courses of ashlar blocks of chalk, each course diminishing in thickness upwards, in all about 4 ft., and above this the cylinder was continued of brickwork for fifteen courses more, measuring between 4 and 5 ft.; it had been worked from within, as the oozing outwards of the mortar is evident; the heavy irregular wall in which this shaft is partly imbedded is formed of rough blocks of chalk, old Roman tiles and bricks, rubble of all kinds, and set in mortar in which there is much pounded brick, and all based on a layer of concrete 9 in. thick; in one part is a mass of excessively hard mortar of a pinkish cast full of small pieces of brick, similar to what is found at the building called the "sette sale" at Rome and also at Pozzuoli, and which bears a good polish^b. When the shaft was first broken into, it contained at the bottom 2 or 3 ft. of dark black-looking mould and a few pieces of charcoal, the only use which suggests itself seems to be, that it must have been the drain or cess-pit of a privy for the Norman house constructed on the Roman ruins. It is probable too that the more precious mosaics of the laconicum were removed at the same time, as no traces of them were found in the recent operations.

Some other Roman walls, and also a part of another pavement, were discovered near to the north of, but not adjoining the remains above described, but too much ruined to afford any grounds for suggesting their purpose; also many more black oak piles.

Several objects of interest have been met with during the excavations, such as flue tiles like B, (cut p. 27,) the drain tile C; many small tiles about 6 in. square scored with marks, to make the mortar adhere; also some pieces of fine stucco of brilliant

^b This kind of concrete or mortar was used to form the pavement called "opus Signinum," made of tiles beaten to small

fragments. Signia was an Italian town famous for the manufacture of tiles.

Pompeii red, and other pieces of a pinkish colour; a portion of a British amphora, and fragments of black Roman earthenware; a small jug (*D*) of grey glazed ware of the fourteenth century entire and in good preservation; a Dutch glass bottle and a Dutch earthenware bottle with embossed heads projecting



Roman Pottery.



D.

from the sides, with holes through which a cord was passed for facility in carrying; this last is of the time of Car. I.

The flue tiles are of excellent terra cotta, see B, and may possibly have been used for passing the metal pipe through which carried hot water to the baths, a use adopted by the Romans to keep the water warm; on some of the tegulæ bessales were potters' marks, but too much defaced to be legible.



Drain tile. C.

At the ancient city of Ofen or Buda, on the right bank of the Danube, and opposite to the modern commercial city of Pesth, is still in constant use, and excellent preservation, a large Roman calidarium and laconicum: it is circular, with a domed roof: around the walls is the pulvinus and a series of niches, each forming a separate sudatorium—there is the alveus, the pluteus, and the schola, with the sunken balneum in the centre. When I visited it numbers of persons of the lower orders were using the baths, some the water, others the sudatio, and several lying on the hot suspensura, with their faces downwards, as I was told for medicinal purposes. All were naked, the heat and steam was almost insupportable; the approach to this bath was through a cold vestibule and a long narrow tepidarium, or, more properly, warm passage. The edifice is considered to be undoubtedly of Roman construction, and may have been repaired by the Turks in more modern times. Some of the baths at Constantinople are similar.

C. TUCKER.