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II.

PAPERS OF THE LITERARY CLASS.

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I. *On the ORIGIN and PRINCIPLES of GOTHIC ARCHITECTURE.*

By Sir JAMES HALL, Bart. F. R. & A. S. S. EDIN.

[*Read April 6. 1797.*]

INTRODUCTION.

LONG after the arts of ancient Greece and Rome had been lost, and before any effectual attempt was made to revive them, a style of building, known among us by the name of Gothic Architecture, began to appear in Europe.

At first, a few only of its peculiar forms were employed, which, in some old buildings, are to be met with, intermixed with the remains of a still more ancient style. Afterwards, rising by degrees into favour, it supplanted, in all the departments of architecture, every other species of design, and maintained an unrivalled dominion during three hundred years.

IN the early part of the sixteenth century it underwent a sudden reverse of fortune; not, however, (I am inclined to think), from any discovery of its defects, or any inquiry into its merits, but entirely from the general temper of the times. A passionate admiration of the works of antiquity, which had then recently attracted the attention of the moderns, produced a contempt for whatever was not professedly formed upon the models of Greece and Rome. At the same time, an indiscriminate hatred against every production of the middle ages, strongly felt by men just emerging from the gloom of that period, led them to overlook the merit of this very brilliant exception to its general barbarism.

BUT the excess of these impressions has of late very much abated; authors of the greatest eminence have testified a respect for Gothic architecture, by advancing various systems to account for its forms; and, whilst they acknowledge the superior excellence of the works of the ancient Greeks, they allow that, in airy lightness, and in bold grandeur of effect, those of the Gothic style have not been surpassed, if ever equalled, by the most celebrated of our modern productions. The period, too, in which it prevailed, being at a distance from our times, and that distance being magnified in our imagination by the obscurity of its history, we are inclined to rank its monuments with the works of remote antiquity, which seldom fail to excite even a greater interest than those possessing the charm of novelty.

IN concurrence with these favourable sentiments, my object, in the following Essay, is to restore to Gothic architecture its due share of public esteem, chiefly by shewing, that all its forms may be traced to the imitation of one very simple original; and, consequently, that they are connected together by a regular system: thus proving, that its authors have been guided by principle, and not, as many have alleged, by mere fancy and caprice.

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HAVING endeavoured to investigate the theory of Gothic architecture, I shall present a view of what I have been able to collect concerning its history; and, without pretending to dispel the very deep obscurity which still surrounds this curious subject, I shall venture to suggest some hints, which may be of service in guiding the researches of antiquaries. By this historical view, I hope, likewise, to refute an opinion, which has contributed greatly to discredit the Gothic style, namely, that it prevailed only in barbarous times; since I shall show, that, although it made its first appearance in a period of that description, it continued to flourish, while the arts of design were advancing in excellence, and still maintained its pre-eminence, when they had attained to the highest degree of modern splendour.

LASTLY, by instituting, between the Gothic and other styles, a comparison, founded upon the general and fundamental principles of architecture, I shall endeavour fairly to appreciate its merits, and to show the high estimation to which it is entitled, in point both of beauty and of utility*.

BEFORE

* THIS plan is now nearly completed, the whole Essay being written out, and accompanied with a set of drawings sufficient to render it intelligible, but by no means in a state for publication. To bring them to such a state must be a work of much labour and time, especially since the nature of the subject has hitherto compelled me to execute all of them with my own hands.

I HAVE judged it advisable, therefore, to lay before the Society a part of the Essay, which requires but few drawings, while it announces the fundamental and essential views of the theory; reserving the full illustration of it to another occasion, when I hope to produce the whole in a separate work.

IN the mean time, it may not be improper to observe, further, with respect to my general plan, that the first part, comprehending the theory of Gothic architecture, has been arranged under three subdivisions; the first of these contains a view of its elements, all its forms being reduced to their simplest state; the second treats of the deviations from those elements, which, in the course of practice, have been occasioned by various circumstances; and, the last, combining the other two, contains an examination

BEFORE we enter upon this inquiry, which is chiefly directed towards the investigation of a principle of Imitation, it will be proper to premise a few observations, on the mode in which the forms of nature have been introduced into works of art; a subject which hitherto seems not to have met with the attention it deserves.

ALTHOUGH the connexion between beauty and utility be still involved in such obscurity, that we are unable to decide concerning the universality of that connexion, of one thing we are certain, that, in a work intended to answer some useful purpose, whatever visibly counteracts that purpose always occasions deformity. Hence it is, that, even where ornament is principally intended, the ostensibly useful object of the work, if it have any such, must be provided for, in the first place, in preference to every other consideration.

BUT, in most useful works, some parts occur, the shape of which is quite indifferent with respect to the proposed utility, and which, therefore, the artist is at liberty to execute as he pleases; a liberty, which has opened a wide field to the taste and invention of ingenious men of every age and country, who have turned their attention to the composition of ornaments; and whose exertions have been more or less influenced by the state of civilization in which they lived. It would seem, however, if we may judge by those various efforts, that little has been effected by mere human ingenuity; since we see, that recourse has been had, almost universally, to Nature, the great and legitimate source of beauty; and that ornament has been attained, by the imitation

mination of the monuments of the art now in existence, and an application of our principles to every part of them.

THE present publication consists of the introduction to the whole Essay, together with the elementary part, illustrated by six plates.

imitation of objects, to which she has given a determinate and characteristic form.

THUS, among the Greeks, in the period of their highest refinement, we find the handles of vases in the shape of vine branches, or of serpents twisted round each other. Some urns of ancient Egyptian workmanship terminate in the head of an owl. The heads of our ships are decorated with figures of men and of animals; and the hatchets and canoes of Nootka Sound are covered with rude images of various natural objects.

THE imitation, however, in such cases, differs from that in a statue or in a picture. In the one, the sole object is to represent some natural object; whereas, in the other, the forms of nature have been partially adopted, and modified in various ways, in order to suit the useful destination of the work. In this manner, artists of every age have been led to select, among the forms of a natural object, such as answered their purpose, to the exclusion of the rest; and have exhibited modified imitations of nature, which, being justified by the circumstances of the case, do not suggest the idea of mutilation. Thus we meet with the foot of a table executed like that of a lion, or the hilt of a sword like the head of an eagle, without asking what has become of the body of the animal, and without being struck with any impropriety in the omission.

FREQUENTLY, where the materials employed are themselves possessed of variety and elegance, the object of ornament has been sufficiently attained, by allowing the natural forms, in whole or in part, to remain in the finished work. For instance, cups are made of shells, of cocoa nuts, or of ostrich eggs, the character and beauty of which depend upon the natural form of the materials. And in the case of the bottles, used by the Roman Catholic pilgrims, an example occurs of an utensil, in which

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the natural form has undergone little or no variation, since it consists of the hard outward skin of a gourd, of the same shape in which it grew upon the plant*.

THIS last class of forms has been introduced, by Imitation, into works composed of shapeless materials. Thus we have silver cups in the form of those made of shells, and fruit-dishes of stoneware in the form of baskets. The ancient Peruvian vases of pottery are executed in exact imitation of gourds; a practice which had probably succeeded the use of gourds as bottles. In such cases, the defect of real character in the object is supplied by a fictitious one, which, in the hands of a man of genius, is often productive of the most happy effects; since it enables him to confer upon his work the merit of consistency, and truth of character; qualities, which influence the mind of the spectator as powerfully, when founded on fiction as on reality. For we judge of such a work, as we do of a romance, in which we are scarcely less interested than if we believed it to be true.

WE may now consider the application of these principles to every kind of ornamental architecture. As stone is not naturally possessed of any peculiar shape, and as the useful object proposed, by structures formed of it, may be accomplished in various ways, very great latitude is left to the invention of the artist. We see, accordingly, that, in every country where much refinement has been introduced, great pains have been bestowed in ornamenting stone buildings, with figures representing various natural objects. It would seem, that the latitude has even been too great; for experience shews, that the
artist

* EVEN in this case, however, the natural form undergoes a certain degree of modification, by the device employed to produce the neck of the bottle. The fruit, while small and tender, is surrounded with a string, which remaining during its growth, prevents the part, thus bound, from swelling with the rest.

artist has succeeded best, where his imagination has been circumscribed, and forced into a regular channel.

FOR this purpose, recourse has frequently been had to the device last mentioned; the building being executed in imitation of a structure, composed of materials, which naturally possess a determinate and characteristic form. Such was the method followed by the architects of ancient Greece, who constructed temples, and other public edifices, in imitation of a rustic fabric, composed of square beams, supported upon round posts or stems of trees; and who derived the numerous ornaments of that beautiful style, from circumstances which would naturally take place in such a structure*.

VOL. IV.

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* THAT they really did imitate a building of wood, is stated, in the clearest manner, in the work of VITRUVIUS, particularly in his chapter, "De Ornamentis Columnarum." He there speaks of architectural work in stone or marble, as a representation, (*imago*), and of the timber fabric as a reality, (*in veritate*), as will appear by the following quotation.

"ITAQVE, in Græcis operibus, nemo sub mutulo denticulos constituit, non enim possunt subtus cantherios afferes esse. Quod ergo supra cantherios et templa in veritate debet esse collocatum, id in imaginibus, si infra constitutum fuerit, mendosam habebit operis rationem. Etiamque antiqui non probaverunt neque instituerunt in fastigiis mutulos, aut denticulos fieri, sed puras coronas; ideo quod nec cantherii nec afferes contra fastigiorum frontes distribuuntur, nec possunt prominere, sed ad stillicidia proclinati collocantur.

"ITA quod non potest in veritate fieri, id non putaverunt in imaginibus factum, posse certam rationem habere. Omnia, enim, certa proprietate, et a veris nature deductis moribus, traduxerunt in operum perfectiones. Et ea probaverunt, quorum explicationes, in disputationibus, rationem possunt habere veritatis."

IN one respect, this passage is extremely obscure, but, in another view, it is sufficiently clear to answer the present purpose. The obscurity arises from the difficulty, or rather impossibility, of discovering the meaning of several of the technical terms employed, these being very rarely used by authors, and relating to a mode of building different from any now practised. But, whilst commentators differ as to the precise meaning of the words *cantherius*, *affer*, and *templum*, as used in this passage, they all agree in considering them as denoting parts of the timber frame of a roof. At the same time, *mutulus* and *denticulus* are well known terms of architecture, and appropriated.

A FAINT and distant resemblance, however, of the original, has generally been found to answer all the end proposed by the imitation; a resemblance, which may sometimes be traced in the general distribution of the edifice, sometimes in its minute parts, and not unfrequently in both.

BUT the forms of nature, thus introduced, have been greatly modified by those of masonry. For though stone is by nature shapeless, yet, in the course of practice, many peculiar forms have been long established, and currently employed, in working it; such as straight lines, plain surfaces, square angles, and various mouldings used to soften the effect of abrupt terminations; all of which, originating in motives of mechanical convenience, and of simple ornament, had, in very early times, been appropriated to masonry, and considered as essential in every finished work of stone; so that, when the imitation of nature was introduced, these masonic forms still maintained their ground, and, being blended with the forms of nature, the two classes reciprocally modified each other.

THIS combination of art with nature, of which we see the most perfect example in the Corinthian capital, produces what

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appropriated to buildings of stone. The latter part, which relates to the principle of imitation in general, is sufficiently clear. The passage, in English, is nearly as follows:

"THUS, in the works of the Greeks, denticles were never placed under a modillion, because it is impossible that the *asseres* can be under the *cantherii*. If, then, what is situated over the *cantherii* and *templa in reality*, be exhibited as under them in the *imitation*, the principle on which the work proceeds is belied.

"IN the same manner, the ancients never approved of, or directed, the introduction of modillions or denticles in the frontispiece, but preferred a plain cornice; for this reason, that neither the *cantherii* nor *asseres* lie towards the gable, nor can they project beyond it, but are placed with an inclination to the gutter.

"THUS, they esteemed it a departure from principle to exhibit, in an imitation, what could not occur in reality. For in finishing their works, they introduced every ornament in an appropriated manner, and according to a real analogy borrowed from nature; and they approved of nothing, which could not be theoretically accounted for, on the principle of its resemblance to truth."

are called architectonic forms, in which the variety of nature, being subjected to the regularity of art, the work acquires that peculiar character, which, in a natural object, we consider as offensive, under the name of FORMALITY; but which, in architecture, we admire as a beauty, under the name of SYMMETRY: thus, we reprobate the formality of an avenue, and praise the symmetry of a colonnade.

SUCH is the nature of architectonic imitation; a device, which probably originated in accident, but to which architecture is indebted for its highest attainments.

I WAS first led by Mr BYRES, a very respectable member of this Society, to observe, among the remains of antiquity at Rome, many beautiful examples of the application of these principles by the ancients; and though my view of the subject was then very obscure, the theoretical solution of the question not having occurred till long after, I was fully aware of the very great practical advantages which they had derived from the employment of the principle of imitation.

OCCUPIED with this view of ancient art, as I was travelling through the western provinces of France, in my return from Italy, in the end of 1785, I was struck with the beauty of many Gothic edifices, which, far from appearing contemptible, after the masterpieces of art I had seen in Italy and Sicily, now pleased me more than ever. I was thus induced to believe, that those extensive works, possessed throughout of so peculiar a character, and so eminent for unity of style, could not have been carried on, unless the architects who built them, like those of ancient Greece, had been guided, in their execution, by some peculiar principle; and being dissatisfied with all the theories of the art which I had heard of, I undertook the investigation, which has given rise to the following Essay*.

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* AFTER stating my own views at full length, I shall enumerate and examine the various opinions of others on the subject of Gothic architecture, no less than five

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CONCEIVING that some rustic building, differing widely from the Grecian original, might have suggested the Gothic forms, I had made it my business to search for such a one, when the following accidental circumstance greatly assisted my speculations.

IT happened that the peasants of the country through which I was travelling were then employed in collecting and carrying home the long rods or poles which they make use of to support their vines, or to split into hoops; and these were to be seen, in every village, standing in bundles, or waving, partly loose, upon carts. It occurred to me, that a rustic dwelling might be constructed of such rods, bearing a resemblance to works of Gothic architecture, and from which the peculiar forms of that style might have been derived †. This conjecture was at first employed to account for the main parts of the structure, and for its general appearance only; but after an investigation carried on, at different intervals, during the course of these eleven years, with the assistance of some friends, both in the collection of materials, and in the solution of difficulties, I have been enabled to

in number. At the time here alluded to, I was acquainted with an opinion, which I have since found to have originated with Dr WARBURTON, that the Gothic style was copied from an alley of trees. I was aware of the advantages of this theory in some essential points, yet it always appeared to me unsatisfactory in many others: and I conceive it to be at best far too vague to serve as a guide to the artist.

† THIS resemblance, though very obvious in many cases, has not, to my knowledge, been observed by any one but the late Mr GROSE; to whom it seems to have occurred in a transient way. He makes use of the shape of a bower to assist his description of a Gothic roof, (*Antiquities of England and Wales*, p. 75.); but he does not go so far as to ascribe the architecronic forms to this origin; a view, which probably, would not have escaped him, had he not been preoccupied with a different one; for he considers the rudiments of a Gothic arch as formed "of two flat stones with their tops inclined to each other, and touching." I did not meet with this passage till several years after I had undertaken the present inquiry, and had carried it a considerable length.

to reduce even the most intricate forms of this elaborate style to the same simple origin.

IN the present state of the question, the following inquiry must be considered as falling under the denomination of, what is called by Mr STEWART*, "*Theoretical History*," and by some French authors, "*Histoire raisonnée*;" being an attempt to trace, by conjecture, the steps through which an art has passed, in attaining the state in which we observe it. Indeed it is probable, that few investigations have been undertaken, which more completely correspond to that definition, since, in most subjects of this kind, many steps of the progress are known, and nothing is required but to fill up, by theory, the interval between them; whereas, in the present case, as all direct testimony is wanting, and as no steps of the actual progress of the art have come to our knowledge, our opinions on the subject, hitherto, can only amount to presumptions, founded upon the correspondence of the theory with the monuments of the art now in existence; and, the more numerous and complicated the cases are, in which this coincidence takes place, the greater probability there is in favour of the system.

BUT, though such be the actual situation of the inquiry, we may hope to see it, hereafter, assume a different form; for, should the conjecture, brought forward in the following Essay, carry with it sufficient plausibility to excite a spirit of research among persons best qualified to pursue the subject, there is reason to expect, that discoveries may be made, of a literary or architectural nature, by which its truth or falsehood will be established beyond dispute.

WHAT has just been said will, it is hoped, serve as my apology for having advanced a system, which, strictly speaking, is founded on conjecture alone; and, on the other hand, for having enumerated a multitude of particulars, many of which might

* BIOGRAPHICAL ACCOUNT of Mr SMITH.

might justly be considered as superfluous, were the theory supported by direct testimony.

OF THE ELEMENTS OF GOTHIC ARCHITECTURE.

WHEN we enter a Gothic church, our attention is first attracted by a double row of clustered pillars, composed of an assemblage of long and slender shafts, which, reaching from the ground nearly to the summit, there separate and spread in all directions, forming the ribs or *groins* (as they are called) of a vaulted roof. In the meeting of these groins, and in the windows of the sides and ends, we see the form of the pointed arch, the principal characteristic of Gothic architecture.

SUCH buildings have, I conceive, been executed in imitation of a rustic dwelling, constructed in the following manner:

SUPPOSE a set of round posts, (Pl. I. fig. 1. & 5.), driven firmly into the ground in two opposite rows, the interval between the neighbouring posts in the same row being equal to that between the rows, and each post being raised above the ground to a height equal to three of those intervals.

THEN a set of long and flexible rods of willow, being applied to each post, (fig. 2. & 6.), let them be thrust into the ground at its base, and bound to it by two tyings, one near the ground, and another at two-thirds of its height; the rods being left loose, from this last point upwards, and free to be moved in any direction. Let three rods be connected with each outside corner post, (as A or H of the ground-plan fig. 6.), and five with each

each of the others, (as B or G), and let their position be such as to cover the inside of the post, (as marked by little circles in fig. 6.), so that, when seen from between the rows, the lower part of each post shall be concealed from the view, and present the appearance of a bundle of rods, (fig. 2.).

THINGS being thus disposed, the skeleton of a thatched roof may be formed, by means of the loose ends of the rods. This is represented complete in Plate II. figure 15. & 16.; but the structure being rendered intricate, by the mixture of different sets of forms, I have, for the sake of distinctness, described each of them separately, and have represented them by separate drawings, with each of which a ground-plan is connected.

A ROD from one of the posts, being so bent as to meet a similar one from the post immediately opposite to it, in the middle of the space between them, let the two rods be made to cross each other, and let them be bound together at their crossing, (Pl. I. fig. 3.). Thus will be produced the exact form of the Gothic arch. The same being done with each pair of opposite posts, and a set of pointed arches being formed, let them be connected together by means of a straight pole, laid upon the forks of the crossing-rods, and bound to each of them, (fig. 7. & 11.).

THEN let a loose rod be brought from each of any two contiguous posts in the same row, so as to form a pointed arch similar to that just described, and nearly of the same height. This being done with every two contiguous posts, (fig. 8. & 12.), and a new set of pointed arches being thus produced, standing opposite to each other in pairs, let each pair be bound by a horizontal pole lying on the opposite forks, and crossing the longitudinal pole, described above.

Two of the rods of each corner post, and three of those of each of the others, being thus disposed of, we have one of each corner post, and two of each middle post still to employ;

ploy; which is done as follows: A pair of these unoccupied rods being brought from any two posts which stand diagonally to each other, (A and F, fig. 6.), and made to meet in the middle, not as in the first case, crossing in an angle, but side by side, forming a semicircle, and joined together after the manner of a hoop, (fig. 4.); and the same being done with every pair of diagonal posts, (fig. 9. & 13.), the whole rods will have been employed.

EACH of the three sets of arches having thus been separately described, (fig. 7, 8, & 9.), the complete structure, in which they are all combined, may easily be understood, (Pl. I. fig. 10. and 14., and Pl. II. fig. 15, & 16.).

IN this manner a frame would be constructed, fit to support thatch or other covering, and such a one has probably been often used. It would seem, however, that, for the sake of strength, the number of rods has been increased in each cluster, by the introduction, between every two of them, of an additional rod, which, rising with them to the roof, still continues its middle position, as they spread asunder, and meets the horizontal pole at an intermediate point. This is shown in Plate III. figure 19, which is drawn with its covering of thatch; and the same is expressed in the corresponding ground-plan, figure 20.

FROM the imitation of a dwelling, so constructed, we may now trace the three leading characteristics of Gothic Architecture, the pointed arch, the clustered column, and the branching roof, (Pl. II. fig. 17, & 18., and Pl. III. fig. 21, & 22.)*.

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* IN buildings of stone, the arch or groin, which joins the diagonal piers, is very generally a real semicircle, like that in the willow structure just described; as I have found to be accurately the case at Beverley and Melrose. This rule of execution, with the deviations from it, which we meet with occasionally, will be fully considered in a subsequent part of the Essay; in which it will be shown, that in the usual roof, where the diagonal groin is a semicircle, it becomes the regulator of all the rest, determining their height and form in every respect.

THE rustic fabric might thus be covered completely, but would not be habitable, unless the openings of the sides and ends were closed, so as to resist the weather. This might easily be accomplished, by means of basket-work, covered, as is still practised in many countries, with a mixture of clay and straw. In order to furnish ribs for the basket-work, a set of upright rods would be thrust into the ground below, and bound to the arch above, dividing the opening into spaces reaching from top to bottom, (Pl. IV. fig. 23.), which, being filled up with twigs wattled through them, would be entirely closed, (fig. 24.), and the work would be tolerably strong. It might however be thought advisable, for the sake of greater strength, to split all the upright rods, down to the level of the points at which the main rods of the opening separate from their respective posts; or, to borrow a term from architecture, down to the level of the impost of the arch; and then to carry the half rods, so split, across the rest, in such a manner as to afford the opportunity of repeatedly binding them to each other, (fig. 25.).

BUT were the spaces all shut in this manner, the house would be rendered absolutely dark. It would therefore be necessary to provide for the admission of light, which might be done, without materially weakening the structure, by omitting some of the wattled work in the middle, so as to leave part of the ribs open and bare, (fig. 25.).

THESE naked ribs seem to have suggested the forms of the slender bars of stone, called Mullions, which constitute the framework of the glass, in all Gothic windows; the most common example of which may be seen in (fig. 27.).

THE window, in the fabric of stone, as well as in that of willow, being very conspicuous, would naturally become an object of attention in point of beauty. Accordingly we find, that, in the composition of Gothic edifices, much pains have been bestowed in ornamenting the windows, by the introduction

of a number of figures, which are often extremely elegant, and sometimes surprisngly complicated, though without confusion; for they can all be traced to some variety or modification of the simple elements just laid down; as will be shown, when we treat of the more complicated works of Gothic architecture; at present, it is necessary to mention only one other design.

In this window, (fig. 26.), the halves of the neighbouring rods are brought to meet, but not to cross, and are bound together so as to touch each other, back to back; next, the halves of each rod being brought together again, they are bound face to face; then again separated, and bound a second time back to back, with the halves of the neighbouring rods; and so on, till the whole space is filled with a set of regular and equal compartments, bounded by waving lines, (fig. 26. & 29.).

THE form of the Gothic door may be traced to an origin similar to that of the last mentioned window. One pair of rods, (fig. 31.), being brought from the posts which form the upright sides of the door, are made to meet in a pointed arch, in the manner described above; then, another pair of rods, longer than the first, and connected with the same posts, are brought to meet above them, and are bound together face to face, like the half rods in the last mentioned window; the space between the two pairs of rods being occupied by a circular hoop.

THE representation of the upper pair of rods, when dressed with some small ornaments, as in many Gothic buildings, produces a most elegant effect. Figure 33. is a door of St Mary's, Beverley, reduced from a drawing taken on the spot, at my desire, by Mr J. HALFPENNY.

THE form of the steeple, however various and apparently different from what has hitherto been mentioned, can easily be reduced

duced to the same principles. The common steeple, or sharp pointed spire, seems to have for its origin simply eight long and straight poles thrust into the ground, one in each of the angles of an octagon; and so inclined, that they all meet in a point, directly over the centre of the base, and raised above it four or five of its diameters, the rods, thus placed, forming together a very acute octagonal pyramid, (fig. 34.). The original object of a structure of this kind would probably be mere ornament, as it is not calculated to answer any purpose we know of, unless it were to support a bell. Perhaps the first works of this kind, even those executed in stone, were placed upon the ground; but as a spire is seen to best advantage from a distance, an architect would naturally think of raising it in the air, by placing it on the summit of a tower; which is the case with all the spires of this kind I have seen. Figure 35. is a view of the spire of Tuxford in Nottinghamshire.

BESIDES the rectilineal spire, we sometimes meet with others of a curved form, which may be accounted for in a manner no less satisfactory, as shall be shewn in a subsequent part of this Essay.

HAVING now taken a view of all those parts of Gothic architecture, which constitute its solid mass, it remains, in order to complete the elements of the art, that we consider two sets of small ornaments, which very often occur, and which, though not necessary in theory, nor universally observed in practice, arise naturally from the principles already laid down, and contribute very much to give to Gothic architecture that peculiar appearance by which it is distinguished. Both these ornaments may be traced to the effects of time upon the materials employed in the construction of our rustic fabric; one set being connected with the vegetation of the rods, and the other with their death and consequent decay.

As it would frequently happen, that the willow rods, thrust into the ground, would strike root and grow, the architect seems to have taken advantage of this circumstance, by representing them as decorated with buds and tufts of leaves, whenever he thought that such ornaments could be introduced with good effect.

THIS practice has been very generally followed in the execution of the door, as in that exhibited in figure 33. the upper part of which is a representation of living rods, covered with tufts of leaves, like those in actual vegetation, (fig. 32.). Upon the spire, too, a set of small projections, placed at regular intervals, often occur, as in that of Bunny, in Nottinghamshire, (fig. 37.), which seem to be the representation of buds springing from the poles of the original, (fig. 36.).

THESE ornaments, known by the name of *Croquets*, when placed on the sloping part of doors, steeples, pinnacles, &c. and of *Finials*, where they form a tuft on their summit, universally and unequivocally represent foliage. The leaves, it must be owned, however, seldom resemble those of trees, but more commonly some plant of the cabbage kind. On this occasion, the artist has used the freedom to deviate from the strictness of the imitation, and has contented himself with adhering to the general idea of foliage. But, in so doing, he has been in a great measure justified by the circumstances of the case; for the foliage of a tree, especially that of the willow, being composed of a multitude of small and detached parts, could not, without much difficulty, be executed in stone, and would produce a very frail and perishable work, which could only be placed with advantage in very protected situations. He has thus been induced, in most cases, to choose some plant having a massy and compact form, better adapted to sculpture. This however is not without exception, as we do meet sometimes with cro-

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quets formed of the leaves of various trees, especially of those of the vine; as may be seen in York-Minster in several places; particularly in that very interesting collection of pediments and pinnacles, surrounding the inside of the nave and its aisles. These are executed with amazing delicacy and elegance, and with such fertility of invention, that, though eighty-eight in number, not only every two of the pediments, but every two croquets on the same pediment, differ from each other*.

UPON

* ONE of these pediments, with its pinnacles, croquets, and finials, executed on a large scale, may be seen in that beautiful collection of the ornaments of York-Minster, now publishing in numbers by Mr HALFPENNY: in which work, likewise, are many other things applicable to the present subject. I am happy to have it in my power to bear testimony to the faithful accuracy with which the objects are there represented, from having examined several of the originals in that view, in the course of last summer, (1796), particularly that of Plate XLI. of which I made a drawing myself, in company with Mr HALFPENNY; so that I can vouch for its exactness in every respect. I have been induced thus particularly to mention the subject, by a suspicion mentioned in Mr HALFPENNY's seventh number, concerning the accuracy of his drawings; some gentlemen having imagined, that he had placed the sculpture in too advantageous a light. To this he answered, that "in truth he has not been able, in many instances, to come up to the spirit and elegance of the originals." A declaration no less true than it is modest. I am well convinced that the gentlemen, with whom this suspicion has originated, have not been much accustomed to examine our Gothic buildings of eminence, since, in any of these, they would have met with numberless works, executed in too high a style of design to admit of embellishment in the present state of the arts. Nor is it wonderful that such should be the case, when we reflect, that they belong to the 14th and 15th centuries; during which, a series of artists flourished in Italy, who, in point of chaste design, and careful imitation of nature, have never since been equalled, though they had not attained to many of the refinements which were introduced in the subsequent age. These artists travelling over Europe, contributed greatly to the ornament of the Gothic edifices which were then building, as we learn from many curious facts collected by Lord ORFORD, in his *Anecdotes of Painters*.

I SHALL enter more fully into this subject, when I speak of the History of Gothic Architecture; and I am led to touch upon it now, though out of place, in order to call the attention of men of taste to the fate of numberless beautiful ornaments of the

the

UPON the monument of King JOHN I. and Queen PHILIPPA, in the church of Batalha, are two canopies of frittered-work, constructed in a manner which I shall endeavour to explain in a subsequent part of this Essay. The lower part of each of them consists of an arch of contrary flexure, like that of the door of St Mary's, Beverley, (fig. 33.), but ornamented in a manner somewhat different, having, in place of the crockets, a set of leaves, in form and arrangement, greatly resembling those of the willow*.

WHOEVER

the Gothic style, which are daily perishing by the exertions of a mistaken zeal in their favour.

EVERY year, great sums are bestowed in dressing up the old churches, in many parts of England, much to the detriment of these noble edifices. In some cases, this is done by befouling the building with white or yellow paint, which chokes and confounds all the delicacy and elegance of the sculpture. This evil, however, is not of the deepest kind; since, here, the original forms of the work remain entire, and may be again restored to their purity, when a better taste prevails. But an injury of a much more serious nature is occasioned by the operation of chipping, in which the mason, with a barbarous hand, actually goes over the whole work, and chisels off the surface to a certain depth, leaving but a poor shadow of the original form. By both operations, the building acquires the harsh and glaring appearance of new work; which, however, is removed in a few years, by the influence of the weather, and the edifice recovers its former grandeur, as far as colour is concerned. But the havoc committed by chipping is quite irreparable; for the sculpture, when once removed, can return no more.

I HAVE been told, in vindication of this practice, that the forms of the old work were restored exactly as they originally stood. An idea worthy of the simplicity of MUMMIUS the Roman general, who demolished Corinth. As if it were in the power of every stone-cutter to replace a master-piece of the 15th century!

I WAS happy to find, at York, that a different spirit prevailed in the operations carrying on in the Minster. In all these repairs, the ancient sculpture has been most scrupulously respected; and, in many places, the stone has been carefully freed from its load of paint, so as to restore it to its original purity. For these attentions, the public is greatly indebted to the good taste and judgment of the Rev. Mr EYRE, one of the residentiaries.

* SEE Mr MURPHY'S admirable publication; a work to which I shall have very often occasion to refer, when I speak of the more complicated forms of Gothic architecture.

WHOEVER pays any attention to Gothic architecture, must observe, in the upper part of most windows, an ornament projecting from the bars, formed by two curved lines meeting in a point. It would be difficult to describe this form in words, but it may be understood easily by figures 27, & 28. of Plate IV. which represent two contiguous windows of St Mary's, Beverley; in one of which the bars have been executed plain, and in the other they have been ornamented in this manner. Figure 30. is the window that lately stood in the chapel of Holyroodhouse at Edinburgh, and figure 29. the same general form executed quite plain, as it sometimes occurs. As this ornament has not, that I know of, been characterised by any peculiar name, I shall apply to it that of *cusps*, by which mathematicians denote a figure of the same kind*.

IT was long before any satisfactory explanation of this form occurred, though the frequency of its appearance, and the uniform manner in which it is introduced in all Gothic works, left little room to doubt that it had an origin, in common with the more substantial forms of the style. At last a friend suggested to me, that it may have been borrowed from the appearance assumed by the bark of the rods, when about to fall off, in consequence of decay. With this view, having attended particularly to branches in a similar situation, I have met with several facts, which tend to confirm this conjecture. The dead branches of every kind of tree, after being exposed to the weather during three or four years, throw off their bark, which, immediately before it drops, curls into various shapes, owing

* ASSEMBLAGES of these cusps are spoken of in the descriptions of Gothic works, by the names of trefoil, quadrefoil, semi-trefoil, &c. but no proper word has been used to describe the form, wherever it occurs, or however combined. This, I trust, will sufficiently apologise for the liberty I have taken, of introducing a new term into architecture.

AN application of the word *cusps*, as used by mathematicians, may be seen in Dr SMITH'S Optics, Vol. I. p. 172. where he uses it in describing the caustics formed by reflection.

owing to the unequal contraction of its different layers. This takes place variously in different woods; in some, the bark bends inwards, in some outwards, in some across the branch, and in some lengthways. I have had occasion to observe, that, universally, the bark of the willow bends concave outwards, and lengthways with respect to the branch. One of the first distinct examples I met with, of this kind, was on a rail at St Mary's Isle in Galloway, in the summer of 1792, (Pl. V. fig. 38.). The rail had been made entirely of fresh willow, and the posts had all struck root, having then the third year's growth upon them; the horizontal bars had died of course, and were in the act of losing their bark. This, in some places, was seen separated from the wood at one end, and adhering to it at the other, forming a gentle and continued curve with the mass of bark, which still remained attached to the wood; some pieces of bark, a few inches in length, had separated at both ends, and remained adhering only by the middle; in some places two contiguous pieces of rising bark met, and exhibited a shape very much resembling that of the cusped ornament which I have just described. In the summer of 1795, I saw, at the same place, a still more striking example of this, upon an upright post of willow, (fig. 40.), in which the two pieces of curling bark formed, together, a cusp from nine inches to a foot in length. In a few days, the under piece of bark fell off; but the upper one remained for more than a month, lying close to the wood during rain, and rising from it when the weather was dry. Figure 39. represents a large branch, which I cut from an old willow, having the curled bark upon it, and which, being kept dry, still retains its shape.

THERE is great reason to suppose, that this accident has suggested the cusped ornament: For if we suppose a window of the willow house, (fig. 41.), in the same state of decay with the rails just mentioned, to have come under the observation of an architect

test of genius, in the habit of borrowing all his ideas from a house of this kind, and eager to seize upon whatever contributed to add beauty or novelty to his work, it is natural to believe, that he would take advantage of the circumstance, by imitating, in stone, the curling bark; and this being executed with that regular symmetry, which architecture bestows upon the natural objects it represents, (fig. 42.), would produce a light and elegant effect, and the ornament would soon become general.

WE know that to such accidents, the architecture of the Greeks was indebted for many of its principal embellishments; of which the origin of the Corinthian capital is a striking and authentic example.

FINDING that all the essential parts of Gothic architecture could thus be explained, by tracing its origin to the imitation of a very simple rustic edifice, I was desirous of submitting the theory to a kind of experimental test, by endeavouring actually to construct a building such as has been described. With the help of a very ingenious country workman*, I began this in spring 1792, and completed it, in the course of the winter following, in a manner which far surpassed my expectation, and which has already met with the approbation of several Members of this Society. The method of construction answered so well in practice, that I doubt if a better could be followed, with such simple materials; and so primitive is the mode of execution, that I believe, with a little ingenuity, the whole might be executed without the help of a sharp instrument, or of any materials but such as the woods afford.

A SET of posts of ash, about three inches in diameter, were placed in two rows, four feet asunder, and at the interval of four

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* JOHN WHITE, cooper, in the village of Cockburnspath, in Berwickshire.

feet in the rows. Then a number of slender and tapering willow rods, ten feet in length, were applied to the posts, and formed in the manner already described, into a frame, which being covered with thatch, produced a very substantial roof, under which a person can walk with ease*.

THIS little structure exhibits, in miniature, all the characteristic features of the Gothic style. It is in the form of a Cross, with a Nave, a Choir, and a north and south Transept. The thatch, being so disposed on the frame, as not to hide the rods of which it is composed, they represent accurately the pointed and semicircular arches, and all the other peculiarities of a groined roof. The door is copied from that of Beverley. The windows are occupied by a number of designs, executed, (by means of split rods), in exact resemblance of those which actually occur in various Gothic edifices. Round each window is a border of compact wicker-work, which, by deepening the shade, adds greatly to the general effect. At a little distance stands the spire, formed of eight straight poles of willow planted in the earth, and rising in an octagonal pyramid to the height nearly of twenty feet. Various other Gothic forms are likewise introduced, which being of the more complicated kind, will be explained in a subsequent part of this Essay.

THE appearance of the whole, whether seen from within or from without, bears, I flatter myself, no small resemblance to a cathedral.

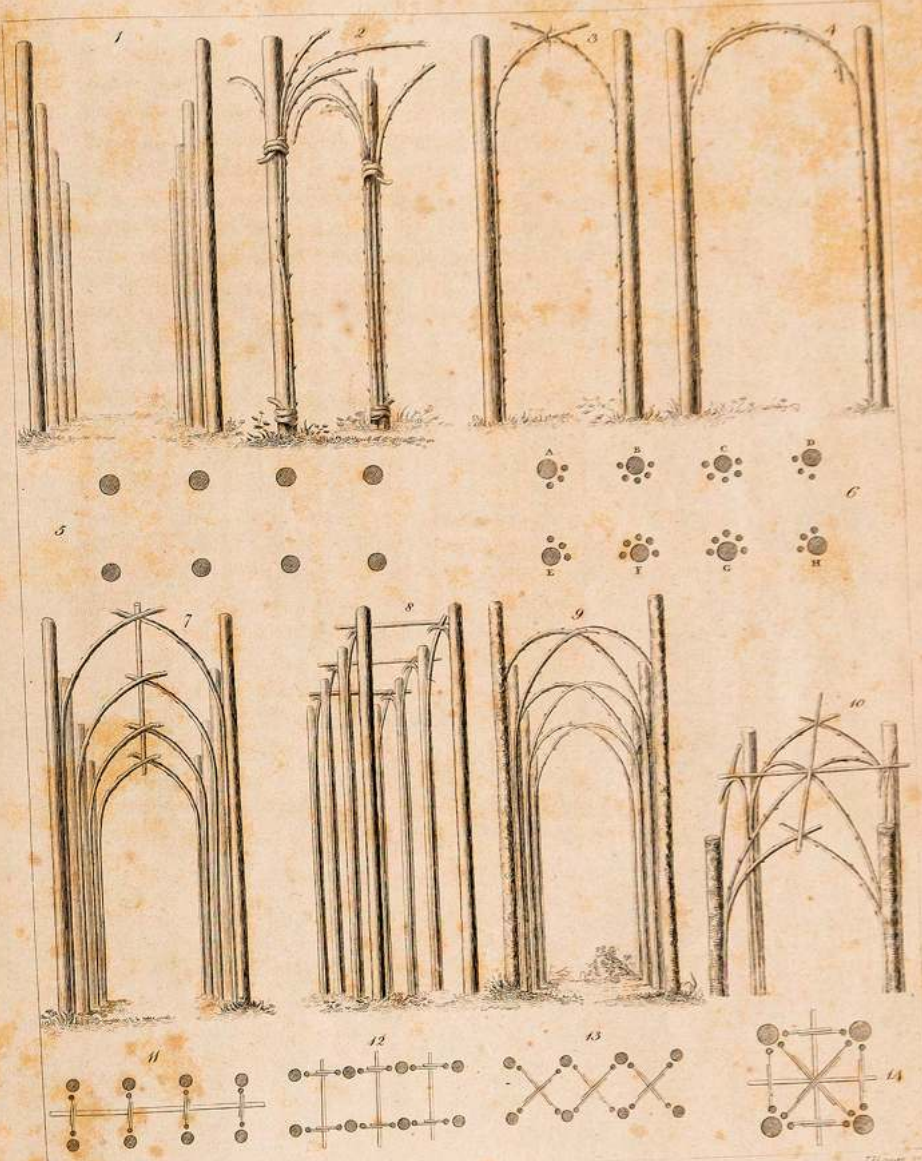
IN the course of spring and summer 1793, a great number of the rods struck root, and throve well. Those of the door, in particular,

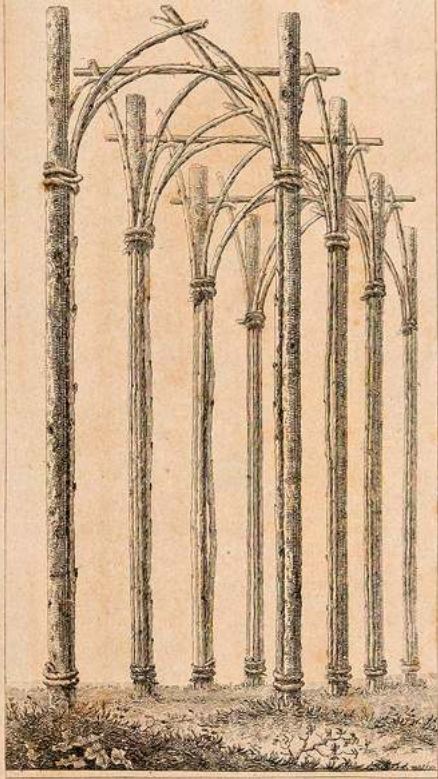
* THE roof, being protected from the weather, is still in perfect preservation, though it has now stood about five years; but the windows and other parts, which are more exposed, are going fast to decay, though they have been often repaired. Soon after the work was finished, a very accurate drawing of it was made by an ingenious young artist, Mr A. CARSE, which it is proposed to engrave for the illustration of this Essay, when published at full length.

particular, produced tufts of leaves along the bent part, exactly where they occur in stone-work; the vegetation did not however reach, as had been wished, to the very summit, but was more than sufficient to justify an artist in the execution of doors like that of Beverley, (fig. 33.). Three of the rods of the steeple, also, sent out buds; at small intervals, to the height of eight or ten feet from the ground, so as, at one stage of their growth, to resemble the budded spire already described.

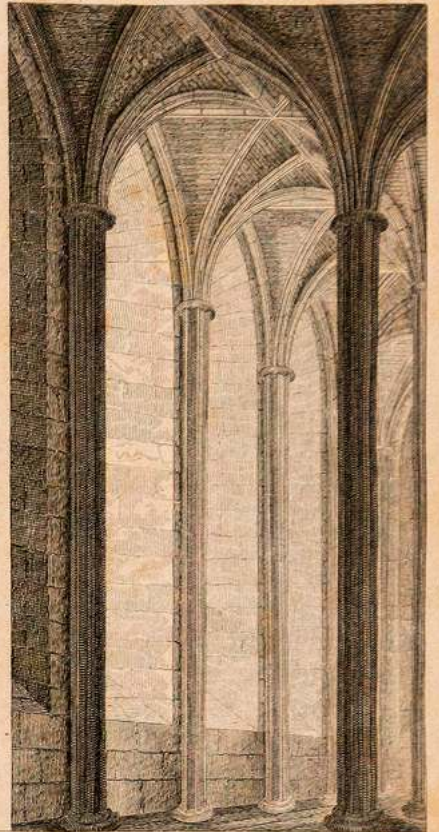
I HAVE likewise had the satisfaction, in the course of last autumn, (1796), of finding one entire cusp formed by the bark in a state of decay, in a place corresponding exactly to those we see executed in Gothic works.

IN this manner, all the original forms of Gothic architecture may be accounted for. But they seldom occur in the state of simplicity, which, in order to facilitate their description, I have hitherto supposed; for, in a Gothic edifice, they are for the most part complicated by varieties in execution, and by intermixture with each other. They have been modified, likewise, and sometimes disguised, by the circumstances attending the transition from wicker-work to masonry, which have occasioned changes, both in the general design of these works and in the execution of their minute details. I shall endeavour to show, however, (in the work I have already announced), by an examination of the actual monuments of the art, that the most intricate of these forms may be traced to the same simple original. But to accomplish this, it will be necessary previously to investigate the transition to Masonry; an inquiry too extensive to be comprised within the limits of an academical memoir.

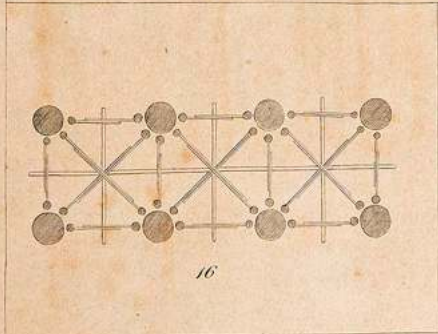




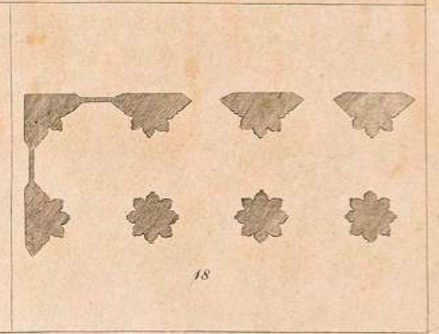
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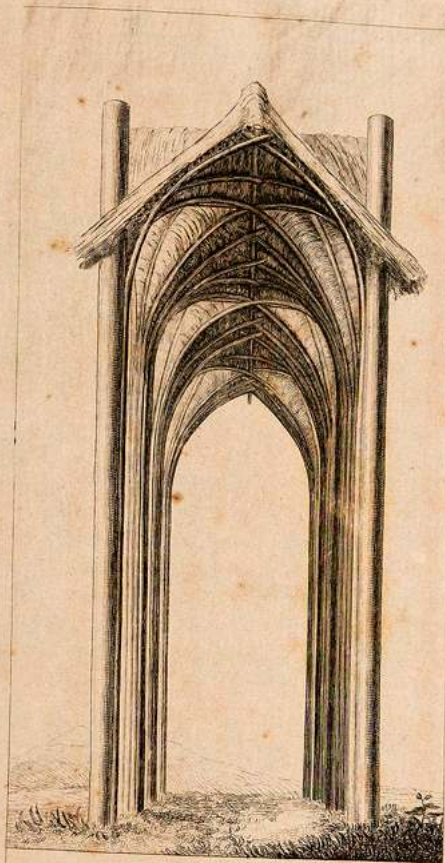
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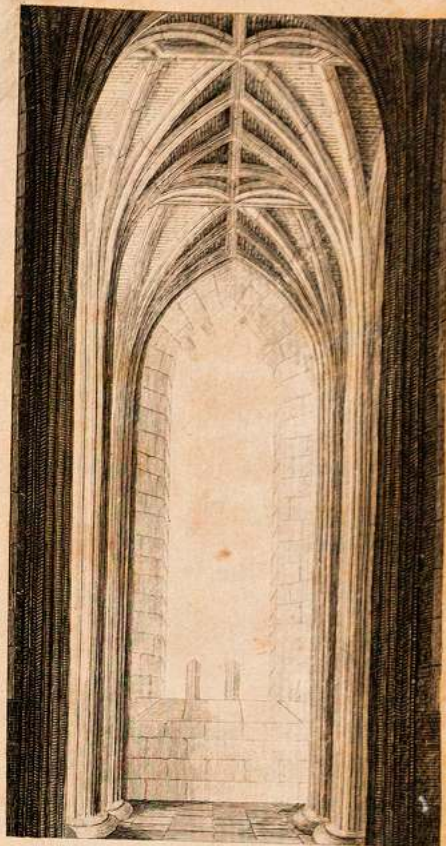
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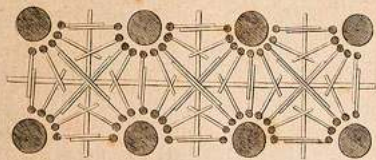
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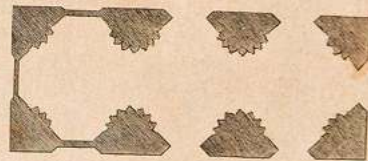
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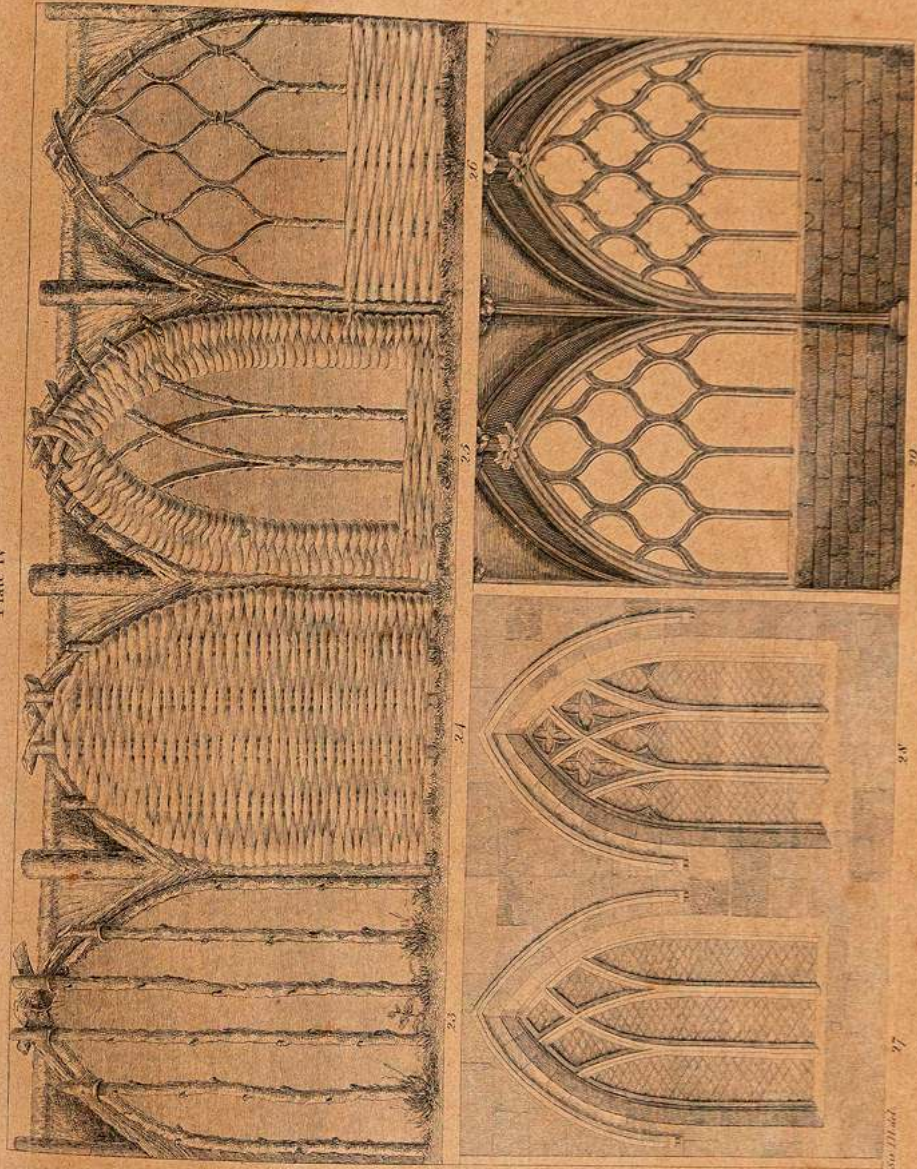


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Plate IV



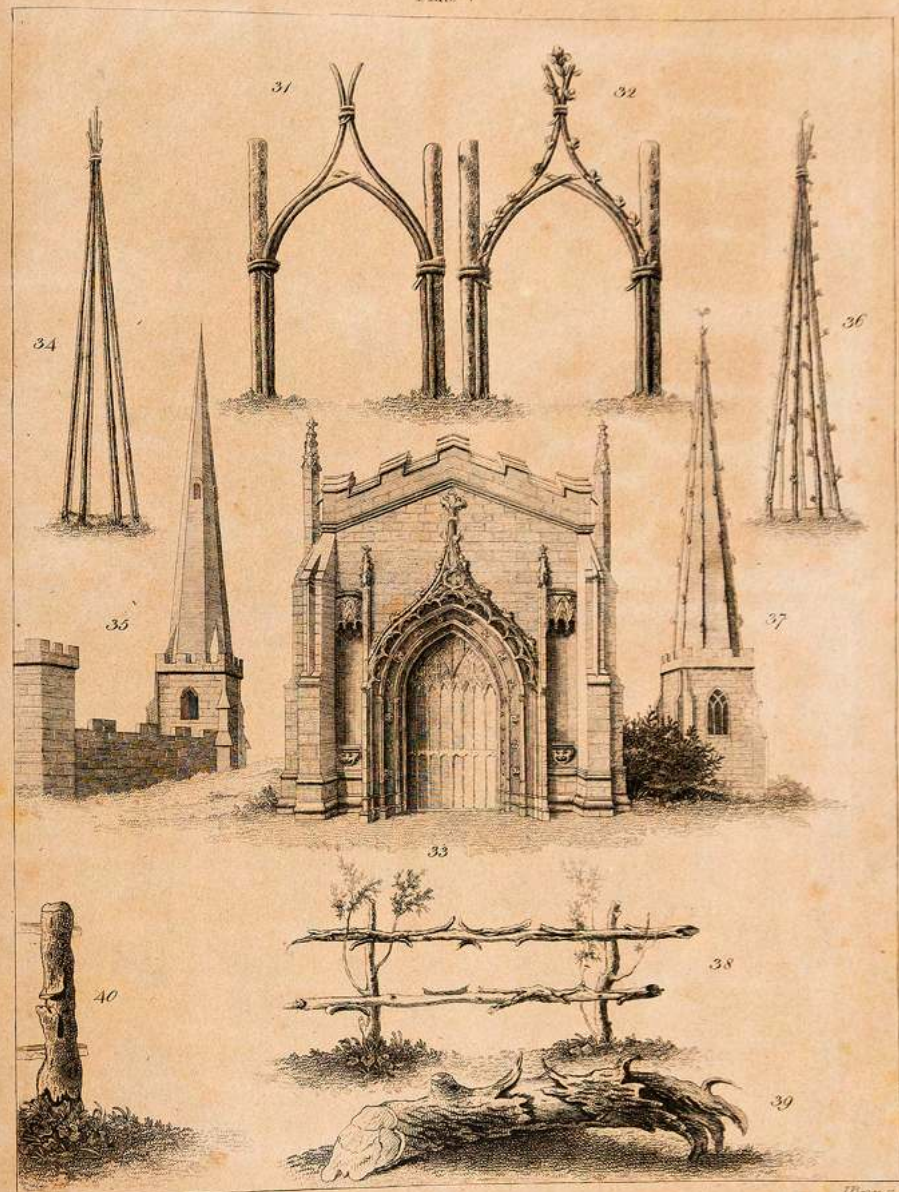
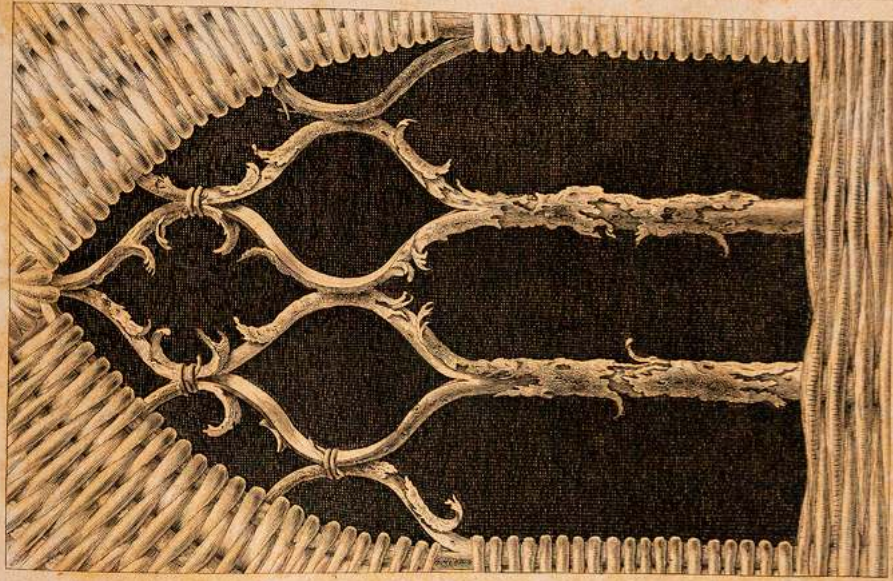
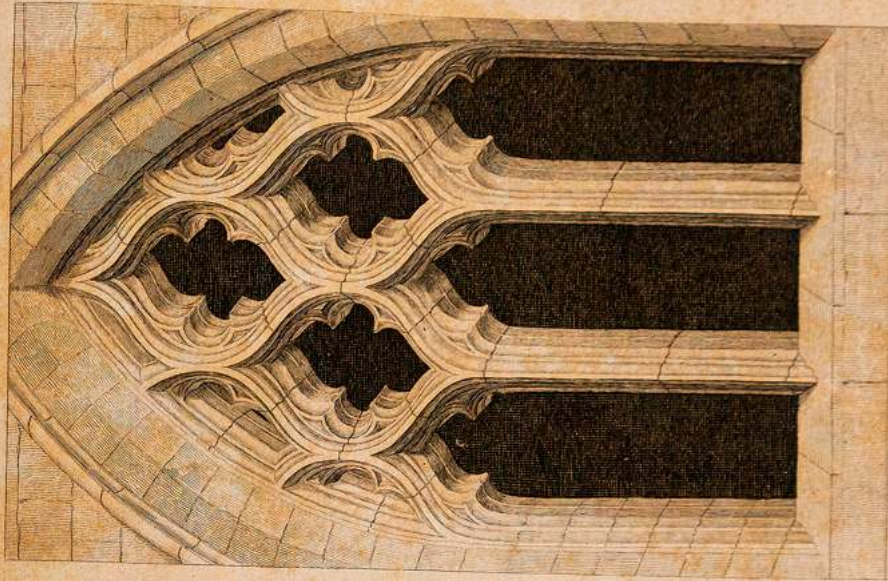


Plate VI



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