THE ARCHITECTURAL REVIEW, OCTOBER, 1904, VOLUME XVI. NO. 95.

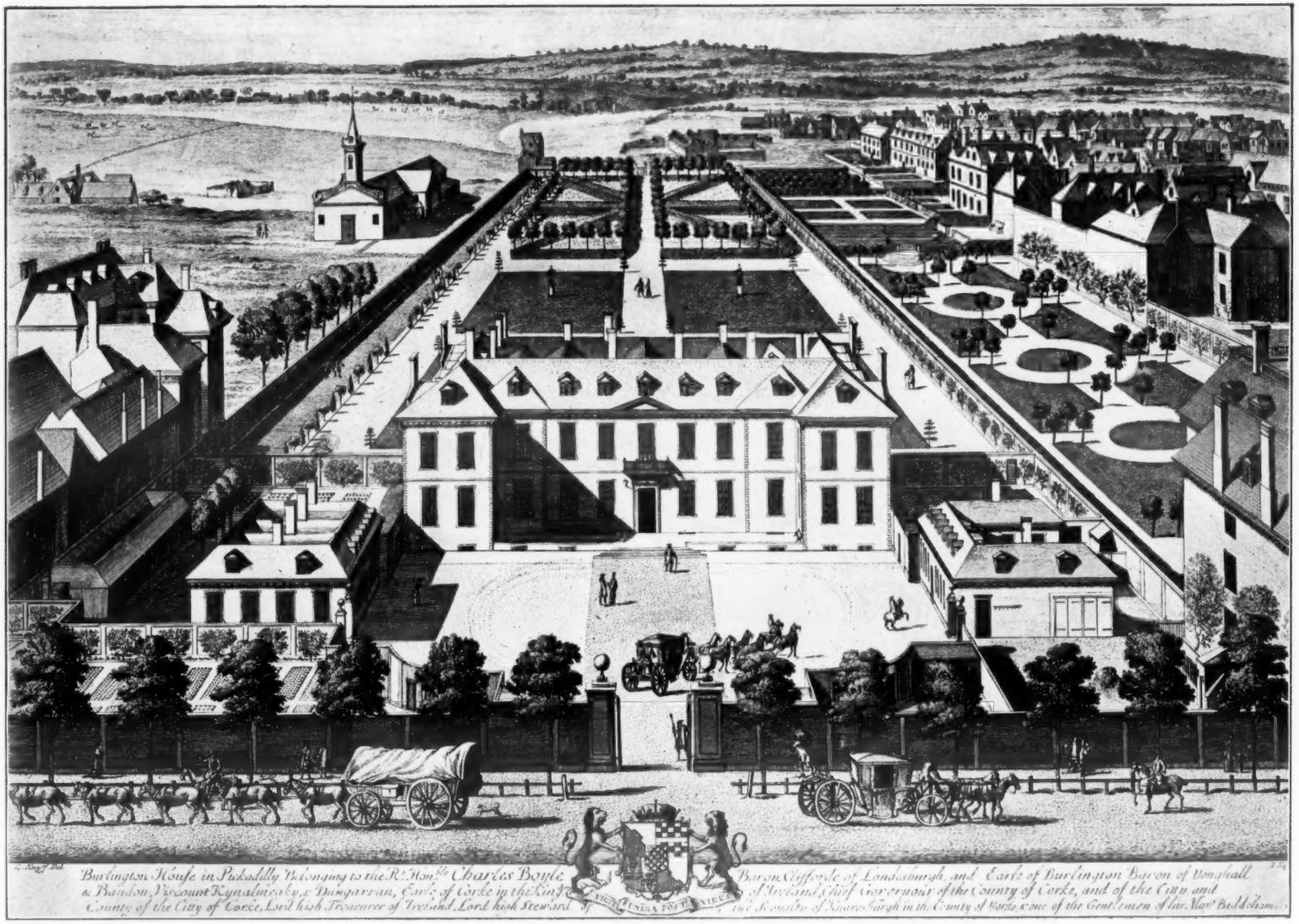


FIG. 1.—BURLINGTON HOUSE, 1708.

Burlington House, Piccadilly.—I.

THE earliest record of the building of Burlington House is found in Pepys' Diary, February 20, 1664-65, in which, speaking of my Lord Chancellor's new house,[1] he says, "near that is my Lord Barkeley, beginning another[2] on one side and Sir J. Denham on the other." That he is referring to Burlington House is shown by a second entry in his diary, September 28, 1668, "Thence to my Lord Burlington's house, the first time I ever was there, it being the house built by Sir John Denham[3] next to Clarendon House." The plan and elevation of this first house was published in Colin Campbell's "Vitruvius Britannicus," Vol. I.; but a much better idea of its general design is to be found in a drawing by Knyff, engraved by Kip, and published in 1707, in a work entitled "Nouveau Théâtre de la Grande-Bretagne." Judging from the print, a reproduction of which we publish here (Fig. 1), the principal block in the rear of the courtyard seems to have been a solid but unpretentious structure in brick, with wings at each end, projecting 10 ft. from the main block, and stone quoins to all the angles.

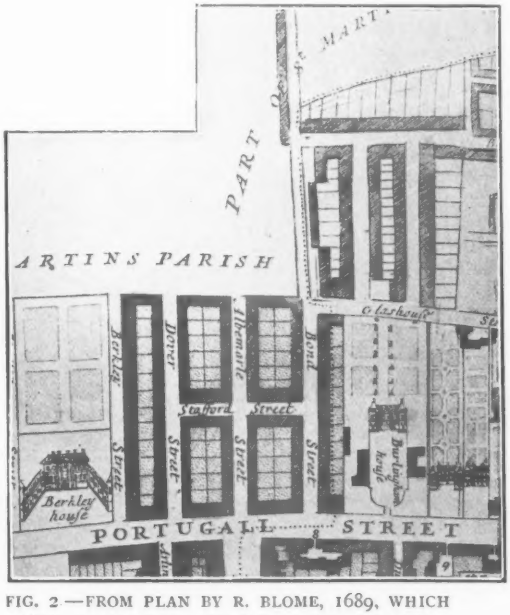


FIG. 2.—FROM PLAN BY R. BLOME, 1689, WHICH SHOWS THAT AT ALL EVENTS AT THAT DATE BERKLEY HOUSE AND BURLINGTON HOUSE WERE BOTH IN PORTUGALL STREET. PICKADILLY COMMENCED ABOUT TWENTY YARDS TO RIGHT.

On the left or west side of this courtyard was a one-storey block containing the offices, and on the other side a similar block forming the stables. A semi-circular wall (in foreground of print) facing the main block screened off two other courts in which a kitchen garden was provided on the west side, and various outbuildings on the other side. There was only one entrance on this side, in the centre of an ordinary screen wall facing Piccadilly, shown on Knyff's view. The same view and an old map show us (Fig 2) (from a plan by R. Blome, 1689) that the grounds of the house extended as far as Conduit Mead (about 460 yards north from Piccadilly), which was then pasture land, and beyond that, towards the north and west, open country. This may account for the statement made by Horace Walpole in his memoirs, that when Lord Burlington was asked "why he built his house so far out of town," he replied "because he was determined to have no building beyond him." As Clarendon House and Berkeley House were being built at the same time on the west side, he must have been thinking of his north-west aspect. The chapel shown in Knyff's drawing on the left is probably the timber church[4] which was originally built on Hounslow Heath by King James for the mass priests, and re-erected here with apparently the addition of a brick front. This chapel was removed about 1690 to Conduit Street, where it was known as Trinity Church. Here Evelyn went on July 18th, 1691, "to hear Mr. Stringfellow preach his first sermon in the newly erected church."[5]

To return to Burlington House. In 1704, Richard Boyle, the 3rd Earl of Burlington and great-grandson of the 1st Earl who built the house, succeeded to the title and estates. Before he attained his majority he is said to have spent several years in Italy,[6] where he became an enthusiastic admirer of the genius of Palladio. On his return to England in 1716 he commenced the transformation of Burlington House. In Colin Campbell's work, "Vitruvius Britannicus," Vol. III., we gather from the text which accompanies the plates of Burlington House as transformed, that prior to his being called to the service of the Earl of Burlington, the stables forming the eastern block had been rebuilt by another architect (Fig. 3),[7] so that he was obliged

[1] Clarendon House (pulled down about 1668).

[2] Berkeley House destroyed by fire in 1738. On that part of the site which fronts Piccadilly, Devonshire House was built in 1735 from the designs of Wm. Kent.

[3] Sir John Denham, Surveyor to the Crown.

[4] Wheatley and Cunningham, "London Past and Present," 1891, Murray.

[5] In 1836 this church was rebuilt in brick and lasted till 1778, when it was pulled down to make way for Messrs. Benjamin's shop.

[6] "Dict. National Biography."

[7] The name is not given, but it was probably Giacomo Leoni, a Venetian architect, who was brought over to England by Lord Burlington to superintend the translation of "The Architecture of Palladio," a work published in two volumes 1715-1716.

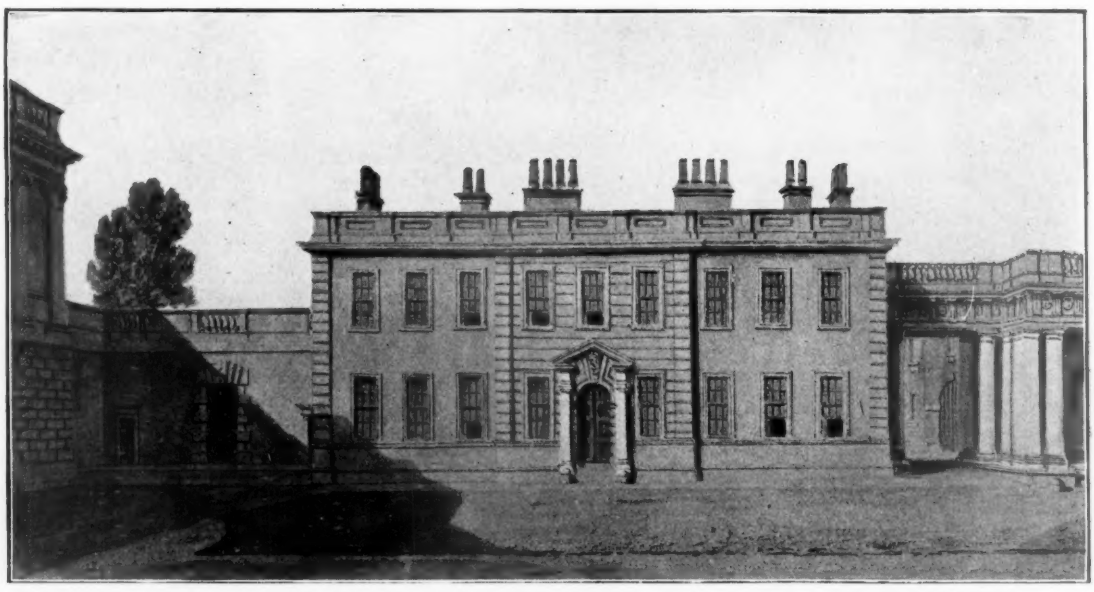


FIG. 3.—THE EASTERN BLOCK AS REBUILT BY LORD BURLINGTON, C. 1716. FROM A WATER-COLOUR DRAWING BY J. BUCKLER (1828) IN THE CRACE COLLECTION, BRITISH MUSEUM.

to make the offices (the western block) conformable to them. In this rebuilding of the eastern block, the whole of the ground storey was devoted to stables,[8] and a second storey containing bedrooms was added, a simple but good architectural character being given to the exterior. This two-storey block was copied by Colin Campbell when he rebuilt the offices on the opposite side of the great court. Whether Lord Burlington was dissatisfied with the result in the

[8] The coachhouses shown in Knyff's drawing were transferred to the eastern court and built against the Piccadilly wall.

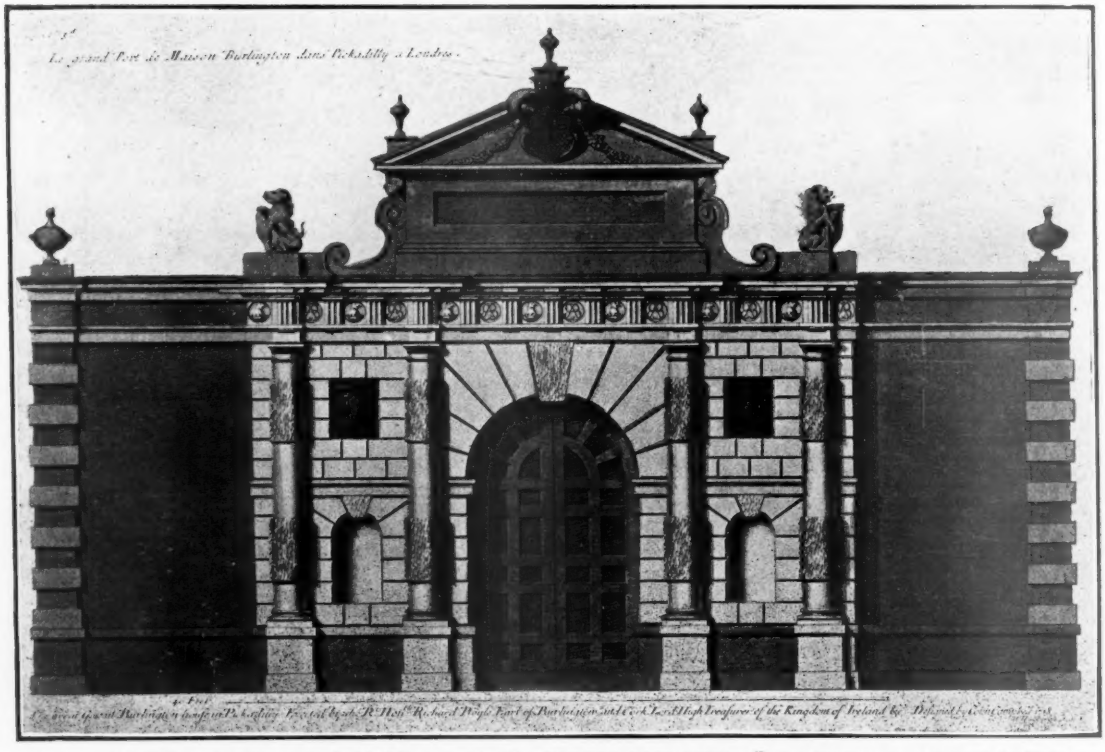


FIG. 4.—THE GREAT GATEWAY IN PICCADILLY, FROM "VITRUVIUS BRITANNICUS." DESIGNED BY COLIN CAMPBELL.

FIG. 5.—THE SEMI-CIRCULAR COLONNADE, BURLINGTON HOUSE, PICCADILLY. FROM A WATER-COLOUR DRAWING BY J. BUCKLER (1828) IN THE CRACE COLLECTION, BRITISH MUSEUM.

building of the stables, or considered that the alterations he proposed to make in the front of the main block of Burlington House required an architect with more practical knowledge, is not known; but Colin Campbell was called in, and in the text of "Vitruvius Britannicus," already referred to, he takes to himself the credit of the design of the following works, viz.: "The front of the house, the conjunction from thence to the offices, the great gate and the street wall." In his description of the plate illustrating the great gate (Fig. 4), he says, "It was adorned with four three-quarter detached columns of the Doric order, 2 feet diameter, agreeable to the colonnade to the court." In commenting on this, Mr. Reginald Blomfield, in his history of Renaissance architecture in England 1500-1800, says, "Either, therefore, this colonnade must have already been in existence, or Colin Campbell is referring to it as an integral part of his own design for the street end of the forecourt." Neither of these suggestions seems quite satisfactory, for firstly, if it had been an integral part of Campbell's design he would certainly have claimed it, especially as he goes out of his way to mention the conjunction passage from the house to the offices which had no particular architectural value; and secondly, Colin Campbell's design for the great gate might have been seriously hampered if he had been required to fit it to a colonnade already in existence. Moreover, the Doric columns and entablature of both gate and colonnade are of the same dimensions and identical in mouldings and style. What, however, may have happened is this: The original idea of the colonnade was due to Lord Burlington, who desired to give a more architectural character to the semi-circular wall shown in Knyff's drawing, especially when we consider that this wall, as seen from the house, occupied a very important position. His recollection of Bernini's colonnade forming the approach to St. Peter's, Rome, may have suggested a similar feature in front of his own blank wall. As Lord Burlington, however, was not a draughtsman, for no sketch of his handiwork has ever been found, he may have instructed Leoni (as suggested by Mr. Blomfield, p. 228) to make a sketch plan and elevation, which he handed to Colin Campbell to work out in harmony with the great gate which he had designed. Colin Campbell therefore probably set out the whole work and superintended its execution, but he refrained from claiming it as his own design for the reasons just stated. As the original semi-circular wall was only in brick, it was rebuilt in stone and increased in diameter to extend, with the colonnade in front, to the full width of the central court. There is no doubt that this semi-circular colonnade (Fig. 5) was one of the most beautiful features of this central court, and it is thus apostrophised by Horace Walpole in his memoirs: "As we have few examples of architecture more antique and imposing than that colonnade, I cannot help mentioning the effect it had on myself. I had not only never seen it, but had never heard of it, at least with any attention, when, soon after my return from Italy, I was invited to a ball at Burlington House. As I passed under the gate by night it could not strike me. At daybreak, looking out of the windows to see the sun rise, I was surprised with the vision of the colonnade that fronted me. It seemed one of those artifices

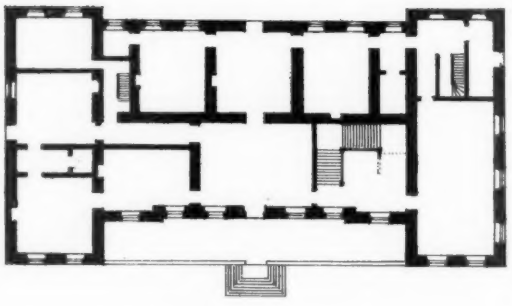


FIG. 6.—PLAN OF GROUND FLOOR, 1667.

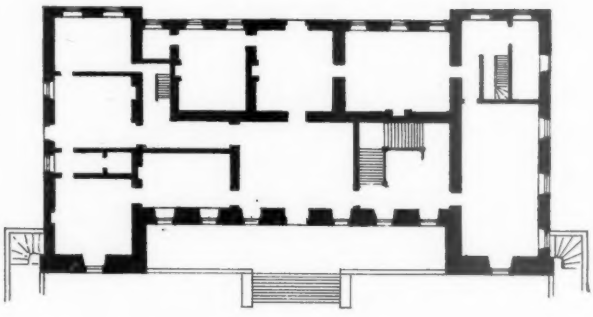


FIG. 7.—PLAN OF GROUND FLOOR, 1717.

in fairy tales that are raised by genii in a night-time."

The works that we have hitherto described have been new buildings erected on the sites of old ones, but in the transformation of Burlington House no alteration whatever was made in the plan (compare Figs. 6 and 7), except that the rooms on the first floor of the south front and in the east wing, which were probably bedrooms, were raised and converted into a series of state reception rooms by Lord Burlington. Taking them in the order in which they were probably carried out, the alterations were as follows:—1. The substitution of a central window in each wing on the south front (Fig. 9) on the ground and first floor in the place of the two windows shown in Knyff's drawing. 2. The suppression of the two small breaks shown in the recessed portion of the front (see Fig. 1), which was done by increasing the thickness of the wall. 3. The reconstruction of the three windows on each side of the central doorway on the ground floor and the seven windows above the same on the first floor, so as to make them equi-distant, which was not the case in the original building on account of the breaks referred to. 4. The removal of the attic roof of the whole of the south front. 5. The raising of the front wall so as to give greater height to the suite of rooms on the first floor front. 6. The encasing of the whole front and the returns of the wings with stone (Fig. 8). The design consisted of plain ashlar masonry with bevelled joints on the ground storey. On the first floor the seven windows in the central portion were enriched with moulded architraves and carried pediments alternately angular and segmental, and a range of six three-quarter detached columns of the Ionic order between the windows and responds at each end. The two wings were decorated with pilasters of the Ionic order in pairs on each side of the central windows, returning on the internal flanks with a niche in each flank[9] (shown in Figs. 19 and 20).[10] The central windows on the first floor in each wing consist of a wide centre light and a narrow light on each side, divided one from the other by Ionic pilasters, the entablature of which forms the impost mouldings of the arch over the central light. The "motif" was probably derived from the open gallery in two tiers with which Palladio enclosed the ancient town hall of Vicenza. The term "Venetian window" is sometimes given to it.

The whole front was surmounted by a rich entablature with modillion cornice, continuous above the wings and their flanks, but returning above the Ionic columns. This was crowned by a balustrade, which masked the low-pitched roof covering the southern half of the main block. The design for the central or recessed portion of the front (Fig. 9) between the wings is a close copy of the Palazzo Porto[11] (Fig. 10) at Vicenza, designed by Palladio. The ground storey, however, is of less height, so that there was no space for the circular arches over the windows, as in the Palazzo Porto. There are the same number of three-quarter detached Ionic columns on the first floor, and similar windows with pediments, alternately angular and segmental, but without the figure sculpture on the top. Modillions have been introduced into the cornice, and the balustrade above mentioned takes the place of the attic storey[12] of the Palazzo Porto. As Colin

[9] These niches were, according to Colin Campbell, provided for statues of Palladio and Inigo Jones, the two architects, for whose works Lord Burlington conceived the greatest admiration; they were, however, never placed in the niches, as there is no trace of their pedestals on the existing cills. It is possible that the two statues now standing in front of the villa at Chiswick were those intended for these niches.

[10] See Part 2.

[11] Not of the Palazzo Chieregati, as often stated, to which it bears but little resemblance.

[12] In the new buildings of Burlington House connected with the work for the learned societies, Messrs. Banks and Barry copied still more closely Palladio's design, as they introduced the attic storey and the projecting balustrades in front of the first-floor windows. They destroyed the beauty of the Ionic capitals, however, by the introduction of wreaths hanging from the volutes.

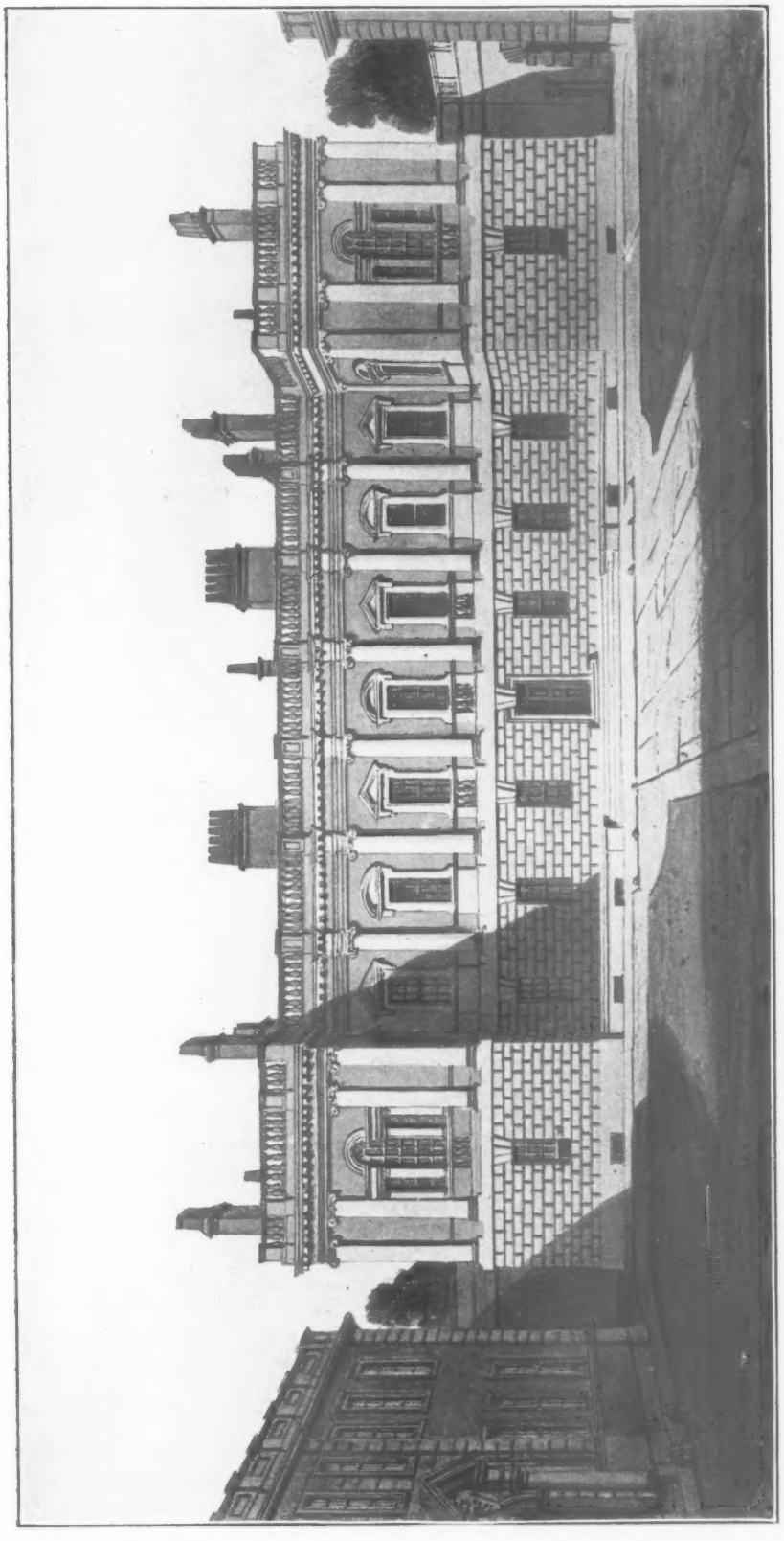


FIG. 8.—BURLINGTON HOUSE AS TRANSFORMED BY LORD BURLINGTON, 1717.
FROM A WATER-COLOUR DRAWING BY J. BUCKLER (1828) IN THE CRACE COLLECTION, BRITISH MUSEUM.

FIG. 9.—THE ROYAL ACADEMY, BURLINGTON HOUSE.

Photo: H. Irving.

Campbell had never been in Italy, and was therefore not acquainted with Palladio's work, Lord Burlington must have instructed him to copy the design of the Palazzo Porto published in the "Quattro Libri Dell' Architettura" by Palladio (Venice, 1570), unless he happened to possess the original drawing. Virtually, therefore, the wings only were from Colin Campbell's own design. With the completion of the south front and its new roof, Colin Campbell's services probably terminated. The whole of the internal decoration is certainly the work of one

FIG. 10.—THE PALAZZO PORTO, VICENZA, BY PALLADIO.

artist, and as William Kent, to whom it was entrusted, did not return to England with Lord Burlington till 1719, we must assume that in the interval[13] they were visiting various Italian palaces in order to decide upon the decoration of the suite of rooms on the first floor, the height of which had been increased from 15 to 20 feet. There are, unfortunately, no records to show how long the work lasted or at what period the State ballroom was undertaken. The richly coffered ceiling of

[13] 1717 is put down as the date of the great gate. If the building of the new front followed that work, it might have been completed in the following year.

the latter must have been carried out in its entirety at one time, and as it occupied the whole of the east wing from back to front, the roof over the north end had also to be reconstructed. This might have been done by Colin Campbell, but as the ceiling of the ballroom is at a lower level than those of the other rooms, it is more likely that it was not undertaken until Kent's time. All the other rooms, including the hall containing the staircase, which was then on the right of the entrance hall, are uniform in design. At a height of 14 feet from the floor is a richly moulded cornice with modillions, above which is a cove similar to those which exist throughout Italy, and are more appropriate in that brighter climate.[14] Above the cove and enclosing the horizontal portion of the ceiling is a broad band richly decorated and moulded on the inner side. The State banqueting room (Fig. 11) in the west wing, the ante-room to same, the saloon in the centre, and the staircase hall, all had painted ceilings to which we shall return later on. Greater importance was given to the banqueting room, the north wall of which was decorated with two three-quarter detached columns of the Corinthian order, carrying an entablature with richly moulded frieze, and to the saloon (Fig. 12) which was set out architecturally with doors and sham doors[15] with richly moulded and gilded architraves, frieze and pediments with figures of cupids above them, and moulded panels between and frontispieces above all carved in wood. All the doors on the first floor are of similar design with moulded architraves, friezes, and pediments, the doors themselves being in mahogany, six panelled, with the egg-and-tongue ornament carved round each panel. As the

[14] It is a curious fact to note that although the rooms were raised in height as already stated, the windows lighting them are actually three feet lower than those in the old house (*See* section, Fig. 20, Part 2, where the right-hand block shows the original windows).

[a] Lord Burlington would seem to have had a passion for sham doors, for according to Walpole the house which he built for General Wade in Cork Street was primarily intended to provide a place for a large cartoon by Rubens which the General had bought in Flanders; there were, however, so many doors that there was no room for it, and he was forced to sell the picture

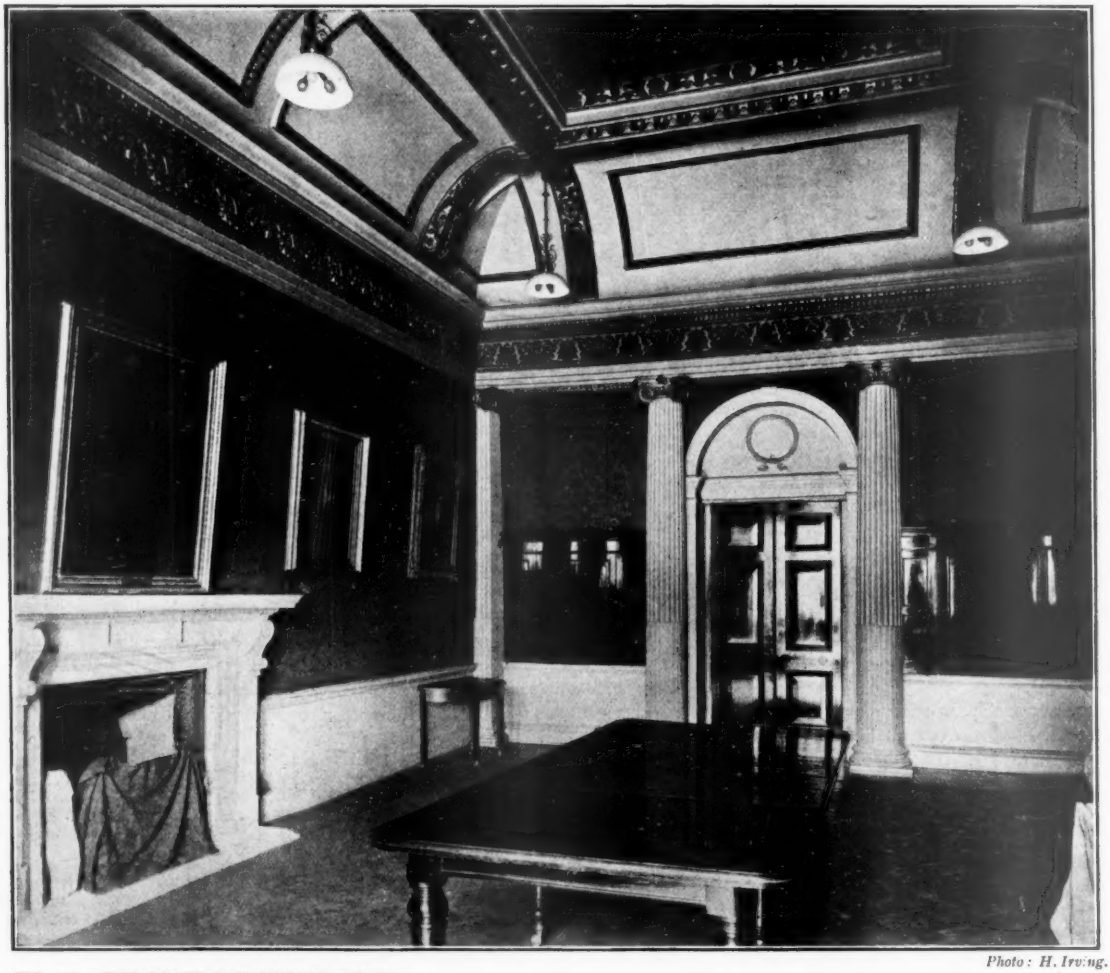


Photo: H. Irving.

FIG. 11.—THE STATE BANQUETING ROOM.

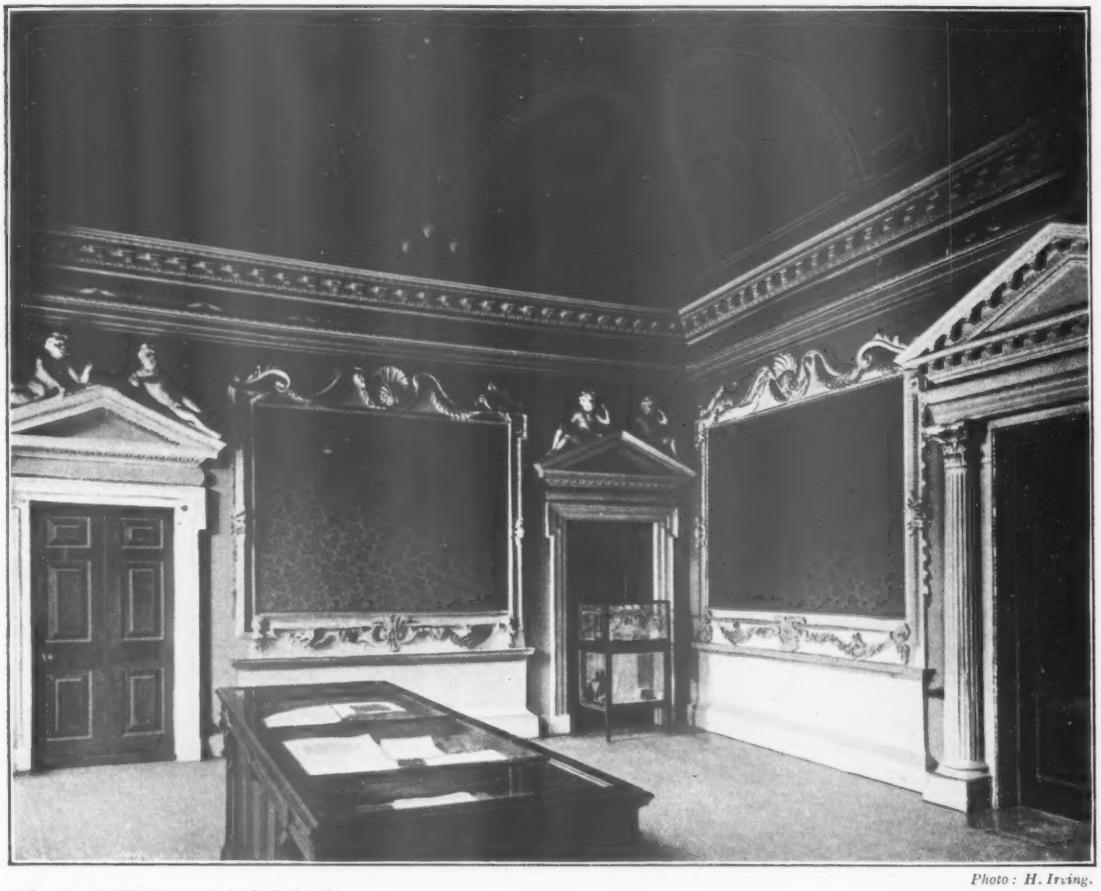


Photo: H. Irving.

FIG. 12.—INTERIOR OF THE SALOON.
The decoration of the cove is of late date.

original staircase was removed in 1816, its design is not known, nor are we able to say to what extent it was altered or enriched by Kent; but the north wall opposite the windows was decorated with a painting by Sebastian and Marco Ricci which was framed and fixed on the walls of the new staircase in 1816, when other important changes were made on the north side of the mansion. The ceiling of the State ballroom (Fig. 13) (60 feet long by 20 feet wide) was decorated with deep coffers alternately octagon and square, all richly mounted and gilded, resting on a cove of less height than in the other rooms, but with a similar cornice and with doors of the same design. Unfortunately none of the original chimney-pieces are in existence, and the only record we have of the design of one of them is to be found in a work published by Kent, illustrating the designs of Inigo Jones with some additional ones of his own.[16]

Before we take up the subsequent changes made in Burlington House it may be as well to give some description of the paintings which decorated the ceilings and walls and were carried out by Lord Burlington. We have already referred to one painting on canvas which was framed and hung on the new staircase built in 1816. This was removed from the north wall of the old staircase. There is a second painting in the existing staircase hall, also framed, and of the same dimensions and design. This may possibly have been in the State ballroom between the two fireplaces in the east wall.[17] These paintings, as also others on the ceilings, were made for Lord Burlington by two Italian painters, Sebastian and Marco Ricci. Marco, the nephew of Sebastian, came over to England in 1710, and in 1712 persuaded his uncle to join him; thenceforth they would seem to have worked together, Sebastian painting the figures and Marco the architectural features and the backgrounds. The pictures decorating the staircase of the Royal Academy

[16] "Designs by Inigo Jones and Mr. Kent," 1744.

[17] There is no written record of this, but the two paintings now framed in the staircase hall of the Royal Academy correspond in design and execution with that of the ceiling of the great banqueting hall, which is known to have been painted by the Riccis.

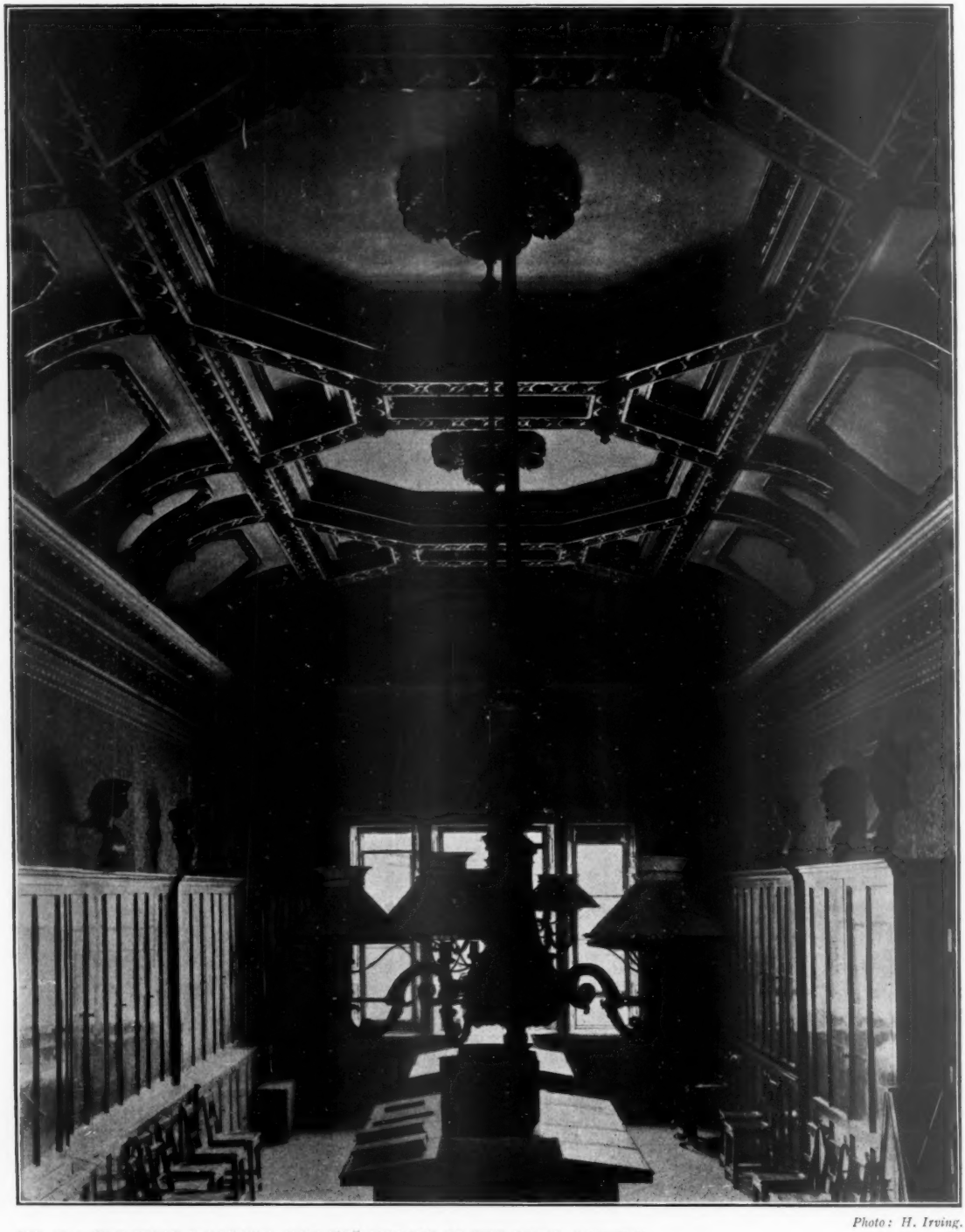


Photo: H. Irving.

FIG. 13.—THE STATE BALLROOM, NOW THE LIBRARY OF THE ROYAL ACADEMY.

are still in good preservation, though no longer lighted by the north window which was replaced by the entrance doorway to the exhibition galleries.

The picture on the west wall represents Venus riding in a car drawn by six horses and escorted by Tritons and Naiads with winged cupids flying in the air. On either side is a device, due probably to Marco Ricci, consisting of a representation of a stone figure seated on a console bracket carrying a bronze vase in which are shells, corals, and seaweed. The background to the right is the sea with cliffs on the right.

In the centre of the picture on the east wall is

the figure of Diana standing against a background of trees and by the side of a circular fountain basin with her handmaids grouped round her. In the background on the right is a distant group of trees with the spires and towers of a town. Here one of the figures of the side device is a satyr, and the vases contain fruit and flowers on one side and the products of the chase on the other. The ceiling of the staircase hall, now the Council Room of the Royal Academy, though painted by the Riccis, is of quite a different type, being painted in imitation of Tiepolo.[18] In a circular centre are represented Jupiter, Juno, and other gods and goddesses in the clouds; this is surrounded with the painting of a moulded circular frame; and in the four angles which represent the pendentives of a dome are groups of animals and cupids, the animals portrayed being a lion, a tiger, a stag, and a horse. The foreshortening of these groups and of the ten or eleven cupids outside the circular frame is admirable.

The ceiling of the banqueting room contains a fourth painting by the Riccis, representing a bacchanalian procession with Bacchus sitting in a chariot drawn by tigers, and accompanied by bacchantes, satyrs, and cupids. In the background, on the right, is the sea, and on the left trees. There is the same architectural device, a satyr on one side and a nude figure on the other, painted by Marco Ricci on either side; but owing to the picture being of narrower dimensions than the staircase pictures referred to, there is no room for the vases.

The ceiling of the saloon, as also that in the ante-room of the banqueting hall, was painted by Sir James Thornhill, and is extremely poor as compared with the work of the Riccis. It represents scenes in Olympus, but the figures are very badly drawn, and there is an absence of that composition which is one of the chief characteristics of the Italian artists' work.

R. Phené Spiers.

(To be concluded.)

[18] Horace Walpole, in his Memoirs, says that Sebastian Ricci excelled in imitation of Paul Veronese, and once deceived the French Academician painter La Fosse, who, annoyed at the imposition, advised him in future to paint no more Riccis, but only Paul Veroneses.

Architectural Education.

A Discussion.—I.

AIMS AND PRINCIPLES.

By W. R. Lethaby.

I do not propose to attempt a review of the very interesting series of articles dealing with foreign methods of education which have been published in this magazine. These articles are, it seems to me, most valuable in showing the anxiety with which this subject is regarded in other countries, and the large scale upon which education is conducted in them. In other countries, in a word, it is recognised that building is one of the great activities which are necessarily bound up with the status and progress of a people.

We English—is it not possible?—are a little vaguely sentimental in desiring some abstract greatness which is not necessarily marked by noble cities and finely disciplined life. However, this is one of the bigger questions, and it must be assumed here that we are all interested in these "outward evidences" and agree that they are worthy of most serious concern.

Beyond some emulation of other nations in the volume and intensity of their effort, it would be vain, I think, to attempt to apply foreign systems to our own case. In the first place, however ample and clear the explanations of those systems are, they are not exhaustive, and they cannot even be understood without reference to the whole ground and background of those customs of which they form parts.[1] In the second place, foreign building customs are no more fixed than our own. There is just now a considerable movement towards greater freedom in Germany, and in France the whole code of assumptions (a most desirable agreement in actual working) on which their architectural conceptions rest is likely to crumble to dust before criticism, especially if, as seems from many signs most probable, they are to be drawn by the great nationalist movement into a "Gothic revival."

Reality in Building.—The office of all who are engaged in any part of the great craft of building is worthily to house the people and their belongings. This is certainly one of the primary arts like tilling the earth, and around it necessarily gather the

[1] For instance, in regard to the relation between those concerned in the design of buildings, and those who execute them, and the education of the latter—one of the very moot questions—we are not told that in Germany at the present day there are no less than fifty Building Trades' Schools established. And in regard to France, I have never been able to understand exactly how the most interesting and *exquisitely designed* works, like the steel-work of the new stations, are produced, and the relation of the course at the Beaux-Arts to them.

associations and emotions of a people. But it is only so far as building is done in the spirit of its high first need that it is essentially poetic. For instance, degraded as the practice of agriculture may have been, it has not lost a whit of serious intensity to our thought just because it is still elemental and *real*, stern, epic, and directly conditioned by labour, sun, and storm. No room has been made in this traditional art for fashion, triviality, or pretence: the Eden story and the Eclogues of Virgil are still not incongruous with it, for the touch of earth ever renews. Again, a ship is poetical just because of its intense reality; everything from a primitive coracle to a monstrous turreted war-ship, they all impress our imaginations and strike at our hearts because of their direct reality. The beauty of a ship is its fitness to swim the sea.

The same principle holds good of certain classes of building done even to-day, such as the substantial cart-sheds and cow-houses of the country, stone bridges, rows of railway arches, and the like common things. The value, the humanity, of all these is their nearness to need; they are not shaped by caprice for outward seeming, but by the very Nature of Things. This is the mark of all noble building in all times, and will be for all time. Here is the division between true and false originality: in the one case it is aimed at by those who would, as it were, build a spire on its point, while in the other case work will be original because natural and in the line of development.

Let us consider what a lowering there would be in the qualities of the things spoken of above if the doing of them became subordinated to a fashion; if ships were "designed" in the style of Greek galleys, a rifle as far as possible like a cross-bow, a locomotive like Louis the Fourteenth's coach, and a bicycle "to harmonise with" a sedan-chair.

Are we not always seeing our projects for building through a series of veils? They might be, they should be, "*just so*," but we wish them to have a certain flavour of antiquity, of scholarship, and of picturesqueness. Of all these the last, the careful contriving of seeming accident, it seems to me, is intellectually the lowest, and it has the most misled us. The pre-occupation about such questions as these reminds me of a jam advertised in a back street as of "fine strawberry flavour for 3d." What we need, what is poetical, in building is not the flavour of originality or of accident, nor even of boldness and solidity, but it is merely good thoughtful work; and if we could aim directly at that, all legitimate flavours and appearances would come by the way. We early found out perhaps that the favourite savours of modern architects did not truly touch us, but we hide from ourselves the fear that our own blend of learning, "home-likeness," romance, and texture, so far as it is consciously aimed at as a superficial beauty, is not a bit better. One walk along Piccadilly, Shaftesbury Avenue, and Holborn, ought to convince us that there is for ever no hope in style designing.

Do I seem to say that we should throw away our present stock of styles and customs? By no means. But accepting them, taking them for granted, ignoring them, let us concentrate on building facts, building reason, building excellence, not forgetting that in this too there is for the time danger of our reaching a seeming of reality rather than reality itself. It may be objected that "reality in building," "reason in design," and the like terms are not clearly definable, and this is perfectly true; but that has not prevented us from following after "proportion" or "picturesqueness"—terms equally open to the same objection.

Architecture.—Building excellence is, or is not, the whole of architecture according to what we agree to make the words cover by definition. It would be a fair and possibly the best use of the two words to make them absolutely convertible. Or by agreement we can define architecture to mean something more than building, if we will only clearly decide what the difference shall be. Our present use of the word is ambiguous and most misleading. We think that we assume meanings something like this:—Building means unworthy architecture; architecture means noble building. Surely it is an unscientific definition thus to say "Building means poor building, good building is architecture"; yet there would be no great harm if we meant it. But notice; the farm-sheds and bridges mentioned above, by this definition, become Architecture, and much designed and exhibited villas become Building!

Seeing this, some writers, with whom I agree, have said, in effect: "As we have two words in use, and as 'Building' must include in its meaning the best building that may be, 'Architecture' should mean that higher unity known to us in the history of great periods when fine building, sculpture, painting and other arts were intimately associated and combined organically." This search for a definition may seem merely verbal and formal, but I want to show that in either view it is clearly apparent that architecture in the main deals with building; the function of the architect is to build, and the purpose of architectural education is to teach him to build well.

Besides the ability to build well, architects may or may not be interested in past schools of building; they may, in accordance with fashionable demand, *have* to lard over the essentially fit building with borrowed scraps; they may *have* to

present their schemes in taking perspectives; they may not see their way to do without the garments of past styles. But all these things are asides, and will adjust themselves if they are properly ignored, and if the mind is set on the great ambition of building.

Aims in Education.—Building at the best is an experimental, even an adventurous, art, and for the conduct of successful building the chief requirement at bottom is a peculiar type of man—the building type.

The captain who sails the sea may or may not be scientific—sailing was invented before "navigation"—but he *must* be a bold yet prudent sailor. The architect, we decided, has to build, therefore above all it is necessary to stimulate and train the building faculty. Teaching must set itself to develop not only expert knowledge of facts, but readiness of resource, the spirit of prudent daring, the insight which comes of dealing with materials with one's own hands. Our schemes of education must have in view chiefly the production of experts in building—great builders. We need a settled conviction as to the end before we can judge of systems.

Agreement.—I must not seem to omit by oversight the consideration of "style." In days when the great styles of the world, Egyptian, Greek, Gothic, were being wrought, "the style" was the natural manner of doing work. If only we could centre our energies in doing work well, strongly, lastingly, carefully, simply *well*, then at once true style, *the nature of things showing through workmanship*, would certainly be present. In unconsciousness would come that *agreement* which is the essential condition of style. An architectural style is only certain possibilities in workmanship continously explored by many minds working in agreement. If we could only agree, we should at once set up a process of experimental development which is style. If with heart and intellect we could follow any trail for a dozen years a certain style in accordance with the thing aimed at would result; as, for instance, a second quasi-Greek style, or a second pseudo-Gothic style, and so on; and, if these, why not a merely reasonable style if we followed the clue of reason? Indeed, it is only on such lines that it is possible to suppose that we may ever reach agreement, and this seems to me to be the problem of modern style.

It may be objected very well, at this point, that engineers have this agreement fixed in reason; but has their work the possibilities of high interest? With some provisos I venture to say that it has. The failure of modern engineering in England (it is much less in France) is that so much of it is crude; a girder or a bridge is just thrown down in place, and the rawest junction with its supports being made, it is covered with a coat or two of coarse red paint, and left in a ragged and uncared-for manner. If we can suppose engineering to develop a rigorously fit and yet exquisite finish, appropriate to its rigid materials, it should be capable of affording us very high interest. Engineering deals with problems less intimate to man than building; and again, the materials of which it makes use, cast-iron and rolled steel, also seem further removed from us than timber and stone. There is, however, no essential break between building and engineering, and in much it is highly desirable that they should draw together rather than diverge. For all great buildings in cities the architect should be of the type which may perhaps be suggested by the words "engineer of buildings." It may be asked, are there no fixed doctrines of beauty, or laws of proportion, which the true architect has to know and employ other than those which may be applied by the engineer? There are none such. The only law of proportion in architecture is the same as that in organic bodies, the law of fitness and persistence. A fine fishing-rod, a well-toned fiddle, have their just proportions; and Gothic architecture itself was developed, not by any aesthetic view of proportion, but by getting the nerved vault, the ramping buttress, and the stone-barred window to do the utmost possible. True style, then, is developed only by working together experimentally in agreement, and the only agreement possible to us is to work for obviously beneficial ends, to obtain the utmost durability and efficiency. I do not say, or feel, that this is all, but I do feel that this is the only way in which to put ourselves into relation with that nature of things of which I have spoken.

Experiment and Methods.—It is sometimes urged that the "run of buildings in progress" is the best form of practical education, but the facts behind the phrase do not justify the claim. *Constant residence* at truly instructive works, with concurrent advice and assistance, would doubtless be best, but the occasional "run" (truly so called) over average works does not at all begin to do what systematised courses could and should do. A proper scheme of practical and scientific education would not aim at merely showing customary procedure, but it would concern itself with the *best*, and, more important still, with exploring what *might be*, that is with what may be called research work into the possibilities of construction. To foster such a habit of experiment is, I believe, the point of mastering importance. In a practical art, like war for instance, I should suppose the same principle comes in. Commanders, the architects of battles, may be taught the routine, they may read the archæology of their calling, all about Marathon and Crecy, but surely the most necessary faculty

to sharpen and strengthen is that of the power to make combinations to fit ever altering circumstances. We want, indeed, a parallel to the soldier's *Kriegspiel*, a building game to be judged not by taste, but by points in sound economical combination.

Is it not indeed in agreement with one of the central principles of modern method that we should seek to explore the *possibilities* of our art, to examine it like a mathematician or the chemist explores the possibilities hidden in numbers or elements? No school, indeed, can give a complete equipment, but the chief object is to prepare the way, to point out the principles, to suggest method.

Schools.—The first essential in a school of architecture is the provision of means by which a practical knowledge of materials and the way in which they are procured and prepared may be gained; together with direct drill in certain forms of workmanship, and in the processes for assembling materials together.

The earliest possible contact with stone and brick is most desirable to correct any impression that architecture is a drawing-paper affair. After some experience it would be possible to lay out a valuable demonstration course which should once for all settle the main principles of stone-working. I need not attempt to elaborate a scheme for all that might be shown and practised in a well-appointed building school, duly supplied with specimens and models; no one can doubt the desirability, the necessity, of such a school.

On the point of actual craftsmanship there may be some doubt, as if one expected the architect of the future to build with his own hands. I have no thought of the architect becoming an expert mason or bricklayer, but I am confident that if, as a building designer, he is ever fully to grasp the qualities of stone and brick, he must have cut the one and laid the other with his own hands.

This craft practice should of course be specially in masonry, brickwork, and carpentry, the three crafts underlying architecture. Any craft-work, like wood-carving for instance, is good so far as it goes, but it is clearly more remote from building than the others just named.

In a school of building, after due initiation into actual tool-handling, and together with continued practice in the same (such gymnastic is *necessary* to health for one thing), one of the first branches of study would be systematic examination of the properties of forms, the geometry of solids. The French, I believe, owe much of the better side of their building practice to a thorough grounding in this most disciplinary of studies. After handling and surveying the geometrical solids, they seem to be made comparatively immune to that riot of the unconditioned and the ill-conditioned which passes for taste in the picturesque. The actual practice of stone-cutting through some course specially contrived to bring home to the mind of the student the group of facts connected with the finding of forms by successive reductions in the squared quarry-block (which indeed is the foundation principle of masonry), taken together with a course of solid geometry, should lead to the almost intuitive knowledge which is necessary as a groundwork for design.

Next might come a consideration of the typical and common prime factors of building. I feel convinced that, under an examination at once more scientific and more sympathetic with the builder's way of looking at things, the properties of columns, beams, walls, arches, vaults, domes, could be so presented that a vital knowledge of the facts should become to the architect almost what a knowledge of the lever, screw, and other "mechanical powers" is to the mathematician and mechanician. Even the one of these that we take most for granted—the wall—should make a fascinating subject of study in regard to all the general laws of stability, relation of height to base, diminution upwards, battering, or of how it may be strengthened by breaking it into piers, or bending its line like the parapet over the cut-water of a bridge, or by a series of apsed recesses, etc., etc.

I know that some of these points, like the battering of retaining walls, are fully treated of in many books, but it is hardly in the form that appeals to builders, and it is not part of a scheme for the general study of walls; nor is it likely to be so completely absorbed that it becomes part of the designer's spontaneous conceptions, and this is of the first importance. We need not only the ability to test and prove our work, but we want to foresee it from the first in a truly scientific mould.

Vaults and domes, again, open an endless vista for research. The mere geometry of applying domes to squares, polygons, and other figures, with various forms of pendentives, could be so made plain that no student, having once seen what pure construction is capable of doing, could ever again be content to play at being Classic or Gothic, or be anything else than a builder.

Directly associated with this course would be the general Mechanics of Construction, the investigation of forces acting in structures. Here, again, while the mathematical investigation of the subject might be developed to any thinkable point by advanced research students, yet it is important, I think, to get some part of the subject so clearly set out and demonstrated by actual models and experiment at the start, that a certain conception of statical laws should form part of the earliest groundwork, and from the first shape the thought of the student of building.

Along with these more abstract considerations the student should be guided into an examination of the common units of ordinary buildings—windows, doors, chimneys, sky-lights, stairs—always considered from the construction and service points of view, never as style; working, that is, over the ground of the ordinary "Building Construction," but after a much more analytical and critical method. In the current books of Building Construction many degraded style elements are found of which no explanation is offered, and the examples given are hardly in any case good. In these things we have fallen immeasurably below the standard of the old books of Peter Nicholson and other writers where the examples of ordinary fittings were, of their kind, models of excellence. In all this, indeed, we want to set up *standard ways of doing things*.

In the century just past this way of thinking fell much into abeyance, and whim became the sole justification for many forms. As late, however, as the eighteenth century a great body of tradition was carried forward, which stood outside the talk of style of the period, but was, in fact, the very thing which gave the works of the period true style. These customary ways of doing things which spread all over the country—such as the skilfully contrived stone stairs, and beautiful sky-lights, windows, shutters, and mahogany doors, the fan-lights in great varieties of graceful patterns, the delicate cast-iron balcony fronts—were not by any means copies of past work, but belonged entirely to their own age.

With such a stock of materials and experience at hand, the student should enter on schemes of planning; and, first of all, planning more or less in the abstract—that is, consideration of what can be got out of a single "cell," by considering the square, the oblong, the round, etc., as enclosing forms of space, in regard to their relative capacity with a given quantity of wall. Then the ways of adding to the size of a central area by a series of annexes should be investigated, as also ways of most perfectly applying roofs and vaults, under the necessity of disposing the annexes so as to counterpoise the greater span, and many similar problems.

Many of the great historical results in architecture have come about by a development of the single chamber, as, for instance, the Roman Pantheon, the Temple of Minerva Medica, the church of S. Sophia, and the mediæval cathedral. It seems, indeed, to be the builder's typical problem, and it lends itself directly to analysis as more complex buildings cannot do; moreover, the complex type is necessarily made up of single cells. In Roman planning we can see how most magnificent group-planning resulted from mastery over the units.

The reference to historical architecture might now come in, but it should not be studied as history but as recorded experiment in building, and therefore a ready-made experience. The books of M. Auguste Choisy are excellent guides in this respect, and the existence of such a course of education would soon result in the production of many valuable books on the development of construction, and indeed on building from all points of view.

A thorough examination of materials should also be taken up, especially the bringing of them together in structures. For instance, the hundred ways in which walls have been well built of different materials, the local distribution of materials and the customary ways of using them, would form an excellent subject for inquiry. We are very much restricted at the present moment to the "18 inch work in Flemish bond," of the so-called Building Construction books.

Planning for special purpose might now follow, and the preparation of projects for complete buildings; such questions also being approached as a series of problems which admit of reasoned answers, and eliminating as far as possible the element of taste. There will be plenty of room for taste to come in afterwards: taste founded on perception of ruling facts, not in ignorance; the taste which in some cases will be one with the severest science.

A dozen other points for consideration suggest themselves, one of the most important of which is the setting up of contact between the workman and the workmaster. The highly artificial separation of the present system is obviously most disastrous to progress in building, and I feel most strongly that up to a stage all who are to be engaged in building in any skilled capacity should meet in schools common to all. We have to recognise that our concern is with education all round for the production of *buildings*, not for the production of even good "schemes." Projects will avail nothing if there are not able and interested workmen to make them concrete. On this I must say that I do not see any way in which smaller buildings can be made generally interesting and reasonable save by the initiative of builders acting freely; a cottage or a cartshed should not require a learned architect. Such things *must* be done in a simple way; it is impossible to think of a time when greatly educated town architects shall be called in to design the thatching of a corn-rick; this is certainly best done by a thatcher. For smaller buildings generally, and some bigger ones too, which are not of the highly complex city type, my hope is for a class of builder-architects or architect-builders who will build them directly for an employer without any separate question of design. Many

young men, I hope, who go through the educational course will take up this more active and less dyspeptic method of building. From such a class we might hope to obtain our great executants.

In regard to the machinery for putting an educational scheme into operation, we have it ready to our hands in the well-organised building departments of the several London polytechnics, and in the recently-established L.C.C. South London School of Building at Brixton. The courses in these schools are doubtless open to modification to any extent, to fit them for the best interests of the building trades. In them, it seems to me, architects are required as students, as teachers, and as directors.

I have not spoken directly of beauty, but in all I have said I have had beauty most in mind. In an art such as building the question of beauty interpenetrates with all the other more clearly definable objects, and it is certain that if we could obtain them, beauty would necessarily be present in some degree also.

Architecture at the St. Louis World's Fair.

I WENT to St. Louis in the month of April and I stayed there till within two days of the official opening, on the 30th.

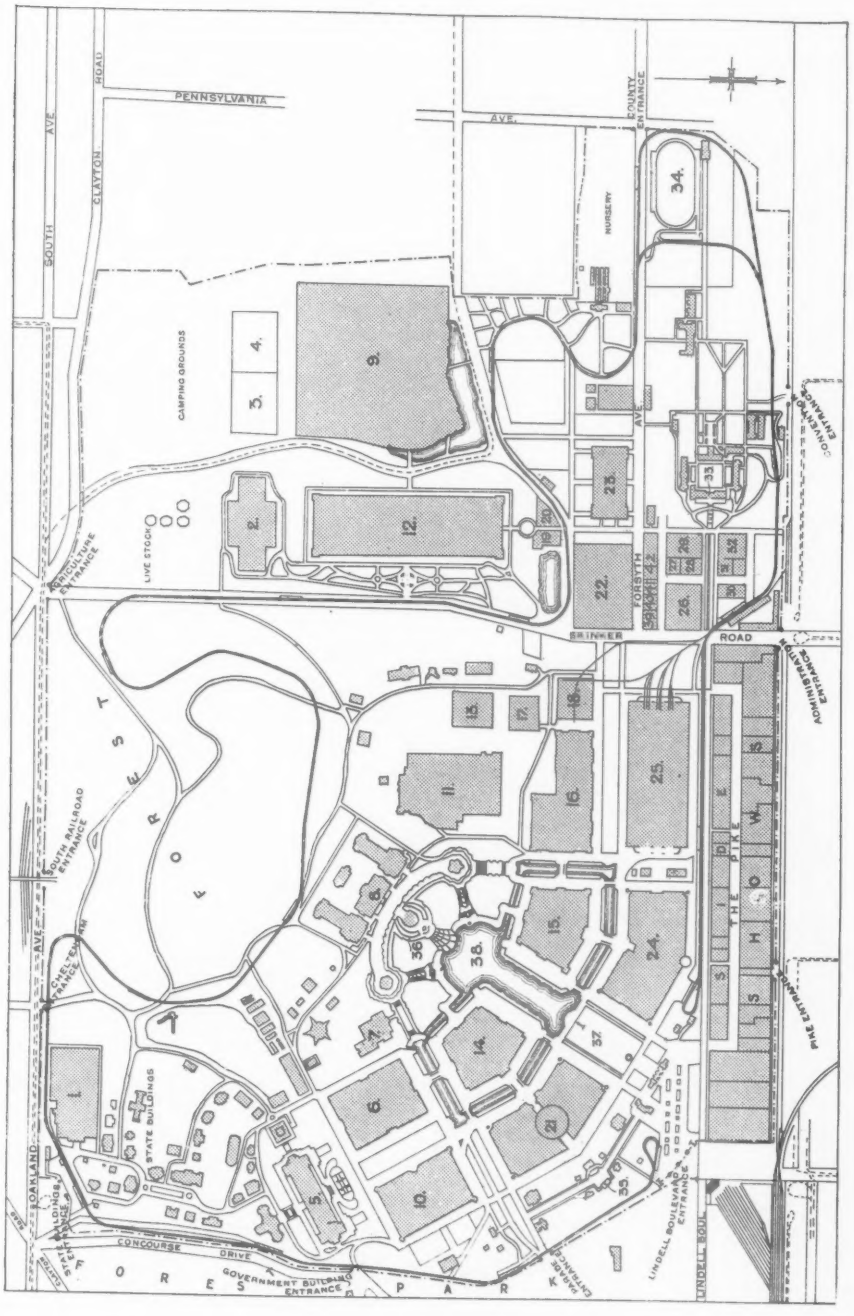
Of the exhibits, excepting the British section,[1] there was little to be seen by that date, but the buildings that housed them were pretty well complete, and it was possible to judge of their effect, taken as masses; though as the investiture of detail and the salve of the paint-pot were still going furiously on, one was often in two moods as to whether the buildings were going to gain by their enrichment or no. About the paint there was no question; paint on these occasions confers the quality of solidity. What before seemed pasteboard, to-day is endowed with the majesty of masonry—yesterday it was a phantom, to-day it stands a monument. I was in time to catch something of the humours of construction, the quaint incongruities of chance juxtaposition—the making of a reflection, the colouring of a waterfall—humours which faded away as the palaces drew towards serious completion. A ladder leant against a massy Tuscan column, something near the size of our Duke of York's column, would be apt to go through it. Portions of colossal figures littered the ground round about these palaces with provokingly serene and indifferent countenances, considering the situations into which they had got themselves. One fragment, the head, neck, and shoulders of an immense goddess with an ineffably serene, mild-eyed expression of endurance, was propped up out of the mud, in which her collar bones reposed, by a 5 inch by 4 inch strut of timber hitched, to prevent slipping, against her eyelid, and on this disconcerting support she placably leant her head. I learnt the art of colouring the beds of tributary rills and streams so as to make the water look deeper and more rapid in its course to the lake. I saw the heaped-up bases of great statues start as some mysterious game of spilikins played round an immense turbine wheel; next would come a plaster sheeting to this cage of lucifer matches; mouldings and cornices were swept round the sturdy monoliths; texture was given to it with sifted sand; a lid was brought and clapped on this singular box by a two-ton steam crane, and on this tableland pranced an elephant, or a wrestler taming a crocodile. It was like living under the lee of Aladdin's palace, and conjecture often failed to anticipate how the uncompleted window would be finished.

They had been two years devising and raising this Exposition, and yet in the end they were caught belated. The foreigners for the most part achieved punctuality; the British got their pavilion built, their stands at the Liberal Arts and the Fine Arts all fitted and arranged, their wares unpacked and exhibited, labelled and catalogued by the due time, whilst the American contribution was still in unopened packing-cases. To my observation the Americans are a hand-to-mouth people. They do not value experience and the lessons it brings—these quietly drop into the effluents of their memory. They have had several expositions of late years, and they should know better than any other nation how to go about in constructing and organising such affairs, but this one at St. Louis shows no controlling conception, almost no co-ordination. The grounds were parcelled out and allotted on paper, and each recipient of his portion was supposed to do exactly what he liked with his bit, and he did. A railway rings round the World's Fair at such a level as to ruin the vistas of the show from the entrances, and under these lines, when you have bought your ticket, must you creep before you can see anything or go anywhere. A considerable quantity of the material for the Exposition came by cart along the streets and roads of St. Louis. The World's Fair is to the west of the town, situated in the remoter part of the park that forms a wide belt of well laid out and planted grounds sheltering St. Louis on the west. The commercial, so to put it, routes to the Fair are not through the park,

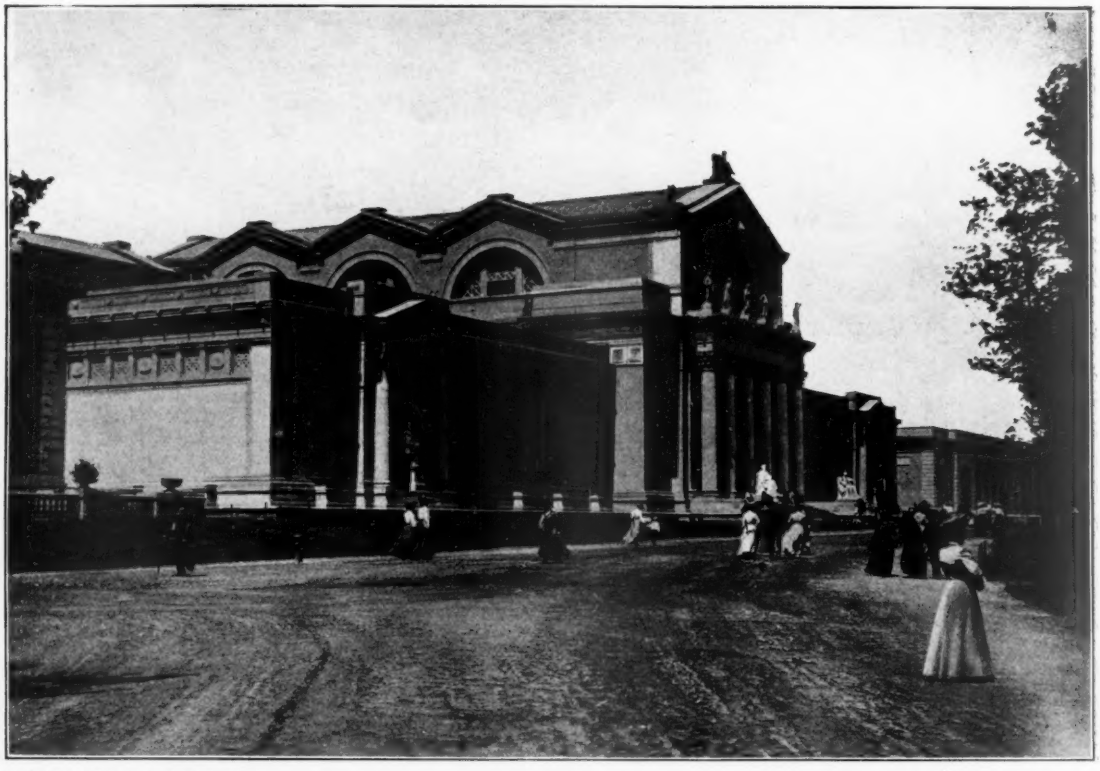
[1] See General Notes, p. xxxvi.

References to Buildings:—

1. Hotel.
2. Horticulture.
3. Forestry (Germany).
4. Forestry (U.S.A.).
5. U.S.A. Government Building.
6. Mines and Metallurgy.
7. Germany.
8. Fine Arts.
9. Philippine Villages.
10. Liberal Arts.
11. Jerusalem.
12. Agriculture.
13. Morocco.
14. Education.
15. Electricity.
16. Machinery.
17. Japan.
18. Boiler House.
19. Ceylon.
20. Canada.
21. Manufactures.
22. France.
23. Forestry (Fish and Game).
24. Varied Industries.
25. Transportation.
26. Great Britain.
27. Cuba.
28. China.
29. Belgium.
30. Russia.
31. Sweden.
32. Austria.
33. Administration Buildings.
34. Physical Culture.
35. Model City.
36. Festival Hall, Cascades, and Terrace of States.
37. Louisiana Monument.
38. Grand Basin.
39. Mexico.
40. Siam.
41. Nicaragua.
42. Brazil.

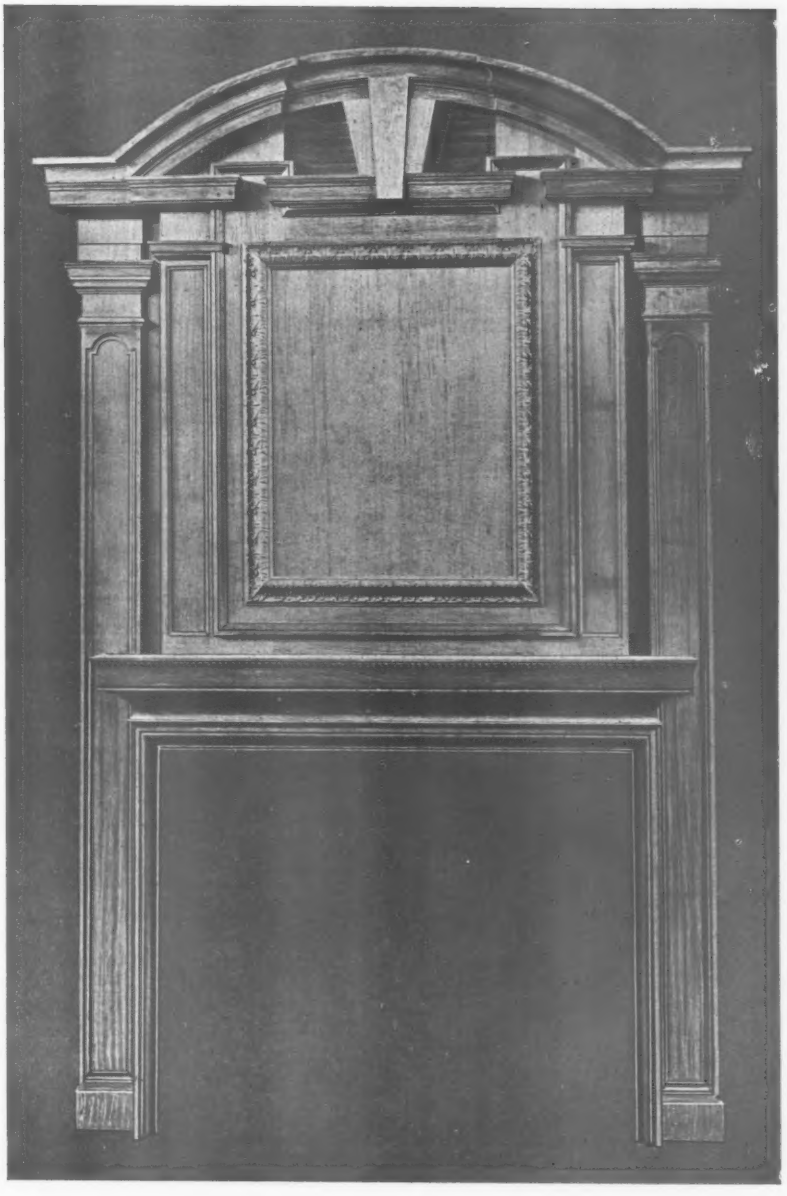


PLAN, WORLD'S FAIR, ST. LOUIS, 1904. AREA: 1,240 ACRES.



PALACES OF THE FINE ARTS.

THE CENTRAL CASCADES AND RIGHT WING OF THE TERRACE OF STATES.



THIS · CHIMNEY-PIECE · IN · OAK · WAS · DESIGNED BY · Mr J. J. JOASS · AND · IS · ONE · OF · A · NUMBER OF · INEXPENSIVE · MANTELS · ON · ARCHITECTURAL LINES · BEING · MADE · BY ·

JOHN · P · WHITE

AT · THE · PYGHTLE · WORKS · BEDFORD · ✤ · ✤ ·
LONDON · OFFICE · & · SHOWROOMS · ✤ · ✤ · ✤ ·
✤ · ✤ · ✤ · ✤ · ✤ · 24 · MARGARET · STREET · W.

LOOKING TOWARDS THE GERMAN GOVERNMENT BUILDING AND THE LEFT WING OF THE TERRACE OF STATES. PALACE OF MINES AND METALLURGY IN LEFT FOREGROUND; PALACE OF EDUCATION IN RIGHT FOREGROUND.

but by prolongation of the town's streets, along which an endless stream of electric cars travels. These roads—we should not call them roads in England: we have no words mean enough to describe them; nor does the American either in Missouri: he calls them avenues or boulevards, according as they run east and west or north and south—would have sufficed for the cars if they could have kept their monopoly undisputed; they were by nature unsuited to the heavy traffic of the carts, being mere mud morasses, the only "metal" about them being the tram lines, and they very much in the way. A special hard road for this cart traffic, and for this only, should have been made, for the comfort of vehicles, animals, and passengers, and for economy of time, money, and temper. As it was, it was seldom you could get to the gates of the Exposition by car without some adventure due to the foundering of a cart across the track, which involved strange expedients for removal, much patience, and often much time. Loads which were quite tractable on a sound firm road became cruelly overwhelming where the carts floundered axle-deep in sticky slime. I came across many other examples of this want of prevision, this complacently letting the future take care of itself. It is glaring enough in the architecture of their towns (Washington excepted), but in less conspicuous ways one meets it at every corner. The lay-out of the World's Fair will serve as a further illustration.

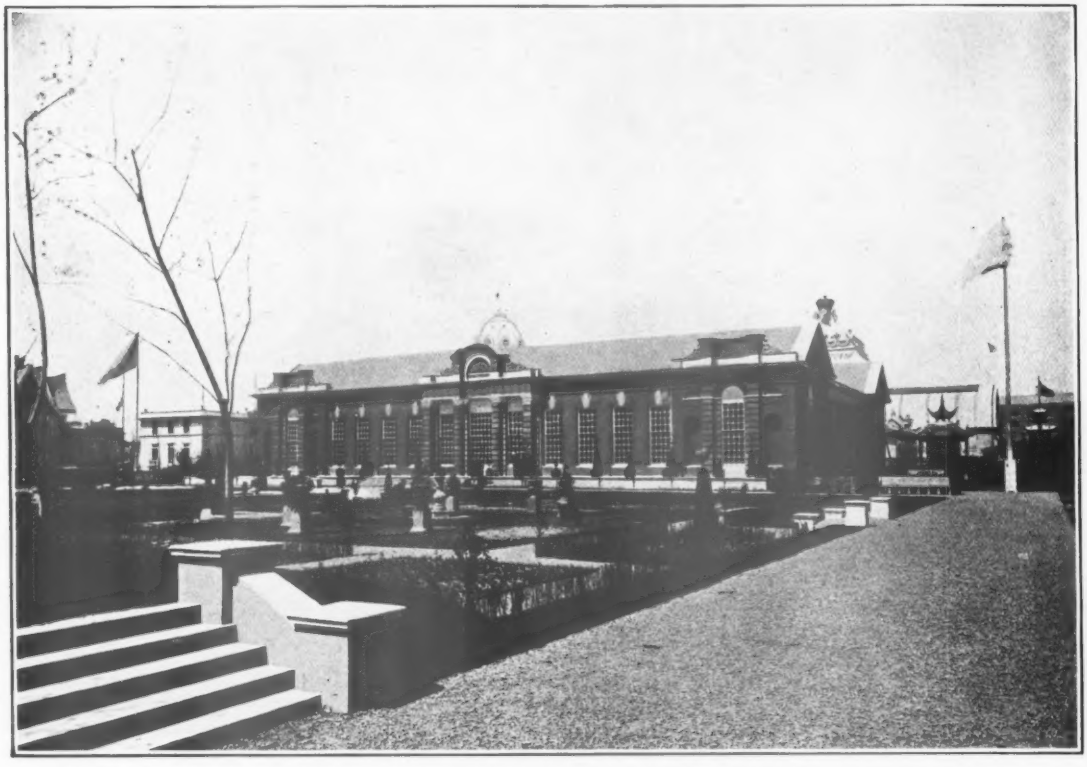
From the Lindell Boulevard entrance the ground rises steeply to a ridge, on the summit of which is the permanent building of the Fine Arts. This will remain, as museum and picture gallery, after all the rest of the fair shall have vanished away. At the entrance you look up an amphitheatre, which is, for the moment, crowned with the Festival Pavilion, with the Gallery of States, on the right of these Jerusalem, on the left the German Pavilion. The Festival Pavilion, with its colonnades, entirely hides the Fine Art Buildings—a circumstance too significant to be merely the sport of chance. Let us grant the real facts that underlie this arrangement. The buildings that should contribute to the enthronement of this Festival diadem—Machinery, Education, Manufactures, Varied Industries—are so busied with their own appearance that they have no time to fall into line, as far as regards their architectural design, with each other, and so pleased with it that they have no wish to subordinate any characteristic of theirs to help make a general harmony. Both the German Pavilion and Jerusalem are intensely out of key with the general bridecake look of these exhibition buildings—the former is a solid-looking dour representation of

Frederick's Palace at Sans Souci—aggressively stablished on the high ground with its skirt of propriety tightly wrapped round it to defend it from the approaches of the demi-mondaine rococosity surging up towards it. Jerusalem, its balance on the other side, is a frank representation of the real thing, like our "Old London" was; it sits snugly behind its own walls, gay—almost incredibly gay—with colour heightened by the representation of the ravages of centuries. Neither group of buildings helps the general composition—they intrude their jarring personality upon the few—too few—attempts to make an harmonious grouping. Broadly speaking, the official buildings are "Beaux-Arts" in style and feeling—rather perfunctory, as if the architects had got tired of the thing before actual erection, and had handed over the contraption to the "formatore" to do his utmost possible upon it. The amount of gypsum on the grounds heaped lightly together would make a respectable mountain, and if it all came from one quarry would leave a hole big enough to store water for a large manufacturing town.

I expected to see some applications of armoured concrete and samples of light steel construction; but except in the permanent Fine Art Building there were no examples of such things. The cost, weight, and length of time in erection, stood in the way, I conclude, of such methods. The modulus of construction was 4 inch by 2 inch battens, and these fastened together with French-wire nails seemed capable of almost everything. Wonderful, to a Britisher, is the American's confidence in a wire nail, but the wonder somewhat abates when you try to prise open a packing-case secured by liberal nailing. The workman goes about with ¼ lb. of 3½ inch nails in his mouth, and a reserve of 1 lb. or more in a pocket in the seat of his breeches, and a light hammer in his hand; these and a saw constitute his outfit; in about the proportion of 1 in 50 may be a man who has a screwdriver and a pair of pliers. I never saw a chisel or a plane, except at the British Pavilion, which was being erected by British workmen.[2] Joinery and cabinet work were done off the premises. The hand-to-mouth dexterity—all that really is required for an exhibition building—of the workmen was amusing, but I saw nothing specially novel in the methods of construction. No wide spans, nothing daring in the way of timber arches or trusses. The interiors of the Exhibition buildings were very impressive and romantic from this quantity of light timber scantlings—it was like entering a forest—and the tracery of the innumerable branches gave an air of mystery as well as a sense of scale to the great barns. Another advantage of wood construction is the ease with which it is cleared away at the end of the exhibition. The one at Chicago finished up in a harmless—and it is suggested, a convenient—conflagration; and indeed these wood battens after they have been so plentifully armoured with wire nails can have little commercial value. Externally, the official buildings are stately and grandiose, and in some measure help one to realise what Rome may have looked like in Trajan's time, or Alexandria in its prime. Something of the quality of Bernini's colonnade before St. Peter's has been secured—the open spaces are wide, and kept refreshing with green turf and bright flowers; water is abundant, the roadways are wide and liberally furnished with statues and public monuments—judging by the pictures given us by the camera only, had Rome more to show in Augustus's time? And this presentment in three dimensions of what fine cities have been and what are the broad elements of a fine civic conception makes its mark in a country where such things as new cities are of common occurrence. It also strengthens the hands of those who wish to keep unspoiled the liberal proportions of their older cities; it helps to bring about the return—as far as it is now possible—to the original and noble setting-out of the plan for Washington city. It has affected the conception of public buildings, enlarged their scale, and given them an impressiveness that we seem to have lost here in England completely. We have built nothing of late years—since the British Museum, shall we say?—to compare, in the matter of dignity and scale, with the Boston Public Library.

The skyscrapers of New York present a problem—that of housing in a vertical block—a hive of small cells, each demanding its window. Each cell is tiny; the whole cluster contains some hundreds. What an infinity of niggle and pettishness would such a block be in our hands. Thanks no doubt largely to his French training, the American architect treats his problem with surprising breadth. He gives you wall surface graduated, when you look into it, both in the matter of texture and the size of its elements—the many, many ranks of troublesome windows subside, under his hands, into mere putlog holes, pitting the masonry as did the wooden shelters round the brick towers of mediæval Italy. We go to Bologna to admire the Torre di Garisenda, or to Padua to see how Ezzelino housed himself and his company. As much abuse, and more, has been heaped upon him as on any Wall Street financier; their methods of living have been compared, and I do not remember that Ezzelino emerged from the comparison with any superiority. With the searching, penetrating light of America, less window is needed than we

[2] The British Pavilion was erected from the designs of Messrs. Ernest George and Yeates by Messrs. George Trollope and Sons and Colls and Sons, Ltd.



THE BRITISH GOVERNMENT BUILDING. FOUNTAINS AND TANKS IN LEFT FOREGROUND.

THE FRENCH GOVERNMENT BUILDING (IN THE FOREGROUND). FORESTRY (FISH AND GAME) BUILDING BEHIND.

PALACE OF ELECTRICITY.

LOOKING TOWARDS THE UNITED STATES GOVERNMENT BUILDING.
PALACE OF LIBERAL ARTS ON THE LEFT; PALACE OF MINES AND METALLURGY ON THE RIGHT.

PALACE OF VARIED INDUSTRIES AND THE LOUISIANA MONUMENT.

PALACE OF MANUFACTURES AND THE LOUISIANA MONUMENT.

require here, and the effect of the architect's ordered arrangement of windows is that it almost counts for texture to the masonry instead of thrusting the masonry into skeleton.

The other buildings, not official, but erected by the different states or by foreign nations, have not the same scope, and, except the French, hardly pretend to this quality. Each nation, besides showing its exhibits according to their classification in the various official buildings allotted for the purpose—their pictures in the fine art buildings, their different enterprises in the education, liberal arts, commerce, machinery, and other buildings—has put up its pavilion for reception and entertainment purposes, and also for such business as may require transacting. These pavilions, with their allotments of grounds within which they stand, have been used by each nation as an occasion to show off what they can do and what they have done in the past. They contain a choice collection, some of them, of works of art, and by being intensely national they introduce a most informing picturesqueness to the outer ring of the amphitheatre of the site. The British pavilion is an adaptation of the Banqueting Hall (sometimes called the Orangery) in the gardens by Kensington Palace. The French pavilion is not far off, and it is instructive to note the way in which the French have taken up their opportunity as compared with our handling of the problem. We content ourselves with a replica, as far as practicable, of a thing once done, and we fill the interior with some choice pieces of old work. Everything looks solid, well established, and self-satisfied. The garden is laid out in a quiet, tame way, suitable to a middle-class residence. There is nothing whatever distinctive—no attempt to recall our noteworthy gardens. True, the limits of the allotted ground, about half an acre I should say, prevent the reproduction of, say, the Pond Garden at Hampton Court, or of Levens; but a shot might have been made at Northiam or St. Catherine's Court, near Bath, or, more feasible still perhaps, Montacute. Some old clipped yews might well have been sacrificed—butchered to make a Louisian holiday. The one poor architectonic effort in the garden is misconceived and fails accordingly. Three terra-cotta tanks of equal size stand side by side in the middle of the garden, the centre one raised somewhat higher than the tributary ones, containing an uplifted basin and fountain; in this way the element of water is introduced. But the level of the water stands some three feet above the garden level, and as the level of the garden itself is some feet above that of the main roads bounding it, to the passer-by or to the saunterer in the garden itself these sheets of water count for nothing, whilst the cisterns themselves constitute an eyesore. The magic beauty, the peerless charm of water, is like that of a jewel or an enamel placed on a robe—it brings in a fresh piece of brilliant changing colour. It draws down the sky into the bosom of the garden in concentrated colour; it paints in subtle reversion the verdure of its borders, the tinctures from the flowers in the parterres, the shadows of the enclosing walls of green, where a stone Narcissus nods to his drowned brother so near, so silent, and for ever inaccessible. A fleer of wind ruffles heaven's earthly eye—the wraiths that are heaven's memory of its desired landscape pass shuddering across and away, and the jewelled centre of the garden has become an opal.

A stone's throw from this indolent mediocrity lies the French garden. A crisp sense of business, of recognising the *raison d'être* of an exhibition, arrests the eye. The lay-out is not greatly dissimilar, except that there is no water. They have a larger territory than the British, and their garden is subdivided into rosary, orchard, and fruit garden, all very tastefully arranged. But every plant is comfortably labelled in easily legible lettering, so that if you were to single out, say, a rose as especially taking your fancy, you can see at once what its name is and where, if you want to, you can get it. In the orchard, besides the variety of fruit trees, there are shown the many ways of training them—as standards, dwarf standards, shrubs, on espalier, horizontally, obliquely, vertical, recumbent, supine; you shall gather your cherries, currants, gooseberries, apples, and pears at any attitude you may choose, and there shall be good reasons and clear explanation of the advantages of each fashion. Now, fruit-growing is one of the important industries of America, especially the apple crop, and in their hurried way of snatching at present conveniences the sight of your fruit growing all within easy reach of your hand must have strong attractions. For all its purpose-like commercial presentment this educational horticultural exhibit was a fascinating thing *quâ* exhibits. Gooseberry saplings woven into a trellis made one forget, in contemplation, the reflection how useful it would be for gardening purposes to have a hinge in one's back. It was a kindly thought of the raspberry to grow to a man's height. The interior of the pavilion showed modern masterpieces. There were some amazingly big vases in pottery that in the matter of craftsmanship would win respectful admiration from the Chinese.

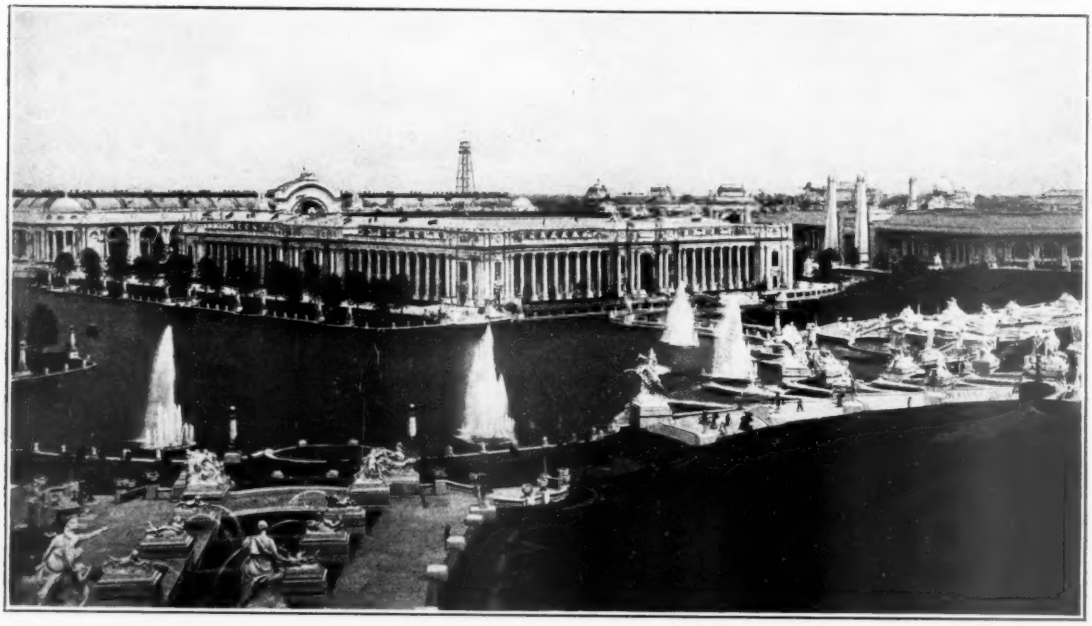
The Japanese quarter was on very uneven ground, the entrance on nearly as high a level as Jerusalem, and falling rapidly, in a tumbled sort of way, down towards the official buildings of the Exhibition. There were a few fair-sized trees on their estate, a most welcome feature,

JAPANESE GARDEN AND TEA-HOUSE.

and, except to the south part of the grounds, all too scarce. I do not know whether this bit of hill-side was given to them at their request or no; in their hands it seemed the most appropriate possible. You pass through a wide carriage gate, not unlike, with its palings on either side, the usual entrance to a country house, and at once pass into the land of the willow-pattern plate. The tea-houses had an anxious eye and cocked ear for Western tastes and requirements, but the garden was old Japan—its romance untouched, to my eyes, by the tarnish of Western civilisation. Siam, too, I should single out as a particularly attractive building.

Returning once more for another look at the official buildings, there are two ways of dealing with the problem of their architecture—one, to carry out, as far as circumstances and materials will allow, a reproduction of existing types of monumental buildings, and since the occasion and the materials favour it, to select the architecture of classical times as the theme on which to build the many variations, or else to construct what one might call festival architecture—the architecture of triumph and of fantasy—the art of the confectioner and the triumph of the bridecake. At St. Louis both kinds have been attempted, and an uncertain note in consequence struck. The United States Government buildings and the Palace of Education represent the orthodox architecture, the Mines and Metallurgy Building representing the fantastic. All three close together bring this home forcibly to the spectator, and in a sense the fantastic triumphs. It is impossible to forget the hollowness and unsubstantiality of the buildings pretending to represent the qualities of the masterpieces of old time: and the modern exigencies of purpose and illumination accentuate their unfitness and unreality. For purposes of exhibiting the articles contained, the Mines Building is easily superior, whilst the cool shadow of its eaves, its amply shaded ambulatory round all its sides invite the lounger and dazzled spectator to do the remainder of his inspection on comfortable human terms. When darkness falls it blossoms out into a dazzling wealth of multitudinous fires which explain and justify the arbitrariness of its wayward decoration.

And there is, too, the feeling that no wrong has been done to the illustrious architectural dead. No graves have been ransacked, no corpses exhumed, dressed and powdered, with glass eyes in the vacant sockets, the hair oiled and curled, and the figure made to sit up and simulate majesty if not



PALACE OF EDUCATION.

PALACE OF MINES AND METALLURGY ON THE RIGHT.
UNITED STATES GOVERNMENT BUILDING IN DISTANCE.

BIRD'S-EYE VIEW OF FOREIGN GOVERNMENT BUILDINGS FROM THE GREAT WHEEL.
FRENCH GOVERNMENT BUILDING IN THE FOREGROUND.

life. Despite the educational value of this revival of what Rome or Alexandria may have looked like, which I have already pointed out, and which is undoubtedly both important and fruitful, the conclusion I came to was that such exhibitions as these are pageants, that the licence of the theatre was not only justifiable but demanded, and that though one might describe Egyptian, Greek, and Roman architecture as spectacular, there was too much deep emotion in the bones of such architecture to allow one to view its hollow resurrection for a passing moment without some pain.

The other type strikes no such chords: it is frankly ephemeral, frankly scenic, with just the spice of impudence in it sufficient to enable one to contemplate its removal, after its work is done, with a chastened satisfaction. It is stuff that one is glad to have seen theoretically (so to speak), and which one doesn't want to see in real life. It is run up surprisingly quickly; it is made gay chiefly with cast enrichments and colour; it is of the nephelococcygian order of architecture, and it looks at you with its finger laid against its nose; and you accept its demure silence. For the day of the serious need of these exhibitions is surely now over. The enhanced facilities of travel, the widespread system of illustration, the continuous chain of information that whirls unceasingly through the technical papers and magazines, leave little undetected and unwinnowed by the expert. And it is the expert who can gain most from these exhibitions; to the ordinary visitant these exhibits awake a languid surprise, something comparable to the looking at a drop of pond water under a microscope: "Dear me! I did not know we had such and so many things about us—that it took so much life and so much contrivance to keep even a drop of water going." The lay public's pleasure is to leave this world of narrow matter-of-fact and to wander at will through the large grounds, broad avenues, and the groves of this world of wide matter-of-fiction: to spend some hours in the land of romance, to take and turn the storied crystal in their own hands, to leave the confines of Cocker and go forth to meet the Encyclopædia himself in person—to sup in the "patio" of a castle in Spain—to watch the wild fire throb and flicker as it dances over the canals and basins, climbing around the columns, hanging in festoons from the arches, wavering along the cornices and outlining the domes and spires—this is to taste the main product of the Exhibition. The seriousness of the architecture provided for such exhibitions is a testimony of the sincerity of the spectators who demand

a vraisemblance in their land of faery—they bring with them their critical knowledge and their conscience, and they expect to return from their adventure with no outrage done either to their convictions or to their sympathies. But granting that all these conditions are fulfilled, it seems an enormous apparatus to evoke for the purpose, and there should be long intervals of time allowed between each new manifestation of this particular form of energy. The quantity of educational pabulum takes time to digest, the quantity offered is both large and concentrated, and owing to the necessary effrontery with which it is offered we run the risk of a moral as well as physical indigestion. Like puff-pastry it should not appear often on our tables. HALSEY RICARDO.

Current Architecture.

SEDGWICK MEMORIAL MUSEUM. — The Sedgwick Memorial Museum, which was opened by the King and Queen on March 1 this year, has been built partly with a fund raised shortly after his death to commemorate Adam Sedgwick, Woodwardian Professor of Geology in the University of Cambridge. The building, of which Mr. T. G. Jackson, R.A., is the architect, stands on the site purchased from Downing College for University purposes, and is an **L** in plan, facing Downing Street and Downing Place. It contains on the ground floor two large lecture-rooms, working-rooms, and a museum of comparative geology. Two staircases contained in projecting towers rise from storey to storey to the top of the building, but the principal entrance to the Great Museum, which is nearly 300 feet long and occupies almost the whole first floor, is by an external staircase in the interior court, which divides at the lower part into two sweeps, at the foot of which are a pair of cave-bears and a pair of primitive bisons, forming the finish of the balustrades on either side. The Great Museum is fitted with high cases projecting at right angles to the walls between the windows, and table cases elsewhere. Down the middle are arranged the great saurians and skeletons of extinct animals, and at the south end is a board-room, with a private room for the professor adjoining. In a niche between two arches in the centre of the museum is a bronze statue of Professor Sedgwick, the last work of the late Onslow Ford, R.A. The second floor is occupied by numerous museums and laboratories, and by a library, which is handsomely fitted with oak, for which part of a gift of £2,000 from Dr. Latham, the late Master of Trinity Hall, was made available. The rest of this munificent gift, which was made for the purpose of decorating the buildings facing Downing Street, has been used partly on this building and partly on the Law Library adjoining. In the roof is a great attic chamber, 175 feet long, with a barrel ceiling, which is one of the most striking parts of the building, extending all along the Downing Street front. The attic of the back wing is occupied by various offices. The builder is Mr. Sindall, of Cambridge, and the clerk of works Mr. Robert Edwards. The carving is by artists from the staff of Messrs. Farmer and Brindley, some of whom have worked under Mr. Jackson's direction for very many years past, much to his satisfaction. The fireproof floors and other constructive ironwork are by Messrs. Homan and Rodgers, of London.

MONUMENT IN HAMPSTEAD CHURCHYARD.—The monument marks the site of three graves, and primarily commemorates a young child who lies buried beneath it. It is the conjoint design of Mr. Harry Furse, sculptor, and Mr. E. P. Warren, architect. The bronze group, cast from Mr. Furse's model, represents the Angel of Death supporting a child in his arms. The stonework, in Portland stone, was carried out by Mr. T. E. Jago.

CENTRAL STATION BUILDING, GROVE ROAD, MARYLEBONE, LONDON; for the Central Electric Supply Company, Limited. Mr. C. Stanley Peach and Mr. C. H. Reilly, Architects.—One of the largest power-houses in London will eventually be that of the Central Electric Supply Company at Grove Road, St. John's Wood, which will supply power for general purposes for the west-end districts of London served by the Westminster Electric Supply Corporation and the St. James's and Pall Mall Electric Lighting Company. It is situated on the banks of the Regent's Canal, the site being 7½ acres in extent, all of which will eventually be covered with the buildings. Upwards of 150,000 h.p. can be placed on the site if the plant is arranged on the one-floor system. The one half of the first section has recently been completed, and provides accommodation for 14,800 h.p. The chimney shafts (there will eventually be six) are very prominent structures, and standing high can be seen for a considerable distance in all directions. Each shaft is 18 feet by 18 feet inside measurement at the top, 260 feet high from top of concrete to top of cap. The main flues enter by three openings

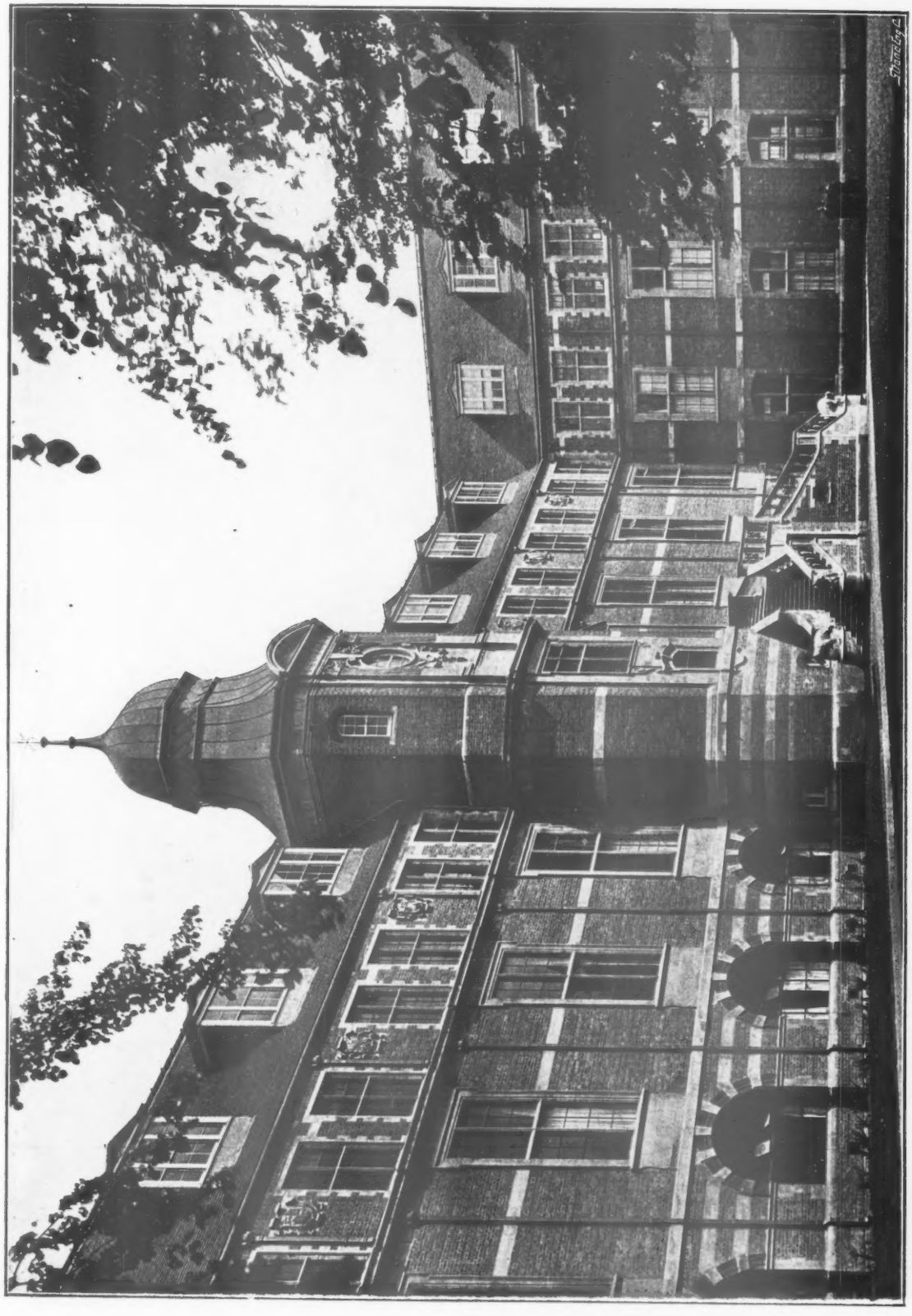


Photo: H. Irving.

THE SEDGWICK MEMORIAL MUSEUM, CAMBRIDGE. FROM THE QUADRANGLE. T. G. JACKSON, R.A. ARCHITECT.

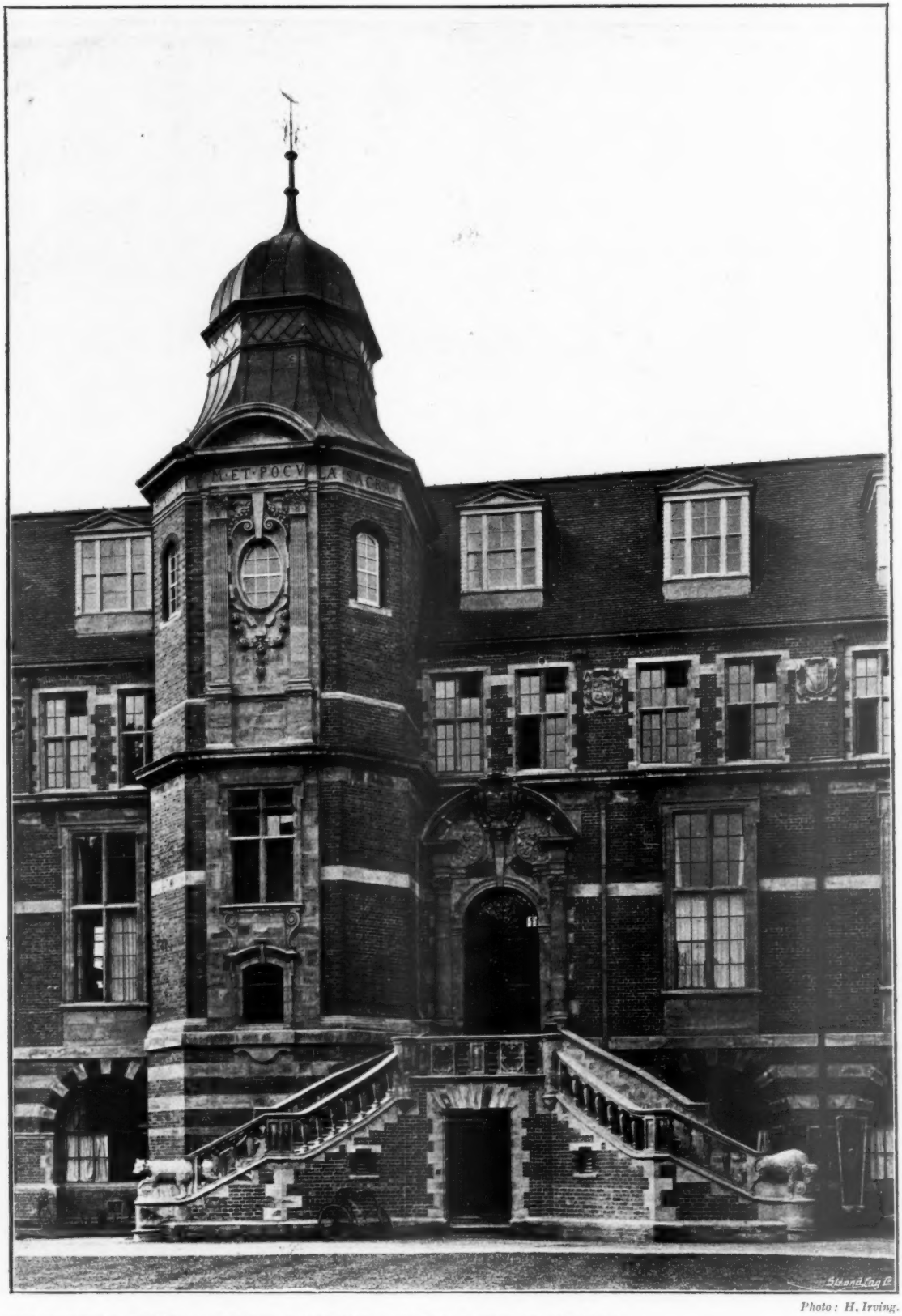


Photo: H. Irving.

THE SEDGWICK MEMORIAL MUSEUM, CAMBRIDGE. ENTRANCE FROM QUADRANGLE.
T. G. JACKSON, R.A., ARCHITECT.

Photo: H. Irving.

THE SEDGWICK MEMORIAL MUSEUM, CAMBRIDGE.

THE LIBRARY. T. G. JACKSON, R.A., ARCHITECT.

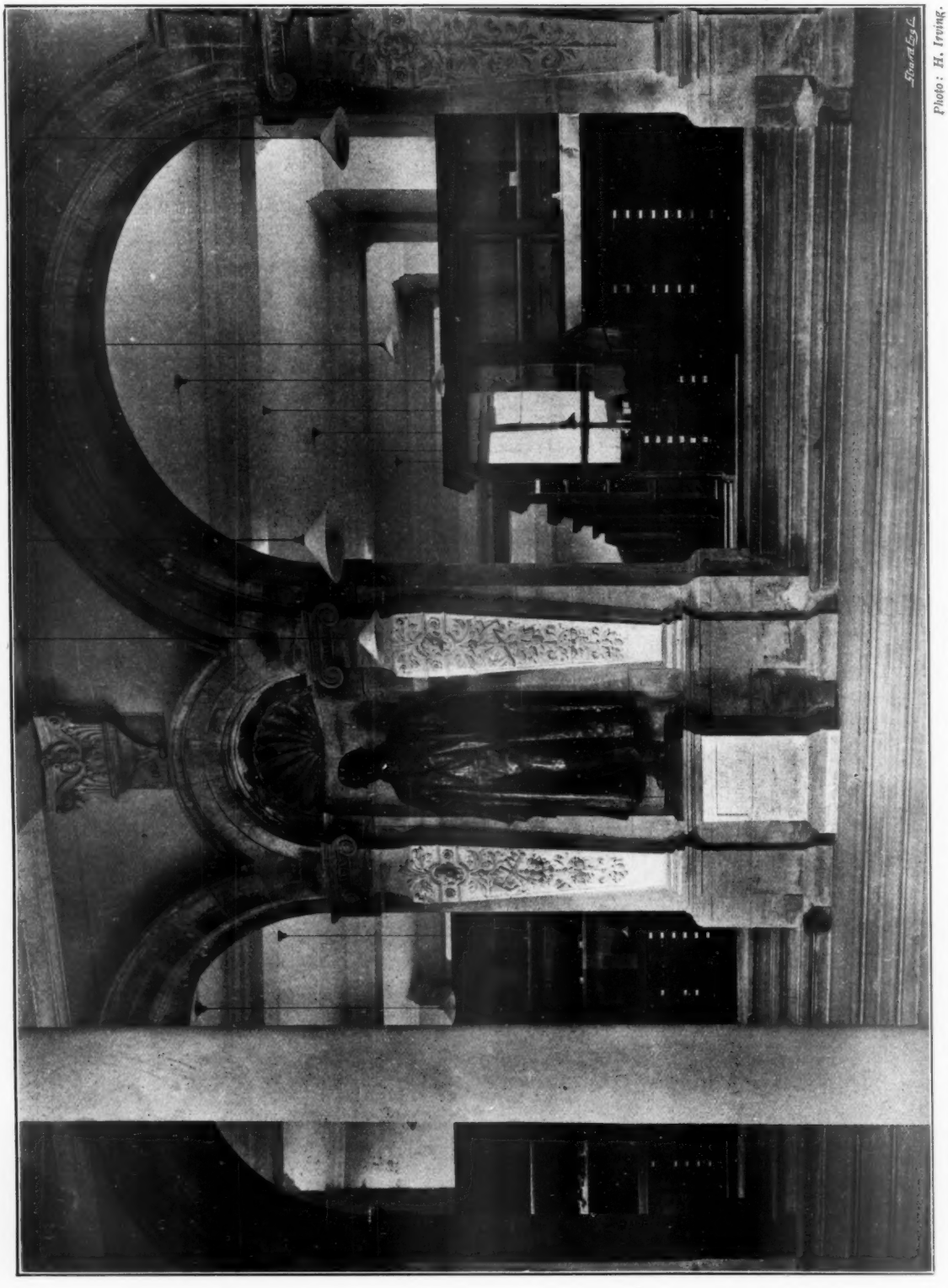


Photo: H. Irving.

THE SEDGWICK MEMORIAL MUSEUM, CAMBRIDGE. T. G. JACKSON, R.A., ARCHITECT.
STATUE OF PROFESSOR SEDGWICK BY THE LATE ONSLOW FORD, R.A.

Photo: H. Irving

MONUMENT IN HAMPSTEAD CHURCHYARD.

HARRY FURSE, SCULPTOR. E. P. WARREN, ARCHITECT.

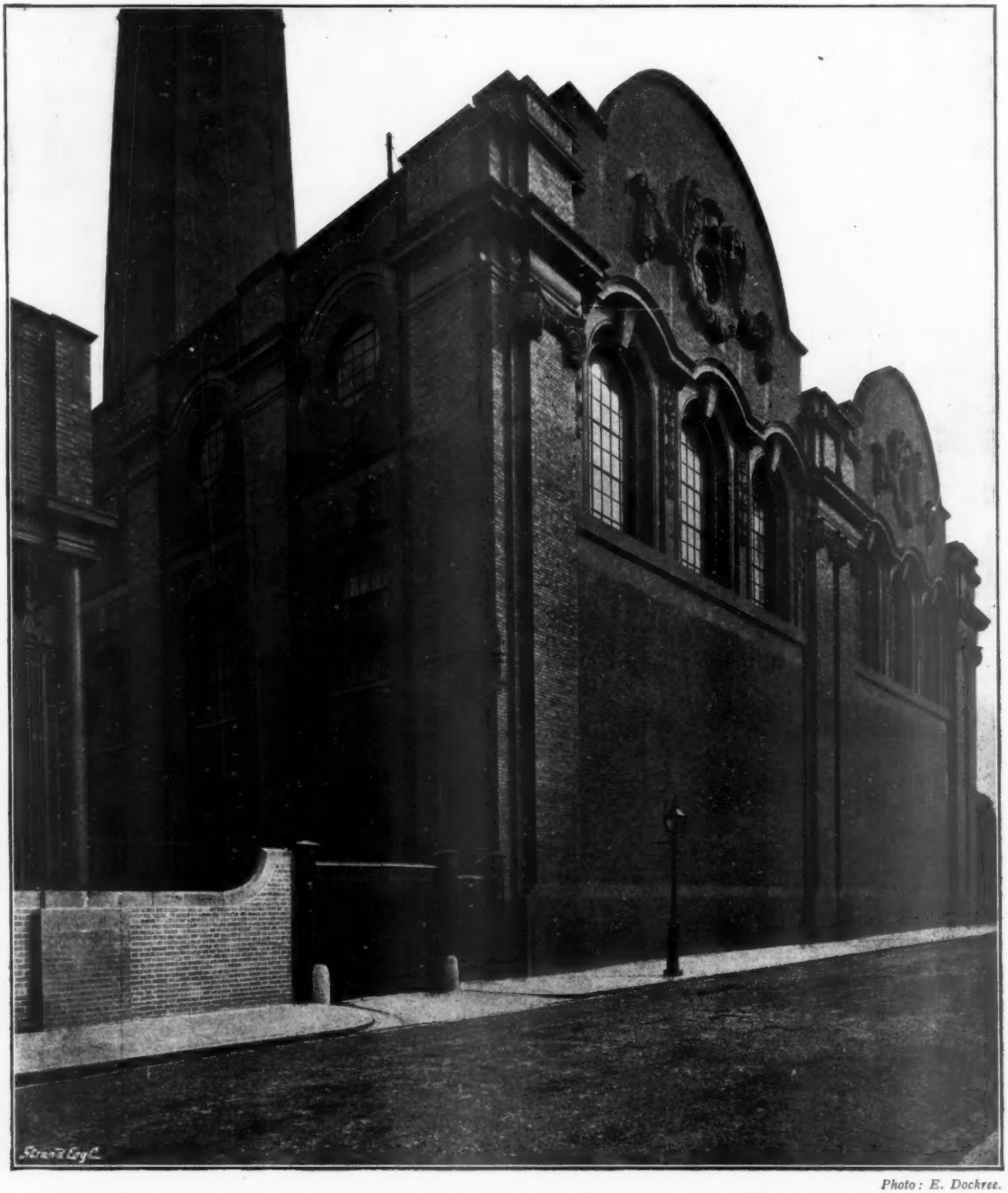


Photo: E. Dockree.

CENTRAL STATION BUILDING, GROVE ROAD, MARYLEBONE, FOR CENTRAL ELECTRIC SUPPLY COMPANY, LTD.
C. STANLEY PEACH AND C. H. REILLY, ARCHITECTS.

60 feet above ground level. In the architectural treatment of the upper part an attempt has been made to take advantage of the iron bands which sooner or later are required round the upper part of all shafts, and of the recesses formed, by placing the set-offs, when the brickwork is reduced in thickness, on the outside instead of the inside of the wall. By these means some relief is obtained, and the upper part is designed as an enriched feature which, in contrast with the plain wall below, forms the whole composition. It is possible that working on these lines some satisfactory and characteristic treatment of large stacks may be evolved. Similar principles have been followed in the general treatment of the principal façades.

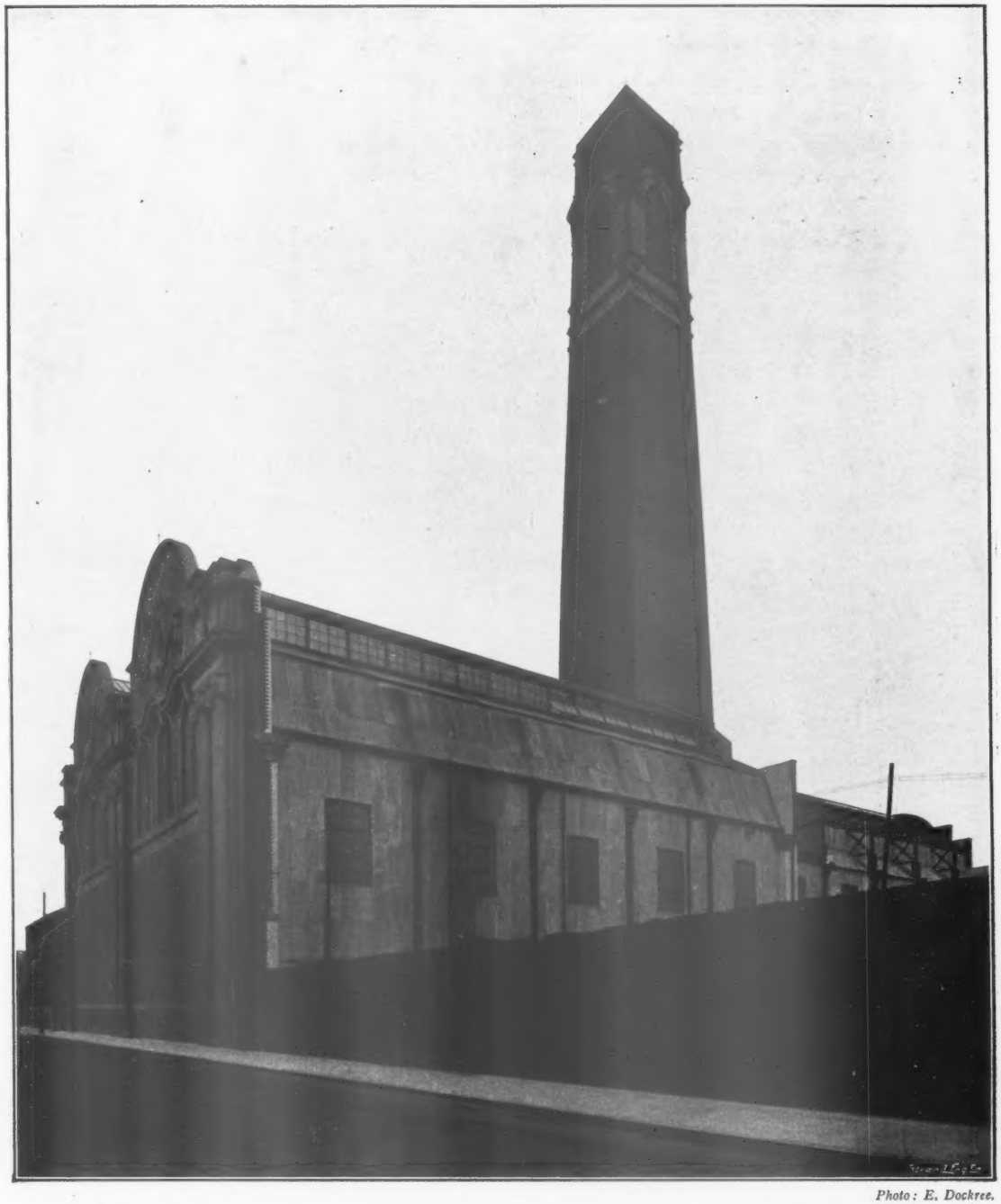


Photo: E. Dockree.

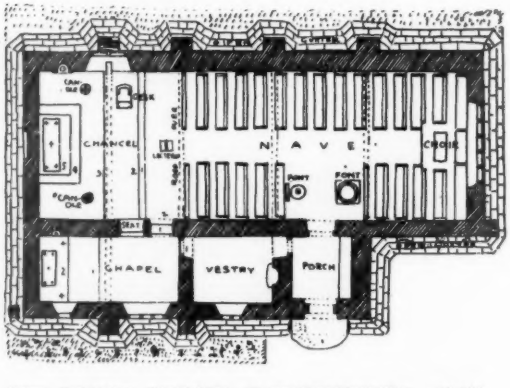
CENTRAL STATION BUILDING, GROVE ROAD, MARYLEBONE, FOR CENTRAL ELECTRIC SUPPLY COMPANY, LTD.

C. STANLEY PEACH AND C. H. REILLY, ARCHITECTS.

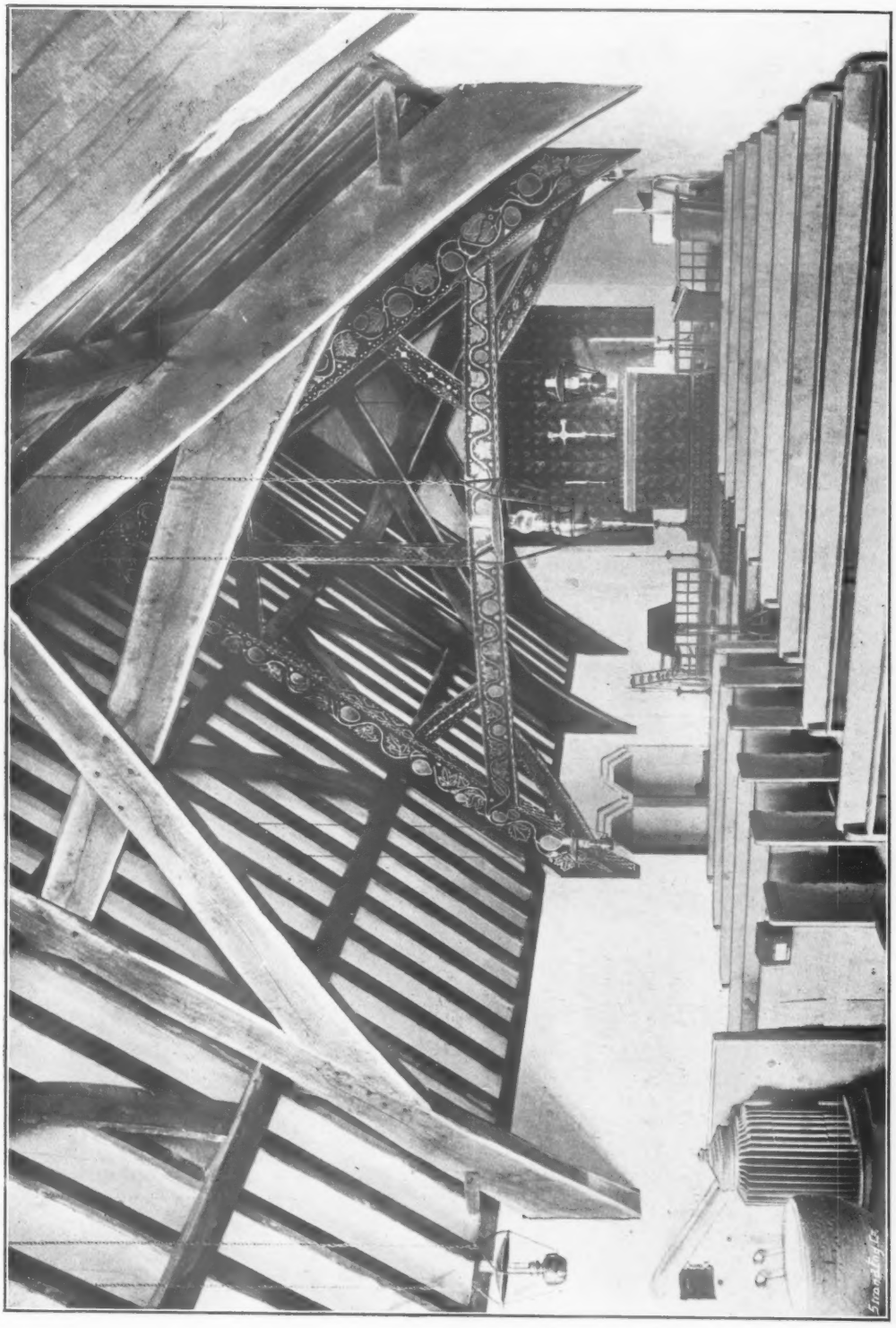
NEW CHURCH, KEMPLEY, GLOUCESTERSHIRE.—Kempley lies about six miles to the south of Ledbury and eight miles to the north-east of Ross. It stands on high land and has an uninterrupted view to the north of the Malvern Hills. The new church was built by Lord Beauchamp for the greater convenience of the parish, the old church, well known for its eleventh-century paintings, lying some little distance out of the modern village, and at a lower level and subject during the winter months to flooding. Some of the foundations of the new church had been put in, under Lord Beauchamp's direction, before Mr. A. Randall Wells, the architect, was asked to

NEW CHURCH, KEMPLEY, GLOUCESTERSHIRE. FROM THE SOUTH-EAST.
A. RANDALL WELLS, ARCHITECT.

design a church to fit upon them as nearly as possible, fulfilling certain requirements of his lordship that there should be no east window, that most of the lighting should be done from the west end, and that the eaves should be kept low. The work was done without a contractor, and the labour was mainly local, assisted by masons who had previously worked with the architect. Mr. R. James, a small local builder, acted as foreman. The stone used was from the Forest of Dean stone quarries, about seven miles from the work. The walling was the usual rough walling of the district, with quoins as little wrought as present-day masons' training will allow. The roof timbers were of oak cut on the estate and used green; the covering of stone tiles diminishing from five feet long at the eaves to a foot at the ridge. The bulk of these were quarried by the workmen from a piece of land hired in the Forest of Dean, stone tiling having fallen into disuse in the district. The stone relief of the Crucifixion on the outside of the east wall and the panel in the porch of the Virgin and Child were carved by men in the employ of Mr. Laurence Turner from the architect's designs, while the relief over the entrance was cut by the architect himself. The wrought-iron casements of a special flat-welded section were made and the glazing done by Mr. W. Smith, of 1, Balcombe Street, N.W., the glass used being some old Dutch glass of a horny appearance, similar to that which can

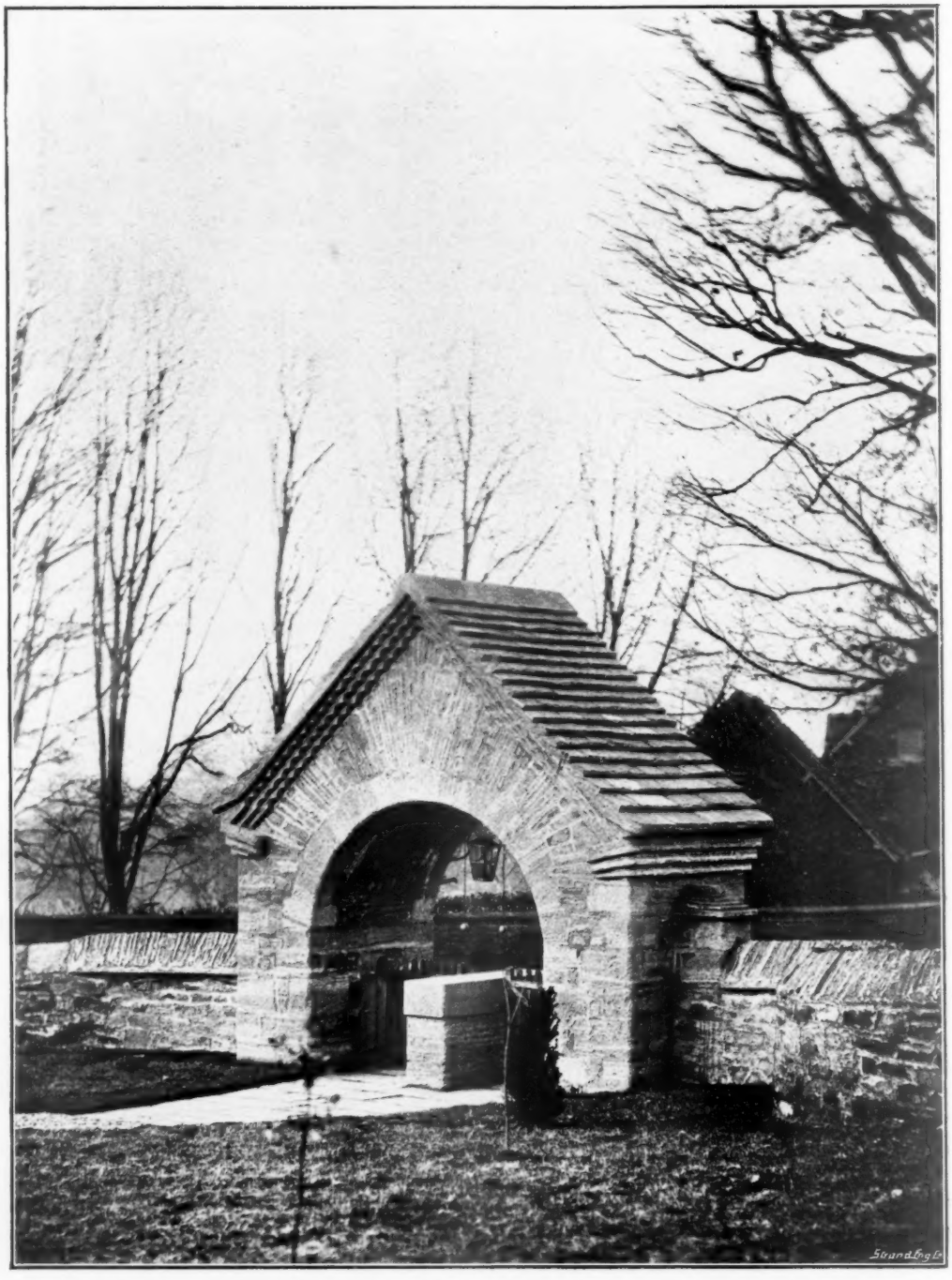


NEW CHURCH, KEMPLEY, GLOUCESTERSHIRE. PLAN.



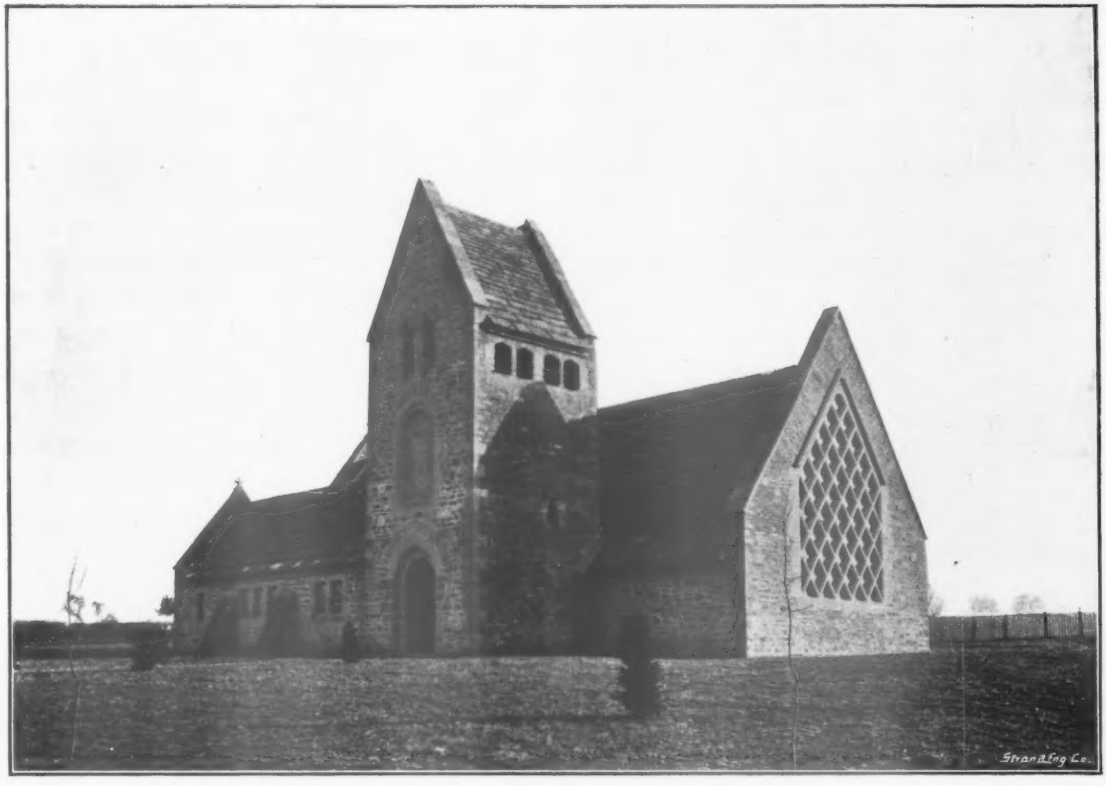
NEW CHURCH, KEMPLEY, GLOUCESTERSHIRE. INTERIOR, LOOKING EAST.

A. RANDALL WELLS, ARCHITECT.



NEW CHURCH, KEMPLEY, GLOUCESTERSHIRE. THE LYCH GATE.
A. RANDALL WELLS, ARCHITECT.

still be seen in English cottage lights with old flat leads and bands. The seating, the prayer desk, the rails, and the altar were designed by the architect and made by the Gloucester Joinery Company in English oak. The lectern was made by Mr. Ernest Barnsley; candelabra for the chancel and a pair of iron candlesticks for the chapel were supplied by Mr. Ernest Gimson. The edges of the Rood principal were ornamented by the carpenters with draw-knife and chisel in the traditional village manner. The pattern was gouged and cut into the oak by the architect, assisted by his brother, Mr. Linley Wells, so that it could be easily repainted by the village painter. After the



KEMPLEY CHURCH, GLOUCESTERSHIRE. FROM THE NORTH-WEST.
A. RANDALL WELLS, ARCHITECT.

gouging the whole principal was given a thin coat of ivory black, the pattern was then grounded in with broken white, and the colours filled in on top. The colours used were Chinese vermilion, ruby madder, golden ochre, chrome yellow, chrome green, permanent blue, and indigo. The figures on the beam—Christ, St. Mary, and St. John—were carved in pine by Mr. David Gibb, probably the only ship's figure-head carver left in London. These were painted with the beam, but unfortunately on their completion were removed by order of the Bishop of Gloucester, who at the same time had a canopy, given by Lord Beauchamp, taken from over the altar. The Vicar is responsible for the present temporary arrangement of the east end and candlesticks.

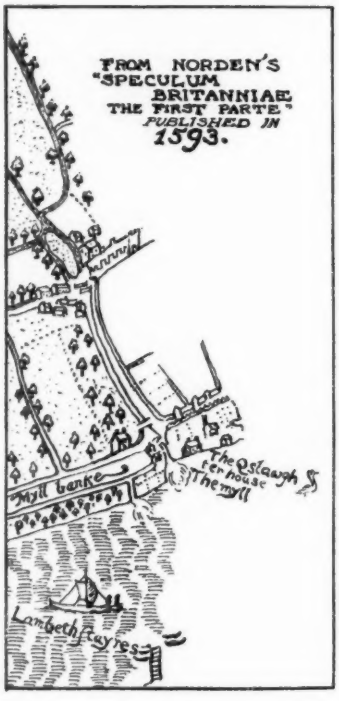
Discoveries at Westminster.

THE ABBEY MILLSTREAM AND BRIDGE AND DISCOVERIES MADE IN RECENT EXCAVATIONS.

GREAT COLLEGE STREET forms the southern boundary to the garden of Westminster Abbey, from which the street is separated by the well-known mediæval stone wall that runs along its northern side.

In many old maps this is called the Dead Wall, and separated the garden from the path and watercourse, the situation of which are accurately represented by the street of to-day. In a map dated 1690, at the British Museum, this dead wall is shown as forming the southern enclosure of the Earl of Lindsey's garden, the eastern portion of which seems to have formed part of the site of the Abingdon Street houses.

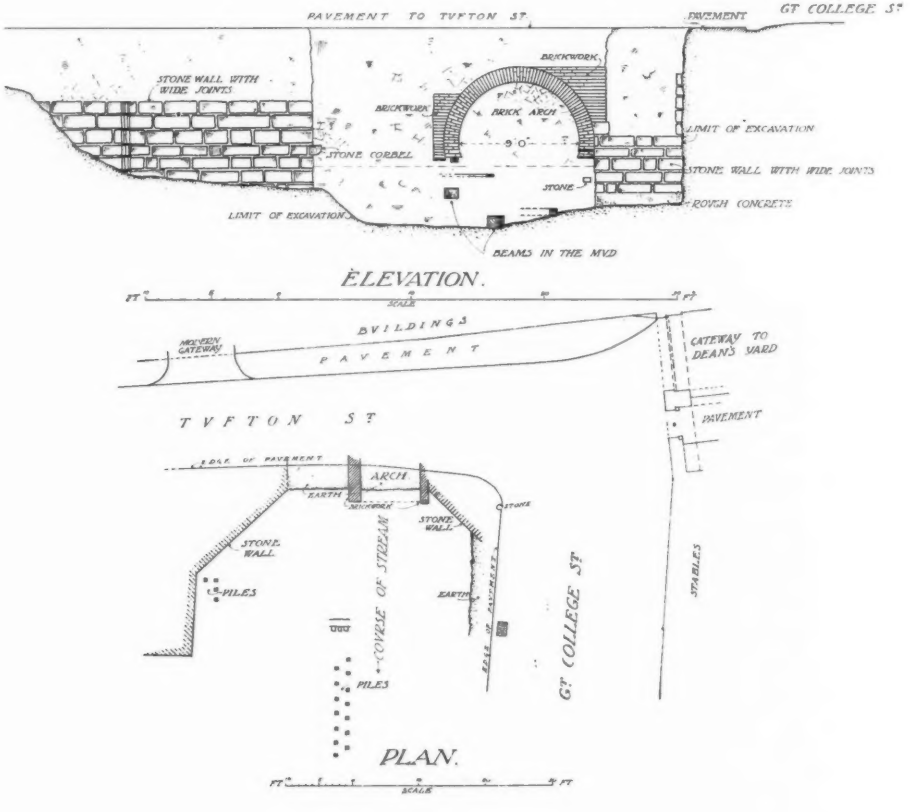
Many confident statements are to be met with that the watercourse in question was a tidal creek, practicable for boats and barges as far as the ancient Abbey gateway, represented by the archway at present giving access to the south-eastern corner of Dean's Yard, anciently called "The Elms." A study of sixteenth and seventeenth century maps and plans, however, makes it clear that this water-



course was a millstream of no great width, and serving a mill placed on the river bank at the southern end of the present Victoria Tower Garden. This mill is clearly shown in several plans and "bird's-eye" views, notably in the plan of Pieter Vanden Keere, 1593, in the Print Room of the British Museum. In this plan a double structure is shown, labelled "The Queen's Slaughter-house and Mill." Norden's map, in the "Speculum Britanniae—the first parte," published in 1593, also clearly shows the mill and Queen's slaughter-house. The slaughter-house existed well into the eighteenth century, and is shown as "The King's Slaughter-house," in the same position, in a plan of intended improvements to Westminster Bridge dated 1739, at the British Museum.

In view of its position on a tidal river with so great a rise and fall of tide as the Thames, the mill, in all probability, must have been worked between tides, and very likely by means of automatic flood-gates, which admitted water as the tide rose, and held it back as the tide fell. There are, I believe, many mills of this sort existing, on Southampton Water and elsewhere, and I have lately seen one near Chichester. If such was the nature of the mill, boats or barges could only have passed from the Thames to the millstream at high tide, by some side creek or lock, which I have been unable to detect on any of the maps or plans I have seen, and in the recent demolitions of buildings in Great College Street, and the

BRIDGE OVER ABBEY MILL STREAM WESTMINSTER.



subsequent excavations, nothing so far as I am aware has been discovered, either in the nature of quays or wharves, to warrant the supposition that the stream was navigable. In Richard Blome's "Map of the Parish of St. Margaret's, Westminster, taken from the last Survey, with Corrections," 1720, the position of the eastward commencement of uncovered waterway in Great College Street coincides with the bridge uncovered last spring at the junction of that street with Tufton Street, of which I am able to show a photographic view and measured drawing. Blome's map shows Tufton Street as the Bowling Alley, a name under which it figures in many contemporary and earlier maps, and indicates several small bridges crossing the course of the stream in what is now Great College Street, and connecting the path that ran along the bank under the old wall, known as the Dead Wall. It further shows one wide bridge for general traffic on Millbank.

The bridge, as shown in my illustrations, consists at present of a round brick arch or vault, placed between two stone abutments or flanking walls of obviously earlier date. They are in fairly dressed masonry of Kentish rag, and are, I should say, not later than the early part of the fifteenth century. The brickwork appears to be, at earliest, of seventeenth-century character, and the arch uncovered recently seems to me to be the end of a culvert rather than a bridge, and formed between the stone abutments of a demolished bridge, which was probably of timber, merely to enable the street to be carried solidly up to the entrance of Dean's Yard. It is noticeable that the exposed end of this brick vault shows that there is no invert arch. The vault indeed springs from the clay of the bed, without anything approaching to foundations. As I saw it in the spring, the right-hand or northern side of the vault rested upon a thin slab of wood, which, on inspection, proved to be not even oak or elm, but pine. The absence of invert arch and of foundations shows clearly that the brick vault must have been built after the millstream, as such, had ceased to exist, the water being drained off higher up, perhaps to feed the rectangular canal or pond in St. James's Park, shown in eighteenth-century prints. No water flows now in the old course in Great College Street. There is strong evidence that the bridge which connected the existing stone abutments or flanking walls was of timber, as one or two stone corbels remain to suggest the support of struts to the main timbers or "stringers" of such a structure.

I have had no possible means of ascertaining the length of this brick vault or culvert, and its extent would throw considerable light upon its purpose, for, if extending back, *i.e.* westwards, as far as Great Smith Street, it would lead to the supposition that, after the disuse of the mill and millstream, the latter was vaulted over to gain ground whereon to erect buildings or form gardens at the back or to the southward of Dean's Yard.

A few years ago the northern side of Little Smith Street, at present occupied by the Church House, was formed by a row of small houses whose back-yards abutted on the mews and back-yards of Dean's Yard; under these back-yards approximately the stream must have passed. But Norden's map shows a twin stream, the southern branch of which would, I think, about coincide with Little Smith Street. These streams seem to converge at the bridge, and the modern Church House appears to occupy pretty accurately the area of the island they enclosed. It will be noticed in Norden's map, of which my illustration shows a portion, that there is a group of buildings precisely at the point where the recent excavations have discovered so many indications of seventeenth-century usage. These are the only buildings which in 1593 seem to have existed on the south bank between the Abbey Gate and the river.

Eastward of the bridge and marking the southern bank of the stream is a row of small timber piles or camp shedding, probably placed to form a stable site on the bank for building purposes. Excavations for sewers, &c., in Great College Street have disclosed a stone wall of considerable thickness, which seems to denote the retaining wall of the northern bank.

Upon this site, extending between Tufton Street (the old Bowling Alley) and Barton Street, a much more recent thoroughfare apparently, there stood until last year two blocks of houses separated by a narrow passage called Black Dog Alley, and all, I think, of the eighteenth century; though the brick-vaulted cellars beneath those in the eastern block next Barton Street, built of smallish bricks, had the appearance of seventeenth-century work.

A very large number of objects, pottery, spoons, knives, and tobacco pipes, mostly of the seventeenth century, were found in the recent excavations beneath these houses. Before describing these interesting "finds" I wish to offer a few remarks upon the course of the stream in the neighbourhood of Thorney Island, and must profess my indebtedness for much information to Mr. J. G. Waller, F.S.A., whose paper and plan contained in the "Transactions of the London and Middlesex Archæological Society" in 1890 is of extreme interest and value. Mr. Waller derives its name of Tyburne from the Saxon Tye or Teo Bourne—a double brook—and accounts for this name by the duplication or bifurcation marking off

the delta on which the city and abbey of Westminster stand, and responsible, as he says, in great part for its formation. He points out that in its southward course, from its rise in the conduit fields below the hill of Hampstead to the Thames, it gives name to Brook Street, to Conduit Street, and to Pump House Ground, at the junction of the latter with Bond Street. Hence it passed by the rear of the garden of Berkeley House and the end of Clarges Street to the Green Park, which it crossed to the front of Buckingham Palace, where, in Faithorne's map of 1685, it was covered in from view. Passing in front of the palace its course was down James Street, Chapel Street, Orchard Street, between the present Church House and the south side of Dean's Yard to the bridge at the corner of Tufton Street.

Mr. Waller describes the junction of the other branch, the bifurcation, as occurring in front of Buckingham Palace, whence, he says, it made a bold sweep westwards, forming the ancient boundary of Westminster, and, under the name of the King's Scholars' Pond Sewer, passed into the Thames, running close to Victoria Station (there was in the early part of the nineteenth century a brewery here) and by Vauxhall Bridge Road and Tachbrook Street, out to the river. But there is still the eastern branch, which confined the island of Thorney, to account for, and this is more difficult. In Norden's map a branch is shown running eastward along St. James's Park until close to Spring Gardens, somewhere about the present Admiralty buildings. It seems to be covered in, or at any rate disappears. The whole lie of the ground, however, and the lines of the houses in old maps, seem to indicate that it passed through Old Scotland Yard or thereabouts, and made for the Old Scotland Dock shown clearly in the plan of the Palace of Westminster published by the Society of Antiquaries in 1747 from a survey of 1680. There seems, however, to have been an offshoot of this branch running southward across the present Parade Ground of the Horse Guards. I think it must have passed along a portion of the eastern side of St. James's Park, as excavations along the western side of Delahay Street some years ago discovered a number of willow trunks, &c., and down Princes Street, which in a map of 1685 as well as in others is called "Long Ditch," though this, of course, may have been an artificial ditch.

The water has long since been diverted from the natural course of the stream into the pond in St. James's Park and into various sewers.

I have now to draw attention to the objects found in the excavations on a spot bounded by Tufton Street—or the old Bowling Alley—on the west, the millstream or Great College Street on the north, and Barton Street on the east, and extending to some 80 or 90 feet southward from Great College Street. Most of the articles were found within 20 or 30 feet of the old stream, many in the course itself. The most valuable of these is a portion of a writhed Purbeck marble shaft, which is clearly the upper part of the north-eastern angle shaft of the Confessor's shrine. It exactly fits that position, and has now been restored to the Abbey.

They consist chiefly of spoons, knives, and pottery. Of the spoons, No. 2, a small slip-ended pewter spoon, is I think the earliest, probably of the early sixteenth century, and much like one in the Ellis collection at South Kensington having the date 1523 assigned to it.

Nos. 3 and 5 are pewter "Maids' Head" spoons of the middle seventeenth century.

No. 1, a brass spoon with a heart on the touch and a *pied de biche* handle, probably 1680–90.

No. 4, a brass spoon plated with tin, is plain, slip-handled, and a little earlier in date, while No. 6, marked S.C. on the handle, is a brass spoon probably of the seventeenth or early eighteenth century.

No. 7, the sifting or straining ladle of brass, from the shape of its handle must be, I think, of the late seventeenth century.

No. 8 is a pot-lifter of iron of about the same period.

The knives are, I believe, of the seventeenth century, with the possible exception of No. 10, a knife with a small blue-stained short wooden handle inserted in an iron ferrule, which may be of the late sixteenth century.

No. 11 has an engraved haft of bone.

No. 12 is a small ball-shaped padlock.

The small brass candlestick, No. 14 in plate B, is rather unusual in shape, and belongs, I think, to the end of the seventeenth century.

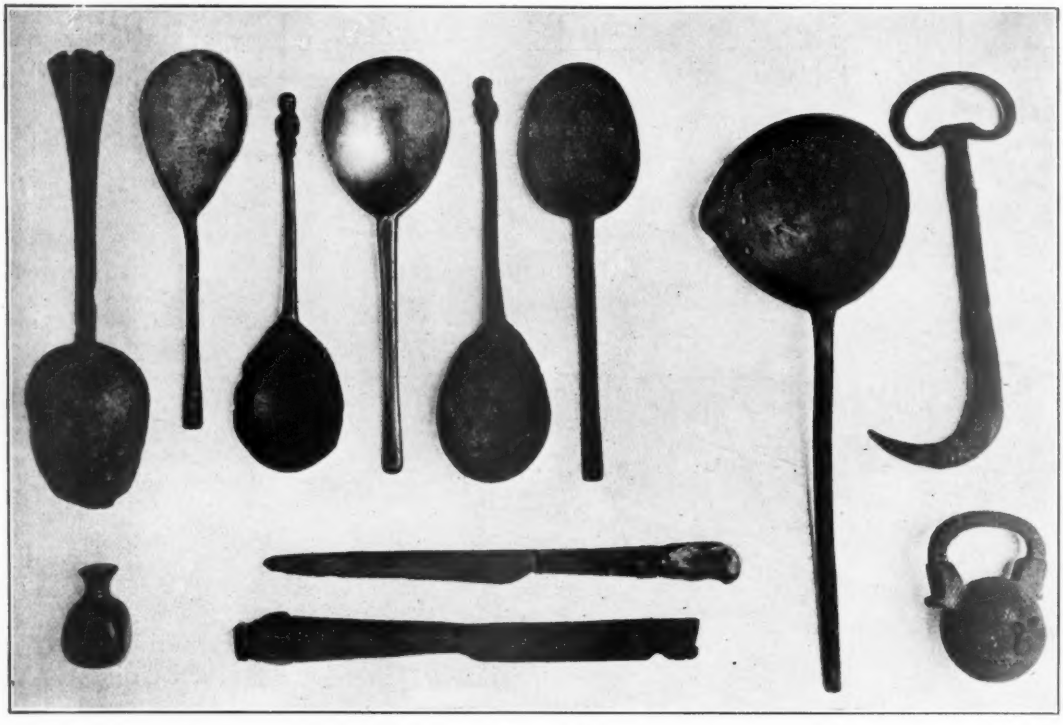
The extremely small pipe in the same illustration must belong at latest to the early part of that century; it would not admit an ordinary modern cigarette, and is barely 3 inches long.

The small glass bottles, Nos. 9, 20, and 23, are probably ink or essence bottles. The little green-glazed jug, No. 18, is curious, and seems to be intended, with its minute outlet, for pouring drops. The ointment pots in plate C are of a not unusual type; they are of glazed white ware, known as "Battersea Delft," turned brown in some cases by contact with the clay, the small pot No. 22 being prettily marked with blue.

I am indebted to Mr. W. W. Watts, F.S.A., and Mr. Mitchell, of South Kensington Museum, for kind assistance as to dates and descriptions of these articles.

The most exciting find has been No. 24, the "Greybeard" jug with its contents, No. 27.

THE BRIDGE OVER THE ABBEY MILLSTREAM
AT THE CORNER OF TUFTON AND GREAT COLLEGE STREETS, WESTMINSTER.



1 2 3 4 5 6 7 8
9 10 12
11

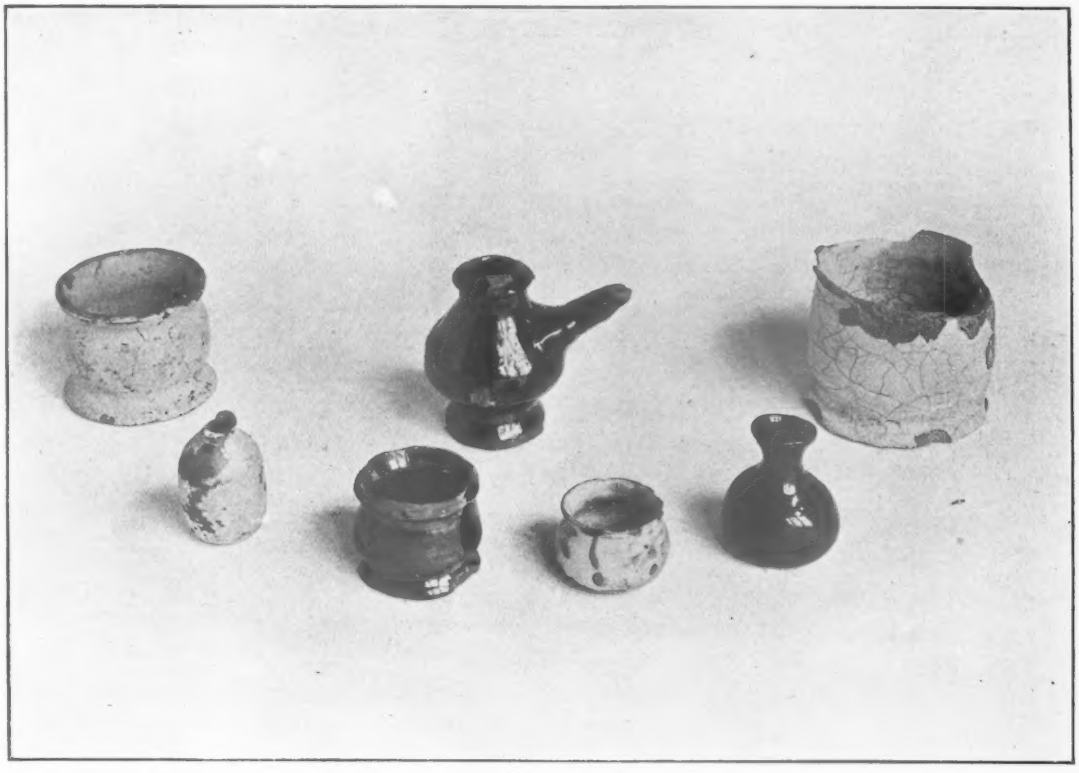
A—Spoons, straining ladle, pot-lifter, knives, padlock, and glass bottle.

Photos: H. Irving.

13 14 15
16

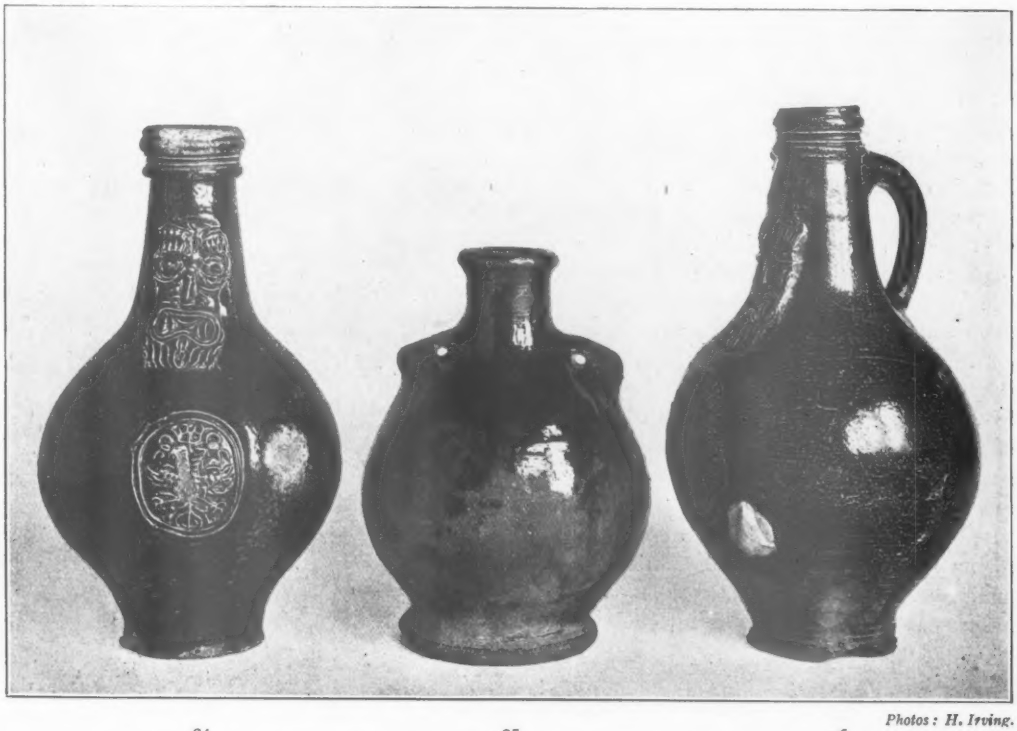
B—Stoneware jug; small brass candlestick; dark-green glass bottle; tobacco pipes.

OBJECTS FOUND IN THE WESTMINSTER EXCAVATIONS.



17 18 19
20 21 22 23

C—Ointment pots of "Battersea Delft," small glass essence bottles, and small green-glazed dropping jug.

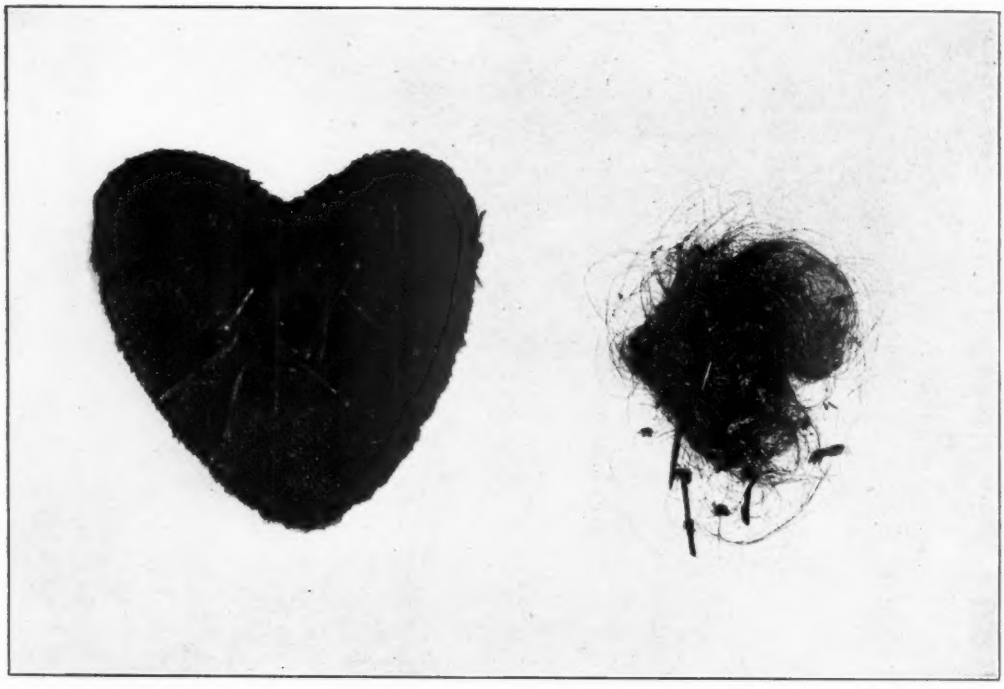


Photos: H. Irving.

24 25 26

D—Brown "Greybeard" jugs and green-glazed earthenware bottle.

OBJECTS FOUND IN THE WESTMINSTER EXCAVATIONS.



E.—27. CHARM FOUND IN "GREYBEARD" JUG. *Photo: H. Irving.*

When found and purchased by me it was stoppered down with a cork. Upon opening it, and washing out the contents, I found them to be as follows:—A small piece of cloth or serge, formerly red, cut carefully and neatly into a heart shape, and stuck full of brass round-headed pins, each pin bent. A small quantity of hair, ostensibly human, and some small finger-nail parings. I think there can be little doubt as to the nature of this deposit inside a stoppered jug, found in the clay of the millstream bank.

It is a malevolent charm, the intended victim of which was a woman, and it is perhaps permissible to surmise that the depositor and evilwisher was of the same sex. Perhaps a maidservant who had a grudge against her mistress, and who could easily obtain the clippings and prunings of her toilet.

The jug and its contents were probably buried in the seventeenth century with the accompanying rite of a fearful incantation. The Lord's Prayer may even have been said backwards, and a peculiarly malevolent phase of the moon may have been awaited. If it is fair to form these somewhat uncharitable and ungallant surmises, the opportunity is also presented of adjusting the balance of charity and of gallantry, by expressing the sincere hope that the charm was ineffectual, that the fair intended victim escaped all aches and pains, and that the only pricks bestowed were upon the repentant conscience of the depositor.

The only similar discovery of which I have knowledge is that of a small wax heart, also, I believe, stuck with pins, found wrapped in paper or parchment, under the thatched eaves of a cottage in Scotland. These charms seem to be akin to the images of wax and clay, perforated with pins, thorns, or daggers, which have formed part of the immemorial stock-in-trade of witchcraft both in eastern and western countries.

The finding of this relic of the Black Art adds to the romantic charm of an ancient and extremely interesting neighbourhood, unfortunately in imminent danger of total demolition at the hands of its ground landlords, on whose behalf I had, last year, the honour of making an appeal to the sympathies of your readers.

EDWARD PRIOLEAU WARREN.