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978-1-108-07059-1 - An Encyclopaedia of Architecture: Historical, Theoretical,  
and Practical

Joseph Gwilt

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An architect like his father before him, Joseph Gwilt (1784–1863) is best remembered for his published work. His most celebrated achievement, reissued here in its first edition of 1842, was this hugely popular resource, which went through several further editions. The work draws extensively on French sources, although its success owes much to its accessibility and organisation into three thorough sections. The first looks at the development of architecture, using examples from various countries and regions, with a particular focus on Britain. Architectural theory is then explored with reference to construction, building materials and detailed illustrations. Lastly, Gwilt turns to praxis, looking at rules and styles of architecture and how these have been implemented in public and private buildings. Over 1,000 wood engravings, based on drawings by the author's son, accompany the text. *The Architecture of Marcus Vitruvius Pollio* (1826), Gwilt's English translation, is also reissued in this series.

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# An Encyclopaedia of Architecture

*Historical, Theoretical, and Practical*

JOSEPH GWILT



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AN  
ENCYCLOPÆDIA  
OF  
ARCHITECTURE,  
HISTORICAL, THEORETICAL, AND PRACTICAL.

BY  
JOSEPH GWILT.

ILLUSTRATED WITH MORE THAN ONE THOUSAND ENGRAVINGS ON WOOD

By R. BRANSTON,

FROM

DRAWINGS BY JOHN SEBASTIAN GWILT.



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## P R E F A C E.

AN Encyclopædia of any of the fine arts has, from its nature, considerable advantage over one which relates to the sciences generally. In the latter, the continual additions made to the common stock of knowledge frequently effect such a complete revolution in their bases and superstructure, that the established doctrines of centuries may be swept away by the discoveries of a single day. The arts, on the other hand, are founded upon principles unsusceptible of change. Fashion may, indeed,—nay, often does,—change the prevailing taste of the day, but first principles remain the same; and as, in a cycle, the planets, after a period of wandering in the heavens, return to the places which they occupied ages before, so, in the arts, after seasons of *extravaganza* and *bizzaria*, a recurrence to sound taste is equally certain.

It is unfortunate for the productions of the arts that the majority of those who are constituted their judges are so little qualified for the task, either by education or habits; but on this, as it has been the complaint of every age, it is perhaps useless to dwell. This much may be said, that before any one can with propriety assume the name of architect, he must proceed regularly through some such course as is prescribed in this work. The main object of its author has been to impart to the *student* all the knowledge indispensable for the exercise of his profession; but should the perusal of this encyclopædia serve to form, guide, or correct, the taste even of the mere *amateur*, the author will not consider that he has laboured in vain.

An encyclopædia is necessarily a limited arena for the exhibition of an author's power; for although every subject in the department of which it treats must be noticed, none can be discussed so extensively as in a separate work. An attempt to produce a *Complete Body of Architecture* the author believes to be entirely original. In his celebrated work, *L'Art de Batir*, Rondelet has embodied all that relates to the construction of buildings. Durand, too, (*Leçons et Précis d'Architecture*,) has published some admirable rules on composition and on the graphic portion of the art. Lebrun (*Théorie d'Architecture*) has treated on the philosophy of the equilibrium, if it may be so called, of the orders. The *Encyclopédie Méthodique* contains, under various heads, some invaluable detached essays, many of which, however, suffer from want of the illustrative plates which were originally projected as an appendage to them. All these, with others in the French language, might, indeed, be formed into a valuable text-book for the architect; but no such attempt has hitherto been made. Neither

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in Germany nor in Italy has any complete work of the kind appeared. In the English, as in other languages, there are doubtless several valuable treatises on different branches of the art, though not to the same extent as in French. In 1756, Ware (London, folio) published what he called *A Complete Body of Architecture*. This, though in many respects an useful work, is far behind the wants of the present day. It is confined exclusively to Roman and Italian architecture; but it does not embrace the history even of these branches, nor does it contain a word on the sciences connected with construction. The details, therefore, not being sufficiently carried out, and many essential branches being entirely omitted, the work is not so generally useful as its name would imply. From these authorities, and many others, besides his own resources, the author of this encyclopædia has endeavoured to compress within the limits of one closely-printed volume all the elementary knowledge indispensable to the student and amateur; and he even ventures to indulge the belief that it will be found to contain information which the experienced professor may have overlooked.

Though, in form, the whole work pretends to originality, this pretension is not advanced for the whole of its substance. Not merely all that has long been known, but even the progressive discoveries and improvements of modern times, are usually founded on facts which themselves have little claims to novelty. As a fine art, architecture, though in its applications and changes inexhaustible, is in respect of first principles confined within certain limits; but the analysis of those principles and their relation to certain types have afforded some views of the subject which, it is believed, will be new even to those who have passed their lives in the study of the art.

In those sciences on which the constructive power of the art is based, the author apprehended he would be entitled to more credit by the use of weightier authorities than his own. Accordingly, in the Second Book, he has adopted the algebra of Euler; and in other parts, the works of writers of established reputation. The use of Rossignol's geometry may indeed be disapproved by rigid mathematicians; but, considering the variety of attainments indispensable to the architectural student, the author was induced to shorten and smooth his path as much as possible, by refraining from burdening his memory with more mathematical knowledge than was absolutely requisite for *his* particular art. On this account, also, the instruction in algebra is not carried beyond the solution of cubic equations: up to that point it was necessary to prepare the learner for a due comprehension of the succeeding inquiries into the method of equilibrating arches and investigating the pressures of their different parts.

In all matters of importance, in which the works of previous writers have been used, the sources have been indicated, so that reference to the originals may be made. Upon the celebrated work of Rondelet above mentioned, on many learned articles in the *Encyclopédie Méthodique*, and on the works of Durand and other esteemed authors, large contributions have been levied; but these citations, it will be observed, appear for the first time in an English dress. In that part of the work which treats of the doctrine of arches, the chief materials, it will be seen, have been borrowed from Ron-



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delet, whose views the author has adopted in preference to those he himself gave to the world many years ago, in a work which passed through several editions. Again, in the section on shadows, the author has not used his own treatise on *Sciography*. In the one case, he is not ashamed to confess his inferiority in so important a branch of the architect's studies; and in the other, he trusts that matured experience has enabled him to treat the subject in a form likely to be more extensively useful than that of treading in his former steps.

The sciences of which an architect should be cognisant are enumerated by Vitruvius at some length in the opening chapter of his first book. They are, perhaps, a little too much swelled, though the Roman in some measure qualifies the extent to which he would have them carried. "For," he observes, "in such a variety of matters" (the different arts and sciences) "it cannot be supposed that the same person can arrive at excellence in each." And again: "That architect is sufficiently educated whose general knowledge enables him to give his opinion on any branch when required to do so. Those unto whom nature hath been so bountiful that they are at once geometricians, astronomers, musicians, and skilled in many other arts, go beyond what is required by the architect, and may be properly called mathematicians in the extended sense of that word." Pythius, the architect of the temple of Minerva at Priene, differed, however, from the Augustan architect, inasmuch as he considered it absolutely requisite for an architect to have as accurate a knowledge of all the arts and sciences as is rarely acquired even by a professor devoted exclusively to one.

In a work whose object is to compress within a comparatively restricted space so vast a body of information as is implied in an account of what is known of historical, theoretical, and practical architecture, it is of the highest importance to preserve a distinct and precise arrangement of the subjects, so that they may be presented to the reader in consistent order and unity. Without order and method, indeed, the work, though filled with a large and valuable stock of information, would be but an useless mass of knowledge. In treating the subjects in detail, the alphabet has not been made to perform the function of an index, except in the glossary of the technical terms, which partly serves at the same time the purpose of a dictionary, and that of an index to the principal subjects noticed in the work. The following is a synoptical view of its contents, exhibiting its different parts, and the mode in which they arise from and are dependent on each other.

Book I. HISTORY OF ARCHITECTURE, considered in —

Chap. I. ORIGIN.

- |                         |  |
|-------------------------|--|
| 1. Wants of Man.        | 3. Different Sorts of Dwellings arising from different Occupations of Mankind. |
| 2. Origin and Progress. |  |

II. VARIOUS COUNTRIES.

- |                            |                               |
|----------------------------|-------------------------------|
| 1. Druidical and Celtic.   | 8. Chinese.                   |
| 2. Pelasgic and Cyclopean. | 9. Mexican.                   |
| 3. Babylonian.             | 10. Arabian or Saracenic.     |
| 4. Persepolitan.           | 11. Grecian.                  |
| 5. Jewish.                 | 12. Etruscan.                 |
| 6. Indian.                 | 13. Roman.                    |
| 7. Egyptian.               | 14. Byzantine and Romanesque. |

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| 15. Pointed. | 18. German.             |
| 16. Italian. | 19. Spain and Portugal. |
| 17. French.  | 20. Russia.             |

## Chap. III. BRITISH ISLES.

- |  |                      |
|--|----------------------|
| 1. British Architecture from an<br>early Period. | 6. Elizabethan.      |
| 2. Norman.                                       | 7. James I. to Anne. |
| 3. Early English.                                | 8. George I.         |
| 4. Ornamented English.                           | 9. George II.        |
| 5. Florid English or Tudor.                      | 10. George III.      |

## Book II. THEORY OF ARCHITECTURE, founded on knowledge of—

## Chap. I. CONSTRUCTION.

- |                            |                           |
|----------------------------|---------------------------|
| 1. Arithmetic and Algebra. | 7. Mensuration.           |
| 2. Geometry.               | 8. Mechanics and Statics. |
| 3. Practical Geometry.     | 9. Arches.                |
| 4. Plane Trigonometry.     | 10. Walls.                |
| 5. Conic Sections.         | 11. Mechanical Carpentry. |
| 6. Descriptive Geometry.   |                           |

## II. MATERIALS.

- |             |   |
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| 1. Stone.   | 8. Slates.                              |
| 2. Granite. | 9. Bricks and Tiles.                    |
| 3. Marble.  | 10. Lime, Sand, Water, and Ce-<br>ment. |
| 4. Timber.  | 11. Glass.                              |
| 5. Iron.    | 12. Asphalte.                           |
| 6. Lead.    |   |
| 7. Zinc.    |   |

## III. USE OF MATERIALS IN —

- |                            |                               |
|----------------------------|-------------------------------|
| 1. Foundations and Drains. | 8. Glazing.                   |
| 2. Bricklaying and Tiling. | 9. Plastering.                |
| 3. Masonry.                | 10. Smithery and Ironmongery. |
| 4. Practical Carpentry.    | 11. Foundry.                  |
| 5. Joinery.                | 12. Painting and Gilding.     |
| 6. Slating.                | 13. Specifications.           |
| 7. Plumbery.               | 14. Measuring and estimating. |

## IV. MEDIUM OF EXPRESSION BY—

- |                        |                      |
|------------------------|----------------------|
| 1. Drawing in general. | 3. Shadows.          |
| 2. Perspective.        | 4. Working Drawings. |

## III. PRACTICE OF ARCHITECTURE, as a Fine Art consists in —

## Chap. I. KNOWLEDGE OF PRINCIPAL PARTS OF A BUILDING.—

- |                            |                                |
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| 2. The Orders.             | 15. Caryatides and Persians.   |
| 3. Tuscan Order.           | 16. Balustrades and Balusters. |
| 4. Doric Order.            | 17. Pediments.                 |
| 5. Ionic Order.            | 18. Cornices.                  |
| 6. Corinthian Order.       | 19. Profiles of Doors.         |
| 7. Composite Order.        | 20. Windows.                   |
| 8. Pedestals.              | 21. Niches and Statues.        |
| 9. Intercolumniations.     | 22. Chimney Pieces.            |
| 10. Arcades and Arches.    | 23. Staircases.                |
| 11. Orders above Orders.   | 24. Ceilings.                  |
| 12. Arcades above Arcades. | 25. Proportions of Rooms.      |
| 13. Basements and Attics.  |                                |

## II. COMBINATION OF PARTS BY —

- |   |   |
|---|---|
| 1. General Principles of com-<br>position.                | 4. Horizontal and Vertical<br>Combinations in Building. |
| 2. Drawings necessary in Com-<br>position.                | 5. Subdivisions of Apartments<br>and Points of Support. |
| 3. Caissons in Hemispherical<br>and Cylindrical Vaulting. | 6. Combination of Parts in<br>leading Forms.            |

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| 5. Government Offices.                        | 18. Prisons.                             |
| 6. Courts of Law.                             | 19. Barracks.                            |
| 7. Town Halls.                                | 20. Private Buildings generally.         |
| 8. Colleges.                                  | 21. Private Buildings in Towns.          |
| 9. Public Libraries.                          | 22. Private Buildings in the<br>Country. |
| 10. Museums.                                  | 23. Farm Houses.                         |
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| 12. Lighthouses.                              |  |
| 13. Abattoirs, or Public Slaughter<br>Houses. |  |

APPENDIX. — LAWS relating to Building: Building Act — Chimney-Sweepers Act — Dilapidations — Compound Interest Tables and Valuation of Property.

GLOSSARY, containing also LIST OF PRINCIPAL ARCHITECTS and their Works, &c.

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Perfection is not attainable in human labour, and the errors and defects of this work will, doubtless, in due time be pointed out; but as the subject has occupied the author's mind during a considerable practice, he is inclined to think that these will not be very abundant. He can truly say that he has bestowed upon it all the care and energy in his power; and he alone is responsible for its errors or defects; — the only assistance he has to acknowledge being from his son, Mr. John Sebastian Gwilt, by whom the illustrative drawings were executed. No apology is offered for its appearance, inasmuch as the want of such a book has been felt by every architect at the beginning of his career. Not less is wanted a similar work on Civil Engineering, which the author has pleasure in stating is about to be shortly supplied by his friend, Mr. Edward Cresy.

Without deprecating the anger of the critic, or fearing what may be urged against his work, the author now leaves it to its fate. His attempt has been for the best, and he says with sincerity,

————— “ Si quid novisti rectius istis  
Candidus imperti, si non his utere mecum.”

J. G.

*Abingdon Street, Westminster,  
30th September, 1842.*

P.S.— The author begs here to acknowledge the unremitting zeal of the printers of this work, and the obligations under which they have laid him by their care in its progress through the press. A few unavoidable errors have, however, occurred, notwithstanding every care; and the attention of the reader is requested to the “Errata” for their correction.

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## ERRATA.

Page 353. line 6. from bottom, for  $FM = \frac{\times CP}{CA} - CA$ , read  $FM = \frac{CF \times CP}{CA} - CA$ .

400. line 4., for AA read AB.

403. last line, for  $x = \sqrt{\frac{2p-2bc}{a} + \frac{bb}{a} - \frac{b}{a}}$ , read  $x = \sqrt{\frac{2p-2bc}{a} + \frac{bb}{aa} - \frac{b}{a}}$ .

404. line 3., for  $x = \sqrt{\frac{163851 \cdot 56 \times 2 - 2128 \times 2 \times 12\frac{1}{2}}{195} + \frac{2128}{195} \times \frac{2128}{195} - \frac{2128}{195}} = 28 \cdot 16$ ,

read  $x = \sqrt{\frac{163851 \cdot 56 \times 2 - 2128 \times 2 \times 12\frac{1}{2}}{195} + \frac{2128}{195} \times \frac{2128}{195} - \frac{2128}{195}} = 28 \cdot 16$ .

414. in fig. 582., letter A omitted at springing of arch inside, and letter B at the outside of the springing.

421. line 1., for  $x = \sqrt{\frac{2p}{f} + \frac{2pd+2ne-2mc}{af} + \frac{b^2}{a^2f^2} - \frac{b}{af}}$ ,

read  $x = \sqrt{\frac{2p}{f} + \frac{2pd+2ne-2mc}{af} + \frac{b^2}{a^2f^2} - \frac{b}{af}}$ .

430. line 25. from bottom, for  $\sqrt{49\frac{1}{2} \times 49\frac{1}{2} + 22\frac{1}{2} \times 22\frac{1}{2}} = 54\frac{37}{100}$ ,

read  $\sqrt{49\frac{1}{2} \times 49\frac{1}{2} + 22\frac{1}{2} \times 22\frac{1}{2}} = 54\frac{37}{100}$ .

432. line 5., for BC, read DC.

432. line 4. from bottom, for  $\sqrt{14207} = 119 \text{ ft. } 2 \text{ in.}$ , read  $\sqrt{14207} = 119 \text{ ft. } 2 \text{ in.}$

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