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(MAY 1902)

By RICHARD HARRIS

(List of trees made for  
made in the field)

FIRST EDITION





T H E  
*City and Countrey Purchaser,*  
A N D  
**Builder's Dictionary :**  
O R, T H E  
**Compleat Builder's Guide.**  
S H E W I N G

The Qualities, Quantities, Proportions, and Rates or Value of all Materials relating to Building; with the best Method of preparing many of them.

A N D A L S O

The Customs, and Methods of Measuring of all Artificers Work, concern'd in Building; together with the City and Countrey Prices, not only of Workmanship, but of Materials also: The which will be extraordinary useful in making of Bargains, or Contracts betwixt the Workmaster and Workman; and likewise in computing the Value (or Charge of Erecting) of any Fabrick, great or small.

L I K E W I S E

The Explanation of the Terms of Art used by most Workmen.

T O G E T H E R

With Aphorisms, or necessary Rules in Building, as to Situation, Contrivance, Compactness, Uniformity, Conveniency, Firmness, and Form, &c.

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By T. N. Philomath.

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L O N D O N :

Printed for *J. Sprint* at the Bell, *G. Conyers* at the Ring, and *T. Ballard* at the *Rising-Sun* in *Little Brittain*. 1703.

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TO HIS

Most Honoured Friends,

THE

Truly Worthy Gentlemen,

JOHN BARKER, Esq; of  
*Mayfield-Place in Sussex;*  
Mr. ROBERT KNIGHT,  
Treasurer of the Honour-  
able *Irish Society in Lon-*  
*don,* and Mr. ROBERT  
BARKER, of *Birchden-Place*  
in *Sussex.*

Worthy Sirs,

**I**F an Author in this Age appears in  
Publick without a Dedication, he  
is but very little esteemed or regar-  
ded: And therefore, because I would

# The Dedication.

not seem to run counter to the usual Custom, I presumed to lay this Treatise at your Feet. Tho' perhaps it may seem a piece of Arrogancy, in so mean an Author, to dare to Dedicate a Treatise that is so far from being free from Defects, as this Tract is, to Persons of such Judgment and Experience in Matters of this nature: Yet the preceding Notions which seem to denounce this Dedication to be a piece of Presumption, do justifie it at the same time, because it plainly implies a Necessity of such a Dedication. For where the Author is obscure, and the Tract not so compleat as it might have been, were it to be done again, there is certainly a great occasion to shelter it under the Wings of some worthy Patronages.

For how can it but be expected, but that such a Treatise as this, (that has nothing but the Truth of its Observations, and its usefulness, to procure it  
Merit,



# The Dedication.

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Merit, or Esteem;) when it is emitted to the World, should in some measure be protected against the Aspersions of the Censorious Age.

And I have no cause to doubt, but that Persons of such Candor and Condescension, as you are, Worthy Sirs, will allow Necessity to be a sufficient Argument, by which an Action of this nature may be justified; which otherwise might justly have passed for a Crime; and that too committed against the best of my Friends, from whom I have received many Signal, and never to be forgotten Favours: For I have been brought up, Educated, and have acquired that little Knowledge which I have of this and other Arts, under the Favour and Roof, (as it were) of the first of you, my Honoured Worthy Friends. From the second of you, I have received no small number of Favours, tho' I was wholly a Stranger to him, until these last Years.

# The Dedication.

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*And by the Kindness and Liberality of the third, I have been very much encouraged and assisted in my Mathematical, and other Studies.*

*I could not forbear without Ingratitude (to you Worthy Sirs,) to tell the World of these your extraordinary Favours; which seeing I am not in a Capacity to requite them, seem to Postulate from me at least a Publick Recognition, which this Dedication of the Fruits of my Labours, gives me a fair Opportunity to make. What I have here presented you with is but a Mite; yet I have endeavoured to make it as useful as I possibly could, (considering it is but a Manuscript.) by avoiding Prolixities, and have omitted nothing that is Remarkable, or Useful, as near as I could; for I have comprehended as much in this Tract, as my designed Brevity would admit of; for I did not design to make*  
*it*

# The Dedication

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*it a large Volume, (as I could have done) at first emitting it to the World, but a Compendium of the Art of Building rather, till I see how this will be accepted by the Publick.*

*What lay scattered up and down in diverse Volumes, I have comprised under their proper Heads, and that too, in a Method wholly new; and I do hope not an obscure one. I have intermixt a great many new things, which were Observations of my own making, and some were Communicated to me by my Friends, many of which were experienced Trades, or Handicrafts Men, whose Employments wholly depended on Building; and some Notions I had from some observing Gentlemen, and others that were sometimes Masters of such Buildings, most of which was never (to my knowledge I am sure) made Publick before. All which I hope will make it in some measure prove useful to the Publick: And*

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## The Dedication.

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I hope for the same Reason it will gain your approbation, which I am confident will not a little contribute to the Credit of the Book

But one thing I think it necessary, to declare to the World which is this, viz. That none but my self had the Perusal before it was Printed, (that I know of,) so I alone am justly chargeable with the Errors therein; for I don't suppose it to be wholly free, after all the Diligence and Care which was taken about it.

But I am satisfied that your Candor, and Exquifiteness of Judgment is such, that if you find the Matter of this Treatise to be useful, and to answer the Test of Experience, you will easily overlook any Imperfections, that some rigid Criticks may censure in the manner of proposing it.

I have nothing more to trouble you with here, but to Petition you, (Worthy  
thy

# The Dedication.

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thy Sirs) ever to continue your Opinion of me, and to own both this and me, so far as you find truth in us both, and no further. And (tho' I have nothing in me to deserve it at your kind hands; yet,) I shall make it my Study and Care, by all due Acknowledgments to preserve it, and remain always,

Worthy Sirs,

Your Humble,

Faithful, and most

Obliged Servant.

T. N.

Exor-

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Appendix

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# EXORDIUM

In Laudem

## ARCHITECTURÆ:

BEING

The Prelude or Proœm

TO THIS

# TREATISE.

Shewing the Antiquity, Excellency, Emolument, and Necessity of

## ARCHITECTURE.

**A**Mongst those many *Arts* which *Divine Providence* hath been pleased to endow Mankind with the Knowledge of, this of *Architecture* is none of the least, and therefore may well challenge a place amongst the Primary, and most necessary, if not the Preeminency of Rank.

*First*, For its *Antiquity*; it being almost Coætaneous with the World it self; for it was practis'd in the very Infancy of the World,

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by the 1<sup>st</sup>. born of Mankind, *viz*, *Cain*, as you may find it Recorded, *Gen.* 4 17. You may further observe that this is the second *Art* which the *Divine Pen-man* hath left us upon Record: For we must allow *Agriculture* to be the most Ancient, and most necessary *Art* of all others: It must certainly be the Senior *Art*; because we find in *Gen.* 2. 15. That *Almighty God* did place *Adam* in the Garden of *Eden* in the time of his Innocency, and was there ordered to perform the Office of a Georgick, [or Husband-man.] *Agriculture* must also as certainly be the most necessary, because Men can, and do subsist (in a great measure) without Clothing, Houses, &c. in some Climates and Countries; but there is no part of the World where Men can live without Food.

But nevertheless, where People are so barbarous as to be quite ignorant of *Architecture*, or Building, they are also for the most part wholly destitute of the Knowledge of *Agriculture*, or Tillage of the Earth; for *Agriculture* without *Architecture*, would be but of small use; because it would be to but little purpose for the Husbandman to Plow and Sow, and Plant Fruit-trees, and the like, if when Harvest comes, he hath neither *Barns*, nor *Granaries* to preserve his Corn in; nor *Conservatories*, or *Store-houses* to lay up his Fruit in.

Secondly,



Secondly, As to the Nobility, or Excellency of this *Art*, it may be observed from the following Circumstances, That

The *Holy Ghost* has been pleased to honour this *Art* so far, as to grant it the Privilege to be enroll'd (in the *Holy Scripture*) among the Actions of the first Monarchs of the World, viz. From *Adam* to *Noah*, there is no mention made of the Military Actions of the Antidiluvian Sovereigns: All that is noted concerning them, is that they lived so many Years, and taught their Progeny to keep Sheep, to Till the Ground, to Plant Vineyards, to dwell in Tents, to *Build Cities*, to play on Organs, and Harps, to Work in Brass and Iron, &c.

The *Divine Architect* of the World hath been pleased to honour this Excellent *Art* so far, as to vouchsafe to give necessary Precepts and Rules concerning some Buildings, of which I will here give some Instances. And,

*First*, Of the *Diluvian Ark*, mentioned, *Gen. 6. 14, 15 and 16 Verses*. Where he was pleased first to give Directions for chusing the Materials for it. *Secondly*, He gives Order for the Dimensions. And *Thirdly*, For its Form, both External and Internal.

The Second Instance shall be of the *Sanctuary*, consisting of the *Ark of the Covenant*, the *Mercy Seat*, the *Tabernacle*, and the *Altar*, as you may find in the 25, 26, 27, and 30 Chapters of *Exodus*.

The Third *Instance* that I shall produce is concerning the Building of *Solomon's Temple* at *Jerusalem*, as you may find it upon Record in *1 Chron. 28: 29.*

Tho' some have been so bold as to assert that the Ground of all Arts are to be found in the Holy Scriptures; yet I think none of the Civil Arts can pretend to such Documents from Scripture, as the *Art of Building* can: For we may observe from the preceding Instances, and some other Texts of Scripture, (which I shall by and by refer you to,) that the *Omniscient Architect* of the World did direct Mento Build by Design, *viz.* By a *Prototype, Model, Draught, or Pattern*: As you may find it in *Exodus 25. 40. Num. 8. 4 1 Chron. 28. 11. 12, 18, 19. Acts 7. 44. Heb 8. 5.*

It is also observable that the *Divine Architect* did not only direct to the Form by a *Pattern, or Draught*, but also by giving the *Dimensions* of each particular as you may observe from *Gen 6. 15 and 16. and Exod. 25. 10.* also in the 26, 27, and 30 Chapters of *Exodus, 2 Chron. 3. 3, &c.* He also give Directions for chusing Materials for each particular use, as you may find in the afore cited 6 Chapter of *Gen.* and *Exod. 25. 26, 27, and 30 Chapters*; not only so, but was pleased to direct to the Quantity by Weight, as you may see it in the but now mentioned Chapters of *Exodus*, and in the 28 of the first Book of *Chronicles, &c.*

And let me further add, tho' *Architecture* be contemned, and slighted by some, because it depends upon *Mechanicks*, or *Handicrafts-Men's* Practice; yet it is not despiseable as they would fain make the World believe it is: For I must, and will tell such Men the plain Truth, that they must certainly be Infidels, and do not deserve the Title of a *Jew*, and much less a *Christian*: For if such Persons were *Jews*, I think they must needs be very ignorant of the Pentateuch, or Writings of *Moses*, or else they would have been convinced of this their Error from the 31 of *Exodus* 3 and 6 Verses. Where the *Holy Ghost* styles the *Mechanick* Knowledge of *Bezaleel*, and *Aholiab*, &c. the Spirit of God, Wisdom, &c. And if they were *Christians*, they were very mean ones to be ignorant of the Books of *Moses*, and the *Gospels* of St. *Matthew*, *Mark*, and *Luke*; for we may learn out of St. *Matthew* 13. 55. and *Mark* 6. 3. and *Luke* 2. 51. That our *Blessed Redeemer* did not think the Knowledge and Practice of *Architecture* and *Mechanicks* of *Handicrafts* so abject as some would represent it to be; for from these Texts we may learn that he was pleased to exercise this Art of *Architecture*, and to be a *Mechanick*, viz. A *Carpenter*, for some part of the time, that he was here Conversant with Mortals; which I must tell you, is no small Honour to the *Mechanicks* and *Architecture*.

I profess, I can discern no more Reason why the Sordidness of some one Workman or *Mechanick*, should be the cause of Reproach to *Handicraft Arts*, than that most excellent Invention of raising Water at *London-bridge* (for the Service of many Families in the City,) should be disesteemed and neglected, because there may sometimes happen to be a blind, (or otherwise defective) Horse employed in the Operation.

And tho' *Mechanick* Employments be by some reckon'd so very Ignoble and Scandalous, yet it is very well known that many Gentlemen of good Rank and Quality in this Nation, are often conversant in *Handicraft* Employments: And other Nations exceed us in the number of such Gentlemen, of which I shall give you an Instance. In *France* the making of Glass at the Glass Houses is performed by Gentlemen of no mean Extraction, *viz.* Most of them of the great Glass House descending from Prince *Anthony Brossard*, Natural Son of *Charles* of *France*.

None but Gentlemen are employed in the Art of making Glass in *France*, and these Gentlemen bear Honourable Coats of Arms, and both they, and their Servants, and Deputies are exempt from paying of Taxes, Quartering of Soldiers, &c.

This Noble Art makes Marble, and other Stones become the Delights of Men, of which are made our Glorious Palaces, and the Ornaments

naments of our most splendid Churches, and the most durable Monuments which the Ambition of Men could ever invent, whereby to render themselves and their Grandure known to future Ages.

This Art hath always been had in great Esteem; for it is become familiar in the Courts of Kings and Princes, &c. The present King of *France* has Established an Academy for promoting this noble Art.

Another thing which proves the Excellency of this Art, is that it is always possessed and practised most by the most Civilized and Learned Nations.

Almost every Nation (that are Civilized, especially) have shewed ample Testimonies of the Respect they had for this Art. For the *Jews* boast much of *Solomon's Temple*, the *Affyrians* of great *Babylon*, the *Egyptians* of their *Pyramids*, &c. The *Ionians* of their *Ephesian*, or *Diana's Temple*; and the other *Greeks* of the *Temples of their Gods*: *Rome* boasts of its *Temples*, *Amphitheatres*, *Triumphant Arches*, and *1000 Stately Palaces*, &c. *France* glories in its *Louvre*, *Nostre-Dame*, *Versailles Palace*, of *St. Germain's-en-lay*, *Fountainbleau*, &c. *Spain* of its *Escureal*, &c. *Holland* of its *Stately Churches*, *Stadt-house*, &c. And *England* of its *Hampton Court*, *Windsor-castle*, *Westminster-abby*, *Royal Exchange*, *St. Paul's*, *Salisbury Church*,  
 a &c.

¶ It would be endless to instance in things of kind. And therefore I shall conclude with this of the Excellency of this Art, and proceed to that

2dly, Of the *Emolument* and *Necessity* of this Art of *Building*.

As to the Profit of this *Art*, I think I need not to say much; for all know, (that know any thing) that Merchants and other Traders, cannot subsist without their Ware-houses, nor Trademen without their Shops, nor the Husbandman without his Barns, Granaries, &c. For without these *Buildings* to preserve their Goods in, none of these different Ranks of Men would make much Profit of their Commodities.

Besides there can be no pretence to any kind of Profit without *Buildings*; for there are no Nations in the World where the Air is so serene, as that there is no need of *Buildings* to protect the Manufactures of it from the Injuries of corroding Time and Air: Add to this, that it is no small Profit that accrues to a State, or Nation, by those many Trades that depend purely upon Building. *viz.* Carpenters, Joiners, Masons, Bricklayers, Sawyers, Glaziers, Plumbers, Painters, Carvers, Smiths, Brick and Tile-makers, Stone-cutters, &c. For I have made it appear above, that other Trades cannot subsist without these, *viz.* Because they cannot subsist without

out

out *Buildings*. Also where there is no *Architecture* in a Nation, there can by consequence be no Princely Government; for where the People are so barbarous as to live in Caves, and in Hutts made of Boughs, &c. There is no Mechanicks amongst them, and by consequence no Improvement of Manufactures, and from thence it will follow, there will be little or no Revenues fit to maintain a Regal Power; and for the most part, where such a Power is wanting, People are so savage and barbarous, that they live more like Brutes than Rational Men; living by Rapine, Murder, &c. So that no Man can properly call any thing his own, for they live (as it were) in a daily expectation of being rob'd, and deprived of that little which they have, by those which are stronger than themselves. Which also implies a *Necessity of Building*, to which may be added that Complaint which *Aristotle* saith was made by some, *viz.* That Man was worse dealt with by Nature than other Creatures, whereas they have some of them Hair, some Shells, some Wool, some Feathers, and some Scales to defend them from the Injuries of the Weather, Man alone is born naked, and without any Covering: But to this it may be answered, that *Divine Providence* hath endowed every Man with 2 such Superlative Instruments, *viz.* The *Hands*, (those admirable Instruments of A-

tion) in Conjunction with that Faculty of the Soul, call'd Reason, it fully supplies in Man what ever may or can be supposed to be wanting in humane Creatures, as'tis unwisely objected by some, that they are not sent into the World uncovered, and exposed to all Extreame of Weather, as Heat, Cold, Drought, and Moisture, &c. By this Instrument of Instruments, the Hand which is adapted (by the *Divine Architect* of the World,) to supply the most necessary and useful Services of Man's Life, *viz.* *Building, Husbandry, Military Actions, Chirurgery, Writing, Engraving, Playing on Musical Instruments,* and all the necessary, as well as the *Recreative Arts* and Employments of humane Life. For indeed, if Man had wanted this Member, (as the Learned Mr. Ray observeth,) then we must have lived like Brutes, without *House* or Shelter, but what the Woods and Rocks afforded, without Cloaths or Covering, without Corn, or Wine, or Oil, or any other Drink but Water; without Warmth and Comfort, or other uses of Fire, as Baked, Boiled, and Roasted Meats, but we must have scrambled with the wild Beasts for Acorns, Crabs and Nuts, and such other Fruits as the Earth produces of her own accord. We had lain open and exposed to Injuries, and had been unable to resist, or defend our selves against almost the feeblest



feeblest Creature. Altho' Men were endow'd with this incomparable Instrument the Hand; yet History informs us, that in the Infancy of the World Men lived almost like wild Beasts, in Caves, and fed on Fruits and Roots of the Earth; but after they perceived the necessary use of Fire against the Extremity of Cold: Some began to edifie Cottages with Boughs, &c. and some digged Caves in the Mountains, and finding the Conveniency, and Necessity of it, at last by Practice they attain'd by degrees to a greater Perfection in *Building*. So that now there is but few Nations but that practice it in some gree, (having found the usefulness, and necessity of it, to protect them from the Injuries of the Weather, and in some Countries from the Assaults of Rapacious Beasts.) Tho' in some Countries, where the People are in Subjection to a Governour, and in a great measure Civilized; yet their *Buildings* for want of Art are very imperfect and defective, in comparison of ours in the learned part of *Europe*, of which I will give an Instance or two. At *Puna*, an Island in the *West-Indies*, their Houses stands on Posts, 10 or 12 Foot high, with Ladders on the out-side to ascend up to them by. Also in the Isle of *Mindanao*, one of the *Philippine* Islands in the *East Indies*, their Houses stand on Posts, 14, 16, 18, or 20 Foot high, they have but one Floor,

but many Rooms in it; under the Houses there is a clear Passage like a Piazza, but a filthy one commonly, for some make this Place the Draught of their Houses, but they Build by the Rivers mostly, and the Floods cleanse those Places. At the *Nicobar* Islands, their Houses are built after the manner of those at *Mindanado*, only here the Roofs are Arched, but at *Mindanao* they are ridged; but in the *Nicobar* Isles they have but one Room in a House. These sort of Buildings are all the Mode amongst the *Malayans* in the *East Indies*.

I shall add one Instance more of the necessity of *Building*, and that from the Observation of the ignorant *Indians* in *New England*, &c. Who see that there is a necessity of laying up some Corn for a Winter Store, and for Seed for the next Season; and therefore they make them Barns for that purpose, tho' very poor ones; for they are only great Holes digged in the Ground, and Ceiled with the Barks of Trees.

I cannot here but commend our compleat Method of Building, now used in *England*, by much to be prefer'd before the ancient Practice here, or that now used in many Nations. The Principal Qualities of this Modern Method, are these, *viz.* Compactness, Uniformity, and Conveniency.

This

This Art, like most others, hath in this Age been much improved; Men being now more Mathematically inclined than formerly, having likewise better Opportunity to attain it, from the many Treatises that have been made Publick of these Arts from time to time, in this last Age. For as an ingenious Man well observes, there is scarce any part of the Mathematicks, but is some way subservient to *Architecture*. *Geometry*, and *Arithmetick*, for the due measure of the several parts of a *Building*, the Plans, Models, Computation of Materials, Time and Charges; for ordering right, its Arches and Vaults, that they may be both firm and beautiful: *Mechanicks* for its strength and firmness, transposing and raising Materials: And *Opticks* for Symmetry and Beauty. He further adds, I would not have any one assume the Character of an *Architeſt*, without a competent Skill in all of these. *Vitruvius* requires these, and many more to make a compleat *Architeſt*.

In the ensuing Treatise, I have endeavour'd to assist all such as have a desire, (or have an occasion) to understand the Grounds, and Rules of *Architecture*.

I was first induced to undertake this Task of Composing a Treatise of this nature, purely for my own use, for by daily Experience, I found that such a Tract was very much

wanting, and that if I did compose such a piece, it might prove exceeding useful to others, as well as to my self, an Ingenious Bookseller being informed of my design, was for my carrying it on.

I have been in a great measure excited to it of late, out of pity to some poor Workmen; for I have been informed of several, that for want of Skill, and Foresight, undertaken Buildings by guess, by which they have been almost ruined, or at least kept very low in the World; tho' they have been very industrious in their Callings,) and that purely by the means of unadvised Contracts. And then again on the other hand, it hath been an Observation made by others as well as my self; that some honett well-meaning Gentlemen, (and others) that have had occasion to Build, &c. They have been strangely over-reach'd by some Fraudulent Crafty Workmen. But I hope this small Treatise may be a means to promote distributive Justice (in such things as relate to Building) and like a just Arbitrator, whereby both Master and Workmen shall have what is Justice and Equity betwixt them: For

The ensuing Treatise contains not only the *Price* that most *Materials* are usually valued at, and sold for in different parts of the Kingdom, and also the usual *Rates* of all sorts of *Workmen's Work*, both in the City, and also  
in

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# P R O O E M.

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in different parts of the Countrey. But also

2. It contains Informations, as to the *Qualities, Quantities, Proportions, and Methods* of preparing and making many of the *Materials* relating to Building.

3. Also the *Customs, and Methods* of *Measuring* all sorts of Artificers Works.

4. An Explanation of the *Terms* of *Art* made use of amongst *Workmen*.

5. In the following Tract, is also comprehended, *Considerations* as to the Choice of a *Surveyor, Workmen, Model, or Draught, &c.*

6. *Aphorisms, or necessary Rules* in *Building*, as to *Situation, Contrivance, Receipt, Firmness, or Strength, and Form, or Figure, and Beauty.*

7. The Method of *Surveying of Buildings*, as to entering Dimensions in Pocket-books, and making *Bills* of Measurement, &c.

8. Of *Valuing Buildings* when they are erected.

9. A Method of *Censuring*, or passing ones Judgment on a *Building* (that is already compleated or finished) as to its *Commodiousness, Firmness, and Delightfulness*, which are the principal Qualities in a good *Fabric*.

In the Composing of this Work, (besides my own, and some Friends *Observations*; which

which together consisted of several Sheets of Paper, which were never yet made publick) I have made use of the best Authors extant, to the number of about 50, great and small; wherein the Task was not small; what in *Reading, Comparing, Choosing, Correcting, Revising, Disposing,* and *Transcribing* in respect of *Matter, Form,* and *Order*: By reason I was obliged not to make this first Impression too large: For to speak the Truth, I must tell you I found I had no small Difficulties to wrestle with; by reason I had design'd to Collect the Heads of all such things as were most material from so many Authors, and from my own Notes which would have Compos'd a small Treatise of it self; (for I must tell you they are not a few, nor they have been no small time a Collecting, nor from none but experienced Men, and my every Days Observations almost, my Business being frequently amongst Workmen of diverse Professions, and different places; so that the Reader will here have a great number of Observations which are wholly new.) So that I was oftentimes more solicitous, and concerned to consider what, than what not to Write: Yet I have diligently endeavour'd to insert the most important things, that nothing material might be wanting to present you with a Satisfactory Account of the Art of *Building* in all its parts, so as to make  
good

good our Title. Some perhaps may think it too small, and the Discourse too Brief (for a Subject of this Nature) indeed I think so too; but then I must tell you that it was my design to be as brief as I could conveniently (in this first Edition, if this be kindly received in the World, I may perhaps much enlarge it hereafter; having a Store purposely reserved for that use, if I can find Encouragement.) But, Friendly Reader, I have consulted your Advantage, by rendering the Book both more portable, and less chargeable; so that every one that desires to look into the Precepts, &c. of this Art, may here find Satisfaction without great Expence, either of Time or Money.

The Method of this Treatise is wholly new, but the whole Art is here ranged under certain Heads, and brought to a certain Method, and limited to practical Rules; and that so perspicuous, as to be understood by the meanest Capacity.

One great Reason of my making choice of this Method, of Composing it under Alphabetical Heads was this, *viz.* In a Subject of this nature there would unavoidably have been a Necessity to have made use of abundance of Terms which are used by *Architects*, and *Workmen*, which would not have been understood by Gentlemen, and young (and ignorant) Handicrafts-men, (for whom  
this

this Treatise is chiefly design'd,) unless we had explain'd these *Terms* as they fell in, by Consequence in the Discourse; but if I had done so, I should too often have been necessitated to make large Excursions, or Degressions from the Matter in hand, which would have so disjointed the Discourse, that it would not have been so easily understood by young Tyro's in this Art, especially in a Compendious Discourse, as this was design'd to be; and put the case any one had wanted at any time to know the meaning of such Terms when they had heard them used, it would have been no small trouble to have found them in continued Discourse.

All the Treatises that I ever yet saw on this Subject, (which are not a few) were either continued Discourses, or branched into Chapters, (or the like) containing the Parts, Members, and Materials relating to Building, or else comprisd under the Titles of Mechanick Trades, as *Carpenters Work*, *Bricklayers*, &c. or else in a Dialogue, which I like worst of all; because in asking of Questions, commonly there is a Necessity of using more words than any other way of Writing: I dare to maintain it that none of the aforesaid Methods are so fit for a Subject of this Nature that relates to so many Orders of Men;

parts



## P R O O E M.

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parts of *Buildings*, Members of Parts, and vast variety of Materials, &c. As this which I have here chosen, (and I have heard some others wish for it, not only in this, but other Arts also.) For here either Gentleman, or Workman may immediately find (by the Letters at the top of each Page) any thing that he hath occasion to be inform'd about, without the trouble of reading over whole Chapters, or the like.

Courteous Reader, I will assure you, that you have here Epitomized the Substance, or Marrow, of all, or most of the known Authors that have Treated of this Art; besides a great many new and necessary Observations, &c. which I hope will prove useful to the Publick, tho' it be Composed after a new Method, *viz.* an Alphabetical Order; and upon that account it may perhaps be objected against as a very broken and imperfect Subject. But I must here inform such, that many times each particular word (or Head) is a compleat Discourse by it self, and where it is not, you are referr'd to another place which will make it compleat, by only turning over a few Leaves.

Having thus briefly hinted at the Reason of Composing it in this Method; I will next advertise you a word or two  
for

for the better apprehension of the Scope, and use of the Book.

*First*, That it is intended for beginners, and such as have not had occasion to study this Art, and not for Accomplished *Architects*, and therefore adapted to the meanest Capacities.

*Secondly*, In several places the Derivation of the Word is hinted at, (which assists the Memory, and informs the Understanding) as well as the Meaning and Sense it is commonly used in; and several other Things or Circumstances, according to the Nature of the Word; of which I will here give some Instances. As suppose, *1<sup>st</sup>*. The Word *Arch*, there you have *1<sup>st</sup>*. its Derivation, then an Explanation of 5 different Kinds, and the Method of making them, and then 5 Theorems concerning them, and the Method of Measuring them, and lastly, the Price.

2. Then next Instance shall be of the Word *Bricks*, where you have an account what, and wherefore made, and then a Description of 18 sorts, with their Dimensions, Price, Weight, and Form of them; with the Method and Price of Making, Burning, also Directions for Buying, Choosing, and Laying of Bricks, &c.

3. Of the Material, call'd *Glass* after a general Definition of it, you have an account

count of 13 forts, and the Price of most of them, &c.

4. Of *Lead*, where you have 14 Particulars, too many to repeat here.

5. Of *Mortar*, you have 13 Heads.

6. Of *Nails*, you have 25 Particulars.

7. Of *Painting*, where are 18 distinct Heads: All other Trades having their proper Heads also.

8. Of *Stair-cases*, there is an account of about 25 forts.

9. Of *Tiles*, there are more than 40 Particulars. I shall forbear to enumerate any more, but refer you to the Book it self, where you shall also find a Description of all the Members of the 5 Orders of Columns, with their Dimensions and Proportions. If this Treatise find a kind Reception in the World, I shall be encouraged to Publish my *Compleat Tutor to the Practick Part of Architecture*, which will be a Treatise purely for Directions, and ease to Workmen.

Lastly, I do declare, that if any thing which I have set down in the insuing Treatise, be objected against as a Mistake, or that it is not so plain and express as it might have been, upon the least Information thereof, I shall be very ready to revoke it. And therefore if in any thing I have been beside the Matter in hand, or made a false Step, or Blunder: I do earnestly intreat the courteous good natured Reader,

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P R O O E M.

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Reader, either to inform me of it, (and upon Eviction I shall freely yield,) or else that he would freely remit the Fault; since all know *Никто не est errare.*

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T H E

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THE

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## ABACUS.

**I**T'S a square Table, List, or Plinth, in the upper part of the Chapters of Columns, especially those of the *Corinthian* Orders, which serves instead of a Drip or Corona to the Capital. It supports the nether Face of the Architrave; and whole Trabeation. In the Corinthian and Compound Orders, the Coronets of it are call'd the *Horns*; the intermediate Sweep and Curvature the *Arch*, which has commonly a Rose carv'd in the middle.

The *Sieur Mauclerc*, in the Ionick Order, designs an O-G with a Fillet over it for an *Abacus*; and this Fillet is half the Latitude of the O-G, the which he calls the Fillet of the *Abacus*.

And in the Corinthian Order, he describes the *Abacus* to be one 7<sup>th</sup>. part of the whole Capital, which he divides into three parts, and the uppermost of these is a Boultin, and  $\frac{1}{3}$  of the next third below, is the Fillet of the *Abacus*, and the rest below being 1 and  $\frac{2}{3}$  is the Plinth of the *Abacus*.

*Andree Palladio* in the Tuscan Order, calls the Plinth above the Boultin, (or *Echinus*) *Abacus*; which from its form, saith he, is commonly call'd Dado, or Dye, the which is  $\frac{1}{2}$  of the whole height of the Capital.

In the Dorick Order, he also calls the Plinth above the Boul-  
tin of the Capital, the *Abacus*; above which he places a Cima-  
tium, for the upmost Member of the Capital.

In the Ionick Order, he defines it to be the same with the  
Sieur *Mauclerc*.

In the Corinthian and Composite Order, he designed it to be  
the same almost with the Sieur *Mauclerc*, only his is a large  
Casement, instead of the Plinth. But *Vincent Scamozzi* gives  
the Title of *Abacus* to a Casement, or Hollow, which is the Ca-  
pital of the Pedestal of the Tuscan Order. V. *Capital*.

### *Abreuvoirs.*

A Term in Mafonry, by which is to be understood the Inter-  
vals, or Spaces between the Stones in laying them, commonly  
call'd the Joints wherein the Mortar is placed.

### *Acroteria.*

Are sharp and spiry Battlements, or Pinacles, that stand in  
Ranges, with Rails and Ballisters upon flat Buildings. Also I-  
mages set on the tops of Houses, are so call'd by some.

### *Acroteres.*

Are Pedestals upon the corners and middle of a Pediment to  
support Statues; they may properly be called Pinacles.

### *Adition V. Chauncel.*

### *Alabaster.*

1. *What*] 'Tis a kind of soft, clear, white Marble; if it be so  
soft as to be cut, it is call'd *Gypsum*.

2. *Where found, or dig'd*] Some is brought to us out of the  
*Indies*, and from *Egypt*, *Syria*, &c. There is also some found in  
*Lincolnshire*, and in *Staffordshire*.

3. *It's use*] It's chiefly used for Monuments in Churches, &c.  
Where there are any Figures in Relief, or in Bass-relief, &c. car-  
ved. It's also sometimes used for a Coat of Arms, when a Gen-  
tleman will have his Coat of Arms cut in Relief, to set in Brick  
or Stone-work in the Front of his House.

### *Alcove.*

By the Spaniards call'd *Alcobar*; 'tis a Recess within a Cham-  
ber for the setting of a Bed out of the way; where for State  
mar.

many times the Bed is advanced upon 2 or 3 Ascents, with a Rail at the Feet. These *Alcoves* are frequent in many Noble Men's Houses in *Spain*, and other parts beyond Sea.

### Alder.

1. *What*] 'Tis an Aquatick Tree, so very common that it needs no Description.

2. *It's Use*] Those which were large, were formerly made use of in building of *Boats*: So now are very large *Alders* sought after for such *Buildings* as lie continually under Water, where it will become as hard as a Stone; but being kept in an unconstant Temper, it decays in a little time.

*Vitruvius* tells us, that the *Morasses* about *Ravenna* in *Italy* were pil'd with this Timber, to Superstruct upon, and he highly commends it. It was also used under that famous Bridge at *Venice*, the *Rialto* which passes over the grand Canal, bearing a vast weight.

3. *Poles*] Of this Wood are extraordinary useful for *Pumps*, *Water-pipes*, (*Troughs* and *Sluces* also if large.) These *Poles* I have known used (in the *Countrey*) for *Water-pipes*, to convey Water thro' *Bays*; and *Dams*, and also to carry Water from any Spring, to supply a House with this necessary Element; large *Poles* of this sort of Wood I have known used for *Ground-guts*, to convey the Water out of *Stews*, the *Poles* were about 8 or 10 Inches Diameter, and the Concavity in them about 4n, or 4  $\frac{1}{2}$ ; for in boring, and fitting, of which size they have about 3 s. 6 d. per Rod for Workmanship.

4. But for *Water-pipes*] the *Poles* need not be above 4 or 5 Inches Diameter, for the Cavity is commonly about 1  $\frac{1}{4}$ , or 1  $\frac{1}{2}$  Inch Diameter.

5. *Of the Method of boring Alder Poles.*] The Order in which they proceed, in this Operation, is this: Being furnish'd with *Poles* of a fit size, not too small (nor too large, if for *Water-pipes*.) They procure *Horses*, or *Truffels*, of a fit Altitude, to lay the *Poles*, and rest the Auger on whilst they are boring, they also set up a Lath, to turn the least ends of the *Poles* to adapt them to the Cavities of the greater ends of the others; their Lath being up, and your *Poles* cut to the lengths they will conveniently hold, viz. 8, 10, or 12 Foot; they proceed to turn the small ends of the *Poles*, about 5 or 6 Inches in length, to the seize they intend to bore the greater ends, about the same depth, viz. 5 or 6 Inches; (this you must note is to make the Joint to shut each pair of *Poles*, together, the concave part is the Female, and the other the Male part of the Joint.) In turning of the Male part, they turn a Channel in it, or small Groove, at a certain distance from the end, and in the Female part they bore a small hole to fit over this Channel; for what

purpose you shall hear when they set the Poles together : They having thus far Proceeded, they then thorough bore their Poles, and because they will prevent boring out at the sides, they stick up great Nails at each end to guide them right through; but they commonly bore it at both ends; and therefore if a Pole be crooked one way, they can bore him through, and not spoil him: The Poles being bored, they proceed to form them into Pipes in the Ground, for which purpose they have a Trench digg'd, and prepared with Clay, to ram them in the Female part, being prepared with an Iron Ring round it, to prevent its splitting; they drive in the male Part, till the Grove in it is just under the hole, which is bored in the upper side of the female Part; and then having some melted Pitch ready, they pour it into the hole in the female Part, which flows round in the Grove which was turned in the male Part; by which means it is made very stanch, and close: And thus they proceed till they have placed all their Poles in their order.

*6. Of the Charge of these Pipes.*] For Workmanship only, they usually ask about 2 s. 6 d. or 3 s. per Rod, viz. only to bore and fit them; but the Charge of all Work, and Materials, viz. Boring, Digging the Trench; laying and Raming in the Clay, &c. And the Charge of Poles, Clay, Pitch, and Iron Rings will be 4 s. 6 d. 5 s. 5 s. 6 d. or 6 s. per Rod; according as the Materials can be procur'd.

*N. B.* I could here have added the Description of an ingenious Contrivance, which these Workmen have, to make the same Auger to bore a Concavity of different sizes; but this, and some other Curiosities, I shall defer till I see how this first Essay will be accepted in the World.

### *Amphitheater, or Amphitheatre.*

Is an Edifice, or Building of an Oval, or Circular Form, with rows of Seats, one above another, where Spectators might sit to behold Stage-plays, and other publick Spectacles, as Sword-playing, fighting of wild Beasts, &c.

### *Anabathrum.*

A Place that is ascended to by Steps.

### *Anchors.*

In Architecture, is a certain sort of Carving, somewhat resembling an Anchor, or Arrow-head; 'tis commonly part of the Enrichments of the Boultins of Capitals of the Tuscan, Dorick, and Ionick Orders, and also of the Boultins of Bed Mouldings, of the Dorick, Ionick, and Corinthian Cornishes. These Anchors,



chors, and Eggs being alternately carved throughout the whole Buildings.

### *Annelet, or Annulet.*

From the Lat. *Annulus*, a Ring, in Architecture, 'tis used to signifie a narrow flat Moulding, (of which v. *Capital*.) which is common to divers places of the Columns, as in the Bases; and Capitals, &c. 'Tis the same Member as the *Sieur Mauclerc*, from *Vitruvius* calls a *Fillet*, and *Palladio*, a *Lifella*, or *Ceinture*; and *Brown ex Scamozzi*, a *Supercilium*, *List*, *Tince*, *Eye-brow*, *Square*, and *Rabit*.

### *Antechamber.*

1. *What.*] From the Lat. *Ante-camera*, an outer, or Fore-Chamber, a Room in Noble Men's Houses, where Strangers stay till such time as the Party to be spoke with is at leisure.

2. *Of it's Proportion in length, &c.*] A well proportion'd *Antechamber*, ought to have in length the Diagonal Line of the Square of the Breadth, and not to excel the breadth and  $\frac{1}{2}$  at most.

3. *Of their height.*] They are made either arched or flat, if they are flat,  $\frac{2}{3}$  parts of the breadth shall be the height from the Floor to the Joists.

But if you would have it higher, divide the breadth into 7 parts, and take 5 for the height. Or divide the breadth into 4 parts, and three of those shall be the height.

In great Buildings, the *Ante-chamber*, *Hall*, and other Rooms of the first Story may be Arched, which will make them handsome, and less subject to Fire; and in such Buildings, the height may be  $\frac{2}{3}$  of the breadth, which will be the height it ought to be from the Floor to the bottom of the Key of the Arch.

But if this Altitude be thought too dwarfish, the height may be  $\frac{3}{4}$  of the breadth.

Or  $\frac{4}{5}$  of the breadth, which will make it yet more stately.

4. *Of their Situation.*] *Ante-chambers*, and others also ought to be so posited, that they may be on each side of the *Entry*, and of the *Hall*: And likewise it ought to be observed, that those on the right Hand, may answer, and be equal, (or nearly so) to those on the left, to the end, that the Buildings may on all sides bear equally the Burden of the Roof.

### *Antick, or Antique-work.*

A Term in *Sculpture*, and *Painting*, being a confused Composure of Figures of different Natures, and Sexes, &c. As of Men, Beasts, Birds, Flowers, Fishes, &c. And such like Fancies as are not in *Rerum Natura*. Of which I will give some Instances, and

first of human Creatures, viz. How strangely deform'd, and confus'd some of the Heathens, represented their Gods, either in *Painting*, or *Sculpture*.

And 1. of *Saturn*, he is described by some with 3 Heads, viz. A Lions, a Dogs, and a Wolfs; others pourtrayed him with 2 Wings on a humane Head.

2. Of *Jupiter*, him the *Lacedaemonians* Pictur'd with 4 Faces. The *Argives* had his Representation in Sculpture with 3 Eyes, viz. One in his Forehead.

3. Of *Apollo*, him the *Lacedaemonians* depicted with 4 Hands, and as many Ears.

The *Persians* described, *Phœbus*, [or *Apollo*] with the Head of a Lion.

The *Egyptians* had his Statue in the likeness of a Man, with the Head of a young Ram, with small Horns on his Shoulders.

4. Of *Mercury*, the Ancients describ'd him like a young Man, with Wings behind his Shoulders and his Ears.

The *Egyptians* fram'd his Image with the Head of a Dog on his Shoulders.

5. Of *Janus*, by some he was depicted with 2 Faces, by others with 4. *Numa* King of the *Romans*, caused his Statue to be hewed out with 365 Fingers.

The *Phœnicians* form'd his Image like a Serpent, with her Tail in her Mouth.

6. Of *Neptune*, some represent him in his upper part like a Man, and the lower like a Fish, in his right Hand he holds a Trident, or 3 pointed Spear.

7. Of *Pan*, the Ancients depicted him from the middle upwards, like a Man with a ruddy Complexion, being very hairy, (his Skin and Breast covered with the Skin of a Spotted Doe, or Leopard, holding in one Hand a Shepherd's Hook, in the other a Whistle,) and from the middle downwards, the perfect shape of a Goat.

8. Of *Fauns*, *Sylvans*, *Fairies*, and *Satyrs*, as to their corporal Shape, they were described like *Pan*, only they had short Horns on their Heads, with small Ears, and short Tails.

It would be a Task too tedious to enumerate all the Antick Forms, and Fancies by which the Heathens did represent their several Gods; and their Poets, and Painters, and Carvers did describe them, and the Powers, Passions, Vertues, Vices, Nymphs, Muses, &c. They not only had strange and monstrous Fictions of humane Creatures; (in *Poetry* and *Sculpture Painting* also :) but of Brutes As. 1. Of the *Syrens*, or *Maremaids*, half a Woman, and half a Fish, *Griffins*, half Beasts, and half Birds; *Pegasus* was also another of the same Fictitious Kind; *Harpyes* also which were part Women, and part Birds; *Centaur*s, half Men, and half Horses, *Sagittaur*s, half Men, and half Beasts; *Dragons*, also part Serpents, and part Birds. 2. They had also some Representations

of twiform'd Creatures, as the Amphisbœna, a Serpent with a Head at each end; the Spread Eagle with 2 Heads on the same Neck. And likewise they sometimes have the Representation of divers sorts of Fruits, and Flowers, growing on the same Plant, &c. With many such like Figments which we have good Reason to believe, there are really no such standing Species of Animals, and Vegetables in Nature, tho' the belief of such feinds hath been propagated by Orators, upon account of their fitness to be made use of in the way of Similitude.

This Work which we call *Antick*, the *Italians* call *Grotesca*, (of which *V. Pl.*) and the *French Grotesque*, which signifies Comical, Pleasant, apt to make one laugh; also ridiculous. And their word *Grotesques*, signifies foolish, idle Fancies.

### *Anticum.*

From the Lat. a *Porch* before a Door, the fore Door, a *Hatch*.

### *Antipagments.*

The Ornaments, or Garnishing in carved Work, set on the Architrave, (Jambs, Posts, or Puncheons of Doors;) whether of Wood, or Stone.

### *Apertions.*

1. *What*] From the Lat. signifying opening. But in Architecture 'tis used to signify, *Doors, Windows, Stair-cases, Chimnies,* or other *Conduits*: In short, all *Inlets, or Outlets, of Men, Light, Smoak, &c.* To which belong 2 general Cautions, viz.

1. Of their Number, and 2. Their Position.

2. *Of their Number and Dimensions.*] Let them be as few in number, and as moderate in Dimension, as may Possibly consist with other due Respects; for in a word, all *Openings* are *Weaknings*.

3. *Of their Position.*] Be sure to let them not approach too near the Angles of the Walls; for it were indeed a most essential Solecism to weaken that Part which must strengthen all the rest.

### *Aqueduct.*

From the Lat. *Aqueductus*, a Conveyance made for the carrying of Water from one place to another.

## Arches.

1. *Whence deriv'd.*] It comes from the Latin, *Arcus*, a Bow.

2. *What*] In Architecture 'tis us'd to signifie an intern Support to the Superstructure; and it is either *Circular*, *Elliptical*, or *Straight*. Of *Circular Arches*, there are 3 Kinds; *Semicircular*, *Scheme*, or *Skeen*, and *Arches of the 3d. and 4th. Point* of these, and of *Elliptical*, and *straight Arches*, I shall treat in their order.

3. *Semicircular.*] These Arches are an exact Semicircle, and have their Centre in the middle of the Diameter, or right Line that may be drawn betwixt the Feet of the Arch. Of this Form the Arches of Bridges, Church-windows, and great Gates are sometimes made in our modern Buildings.

4. *Scheam, or Skeen.*] These I understand to be such, as consist of less than a Semicircle, and consequently are flatter Arches. Some of these contain an Arch of about 90 Degrees, others about 70, and others (which are yet flatter) about 60 Degrees; these last are very flat. Now, 'tis very easie to distinguish between Semicircular, and Scheme Arches, for the *Chord*, (or right Line) drawn between the Feet of a *Semicircular-arch*, is just double to its *height*, (measur'd from the middle of the Chord, to the Key piece, or top of the Arch;) whereas the *Chord* of a *Scheme-arch* of 90 Degrees will be above 4 times its height. and the *Chord* of a *Scheme-arch* of 60 Degrees, will be above 6 times its height.

5. *Of the 3d. and 4th. Point.*] So our *English* Authors call 'em, but the *Tuscan* Authors calls them *di tarzo*, & *di quarto acuto*, because they always concur in an acute Angle at the Top. They consist of 2 Arches of a Circle, (meeting in an Angle at the top) drawn from the division of the Chord, into 3, or 4, or more parts, at pleasure. The particular Method of drawing which, and all other Arches, and Mouldings, &c. I must at present omit; but if this find Acceptance, and I any Encouragement, the next Impression shall contain these, and many other Curiosities, not to be found in this. I have observ'd many of these Arches, in old Stone Buildings, both Houses and Churches. But I say, (says that great Architect, Sir *Henry Wotton*) that these kind of Arches, (both for the natural Imbecility of their acute Angle, as likewise for their Uncomeliness) ought to be exil'd from all judicious Eyes, and left to their first Inventors, the *Goths* and *Lombards*, amongst other Reliques of that barbarous Age.

6. *Elliptical*] These kind of Arches consist of a Semi-Ellipsis, and were formerly much us'd instead of Mantle-trees in Chimneys. They are commonly describ'd on 3 Centres; but they may be drawn otherwise. These consist of 3 parts, viz. 2 *Hanses*, and a *Scheme*, now Workmen call each end of these *Arches* the *Hanse*, which *Hanses* are always the *Arches* of smaller Circles than the *Scheam*, which is the middle part of these Arches

ches, and consists of a part of a larger Circle ; which is drawn betwixt the 2 Hansas to conjoin them all together, to make, as it were one Helical Line, and by consequence an *Elliptical Arch*. These Arches have commonly a *Key-stone*, and *Chaptrels*, (the *Key-stone*, is that which is the very summity, or top of the Arch, which is equally distant from both ends, and the breadth of this *Key-stone* at the top, ought to be equal to the height of the Arch, (which is commonly about 14 Inches, when made of Brick) and *Sommer* (or point with its 2 edges) to the Centre of the Schem, the *Key-stone* should break without the Arch, so much as the *Chaptrels* Project, or Sate over the Jambs. The *Chaptrels* I understand to be the same, which most Architects call *Imposts* ; and 'tis that on which the Feet of the Arches stand, whose height, or thickness ought to be equal to the breadth of the lower part of the *Key-stone*, N. B. That each other Course in these Arches consist of 2 *Stretchers*, which are 7 Inches long apiece, (when the Arch is 14 Inches deep) and the other Courses betwixt these of 3 *Headers*, and 2 *Closers* ; the length of the *Headers* must be  $3\frac{1}{2}$  Inches, and the *Closers*,  $1\frac{3}{4}$  Inches ; thus one Course of the Arch will be divided into 2 *Stretchers*, and the other alternately into 3 *Headers*, and 2 *Closers*, throughout the whole Arch.

7. *Strait*] These Arches have a straight, upper, and under edge, as the former had carved ones ; and those 2 edges are parallel, and the Ends, and the Joints, all point toward a certain Center : They are generally used over Windows and Doors, and 'tis a certain Rule amongst Workmen, that according to the breadth of the Peers betwixt the Windows, so ought the *Skew-back*, or *Sommering* of the Arch to be ; for if the Peers be of a good breadth, as 3, or 4 Bricks in length, then the straight Arch may be described from the *Oxi*, (as 'tis vulgarly call'd) which being but part of the word *Oxigonium*, signifying an Equilateral Triangle ; but if the Peers are small, as sometimes they are but the length of 2 Bricks, and sometimes but one Brick and a half, then the breadth of the Window, or more, may be the Perpendicular (to the middle of the under side of the Arch) at whose end below, shall be the Centre for the *Skew-back*; or *Sommering* to point to. These *straight Arches* are commonly about 1  $\frac{1}{2}$  Brick, which when rubb'd, makes about 12 Inches high, tho' sometimes they are but 11 Inches, or thereabouts, which answers to 4 Course of Bricks ; but they may be made more or less in height, according as Occasion requires. N. B. That by the word *Skew-back*, is meant the leveling end of the Arch, and by *Sommering*, is to be understood the level Joints betwixt the Courses of Bricks in the Arch. These Arches commonly consist of a *Stretcher*, and a *Header* in height, the *Stretchers* being a whole Bricks length, and the *Headers* a Bricks breadth.

Now the whole Business of building Arches, (saith Sir H. W.) may be reduced into these 5 following *Theorems*.

8. *Theorem the 1<sup>st</sup>.*] All solid Materials, free from Impediment, do descend Perpendicularly downwards, because Ponderosity is a natural Inclination to the Center of the Earth, and Nature performeth her Motions by the shortest Lines.

9. *Theorem the 2<sup>d</sup>.*] Bricks moulded in their ordinary Rectangular Form; if they be laid on by another in a level row, between any Supporters, sustaining their 2 ends, then all the pieces between will necessarily sink, even by their own natural Gravity, and much more if they suffer any Pressure by a superincumbent Weight; because their sides being parallel, they have room to descend Perpendicularly, without Impeachment; according to the former *Theorem*: Therefore to make them stand, either the Posture, or their Figure, or both must be changed.

10. *Theorem the 3<sup>d</sup>.*] If Bricks moulded, or Stones squared, *Cuneatim*, (i. e. Wedge-wise, broader above, than they are below) shall be laid in a row level, with their ends supported, as in the precedent *Theorem*, pointing all to one Centre; then none of the pieces between can sink, till the Supporters, or Butments give way; because they want room in that Figuration to descend Perpendicularly. But this is yet a weak piece of Structure, because the Supporters are subject to too much impulsion, especially if the Line be long; for which Reason this Form, (*viz.* straight Arches) is seldom used, but over Doors, and Windows that are narrow. Therefore to fortifie the Work, as in this third *Theorem*, we have supposed the Figure of all the Material's, different from those in the 2<sup>d</sup>. So likewise we must now change the Position, as will appear in the following *Theorem*.

11. *Theorem the 4<sup>th</sup>.*] If the Materials be figured Wedge-wise, (as in the preceding *Theorem*) should be disposed in the Form of some Circular Arch, (and not straight or level) and pointing to some Centre, (or Centers.) In this case, neither the pieces of the said Arch, can sink downwards for want of room to descend, (as in the 1<sup>st</sup>. *Theorem*) Perpendicularly: Nor the Supporters, or Butments of this Arch, can suffer so much Violence, as in the precedent flat Posture, for the Convexity will always make the Incumbent weight, rather to rest upon the Supporters, than to shove them; whence may be drawn an evident Corollary, that the safest of all Arches is the Semicircular, and of all Vaults the Hemisphere; tho' not absolutely exempted from some Weakness, (which is the sole Prerogative of Perpendicular Lines, and right Angles) as *Bernardino Baldi*, *Abbot of Guastalla* hath observed in his Commentary upon *Aristotle's Mechanicks*, where let me note by the way, that when any thing is Mathematically demonstrated weak, it is much more Mechanically so. Errors ever occurring more easily in the management of gross Materials, than in Lineal Designs.

12. *Theorem the 5<sup>th</sup>.*] As Semicircular Arches, or Hemispherical Vaults, being raised upon the total Diameter, be of all other the roundest, and consequently the securest by the precedent

dent *Theorem*: So those are the comeliest, which keeping precisely the same height, shall yet be distended, one 4<sup>th</sup>. part longer than the said Diameter, which Addition of Distent will confer much to their Beauty, and detract but little from the strength.

I did not intend here to have had the different Proportions of *Arches*, &c. According to the 5 Orders of Architecture; as they have been observed, and set down for a certain Rule, by diverse famous *Architects*: But fearing I shall too much exceed my limited Bounds, I shall defer it till another Opportunity; because the Bookseller would not have this First Edition too large.

13. *Of Measuring Arches*] In measuring of them, whether they are Straight, or Circular; they must be measured in the middle, *i. e.* if a straight *Arch* be 12 Inches in height, or depth, the length must be measured in the middle of the 12 Inches, which length will be no longer than if it were measured at the under side, next the head of the Window, by so much as one side of the springing of the Arch is skew'd back from the upright of the Jambes, Peers, or Coins of the Windows.

Also in *Circular Arches*, 'tis to be observed, that the upper part of the *Arch* is longer, (being girt about) than the under part, because it is the Segment of a greater Circle, cut off by the same right Line that the lesser is, and therefore it must be girt in the middle,

14. *Price*] For the Workmanship of *straight Arches*, well rub'd, and handsomely set; (of Brick) in *London*, about 8 *d.* or 9 *d.* per Foot; but in some parts of *Suffex*, and *Kent*, they will not do it under 12 *d.* per Foot, running Measure. But in *London*, if the Workmen find Materials, then 'tis about 10 *d.* or 12 *d.* per Foot.

*Skeen*, or *Scheam Arches*, and *Elliptical* ones; of rub'd Brick, are common about the same price with strait ones. But *Scheam Arches* of unrub'd Bricks, are commonly included with the plain Work, unless the plain Work be done at a reasonable Price: But you must here note, that the Master of the Building, (or Owner) is at the charge of the Centers to turn the *Arches* on; and not the Workman, unless he be allow'd for it in the Price of the Work.

### *Architeſtonick.*

Belonging to the chief Overseer of Buildings, also to an

### *Architeſt.*

A Master-workman in a Building; 'tis also sometimes taken for the *Surveyor* of a Building, *viz.* He that designs the Model, or draws the Plot, or Draught of the whole Fabrick; whose business it is to consider of the whole Manner, and Method of the Building,

Building, and also the Charge, and Expence: In the management of which, he must have respect to its due *Situation, Contrivance, Receipt, Strength, Beauty, Form, and Materials*. All which are to be duly deliberated of by the *Superintendent*, (or *Surveyor*) of a *Building*; it being wholly committed to his Circumspection, and therefore it will be his Prudence to manage the whole Affair advisedly, and with great Caution, that all may be so order'd, and disposed (in all Circumstances) that it may answer the Design, and be consentaneous to Reason. But tho' the whole Fabrick be the Care of the *Superintendent*, yet Sir *H. Watton*, would have a second *Superintendent*, (or *Officiator*, as *Vitruvius* calls him) whose Care it should be to choose, (or examine) and sort all the *Materials* for every part of the Structure.

### *Architecturè.*

A Mathematical Science, which teacheth the Art of Building, being a Skill obtain'd by the Precepts of Geometry, by which it gives the Rules for designing, and raising all sorts of Structures, according to Geometry and Proportion. Containing under it all those Arts that conduce any thing to the Framing of Houses, Temples, &c. *Vitruvius* branches it into 3 parts, viz. *Ædification*, or building Houses, &c. *Gnomonica*, or Dialling, and *Mechanica*, the Mystery of Machines, or Engines.

### *Archives.*

A Place where ancient Records, Charters, and Evidences are kept.

### *Architrave.*

1. *Whence derived*] I suppose it to come from the *French*, for the word is purely so.

2. *What*] 'Tis used in *Architecture*, to signify the Moulding, or Ornament next above the Capital of a Column: it being always the next gross Member below a Frieze. The word is also sometimes used to signify the chief, or principal Beam in a Building; now I cannot conceive what they mean by the principal Beam in a Building, because I do not suppose it can properly be applied to all Buildings, but only to some peculiar kinds, as what we call *Porticoes, Piazza's, or Cloysters*, (by which we understand a long kind of *Galleries, or Walking-places*, whose supern part of the Structure, is born, or supported by Columns, or Pillars, at least at one side.) The which, if they consist of wooden Columns, or Pillars, have not Arches rising from them to bear the Superincumbent part of the Fabrick, but have a Beam resting, or lying on the tops of the Columns, by which the superiour part of  
the



the Edifice is supported, upon which account suppose it to be called the chief or principal Beam.

In Chimneys, the Architrave is the Mantle over the Jambs of Doors, and Lintels of Windows; 'tis call'd *Hyperthyron*.

There are also *Architrave Doors*, and *Windows*; those are call'd *Architrave Doors*, which have an *Architrave* on the Jambs, or Puncheons, and over the Door, upon the Cap-piece, if straight, or on the Arch, if the top be carved. The Form of these *Architraves* about Doors, are not always the same; for sometimes they are according to one of the 5 Orders of Architecture. But 'tis sometimes done according to the Workman's Fancy; for I have seen some have put for an *Architrave* round a Door, 1<sup>st</sup>. next the Door a small Bead, then abroad Plinth, or Fatio, above that on O--G, and Lint. There are Stone and Brick *Architraves*, as well as Timber ones. *Architrave Windows* of Timber, are commonly an O--G, rais'd out of the solid Timber, and a Lint above, but sometimes they are struck, and laid on. Brick *Architraves* are usually cut in the length of a Brick, but sometimes they are cut in the length of a Brick and  $\frac{1}{2}$ , then each other course alternately consists of the breadth of 2 Bricks; the upper one on which the O--G. is cut, and part of the upper *Fatio*; they call Header, or *Heading Architrave*, and the breadth, or head of Bricks on which the lower *Fatio*, and part of the upper one is cut, they call a *Jak* Architrave of Stone. v. Door, N. 4.

3. *Kinds*] *Architects* distinguish them into 5 *kinds*, viz. Tuscan, Dorick, Ionick, Corinthian, and Composite, according to the 5 Orders of Columns.

4. *Parts, or Members*] Are more numerous than the *Kinds*, because some of the Orders have 2 different sorts of *Architraves*, and what yet more increases the number, is, that some Authors differ from others in their Forms, of the same Orders. Of all which I shall give a particular account, in the following order.

5. *Tuscan*] According to *Vitruvius*, ought to be  $\frac{1}{2}$  a *Modie* in Altitude; this general Member, he hath described in two Forms, the 1. Consisting of 3 parts, or Members, viz. 2 *Fatio's* and a *Cimatium*, and is thus divided, the whole height is divided into 6 parts, 30, or 50, which is subdivided in this manner, viz. the upmost 6<sup>th</sup>. part is the *Cimatium*, which being subdivided into 3, the upper part shall be the *Fillet*, and the 2 lower ones the O--G. The 5 grand Divisions which remain, must be divided into 9, 5 of which shall be for the superiour *Fatio*, and the other 4 for the inferiour one. His 2<sup>d</sup>. Form consists of but 3 Members, or Parts, viz. a large *Plinth*, or *Planchier*, a *Casement*, and a large *Fillet*, and is thus subdivided, the whole height is divided into 6, the upper part is for the *Fillet*, (which projects in square beyond the *Plinth*) the 5<sup>th</sup>. part is for the *Casement*, (which rises from the Plain of the *Plinth*, and terminates in a *Quadrant*, at the lower corner of the *Fillet*.) The other

other 4 parts remaining, are for the *Plinth*, or *Planchier*, or *Fatio*.

*Palladio* hath also 2 distinct shapes for the *Tuscan Architrave*; the 1<sup>st</sup>. which we shall mention, consists of 2 *Fasio's*, (or *Fatio's*) and a *List*; the lower *Fatio* is  $12 \frac{1}{2}$  m. high, the upper *Fatio* is  $17 \frac{1}{2}$  m. which terminates with a *Quadrantal Casement*, rising from its *Plain*, and terminating with the lower corner of the *List*; the *List* is 5 m. high; so the whole height of the *Architrave* is 35 m. His 2<sup>d</sup>. *Architrave* is only a plain *Fatio* of 35 m. high. *Scamozzi*, according to his *Delineations*, makes the *Tuscan Architrave*  $31 \frac{1}{2}$  m. high. the which he divides into 4 parts, or *Members*, viz. 2 *Fatio's*, a *List*, and a *Plinth*; his 1<sup>st</sup>. *Fatio* he makes 10 m. his 2<sup>d</sup>.  $16 \frac{1}{2}$  m. his *List*  $1 \frac{1}{2}$  m. and his *Plinth*  $3 \frac{1}{2}$  m. all which make  $31 \frac{1}{2}$  m. tho' according to his *Verbal* account of it, he saith it must be  $32 \frac{1}{2}$  m. except it should be a *Typographical Erratum*.

*Vignola* describes it with the same parts, height, and form, with *Vitruvius's* 2<sup>d</sup>.

6. *Dorick*] This *Architrave*, according to *Vitruvius's*, is half a *Module* in *Altitude*, the which he delineates in 2 *Forms*; the 1<sup>st</sup>. (which I shall mention) he divides into 7 parts, the uppermost of which is the *Tenia*, the other 6 remaining parts, he makes a *Fascia* under the *Tenia*, he placeth *Drops*, whose height are  $\frac{2}{7}$  of the *Architrave*;  $\frac{1}{4}$  of this  $\frac{2}{7}$  is the *Fillet*, to which the *Drops* hang; the *Drops* are 6 in number, placed under, (and of the same breadth with) the *Triglyphs*. His 2<sup>d</sup>. *Figure* of his *Architrave*, consists of the same *Members* with the 1<sup>st</sup>. and the whole height is equal to the 1<sup>st</sup>. but he divides the *Altitude* into but 6 parts; the upper one of which is his *Tenia*, and the other 5 the *Fascia*, the upmost of which is the *Altitude* of his *Drops*, which have a *List*, which is  $\frac{1}{4}$  of their height, as before.

*Palladio*, composes this *Architrave* of the same height, with *Vitruvius*, but of a different *Fashion*; for he makes it to consist of 3 parts, or *Members*, viz. 2 *Fascia's*, and a *Tena*, or *Tenia*; he divides the whole height into 6 parts, one of which being 5 m. he assigns for the *Gutta*, *Bells*, or *Drops*; the *Listella* of the *Drops*, is  $\frac{2}{3}$  of the whole height  $1 \frac{1}{3}$  m. and the *Drops*  $2 \frac{2}{3}$  m. The *Tenia* above the *Drops*, (or of the *Architrave* rather) he makes  $4 \frac{1}{2}$  m. and the *Prima* (or upper) *Fascia*, he makes  $14 \frac{1}{2}$  m. and the *Secunda*, (or lower) *Fascia*, he allows 11 m. for, in all 30 m. which is the whole height.

*Scamozzi*, (according to his *Portraiture* of this *Architrave*) makes it 35 m. in *Altitude*, and he makes this grand *Member*, to comprehend 3 petty *Members*, viz. 2 *Fatio's*, and a *List*; whose *Dimensions* are as follows (beginning at the top, and so descending) the *List* to be 5 m. the upper *Fatio*, 18 m. and the lower one 12 m. in all 35 m. The *Drops*, or *Bells*, he thus divides, the *List* above them he designs to be  $1 \frac{1}{2}$  m. and the *Bells*,

or Drops themselves  $4\frac{1}{2}$  m. so that your whole height is 6 m.

*Vignola*, delineates this *Architrave*, 30 m. in height, the same with *Vitruvius*, and *Palladio*; both which he also imitates in the lesser Member, for he hath 2 distinct Forms, one like *Vitruvius*, containing 2 Members, or Parts, one a *List*, the other a *Fatio*; his other Form is like *Palladio's*, comprehending 3 petty Members, viz. a *Tenia*, and 2 *Fatio's*.

7. *Ionick*] According to *Vitruvius's* Order, this grand Member ought to be  $\frac{1}{2}$  a Module high; he hath described 2 Forms of *Architraves*, in the *Ionick* Order, viz. one for the *Ionick* Column, without a Pedestal, and the other with a Pedestal, and 1st. I will describe that without a Pedestal; the which he composes of 4 minuter Parts, viz. 3 *Fascia's*, and a *Cimatium*; which is thus divided, the whole Altitude is divided into 7 parts, the uppermost of which is allotted to the *Cimatium*, which is subdivided into 3 parts, the uppermost of which is for the *List*, and the 2 remaining, for the O.-G. The other 6 remaining parts, they divide into 12, 5 of which he makes the upper *Fascia*, 4 the middle one, and 3 the lower. The other for the *Ionick* Column, with a Pedestal, he thus proportions, viz. He reckons the whole height of the *Architrave*, *Frieze*, and *Cornish*, to be 2 Modules, the which he divides into 10 parts, 3 of which are for the *Architrave*, (which is 36 m.) the which he distinguishes into 6 Minuter Parts, or Members; the which he thus names, (beginning at the top, and so descending) viz. A *Fillet*, a *Cima*, a *Thorus*, and 3 *Fascia's*; all which smaller Members he thus finds, viz. He 1st. divides the whole height into 6 equal parts, the upmost of which parts, he subdivides into 4 parts, the highest of these 4 is for the *Fillet*, the 2 next of the 4 are allotted to the *Cima*, and the 4th. remaining, is for the *Thorus*. The 5 grand Divisions remaining, he subdivides into 12, which are thus distributed, viz. 5 for the upper, 4 for the middle, and 3 for the lower *fascia*. *Palladio*, assigneth 34 m. for the Altitude of this *Architrave*, according to his Scheme of this Member, it is composed of 7 parts, viz. A *List*, a *Cima*, 3 *Fascia's*, and 2 *Astragals*; the which he thus proportions, viz. To the *List*, (which is above the *Cime*, for I will descend with the Description) he allots  $2\frac{2}{7}$  m. the *Cima*,  $4\frac{3}{7}$  m. To the upper *Fascia*, he allows  $10\frac{1}{7}$  m. to the *Astragal* at his Foot  $\frac{1}{7}$  m. the middle *Fascia*, is to contain  $7\frac{5}{7}$  m. and the *Astragal* at his foot  $1\frac{1}{7}$  m. to the lower *Fatio*, he assigns  $6\frac{2}{7}$  m. all which being added into one Sum, amounts to  $34\frac{1}{7}$  m. *Scamozzi* makes the *Ionick Architrave*, 35 m. high, and of the same shape with *Vitruvius's* second, viz. To consist of 6 parts, viz. A *List*, *Cima*, *Astragal* (or *Thorus*) and 3 *Fascia's*, which he thus proportions, he allots to the *List*,  $2\frac{1}{2}$  m. to the *Cima*, 4 m. to the *Thorus*, 2 m. to the upper *Fascia*,  $11\frac{1}{2}$  m. to the middle one 8 m. and to the lower one 6 m.

*Vignola*, allows  $37\frac{1}{2}$  m. to the *Ionick Architrave*, in height, and

as to the Form, his is much the same with *Vitruvius's* 1st. of this Order.

8. *Corinthian*] According to *Vesuvius*, ought to be  $\frac{1}{2}$  a Module high; but you must note this is for the *Corinthian* Column, without a *Pedestal*; this Member he divides into 7 parts, the uppermost of these is the *Cimatium*, the 6 remaining parts he divides into 12, 5 of which he allots to the upper *Fascia*,  $\frac{1}{3}$  part of this *Fascia* is to be allow'd for a *Bead* at his Foot, 4 of the 12 parts he allows to the middle *Fascia*, and  $\frac{1}{3}$  of this *Fascia*, he makes the *Bead* of at the Foot, and the 3 parts remaining, he makes the lower *Fascia*. The *Architrave* for the *Corinthian* Order with a *Pedestal*, *Vitruvius* alloweth a larger Altitude, than that without; it consists of the same Members, both for Number and Form, with the former *Architrave*, but they differ in Dimensions. The Division, and Subdivision of which take as followeth: The whole height of the *Architrave*, ought to be  $\frac{1}{4}$  of the height of the Column, (nearly to  $\frac{1}{5}$  of the Body of the Column below) which is—to 40  $\frac{1}{2}$  m. This Altitude he divides into 7 equal parts, and at the uppermost of these 7, he maketh a *Cimatium*, and the 6 remaining, he divides into 12 equal Divisions, 5 of which are allotted to the upper *Fascia*, 4 to the middle one, and 3 to the lower one: The upper, and middle *Fascia*, he subdivides into 8 parts each, one of these 8ths he allows for a *Bead* at the Foot of each of these *Fascia's*.

*Palladio* makes this *Architrave* to contain 8 parts, viz. 1 *List*, 1 *Cima*, 3 *Beads*, and 3 *Fascia's*, the height of all which, he orders to be 36 m. high, which he thus subdivides, viz. To the (upper Members, or) *List*, he allows 2  $\frac{1}{4}$  m. the next in order, is a *Cima*, and the next in order is of 2 m. high, at the foot of the which is a *Bead*, then follows the upper *Fascia* with his *Bead*, at his Foot, both which contains about 13  $\frac{1}{2}$  m. then comes the middle *Fascia*, and his *Bead*, which contain 8  $\frac{1}{2}$  m. and last of all the lower *Fascia*, of 6  $\frac{1}{4}$  m. high.

*Scamozzi*, reckons the whole height of this *Architrave* to be 40 m. the which he subdivides into 9 small Members, viz. (beginning at the top descending) a *List* of 2 m. a *Casement*, 3  $\frac{1}{2}$  m. and O-G. of 2  $\frac{3}{4}$  m. a *Bead* of 1  $\frac{1}{2}$  m. a *Fascia* of 12 m. and his *Bead* of 2 m. the middle *Fascia* 8  $\frac{1}{2}$  m. and his *Bead* 1  $\frac{1}{2}$  m. and lower *Fascia* of 6  $\frac{1}{2}$  m. in all 40. m. as before said.

*Vignola*, makes the *Corinthian Architrave* to be 45 m. high, the which he subdivides into 8 smaller Members, viz. as *Palladio* doth, viz. a *List*, a *Cima*, 3 *Beads*, and 3 *Fascia's*.

9. *Composite, Compound, or Roman*] *Vitruvius* makes the *Architrave* in this Column, and the *Frieze*, and *Cornish*, all of an equal height, viz. Each of which is equal in height to the Diameter of the Column, above, just under the *Capital*; which is  $\frac{1}{2}$  of a Module,—50 m. This *Architrave* *Vitruvius* divides into 6 parts, one of which is for the *Cimatium*, and its *Boulgin* under

it; this upper 6th. part he divides into 4, and one of these 4, he allows for the *Fillet* above the *Cima*, the 2 next for the *Cima* it self, and the 4th. remaining he allots for the small *Boultin* under the *Cima*; the other 5 grand Divisions, he subdivides into 12 Minuter Parts, 5 of which parts he assigns for the upper *Fascia*, 4 for the middle one, and 3 for the lower; the upper and middle *Fascia's*, he subdivides into 8 parts each, and one of these 8ths he allows for a *Bead*, at the foot of each of these *Fascia's*.

*Palladio* makes this *Architrave* 45 m. high, the which he distributes amongst 7 particular Minuter Members, which I will thus reckon up in order, (beginning at the top, and so descending) And 1st. to the *List*, he allows  $2\frac{1}{8}$  m. to the *Casement*.  $4\frac{1}{8}$  m. to the O. G.  $9\frac{1}{4}$ , to the *Bead*  $1\frac{1}{4}$  to the upper *Fascia*, 15 m. to an O. G. at his Foot  $2\frac{1}{4}$ , and to the lower *Fascia* 11 m.

*Scamozzi* makes this 40 m. high, the which he divides amongst these 8 following Members, or Parts, viz. (descending) 1st. a *List* of 3 m. 2dly. an O-G of  $4\frac{1}{2}$  m. 3dly. an *Astragal* of 2 m. 4thly. the upper *Fascia* of  $11\frac{3}{4}$  m. 5thly. a *Bead* at his foot of  $2\frac{1}{4}$  m. 6thly. the middle *Fascia* of  $8\frac{1}{2}$  m. 7thly. his at his foot  $1\frac{1}{2}$  m. 8thly. and lastly, the lower *Fascia* of  $6\frac{1}{2}$  m.

*Vignola* makes this *Architrave*, 45 m. in Altitude; the which he divides into 7 Members, a *List*, a *Casement*, a *Boultin*, a *Fillet*, a *Fascia*, a *Bead*, and a *Fascia*.

10. *Measuring.*] As to measuring of *Architraves*, in Buildings, (whether of *Brick*, or *Stone*) they are commonly done by the foot *Lineal*, and therefore the length being taken in Feet, the Content is also had at the same time.

11. *Price.*] As to their value; they are different according to their breadth, or wideness; *Architraves* of *Stone*, about *Doors* and *Windows*, Mr. *Wing* saith, they are commonly reckon'd 1 d. per Inch broad, at 1 Foot: E. G. if it be 9 n. broad, it's worth 9 d. per Foot, 10 n. 10 d. &c.

### Ash

*Of Sawing.* In some places they have 3 s. per hundred, in others 3 s. 6 d. and other some 4 s. The Price varies in this, as it doth in other *Businels*, viz. According to the Custom of the Place; but it is certainly worth 6 d. per hundred (at least) more than it is to saw *Oak*.

### Ashlar.

1. *What.*] I understand by *Workmen*, that by this word, they mean common, or free *Stones*, as they come out of the *Quarry*, of different lengths, and thickneses. Mr. *Lejbour* saith, that 9 n. is the common thicknes.

2. *Price.*] Mr. *Wing* saith, in *Rutland*, they commonly value them at 3 *d.* or 4 *d.* per Foot at the Quarry.

About us (in *Suffex* and *Kent* they toll them, being a common ordinary sort of Stone) by the Load, about 18 or 20 Foot makes a Load, which costs, if they come rough from the Quarry, about 3 *d.* per Foot; being laid down at the place, where they are to be used; but if they are ready scapted, then they are valued at about 4 *d.* per Foot. But if they are bought rough at the Quarry, then they are valued at about 2 *d.* per Foot; but if scapted, then about 3 *d.* per Foot. But in some other Places in *Kent*, and *Suffex*, I have known them sold rough at the Quarry for about 1  $\frac{1}{2}$  *d.* per Foot, and for 2  $\frac{1}{2}$  *d.* per Foot scapted; but if they were laid down at the Place for use rough, then they were usually valued at about 2  $\frac{1}{2}$  *d.* per Foot, and if ready scapted, at about 3  $\frac{1}{2}$  per Foot.

But as to the real value of *Stones*, or *Ashlar*, in all Places, it's impossible to give a certain Rule to know it: Because the Price differs, 1<sup>st</sup>. According to the different Customs of the Places. And 2<sup>dly</sup>. The Circumstances of the Quarry. And 3<sup>dly</sup>. Goodness of the *Ashlar*. To all which 3 Heads I shall briefly say something. 1<sup>st</sup>. Of the Customs of Places, by which I mean as to Carriage; I have known *Stones* carried above a Mile for 1 *s.* 8 *d.* per Load, at one Place, and again at another Place the usual Price to carry a Load but about  $\frac{1}{2}$  a Mile was 2 *s.* which is 4 *d.* per Load more than at the 1<sup>st</sup>. Place, tho' they were carried but  $\frac{1}{2}$  so far.

2<sup>dly</sup>. As to the Circumstances of the Quarry, which I shall consider under 2 Heads. And 1<sup>st</sup>. Whether the *Stones* are drawn in inclosed Land, or on the Lord's Waste, (*viz.* In the High-ways, or on Commons, &c.) For if they are drawn within Land (as they commonly call it) he that is the Proprietor of the Land, will be paid well for damaging his Ground, both by drawing, and carrying the *Stones* out of his Land. Whereas, if they are drawn on the Lord's Waste, the Lord hath only (commonly) a small Acknowledgment (by the Load, or so forth) for Trespassing upon his Waste.

3<sup>dly</sup>. As to the Goodness of *Stones*, that may be consider'd of under 2 Heads, *viz.* Durability, and Magnitude. And 1<sup>st</sup>. Of Durability; this wholly depends on Experience, for none can certainly tell when a new Quarry is 1<sup>st</sup>. opened, how the *Stones* may prove; for some *Stones*, when they are taken out of the Quarry, are very soft and friable, and being but a few Years exposed to the Weather, moulder into Sand; tho' some of these soft *Stones* are indurated by being exposed to the open Air; but as for hard *Stones*, they are generally durable, being of a more solid and firm Consistence. 2<sup>dly</sup>. As to their Magnitude, I need not say much, for all know that large *Stones* must needs be better, and make firmer Work than small, which are only fit  
for

for filling Work in thick Walls, or to use in such Places where the Country affords no better. But 'tis too often through the Stone Drawers Carelessness, or Ignorance, that *Stones* are broken up so small in the Quarry; and therefore to promote (in some measure) so useful an Art; I shall, when I come to speak of *Stones*, lay down some Precepts to be observ'd in drawing of *Stones*, as I received it from an ancient experienced *Stone drawer*, who always drew the best *Stones* on our side the Country.

I might have added a 3<sup>d</sup>. Head to the Circumstances of the Quarry; which because I did not think of then, I shall here annex it; tho' it be out of its proper place, but in another Edition it may be Corrected: Which 3<sup>d</sup>. Head is this, *viz.* There is a great difference as to Quarries, in respect of the Position of the *Stones* in the Ground, which may be again considered under 2 Heads, *viz.* As to their depth in the Ground, and their manner of lying there. And 1<sup>st</sup>. As to their depth: When they lie a considerable depth, it requires a great deal of Labour to remove the Earth over the *Stones*, or uncope it, as Workmen call it: 2<sup>dly</sup>. If they lie almost even with the Surface of the Ground; then it will require but little work to uncover them. And 2<sup>dly</sup>. As to their manner of lying in the Ground, that is also different, and that in 2 Respects; for if the Quarry consist of a Rock, it will require more Labour to raise the *Stones*, and break them fit for use, than if the *Stones* lie separate, and disjunct. All which forecited Circumstances, being duly consider'd, will make the Price of *Stones* very uncertain; for I have known *Stones* drawn for 9 *d.* per Load, and I have known 3 *s.* per Load given.

Before I conclude this of *Ashtar*, I shall add something to the 3<sup>d</sup>. General Head, of the goodness of *Stones*, and that shall be the 3<sup>d</sup>. Division of that Head, *viz.* The Form of *Stones* ought to be consider'd, as to their being raised square, and not with obtuse, and Acute Angles, which requires more work in Scapting, and waists more of the *Stones*, V. P. *Stones* of drawing.

### *Ashtering.*

Quartering (to tack to) in Garrets about 2  $\frac{1}{2}$ , or 3 Foot high, Perpendicular to the Floor, up to the under side of the Rasters; 'tis from 4 to 6 *s.* per Square Workmanship.

### *Asragal.*

V. Capital. N. 2. 45.

*Attick.*

In Building a little Order, placed upon another much greater; for in instead of Pillars, this Order has nothing but Pilasters.

*Attick, or Athenian Base.*

The same as Palladio's Ionick Base, which see.

*Back,*

Or *Hip-molding*, is a Term in Carpentry, by which they signifie the outward Angle of Hips, or Corners of a Roof; which in square Frames, where the Roof is  $\frac{1}{4}$  Pitch, contains an Angle of 116 Degrees, 12 m.

It's also a Term used by Iron-mongers, to signifie a certain sort of Nails, V. Nails. N. 2.

*Bake-house.*

1. *What*.] It's a Room of Office, in all noble Buildings, where the Oven is placed, &c.

2. *Its Position*.] According to the Rules of Sir Henry Wotton, it ought to be placed on the South-side of any Building.

*Balcony.*

1. *What*.] Is a kind of open Gallery, (without the Walls of a House, or Building) for People to stand in, and behold any Action, as Pageants, and the like, in Cities, or to take the Air, &c. This Jutty, or projective Building commonly is in the midst of the Front of a House, if there be but one Balcony to it; and for the most part level with the 1<sup>st</sup>. Floor above Stairs. And they are sometimes of Wood, and sometimes of Iron; the wooden consist of Rails and Ballisters, and so do the Iron ones sometimes, but not always, for they are sometimes made of cast Iron of various Figures in semi Relief, and others of wrought Iron, in crail'd Work, or flourishes, of different shapes, according to the Fancy of the Master, or Workman.

2. *Price*.] Wooden *Balconies* are commonly done by the Yard, *viz.* From 3 to 5 s. per Yard, Workmanship, according as what Work the Carpenter bestows on it.

Iron *Balconies* are commonly done by the lb. (*viz.* wrought ones) from 4 d. to 8 d. per lb. according to the Curiosity of the Work.



*Baldachin.*

It's a perfect *French* word, and they pronounce it *Baldaquin*, which properly signifies a Canopy; 'tis used by Architects, to signify a piece of Architecture, built in fashion of a Canopy, or Crown, supported by several Pillars to serve for a covering to an Altar; some also use it to signify a Shell over the front Door of a House.

*Balkes.*

Great pieces of Timber coming from beyond the Seas by Floats.

*Ballon.*

*French*, a Term in Architecture, signifying the round Globe of the top of a Peer, or Pillar.

*Balluster.*

A Term in Architecture, used to signify the lower part of the Ionick Capital. Also an Inclosure of Pillars set about the Beds of Princes, or to rail in the Communion Table.

*Ballustrade.*

A Term in Architecture, used to signify a row of little turn'd Pillars, so high as for a Man to rest his Elbows, fixed upon a *Terrass*, or upon the top of Building, or to make any separation.

*Ballister, or Bannister.*

1. *What.*] It's a small Column, or Pillar of different Sizes, viz. from 1  $\frac{3}{4}$  Inches, to 4 n. Square, or Diameter: their Dimensions, and Forms are various, according to the Fancy of the Workmen; the *French* give them various Names, viz. *Balaustrade*, *Balaufter*.

2. *Their Use.*] They with Rails are placed on Stairs, in the Fronts of Galleries in Churches, &c. Round Altar-pieces in Churches, on *Terrass* Walks, and in Balconies, and Platforms, &c.

3. *Their Price.*] With Rails, &c. of Wood on Balconies, Platforms, Stairs, &c. according to the Work, viz. About 4 s. per Yard, running Measure.

4. Of *Turning them* only] *1 d. per Inch Workmanship*, is the usual Allowance.

5. Of *Painting them*.] They with what belongs to them, are usually painted by the Yard; the Custom of Measuring which is this, *viz.* Both sides of the Ballisters are measured as if it were flat Measure, including the Vacuity betwixt the Ballisters; which being cast up in Feet and Parts, it's reduced into Yards, as other Plain Painting is. Mr. *Leybourn* saith, that he hath seen the Experiment tryed, by girting the Ballisters, to find the difference betwixt that way, and measuring them, and the Vacuity on both sides, as if it were flat, and he found that the difference would not counter-value the trouble of Girting. But this stands to Reason it should be nearly the same, because it's the Custom to set them but their Square or Diameter asunder, and then the Flanks make good the Vacuities.

### *Bandelets.*

'Tis derived from the *French*, *Bandelette*, a little *Fillet*, or Band; 'tis used by *Architects*, to signify the 3 Parts that compose an *Architrave*.

### *Bannister.*

V. *Ballister.*

### *Barbican.*

A Term in *Architecture*, derived from the *French*, and made use of to signify an Outwork in a Building.

### *Bargecourse*

Is a Term used by Workmen, by which they signify a part of the *Tyling*, which projects over without the Principal Rafters, in all Buildings, where there is either a Gable or a *Kirkin-Head*.

### *Barn*

Is a Word that needs no Explanation, because 'tis a Building that every one knows; they being so common: But I shall add 2 things concerning them, and the

1. Shall be what Mr. *Worldge* advises, concerning placing them, which is this, That it is very inconvenient to build *Barns*, or *Stables*, or such like Places, too near to a House, because *Cattle*, *Poultry*, &c. require to be kept near to *Barns*, &c. which would

would then annoy a House: I had some Thoughts to have added here *Pliny's* Observations, concerning the manner of Building *Barns*; but for the Reason already mentioned, I shall omit it in this 1<sup>st</sup>. Edition, and proceed to my 2<sup>d</sup>. Head, concern the Price of Framing, &c. the Carcass, &c. of a Timber Barn.

2. *Of the Price of Framing, &c.*] I have known the Carcass of a Barn Framed for 3 s. 6 d. per Square, Carpenters work only, and I have known 8 s. per Square given for Carpenters Work, he Felling, Hewing, and Sawing his Timber and Boards, and finding Nails.

I have been inform'd by some Workmen, that the Charge of a Square of Building of the Timber Work of a Timber Barn, may be thus computed, *viz.* 4 s. per Square for Sawing the Boards, (considering their laping one over another, and the Staving the Logs) 2 s. per Square for Sawing the Timber Members, 3 s. 6 d. per Square for Framing the Carcass, and from 4 s. to 7 s. per Square for the value of the Timber, reckoning the Price of the Timber from 12 s. to 21 s. per Tun; and one Tun to make 3 s. Square of Frame in Barn-work. He reckon'd rough Timber, *viz.* Unhew'd, or Squar'd, and that a Tun of rough Timber (which is equal to a Load of hew'd: From these Computations, we may reckon the whole value of a Square of such Timber-work to be worth from 3 s. 6 d. to 16 s. 6 d. per Square,

### Bars

Of Iron for upright ones for Windows, their usual Price is 3 d.  $\frac{1}{2}$ , or 4 d. per lb. in London.

### Bar posts

Are a necessary sort of *Posts*, much used in the Countrey, 2 of which, and 5 Rails or Bars, serve instead of a Gate, for an Inlet to Fields, and other Inclosures; each of these Posts consist of 5 Mortices, and those *Posts* are commonly about 6 Foot, or 6  $\frac{1}{2}$  Foot long, 4 f. of which stands above Ground. These *Posts* are in some Places made by the Piece, *viz.* 1 d. or 1 d.  $\frac{1}{2}$  per Post Hewing, and  $\frac{1}{2}$  d. per Hole for Morticing them.

### Base.

1. *Whence derived.*] I have good Reason to think 'tis derived from the Latin Word *Basis*.

2. *What.*] 'Tis used in Architecture, to signify the Molding, next above the *Pedestal* of a Column, it being always the grand Member (or Ornament) at the Foot of the Body of a Column: 'Tis also used to signify the Ground-work, or Foundation of a

Building, also the Pedestal, on which a Statue stands, is call'd the Base.

3. *Kinds.*] They are distinguished by *Architects* into 5 Kinds, viz. *Tuscan*, *Dorick*, *Ionick*, *Corinthian*, and *Composite*, according to the 5 Orders of Columns.

4. *Parts, or Members*] Exceed the number of the Kinds, because that some Authors differ from others in their Form; of each of which I shall give you the following Account.

5. The *Tuscan*] According to *Vitruvius*, must be  $\frac{1}{2}$  a Module high; this cross Member consists of 3 Minuter Members, or Parts, viz. a *Plinth*, a *Thorus*, and a *Fillet*, and is thus divided, and subdivided; the whole Altitude being  $\text{---}30$ , is divided into 2 equal parts, the lower one of these is for the *Plinth*, and the upper part of the 2 is to be subdivided into 3 equal parts, the lower of these are for the *Thorus*, and the upper one for the *Fillet*.

*Palladio* alloweth this Base to be 30 Min. high also; the which he distributed amongst 3 smaller Members, viz. a *Plinth*, or *Orlo*, a *Torus*, and a *Listella*, or *Ceinture*. The *Plinth* is 15 m. the *Torus* 12  $\frac{1}{2}$  m. and the *Listella* 2  $\frac{1}{2}$  min. high.

*Scamozzi* also alloweth this Base 30 m. in height, but then he reckons but 2 Members, or Parts to it, and they are a *Plinth* of 18 m. and a *Thorus* of 12 m. altho' at the same time he places above the *Thorus* a *List* of 3 m. which in all (I think) makes more than  $\frac{1}{2}$  a Module by 3 m.

*Vignola* also makes the Base of 3 Parts, viz. a *Plinth*, *Thorus*, and *Fillet*; all which he reckons 30 m.  $\text{---}$   $\frac{1}{2}$  a Module.

6. *Dorick.*] This Base *Vitruvius* reckons to consist of 6 Parts, viz. a *Plinth*, 2 *Thoruses*, 1 *Scotia*, and 2 *Lists*; the whole height of all these, he allows to be 30 m. which he thus divides, viz. 1st. into 3 Parts, the lower one of these is for the *Plinth*, the 2 Parts remaining, he subdivides into 4, the upper one of which 4, he allots to the upper *Thorus*, the 3 lower parts of these 4, he divides into 2, the lower of which 2 is for the lower *Thorus*, then he subdivides the upper part of these 2 into 7 equal parts, the upper and lower of these 7, are for the 2 *Lists*, and the 5 betwixt them is for the *Scotia*. But amongst all these 6 Members, or Parts of the Base, there is one large *Fillet*, which is  $\frac{1}{4}$  part of the Module, but this *Fillet* he reckons to be no part of the Base, but a part of the Body of the Column.

*Palladio*, assigneth 30 m. for the Altitude of this Base: According to his Scheme of this Member, it is composed of 7 Parts, viz. a *Plinth*, 2 *Thoruses*, 3 *Annulets*, and a *Scotia*, or *Cavetto*; the which he thus proportions, viz. To the *Plinth*, (the which I think he may more properly call a *Scotia*, or *Casement*) which is wrought hollow, he allots 10 m, to the lower *Thorus* 7  $\frac{1}{2}$  m, to the lower *Annulet* 1  $\frac{1}{4}$  m, to the *Cavetto* 4  $\frac{2}{3}$  m, to the middle *Annulet* 1  $\frac{1}{4}$  m. to the upper *Thorus*, 4  $\frac{1}{2}$ , and to the upper *Annulet* 1  $\frac{1}{4}$ .

*Scamozzi* makes the *Dorick-base* 30 m. high, the which he

subdivides amongst 6 small Members, *viz.* (beginning below, and so ascending) 1<sup>st</sup>. A *Plinth*, to which he allows 10  $\frac{1}{2}$  m. 2. A *Thorus* of 8 m. 3. A *List* of 1 m. 4. A *Scotia* of 4 m. 5. A *List* of 1 m. And 6. A *Thorus* of 5  $\frac{1}{2}$  m. Above all these he places a *List* of 2 m. which he doth not reckon into the *Base*, but to be part of the Body of the *Column*.

*Vignola* also reckons the height of the *Base*  $\frac{1}{2}$  the Diameter of the *Column* below, but he makes it to consist of but 4 parts, *viz.* A *Plinth*, a large and small *Thorus*, and a *List*.

7. *Ionick*,] According to *Vitruvius's* Order, is  $\frac{1}{2}$  a Module high; he describes 2 sorts of Bases in this Order, one for the *Ionick* Column without a Pedestal, the other with; each of which Bases consist of smaller Members; but the Bases differ in the Dimensions of their Parts. The Members whereof they consist, are these following, *viz.* A *Plinth*, 4 *Fillets*, 2 *Scotia's*, 2 *Astragals*, and a *Thorus*. I shall 1<sup>st</sup>. describe the Dimensions of the Parts of the *Ionick* Base, without a Pedestal. This Base he thus divideth and subdivideth, *viz.* He divideth the whole height of the Base into 3 equal Parts; the lower one of which is the height of the *Plinth*, the 2 upper, and remaining Parts, he subdivideth into 7 equal Parts, the upper 3 of which make the *Thorus*, the 4 7<sup>th</sup>. remaining, he subdivideth into 8 equal parts,  $\frac{1}{2}$  of the lower 8<sup>th</sup>. makes the lower *Fillet*, the other  $\frac{1}{2}$ , and the 2 d. 8<sup>th</sup>. and  $\frac{1}{2}$  the 3 d. 8<sup>th</sup>. makes the 1<sup>st</sup>. *Scotia*, and the upper  $\frac{1}{2}$  of the 3 d. 8<sup>th</sup>. makes the 2 d. *Fillet*, the 4<sup>th</sup>. and 5<sup>th</sup>. makes the 2 *Astragals*,  $\frac{1}{2}$  the 6<sup>th</sup>. 8<sup>th</sup>. makes the 3 d. *Fillet*, the upper  $\frac{1}{2}$  of the 6<sup>th</sup>. 8<sup>th</sup>. and all the 7<sup>th</sup>. and  $\frac{1}{2}$  of the last, or upmost 8<sup>th</sup>. makes the second *Scotia*, the  $\frac{2}{3}$  of the last 8<sup>th</sup>. remaining, makes the upper *Fillet*, which subjoyns to the *Thorus*: Above the *Thorus* he places another *Fillet*, which he doth not reckon any part of the *Base*, but part of the Body of the *Column*, which *Fillet* is  $\frac{1}{2}$  of the Body of the *Column*, — 5 m.

The *Ionick* Base with a Pedestal, he thus divides into parts, *viz.* 1<sup>st</sup>. Into 3 equal parts, the lower one of these is the height of the *Plinth*, the 2 remaining, he divides into 3 equal parts, the upmost of which he assigns for the *Thorus*, the  $\frac{2}{3}$  remaining, he subdivides into 12 equal parts,  $\frac{1}{2}$  the lower  $\frac{1}{2}$  he assigns for the *Fillet*, above the *Plinth*, the remaining  $\frac{1}{2}$  of  $\frac{1}{2}$ , and the 3 next 12<sup>ths</sup>. make the first *Scotia*, the 5<sup>th</sup>. 12<sup>th</sup>. makes the 2 d. *Fillet*, the 6 and 7<sup>th</sup>. makes the 2 *Astragals*, and  $\frac{2}{3}$  the 8<sup>th</sup>. makes the next *Fillet*, the other  $\frac{1}{3}$  of the 8<sup>th</sup>. and the 9<sup>th</sup>. 10<sup>th</sup>. and 11<sup>th</sup>. make the 2 d. *Scotia*, and the 12<sup>th</sup>. and last part makes the upper *Fillet*, which is under the *Thorus*.

There is also a *Fillet* above the *Thorus*, which is of the same height with that without a *Pedestal*.

*Palladio* assigneth 30 m. for the Altitude of this Base, and according to his Scheme of this Member into 6 smaller Members

1st. A *Plinth*, (or rather as he delineates it a *Casement*) of 10 m.  
 2. A *Thorus* of  $7\frac{1}{2}$  m. 3. A *List* of  $1\frac{1}{4}$  m. 4. A *Scotia* of  $4\frac{3}{4}$  m.  
 5. Another *List*, or *Ceinture* of  $1\frac{1}{4}$  m. 6. A *Thorus* of  $5\frac{1}{4}$  m. all  
 which makes 30 m. which compleats his *Base*. Above which on  
 the Foot of the Body of the *Column*, he places an *Astragal* of  
 $2\frac{1}{4}$  m. and above that a *Ceinture* of  $1\frac{3}{4}$  m. all which makes  
 $33\frac{1}{2}$  m. *Scamozzi* makes the *Ionick Base* 30 m. high also, and of  
 the same number of parts and form with *Palladio*, viz. 1st. A  
*Plinth*, (which is concave) of  $10\frac{1}{2}$  m. 2. A *Thorus* of 8 m.  
 3. A *List* of 1 Min. 4. A *Scotia* of  $4\frac{1}{2}$  m. 5. A *List* of 1 m.  
 6. Another *Thorus* of 5 m. all which makes the *Base* of 30 m.  
 above which on the *Column*, are 2 small Members more, viz. An  
*Astragal* of  $2\frac{1}{2}$  m. and a *List* of  $1\frac{1}{2}$  m. all which added together  
 make 34 m. in heighth.

*Vignola* Composes his *Ionick Base*, of the same number of small  
 Members, and of the same form with *Vitruvius*.

8. The *Corinthian*,] According to *Vitruvius*, is  $\frac{1}{2}$  a Module  
 high, both in the *Corinthian Column*, with *Pedestal*, and with-  
 out a *Pedestal*; that without a *Pedestal*, he makes to consist of  
 11 smaller Members, viz. A *Plinth*, 2 *Thoruses*, 4 *Fillets*, 2 *Scotia's*,  
 and 2 *Astragals*: This *Base*, viz. 1st. He divides the whole  
 heighth into 4 equal parts, the lower one of these Divisions he  
 assigns for the *Plinth*, the 3 parts remaining, he again divides  
 into 5 equal parts, the upper one of these 5 he allots for the  
 upper *Thorus*, (which is the highest Member in the *Base*) the  
 lower *Thorus*, he maketh to contain 5 quarters of one of these  
 5th. parts, viz. All the 1st. or lower 5th. part, and  $\frac{1}{4}$  of the 2d. so  
 that  $\frac{3}{4}$  be taken for the upper *Thorus*, and one 5th. and a quarter  
 of  $\frac{3}{4}$  below for the lower *Thorus*, there remains but 2 of these  
 5ths, 3 of one 5th. the which he subdivides into 12 equal parts,  
 of  $\frac{1}{2}$  of the lower 12th. he makes the 1st. or (lowest *Fillet*,)  
 then of the other  $\frac{1}{2}$ , and all the 2d. 3d. 4th. and  $\frac{1}{2}$  the 5th. he  
 makes the lower *Scotia*, of the remaining  $\frac{1}{2}$  of the 5th. 12th. part  
 he makes the 2d. *Fillet*, of the 6 and 7th. parts he makes the  
 2 *Astragals*, of  $\frac{1}{2}$  the 8th. part he makes the 3d. *Fillet*, of the  
 other  $\frac{1}{2}$  of the 8, and all the 9, 10, and 11 and  $\frac{1}{2}$  the 12th. he  
 makes the 2d. *Scotia*, and of the last  $\frac{1}{2}$  of the 12th. part, he makes  
 the 4th. or last *Fillet*, which subjoyns the under side of the up-  
 per *Thorus*. Above the *Base* he adds a *Fillet*, which is  $\frac{1}{4}$  of  
 the Diameter of the *Column*, in heighth, which is —  $2\frac{1}{2}$  m.

The *Base* for the *Corinthian Column*, with its *Pedestal*, is of the  
 same heighth, and number of parts, and each part hath the same  
 Dimensions, with that which hath no *Pedestal*.

*Palladio*, makes this *Base* to contain 8 smaller Members, viz.  
 1 *Orlo*, 2 *Thoruses*, 2 *Astragals*, 2 *Ceintures*, and 1 *Scotia*. 'Tis my  
 Thought, that either the Author, or the Ingraver, have made a  
 great blunder in the Division, and Subdivision of this *Base*,  
 which I shall exhibit to you as I found it, tho' I do do not sup-  
 pose

pose it to be false: The *Orlo* he makes  $9\frac{3}{4}$  m. the lower *Thorus* 7 m. the lower *Astragal*  $\frac{3}{4}$  m. (the which I am confident is too little,) the lower *Ceinture*  $\frac{1}{4}$  m. the *Scotia*  $3\frac{3}{4}$  m. the next *Ceinture* has nothing set to him, but he appears about the same size with the other *Ceinture*; then comes the next *Astragal* of  $\frac{1}{2}$  m. and then the upper *Thorus* of 5 m. above all these 8 Members of the *Base*, he places another *Astragal* of  $2\frac{1}{2}$  m. and above that a *Ceinture*: Thus I have given you a very lame account of this Member, but I may thank the Author, or Graver of both for it, that it is no better.

*Scamozzi*, according to his Portraiture of this *Base*, makes it 30 m. high, and he divides this grand Member into 8 petty Members of the same Form with *Palladio*, viz. 1. *Orlo* of  $9\frac{1}{2}$  m. then a *Thorus* of 7 m. next an *Astragal* of 2 m. next a *List* of 1 m. then a *Scotia* of  $3\frac{1}{2}$  m. next another *List* of 1 m. and then another *Astragal* of  $1\frac{1}{2}$  m. and last of all another *Thorus* of 4 m. all which makes 30 m. Above the *Base* he places 2 other Members on the Foot of the *Column*, viz. An *Astragal* of  $2\frac{1}{2}$  m. and a *List* of 1 m. *Vignola* allows this *Base* to be 30 m. also; and as to the Form, he makes it much the same with *Vitruvius*.

9. *Composite, Compound, or Roman.*] *Vitruvius* makes this *Base* to contain 30 m. in Altitude. This grand Member he divides into 10 smaller, viz. A *Plinth*, 2 *Thoruses*, (one of which is in the middle where the 2 *Astragals* are in the *Corinthian Order*) 4 *Fillets*, and 2 *Scotias*. This Member he 1st. divides into 4 parts, the lower one of which is for the height of the *Plinth*, the other 3 parts he subdivides into 5, of the upper one of the 5 he makes the upper *Thorus*, the lower *Thorus* he makes of the lower 5th. and  $\frac{1}{4}$  of the 2d. 5th. (so that the lower *Thorus* is  $\frac{3}{4}$  high;) the 2d. 5th. parts, and  $\frac{3}{4}$  remaining, he subdivides into 12 equal parts, of  $\frac{1}{2}$  the lower 12th. he makes the 1st. *Fillet*, of the other  $\frac{1}{2}$ , and all the 2d. 3d. 4th. and  $\frac{1}{2}$  the 5th. he makes the 1st. *Scotia*, of the remaining  $\frac{1}{2}$  of the 5th. he makes the 2d. *Fillet*, of the 6th. and 7th. he makes the middle *Thorus*, then of  $\frac{1}{2}$  the 8th. he makes the 3d. *Fillet*, of the remaining  $\frac{1}{2}$  of the 8th. and all the 9th. 10th. and 11th. and  $\frac{1}{2}$  the 12th. he makes the 2d. *Scotia*, of the remaining  $\frac{1}{2}$  of the 12th. he makes the last *Fillet*, which is just under the upper *Thorus*. Above the *Base*, on the foot of the *Column*, he makes a *Fillet*, which is  $\frac{1}{24}$  of the Diameter of the *Column* below.

*Palladio* makes this *Base* 30 m. high, which he divides into 11 smaller Members, viz. An *Orlo*, 2 *Thoruses*, 4 *Lists*, 2 *Scotias*, and 2 *Astragals*, to the 1st. Member, being an *Orlo*, (which is Concave) he allows 9 m. then follows 2 *Thoruses* of 7 m. then a *List* of  $\frac{1}{2}$  m. next a *Scotia* of 3 m. then another *List* of  $\frac{1}{2}$  m. then the 2 *Astragals*, each of 1 m. apiece, then a *Fillet*, or *List* of  $\frac{3}{2}$  m. then a *Scotia* of 3 m. and then another *List* of  $\frac{1}{2}$  m. and then the upper *Thorus* of 4 m. above which on the Foot of the *Column*, he places another *Astragal* of 3 m. and above that a *List* of 1 m.

*Scamozzi* makes the *Roman Base* 30 m. high, the which he divides amongst 7 smaller Members, viz. 10 m. to a Concave Plinth, 7 m. to the 1st. *Thorus*, 2 m. to an *Astragal*, 1 m. to the 1st. *List*, 4 m. to the *Scotia*, 1 m. to the 2d. *List*, and 5 m. to the upper *Thorus*, which is the highest Member in the *Base*; but above the *Base*, he places 2 Members, viz. An *Astragal* of 2 m. and a *List* of 1  $\frac{1}{4}$  m.

*Vignola* makes his *Roman Base* very much like *Vitruvius's*, only he places 2 *Astragals* in the middle betwixt the 2 *Scotia's* where *Vitruvius* has a *Thorus*.

### Batement.

A Term used by some *Carpenters*, signifying thereby to abate, or waste a piece of Stuff, by forming it to a design'd Purpose. Thus instead of asking how much was cut off from such a piece of Stuff, some *Carpenters* will ask what *Batement* that piece of Stuff had.

### Batten

Say some is a Scantling of Stuff, of 2, 3, or 4 Inches broad, and but seldom above 1 Inch thick, and the length unlimited. But I must tell you what Sense I have observed Workmen to use it in, (by Workmen, I mean *Carpenters* and *Joyners*) which is this, viz. In Doors, and Windows of Shops, &c. which are not framed of whole Deal, or 1  $\frac{1}{2}$  Inch Oak, with *Stiles*, *Rails*, and *Pannels* (as *Wainscot* is framed) and yet they are made to appear as if they were, by means of pieces which are bradded on (upon the plain Boards, which are joynd together for) the Door, or Window, all round the edges, and sometimes cross them, and up, and down, &c. According as how many *Pannels* the Workman designs the Door, or Window shall appear to have. These pieces which are thus bradded on to represent *Stiles*, *Rails*, and *Montans* are of different breadths, according to the Design of the Artificer, as from 2, to 6 or 7 Inches, and commonly on one edge of those which represent the *Stiles*, and the upper and lower *Rails*, and on both edges of those which are to appear like *Montans*, and middle *Rails*, there is commonly some Moulding struck, as a *Bead*, an *O. G.* or the like.

### Batten Doors.

1. *What.*] *Batten Doors* are (as I said before) such as seem to be *Wainscot* ones, tho' they are not so; for *Wainscot* ones the *Pannels* are groved into the Framing, but here they first Joint, and Glue the Boards, which are cut to the full length, and breadth



breadth of the Door-case, which Gluing being dry, they traverse them over, both in length, and breadth with a long Plane, and then smooth them, and then fit on the *Battens* on the Front-side. And this is what they call single *Batten-doors*: for you must note, there are double *Batten-doors*, viz. Such as are Batten'd on both sides, tho' that is but seldom used.

But there are commonly used Batten'd Doors, which are call'd double Doors, viz. Such as are front, or outer Doors; they are commonly made of whole Deal, and then Batten'd on the outside, and pieces of 4 or 5 Inches broad, miter'd round on the Edges, on the inside of the Door, and then cross the Door betwixt these pieces, it is lined with slit Deal, which makes it level with the miter'd pieces. I have seen some *Doors* that have been lined with pieces put Bereling, and not at right Angles, but near Miter to the sides of the Door, and when all is plained off level, it hath been divided out in Rhombuses, and struck with a Pencil, and at the Angles of the Rhombuses, were round headed Nails driven, which added something of Beauty to the Work: This way of Lining upon the Doors, viz. Pointing from the lower corner behind, toward the upper corner before, I believe may be a good way to prevent a Door from sagging, or sinking at the fore corner, when ever the Joints shall happen to unglue.

2. *Price.*] As to the Price of such *Doors*, vid. *Doors* N. 4. where you will find Price of Materials, and Workmanship; but I shall here add, that for Workmanship of making *Batten'd-doors* of slit Deal, about an Inch thick, (or of thin whole Deals) Glued, and Batten'd on one side, 4 s. per Door, is a good moderate Price: But such as are mentioned above, (which are for Front, and other outer Doors) viz. both Batten'd, and Lined, are worth 7 s. per Door Workmanship.

### *Batter.*

A Term used by Workmen, to signifie that a Wall, a piece of Timber, or the like, doth not stand up right, but leans from-you-ward, when you stand before it; but when it leans towards you, they say it *over-hangs*, or *hangs over*.

### *Bay.*

This word is used, to signifie (as it were) the Magnitude of a *Barn*; for if a *Barn* consist of a Floor, and 2 Heads, where they lay Corn, they say a *Barn* of 2 *Bays*; these *Bays* are from 14, to 20 Foot long, and Floors from 10 (which is the smallest size) to 12 broad, and usually 20 long, which is the breadth of the *Barn*: If a *Bay* be 20 Foot long, then there is commonly a pair of *Prick-posts* in the middle, and a *Beam* to hold in the Rod from bending the *Raisons*; but if the *Bays* are not above 16 Foot,

and the Timber stout, then there is no *Posts*, but at the end of each Bay, where there is always hanging *Braces*, Framed into the *Beam*, and *Posts*, and also a cross *Cell* to hold in the side *Cells* from flying out when the *Barn* is fill'd, and 'tis common for large *Barns* to consist of divers such *Bays*.

### *Bay-window,*

I understand to be such a one, which is composed of an Arch of a Circle, and so by consequence such a one will stand without the Strefs of the Building. By which means Spectators may the better see what is acted in the Street.

### *Bead.*

A Moulding, so call'd, which is commonly made upon the edge of a piece of Stuff; as for Example, 'tis common to see Joiners make a Moulding, which is about a quarter of a Circle, on the upper edge of a *Skirting-board*, also on the Lining-board of a *Door-case*, or the like, also on the inner, or lower edge of an *Architrave*. A *Bead*, and a *Boultin*, differ very little, only in Magnitude; for when they are large, Workmen commonly call them *Boultins*. Sometimes a *Bead-plain* is set on, upon the edge of each *Fascia* of an *Architrave*, and sometimes also this Moulding (especially in the *Corinthian*, and *Roman Order*) is cut, or carved, in short Embossments, which resembles Womens Beads in Semi-relief; and sometimes likewise an *Astragal* is thus Carved; in both which, these Carvings are call'd *Beads*.

### *Beam,*

1. *What.*] In Building, is a piece of Timber, which always lies cross the Building, into which the Feet of the principal Rafter are Framed; no Building hath less than 2 of these *Beams*, viz. one at each Head; into these *Beams* the *Girders* of the Garret-floor are Framed; and if it be a Timber Building, the *Teazle Tennon*s of the *Posts* are Framed. The *Teazle Tennon*s are made at right Angles to those which are made on the *Posts* to go into the *Raisons*, and the *Relish*, or Cheats of these *Teazle Tennon*s stand up within an Inch and a  $\frac{1}{2}$  of the top of the *Raison*, and the *Beam* is *cauked* down [which is the same as Dove-tailing a Cross] till the Cheeks of the Mortices in the *Beam* conjoyn with those of the *Teazle Tennon* on the *Posts*.

2. *The Size.*] The *Beams*, according to an Act of Parliament, for the Re-building of the City of *London*, after the dreadful Fire, were appointed to be of the following Scantling, viz.

	Foot	Inch	Inches.
In length	$\left. \begin{array}{l} 15 \\ 16 \\ 17 \end{array} \right\}$	must be in that Square.	$\left. \begin{array}{l} 7 \\ 8 \\ 10 \end{array} \right\}$ and $\left. \begin{array}{l} 5 \\ 6 \\ 6 \end{array} \right\}$

And so proportionably to their lengths. But in the Countrey, where Timber is more plentiful; they generally make their *Beams* Stouter.

Sir Henry Wotton advises, that all *Beams, Girders, and Summers*, ought to be of the strongest, and most durable Timber.

### *Bear.*

Timber is said to *bear* at its whole length, when neither a *Brick-wall*, or *Posts*, &c. stand between the ends of it. But if either a *Brick-wall*, or *Posts* be Trim'd up to the Timber, then it is said to *bear* only at the distance between the *Brick-wall*, or *Post*, and either end of the Timber. Thus Carpenters usually ask what

### *Bearing?*

The Answer to such a Demand, or Question, such a piece of Timber has, is 10, 12, 15, &c. Foot, according to the length of the whole Timber, or else according to the distance between either end of the Timber; and a

### *Bearer.*

*Viz.* A Post, or Brick-wall, that is Trimed up between the ends of a piece of Timber to shorten its *bearing*.

### *Beam filling*

1. *What.*] Is Plasterers Work, 'tis only filling up the vacant space betwixt the *Raison* and the Roof, whether Tiling, Thatching, or any other Roof; 'tis a sort of Work that is very customary in the Countrey, where they do not Parge, or (which is all one) Plaster their Garrets, they thus perform this sort of Work, *viz.* They take some pieces of Stones, or else Bricks, and lay them betwixt the Rafter upon the *Raison*, and then Plaster upon it with *Loam*, or else they set some *Tiles*, with one edge upon the *Raison*, and the other leans against the Roof, and then upon these *Tiles* they Plaster with *Loam*.

2. *Price.*]

2. *Price.*] The usual Price for Workmanship only, in the Country, is  $\frac{1}{2}d.$  per Foot, or  $1\frac{1}{2}d.$  per Yard, Lineal Measure.

### *Bed.*

Of a *Stone*, What. V. *Stone*, N. 4.

### *Bed-moulding,*

Or as some will have it,

### *Bedding-moulding,*

Is a Term used commonly amongst Workmen (but I did never mind it in any one of the Treatises of the *Greek*, or *Italian Architects*. But however our Modern *Artificers*, make use of this Compound Word, to signify, those Members in a *Cornice*, which are below the *Coronet*, or *Crown*, E. G. 'Tis now common for *Joyners* to have their *Bed moulding* to consist of these 4 Members, viz. 1. (below) an O. G. 2. A *List*. 3. A large *Boultin*. And 4. and Lastly, under the *Coronet*, another *List*. This is what they frequently call a *Bed-moulding*.

### *Bevil.*

Any Angle that is not square, is call'd a *Bevel Angle*; whether it be more obtuse, or more acute than a *Right Angle*; but if it be  $\frac{1}{2}$  as much as the *Right Angle*, viz. 45 Degrees, then Workmen call it *Miter*, they have also a Term, *half Miter*; which is an Angle that is a  $\frac{1}{4}$  of a *Quadrant*, or *Square*, viz. An Angle of  $22\frac{1}{2}$  Degrees, this they call  $\frac{1}{2}$  *Miter*.

### *Bill.*

All know a *Bill* to be an Account of Work done, Materials used, &c. As for the Method of drawing up Trades-men's *Bills*, we shall give some Examples, under the following Heads, viz. *Bricklayers Bill*, *Carpenters Bill*, *Glaziers Bill*, and *Smiths Bill*, all which V. in their proper places.

### *Binding Joysts.*

1. *What.*] *Binding Joysts*, are those *Joysts* in any Floor, into which the *Trimmers* of *Stair-case* (or *Well-hole* for the *Stairs*) and *Chimney-ways* are Framed; these *Joysts* ought to be stouter than common *Joysts*.

2. *Scantlin, or Size.*] The Size of these, as well as all other Timber Members was settled by an Act of Parliament, before the Re-building of London. According to which Act, *Binding-Joists,*

	Foot	Inches	Inches.
Which contain in length	$\left. \begin{array}{l} 7 \\ 9 \\ 11 \text{ or } 12 \end{array} \right\}$	$\left. \begin{array}{l} \text{must be} \\ \text{in their} \\ \text{Squares} \end{array} \right\}$	$\left. \begin{array}{l} 6 \\ 7 \\ 8 \end{array} \right\} \text{ and } 5$

So large they were order'd to be, and no less. They might (I suppose) be as much bigger as they pleased.

### *Boarding of Walls:*

#### *V. Weather-boarding.*

#### *Boat.*

A Term used among Iron-mongers, to signify a certain sort of *Nails*; for which *V. Nails.*

#### *Bolts*

Of Iron, are of various sorts. In Navigation they have 6 Kinds, for which they have distinct Names, which we shall not here stay to describe. Some Iron-mongers distinguish those for House-building, into but 3 sorts, *viz.* Plate, Round, and Spring *Bolts*. Plate, and Spring-bolts are made use of, to fasten Doors and Windows, and these are of different Sizes, and Prizes. I have known small *Spring-bolts* sold at 3 <sup>1</sup>/<sub>2</sub> *d.* per piece, others at 9*d.* others at 14*d.* and so likewise *Plate-bolts*, some are 9*d.* 10*d.* *&c.* per piece. There are also *Brass-knob'd-bolts*, short, are about 10 *d.* per piece long for *Folding-doors*, about 18 *d.* per Piece. *Iron Balcony-bolts*; about 1 *s.* There are also *Brass-plate-bolts*, at about 10 *d.* per piece. There are also *Round-bolts* (or long Iron-pins) with a Head at one end, and a Key-hole at the other, these are commonly sold by the lb. *viz.* 3 <sup>1</sup>/<sub>2</sub> *d.* or 4 *d.* per lb.

#### *Bond.*

A Term used amongst Workmen; for when they say make good *Bond*, they mean fasten the two, or more pieces of Timber well together, either with Tenanting, and Morticing, or Dove-tailing, *&c.*

*Botham,*

Is an Iron-mongers Term, which they use to signifie a certain sort of *Nails*; for which V. *Nails*, N. 2.

*Boulder-walls.*

1. *What.*] That is Walls made of round Flints, or Pebbles, which are found where the Sea hath a Beach cast up, and also at some other places where there were plenty of Flints.

2. *The Method of building them,*] As I am inform'd by a Brick-layer that hath been used to such Work, 'tis their usual way (if they can so fit it) for two to work upon it at a time, one at one side of the Wall, the other at the other side, and one to be right-handed, the other left; for two such fit best to work together in this sort of Work: They have a Hodd of Mortar pour'd down on their Work, and so they part it betwixt them, spreading it each toward himself, and then they lay in their *Boulders*, or *Flints*. But he saith, they always work with a very stiff Mortar, and had need to have a good length of Work before them; for they work but one course in height at a time; for saith he, if we should do more, it would be apt to swell out at the sides, and run down; and therefore we are forced to work continually in length: He saith likewise, that if it chance to be misty Weather, 'tis very difficult to make the work stand.

3. *Price.*] He tells me, that their Custom is to work by the Square, or 100 Foot; for which their usual Price is 12 s. for Workmanship only.

*Boults.*

V. *Bolts.*

*Boultin,*

In an Architecture, is a Convex-moulding, that consists of an exact  $\frac{1}{4}$  of a Circle; being the Member next below the Plinth in *Tuscan* and *Doric* Capital.

*Brace,*

In a Building, is a piece of Timber, which is framed in with Bevel Joints. Its use is to keep the Building from swerving, either this, or that way; they are sometimes call'd *Strutts*, viz. When they are Fram'd in the *King-piece*, and principal *Rafters*.

*Brads*

*Brads*

1. *What.*] Are a sort of Nails without Heads, some Ironmongers distinguish them into six Species, as followeth, *viz.*

2. *Joyners,*] Plain for hard Wood-wainscot, from 1 Inch to  $2\frac{1}{4}$  in length,

3. *Batten*] For soft Wood-wainscot, the sorts are, 1 d. 2 d. 3 d. Ditto, large 4 d. Ditto large, 5 d. 6 d.

4. *Flooring,*] Plain for soft Wood, Joysts, the sorts are 14. 15, 18, 19, 20, 21, 22, 23, 28, 32, and 36 lb. per M.

5. *Ditto strong,*] Fit for hard Joysts, the sorts are 15, 18, 19, 24, and 32 lb. per M.

6. *Quarter-heads,*] For soft Wood the sorts are 10. 13, 15, 18, 19, 20, 22, 23, 28, and 32 lb per M.

7. *Ditto strong,*] For hard wood Joysts, the sorts are 14. 20, 34, 44, and 54 lb per M.

N. B. All *Bill-brads*, alias *Quarter-heads*, are very fit for shallow Joysts that are subject to warp, or for Floors laid in hast, or by unskilful Persons, because the Bill to the Head will hinder the Boards from starting from the Joysts, but doth not make so smooth Work as the plain Brads

Lastly, As to the *Prices* of *Brads*, I shall set down but a few at present, which shall be these following, *viz.*

1. Of *Batten-brads*, in the Country they vulgarly call 'em *Joyners Brads*, the usual Price

of a M. of  $\left\{ \begin{array}{l} 2 \\ 1\frac{1}{2} \\ 1 \end{array} \right\}$  Inch is  $\left\{ \begin{array}{l} 20 d. \\ 15 \\ 11 \end{array} \right\}$

2. Of *Quarter-heads*, or *Bill-brads* for soft Wood-floors, the usual Price

of a M. of  $\left\{ \begin{array}{l} 15 \\ 18 \end{array} \right\}$  lb is  $\left\{ \begin{array}{l} 4 s. 9 d. \\ 5 s. 6 d. \end{array} \right\}$

*Break in,*

Is a Term used by Carpenters, when they cut, (or rather break) a hole in Brick-walls with their Ripping-chissel.

*Brest,*

A Term in Architecture, made use of by some to signify the same Member in a Column, that others call a *Ichorus*.

*A Brewhouse.*

None need be told what it is; but what I here mention it for, is because it is a necessary part in all Dwelling-houses, especially in the Country: Now Sir *H. Wotton* in his *Elem. Arch.* saith, That all Offices that require Heat, as, *Brew-houses, Bake-houses, Wash-houses, Kitchins,* and the like, ought to be placed in the Meridional part of the Building, if the Position of the House, in respect of the High-street, or the like will admit of it; for it would be but an odd Contrivance, if a House stood on the *North* side of a High-street, to place all the Offices in the Front of it; and it would be very ridiculous to pass thro' a Bake-house, Brew-house, or Wash-house, into Rooms of Entertainment, in a Noble Man's, or Gentleman's House: And therefore we may see the old Proverb holds good still, *viz.* That there is no general Rule, without some Exception.

*x. Brestsummers,*

In a Timber Building, are pieces into which the Girders are Framed, in all the Floors, but the Ground-floor (then they call it a Cell) and Garret-floor, (then it's call'd a Beam.) As to their Size, or Square, 'tis the same by the Act of Parliament with *Girders*, which see. You must note by the way, that I do not mean all the pieces which have *Girders* Framed into them, (and are not in the Garret, or Ground-floor.) But I mean all such pieces which are in the Exterior part of the Building, whether in the Front, Flanks, or Rear of the Building; for you must note the pieces in the internal part of the Building, into which the Girders are Framed, are call'd *Summers*. The *Brest-summers* in *London*, Mr. *Leybourn* saith, are us'd to be measured by the Foot, running Measure; but whether he means only for the Work, or Timber, or both, I do not know: Now *Com. Comer* saith, That *Brest-summers*, in *London* are valued by the solid Foot, if of Oak 3 *s.* per Foot, if Fir, 2 *s.*

*Bricks.*

*x. What.]* All know them to be a Factitious, or Artificial kind of Stone, of a reddish colour, and as to their Form and Magnitude



tude 'tis various, as also their Uses, of both which, and likewise their Consistence, we shall speak in their due places.

II. *Whereof made.*] I will 1st, tell you what *Pliny* saith of this Matter: he saith, That if you would have good *Bricks*, they must not be made of any Earth that is full of Sand or Gravel, nor of such as is gritty and stony, but of a grayish Marl, or whitish Chalky Clay; or at least a reddish Earth. But in case you are forced to use that which is Sandy, be sure to make choice of that kind of Sand which is tough and strong. The best Season (saith *Pliny*) is in the Spring, to make Bricks, for in the middle of the Summer, they are subject to crack and be full of chinks. He further addeth, that the Lome of which *Bricks* are made, ought to be well steeped, or soaked, and wrought with Water.

*Mr. Inco. in Mec. Ex.* saith, that *Bricks* are made of Earth, of which the whitish Chalky sort of Earth and the reddish are best.

At *Lunenburgh* in *Saxony*, they make them of a fat Earth full of Allom.

Also there are good *Bricks* made at *Patane* in *Asia*, of a Pumice sort of Earth, which being dried, will swim in Water, and not sink.

The Ancients likewise made them of Earth which was Sandy.

But here in *England*, they are made for the most part of a yellowish colour'd fat Earth, somewhat reddish, [vulgarly call'd Lome.] *Mr. Leyburn* saith, *Bricks* are made of a reddish Earth, which ought to be digged before Winter, but not made into *Bricks* till the Spring Season.

III. *Of their Kinds, and Appellations.*] The Sorts or Kinds of *Bricks* are as various as their Appellations, and their Appellations are attributed to them, for distinction sake (as the names of all other things are) thereby to be known. And these different Names were at 1st. imposed upon them, according as the 1st. Donors of these Names, thought they did see a Reason to bestow such Names on them, either from some Accident in their making, or from their Dimensions, or from their form or Figure, or from Custom, or from Method in making, or From the Place where, or by whom made, or from their Use, &c. Now these which derive their Names from Accident are *Clinkers*, *Samel*, or *Sandal*: Those from their Dimensions, are the great and small (or Statute) and *Didoron*, *Tetradoron*, and *Pentadoron*: Those from their Form and Figure, are *Compass*, *Concave*, *Feather edgy*, and *Triangular*; those from Custom, *Statute*, and *Cogging*. Those from the Method of making are *Place*, and *Stock-bricks*. Those from the Place where, or by whom, are *Dutch*, or *Flemish*; and those from their use are *Buttress*, or *Pilaster*, *Coping*, and *Paving*. Of all which we shall treat in their order. And,

1. *Compass-bricks.*] These are of a Circular Form, their use is for Steening of Walls, the which I was told by an ancient experienced Workman, he used to perform thus, *viz.* He having *1st.* laid a good Bed of Clay, for the bottom, they Paved it with *common, or Statute-bricks,* only laid down on it, and well settled thereon, and then they began their *Compass-work* with the *Compass bricks,* and as they carried up their Courses, they rammed Clay in behind them (for they had room left behind for the purpose) which made all the Joynts of the *Bricks* pen close and tight together. He saith, he hath done uch Work, where the Walls have been but a little depth in the Ground, and in a loose open Mold (where the Water hath been brought in by *Concave-bricks*) and hath known some which he did betwixt 20 and 30 Years ago to do very well.

As to the Price of these Bricks he could not certainly tell me; but he thought not much dearer than *common or Statute-bricks;* but then he saith, he that hath them made for his use, is commonly at the Charge of a Mold made according to the Circumference of his Wall.

2. *Concave, or hollow Bricks*] These are like a *Statue, or common Brick* on one side, but on the other side they have a *Concavity,* which is Semicylindrical. This Cavity is about  $\frac{3}{4}$  n. deep, and  $1\frac{1}{2}$  n. broad; so that when 2 of these *Bricks* are placed with their hollows together, they are like a Pipe of  $1\frac{1}{2}$  Bore; they are usually about  $1\frac{1}{2}$  n. long,  $4\frac{1}{2}$  broad, and  $2\frac{1}{2}$  n. thick.

As to their laying them in the Ground, they generally do it in Clay; but an ancient Workman did inform me that there must be care taken, that there do not grow any Trees, Bushes or Brambles over these Bricks where they are laid to convey Water, nor yet very near them; for if there do, their Roots are apt to get in betwixt the Joynts of the Bricks, and there dilate themselves with Fibrous Roots, which meet together like a Ball of Hair, in the Concavity, which will endanger the stopping of it, and hinder the Current of Water. Now if this Annoyance could be infallibly prevented, it would be the cheapest way I know of to convey Water to a House; for 6 or 8 s. worth of *Bricks* would do about 6 Rods, and then suppose that the Ditch digging, and laying the *Bricks,* the Charge of Clay, and raming up again, should be as much more, *viz.* 6 or 8 s. for 6 Rods; according to this Proposal, 1 Rod would cost but 2 s. or 2 s. 8 d. and if the fore-cited Objection, could be removed, this Work would last (I had almost said) for ever; it would not be the *6th.* part of the Price of Lead-pipes, and every whit as serviceable, if not to be preferr'd before them; because I do not suppose the Frosts would hurt this (tho' it often bursts Lead-pipes;) for put the case the Water should be frozen up in them, the Ice would then, I do believe, by it's Expansion open the Joynts of the *Bricks;* but we may well suppose from the Nature

ture of the thing, that they will come together in their due Places when the Frost is gone, by the natural Gravity of the Earth; for then there will be no solid Body betwixt the Joynts, to hinder the closing again of the Bricks.

Altho' *Alder-pipes* be much cheaper than *Lead*, these *Bricks*, will not be much above (if they are at all) half the Price of *Alder-pipes*.


As to the Price of these *Bricks*, I have known them sold in *Kent* for 4 s. per hundred, and in *Suffex* for 3 s. 200 of these Bricks at a Foot long will lay 6 Rods.

3. *Cogging-bricks*,] Are a kind of Bricks which are in use in some Parts of *Suffex* to make their *Toothing*, or Indented Work under the Copeing of Walls, built of *great Bricks*.

They are about 10 n. long, 4 n. broad, and  $2\frac{1}{4}$  n. thick; they are commonly sold at the Price of common Bricks.

In using them, they lay them on the top of the Wall, just under the *Coping-bricks*, in an Oblique Position, so that one Corner, or Angle projects over about  $2\frac{1}{2}$  n. on one side, and the Opposite Diagonal Angle at the other, and projects as much over the other side.

4. *Copeing-bricks*,] Are necessary Concomitants to *great Bricks* for Building Fence-walls, and are much used in some Parts of *Suffex*.

The Size and Form of these *Copeing-bricks*, is as followeth, viz. They are about 12 n. square, and  $4\frac{1}{2}$  n. thick. having one flat or plain side, and 2 flat ends, the 2 edges and upper side, are all comprehended under one Curvelinear Surface, the 2 edges consisting of 2 *Boultins*, join'd by 2 *Casements*, or Hollows, to an *Astragal*, which is the top of the Brick, after this Form. 

Their usual Price is from 12 to 16 s. per hundred.

5. *Dutch, or Flemish Bricks*.] I am informed by one, that they are  $6\frac{1}{4}$  n. long,  $2\frac{1}{2}$  n. broad, and  $1\frac{1}{4}$  n. thick; another tells me that they are 6 n. long, 3 n. broad, and 1 n. thick, as for my own part, I never measured any of them.

They are of a yellowish Colour.

The Paving with these Bricks, is neater and stronger than common. They must be layed in Sand.

They are commonly used here in *England*, to Pave Yards and Stables withal. and they make a good Pavement, and are very durable, and being laid edge-ways, look handsomely, especially if laid Herring-bone fashion.

They are also used in Soap-boilers Fats, and in making of Cisterns.

If we allow  $\frac{1}{4}$  n. for the Joint, then 72 of those which are  $6\frac{1}{4}$  n. long, and  $2\frac{1}{2}$  n. broad, will Pave a Yard Square, but if they are set on edge, it will require 113 to Pave a square Yard.

But of the other Size 6 n. long, 3 n. broad, and 1 n. thick, being laid the flat way, 63 will Pave a square Yard, but being set edge-ways, it will require 165 to Pave a Superficial Yard.

These *Bricks* are usually sold for 2 s. per Hundred at *London*.

6. *Clinkers*,] Are such *Bricks* as have much Nitre, or Salt-peter in them, which with the violence of the Fire runs and Glazes them.

7. *Didoron*] Were a sort of *Bricks* used by the Ancients, which were  $1 \frac{1}{2}$  Foot long, or 2 Spans, [the word *Doron* being Greek for a Span, or the space betwixt the top of the Thumb, and little Finger extended] and 1 Foot broad: These were the smallest sort of *Bricks* used by the *Greeks* about their private Buildings; they having 2 larger Sizes for their publick Buildings, as you will find by the Sequel of the Discourse.

8. *Feather-edge*,] Are a sort of *Bricks* formerly used in some parts of *Kent* and *Suffex*, they being of the same Size with *Statute-bricks*, but made thinner at one edge, than they are at the other, on purpose to pen up their *Brick-pannels* (as they call'd them) in Timber Buildings, and they were usually sold amongst the *Statute-bricks* for that Purpose.

9. *Great Bricks*.] They are a sort of *Bricks* that are 12 n. long, 6 n. broad, and 3 n. thick. The weight of one of these *Bricks* being examined, it was found to be about 15 lb. so that 100 will weigh about 1500 lb, and a Thousand 15000 lb. which is 6 Tun 13 c. 3 q. 20 lb. So that about 150 will be a Tun weight.

The use of these *Bricks*, is to build Fence-walls, together with *Pilaster*, or *Buttress-bricks*, and *Copeing Bricks*: I know one Place in *Suffex*, where they are much in use for that Purpose. These Walls are but 6 n. thick, only at the *Pilasters* they are 12 n. thick, and they usually set a *Pilaster* at every 10 Foot. I know a Wall of about 9 Foot high, of these sort of *Bricks* that stands very well, which hath been built near 30 Years: I am informed they are much cheaper than Brick, and 1 Walls, or 14 n. Walls of *Statute-bricks*; of which V. Walls N. IV.

These *Bricks* are usually sold at 2 l. per Thousand, which is 4 s. per Hundred.

10. *Paving-bricks*.] They are by some call'd *Paving-Tiles*. Of these sort of *Bricks*, there are various Sizes, according to the Fancy of Workmen, and the Custom of Places. These, saith Mr. *Leylourn* are of several Sizes, viz. 6, 8, 10, and 12 n. square, in value from 6 to 20 s. per Hundred, and if you would know how many of either sort will Pave a Room, or the like,

Note that  $\left. \begin{array}{l} 36 \\ 21 \\ 12 \\ 9 \end{array} \right\} \text{Bricks of } \left\{ \begin{array}{l} 6 \\ 8 \\ 10 \\ 12 \end{array} \right\} \text{Inches Square}$  will Pave a Square Yard.

In *Surrey*, and several Counties of *England*, are made *Paving-Bricks* of 3 several Magnitudes, viz. 12 n. square, and  $1 \frac{1}{2}$  n. thick, 10 n. square, and  $1 \frac{1}{4}$  n. thick) and 8 n. square, and 1 n. thick, either of these sorts being Polished, or rubbed with sharp Sand on the Surface, and well joyned, and the sides made equal by hewing them with a Brick-ax, and rubbing them on a rubbing Stone with sharp Sand, makes

an excellent Pavement, and very pleasing to the Eye, especially when laid Arras-ways.

I have seen Experiments made on some *Suffex Paving-bricks*, which were  $6\frac{1}{2}$  n. square,  $1\frac{7}{8}$  n. thick, 2 of them weighed 11 lb. Tere, so that 100 of them would weigh 550 lb. and 2 1000 5500 lb. and by consequence about 407 of them would weigh a Tun.

I have known some made of 9 n. square in *Suffex*, which use to be sold for about 8 s. per Hundred.

An experienced old Workman told me he had made *Paving-Bricks* of Clay that were 15 n. square, which he was very much troubled to prevent their warping. These Bricks, when burnt, were of a pale red Colour, as were also some which he made 6 n. square of another sort of Clay, some Miles distant from the former.

He saith, that *Paving bricks*, made of *Lome*, have the reddest Colour, when burnt: But they ought to be made of better Earth than *common Bricks*, tho' they seldom are, by those that make them for Sale.

He saith also, that beside the goodness of the Earth in *Paving-Bricks*, there ought to be a great deal of care taken in the drying of them, to prevent their warping, and also when they are dry, to take them and dress them smooth and strait, on that which is to be the upper Surface, and also to pare the edges straight, and a little under, making an acute Angle with the upper side, and to see that they be exactly square, and then put them in the Kiln, and burn them.

The usual Price of 9, or 10 n. *Paving-bricks* is from 8 to 12 s. per C. in the Country. I have known 10 n. ones from *Surrey* brought by Water to Sea-port-towns in *Kent* and *Suffex*, and sold for 10 s. per C.

11. *Pentadoron*,] Are a sort of *Bricks* in use formerly among the *Greeks*, being 3 f. 9 n. long, and 1 f. broad, with these they did build their publick Edifices. V. *Didoron*.

12. *Place-bricks*.] This is a general name for all sorts of *Bricks* that are made after the insuing Method, from whence they derive their Name. Now Workmen tell me they are forced to have above one Method in making of *Bricks*, not for Fancy sake, but out of pure Necessity; the Reason of which proceeds from certain different Qualities, inherent in different Earths. But to proceed, *Place-bricks*, and *Stock-bricks* are the 2 Kinds that receive their Names from the Method of their making.

*Place-bricks* are generally made in the Eastern part of *Suffex*; so call'd, because there is a *Place* just by where they Strike (or Mold) their *Bricks*, which is a level smooth piece of Ground, prepared for the *Bearer-off* (who carries the Bricks from the *Striker*) to lay them singly down in Rows (which they call *Ricks*) as soon as they are Molded, and there they are left till they are a  
little

little dried, *viz.* Till they are stiff enough to be turned on their Edges, and *Drest* (that is, cut off their Inequalities, and Rugosities) and when they are dry, they carry them to the *Hacks* (or Places where they Row them up, like a Wall of 2 Bricks thick, with some small Intervals betwixt them, to admit the Wind and Air to dry them.) When the *Hack* is fill'd they are covered with Straw on the top, till they are dry enough to be carried to the Kiln to be burnt.

13. *Pilaster, or Buttress-bricks.*] These Bricks are of the same length, breadth, and thickness with the *great Bricks*, 6. 9. they differ from them only in this, they have a notch at one end, which is half the breadth of the *Brick*, in breadth, and also in the length; they are made in the same Mold with the *great Bricks*, only when they make *Pilaster-bricks*, they put into one corner of the Mold, a Cube of Wood of 3 n. square; which piece causes the notch in the *Bricks* when they are Molded.

The use of these *Bricks* is to Bond the Work at the *Pilasters* of *Fence-walls*, built of *great Bricks*. These *Pilasters* are made a Foot square, *viz.* A Brick in length, or 2 Bricks a breadth, alternately throughout the whole height of the *Pilaster*. So that the *Pilaster* stands out 3 n. beyond the Surface of the Wall on each side.

14. *Samel, or Sandal-bricks,*] Are those which lie out most in a Kiln, or Clamp, where the Salt-peter is not digested for want of Heat, and these are very soft, and will soon moulder to dirt.

15. *Stock-bricks,*] These differ not from *Place-bricks* in Form; their difference lying conceal'd in the Quality of the Earth; they are made upon a *Stock*, *viz.* The Mold is put on a *Stock*, after the manner of Molding, or Striking of Tiles, and when one Brick is Molded, they lay him on a little piece of Board, a little longer than the Brick, and on that Brick they lay another piece of Board, like the 1<sup>st</sup>. and on that another Brick, after this manner, they lay 3 Bricks on one another, and so they continue to strike and place them on the Stage, as they do Tiles, till the Stage is full, and then they take each 3 successively, and carry them to the *Hacks*, and turn them down on their edges; so that there will be the thickness of a thin piece of Board betwixt each Brick. When the *Hack* is fill'd with 1 height of Bricks, from one end to the other, then they begin to set them up upon those which were 1<sup>st</sup>. laid on the *Hack*, by that time they will be a little dried, and will bear the others; for they are Molded of very stiff Earth; when they set a second or third, &c. Height, or Course, they cater them a little, as they call it, to prevent their reeling: When the *Hack* is as high as they think fit, they cover them with Straw, as they do *Place-Bricks*, till they are dry enough to burn. This way Workmen

tell me, is more trouble than the other way, *viz.* Of making Place-bricks, and for making and burning (besides the digging of the Earth) they have 6 s. per 1000, which is 1 s. per 1000 more than they usually have for making of Place-bricks. But they are forced to make them so, because if they lay them abroad in a Place to dry, as they do Place-bricks, the Nature of the Earth is such, that they will burst to pieces.

I very well remember an Instance of this kind, that was told me by an ancient experienced maker of Bricks and Tiles; one that used to make Bricks about the Country (in *Kent* and *Suffex*) for Gentlemen: This Man was sent for to *Rumford* in *Essex* to make 100000 of Bricks there for a Gentleman; he having procur'd his Materials and Utensils, went to Work (unadvysedly, not knowing the Quality of the Earth) and having struck about a 1000, when they had layen in the Place to dry, (according to the way of making Place-bricks) till about 10 a Clock, when the Sun began to shine very hot, his whole 1000 of Bricks burst to pieces, so that he was forced to throw them all away, and then went to work again, and struck more, and then before the Sun shone too hot, he *Thackt* them, (*i.e.* cover'd them) over with Straw till the next Morning, and then he raked off the Straw with a Rake, and they did very well when they came to be set on the *Hack*, and when they were burnt, they were curious red Brick, that would ring, when they were hit with any hard thing. They did always use to make *Stock-bricks* at this Place, before he found the way of making Place-bricks of this sort of Earth.

16. *Statute, small, or common Bricks.*) Their Dimensions, *viz.* Of the Mold by the Statute, ought to be, as follows, *viz.* In length within 9 n. in breadth  $4\frac{1}{2}$  n. and in thickness  $2\frac{1}{4}$  n. Bricks made in such a Mold (the Earth being 1st. well temper'd) dried, and burnt, they will be less and lighter, yet they shrink in thickness, but little in breadth less, and in their length not discernable; The weight of Bricks is uncertain, the Gravity of Earths being very different also; yet commonly one Brick will weigh about 5 lb. saith Mr. *Leybourn*, and will contain 90 Cubick Inches, and from some Molds 100. I once made an Observation on the weight of *Statute-bricks*, I took 4, and measured them, and weighed them, I found each Brick to be 9 n. long,  $4\frac{1}{4}$  n. broad, and  $2\frac{1}{2}$  n. thick, and I found that the 4 weighed 22 lb. so that one did weigh  $5\frac{1}{2}$  lb. and 100 of these would weigh 550 lb. and a 1000 5500 lb. and about 407 will be a Tun weight. These were *Suffex* Bricks, of which they commonly reckon 500 to the Load, which number of Bricks, according to this Proportion, will weigh about 24 hundred and a half.

These Bricks are frequently used in *Paving* of Cellars, Wash-houses, Sinks, and Fire-hearths, and the like, 30 of these made; according to the Statute, will Pave a Yard square, and 330 of them

them will Pave a Square, or 100 f. But you must note, 'tis here meant, when the Bricks are laid the flat way, and not set on their Edges; for then it will take up near as many more.

But I have it from Observation, that there must be 32 Bricks laid flat to Pave a Yard, and 64 Bricks set an edge to Pave a Yard Square.

I find also by Computation, from an Observation, that there must be 4600 Statute-bricks to make a Superficial Statute-rod of Brick-work, at a Brick and  $\frac{1}{2}$  thick, and by consequence 1700 to the Square, and 155 to the Superficial Yard; on a Wall of a  $1\frac{1}{2}$  Brick thick, V. P. Num. VIII.

*Mortar, the quantity to a Rod of Brick-work.*] Some allow more than others do, and the truth is, they may well enough do so; for some Workmen have got a habit of making larger Joints than others. Some usually allow about a Load of Lime, and 2 Load and  $\frac{1}{2}$  of Sand (at 36 Bushels to the Load of Sand) to a Rod of Brick-work, or 4600 of *Statute-bricks*. And some others allow a Load and half a quarter of Lime, and 2 Load of Sand, i. e. 2 Bushels of Sand, to one of Lime; and others will allow but  $1\frac{1}{2}$  Load of Sand, to a Load and  $\frac{1}{3}$  of Lime.

*Price of these Statute, or common Bricks.*] This is various, for in different Parts of the Kingdom, they commonly have a different Price, which is not all neither, for Bricks in the same Kiln, shall have a different Price sometimes, if the maker of them be to lay them in at a greater distance than usual, and as Mr. *Leybourn* saith, something ought to be considered, in respect to Workmen's Wages, and the Price of Fuel to burn them with. But, saith he, I never knew them cheaper than 9 s. nor dearer than 18 s. per 1000, deliver'd in any part of London.

In some parts of *Suffex* and *Kent*, I have known *Statute, or common Bricks*, sold for 16 s. per 1000, laid in a Mile or 2 distant from the Kiln, and at others for 20 s. at another place in *Suffex* they sell them at 25 s. per 1000, if they lay them in about 2 or 3 Miles distant, that within this 10 or 12 Years, they did sell them there for 20 s. per 1000, but since the late War began, the Iron-works in that part of the Country, has devour'd a great quantity of their Wood, so that Fuel of late Years is got to be a fourth or more dearer than it did use to be; upon this account they have now raised their *Bricks* to 25 s. per 1000.

Mr. *Wing* tells us, that in *Rutland* Bricks are but 12 s. per 1000 at the Kiln.

*The Price of making Statute bricks.*] In the Country their usual Price is 6 d. per 1000 one Molder hath, the Bearer off hath 4 d. and he that Tempers the Earth ready for use hath 4 d. per 1000, and he that digs it hath 6 d. per 1000; for making the Earth ready (after it is digged, the digging being not reckon'd into the making) Molding, Bearing off, &c. and Burning, their usual Price is 5 s. per 1000.



Mr. *Leybourn* tells us, that about *London*, they allow the Molder 4 d. 5 d. or 6 d. per 1000, and that Bricks made at home will stand the maker of them in (besides the value of the Earth) betwixt 5 and 6 s. per 1000. But I am sensible it will be more in *Kent* and *Suffex*, at least some parts of those Countries.

17. *Tetradoron*] An ancient sort of Greekish Bricks, which were 3 f. or 4 Spans long; and 1 f. broad, being one of their larger Size, with which they built their publick Buildings, V. *Didoron*.

18. *Triangular Bricks*.] This Form of Bricks is described by *Daniel Barbaro*, Patriarch of *Aquileia*, in his largest Edition of his Comment upon *Vitruvius*. He would have these Triangular Bricks consist of an equilateral Triangle, each side to be a Foot, and the thickness but an Inch and  $\frac{1}{2}$ . This sort of Bricks he highly commends to us for many good Properties, as 1<sup>st</sup>. That they are Commodious in the Management. 2<sup>dly</sup>. Of less Expence. 3<sup>dly</sup>. Of fairer shew, adding much Beauty and Strength to the mural Angles, where they fall gracefully into an indented Work: So that Sir *Henry Wotton* wonders that we (in *England*) have not taken them into use, being propounded by a Man of so good Authority in this kind of Knowledge; but the truth is, that all Nations are apt to start at Novelties, and are very apt to be wedded to their own Ways and Methods.

III. *Of the Method of making*.] Of this V. *Stock*, and *Place-bricks*. Mr. *Worlidge* in his *Syst. Agricul.* is for exciting Brick-makers to try their Skill, in making a Composition of Clay and Sand, of which they may form in Molds, *Window-frames* for Houfes, of different Forms and Magnitudes, and also *Chimney-pieces*, and *Frames for Doors*, &c. in several pieces made in Molds, that when they are burnt, they may be set together with a fine red Cement, and seem to be as one intire piece; whereby may be imitated all manner of Stone-work now used in Building, and it will very well supply its Defect where Stones are wanting, or scarce and dear, and also save very much Timber, which is now used in Brick Buildings, and appear much more Compleat and Beautiful, and be of greater strength, and more durable for lasting, than Timber, or ordinary Brick; and one would think it should be very feasible, as we may perceive by the *Earthen-pipes*, made fine, thin, and durable, to carry Water under Ground at *Portsmouth* in *Hampshire*, and by the *Earthen-backs*, and *Grates* for Chimneys, made by Sir *John Winter*, formerly at *Charing-cross*, of a great bigness and thickness, which are evident, and sufficient Demonstrations of the Possibility of making Work fine, thin, and light, for *Tiles*, either plain or curved, and for making of greater Work in Molds, and through burning of them, for *Doors*, *Windows*, and *Chimney-frames*, &c.

This saith he, is one of the most feasible, and beneficial Operations that I know in *England* to be neglected.

It is really my Thoughts, much might be done concerning making of *Chimney-pieces*, *Stone-moldings*, and *Architraves* for Doors, and Windows, and *Architraves*, or *Fascia's* for Fronts of Buildings, &c. if that Men of this Profession would but set their Minds to work, to contrive some good Composition of Earth, and a way to manage it well in Molding, Burning, &c. But (the more is the pity) Men of this Profession are like the Materials they work upon, *viz.* heavy and lumpish.

It might be made a Query, whether a Composition of Earth, something like to common Crockers Earth, would not in some measure answer the Design, since it is apparent, that whatever Form the Crockers are pleased to put their Earth into; it retains it after drying and burning, altho' Crocks, and such like things are formed very thin: Now, suppose that *Chimney-pieces*, or the like, were made in Molds, and dried and burnt, when they came to be set up, if they were not thought smooth enough, they might be Polished with sharp Sand and Water, or a piece of sharp Sand, Stone, and Water. Or were there but Care taken of such things as these (which are for Ornament, as well as Use) when they were half dry, or more in the Air, then to let them be Polished over with an Instrument for the Purpose, either of Copper, or Iron, or some hard Body, and then leave them till they were dry enough to burn; 'tis my Thoughts such would not want much Polishing afterwards.

And let me further add, I am very apt to think, that Ingenious Men of this Profession, might make very handsome and beautiful *Chimney pieces*, *Stone Moldings for Doors*, &c. fit for Noble-men's Houses, and all others that would be at the Charge.

What I would here propose, is by way of Glazing, as Potters do their fine Earthen Ware, either white, or any other colour, or it might be Vein'd in imitation of Marble, or be Painted and Anneal'd with Figures of various Colours, or some History, Perspective, or the like, which would be much cheaper, if not also as durable, and every whit as beautiful as Marble it self. And had I time, and room in this small Treatise, I could here have added the Methods of Glazing, and Painting of various Colours, to have encouraged the lovers of such Arts, to set their Heads to work at it. So that I am inclined to think, we rather want Art, or Ingenuity, and Industry, than Materials to satisfy our greatest Curiosity in Building. 'Tis not the Baseness of our *English* Materials, but want of Skill, and Diligence in managing them, that makes our *English* Buildings in the least measure inferior to any Foreign ones: I well remember an Instance of this nature, which was an Observation of an *English* Embassadour, which was this, *viz.* That we ought not to be discouraged with our ignoble Materials for Building, which we use in *England*, in comparison of the Marbles of *Asia*, and *Numidia*: For saith he, I have often at *Venice* viewed with much pleasure, an Anti-  
porch,

porch, after the *Greek* manner, erected by *Andreas Palladio* upon 8 Columns of the Roman Order, the Backs of Stone without Pedestals, the Shafts or Bodies of mere Brick, 3  $\frac{1}{2}$  Foot in Diameter below, and consequently 35 Foot high, as himself hath described them in his second Book. Than which saith the Ambassador, mine Eyes never yet beheld any Columns more stately of Stone, or Marble, for the Bricks were 1<sup>st</sup>. formed in a Circular Mold, and were cut before they were burnt, into 4 Quarters, or Quadrants, or more than 4 Parts, for he could not certainly tell how many the sides were afterwards in laying, jointed so close and nicely, and the Points concenter'd so exactly, that the Pillars appear one intire piece.

And therefore I would not have *English* Men be disheartned, that we do here want those firm and solid Stones, which Nature hath furnished other Nations with; but rather to exercise their Ingenuity, to supply our selves by Art, with those things which Providence hath thought fit we should want, unless we would do so. And if we can but bring such things to perfection which have been here hinted at, it may hereafter redound to the Honour of the *English* Nation. I mention these things here purely to stir up inquisitive Persons, to endeavour after an Improvement of such Arts, and that they might not be so stupid, as to suppose that either they, or their Fore-fathers, were arrived at the *ne plus ultra* of this, or any other Art; and to perswade them, (if possible) to throw off that slothful and dangerous Principle, of resting contented with being possessed with the same degree of Knowledge, which our Predecessors had before us; and of thinking that they have skill enough, because the barbarous part of the World, doth not practice so much as they. But I would very fain, (if it lay in my Power) prevail upon Mechanicks, to see what Improvements in their Professions they can bring forth.

V. *Of the Method of Burning Bricks, &c.*] All Bricks that are burnt, are burnt either in Kilns or Clamps.

An experienc'd old Brick-burner, or maker, tells me, that his (and some other experienced Brick-burners) Method in burning of *Bricks* and *Tiles*, was thus, *viz.* The Kiln being set, and cover'd with pieces of Bricks, they 1<sup>st</sup>. put in some Cord, (or great) Wood to dry the Ware, with a gentle, even Heat or Fire; which Fire they continue till the Ware is pretty dry; which they know by observing the Reek which ascends out on the top of the Kiln, for when it is changed from a thick Vapour, betwixt a whitish and darkish colour, to a kind of a black Smoke, which is more transparent than the Vapour which 1<sup>st</sup>. arose from the Kiln; after this blackish Smoke hath ascended for some time, they put in no more great Wood, but proceed to make ready for burning; which is performed, either with Spray, Bush, Furz, Heath, Brake, or Fern Faggots; but before they  
put

put in any Faggots, they damm up the *Mouth* of the Kiln (or *Mouths*; for some Kilns have more than one Mouth) with their *Shinlog*, as they call it (which is pieces of Bricks piled upon each other, with wet Brick Earth, instead of Mortar.) This *Shinlog* they make so high, that there is but just room above it to thrust in a Faggot, *viz.* Betwixt a 1  $\frac{1}{2}$  f. and 2 Foot, for the whole height of the Mouth is about 3 f. the Mouth being thus *Shinlog'd*, they proceed to put in Faggots, till they make the Kiln and its Arches look white with Heat, and the Fire begins to appear at the top of the Kiln, and the Kiln and Arches below begin to change from white to a greyish Colour; then he saith they slacken the Fire for some time, *viz.* for about  $\frac{1}{2}$  an Hour, or an Hour, as they think fit; that the Fire, or Heat may ascend to the top of the Kiln, by the Motion of the Air in at the Mouth, and also that the lower Ware may settle and cool, and not be burnt more than that above it. Thus they continue to do, heating and slacking alternately, till the Ware be through burnt, which it will be (he saith) in about 48 Hours: According to this Method, he saith he hath burnt many Kilns of Ware so equally, that those on the top were almost as hard as those below (if not altogether.) He told me he had burnt several Kilns of *Tiles* and *Bricks* together, *viz.* About 3000 Bricks, and 10 or 11000 of Tiles, and hath not had above 50 waste, broken, and *Sandal Tiles* in all (which I will assure you is very rare;) whereas, saith he, such Brick-burners as continue their Fire without any intermission, make their lower Ware extream hard; and that on the top of *Samel-bricks*, or *Tiles*, nay, and which is worse, they make the lower ones run so with the excessive heat, that they are almost united into one intire Body, so that they are forced to get them out with *Wringers* (or *Iron-bars*) and each *Bolt* of *Tiles*, shall be one intire Mass (which I have observed my self.)

And then as to cooling of Kilns of Ware, some unwise Burners, as soon as the Ware is burnt, they immediately stop up the rest of the Mouth of the Kiln, which was left open above the *Shinlog*, by which means it is long in cooling, so that they (*viz.* Such Indiscreet Burners) are commonly a Fortnight, or almost 3 Weeks, in Setting, Burning, and Cooling, and drawing of a Kiln of Ware. Whereas, saith he, I have Set, Burnt, Cool'd, and Drawn a Kiln a Week for several Weeks together. But then I never stopp'd up the rest of the Kilns Mouths above the *Shinlog*, but left it open for the Air to pass in and cool the Ware.

He also told me, that 600 of Faggots would burn a Kiln of 10 or 11000 of *Statute-bricks*. Mr. *Wing* informs us, that a Chaldron of Coals will burn about 4200 of Bricks.

I have been informed that their Method of burning *Bricks* in *Clamps*, is something after this manner, *viz.* They build their *Clamps* of the *Bricks* that are to be burnt something like the Method

Method of Building the Arches in Kilns, *viz.* With a vacancy betwixt each Bricks breadth, &c. for the Fire to ascend by; but with this difference, that instead of Arching, they truss, or span it over, by making the Bricks Project over, one beyond the other, on both sides the place for the Wood and Coal to lie in, till they meet, and are bonded by the Bricks at the top, which closes up the Arch; this place for the Fuel, they carry up strait at both sides, or which is the same thing, upright at both sides, till 'tis about 3 f. high, and then they begin to lay the Bricks, projecting over inwards till they meet in the middle, which they will do in about 3 or 4 Course of Bricks in height, the width of the Mouth being but about  $2\frac{1}{2}$  f. Above this Arch they lay the Bricks in the order they do in a Kiln, to 8 or 10 f. in height, according as the *Clamp* is to be in bigness; for they usually burn a great many Thousands in a *Clamp* at a time, so that they build them 8 or 10 f. above the Arching.

But you must further note, that after they have begun to make the Place (or Places) to receive the Fuel, before it is closed up at the top, it is almost filled with Wood, and on that they lay a thickness of Sea-coal, and then they over-span the Arch; but they strew Sea coal, all over the *Clamp* from bottom to top, *viz.* Betwixt all the Rows of Bricks; for they are not laid Contingent in their Vertical Rows, and one Course of Brick is laid one way, and the other another, so that there is small Interstices betwixt all the Bricks, for the Coal to be strewed into, from the bottom to the top: This being done, they fire the Wood, and that fires the Coal; the which, when 'tis all burnt out, they conclude the *Clamp* of Bricks to be burnt:

VI. *Of the quantity of Earth to make a Thousand of Bricks, &c.*] I am inform'd that 1 Load of Lome (a Load being 12 Bushels) will make about 200 of *Statute-bricks*, and then by consequence, 3 Load will make a 1000. Also that 19 Load of Lome will make 1600 of great Bricks, and 12 will be sufficient for a 1000 of the same.

VII. *Of the Choice of Bricks, &c.*] *Pliny* advises in making choice of Bricks for Building, to be sure (if possible) to procure such as are Years old at least. There are commonly, and generally in all Kilns and Clamps, 3 Degrees of Bricks, in goodness, *viz.* The 1<sup>st</sup>. and best sort are those which lie next the Fire; (*viz.* Those are best for lasting) and have, as it were, a Gloss on them, which proceeds from the Salt-peter, which is inherent in them, and which by the Violence of the Fire, runs and glazes them; these are call'd *Clinkers*.

The second and most general sort for Building, are those which lie next in the Kiln, or *Clamp*, to those before mentioned.

The 3<sup>d</sup>. and worst sort, are those which lie on the out-sides of the Kilns and Clamps, where the Salt-peter is not digested for want of a due Heat, and these when they come to be expo-

sed to the Weather for some time, will moulder away like Dirt; and these Workmen call Samel, or Sandal-bricks. 'Tis an Observation, That whilst Bricks are Burning, those on the Windy side of a Clamp, are the worst of all.

VIII. *Of Observables in Buying and Laying Bricks, &c.*] And 1<sup>st</sup>. Of Buying, the last Number will direct any Master or Workman (that doth not understand it) how to choose good Bricks; and in the 16 §. of Bricks, *viz.* Under the Head Statute-bricks, you have some Directions, as to the Number of Bricks; but you must note, 'tis impossible to be certain (to know) how many will be wanting exactly; because in such Cases there can be no infallible way discovered; and that for several Reasons, *viz.* (altho' the Bricks were all made in the same Mold, and Burnt in the same Clamp, or Kiln) the Bricklayers Hand may vary in laying his Mortar. 2<sup>dly</sup>. Many Bricks warp in Burning (and the Seller will bring you some such, in spite of all your Care in chusing.) 3<sup>dly</sup>. Some miscarry, and are spoiled in every Carriage. 4<sup>thly</sup>. The Tally, or Tale is for the most part too little, if not well looked to. And besides all these Uncertainties, when Bricks are dear, and Lime cheap; (which sometimes happens so) if you put your Work out by the Great, or by Measure, and he is to find Materials that doth the Work, the Workman without good looking after, will certainly use the more Mortar, and make very great Joints; which is a defect in any Building.

Secondly, Of laying Bricks, which is a thing of no small Consequence in a Building; for the well Working, and Bonding of Brick-work (or as some Workmen call it, breaking of Joint,) conduces very much to its Fortitude; I think therefore it may not be amiss to add some particular Notes about it, which experienced Workmen have thought convenient to commend to the Publick, as well worth their Observation.

First. Let me commend to your Care, to be sure to procure good strong Mortar; of which V. Mortar.

Secondly. If your Bricks are laid in Winter, let them be kept and laid as dry as possible; if they are laid in Summer-time, it will quit cost to employ Boys to wet them; for they will unite with the Mortar much better, than if they were laid dry, and will make the Work much stronger. But perhaps it may be well objected, that it will be too much trouble to wet all the Bricks (by dipping them in Water) if the Building be large; and besides, it makes the Workmen's fingers sore. To prevent these Inconveniencies, there may be Water throw'd on each Course of Bricks after they are laid, as I am inform'd was done at the Building of Physicians College in Warwick-lane, by order of the Surveyor, the Ingenious Mr. Robert Hooke.

Thirdly. If your Bricks are laid in the Summer-time, be sure to cover them, to prevent their drying too fast; for if the Mortar dry too hastily, it doth not cement so firmly to the Bricks, as when it dries gradually.

Fourthly.

*Fourthly.* If *Bricks* are laid in Winter, be sure to cove. them very well, to protect them from Rain, Snow, and Frost, which last is a mortal Enemy to all Mortar, especially to all such as have taken Wet but just before the Frost assaults it.

*Fifthly.* Let Care be taken that *Bricks* be not laid Joynt on Joynt, in the middle of Walls, as seldom as may be, but let there be good Bond made there, as well as on the out-sides; for some Workmen in working Brick and  $\frac{1}{2}$  Wall, lay the Header on one side of the Wall, Perpendicular on the Header on the other side of the Wall, and so all along thro' the whole Course, which indeed necessarily follows, from the unadvised setting up of the Quoin at a Toothing; for 'tis common to Tooth in the stretching Course 2 Inches with the Stretcher only, and the Header on the other side to be Perpendicular over the Header on this side, which causes the Headers to lie Joynt in Joynt in the middle of the Work.

Whereas, if the Header on one side of the Wall, were toothed as much as the Stretcher on the other side, it would be a stronger Toothing, and the Joynts of the Headers of one side, would be in the middle of the Headers of the Course they lie upon on the other side.

All that can be pretended to excuse this ill Custom of Working thus, is this; That the Header will not hang 2 n. over the Bricks underneath it. This indeed I do grant to be an Objection, but not so great, but that it may be removed, and that without much difficulty, *viz.* Thus, By having a piece of Wood of the thickness of a Course of *Bricks*, and 2 n. broad, and lay it on the last Toothing Course to bear it, or a Brick-bat put upon the last Toothing, will bear it till the next Quoin is set upon it, and then the Bat may be taken away.

*Sixthly.* The same Inconveniency happens at an upright Quoin in a Brick and  $\frac{3}{4}$  Wall, where 'tis usual to lay a Closer next the Header on both sides of the Wall, and in so doing, 'tis Joynt in Joynt all the length of the Wall, except by chance a  $\frac{3}{4}$  quarters Bat happen to be laid.

To prevent which Inconveniency, and thereby make the Wall much firmer, lay a Closer on one side, and none on the other side; but lay a  $\frac{3}{4}$  quarter Bat on the Quoin in the Stretching-course, and in the Heading-course, adjoyn an Header next to the Header at the Quoin.

Also in 2 Brick-walls, it is the best way in Stretching-courses, wherein they lay stretching on both sides the Walls; next the Line, so also to lay stretching in the middle of the Wall, and Closers next to each Stretching-course that lies next the Line.

A Bricklayer and his Labourer (having all his Materials ready) will lay in a Day about 1000 *Bricks*, in whole Work on a solid Plain, and some very expeditious Fellows will lay 12 or 1500;

IX. *Of Facing Timber-buildings with Bricks.*] In some Places this Method of facing Timber-building is in use, but I think it should be call'd Caseing; for 'tis covered all over on the outside with Brick, so that no Timber is to be seen. The which is performed after this manner, viz. All betwixt the Timber the Wall is a Brick a length thick (or 9 n. Wall of Brick, but against the Timber, the Wall of Bricks is, but 4  $\frac{1}{2}$  n. or half a Brick, or the breadth of a Brick thick (beside the Timber.)

But this Method is not approved of by able Workmen, because the Mortar doth so extremely corrode and decay the Timber.

For I remember an experienced Bricklayer told me, that he did pull down such Work at *Eridge-place* (which is one of my Lord of *Abergaveny's* Country-seats) and the Timber was extremely corroded, and eaten with the Mortar.

### *Bricklayer's.*

I. *Work.*] The *Bricklayer's Work* in the City is of various Kinds, viz. *Tyling, Walling, Chimney-work, and Paving* with Bricks and Tiles. But in the Country 'tis common for the *Bricklayer's Trade*, to comprehend the *Maisons* and *Plasterers* also. All which Particulars will render it too large to be comprehended under the general Head of *Bricklayer's-work*; I therefore think it will be more convenient to rank it under its particular Branches, or Parts, viz. *Walling, Tyling, Chimney-work, Paving, &c.*



*Bill of making.*] A Bricklayer's Bill may be Composed after this Method.

Mr. Robert Rich of Rochester his Bill of Materials, had of, and Work done by Benjamin Bennet, Bricklayer, October 5. 1702.

	l.	s.	d.
For 12 Thousand of Bricks at 15 s. per M. —————	09	00	00
For 8 Thousand of Tiles at 20 s. per M. —————	08	00	00
For 17 Hundred of Lime at 14 s. per C. —————	11	18	00
For 15 Load of Sand at 2 s. 6 d. per L. —————	02	05	00
For 10 Hundred of 9n. Paving-tiles at 10 s. 6 d. } per Hundred.	05	05	00
For 40 Ridge-tiles at 1 $\frac{1}{4}$ d. per piece. —————	00	05	10
For 3 Weeks and 3 Days Work for my self, at 3 s. } per diem.	03	03	00
For 27 $\frac{1}{2}$ Days for my Man at 2 s. 6 d. per Day. ———	03	08	09
For a Labourer 27 $\frac{1}{2}$ Days at 1 s. 8 d. per Day. ———	02	05	10
Sum Total is	45	11	05

But note, if Bricklayers do not work by the Day, then they use a different Method in Writing their *Bills*; for then they either take their Work by the Great, *viz.* to do all, and find all belonging to Bricklayers Work, or else he is to do it by Measure, and to find all Materials and Work, at such a Price by the Rod for *Walling*, by the Square for *Tiling*, and by the Yard for *Paving*, &c. But if he find no Materials, he may also work by Measure, and then the Bill must be made after this manner, *viz.* For so many Rods of *Walling*, at so much (according to their Agreement) per Rod, &c.

Note also that in some Buildings *Chimneys* are put out to the Bricklayer by the Hearth, either only to build, or to find Materials also, and then the Bill is made according to the Agreement,

There are some other things which come into a *Bricklayer's Bill*, *viz.* All kind of ornamental Work in *Brick*, which is commonly set down, or rated at so much per Foot, or so much per Piece, except a good Rate be allowed by the Rod, &c. Or there be a Sum of Money over and above the Price, or value of the Rod-work allowed, and so the Ornamental Work be included in it. By ornamental Work, is to be understood, streight, or circular *Arches*, over *Windows*, or *Doors*; *Fascias*, with, or without *Moldings*, *Architraves*, round *Windows*, or rubbed *Returns*, *Friezes*, *Cornices* of all sorts, *Water-tables* wrought, and *Water-courses*: All which are valued by the Foot running Measure; to which I must add *Base-mouldings*, and *Plinths*, and

The *Splaying* of the *Jambes* of *Windows* and *Doors* on the inside of *Buildings*. Also *Pilasters*, *Peers*, *Pediments*, *Grotto's*, and *Rustick Quoins*. These 5 last mentioned, are valued at so much per piece, according to the largeness, and goodness of the Work and Materials; and thus all *Ornamental work*, ought to be valued. By the word *Ornamental work*, is to be understood in *Bricklayers Work*; all kind of *Brick-work*, that is hewed with an *Ax*, or rubbed on a *Rubbing-stone*, or of *Stone* wrought with *Chissels*, or rubbed with *Stones*, or *Cards*, all such is *ornamental Work*, and ought to be paid for, besides the *Rod-work*, &c. I shall now proceed to speak of that part of *Bricklayer's work*, which is called

### *Brick-work.*

1. *Some Notes about Measuring, &c.*] Sometimes *Brick-walls* are wrought 2 n. thicker than the rest of the Work, part of the way, which 2 n. serveth for a *Water-table* to the Wall, which is usually set off about 2 Foot above the Ground; and therefore the *Brick work* may be measured at the same thickness that is above the *Water-table*, and then the 2 n. Work may be thus added to it.

Suppose a Wall 20 f. in length, and 2 Bricks thick above the *Water-table*.

After the Dimensions of the Wall is taken (from the bottom, to the height it is to be taken at 2 Bricks thick) then add 20 f. in length by the height of the 2 n. Work, *viz.* From the bottom to the setting off, or *Water-table*, which being halfed, is so much 4 n. Work, and then reduce it to a Brick and  $\frac{1}{2}$  Work.

As for *ornamental Work*, we need not to mention that here, it being mentioned above.

2. The Measuring of *Gable-ends* in *Brick-work*, is done after the same Method that *Carpenters* measure *Gables*, (only this is reduced into *Rod-work*) V. *Gable-end*, N. 2.

3. Be sure to observe, in taking Dimensions of Walls that joyn to an Angle, that the length of one Wall be taken at the out-side of the Angle, and the others length to the in-side of the Angle.

4. If there be a *Gable end* to measure, and the width of the House be given (or known) which is the Base of the *Gable end*, and the length of the Perpendicular is required, there is a brief way used amongst Measurers to find it. To make it the plainer, I will propose an Example, *viz.* Suppose the Base of the *Gable* be 24 f. and the length of the Perpendicular is required; take the length of the Rafter (which will be) 12 f. to which add  $\frac{1}{2}$  it self, *viz.* 9 Foot, it makes 27, the  $\frac{1}{3}$  of it is 13 f. 6 n the length of the Perpendicular. But tho' this way be commonly practised, it is not exact, for it makes the Perpendicular a little too much: This you must note is practised for

Roofs,

Roofs that are  $\frac{3}{4}$  pitch ; and therefore I would not advise any to make use of this Method in any other Pitch. Now I am upon Discoursing of *Gable-ends*, I will here add 2 exact ways of finding the Perpendicular ; the 1<sup>st</sup>. shall be by Proportion, thus, *viz.* As 20 to 22, 35, so is the length of the Rafter to the Perpendicular required ; or Subtract the Square of  $\frac{3}{4}$  the Base, or  $\frac{3}{4}$  width of the House, from the Square of the Rafter's length, there will remain a Number, whose Square Root is the length of the Perpendicular.

5. In taking out the Deductions for the Doors, and Windows, &c. if any happen in Brick-work, of 2  $\frac{1}{2}$  Bricks thick, or in 2 Bricks thick, then add  $\frac{2}{3}$  to the length, for those in the 2  $\frac{1}{2}$  Brick-work, and  $\frac{1}{3}$  to the lengths of Doors, or Windows, in 2 Br. (or it may be  $\frac{2}{3}$ , or  $\frac{1}{2}$  to the breadth, and not the length, according as which will be soonest divided) and then the lengths and breadths being multiplied one into the other, the Product is the proper Deductions in Brick  $\frac{1}{2}$  work, without any further trouble ; and it will neither wrong Master nor Workman.

6. Our 6<sup>th</sup>. Note should have been on *Chimneys*, but of that *V. Chimneys*.

I did also intend (when I began this Head of *Brick-work*) to have inserted here several other things appertaining to *Brick-work*, *viz.* The Method of Measuring, Reducing to Standard-thickness, finding the value of any odd Foot, Price of this Work, in diverse Parts of the Kingdom, of laying Foundations of Walls, &c. But finding B. will be a very copious Letter, I shall refer it to Walls of Brick, which *V. N. IV.*

### *Brick-walls.*

*V. Walls, N. IV.*

### *Bridge*

Of Timber to Build over any Brook, Gill, or small River, if it do not exceed 40 or 50 Foot in length, and that without setting any of the Timber down in the Water, it being a cheap and safe way of building a *Bridge* of that length.

To perform this piece of Art, the Timber must be so joynted, as to resemble (in some measure) an Arch of Stone, or Brick, the Joynts ought to be well made, and shut together strongly with Cramps and Dogs of Iron. This Bridge must be made to rest upon 2 strong firm Pillars of Wood, at either end of the Bridge, both being well proped with Spurs or Braces; there must be 2 good Buttresses of Brick for these wooden Pillars, and Spurs to stand in, that they may not give way, or slip ; this being done, the Bridge may be Planked over, and

Graveled, and it will last a long time. This hath been already practised, saith Sir *Hugh Plat*.

### *Bring up.*

'Tis a Term used among Workmen, especially *Carpenters*, when they discourse with *Bricklayers*, and then they say *Bring up* the Foundation so high, *bring up* such a Wall, *bring up* the Chimneys, &c. Which is as much as to say, build the Foundation so high, build the Wall, build the Chimneys, &c.

### *Broad-stone.*

1. *What.*] 'Tis the same with *Free-stone*, only this is so called, because they are raised broad and thin out of the Quarries, viz. not above 2 or 3 Inches in thickness.

2. *Use.*] The use of these sort of *Free-stones*, which are called *Broad-stones*, is for Paving of Yards, and Passages, and before Shop-doors and Stalls, &c.

3. *Price.*] If they are of promiscuous *breadths* and lengths, then the usual Price for the Stone fitting, and laying in Mortar, from 6 to 8 *d.* per Foot square, or from 4 *s.* to 6 *s.* per Superficial Yard.

But some of these Stones are cut into perfect Squares, as Paving-tiles are, but much larger, as 12, 20, and 24 Inches square, or more, but those, as they are neater, so they are dearer; some Paving with these, being worth 1 *s.* per Foot, but 'tis worth 15 or 16 *d.* per Foot, if the Stones are good and well polished, as they ought to be, for Kitchens, Dray-houses, and neat private Places.

### *Building.*

I. *Considerations about it.*] Every Man that is disposed to *Build*, either out of Choice, or thro' Necessity, should 1<sup>st</sup>. sit down, and seriously consider of the whole Design, viz. Both of the Manner and Method, as well as the Charge and Expence. And I am satisfied, that Premeditation is a very necessary Maxim, or Preliminary to Building, because we have it from no less Person than our blessed SAVIOUR himself, who saith in Luke 14. 28. *Which of you intending to build a Tower, sitteth not down first, and counteth the cost, whether he have sufficient to finish it?* The Reason and Necessity of it follows, v. 29, and 30. *Lest haply after he hath laid the foundation, and is not able to finish it, all that behold it begin to mock him, Saying, This man began to build, and was not able to finish.*

And let me perswade all *Builders*, to make choice of such *Surveyors*, and *Workmen*, as understand what they are going about, before they begin the *Work*, viz. Such as be *Masters* of what they pretend to, as a *Surveyor* that understands how to give the Draught, or Model of a Design; so as that when it is erected, it may answer to the end, which is to Build well; and a Building is said to be well done, when it is so contrived, and perfected, that it is possess of the following Qualifications, viz. Accommodation, or Usefulness, Proportion, (Beauty, or Handsomeness) and Uniformity in its Parts; Firmness with Duration. For that *Fabrick* cannot be accounted perfect, which is useful only for but a short space of Time, or not convenient for a longer: and hath not also Decency and Beauty, which is derived from Proportion and Uniformity: I would therefore (if it lay in my Power) endeavour to perswade all *Builders* to procure such *Surveyors*, and *Workmen* (if possible to be procured in the Country, where the *Builder* lives) as understood the Theory, and Practice of Architecture, and also of Arithmetick (which is the Ground of all Arts) without the knowledge of these 2, the best *Mechanick*, or *Handicraft Man* will be but an imperfect *Builder*, and subject to fall into many Errors, and be guilty of committing many Faults, and making many Mistakes. For *Gentlemen*, and others that are *Builders*, are too often prevailed upon, and perswaded by such *Workmen*, as are wedded to their own Wits (tho' they were never vers'd in the Grounds of Architecture, and were wholly ignorant of the meaning of Proportion, Uniformity, and Accommodation in Building) and tied to their own odd sort of irregular old way; which is no better than a deformed Custom, and such Men will not (for the most part) be prevailed on, or perswaded to a more compleat way, tho' it be much more beautiful, and regular, and also with less Materials, and cheaper, and more convenient than the other; and all the Reason they will, or can render for it, is, because it is a Novel to them; and they were never accustomed to such a way of working; neither do they understand it: For say they, our Fore-fathers did it not before us, which is a very prevailing Argument with some that know no better; yet perhaps the Master *Builder* is willing to bestow Expences enough on his House, &c. to Enrich, and Adorn it; but his *Workmen*, thro' ignorance perform it with very little Skill or Art. But I do think none are so Senseless and Stupid, as to deny, that it is better to erect such a *Fabrick*, that shall be more useful and necessary, and also more pleasing, both to wise Men, and Fools, than that (tho' done by the same Cost and Expences) which will only please an ignorant *Workman* or 2, (who are possess with an over-weening Affectation of their own Skill, which at best is but conceited Blandring, or Unskillfulness) and perhaps it may also satisfy some few others, that do not understand the

Methods,

Methods, and Maxims of Architecture, and so were easily prevailed upon by these absurd workmen, and Profelyted to be of their Opinion, be it right or wrong. Having thus laid down some Considerations about *Building*, I shall next proceed to speak of certain

II. *Aphorisms necessary to be known, and observed in Building.*]

Dr. Fuller, *Prebend of Sarum*, saith, He that alters an old *House*, is tyed as a Translator to the Original, and is confined to the Fancy of the 1<sup>st</sup>. *Builder*. Such a Man were unwise to pull down a good old Building, to erect (perchance) a worse new one. But those that raise a new *House* from the Ground, are Blame-worthy, if they make it not handsome and useful, seeing to them Method and Confusion are both of a Price. In Building, saith he, we must respect *Situation*, *Contrivance*, *Receipts*, *Strength*, and *Beauty*, to which I will add *Form*, or *Figure*.

1. *Of Situation.*] The Precepts belonging to *Situation*, saith Sir *H. W.* do either concern the *total Posture*, or 'Position (as I may term it) or *placing* of the *Parts*: The 1<sup>st</sup>. of these is usually reckon'd by *Architects*, as part of their Profession, but the Truth is, it is borrowed from other Parts of *Learning*, there being betwixt *Arts* and *Sciences* (as well as betwixt Men) a kind of Society, and Communication of *Principles*.

For some of them are purely *Physical*, touching the Quality and Temper of the *Air*, *viz.* That it is a good Healthy Air, not subject to Foggy Noisomeness, from Fens, or Marshes, that are adjacent; that it be also free from Noxious, Mineral Exhalations. And let not the Place want the sweet Influence of the Sun-beams, nor to be wholly destitute of the Breezes of Wind, which will Fan, and Purge the Air; the want of which would make it like a stagnated Pool, or standing Lake of Air (which is very unhealthy,) As saith *Alberti*, the Florentine Architect. He also warneth us to avoid such Places, as are subject to *Earthquakes*, *Contagions*, *Prodigious Births*, and the like.

Dr. F.'s Physical Advice is, *viz.* chiefly to chuse a wholesome Air; For Air, saith he, is a Dish one feeds on every Minute, and therefore it had need to be Salubrious. Wherefore great Men (who may Build where they please, and poor Men where they can,) if herein they prefer their Profit above their Health, I refer them to their Physicians to make them pay for it accordingly. *Cato* saith, Let your Country-house have a good Air, and not open to Tempests, seated in a good Soil; let it therein exceed, if you can, and let it stand under a Hill, and behold the *South*, in a healthy Place.

*Pliny* adviseth not to set a Country-house too near a Fen, or standing Water, nor yet over-against the Stream, and Course of a River; for saith he, (as *Homer* saith to this Purpose) The Fogs, and Mists that arise from a great River, betimes in the Morning

before

before Day-light, cannot chuse but be very cold and unwholsome.

*Oeconomical,*] Saith Sir *H. W.* let the House, or Seat be well Watered, and well Fuelled, let not the way to it be too steep, and of an incommodious Access, which will be a Trouble to both Friends, and the Family. And see that it be not Seated too far from some Navigable River, or Arm of the Sea, which will conduce to the Ease of the Family, in procuring Provisions, and other Domestick Necessaries.

Dr. *F.* saith, *That Wood and Water are 2 staple Commodities,* where they may be had. The former I confess hath made so much Iron, that it must be bought with the more Silver, and grows daily dearer. But it is as well Pleasant as Profitable, to see a House Cased with Trees, like that of *Anchises* in *Troy*.

The worst is, where a Place is bald of Wood, no Art can make it a Perriwig in haste.

And as for Water, the want of it is a great Inconvenience, the Mischief of many Houses, where Servants must bring the Well on their Shoulders.

*Optical Precepts, or Maxims,*] Such I mean, (saith Sir *H. W.*) as concern the Properties of a well chosen Prospect, which may be stiled the Royalty of Sight: For as there is a Lordship (as it were) of the Feet, wherein a Man walketh with much Pleasure about the Limits of his own Possessions; so there is a Lordship likewise of the Eye, which being a Ranging, and Imperious (I had almost said) Usurping Sense, cannot indure to be Circumscribed within a small Space, but must be satisfied both with Extent, and variety; yet on the other side, I find vast and indefinite Prospects, which drown all Apprehensions of very remote Objects condemned by good Authors, as if thereby some Part of the Pleasure (whereof we were speaking) did perish.

*A Pleasant Prospect is to be respected,*] Saith Dr. *F.* A medly View (such as of Water, and Land at *Greenwich*) best entertains the Eyes, refreshing the weary Beholder with exchange of Objects. Yet saith he, I know a more profitable Prospect, where the Owner can only see his own Land round about him. To this Head of *Situation* he adds what follows, *viz.*

*A fair Entrance, with an easie Ascent, gives a great Grace to a Building,*] where the Hall is a Preferment out of the Court, Parlour out of the Hall, (not as in some old Buildings) where the Doors are so low, Pigmies must stoop, and the Rooms so high, that Giants may stand a tip-toe.

*A Political Precept.*] I remember (saith that great Architect, Sir *H. W.*) One private Caution, which I know not well how to Rank amongst the rest of the Precepts, unless I call it *Political*, which is this, *viz.* By no means to *Build* too near a great Neighbour, which were to be as unfortunately Seated on the Earth,

Earth, as *Mercury* is in the Heavens, for the most part ever in Combustion, or Obscurity, under brighter Beams than his own. We are next to come to

2. *Contrivance.*] When the Situation is resolved upon, the next in order is *Contrivance*. The which being a thing of great Moment in this Affair of Building, I cannot enter upon it, before I have given some few general Precautions.

And First, I would by no means have any one that intends to Build a Structure (that shall be either useful, or ornamental) without the Advice, or Assistance of a *Surveyor*, or a Master-workman, that understands the Theory of Architecture, and is capable of Designing a *Draught*, or *Model*, according to the Rules of Art. If a *Draught* be resolved upon (which may serve indifferent well for small ordinary Buildings) there ought to be the *Ichnography* of each Floor, and also the *Orthography* of each Face of the Building, viz. The Front, the Flanks, and the Rear. But if the Workman be skill'd in Perspective, then more than one Face may be represented in one Diagram *Scenographically*.

In the *Contrivance* of these Designs, whether for *Draught*, or *Model*, the Quality of the Persons, for whom the Building is erected, must be considered, in respect of the *Ichnographical* Plots especially. For Noble-men have occasion for more Rooms of Office, than others of a meaner Degree; all which must be design'd according to their most convenient Occasions, with the lengths and breadths according to Proportion; also the *Ichnography* of all Chimneys, both in length and breadth of the Hearths, and Jambs, Bed-places, Stairs, and the Latitude of all Doors and Windows, in each Contignation, or Floor. And if it were required in Timber Buildings, the Longitude, Latitude, and Crassitude of Ground-plates, or Sells, Brest-summers, and in all (whether Timber, Brick, or Stone) Buildings, the Dimensions of Summers, Girders, Trimmers, and Joysts. Also in the upper Floor, the Scantling of the Draggon-beams, Raizons, or Raising-pieces, or Wall-plates, &c. And also the Crassitude of Partitions, Walls, &c. in Brick, or Stone-fabricks.

All which, and all other Parts (whether in the *Ichnography*, or *Orthography*) of Buildings, ought to be represented (as also Ovens, Stoves, Broilers, Furnaces, Coolers, Fats for Brewings, &c.) with their just Measures, for the best Advantage, as to Commodiousness, Health, Strength, and Ornament. All which Dimensions I would advise to be set in the proper Places to which they belong in the Diagrams, in Characters; because unless the Schemes be very large, it will be very difficult to take the Dimensions nicely, of the smaller parts, if not of the great ones likewise; it will scarce be practicable to take either of them to an Inch, nor perhaps, to 2, 3, nor 4, according as the Diagram may be in Amplitude.

In the *Orthographical* Schemes, there must be the true Deli-



neations, and Dimensions of each Face, and all its Concomitants, as *Doors, Windows, Balconies, Turrets, or Cupuloes, Chimney-shafts, Fascia's, Rustick Quoins, Architraves, Friezes, Cornishes, Pediments, Pilasters, Columns, Shells over Doors, Lantherns,* and all other *Ornaments.* And if it be a *Timber-building,* then all the *Members* in that *Face* ought to have their several *Sizes,* in *Characters,* and true *Positions* by the *Scale.* As for *Example,* the *Ground-plates, or Cells, Interduces, Brest-summers, Beams, Principal Posts, Braces, Quarters, Prick-posts, or Window-posts; Jamb, or Door-posts, or Puncheons, King-pieces, or Joggle-pieces, Struts, Collar-beams, Door-heads, Principal-ratters, Shreedings, &c.* The *Ichnography, Orthography,* and *Scenography* of the *Stair-case,* may be also delineated, and all its *Parts,* as *Hand Rail, Risers, Noseing of the cover, or top, String Board, and Mouldings on it, or Cartouses, Ballisters, Pendants, &c.* with their true *Positions, Forms,* and *Dimensions,* all which being carefully done by an ingenious *Surveyor,* I think 'tis almost impossible for a *Workman* to mistake, or to commit any *Blunders;* tho' to my knowledge they are too subject to do it. More of this *V. Draughts.* You shall next hear what *Sir H. W.* saith of this *Matter;* his *Precautions* are as follow, *viz.*

*First,* (saith he) Let no *Man* that intends to *Build,* settle his *Fancy* on a *Draught* in *Paper* (or *Vellum*) of the *Work* or *Design,* how exactly soever *Delineated,* or set off in *Perspective,* without a *Model,* or *Type* of the whole *Structure,* and of every *Parcel,* and *Partition,* either in *Past-board,* or *Wainot.*

*Secondly,* Let the *Model* be as plain as may be, without *Colours,* or other *Beautifying,* lest the *Pleasure* of the *Eye,* preoccupate the *Judgment.*

*Lastly,* The bigger this *Type* is, it is so much the better; not that I would perswade any *Man* to such an *Enormity,* as that *Model* made by *Antonio Labaco,* of *St. Peter's Church* in *Rome,* containing 22 *Foot* in length, 16 in breadth, and 13 in height, which cost 4184 *Crowns,* the *Price* of a reasonable *Chappel,* yet in a *Fabrick* of 40 or 50000 *Pounds,* there may be very well expended 30 *l.* at least to procure an exact *Model,* for a little *Penury* in the *Premises,* may easily create some *Absurdity,* or *Error,* of a far greater *Charge* in the *Conclusion.*

What *Sir H. Wotton* doth here caution, is very proper and requisite, in large and sumptuous *Buildings,* whether publick, or private; as for *Noble-men's Mansion-houses,* and the like, but it is not worth the while, to be at the *Trouble,* and *Cost* to procure a *Model* for every little *Dwelling-house* that *Men* Build for their own *Conveniency.*

Having thus given sufficient *Caveats,* I will next proceed to discourse of the *Compartition,* or *Contrivance,* whereby to distribute the whole *Ground-plot, &c.* into *Rooms* of *Office,* or *Entertainment,* as far as the *Capacity* of the *Building,* and the

Nature of the Climate will correspond, yea, so far as it may be both decent and useful. But in the mean while we are to consider, whether the Building be to be erected in a City, or great Town of Trade, and whether for a Gentleman, or a Shop-keeper, which is the chief thing to be considered of by the Surveyor, or Master-workman, before he makes his Draught. For a Gentleman's House must not be contrived like a Shop-keepers, neither must all Shop-keepers Houses be a like; for some Trades require a deeper, others may dispense with a shallower Shop, and so an Inconveniency may arise in both; for if the Shop be hollow, the Front Rooms upward ought to be shallow also; because by the strict Rules of Architecture, all Partitions of Rooms ought to stand directly one over the other: For if the Shop stands in an eminent Street, the front Rooms are commonly more Airy than the Back-rooms, and always more commodious for observing publick Passages in the Street; and in that respect it will be inconvenient to make the Front-rooms shallow; but if there be a fair Prospect backwards of Gardens, and Fields, &c. (which seldom happens in Cities) then it may be convenient to make the Back-rooms the larger for Entertainment, &c.

'Tis observed by some, that in Building of Houses long, the use of some Rooms will be lost, and it takes up more for Entries and Passages, and requires more Doors: And if a Building consist of a Geometrical Square, if the House be any thing large, there will be want of Light to the middle Rooms, more than if it be Built like an H, or some other such like Figure (unless it have a Court in the middle of it, which was the Method of Building great Houses formerly.) This way, like a Roman Capital H, is much applauded by some; for say they, this Form maketh it stand better, and firmer against the Winds, and Light, and Air come every way to it, and every Room is near the one to the other. Some affect this Figure very much, because the Offices may be remote from the Parlour, and Rooms of Entertainment; and yet in the same House, which may serve very well for a Countrey Gentleman's House: Now the Method which some propose for such Buildings, is thus, In the Front of one of the long parts of the H is the Kitchen, and the Bakehouse, Brew-house, and Dary-house, in the same part behind it; the Hall in the middle of the H, which separates the Parlours (which are in the other long part) and Rooms of Entertainment from the Offices.

I shall here add a cheap Contrivance in Building, approved of by some, and then proceed to Sir H. W. Method of contriving Noble Buildings.

Now this cheap way is thus, viz. Where Bricks may be had, the Walls of a Building may be best, and most securely raised with them, and with little cost, if there be firm and strong Quoins,

Quoins, or Columns raised at the corners of the House, of sufficient strength to support the Floors and Roof, or the main Beams of it; they may be built Square, and between them the Walls may be raised of the same Materials, and they may be worked up together with the Quoins, leaving the one half of the extraordinary breadth of the Quoins without, and the other within the Wall, whereby there will be much Charge saved, both in Materials, and Workmanship; and yet the Building be firm and strong.

According to Sir *H. Wotton's* Definition of *Contrivance*, it consists of these 2 Heads, or Principles, Gracefulness, or Decency, and Usefulness.

*Decency, or Gracefulness*, he also saith, consists in a double Analogy, or Correspondency. 1<sup>st</sup>. Between the parts, and the whole, whereby a great Fabrick should have great *Apartments*, great *Lights*, or Windows, great *Entrances*, or Doors, great *Stair-cases*, great *Pillars*, or *Pilasters*; in fine, all the Members, and Parts great, proportionable to the Building.

The second Analogy, is between the Parts themselves, not only considering their breadths, and lengths, as where we speak of Doors and Windows, which V. But here saith Sir *H.* enters a third respect of *Height*, a Point (saith he, I must confess) hardly reduceable to any general Precept. The Truth is, the Ancients did determine the *Longitude* of all Rooms which were longer than broad, by the double of their *Latitude*, *Vitruvius*, Lib. 6. Cap. 5. And the height by  $\frac{1}{2}$  the breadth and length added together, but when the Room was a Geometrical Square, they made the height  $\frac{1}{2}$  as much more as the Latitude, which Dimensions the modern Architects have taken leave to vary upon Discretion: Sometimes squaring the Latitude, and doubling that Square Number, the Square Root of that Number is the height, and sometimes more, but seldom lower than the breadth.

But what is here mentioned, I think is not now practised neither, unless it be in some Noble-man's House, who will have a Hall, or the like, higher pitch'd than the rest of the Rooms in the Building, and sometimes a Dining-room; or else for the most part, all the Rooms of a Floor are of an equal height; and in my Judgment, 'tis by far the most commodious-Method, because then there is no Room lost, (as there must be where one Room is open almost to the top of the House, as I have observed it in some old Buildings.) And then the Floor of the second Story will lie level and even, and not in the odd old Method of Steps, out of one Room into the other.

As to the height of *Rooms*, they are various amongst us, according as what Persons they are Built for, and Custom of the Place in the Country; ordinary Timber-buildings, are about 7  $\frac{1}{2}$ , or 8 Foot at most, betwixt Floors: The second sort of Hou-

ses in the Country, is about 9 Foot betwixt the Floors, which for the most part is the Pitch of their Rooms at *Tunbridge-wells*.

The third sort in the Country, (*viz.* in *Kent* and *Sussex*) are Gentlemen's Seats, which for the most part are 10 or 12 Foot high, such as are new Buildings: But 'tis common in old Stone-buildings to be much higher, *viz.* 14 or 16 Foot.

By *Act* of Parliament for the Building of London, there was reckoned 4 Rates of Houses, *viz.*

The  $\left. \begin{matrix} 1 \\ 2 \\ 3 \\ 4 \end{matrix} \right\}$  Rate  $\left. \begin{matrix} 2 \\ 3 \\ 4 \\ 5 \end{matrix} \right\}$  Stories, Cellars and Garrets.

The  $\left. \begin{matrix} 1 \\ 2 \\ 3 \\ 4 \end{matrix} \right\}$  Rates, Cellars in height betwixt Floor and Ceiling.  $\left. \begin{matrix} 6 \frac{1}{2} \text{ Foot.} \\ 6 \frac{1}{2} \\ 6 \frac{1}{2} \end{matrix} \right\}$  at the Discretion of the Builders.

The  $\left. \begin{matrix} 1 \\ 2 \\ 3 \\ 4 \end{matrix} \right\}$  Rate 1 Story.  $\left. \begin{matrix} 9 \text{ Foot.} \\ 10 \\ 10 \end{matrix} \right\}$  at Discretion, &c.

The  $\left. \begin{matrix} 1 \\ 2 \\ 3 \\ 4 \end{matrix} \right\}$  Rate 2 Story.  $\left. \begin{matrix} 9 \text{ Foot.} \\ 10 \\ 10 \frac{1}{2} \end{matrix} \right\}$  at Discretion, &c.

The  $\left. \begin{matrix} 1 \\ 2 \\ 3 \\ 4 \end{matrix} \right\}$  Rate 3 Story.  $\left. \begin{matrix} 9 \text{ Foot.} \\ 9 \\ 9 \frac{1}{2} \end{matrix} \right\}$  at Discretion, &c.

The  $\left. \begin{matrix} 3 \\ 4 \end{matrix} \right\}$  Rate 4 Story.  $\left. \begin{matrix} 8 \frac{1}{2} \text{ Foot high.} \\ \end{matrix} \right\}$  at Discretion, &c.

As to *Sir Hen. 2 d.* Point of *Contrivance*, *viz.* *Usefulness*, which will consist in a sufficient number of Rooms, of all sorts, and in their due and apt Coherence without *Distraction*, or *Confusion*; so as the Spectator may not only call it *una Fabrica ben racolta*; (as the *Italians* used to say of well united pieces of Work) but likewise that it may appear *Airy* and *Spirituos*, and fit to welcome chearful Guests; about which the principal Difficulty will be in

Contriving of the *Lights*, and *Stair-cases*, whereof I will give you a Note or two: For the 1<sup>st</sup>. I observe that the Ancient Architects were at much ease; for both *Greeks* and *Romans*, (of whose private Dwellings *Vitruvius* hath left us some Description) had commonly 2 *Cloyster'd open Courts*, one for the Womens side, and the other for the Men; who perhaps would now take such a Separation unkindly. However by this means they had a good conveniency, to admit Light into the Body of the Building, both from without, and from within, which we must now supply by some open Form of the Fabrick, or (among graceful Refuges) by Terrasing any Story, which is in danger of being too dark; or lastly, by Perpendicular Lights from the Roof, which are the most natural of all others. As to the second Difficulty, *viz.* Contriving of the *Stair-cases*, which is no hard Point in it self, the only thing in contriving them, is to make them handsome, convenient, and in as little room as may be, that they be no hindrance to any other Room, or Rooms. I have, (saith Sir *H. W.*) observed that the *Italian* Architects, are inclined to place the *Kitchen*, *Bake-house*, *Pantery*, *Washing-rooms*, and the *Buttery* likewise under Ground, level with the Cellar-floor, raising the 1<sup>st</sup>. Ascent 15 Foot, or more up into the House; by which Method, besides removing Annoyances out of sight; and having thereby much more room above. It doth also by the Elevation of the Front, add Majesty to the whole Aspect, and with such a Disposition of the Principal *Stair-case*, which commonly doth deliver us into the Plain of the 2<sup>d</sup>. Story, where Wonders may be done with a little Room: (I have observed, that they commonly place all their Rooms for Office, about 5 Foot under Ground at *Tunbridge-wells*, the 1<sup>st</sup>. Stories being about 8 Foot, and then the Lights or Windows to them, be just above the Ground without; but then you must note that these Houses always stand upon an Ascent, that they may have good Sewers to keep these lower Rooms drein'd dry from Water.) But the petty Offices (saith Sir *H.*) may be well enough so remote in *Italy*, yet by the natural Hospitality of *England*, the *Buttery* must be more visible, and we have occasion for larger Rauges, or Chimneys, and more ample *Kitchens* than the *Italians*, or than pethaps the aforesaid Compartment will bear; and likewise not so remote from the Dining-room, or else (saith he) besides other Inconveniencies, perhaps some of the Dishes may straggle by the way.

Here (saith Sir *H.*) let me note a common Defect that we have in our *English Buildings*, *viz.* The want, or neglect of a very useful Room, call'd by the *Italians* *Il Tinello*, 'tis very frequent, nay, almost essential in all their great Families.

'Tis a place properly appointed for a Conservatory of the Meat that is taken from the Table, till the Waiters are ready to eat, which with us is (according to an old fashion) more un-  
 seemly set by, in the mean time.

Now touching the distribution of *Lodging-chambers*, I must here presume to reprove an odd Custom they have in *Italy*, without any ancient Precedent, as far as I can learn by *Vitruvius*.

Namely, That they so contrive their Partitions, as when all the Doors are open on a Floor, one may see through the whole House, which doth necessarily put an intolerable Servitude upon all the Chambers, except the inmost, where none can arrive but through the rest; or else the Walls must be extream thick for secret Passages, and yet this will not serve the turn without 3 Doors to every Room; a thing not to be born with in cold and windy Regions, and every way no small weakning to the Work: This Custom I suppose to be grounded upon a fond Ambition of displaying to Strangers all their Furniture at one view.

There is likewise another Defect, (for Absurdities are seldom solitary) which will follow by consequence, upon such a servile disposing of the *Inner-chambers*. That they must be forced to make as many common great Rooms, as there shall be several Stories, which (besides that they are usually dark, a thing hardly to be avoided, running as they do quite through the House) do likewise devour so much Place, that thereby they want other Galleries and Rooms of Recreation, which I have often consider'd amongst them.

Having thus given some general Hints and Directions, and detected some Faults, the rest must be committed to the Sagacity of the Architect, who will be often put to diverse ingenious Shifts, when he is to wrestle with scarcity of Ground.

As sometimes to dam one Room (the *Italians* call it *Una Stanza dannata*, as when a *Buttery* is cast under a *Stair-case*, or the like) altho' of great use for the Beauty and Benefit of all the rest; at another time to make those fairest which are most in sight, and to leave the other (like a cunning Painter) shadowed. I will close this part (saith Sir *H.*) of Compartmention, with a short Description of a *Feasting, or Entertaining-room after the Egyptian manner*, who seem (at least till the time of *Vitruvius*) from the ancient *Hebrews*, and *Phœnicians* (whence all Knowledge did flow) to have retain'd with other Sciences in a high degree, also the Principles and Practices of this magnificent Art. For as far as I can learn, and conjecture by *Vitruvius*, lib. 6. cap. 5. there being no Form for such a Royal Use, comparably imagined like that of the aforesaid Nation; which I shall now proceed to explain.

Let us conceive a Floor, or Area of a good length (e. g. at least 120 Foot) with the Latitude somewhat more than  $\frac{1}{2}$  the Longitude (the Reason whereof shall be in its due place given) along the 2 sides and head of the said Room shall run an order of Columns, or Pillars, which *Palladio* doth suppose Corinthian.

an ones, supplying that Point out of *Greece*, because we know no Order proper to *Egypt*.

The other Head, or 4th. Side, I will leave free for Entrance: on the aforesaid Pillars, was laid an Architrave, which is only mentioned by *Vitruvius*; *Palladio* adds thereto (and not without Reason) both Frieze, and Cornice, over which went up a continued Wall, and therein  $\frac{1}{2}$  or  $\frac{3}{4}$  Pillars, answering directly to the Order below, but  $\frac{1}{4}$  part less, between these Columns above, the whole Room was Windowed round about.

Now, from the lowest Pillars; there was laid over a Contignation, or Floor, born upon the outward Wall, and the Head of the Columns with Terrace and Pavement, *sub dio*, saith *Vitruvius*, and so indeed he might safely determine the Matter in *Egypt*, where they fear no Clouds; therefore *Palladio* (who leaveth this Terrace uncovered in the middle, and Ballister'd about) did perhaps construe him rightly, tho' therein differing from others. We must understand a sufficient breadth of Pavement, left between the open part and the Windows, for the Pleasure of the Spectators that look down into the Room. The Latitude I have supposed a little more than  $\frac{1}{2}$  the length; because the Pillars standing at a competent distance from the outwall, will by Interception of the Sight, somewhat diminish the breadth in appearance; in which Case Discretion may be more Licentious than Art. This is the Description of an *Egyptian* Room for Feasts, and other Jolities. About the Walls whereof, we must imagine entire Statues placed below, and illuminated by the descending Light from the Terrace, and likewise from the Windows between the half Pillars above; so that this Room had abundance of Light, and besides other Garnishings, it must needs seem very stately to the height of the Roof that lay over 2 Orders of Columns.

Having thus far consider'd of the Lower parts of the Building, the House may now have his Hat put on; which point, tho' it be the last in this Art in Execution, (of any part of the bare Shell of the House) yet it is always the 1st. in Intention; for none would build but for Shelter: I shall now only deliver a few of the properest, and naturalest Considerations belonging to the Roof.

There are 2 Extrems to be avoided in the Cover, or Roof of a House, *viz.* That it be not too heavy, nor too light, the 1st. will be objected against the pressing too much the under Work; the other contains a more secret Inconveniency; for the Cover, or Roof, is not only a bare Defence, but likewise a kind of Band, or Ligature to the whole Fabrick, and therefore will require some reasonable weight; but of the two a House top heavy is the worst: Next, there must be Care taken to contrive an Equality of the Pressure of the Roof upon all the parts of the Edifice, *viz.* As much on one side, as it doth on the other. And here *Palladio's* Advice is very good, which is

this, *viz.* That the inward Walls may take their share of the Burden, and the outer ones be the less charged with it. *Thirdly*, The *Italians* are very careful in giving the *Roof* a graceful Pendency, or Slopeness, dividing the whole breadth of the Building into 9 parts, 2 of these Divisions shall be the Perpendicular to the Roof.

But in this Point the Quality of the Region is to be the Rule to walk by, as *Vitruvius* observeth; that those Climates that are subject to great Snows, ought to have sharper *Roofs* than other places, where they are not subject to the like Accidents; and in all places, Comeliness must yield to Necessity.

I will now add *Dr. T. F.*'s general Maxims, for Contrivance in Building, which are as followeth, *viz.*

Let not the common Rooms be several, nor the several Rooms be common.] (by which, I suppose he means (by what follows) that the common Rooms should not be private, or retired, nor the private Rooms common.) The *Hall* (which is a *Pandochæum*) ought to lie open, and so ought Galleries and Stairs (provided the whole House be not spent in *Paths, Chambers, and Closets*) ought to be private and retired.

*Light* (*God's eldest Daughter*) is a principal Beauty in a Building,] Yet it shines not alike from all parts of the Heavens. An *East window* gives the infant Beams of the Sun, before they are of strength to do any harm, and is offensive to none but a Sluggard. A *South-wind*, in Summer is a Chimney with a Fire in it, and needs to be skreen'd by a Curtain. In a *West-window*, in Summer-time, towards Night, the Sun grows low, and over familiar, with more Light than Delight. A *North window*, is best for Butteries, and Cellars, where the Beer will be sowre, because the Sun smiles on it. *Thorow Lights* are best for Rooms of Entertainment, and Windows on one side for Dormitories.

3. *Recelit.*] As for *Recelit*, a House had better be too little for a Day, than too great for a Year. And 'tis easier borrowing of thy Neighbour a brace of Chambers for a Night, than a Bag of Money for a 12 Month. It is Vanity therefore to proportion the *Recelit* to an extraordinary Occasion; as those, who by overbuilding their Houses, have dilapidated their Lands, and their Estates have been pressed to Death under the weight of their House.

4. *Strength.*] As for *Strength*, *Country-houses* must be *Substantives*, able to stand of themselves,] Not like *City-buildings*, supported by their Neighbours, on each side. By *Strength*, I mean such as may resist Weather and Time, and not Invasion, Castles being out of date in *England*, only on the Sea-coast. As to making of Motes round about a House, 'tis a question whether the Fogs that arise from the Water, be not more unhealthful than the Fish brings Profit, or the Water Defence.



In working up the Walls of a *Building*, do not let any Wall be worked up above 3 f. high, before the next adjoining Wall be brought up to it, that so they may be joyn'd together, and make good Bond in the Work. For there is an ill Custom used among some Bricklayers, to carry, or work up a whole Story of the Party-wall (meaning in *London*) before they work up the Fronts, or other Work adjoining, that should be bonded, or worked up together with them, which occasions Cracks, and Setlings in the Walls of the *Building*, which weakens it very much.

Sometimes the Strength of a *Building* is much impair'd, in the erecting of it, by reason the Master did not procure sufficient Stuff, or Materials, and Money before he began to Buil; for when Buildings are erected by Fits and Pauses, now a piece, and then another, the Work dries, and sinks unequally, whereby the Walls grow full of Chinks and Crevices; this pausing Humour is condemned by all Authors.

5. *Beauty.*] Let not the Front look a squint on a stranger, but accost him right at his entrance.] Uniformity and Proportion, much pleaseth the Eye, and 'tis observed that Free-stone, like a fair Complexion, soonest waxeth old, whilst Bricks keep their Beauty longest.

Let the Offices (saith Dr. T. F.) keep their due distance from the Mansion-house.] Those are too familiar which presume to be of the same Pile with it. The same may be said of Stables and Barns, without which a House is like a City without Works, it can never hold out long.

'Tis very inconvenient (and rather a Blemish, than a Beauty to a *Building*) to see the Barns and Stables too near a House, because Cattle, Poultry, and such like must be kept near them, which are an Annoyance to a House.

Gardens also are to attend in their place. When God (*Genesis* 2. 9.) planted a Garden Eastward, he made to grow out of the Ground every Tree, pleasant to the sight, and good for Food. Sure (saith the Dr.) He knew better what was proper to a Garden than those, who now a days therein only feed the Eyes, and starve both Taste and Smell. Let the Garden (saith Mr. Worlidge) joyn to one, if not more sides of the House, for what can be more pleasant and Beautiful for the most part of the Year, than to look out of the Parlour, and Chamber-windows into Gardens? For Beauty also let there be Courts or Yards kept from Cattle and Poultry, &c. and planted with Trees, to shade, defend, and refresh your House, and the Walls also planted with Vines, and other Wall-fruit, all which will add Pleasure and Beauty to your Habitation.

6. *Form or Figure.*] Figures are either simple or mixt; simple Figures are either Circular or Angular, and of Circular, either Compleat or Deficient, as Oval: The Circle is an unprofitable

Figure in private Buildings, being the most chargeable, and much room is lost in the bending of the Walls, besides an ill Distribution of the Light, except from the Center of the Roof, so as it is not used, only in Temples and Amphitheatres. The Oval, and other imperfect Circular *Forms* are subject to the same Exceptions, and are less Capacious.

Touching the Angular *Forms* or *Figures*, it is a true Observation, that this Art doth not love neither many Angles, nor few; 1<sup>st</sup>. the Triangle which hath of all the others, the fewest sides and corners, is of all others the most condemned, being indeed both incapable and infirm, and not easily reduced into any other Form, but that of it self in the inward Partitions: As for *Figures* of 5, 6, 7, or more Sides and Angles, they are fitter for Military than Civil Architecture; tho' there is a famous piece at *Capravola*, belonging to the House of *Farnese*, contrived by *Baraccio*, in the Form of a Pentagon, with a Circle inscribed, where the Architect did ingeniously wrestle with diverse Inconveniencies in disposing of the Lights, and in saving the Vacuities: But such Designs as these aim more at Rarity than Commodity, and are rather to be admired than commended. And therefore by the Precepts and practice of the best Builders, we resolve upon Rectangular Squares, as a mean betwixt too few, and too many Angles, and thro' the equal Inclination of the Sides (which make the Right Angle) stronger than the Rhomb, or any other Quadrilateral Figure; but whether the Quadrat, or Rectangle Parallelogram, be the better, is not yet well determined, tho' I prefer the latter, provided the length do not exceed the Latitude above  $\frac{1}{3}$ , which would much diminish the Aspect.

Of mixt Figures, partly Circular, and partly Angular; there is a proper Objection against them, *viz.* That they offend *Uniformity*. Of which (having here mentioned it) I will add something concerning *Uniformity*.

In *Architecture*, there seems to be 2 opposite Affectations, *Uniformity* and *Variety*; yet these seeming Opposites may be very well reconcil'd; as we may observe in our own Bodies, the great Pattern of Nature; which is very Uniform in the whole Figuration, each side agreeing with the other, both in Number, Quality, and Measure of the Parts: And yet some are round as the Arms, others flat, as the Hands, some prominent, and others indented or retir'd; so the Limbs of a noble Fabrick may be Correspondent enough, tho' they be various, provided we do not run out into extravagant Fancies, when we are contriving how to part and cast the whole work. We ought likewise to avoid enormous heights of 6 or 7 Stories, as well as irregular *Forms*; and the contrary of low distended Fronts is as unseemly: Or again, when the Face of a Building is narrow, and the Flanks deep.

III. *Of the Modern way of Building in England, compared with the Ancient.*] When I compare the Modern *English* way of Building with the old way, I cannot but wonder at the Genius of old Times. Nothing is, or can be more delightful, and convenient than height, and nothing more agreeable to Health than free Air. And yet of old, they used to dwell in Houses, most of them with a blind *Stair-case*, low Ceilings, and dark Windows; the Rooms built at random, (without any thing of Contrivance) and often with Steps from one to another. So that one would think the People of former Ages, were afraid of Light, and good Air; or loved to play at hide and seek. Whereas the Genius of our Times is altogether for light *Stair-cases*, fine *Sash-windows*, and lofty *Ceilings*. And such has been of late our Builders Industry, in point of *Compactness* and *Uniformity*, That a House after the new way will afford upon the same quantity of Ground as much more Conveniencies.

The Contrivance of *Closets*, in most Rooms, and *painted Wainscot*, now so much used, are also 2 great Improvements, the one for Conveniency, the other for Cleanliness and Health: And indeed for so damp a Country as *England* is, nothing could be better contrived, than *Wainscot* to keep off the ill Impression of damp Walls. In short, for handsome Accommodations, and neatness of Lodgings, *London* undoubtedly has got the Preheminence.

The greatest Objection against *London-houses* (being for the most part Brick) is their slightness, occasioned by the Fines exacted by the Landlords. So that few Houses at the common rate of Building, last longer than the Ground-lease, and that is about 50 or 60 Years. In the mean time, if there happens to be a long fit of excessive *Heat in Summer*, or *Cold in Winter*, the Walls being but thin, become at last so penetrated with the Air, that the Tenant must needs be uneasie with it; but those Extrems happen but seldom. And this way of Building is wonderful beneficial to Trades relating to it, for they never want Work in so great a City, where Houses here and there are always Repairing, or *Building* up again.

The *Plastered Ceilings* so much used in *England*, beyond all other Countries, make by their whiteness the Rooms so much Lightfomer, and are excellent against raging Fires. They stop the Passage of the Dust, and lessen the noise over head; and in Summer-time the Air of a Room is something the cooler for them, and in the Winter something the warmer, because it keeps out cold Air then better than the Board-floors alone can do.

IV. *Some general Rules, to be observed in Building.*] These following Rules were Established by *Act of Parliament*, before the Re-building of *London*.

*First*, In every *Foundation* within the Ground, add one *Brick* in thickness to the thickness of the Wall, next above the *Foundation*, to be set off in 3 Courses, equally on both sides.

*Secondly*, That no *Timber* be laid within 12 Inches of the fore-side of the *Chimney-jambs*.

*Thirdly*, That all *Joists* on the back of any *Chimney*, be laid with a *Trimmer*, at 6 Inches distance from the back.

*Fourthly*, That no *Timber* be laid within the *Funnel* of any *Chimney*, upon Penalty to the Workman for every Default 10 s. and 10 s. every Week it continues unreformed.

*Fifthly*, That no *Joists*, or *Rafters* be laid at greater distances from one to the other; than 12 Inches; and no *Quarters* at greater distance than 14 Inches.

*Sixthly*, That no *Joists* bear at longer length than 10 Foot; and no single *Rafters* at more in length than 9 Foot.

*Seventhly*, That all *Roofs*, *Window-frames*, and *Cellar-floors* be made of Oak.

*Eighthly*, That *Tile-pins* be of Oak.

*Ninthly*, That no *Summers* or *Girders* in Brick Buildings, do lie over the Heads of *Doors* or *Windows*.

*Tenthly*, That no *Summers* or *Girders* do lie less than 10 Inches into the Brick-work; nor no *Joists* less than 8 Inches, and that they be laid in Lome.

Some also advise that all *Tarsels* for *Mantle-trees* to lie on, or *Lintels* over *Windows*, or *Templers* under *Girders*, or any other *Timber* that must lie in the Wall to lay them in Lome, which is a great preserver of *Timber*; but *Mortar* eats and corrodes it. Some Workmen pitch the ends of *Timber* that lie in the Walls to preserve them from the *Mortar*.

V. *Of Surveying of a Building.*] I will here briefly touch upon the Method of *Surveying of Buildings*; by which the Manner and Form of taking Dimensions may be seen, which take as followeth.

A Survey of a Building Erected by R. M. for R. S. the thickness of the Walls (as by Agreement) Brick and  $\frac{1}{2}$ , at 3 l. per Rod, for Mortar and Workmanship, the Dimensions were taken as followeth.

	Foot. Parts.
1. The length of one side. From the Foundation to the Raising.	$\left. \begin{array}{l} \{ 40-50 \} \\ \{ 16-0 \} \end{array} \right\} 648-00$
2. The breadth at one end. The heighth to the Cross-beam.	$\left. \begin{array}{l} \{ 17-16 \} \\ \{ 16-50 \} \end{array} \right\} 283-14$
3. A Partition-wall within. Height to the 1 <sup>st</sup> . Story.	$\left. \begin{array}{l} \{ 17-16 \} \\ \{ 10-50 \} \end{array} \right\} 180-18$
4. The length of the other side. From an old Wall to the Raising.	$\left. \begin{array}{l} \{ 39-33 \} \\ \{ 7-00 \} \end{array} \right\} 275-31$
5. The breadth at the other end. From the Floor to the Cross-beam.	$\left. \begin{array}{l} \{ 17-00 \} \\ \{ 4-83 \} \end{array} \right\} 82-11$
6. A Water Table 30 Foot reduced to From the Foundation to the Table.	$\left. \begin{array}{l} \{ 7-50 \} \\ \{ 3-16 \} \end{array} \right\} 23-70$
7. A Setting off on the other side of the House.	$\left. \{ 16-83 \} \right\} 16-83$
8. A Gable-end.	$\langle 66-00 \rangle 66-00$
<hr style="width: 100%;"/>	
The Total Area, or Content of these Dimensions.	$\left. \right\} 1575-27$

*Particulars to be deducted.*

	F. P.	
1. One Door-case,	{ Broad—8—66 High —9—42 }	} 81—58
2. Another Door-case,	{ Broad—4—33 High —7—42 }	} 32—13
3. A Thlrd Door-case,	{ Broad—4—33 High —5—16 }	} 22—34
4. A Window-case,	{ Broad—4—50 Deep —4—50 }	} 20—25
5. Another Window-case.	{ Broad—4—5 Deep —4—5 }	} 20—25
The total of these Deductions.		176—55
Taken from the whole Content.		1575—27
There refts due to the Bricklayer.		1398—72

Which reduced into square Rods, is 5 Rods 38 Foot.

And then according to the Contract, there will be due to the Bricklayer 15*l.*—8*s.*—3*d.*

Thus far Mr. *Leybourn*: We will now see Mr. *Ven. Maudey's* Method of Surveying Buildings, and taking *Dimensions*; and setting them down in a Pocket-book.

2. Note, Before you begin to set down your *Dimensions*, it is convenient to divide the breadth of the Page or Feet, into so many several Columns as you think you shall have occasion for; either with Lines drawn with Ink, or a Pencil; your Pocket-book being about 4 n. broad, (which is one of the broader sized Pocket-books) you may then divide a Leaf into 4 Columns.

3. Before any *Dimensions* are set down, the Work-master's and Work-men's Names ought to be expressed; also the place where, the Day of the Month, and Date when you measure. I will suppose, for Example, That you were to measure Glazing; then observe if it were Glazed with Square-glass, you must write Squares above the *Dimensions*, and over those *Dimensions* which are appertaining to Quarry-glass (if there be any) you must write Quarries, that when you come to make the *Bill of Measure-*

surement, you may express them severally, because they are of several Prices.

4. The better to explain the Method, I will here insert a *Bill of Measurement of Glazing.*

Glazing done for C. D. in Long-acre, by T. G. of St. Martin's in the Fields; Measured October 17. 1702.

Quarries.			Products.			Squares			Products.			
F.	I.	P.	F.	I.	P.	F.	I.	P.	F.	I.	P.	
5—8—6	}		31—11—30			04—03—00	}		04—11—06			
5—7—3						01—02—00						
5—3—6	}		12—06—09			02—00—00	}		03—00—00			
2—4—6						01—06—00						
2—6—0	}	(3)	08—09—00			06—00—09	}		30—05—03			
1—2—0						05—00—03						
2—1—0	}	(2)	07—02—04			01—02—00	}	(2)	07—00—00			
1—8—6						03—00—00						
			60—5—11							45—04—09		

*An Explanation of the Columns.*

In the 1<sup>st</sup>. Column towards the left Hand, are the *Dimensions* of Glazings done with Squares; which you are taught to cast up in *Cross Multiplication*, which V. N. 2.

In the 2<sup>d</sup>. Column you have the *Product* of each *Dimension* just against it.

In the 3<sup>d</sup>. Column you have 4 *Dimensions* of Glazing done with Squares.

In the last you have the *Product* of each *Dimension* just against it also.

At the bottom of the 2<sup>d</sup>. Column, you have the Sum Total of the Products of the Dimensions done with Quarries, which is 60 Feet, 5 Inches, and 11 Parts.

Also at the bottom of the last Column, there is the Total Sum of the Products of those *Dimensions* of the Glazing that was done with Squares, being 45 f. 4 n. 9 p. As for the odd parts it signifies but little if they are left out in the Sum Totals of a *Bill of Measurement*, for it will amount to but very little in value.

5. N. B. When you are a taking of *Dimensions*, and setting them down in your Pocket-book, whether it be Glazing, or any other Tradesman's Work; you must observe to leave every other Column vacant, that so having set down all your *Dimensions* in your Book (which must be generally done, before any is cast up) when you come to cast them up (which must be in another Book, or a Sheet of Paper) you may enter the Product of each pair of *Dimensions*, just against them, as you see before.

6. If there be another to measure against you, and there should be a mistake in either of your castings up of the *Dimensions* (as it often happens thro' Security or Negligence) then one by reading over the *Dimensions* in his Book with the Product to each Dimension as he goes on, and the other looking in his own Book, the mistake will be soon discovered, which must be rectified between you.

Therefore to be certain in casting up your *Dimensions*, you ought to cast them up twice, if not 3 times, viz After you have cast them all over once, begin and cast them over again, and see whether it agrees with your 1<sup>st</sup>. casting up, if not, then cast them up again. When you make your *Bill of Measurement*, you must set your Name to it at the lower end of the Bill.

7. An Example of a *Bill of Measurement*.



*Glaziers Work done for G. D. in Long-acre, by T. G. of St. Martin's in the Fields; measured October 17. 1702.*

	l.	s.	d.
For 60 Foot 5 Inches of Glazing done with Quarries, at 5 d. per Foot.	01	05	1 $\frac{1}{4}$
For 45 Foot and 4 Inches of Glazing done with Squares, at 7 d. per Foot.	01	06	2 $\frac{1}{4}$
Sum Total	2—11—3 $\frac{1}{2}$		

*Measured the Day and Year above Written, by T. S.*

For the Satisfaction of the Curious, I will shew the Method of taking the *Dimensions of Bricklayers-work*, which is the most troublesome of any Mechanicks work (relating to Building) to measure.

8. Altho' I said before, that you might divide a Page or Leaf of your Measuring Book into 4 Parts, or Columns; yet in measuring of *Bricklayers-work*, it will be necessary to divide a Page into but 3 Columns, one large one for the Appellations, 2 smaller, one for the Dimensions, the other for the Products.

*As*

*As in this Example.*

<i>Appellations.</i>	<i>Dimensions.</i>	<i>Products.</i>
Basis of the Front and Rear.	$\left. \begin{array}{r} 3 \text{ B.} \\ \left\{ \begin{array}{l} \text{f.} \quad \text{n.} \\ 25-00 \\ 00-06 \end{array} \right\} \end{array} \right\} (2)$	$\begin{array}{r} 3 \text{ B.} \\ \left\{ \begin{array}{l} \text{f.} \quad \text{n.} \\ 25-00 \end{array} \right\} \end{array}$
Front and Rear.	$\left\{ \begin{array}{r} 2 \frac{1}{2} \text{ B.} \\ 25-00 \\ 11-00 \end{array} \right\} (2)$	$\begin{array}{r} 2 \frac{1}{2} \text{ B.} \\ 550-00 \end{array}$
Basis of both the Flank-walls.	$\left\{ \begin{array}{r} 2 \frac{1}{2} \text{ B.} \\ 36-02 \\ 00-06 \end{array} \right\} (2)$	$\begin{array}{r} 2 \frac{1}{2} \text{ B.} \\ 36-02 \end{array}$
Both the Flanks.	$\left\{ \begin{array}{r} 2 \text{ B.} \\ 36-02 \\ 11-00 \end{array} \right\} (2)$	$\begin{array}{r} 2 \text{ B.} \\ 795-08 \end{array}$
The Wall between the Chimney	$\left\{ \begin{array}{r} 1 \frac{1}{2} \text{ B.} \\ 11-06 \\ 09-10 \end{array} \right\}$	$\begin{array}{r} 1 \frac{1}{2} \text{ B.} \\ 113-01 \end{array}$
The falling back of both Chim.	$\left\{ \begin{array}{r} 1 \text{ B.} \\ 05-00 \\ 04-00 \end{array} \right\} (2)$	$\begin{array}{r} 1 \text{ B.} \\ 40-00 \end{array}$
The 4 Jamb.	$\left\{ \begin{array}{r} 2 \text{ B.} \\ 14-00 \\ 11-05 \end{array} \right\}$	$\begin{array}{r} 2 \text{ B.} \\ 161-00 \end{array}$
The fore part, or Brests of both Chimneys.	$\left\{ \begin{array}{r} 2 \text{ B.} \\ 11-06 \\ 5-00 \end{array} \right\} (2)$	$\begin{array}{r} 2 \text{ B.} \\ 115-00 \end{array}$

9. The *Dimensions* with their *Products*, being set down, in the next place the *Deductions* of the Windows and Doors must be put down, and their *Products*. V. P. of *Dimensions* in *Brick-work*.

*Deductions.*

	Deduct.		Prod.	
	2 ½ B.		2 ½ B.	
	f. n.		f. n.	
The 4 Windows.	$\left. \begin{array}{r} 06-06 \\ 04-00 \end{array} \right\} (4)$	(4)	104-00	
<hr style="width: 50%; margin: 0 auto;"/>				
	2 ½ B.			
The 2 Doors.	$\left. \begin{array}{r} 09-00 \\ 04-00 \end{array} \right\} (2)$	(2)	72-00	
<hr style="width: 50%; margin: 0 auto;"/>				

10. The next thing in order to be done is, to add the *Products* of each several thickness into one Sum.

*The Products of the several thicknesses.*

3 B. 25-00 <hr style="width: 50%; margin: 0 auto;"/>	2 ½ B. 550-00 36-02 <hr style="width: 50%; margin: 0 auto;"/>	2 B. 795-08 161-00 <hr style="width: 50%; margin: 0 auto;"/>	1 ½ B. 113-01	1 B. 40-00
	586-02	115-00	1071-08	

The several *Products* of each thickness being added.

In the 1<sup>st</sup>. Column on the left Hand there is 25 Feet of 3 B.

In the second 586, 2. of 2 ½ B. &c.

How to find these *Products* V. cross Multiplication. N. 2.

Having found the Total Sum of the *Products* of the *Deductions*; each Total Sum must be subtracted from the Total Sum of the *Products* of the *Dimensions*, that are of the same *Craffitude*.

*E. G. the Products of the Deductions in*

2  $\frac{1}{2}$  B.  
104—00  
72—00

The Total Product of Ded. in 2  $\frac{1}{2}$  B is 176—00

Which 176 Feet of 2  $\frac{1}{2}$  B. Work, being contain'd in the Windows and Doors; must be Subtracted from the 586 Feet, and 2 Inches, being the Total Product of all the *Dimensions* of that Craftitude, viz. 2  $\frac{1}{2}$  B. Work.

This is manifest to Reason.

Because when the *Dimensions* of the Front and Rear were taken; the whole length and breadth was taken over the *Doors*, and *Windows*, allowing nothing of abatement for them.

12. N. B. That whatsoever *Doors*, or *Windows*, or any other Vacancies, are measured over when the *Dimensions* are taken; you must remember to make Deduction for them out of the Total Product of the *Dimensions* of the same Craftitude wherein they were Situated.

To make it the plainer, take the following

### Example.

The *Doors* and *Windows*, being in 2  $\frac{1}{2}$  B. work, I set down the Total Product of all the *Dimensions* of that Craftitude which

The Total Product of all the *Deductions* of that thickness, which are to be Subtracted is, } 176—00

The Remainder is 410—02

The like Method must have been practised, if there had been any other *Deductions* in any other Craftitude; Substraction must have been made of all such *Deductions*, out of the *Products* of the *Dimensions*, before you went to reduce your several Craftitudes to the Standard thickness of 1  $\frac{1}{2}$  B.

But seeing we have no other *Deductions* in our present Example of a Survey; the next thing to be put in practice, will be to reduce the several Craftitudes to the customary thickness of 1  $\frac{1}{2}$  B. But I think it necessary to refer it to Walls, under the Head of Measuring them.

More of this Nature, viz. Of Surveying *Buildings*, or taking *Dimensions*, &c. may be seen under the different Heads of *Carpenters* work, *Joiners*, *Bricklayers*, *Plasterers*, *Masons*, *Painters*; *Thatchers*, &c.

VI. *Of mensuring Buildings*] Having briefly treated of taking *Dimensions*, &c. I shall here add but little under this Head of *Measuring*: only mention the Artificers relating to *Building* that usually work by Measure, which are 1 *Bricklayers*, 2 *Carpenters*, 3 *Plasterers*, 4 *Painters*, 5 *Glaziers*, 6 *Joiners*, and 7 *Masons*. Some of these work by the Superficial Yard, some by the Rod, some by the Square, and some by the Foot: Of all which Works the *Dimensions* are taken either with a 10 Foot Rod, or a 5 Foot one, or with a 2 Foot Rule, and sometimes with a Line. But let the *Dimensions* be taken how they will, they are usually set down in Feet, Inches and parts of Inches; or else in Feet and Centesimal Parts of Feet, which last way is easiest cast up; the following Table will shew the Centesimals.

*A Table of Centesimal Numbers, for every Inch, and quarter of an Inch in a Foot.*

Inches.	1 quarter of an Inch.				2 quarters of an Inch.				3 quarters of an Inch.			
	100 P. Foot.		100 P. Foot.		100 P. Foot.		100 P. Foot.		100 P. Foot.		100 P. Foot.	
0	. 00		. 02		. 04		. 06		. 08		. 10	
1	. 08		. 10		. 12		. 14		. 16		. 18	
2	. 16		. 18		. 2		. 22		. 24		. 26	
3	. 25		. 27		. 29		. 31		. 33		. 35	
4	. 33		. 35		. 37		. 39		. 41		. 43	
5	. 42		. 44		. 45		. 47		. 49		. 51	
6	. 50		. 52		. 53		. 55		. 57		. 59	
7	. 56		. 60		. 62		. 64		. 66		. 68	
8	. 66		. 68		. 7		. 72		. 74		. 76	
9	. 75		. 77		. 79		. 81		. 83		. 85	
10	. 83		. 85		. 87		. 9		. 91		. 93	
11	. 92		. 94		. 96		. 98		. 100			
1 Foot.	100											

To set any number of Feet, Inches, and Parts, as suppose 30 Feet, 8 Inches and 2 quarters, you must 1<sup>st</sup>. set down 30 Feet with a Period, or Comma after it, thus, 30, and then look in the 1<sup>st</sup>. Column of the Table for 8 Inches, and at the Head of the Table for 2 quarters, and then against 8 Inches, and under 2 quarters you will find 7; which set down beyond the 30 to the right Hand, and it will stand thus, 30. 7.

I shall not here stay to treat of the Method of Measuring all these Artificers Works, because they will be all treated of under their proper Heads. But shall now proceed to speak something.

VII. Of *Valuing Buildings*] To estimate the Charge of Erecting any House near the Truth, or to value one that is already built, so that you come something near the Matter, (provided it be built of Brick and Timber, as they usually build in *London*, and Gentlemen in the Country) there must be given.

(1.) The *Dimensions* thereof, not only in length and breadth, but also in height, in respect of the number of *Stories*: For,

(2.) By the length and breadth, the quantity of Squares upon each Floor may be found, and also the Squares of Roofing in the Carpenters Work, and also Tyling in the *Healers*, or Bricklayer's Work. And,

(3.) by the height, one may give a near Estimate of the Rows of *Brick-work*, contain'd in the Walls round about, and in the *Partition-walls*, if there be any; and also in the *Chimneys*: Then,

(4.) Consider how many pairs of *Stairs*, and of what sort.

(5.) What *Partitions* of Timber with Doors.

(6.) What *Timber Front*.

(7.) What number of *Window-frames*, and Lights.

(8.) What *Iron-work*; and

(9.) What *Lead*, &c.

Of all which V. the particular Heads.

Now saith Mr. *Leybourn*, what will be the Charge of Erecting a Fabrick of Brick-walls and Timber, which shall be 20 Foot in Front, and 44 Foot deep (which is the Method in *London* (and I believe in most Cities, &c.) for the Front to be shorter than: the Flanks) and to consist of Cellars, 3 Stories, and Garrets which is one of the 2 *d.* Rate Houses. We will suppose the Price of Materials to be as followeth, (in *London*,) viz.

	l.	s.	d.
Bricks per Thousand. —————	00	16	00
Tiles per Thousand. —————	01	05	00
Lime per Hundred. —————	00	10	00
For Sand per Load. —————	00	03	00
Oak, or Fir Timber per Load. ———	02	15	00
Deal-boards per Hundred. ———	07	10	00
Latins per Bundle. —————	00	01	08

As

*As for the Plaisterers Work.*

For	}	Lathing, Plaistering, Rendring and	_____	}	00—01—02
		and Washing with White and	_____		
		Size, per Yard.	_____		
		Lathing and Plaistring per Yard.	_____		00—00—10
		Plaistring and Sizing, per Yard.	_____		00—00—06

*Smiths Work.*

For	}	Iron Balconies, per lb.	_____	_____	00—00—05
		Folding Casements, per Pair.	_____	_____	00—16—00
		Ordinary Casements, per Piece.	_____	_____	00—04—06

*For Painting.*

Window Lights	_____	_____	_____	00—00—06
Shop Windows, Doors, Pales, per Yard.	_____	_____	_____	00—01—00

Now,saith he, from these Rates of Materials for Building, and for Workmanship : such a House as is here proposed, will amount to about 360 Pounds, which is near 41 *l.* per Square.

Now Mr. *H. Phillips*, proposes the following Method to find the value of a *Building* : viz. Suppose, saith he, a House, which is 1 Rod or 16 *f.* in Front, and 2 Rods deep back in the Flanks ; the Compass of this House will be 6 Rods, and if this House stands in a high Street, having a Cellar, 4 Stories, and a Garret, (which is one of the 3 *d.* Rate Houses) the height thereof will be 50 Foot, or 3 Rods ; so that there will be 18 Rod of *Brick-work* in the Walls ; which may be all reduced to a Brick and  $\frac{1}{2}$  thick, and suppose each Rod of *Brick-work* to contain 4500 of Bricks, and will cost about 7 *l.* the Building, viz. Bricks, Mortar, and Workmanship ; then the whole 18 Rods of *Brick-work* will cost about 126 *l.* The Timber-work for Floors, Windows, Roofs, &c. about as much more ; the Tiling, Plaistering, Lead, Glazing, and Painting, will be about as much more so that the whole will amount to 378 *l.* the allowance for the *Party-walls* will very well pay for the Chimneys. So that this House cannot amount to above 400 *l.* the Building, which is not full 73 *l.* per Square ; but this is a very great Price, in comparison of Mr. *Leybourns*, but he saith that it will be worth more or less, according to the Market-price of the Materials.

The *Friendly Society* of London, for Insuring of Houses, have 2 Rules by which they value Houses, viz. either by the Rent, or the number of Squares contain'd on the Ground-plot. This

last is the general Rule by which they value all *Buildings*, which is grounded on an Act of Parliament for the Re-building the City of *London*, made about *Anno 18. Car. 2.*

The *Buildings* of the City of *London* are valued according to their *Rates*, of which *Rates* there are 4, *viz.*

1st. Rate 2	} Stories, Cellars, and Garrets.
2 ——— 3	
3 ——— 4	
4 ——— 5	

And the naked *Building*, or Shell of a Brick-house (the Floors being finished) is thus valued by the Square of 100 Foot, if in high Streets. *viz.*

1st. Rate at 25 l.	} Per Square.
2 ——— 35 l.	
3 ——— 45 l.	
4 ——— 50 l.	

But these *Rates* may be augmented at the Discretion of the Surveyor, or according to the finishing of the *House*. I shall not now insist any longer on this Head, but defer it till a better Opportunity: V. something more of this nature: *House*.

VIII. *Of Censuring Buildings*] I shall here draw towards a Conclusion of this Head, with Sir *H. W.* Methodical Directions, how to *Censure*, or pass ones Judgment on *Fabricks* already erected; for without some way to contract ones Judgment, it will be confounded amongst so many Particulars as a *Building* consists of. I should therefore think it to be (almost) a harder Task, to be a good *Censurer*, than a good Architect: because the *working* part may be helped by deliberation, but the *Censuring* part must flow from an *Extemporal* Habit. Therefore (not to leave this last Part, or Head without some Light) I could wish him that comes to examine any noble (or great) Work. 1st. of all to examine himself, whether the sight of many fine Objects, which he hath seen before, (which remain like impressed Ideas on the Brain) have not made him apt to think that nothing is good, but that which is the best, to be thus affected, would relish too much of a *Cynical* Humour.

Next before he comes to give his Opinion concerning the *Edifice*, let him endeavour to inform himself precisely of the Age of the *Fabrick*, upon which he is to give his Sentiments or Opinion. And if he shall find the visible Decays to exceed the Proportion of time it hath been built, he may then safely conclude, without making farther inquiry, that the *Materials* were bad, and too slight, or the Seat is nought, *viz.* Posited on a bad Soil



Soil for Foundation, or exposed too much to a Tempestuous, Corrosive Air, &c.

Now after these Premises, if the House be found to bear his Years well, (which is always a sign of a good Constitution.) Then let him suddenly run backwards (for the Method of *Censuring* is contrary to the Method of *Composing*) from the *Ornaments* (which 1st. allure the Eye) to the more Essential *Members*, till at last he be able to form this Conclusion, that the Work is *Commodious, Firm and delightful*: which are the 3 capital Qualities requisite in good *Buildings*. And this (as I may term it) is the most Scientific way of *Censuring*.

But there are two other things which I must not forget. The 1st, (out of *Georgio Vassari's* Preface before his Labourious Work of the Lives of *Architellts*) is to pass a running Examination over the whole Edifice, according to the Properties of a well shapen Man; as whether the *Walls* stand upright, upon a good Foundation; whether the *Fabrick* be of a comely *Stature*; whether for the *breadth* it appear well *burnished*; whether the principal *Entrance* be in the middle of the *Front*, like our Mouths; whether the *Windows*, as our Eyes, be set in equal number, and distance on both sides the *Entrance*, &c. Whether the *Offices*, like the Veins in our Bodies be conveniently distributed, &c. For this Allegorical Review, may be driven as far as any wit will, that is at leisure.

The second way, is in *Vitruvius, Lib. 1. Cap. 2*. Where he briefly determines six *Considerations*, which accomplish this whole Art, *viz. 1. Ordinatio. 2. Dispositio. 3. Eurythmia. 4. Symmetria. 5. Decor. And 6. Distributio.*

The 2 first of these may be very well spared or omitted; for as far as I can perceive, either by his Interpreters, or by his own Text, (which in that very place, where perhaps he ought to have been clearest, he is most obscure) he meaneth by *Ordination*, nothing but a well settling of the *Model* or *Scheme* of the whole Work. Nor by *Disposition*, he meaneth no more than a neat and full Expression of the 1st. Idea or Designment thereof, which perhaps does more immediately belong to the Artificer, rather than to the Censurer. The other 4 are sufficient to condemn or approve (or absolve) any *Fabrick* whatever. Wherefore

*Eurythmia*, is that agreeable Harmony between the breadth, length, and height of all the Rooms of the *Fabrick*, which is very pleasing to all Beholders; which is always so to all by a secret Power which is in proportion: Where, let me note this, that tho' the least Error or Offence that can be committed against the sight, is excess of height, yet that Fault is no where of small Importance, because it is the greatest Offence against the Purse.

*Symmetria*, is a due proportion of each part in respect of the whole; whereby a great *Fabrick* should have great *Apartments* or *Rooms*, great *Lights*, or *Windows*, great *Entrances* or *Doors*, great *Stair-cases*, great *Pillars* and *Pilasters*, &c. In fine, all the *Members* and *Parts* large, proportionable to the *Building*. For as it would be but an odd sight to see a great *Man* with little *Legs*, *Feet*, *Arms*, *Hands*, &c. So also it would be undecent to see a great *Fabrick* consist of little *Apartments*, *Lights*, *Stair-cases*, *Entrances*, &c. So on the other hand, as it is strange to see a little *Man* possess of great *Members*, and *Limbs*, it is also every whit as unseemly to see a *Fabrick* that is but small, to be contrived into great *Rooms*, to have great *Stair-cases*, large *Entrances*, *Lights*, &c. But again, as it is an unbecoming sight, to see either a great or little *Man* to have some of his *Members* proportionable to his *Body*, and other some so large as if they did belong to a *Monster* or *Giant*, and not to him to whom they are affixt: So it is equally as ugly to see a little *House* or *Edifice*, to have some of its parts monstrous also, viz. great in some parts of the *Apartments*, and by consequence others must be as little, or some must be annihilated; and so by consequence, will be wanting; or great *Stair-cases*, great *Windows*, great *Doors*, or any other *Members* larger than they ought to be, in respect of the *Symmetry* of the *Parts* with the whole. It's likewise unseemly to see some of the *Parts* too little, (that they are not proportionable to the whole *Structure*) as to see a *Man* have one very small *Leg*, and the other proportionable to his *Body*, or to have one little *Eye* like a *Bird's*, and the other like (what it should be) a *Man's*, &c. Thus we see there are many *Errors* which may be committed, (for want of a due *Consideration*, and *Premeditation*) in the proportion of the *Parts*, &c. of a *Building*, and this is too often too well known to some *Gentlemen* that are *Builders*, when they light on *Workmen* that are unskilful in the *Rules* of *Proportion*, and the *Theory* of *Architecture*, and such *Men* very often run themselves into a grand *Error*; so that they are almost confounded in their *Business*, and know not well which way to wind themselves out of it again; and being thus wandered from the right *Road*, (for want of this necessary *Knowledge*,) they still blunder on in the dark, not knowing a better way than their old in-artificial one; till they have finished their *Course*: viz. Completed, or rather (which is more proper) concluded, their *Building*; according to their way of *Working* by *Guess*: and these *Guessing* *Workmen* too often guess wrong, and commit many *Faults*, which are easily detected, by any one, that has but a little skill in judging of a *Buildings* *Symmetry*, &c. Besides their conceal'd *Crimes*, which such *Men* are very subject to commit, viz. (I mean) their cutting, mangling, and spoiling their *Master's* *Materials*, when they work upon his

Stuff

Stuff, as they generally do in the Country: Sometimes you may observe in your Course of *Censuring*, a Door, or Chimney so misplaced, either to the right or left, so as to spoil the intended use of a Room, and tho' it be not totally spoiled, yet it seems as if the Artificers, (or Surveyor) wanted Instinct as well as Reason, that they could not contrive so well as *Beavers*, and other Brutes which build their own Houses, convenient for their Occasions. Perhaps sometimes you may observe a Chimney so situated in the Angle of a Room, (tho' design'd for Conveniency, because it could not well be carried up otherwise from the Chimney below it) yet this Chimney shall spoil the intended use (in some measure) of 2 Rooms, (*viz.* that in which the Chimney is, and the next adjoining to the Chimney-jamb) thus I knew one that did observe 2 Chambers in a great measure thus spoiled; the Chimney was set in the Angle of the inner one, and the Door came into it from the Chamber without, just by one Jamb, the which Jamb (and by consequence, that whole Chimney was carried a Foot too far out in the Room, (which they might as well have carried farther the other way) and by this means the Door was placed too far toward other the Wall of the Rooms, so that the Partition-wall by this means was made so short betwixt the other Wall and the Door (at the Chimney-jamb) that it was thereby rendred unfit to place any Beds against it; altho' it was the most becoming Place for Beds in the Rooms: Sometimes little sneaking ill-contrived *Stair-cases* are built in a good comely large *Structure*, and then again on the contrary, some small (or at most but middling) Houses, shall have a *Stair-case* so large in 'em that if you were *ist.* to have seen the *Stair-case*, before you had seen any of the other Apartments, you might well conjecture, that the Rooms of that Fabrick (to be in proportion with the *Stair-case*) to be twice, or 3 times as large again as they are. Nay, perhaps, this is not all the Error neither; for these random Workmen, do so manage the matter, that they spoil the Conveniencies of Closets under them, (or any other Conveniency) tho' it be now Alamode to make some little Conveniencies under a *Stair-case*; for *Closets* are accounted an Improvement in our modern Way of *B.i'ding*: Sometimes you may observe, an ill Position of *Lights* (or *Windows*) to a *Stair-case*, not out of necessity, but thro' want of Skill and Precaution. Again, as to *Lights* (or *Windows*) you may sometimes in your Viewings observe an ill Position (as well as an irregular Disposition in them) *viz.* either in respect of Uniformity, or to secure them from the Weather (I mean by this last, when they are placed too near the Surface of the Building, that the Walls do not project beyond them, the better to carry the wet from them which run down by the Walls in stormy Weather. And then, as to Uniformity in *placing* them, it

Sometimes so happens, that they cannot place the Windows on the Garrets exactly over those in the Stories below ; and therefore when they will not be brought into Uniformity with those below them, they ought to be placed as Uniform as may be within themselves. What I am now speaking of, hath been observed in a *Fabrick*, which stood in the Form of a Roman Capital L, having 2 Fronts on the out-side of the L, confronting 2 Streets which cross'd one another at Right Angles; the Foot, or short part of the L in the *Fabrick*, was not so wide but it might be spann'd with one Roof, but the long part was too wide to be spann'd with one Roof (unless it had been carried up a vast deal higher than the other part, which would have then rendered it very unseemly) and therefore 3 Roofs were set on the long part of the L, parallel with that on the short part, so that there was 3 Gutters, and 4 Gable Heads on that Front which was the long part of the L, and in each of these Gable heads there was a Window ; now according to the Divisions of the Apartments in the Stories below, the Windows in them would not fit to be placed (none of them) perpendicular under the middle of these Gables, the Artificer thinking to make it something nearer to Uniformity, places  $\frac{3}{4}$  of these Windows all towards (nay, very near) one side of the Gables, pretending they were nearer directly over the others, no doubt ; and therefore in his judgment it's nearer to Uniformity ; whereas in truth it's farther from it, for by this means they are not in a Uniform Position, neither in respect of those in the Stories below them, nor yet within themselves, which last they would have been, had they been placed in the middle of each Gable, and would have been more decent and comely, in respect of the Front without, and the Rooms within : For Lights being thus disorderly posited, makes it look all a squint, and as deformed (almost) as to see a Man have an Eye in his Temples. Nay, I could instance in other things, concerning placing of Lights, or Windows, *viz.* of misplacing them, in respect of Altitude, like the Eyes of some Monsters (mentioned by *Peter Lampagneus*) which were seated in the Shoulders, and Breasts, nay, I think almost in the Knees, or Feet, as it hath been observed by some in some parts of some *Fabricks*. But these are the Effects and Blunders of working without the Assistance of Forcasting, and Contriving according to Art. And lastly, (for I will not trouble you any longer at present, concerning *Symmetry*) you ought to observe whether Doors have their due *Symmetry*, as to their Dimensions, as well as Positions, *viz.* that they be not too high, as if they were for a Barn, nor too low, as if they were made for Houses in *Sophia* in *Bulgaria*, where both *Jews* and Christians have their Doors of their Houses but a little above 3 Foot high, which is so contrived, because the *Turks* should not bring in their Horses, which they would do, and make use of them for Stables ; in their Tra-

vels, if it was not for this Contrivance. In fine, my Meaning is, that these, as well as all other Parts of a *Building*, ought to be Analogous to the rest of the *Fabrick*. I shall now proceed to speak of

*Decor.* It is the keeping of a due Respect between the *Inhabitant*, and *Habitation*. Whence *Palladio* did conclude that the principal *Entrance* was not to be regulated by any certain Dimensions, but by the Dignity of the Master; yet to exceed rather in the more, than in the less, is a Mark of Generosity, and may always be excused with some noble Emblem, or Inscription, as that of the *Contè di Bevilacqua* over his Gate at *Verona*, where 'tis likely there had been committed a little Disproportion.

*Patet Janua: Cor magis.*

*Distributio*, is that useful Casting (or Contriving) of all Rooms for *Office*, *Entertainment*, or *Pleasure*, of which I have sufficiently treated before under this Head of *Building*, Num. II. §. 2.

These are the 4 General *Heads* which every Man ought to run over before he pretends to pass his Judgment upon the *Building*, or undertake to *Censure* the Work that he shall view.

I shall conclude this last Head, touching *Ornaments*; against which (me thinks) I hear an Objection, even from some well meaning Man; that these delightful *Crafts*, or *Arts*, may be various ways illapplied in a Nation. I must confess indeed, that there may be a Lascivious, and likewise a Superstitious Use, both of *Pictures*, and *Sculpture*: To which Possibility of Misapplication, not only these *Semi-liberal Arts* are subject, but even the highest Perfections and Endowments of Nature. As *Beauty* in a light Woman, *Eloquence* in a mutinous Man, *Resolution* in a Russian, prudent *Observation of Hours*, and *Humours*, in a corrupt Courtier, *Sharpness of Wit*, and *Argument* in a seducing Scholar, and the like. Nay, finally, let me but ask, what Art can be more pernicious, than even *Religion* it self, if it be converted into an Instrument of Art. Therefore, *Ab abuti ad non uti, negatur consequentia.*

IX. I shall finish this Head of *Building* with that Conclusion of Dr. T. F. In *Building* (saith he) rather believe any Man, than an Artificer in his own Art for Matter of *Charges*, especially if either he, or any particular Friend of his, be like to be concerned about that *Fabrick* which you design to erect; not but that they can tell nearly the Charge, when they know the *Design*, viz. Some ingenious Workmen, but there is but few of them in the Country, that truly understand the Method of valuing a *Building*, and those that do, if they are like to have any hand in it, it is very rare if they will give a just Estimate of it according to their Judgment; because they think if they should

acquaint the *Builder* with the full cost at 1*st*. it would blast a young *Builder* in the Bud, and therefore they sooth him up till it hath cost him something to confute them.

The *Spirit of Building* 1*st*. possessed People after the Flood, which then caused the Confusion of Languages, and since of the Estate of many a Man. I have known some Persons that would curse those with whom they were angry (if they were Men capable of it) by wishing that the *Spirit of Building* might possess them.

### *Butment.*

Is a Term used by *Masons*, and *Bricklayers*, by which they mean the *Supporters*, or *Props*, on, or against which the Feet of *Arches* rest.

### *Buttery.*

1. *What.*] In *Noble-men's*, and *Gentle-men's Houses*, 'tis the Room belonging to the *Butler*, in which he disposes all his Utensils, belonging to his Office, as his *Napkin-press*, *Table cloth*, and *Napkins*, *Pots*, *Glasses*, *Tankards*, *Monteth*, *Cisterns*, *Cruets*, *Salvers*, *Pepper-boxes*, *Sugar-box*, *Mustard-pot*, *Spoons*, *Knives*, *Forks*, *Voider*, or *Basket*, and all other *Necessaries* appertaining to his Office.

2. *Of its Position.*] According to *Sir Henry Wotton's Rule*, it ought to be placed on the *North* side of the *Building*, that is design'd for the *Offices*. It is generally with us in *England* placed near the *Cellar*, viz the Room commonly just on the top of the *Cellar-flairs*.

### *Bullen nails.*

1. *What.*] Are a sort of *Nails* with round *Heads*, and but short *Shanks*, *Tin'd*, and *Lacker'd*; I think there is about 3 *Sizes* of 'em.

2. *There Use.*] They are used in hanging of *Rooms*, and fitting up of *Beds*, covering of ordinary *Stools*, *Chairs*, *Couches*, *Desks*, *Coffins*, &c.

### *Buttress.*

1. *What*] A Term in *Architecture* used to signifie a *Prop*, or *Support*, either of *Brick*, or *Stone*, set to keep the *Work* the firmer in its *Position*, as against *Brick*, or *Stone-walls* that are high, or have any considerable weight against them on the o-  
ther

ther side, as a Bank of Earth, or the like; they are also used against the Angles of Steeples, Churches, and other Buildings of Stone, &c. On their out-side, and along the Walls of such Buildings, as have great and heavy Roots, which would be subject to thrust the Walls out, if they were not thick, if there be no *Buttresses* placed against them; *Buttresses* are also commonly placed for a Support, and *Butment* against the Feet of Arches, that are turned cros some great Halls, in old Palaces, Abbeys, &c. And generally at the Head of Stone-buildings where there are great Crocket-windows, there are for the most part, *Buttresses*, placed for *Butments* to the Arches of these Windows. As to the Theory of *Buttresses*, or *Butments*, I never yet could see any thing of it. 'Tis my Thoughts, an Ingenious, Sagacious, and prying Architect, that is well grounded in the Mathematicks (and would but take the trouble upon him, throughly to examine this Matter) he might bring it within the Bounds of Reason, and Rules; whereby to know nearly of what Size, and (by consequence) what weight a *Buttress*, or *Butment* ought to be (which you must note must be various) according to the Dimensions, and Form of the Arch, and the weight which is super-incumbent on it. As to the weight of the Materials, both on the Arch, and in the *Buttress*, or *Butment*, 'tis no difficulty to calculate: But perhaps it may be here objected, there is a sensible difference as to the strength, and goodness of the Mortar, which may in a great measure compensate for the weight of the *Buttress*, or *Butment*; for where there is a strong firm Mortar made use of, less Weight (or Magnitude) of Brick, or Stone, shall be capable to resist the Pressure of an Arch, with its Super-incumbent Materials; than where the Mortar is bad and feeble. To which I answer, I could very well experiment the strength of Mortar, both as to a direct, or oblique Force, *viz.* Either shoving it out of its Position, or pulling it the shortest way from its Adherents, by which I mean lifting directly up. I think it may also be feasible (and I am sure it would be useful) to make Experiments, to try what *Butment* would be requisite for Arches of any Dimension, or Form, whether Straight, Semicircular, Skeen, or Schem, or of the 3<sup>d.</sup> or 4<sup>th.</sup> Point, or Elliptical, &c.

The Ingenious Dr. *Hook*, Reader of Geometry in *Gresham-colledge*; hath promised in his Treatise of Helioscopes, to Publish something of this Nature; but if ever he did do it, I have not been so fortunate, as ever to see it, or hear of it, but only in that Treatise; what he there promised, was as follows, *viz.* A true Mathematical, and Mechanical Form of all manner of Arches, with the true *Butment* necessary to each of them. A Problem (saith he) which no Architectonick Writer hath ever yet attempted, much less performed.

A Treatise of this nature, would be extream useful to the Publick: For the want of a certain Rule in Arching, with its  
 need-

necessary *Butment*, hath too often proved the ruin of some *Structures*, which have been no small Charge; of which I could give an Instance from my own Observation but very lately, which is of a large Stone-bridge, which was no small Charge, to 2 Countries to erect, not above 10 or a dozen Years ago, which is already so intolerably gone to decay, that it is almost ready to fall, and must be Re-built again in a little time; for some of the Arches are forced to be proped with many pieces of Timber; the chiefest Fault that I could ever yet observe (but I did never make any strict search into it, but only as I rode over it) seems to me, to be want of a good and firm *Butment*, for the Materials did not seem to me to be the Cause of the Defect in the Work. I have only one thing more to add concerning *Buttresses*, and that is something of the value of such Work.

2. *Of the Price of Building Buttresses.*] As to the Method of putting out such Work, if it be not done by the Day, it is commonly done by the Cubick Foot. A Gentleman that had an occasion for 2 Buttresses to be built against an old Stone-building, desired me to discourse with his Workman about it, and to put it out by Measure to him; when he and I came to treat of the Matter, I found he knew not well what to say about it, at last he told me he would do it for 5 *d.* per Foot Cubick, viz. For Workmanship only, it being a sort of Work, that neither he nor I ever knew put out by the Foot; and therefore after a little considering the Work, I told him I did think less than  $2\frac{1}{2}$  the Price would be sufficient, and therefore we came to no Conclusion at that time; and before I should see him again, I knew how to inform my self from a new *Buttress* which was built by the Day (by 2 good Workmen) of 5 f. square, and 12 high: When I had found the Solidity of this *Buttress*, I found that according to their Days Works, it came to about 2  $\frac{1}{2}$  *d.* per f. and this I reckon to be a top Price; because the Workmen are taken to be torpid Operators, and the work was also very well done; upon which Account for 1  $\frac{1}{2}$ , or 2 *d.* per f. as I find by Observation (from the Quarry-stones at 5 *s.* per Load, Lime 25 *s.* for 32 Bushels, Sand at 1 *s.* 6 *d.* for 12 Bushels to a Load) that such Work, Materials, and Workmanship may be done for 6 *d.* or 7 *d.* per f. Cubick.

### *Cabinet,*

**S**trictly taken, is the most retir'd Place in a House. But a Cabinet in Palaces, and great Houses, consists of an Outer-chamber, an Anti-chamber, and a Cabinet with a Gallery on the side.



*Caliducts,*

*I. e.* Conveyers of Heat. The Ancients used to warm their Rooms with certain (secret) Pipes (call'd *Caliducts*) that were convey'd in the Walls, transporting Heat to sundry Parts of the House, from one common Furnace.

*Camber-beam.*

A Piece of Timber cut Arching (or with an obtuse Angle) in the middle. Camber-beams are commonly us'd in Platforms, as Church-leads, &c. And in other Cases where there is occasion for long Beams, a Camber-beam being much stronger, than another of the same size; for he being lay'd (as they generally are) with the hollow side downwards, and having good Eutments at the ends, is a kind of an Arch.

*Cames.*

The small slender Rods of Cast-lead, of which the Glaziers make their turn'd Lead. For their Lead being cast into slender Rods of some 12 or 14 Inches long each, is call'd the *Came* (and sometimes they call each of those Rods a *Came*) which being afterwards drawn through their Vice, makes their turn'd Lead. V. Lead. N. 10.

*Camerated.*

Vaulted or Arched.

*Cant.*

A Term us'd by some Carpenters, when a piece of Timber comes the wrong way in their Work, they say *cant* it, *i. e.* turn it about.

*Cantalivers.*

1. *What.*] Several Ancient and Experienced Work-men tell me, That they are the same as *Modillions*, only those are plain, but these are carv'd. They are both a kind of Cartouzes, set (at equal distances) under the *Corona* of the *Cornish* of a Building.

2. *Price of making*] Mr. *Leybourn* says, They are commonly made by the Piece, at different Rates, according to the Curiosity of the Work. And experienced Workmen tell me, They have commonly 2 s. 6 d. for making and carving of each. But in *London* they will carve them for 1 s. 8 d. each.

3. *Price of Painting.*] Mr. *Leybourn* says, They are commonly Painted by Tale, or so much per Piece, according to the Colour they are laid in.

### *Cantaliver-cornish.*

1. *What.*] Is such a Cornish as has Cantalivers under it.

2. *Price.*] Mr. *Leybourn* says, They are commonly made by the Foot, running Measure [*i. e.* by the number of Feet, in length only] at different Rates, according to the Curiosity of the Work. And experienced Workmen tell me, That they commonly have 1 s. per Foot for the Cornish, it being plain without any Carving in it, and with the Cantalivers, about 3 s. 6 d. per Foot.

### *Canting Stairs.*

#### V. Stairs.

### *Capital.*

1. *What.*] The Ornament that is made on the top of a Column.

2. *Tuscan.*] According to *Vitruvius*, the height of the Tuscan Capital (by the Astragal at the bottom) must be half the Diameter of the Body of the Column below. And this height being divided into 3 Parts, the first, and uppermost part goes to the *Abacus* [which is a Square, or flat Moulding], the 2 d. Part goes to the *Boutrin*, and *Fillet* under it, [the *Boutrin* is a quarter of a Circle, the *Fillet* a narrow flat Moulding] and this part is subdivided into 4 Parts, of which 3 go to the *Boutrin*; and 1 to the *Fillet*, and the 3 d. and last Part goes to the Neck, which is flat and straight. Again, the Neck is divided into 2 parts; one of which is the breadth of the *Astragal* under it [which consists of a Semicircle, and a *Fillet* under it] The *Astragal* is again divided into 3 parts, of which 2 go to the Semicircle, and 1 to the *Fillet*. The Projecture of the Capital shall be  $\frac{1}{2}$  part of the Diameter of the Body of the Column below. The *Astragal* projecteth in a Square.

According to *Scamozzi*, the height of the Capital (by the *Astragal* at the bottom) must (also) be  $\frac{1}{2}$  the Diameter of the

Column below. And this height being divided into 60 parts, 20 of them shall go to the *Abacus* (or *Plinth*, as he calls it) 15 to the *Echinus* or half round (which *Vitruvius* calls the *Boultin*) 5 to the *Rondel*, or *Bead-moulding* [which is a Semicircle] 3 to the *List* (which *Vitruvius* calls a *Fillet*) and 17 to the *Neck*, or *Frieze*, (as he calls it.) Again, 7 such Parts must go to the *Rondel* of the *Astragal*, and 3 to its *List*.

According to *Palladio*, the height of the Capital is (also) half the Diameter of the Body of the Column below (*viz.* by the *Astragal*, which none of them reckon a part of the Capital, tho' in propriety of Speech, it ought to be so esteem'd.) And this height is divided into 3 equal Parts, the uppermost of which goes to the *Abacus* (which he also calls the *Dado*, or *Dye*) the next part goes to the *Ovolo*, or *Echinus* (*Vitruvius* calls it the *Boultin*) the other part is divided into 7, of one of which is made the *Listella* (*Vitruvius* calls it the *Fillet*) under the *Ovolo*, and the other 6 Parts go to the *Collorino*, or *Neck* (he also calls it the *Hypotrachelium*, or *Frieze* of the Capital.

3. *Dorick*.] According to *Vitruvius*, the height of the *Dorick* Capital (by the *Astragal* at the bottom) is equal to  $\frac{1}{2}$  the Diameter of the Body of the Column below. And this height being divided into 3 Parts, the first and lowermost goes to the *Neck*, the next Part goes to the *Boultin* [by which Term he here comprehends several Members and describes this Part in 2 Forms.

1. Of which is a *Boultin* (as 'tis describ'd N. 2.) and 3 *Fillets* under it, and the other is a *Boultin*, and an *Astragal* under it] and this part is divided into 3 parts, 2 of which go to the *Boultin*. properly so call'd, and the other to the 3 *Fillets*, or to the *Astragal*; the *Fillets* are all of an equal size, in the *Astragal*, the *Fillet* is  $\frac{1}{3}$  of the whole, the 3 *d.* and uppermost part of the Capital is again divided into 3, the 2 lowermost of which go to the *Square*, and the other to the *Cimatium* [which is an *O-G.* (with the hollow downwards) and a *Fillet* over it. An *O-G.* is a Moulding, somewhat resembling an S, which *Vitruvius* makes of 2 quarter Circles join'd together; and this *Cimatium* being also divided into 3 parts, 2 of 'em go to the *O-G.* and 1 to the *Fillet*. The *Astragal* under the Capital is equal to  $\frac{1}{2}$  the *Neck*, and made as in N. 2.

*Scammozzi* makes the Capital of the same height, which he divides into 60 parts, of which 3 go to the *Fillet* of the *Cimatium*, 5 to the *O-G* of the *Cimatium*, 12 to the *Square*, 14 to the *Boultin*, 5 to the *Rondel*, and 2 to the *Fillet* of the *Astragal* under the *Boultin*, and 19 to the *Neck*. The *Astragal* under the *Neck* contains 10 such parts, of which  $6\frac{1}{2}$  goes to the *Rondel*, and  $3\frac{1}{2}$  to the *Fillet*. I have describ'd it by *Vitruvius's* Terms, for *Scammozzi* mentions none of them.

*Palladio* (also) makes the Capital of the same height with *Vitruvius*, which he divides into 3 parts, the uppermost of which he subdivides into 5 parts, 2 of which go to the *Cimatium* [which *Vitruvius* calls the *Cimatium*] and is again subdivided into 3 parts, one of which goes to the *Listella*, or *Annulet* [which *Vitruvius* calls a *Fillet*] and the other 2 to the *Scima-recta*, [which is an O-G, as 'tis describ'd in this Number] and the other 3 of the first Sub-divisions of this part goes to the *Abacus* [which *Vitruvius* in this Number calls the Square] The 2 d. of the 3 grand Divisions of the Capital, is subdivided into 3 parts, 2 of which go to the *Ovolo*, or *Echinus* [which *Vitruvius* (N. 2.) calls a *Boultin*] and the other to the *Annulets* under it, which are 3, and are equal. The 3 d. principal part goes to the *Hypotrachelium*, or *Frieze* [which *Vitruvius* calls the Neck] The *Astragal* under the Neck, is as high as all the 3 *Annulets*.

4. *Ionick.*] According to *Vitruvius* is made thus, divide the Semidiameter of the Body of the Column below into 18 parts, take 19 such parts, of which 3 of 'em must go to the *Cimatium*, 1 to the *Fillet*, and 2 to the *Cima* [or O-G] under it. Then take 4 parts for the *Trochilus* of the *Volute*, or *Scroll* [the *Trochilus* is that Member from whence the Scroll begins] then take 4 parts from the *Boultin* [which is  $\frac{1}{4}$  of a Circle] which must be Carv'd with *Eggs*, and *Anchors*. Then take 2 parts for the *Astragal* under the *Boultin*, the *Astragal* is Carv'd with *Beads*, and has a *Fillet* on each side of it, each  $\frac{1}{4}$  of the whole. Then the 6 remaining parts must go to the half of the *Volute* below. Then take 8 more such parts, which must go to make the remainder of the *Frieze*, or Neck of the Capital, and 3 more such parts for the *Astragal* under the Neck, of which one part goes to the *Fillet*.

*Scammozzi's* Description of the *Ionick* Capital is so blind, that I think none is ever the wiser for it. And *Palladio's* Description agrees with *Vitruvius's*.

5. *Corinthian.*] According to *Vitruvius*, the height of this Capital (by the *Astragal* at the bottom) is equal to the Diameter of the Body of the Column below,  $\frac{1}{2}$  part of which goes to the *Abacus* (which consists of a *Boultin*, a *Fillet*, and *Plinth*, [which is but a larger *Fillet*] the *Abacus* being sub-divided into 3 parts, 1 of 'em goes to the *Boultin*, and a third part of the next goes to the *Fillet*, and the rest to the *Plinth*. The height of the *Astragal* below the Capital, is  $\frac{1}{3}$  part of the Diameter of the Body of the Column below, and is divided into 3 parts whereof the *Fillet* contains 1 part, and the *Boultin* 2.

*Scammozzi* makes this Capital  $1\frac{1}{2}$  Diameter of the Column high, which divided into 75 parts, 4 of 'em go the *Boultin*, 1 to the *Fillet*, and 9 to the *Plinth*, and the rest to the *Neck*.

*Palladio* also makes the height of this Capital equal to the whole Diameter of the Body of the Column below and  $\frac{1}{2}$  part more,

more, which is allowed to the *Abacus*; by which I understand he means all the Mouldings above the *Acanthus* Leaves.

6. *Roman, or Composite.*] *Vitruvius* makes, and divides this Capital like the *Corinthian*; and so does *Scammozzi*, and *Palladio*; only the Carving of this is somewhat different from that.

### *Carcass.*

1. *What.*] The Timber-work (as it were the Skeleton) of a House, before it is Lathed, and Plaister'd.

2. *Price of Framing.*] The Price of Framing the Carcass of a House (in the Countrey) as Workmen inform me, is about 8*s.* per Square, if the Workman pay for the Sawing; if not but about 4*s.* 6*d.* per Square.

### *Cariatides,*

In Architecture are Statues of Women, which serve instead of Pillars.

### *Carpenter's.*

1. *Work.*] The several kinds of Work done by Carpenters, (in relation to Building) with their Prizes, and Methods of Measuring them, &c. are too many to be comprehended under this so general word of *Carpenter's-work*; and therefore I shall refer them to their *Particulars*, (as Framing, Flooring, Roofing, &c.) where they will much more readily be found.

2. *Bill to make.*] A Carpenter's Bill should be made after this manner.

Mr. William Liberal of London, his Bill of Materials had of, and Work done by Tho. Trueman, June 24. 1702.

	l.	s.	d.
For 17 Load of Oaken-timber, at 22 s. the Load.	18	14	00
For 28 Load of Fir-timber, at 35 s. the Load.	—	49	00—00
For 180 Feet of Oaken-plank, 2 Inches thick, at 3 d. the Foot.	—	—	02—05—00
For 17 M. of 10 d. Nails, at 6 s. the M.	—	—	05—02—00
For 7 $\frac{1}{2}$ C. of Deals, at 6 l. 5 s. the C.	—	—	45—17—06
For 28 lb. of large Spikes, at 4 d. the lb.	—	—	00—09—04
For 8 Weeks Work for my self, at 3 s. the Day.	—	—	7—04—00
For 8 Weeks 2 Days Work for my Man, at 2 s. 6 d. the Day.	—	—	06—05—00
Sum is	—	—	135—16—10

But, Note, If the Carpenter do not Work by the Day, then he Writes, For so many Square of Roofing (at what Price they agree upon *per* Square) so much Money. Likewise for so many Square of Flooring, at so much *per* Square, so much Money. Also for so many Square of Partitioning, at so much *per* Square, so much Money. And for so many Square of Ceiling-joysts, &c. The Windows they set down either at so much *per* Light, or so much *per* Window. The Door-cases at so much a piece, either with, or without Doors. The Mantle-trees, Tassels, &c. at so much a piece. The Lintelling, Guttering, Cornish, Window-boards, &c. at so much *per* Foot. Stairs, at so much *per* Step, or so much a Pair, &c.

### *Car-tooses, touzes, touches.*

In Architecture are much the same as Modillions; only these are set under the Cornish in Wainscoting, and those under the Cornish at the Eves of a House. Some Workmen call them *Dentils*, or *Teeth*.

## Cartridges,

In Architecture are the same as Cartoozes.

## Cart-nails.

V. Nails.

## Casëing of Timber-work.

1. *What.*] Is a Plaistering of a House all over on the out-side with Mortar; and then striking it (by a Ruler) with the corner of a Trowel, or the like, to make it resemble the Joynts of Stone; that so the whole House may seem to be Built of Stone.

2. *Of the best way of doing it.*] Experienced Workmen tell me, That it ought to be done upon Heart-laths, because the Mortar will decay the sape ones in a little time: And tho' it be more work to Lath it with Heart, than with Sap-laths; yet 'tis better for the Mortar to hang to, because Heart-laths are narrowest, and they ought to be closer together for Mortar than for Lome. They also tell me, that they commonly use to lay it on in 2 Thicknesses, viz. the last before the first is dry.

3. *Of its Price.*] I have put out this kind of Work to Plasterers for 3 *d.* or 4 *d.* the Yard, including Doors and Windows [*i. e.* measuring it as if there were none] and for 6 *d.* per Yard, excluding Doors and Windows [*i. e.* deducting them from the whole.]

## Case of Glafs.

1. *Crown.*] A Case of Crown-glafs (as a Glazier in London informs me) contains 24 Tables, each Table being Circular, or nearly so, and (as I observ'd) about 3 Foot 6 Inches, or 3 Foot 8 Inches Diameter. V. P. Glafs, N. 3.

2. *New-castle.*] The same Gentleman tells me, that they have 35 Tables of *New-castle-glafs* to the Case; and that there should be 6 Foot of Glafs in a Table: I am sure there is as much (and more) in one of them I saw in his Ware-house; for I observed them to be much of the Form of a Corner-tile suppos'd to be prest out flat; and by measuring one of them, I found him to be about  $3\frac{1}{2}$  Foot on the upper or Circular End, and about 18 or 20 Inches on the lower and opposite end, and the Perpendicular heighth about 3 Foot. Mr. *Leybourn* (and Mr. *Wing*

from him) says That a Table of *New-castle glass* contains about 5 Foot, and that 45 of these Tables go to a Case.

3. *Normandy.*] Mr. *Wing* says, That 25 Tables make a Case of *Normandy Glass*.

### Casement,

In Architecture is a hollow Moulding. Some Architects make it  $\frac{1}{2}$  of a Circle, others  $\frac{1}{4}$ .

### Casements,

1. *What.*] In Architecture are Windows to open.

2. *Price.*] Mr. *Leybourn* says they are valu'd (according to their largeness, and the goodness of their Workmanship in their Locks and Hinges,) from 3 s. to 20 s. a Casement. As Casements are about 2  $\frac{1}{2}$  Foot long, about 4 s. or 4 s. 6 d. a piece. Folding-casements of the like size, with Bolts, Hinges, &c. about 12, or 13 s. the pair; and large Folding-casements, 16, 18, or 20 s. the pair. Mr. *Wing* says, they are worth 7 d. or 8 d. the Pound, some 9 d. viz. Folding-casements. Some Smiths in *London* ask'd me 6 d. per Pound for Casements, others said they were worth more, if they had Locks to them; but 6 d. was their Price, if they made them with Turn bolts (or Turn-buckles, as some call'd 'em) or Cock-spurs, and Pull-backs at the Hind-side to pull them to with. One Smith told me, he would make them for 5 d. per Pound. I know some Smiths in the Country, make 'em by the Foot (measuring the whole Circumference round by the outer edge of the Casement; thus, if a Casement be 2 Foot long, and 1  $\frac{1}{2}$  Foot broad, they reckon him 7 Foot.) A Smith at *Rye* ask'd me 9 d. per Foot for ordinary Casements, which I think is dear; for in other Parts of *Sussex*, they proffer'd me to make 'em for 6 d. per Foot, if ordinary; but if something extraordinary (as Folding-casements, &c.) then 8 d. per Foot.

3. *Of Painting.*] Casements are commonly Painted by the Piece, at three half-pence, 2 d. or 3 d. a piece, according as they are of bigness.

4. *Of Hanging.*] Glaziers in the Country tell me. That 'tis the Smith's Work to hang up the Casements; and if they don't do it themselves, they pay the Glaziers for doing it; who have 2 d. a piece for hanging of small Casements, and 3 d. a piece for large ones.

5. *Of Fining.*] V. Glazing. N. IV. §. 1.



*Cast,*

In Architecture a piece of *Timber*, or a *Board*, or *the like*, is said to *Cast*, or to be *Cast*, when (by its own Drought, or Moisture, or by the Drought, or Moisture of the Air, or other Accident) it alters its flatness, and straightness, and becomes crooked.

*Catadrome.*

A kind of Engine like a Crane, which Builders use in lifting up, and letting down any great Weights.

*Catheta.*

A Perpendicular, or Plumb-line, falling from the Extremity of the under side of the Cimatium (of the Ionick Capital) through the Centre of the Volute.

*Cavetto.*

The same as *Casement*.

*Cavazion.*

A Term of Architecture, signifying the Under-digging, or Hollowing of the Earth, for the Foundation of a Building. *Palladio* says, it ought to be the sixth part of the height of the whole Building.

*Caulicoli.*

The Carved Scrolls (under the Abacus) in the Corinthian Capital.

*Ceiling,*

1. *What.*] In Architecture is the Lathing, and Plaistering at the top of a Room, upon the under-side of the Joysts of the next Room, or upon Joysts put up for that purpose, (and call'd Ceiling-joysts) if it be in a Garret. These Plaister'd Ceilings are much used in *England*, beyond all other Countreys; and they have these Conveniencies with 'em. They make the Rooms much more lightsome; are excellent against raging Fire; they

stop the Passage of the Dust, and lessen the Noise over-head, and in Summer-time the Air of the Room is somewhat the cooler for it.

2. *Of Measuring.*] This Work is commonly done by the Yard, (containing 9 Superficial Feet :) And in taking their Dimensions, if the Room be Wainscoted, they consider how far the Cornish bears into the Room, by putting a Stick Perpendicular to the Ceiling, close to the edge of the uppermost part of the Cornish, and measuring the Distance from the Perpendicular Stock to the Wainscot; twice which distance they always deduct from the length, and breadth of the Room taken upon the Floor, and the Remainder gives them the true length and breadth of the Ceiling; which if it be taken in Feet (as most commonly 'tis) they Multiply one into the other, and divide the Product by 9, and the Quotient gives them the Content in Yards.

3. *Price.*] In London the Workmanship (*viz.* Lathing, Plastering and Finishing) is commonly reckon'd about two Pence three Farthings *per* Yard. In Rutland, and some Parts of Kent, (as about Tunbridge-wells, &c.) I know they have 3 *d.* *per* Yard. And in some parts of Sussex, the Workmen tell me they have 4 *d.* *per* Yard. But if the Workmen find all Materials, and Lath it with Heart-oak-laths, then they commonly reckon about 1 *s.* *per* Yard, and with Fir-laths, about 8 *d.* *per* Yard.

### *Ceiling-joists, or Beams.*

1. *What.*] See Ceiling. N. 1.

2. *Of Measuring.*] The Work of putting up Ceiling-joists is measur'd by the Square; and therefore the length in Feet being Multiply'd by the breadth in Feet, and 2 places of Figures being cut off on the Right-hand, what remains to the Left-hand is Squares, and what is cut off is odd Feet, of which 25, make a quarter, 50, half, and 75 three quarters of a Square.

3. *Price.*] Putting up of Ceiling-joists is worth 4 or 5 *s.* (some Workmen tell me, they have 6 *s.*) *per* Square.

### *Cellars.*

1. *What.*] They are the lowest Rooms in a House, the Ceilings of which lie level with the Surface of the Ground, on which the House stands, or at least but very little higher.

2. *Situation.*] Sir Henry Wotton says, They ought (unless the whole House be Cellar'd) to be Situated on the North side of the House, as needing a cool and fresh Air.

3. *Of Digging.*] They are commonly digged by the solid Yard, containing 27 solid Feet; and therefore the length, breadth, and depth in Feet, being all Multiply'd together, and the Pro-

dust divided by 27, the Quotient will give the Content in solid Yards.

### *Cement.*

1. *What.*] In Architecture is a strong, sticking, cleaving, or binding Mortar.

2. *To make.*] There are 2 sorts of Cement, which some Bricklayers use in Cementing of Bricks for some kind of Mouldings, or in Cementing a Block of Bricks (as they call it) for the Carving of Scrolls, or Capitals, or such like. *&c.* One is call'd *cold Cement*, the other *hot Cement*; because the former is made, and used without Fire, but the latter is both made and used with Fire. The *cold Cement* being accounted a Secret, is known but to few Bricklayers; but the *hot Cement* is common. I shall here shew how to make them both.

#### *To make the Cold Cement.*

Take half a Pound of old Cheshire-cheese, pair off the Rind, and throw it away; cut or grate the Cheese very small, and put it into a Pot, put to it about a Pint of Cows-milk, let it stand all Night, the next Morning get the Whites of 12 or 14 Eggs, then take half a Pound of the best unslack'd or Quick-lime that you can get, and beat it to Powder in a Mortar, then sift it through a fine Hair-sive into a Tray or Bowl of Wood, or into an Earthen-dish, to which put the Cheese and Milk, and stir them well together with a Trowel, or such like thing, breaking the Knots of Cheese, if there be any, then add the Whites of the Eggs, and temper all well together, and so use it. This Cement will be of a white colour; but if you would have it of the colour of the Brick, put into it either some very fine Brick-dust, or Almegram, not too much, but only just to colour it.

#### *To make the Hot Cement.*

Take one Pound of Rozin, a quarter of a Pound of Beeswax, half an Ounce of fine Brick-dust, half an Ounce of Chalk-dust, or Powder of Chalk; sift both the Brick-dust, and Chalk-dust through a fine Hair-sive, (you may beat the Brick, and the Chalk in a Mortar, before you sift it) boil all together in a Pipkin, or other Vessel, about a quarter of an Hour, stirring it all the while with an Iron, or a piece of Lath, or such like; then take it off, and let it stand 4 or 5 Minutes, and it's fit for use.

Note, That the Bricks that are to be Cemented with this kind of Cement, must be made hot by the Fire before you spread the Cement on them, and then rub them too and fro,

one upon another, as Joyners do, when they glew 2 Boards together.

### Chambers.

1. *What.* In a Building all those Rooms are call'd *Chambers*, that are situated between the lowermost (excepting Cellars) and the uppermost Rooms. So that in some Houses there are 2, in others 3, or more Stories of Chambers.

2. *Situation.*] Sir *Henry Wotton* tells us, That the principal Chambers of Delight (in a House) ought to be situated towards the East.

3. *Proportions.*] The length of a Well proportionate Lodging-chamber, ought to be the breadth, and half the breadth of the same, or somewhat less; but ought never to exceed that length; for the height three quarters of the breadth will be a convenient height.

### Channel.

In the *Ionick Capital*, is that part which is under the *Abacus*, and lies open upon the *Echinus*, or *Eggs*, which has its Centers, or turnings on every side, to make the *Volutes*.

### Chapter,

In Architecture signifies the Top, or Head of a Pillar.

### Chauncel,

Vulgarly *Chancel*, the most sacred part of a Temple, or Church, so called from the *Cancelli*, or Lattices, which anciently us'd to separate that part from the rest of the Church. The Greeks call it *Adyton*.

### Chimneys.

1. *What.*] A Chimney is a particular part of a House, design'd for the Conveniency of Fireing, with a Tube, or Tunnel to convey away the Smoak.

2. *Of Measuring.*] Tho' Brick-layers, in making of Chimneys, do commonly agree by the Hearth; yet they sometimes also work by the Rod, as in other Brick-work; and then their Method of taking their Dimensions, is thus:

If the Chimney stand singly, and alone, not leaning against, or being in a Wall, and it be wrought upright over the Mantle-tree to the next Floor; they gird it about the Brest for the length, and take the height of the Story for the breadth, and the thickness of the Jambs for the thickness. But if the Chimney stand against (or in) a Wall, which is before measur'd with the rest of the Building; then the breadth of the Brest, or Front, together with the depth of the 2 Jambs, is the length, the height of the Story, the breadth, and the thickness of the Jambs, the thickness. But if the Chimney stand in an Angle of a Room, and have no Jambs; then the breadth of the Brest is the breadth, the height of the Story, the length, and the thickness, the thickness. Then for the Shaft, [which is that part which appears above the Tying,] they commonly girt it about in the smallest part, for the breadth, and take the length of the Shaft for the length; and they commonly reckon the thickness of both sides for the thickness, in consideration of the Widths, Pargeting, and Scaffolding.

Note. Here is nothing to be deducted for the Vacancy betwixt the Hearth, and the Mantle-tree, because of the widths and the thickning for the next Hearth above.

The Dimensions being thus taken in Feet, the Work is thus measur'd: Multiply each Particular length by his breadth, and that Product by its thickness in half-Bricks, [*i. e.* by 2, for 1 Brick thick, by 3, for 1½ Brick thick, and by 4, for 2 Bricks thick, &c.] Add these Products into one Sum, which divide by 3. and the Quotient will give the Content of the whole Chimney in Feet, at the Standard-thickness of a Brick and half. Then divide this Content in Feet, by 272¼, and the Quotient will be the Content in Rods. But, because 'tis difficult to divide by 272¼, you may do thus.—Add 2 Cyphers to the Right-hand of the Content in Feet, and then divide it by 27225, and the Quotient will be the Content in Rods, as before. And, every 100, of the Remainder is one Foot of Work. Or 6807, of the Remainder, is ¼ of a Rod, 13613, is ½ a Rod, and 20419 is ¾ of a Rod.

3. *Price.*] Mr. *Leybourn* says, That Chimneys are sometimes measur'd, and paid for by the Rod, like other Brick-work: And sometimes, says he, they are paid for by the Fire-hearth, at so much the Fire-hearth; which says he) is various, from 20, to 50 s. the Hearth. And Mr. *Wing* says. That Building of Chimneys for ordinary Buildings, with Architrave, Frieze, and Cornish, is worth, from 15 s. to 20 s. per Hearth, according to their height, and substance; and without Architrave, and Frieze, from 10 s. to 20 s. But in great Buildings, says he, (I suppose he means in his Countrey of *Rutland*,) they are usually done by the Foot, *viz.* at about 6 d. per Foot. I know they are commonly built in *London*, and about *Tunbridge-wells*, for a-  
bout

bout 15 s. per Hearth: But some Workmen in *Suffex* tell me, they have 20 s. and sometimes 25 s. per Hearth for building of 'em.

4. *Rules about Timbers near 'em,*] 1. Let no Timber be laid within 12 Inches of the fore-side of the Chimney-jamb. 2. Let all Joysts on the back of any Chimney be laid with a Trimmer, at 6 Inches distance from the Back. 3. Let no Timber be laid within the Tunnel of any Chimney.

5. *Proportions.*] *Palladio* lays down the following Proportions, for the breadths, and depths of Chimneys, (on the in-side) and for their height to the Mantle-tree.

Chimneys in	Breadth.	Heighth.	Depth.
Halls,	6, 7, or 8 Foot.	4 $\frac{1}{2}$ , or 5 Foot.	2 $\frac{1}{2}$ , or 3 Foot.
Chambers,	5 $\frac{1}{2}$ 6, or 7 Foot.	4, or 4 $\frac{1}{2}$ Foot.	2, or 2 $\frac{1}{2}$ Foot.
Studies, and } Wardrobes. }	4, 4 $\frac{1}{2}$ , or 5 Foot.	4, or 4 $\frac{1}{2}$ Foot.	2, or 2 $\frac{1}{2}$ Foot.

Nevertheless, in these Points, the Workman ought rather to be guided by the Modern Fashions, than by the words of this ancient Architect.

6. *To prevent Smoaking.*] *Mr. Lucar* (in his *Solace*,) adviseth to leave 2 holes (one over another) on each side of the Chimney, one sloping upwards, and the other downwards, or else to place 2 Pipes (in the same Position) on each side of the Chimney. Through these holes, or Pipes, says he, the Smoak will easily pass out of any Tunnel, which way soever the Wind blow. I cannot tell how this may take effect; but to me it seems but a Fancy. I think *Philippe de l'Orme's* Advice is better, who proposes to provide a hollow Brass-ball of a reasonable Capacity, with a little hole on one side for the Reception of Water. (I think it were better made with a short Nose to skrew off, when 'tis fill'd with Water; and then the hole at the end of this Nose needs not to be bigger than that at the small end of a Tobacco-pipe.) This Ball being fill'd with Water, is to be placed (with the hole upwards) upon an Iron-wire, that shall traverse the Chimney (a little above the Mantle-tree, at the ordinary height of the greatest Heat, or Flames; and when the Water is hot, it will be rarify'd, and break out of the hole in a windy Vapour; which will force up the Smoak, that otherwise might linger in the Tunnel by the way, and oftentimes revert. It were good to have 2 of these Balls, one of them may supply

supply the place of the other, when 'tis exhausted; or for a need, blow the Fire in the mean time.

I have seen on the top of some Chimneys, a sort of Fane, or Weather-cock, (some call it a beggar-man) whose back-side is cover'd with Plates of Tin; so that which way soever the Wind be, it can never keep down the Smoak in the Chimney; but it always comes out free, and undisturb'd. I have known this last Contrivance help Chimneys, that before Smoak'd very much. But I believe the ingenious Carpenter, and Bricklayer might prevent the Smoaking of any Chimney, by a due *Situation* of the Doors of the Room, and an apt *falling-back* of the Back, and convenient gathering of the Wings, and Brest of the Chimney. But how, and in what manner this is to be done, I must refer to the next Opportunity.

### *Chimney-hooks.*

1. *What.*] These are Hooks of Steel, or Brass, put into the Jambs of the Chimney, in each Jamb one, for the handle of the Fire-pan, and Tongs to rest in.

2. *Price.*] The Steel-hooks are commonly about 1 s. the pair, and the Brass ones, about 2 s. the pair in *London*; for so I have there bought 'em.

### *Chimney-jambs.*

The sides of a Chimney, commonly coming out Perpendicularly (tho' sometimes Circularly) from the Back; on the Extremities of which the Mantle-tree resteth. Also, see Corner-stone.

### *Chimney-pieces.*

1. *What.*] Certain Mouldings of Wood, or Stone, standing on the fore-side of the Jambs, and coming over the Mantle-tree.

2. *Price.*] *Chimney-pieces of Free-stone*, wrought plain, are worth 10 s. but there may be such Mouldings wrought in 'em, as with their Coves, and other Members, may be worth 20, 30, or 40 s. a piece. *Chimney-pieces of Egyptian, or black Fleak'd-marble*, or of *Rance*, or *Liver-colour'd-marble*, are worth (of an ordinary size) 12, or 14 l. a-piece. *Chimney-pieces of Wood*, are also of different Prices, as 10, 12, or 14 s. to 20 s. a piece, more or less, according to their largeness, goodness of the Stuff, and Curiosity in the Workmanship.

3. *Painting.*] They are commonly Painted by the Piece, at about 2 s. a piece, more or less, according to the goodness of the Work, and largeness of the Chimney-pieces.

*Chaprels.*

V. Arches. N. 6.

*Cima.*

V. Capital. N. 4.

*Cima tum-tium.*

V. Capital. N. 3.

*Cima recta.*

As *Scima-recta.*

*Cimbia.*

V. Pedestal. N.

*Cincture.*

V. Pedestal. N.

*Cilery.*

A Term in Architecture, signifying the Drapery or Levage that is wrought upon the Heads of Pillars.

*Cimeliark,*

In Architecture is a Vestry, or Room where the Plate, Vestments, and other rich things belonging to the Church are kept.

*Cisterns.*



## Cisterns.

1. *What.*] They are Vessels, made to serve as Receptacles of Rain, or other Water, for the necessary uses of a Family.

2. *To make.*] If you design to make your Cisterns under your House as a Cellar, which is the best way to preserve your Water for culinary Uses; then may you lay your Brick or Stone with Terrace, and it will keep Water very well. Or you may make a *Cement*, to join your Brick or Stone withal, with a Composition made of slacked sifted Lime, and Lin-seed Oyl, tempered together with Tow or Cotton-wool.

Or you may lay a Bed of good Clay, and on that lay your Bricks for the Floor; then raise the Wall round about, leaving a convenient space behind the Wall to ram in Clay, which may be done as fast as you raise the Wall: So that when 'tis finish'd, 'twill be a Cistern of Clay, walled within with Brick, and being in a Cellar, the Brick will keep the Clay moist; (altho' empty of Water) that will never crack. This (says Mr. Worlidge) I have known to hold Water perfectly well, in a shady place, tho' not in a Cellar. Thus in a Garden, or other place, may such a Cistern be made in the Earth, and cover'd over; the Rain-water being convey'd thereto, by declining Channels running to it. Also, in, or near Houses, may the Water that falls from them be conducted thereto.

## Clamp.

1. *What.*] A Clamp is a kind of Kiln built above Ground (of Bricks unburnt) for the burning of Bricks.

2. *How made, and how Bricks are burnt in it.*] An ancient and experienced Workman, that has made and burnt many Thousands of Bricks, tells me, That they build their Clamps much after the Method that the Arches are built in Kilns, *viz.* With a Vacuity betwixt each Bricks breadth, for the Fire to ascend by; but with this difference, that instead of Arching, they *truss-over*, or *over-span*, as they phrase it, *i. e.* they lay the end of one Brick about half way over the end of another, and so, till both sides meet within half a Bricks length, and then a bonding Brick at the top finishes the Arch. They make the Mouth, (where the Fire is to be put in) about 2  $\frac{1}{2}$  Foot wide, and about 3 Foot high, and then they begin to truss over, which they do for 3 Bricks in height; which with a bonding Brick on the top, will close up the Arch. But after they have begun, make the Place to receive the Fuel (before it is closed at the top) they fill it almost full with Wood, and upon that lay Sea-coal; then being over-span'd like an Arch, on all the Surface they strew Sea-

Sea-coal, and then they lay another Course of Bricks the other way, laying them at a little distance from one another, and strewing Sea-coal upon them: And thus they continue, laying one Course one way, and the other another (and strewing Sea-coal betwixt each Course) till they come to 8 or 10 Foot high, according as the Clamp is to be of bigness. This being done, they fire the Wood, and that fires the Coal; which being all burnt out, the whole Clamp of Bricks is burnt.

*Clamp-nails.*

V. Nails. N. 3.

*Clasp-nails.*

V. Nails. N. 4.

*Cleaving*

Of Laths, Pales, Shingle, and Timber. V. *Laths, Pales, &c.*

*Cleer-story-window.*

V. Window. N.

*Clench-nails.*

V. Nails. N. 5.

*Clinkers.*

Those Bricks are so call'd by some (which having naturally much Nitre, or Salt-peter in them, and lying next the Fire in the Clamp, or Kiln, ) by the violence of the Fire they are run, and are glazed over.

*Cloister.*

A close and separate Habitation, where Friars, Monks, and Nuns live retir'd from the World. Also a long Place cover'd with a Floor, or Flat-fond, supported by Pillars. V. P. Architrave, N. 2.

*Closet.*

*Closet.*

A general Name for any very small Room. The Contrivance of Closets in most Rooms, now so much used (and so useful) is one great Improvement of Modern Architecture.

*Clout-nails.*

V. Nails. N. 6.

*Clout-brads.*

V. Brads. N.

*Cockle-stairs.*

As Winding-stairs. V. Stair-case. N. III.

*Coins.*

As Quoins.

*Collorino.*

V. Capital. N. 2.

*Colledge.*

A Place set apart for the Society, and Cohabitation of Students.

*Collar-beam.*

A Beam fram'd cross betwixt 2 Principal Rafter,

*Column.*

*Column.*

1. *What.*] A Column, in Architecture is a round Pillar for Support and Ornament.

2. *Parts.*] Every Column (in the largest Sense) consists of 7 principal Parts, viz. Pedestal, Base, Body, Capital, Architrave, Frieze, and Cornish; each of which shall be handled in their proper places of the Alphabet.

3. *Kinds.*] Architects reckon 5 Orders or Kinds of Columns viz. Tuscan, Dorick, Ionick, Corinthian, and Roman, Composite, or Compound Order. I shall (here) say something to each of these, in their Order.

4. *Tuscan.*] The whole height of this Column, and the height of each principal Part thereof, according to several Authors, is, as in the following Table.

*Authors*

Authors Names	Whole height		Pedestal		Base		Body		Capital		Architrave		Frieze		Cornish	
	Mo.	Mi.	Mo.	Mi.	Mo.	Mi.	Mo.	Mi.	Mo.	Mi.	Mo.	Mi.	Mo.	Mi.	Mo.	Mi.
Vitruvius	11	5	2	20	0	30	5	0	0	30	0	30	0	30	0	30
Vignola	11	5	2	20	0	30	6	0	0	30	0	30	0	35	0	4
Palladio	10	15	1	0	0	30	6	30	0	30	0	35	0	26	0	4
Scamozzi	11	15	1	52	$\frac{1}{2}$	0	30	6	30	0	30	0	31	$\frac{1}{2}$	0	41

Note (1.) That in this, and the 4 following Tables of the heights of Columns, and their Parts; I have taken pains to reduce all my Author's Dimensions to *Modules* and *Minutes*; reckoning a *Module* the Diameter of the Body of the Column, just above the *Base*; and a *Minute* the 60th. part of a *Module*. (2.) That the height of the Body of a Column, is reckon'd from the top of the *Base*, to the top of the *Altragal* under the *Capital*.

§. *Dorick*.] The whole height of this Column, and the height of each principal part thereof; according to several Authors, is as in this Table.

Authors Names	Whole height		Pedestal		Base		Body		Capital		Architrave		Frieze		Cornish	
	Mo.	Mi.	Mo.	Mi.	Mo.	Mi.	Mo.	Mi.	Mo.	Mi.	Mo.	Mi.	Mo.	Mi.	Mo.	Mi.
Vitruvius	12	40	2	40	0	30	7	0	0	30	0	30	0	45	0	40
Vignola	12	40	2	40	0	30	7	0	0	30	0	30	0	45	0	45
Palladio	13	0	2	20	0	30	7	45	0	30	0	30	0	45	0	35
Scamozzi	12	58	2	26	0	30	7	30	0	30	0	35	0	45	0	42

6. *Ionick.*] The whole height of this Column, and the height of each principal part thereof, according to several Authors, is as in this Table.

Authors Names	Whole height		Pedestal		Base		Body		Capital		Architrave.		Frieze		Cornish					
	Mo.	Mi.	Mo.	Mi.	Mo.	Mi.	Mo.	Mi.	Mo.	Mi.	Mo.	Mi.	Mo.	Mi.	Mo.	Mi.				
<i>Vitruvius</i>	14	15	3	0	0	30	8	10	0	20	0	37	$\frac{1}{2}$	0	30	0	52	$\frac{1}{2}$		
<i>Vignola</i>	14	15	3	0	0	30	8	10	0	20	0	37	$\frac{1}{2}$	0	45	0	52	$\frac{1}{2}$		
<i>Palladio</i>	13	28	2	4	0	52	$\frac{1}{2}$	7	4	0	27	$\frac{1}{2}$	0	34	$\frac{1}{2}$	0	27	0	46	$\frac{1}{2}$
<i>Scamozzi</i>	12	33	$\frac{3}{4}$	2	3	0	30	7	3	0	18	$\frac{3}{4}$	0	35	0	28	0	42		

7. *Corinthian.*] The whole height of this Column, and the height of each principal Part thereof, according to several Authors, is as in this Table.

Authors Names	Whole height		Pedestal		Base		body		Capital		Architrave		Frieze		Cornish			
	Mo.	Mi.	Mo.	Mi.	Mo.	Mi.	Mo.	Mi.	Mo.	Mi.	Mo.	Mi.	Mo.	Mi.	Mo.	Mi.		
<i>Vitruvius</i>	16	0	3	30	0	30	8	20	1	10	0	30	0	37	$\frac{1}{2}$	1	0	
<i>Vignola</i>	16	0	3	3	0	30	8	20	1	10	0	45	0	45	1	0	0	
<i>Palladio</i>	13	5	2	3	0	30	7	55	1	5	0	36	0	28	0	50		
<i>Scamozzi</i>	14	42	$\frac{1}{2}$	3	0	30	3	5	1	10	0	39	0	3	$\frac{1}{4}$	0	46	$\frac{3}{4}$

8. *Roman Composita, or Compound.*] The whole height of this Column, and the height of each principal part thereof, according to several Authors, is as in this Table.

Au- thors Names	whole height		Pede- stal		Base		Body		Capi- tal.		Archi- trave		Frieze		Cornish	
	Mo.	Mi.	Mo.	Mi.	Mo.	Mi.	Mo.	Mi.	Mo.	Mi.	Mo.	Mi.	Mo.	Mi.	Mo.	Mi.
Vitru- vius	16	6 $\frac{1}{2}$	3	30	0	30	8	20	1	10	0	52 $\frac{1}{2}$	0	52 $\frac{1}{2}$	0	52 $\frac{1}{2}$
Vigno- la	16	0	3	30	0	30	8	20	1	10	0	45	0	45	1	0
Palla- dio	15	20	3	20	0	30	8	25	1	5	0	45	0	30	0	45
Scam- mozzi	15	20	3	20	0	30	25	1	5	0	40	0	32	0	48	

9. *Of Diminishing.*] Columns of every Order must be so formed; that the upper part of the Body be less than the lower; which diminishing must be more or less, according to the proportion of their heights; and is to begin from one third part of the whole Shaft upwards, [i. e. the lower third part is to be of an equal bigness;] which *Philander* prescribes (by his own precise measuring of ancient Columns) as the most graceful Diminution. And for the quantity to be diminished, Architects lay down this Rule.—

That the { Tuscan  
Dorick  
Ionick  
Corinthian  
Compound } Column, be {  $\frac{1}{4}$   
 $\frac{1}{5}$   
 $\frac{1}{6}$   
 $\frac{1}{7}$   
 $\frac{1}{8}$  } part

smaller at the top, just under the Capital, than below, just above the Base, i. e. the Diameter of

the top, of the { Tuscan  
Dorick  
Ionick  
Corinthian  
Compound } Column, is {  $\frac{3}{4}$   
 $\frac{1}{2}$   
 $\frac{1}{3}$   
 $\frac{1}{4}$   
 $\frac{1}{5}$   
 $\frac{1}{6}$   
 $\frac{1}{7}$   
 $\frac{1}{8}$  } of

the Diameter of the Column below.

*Colours.*

The Principal Colours us'd in Painting of Houses, &c. shall be treated of in their proper places.

### *Composite Order.*

V. Column. N. 3.

### *Compartition.*

By this Term, Architects understand a *graceful*, and *useful Distribution* of the whole Ground-plot of an Edifice, into Rooms of Office, and of Reception, or Entertainment.

### *Compartment,*

In Architecture, is a particular Square (for an Inscription, or some other Device) marked out in some Ornamental Part of a Building.

### *Concamerate.*

To make an Arched Roof, as in Vaults, &c. to Arch over.

### *Conclave,*

In Architecture, is a Closet, or Inner-chamber.

### *Conduits.*

Sewers, or Gutters to convey away the Suillage of a House. In these (says Sir Henry Wotton) Art should imitate Nature, in separating those ignoble Conveyances from the Sight; and (where there wants a running Water,) should place them in the most remote, and lowest part of the Foundation, with secret vents passing up through the Walls, (like a Tunnel) to the wide Air; which all *Italian* Artists commend for the discharge of noisome Vapours; tho' elsewhere to my knowledge little practised.

*Conges.*



*Conges,*

In Architecture, are the Rings, or Ferrils, heretofore us'd in the Extremities of Wooden-pillars, to keep 'em from splitting, afterwards imitated in Stone-work.

*Contramure,*

In Architecture, is an Out-wall, built about the Wall of a City.

*Copeing of Walls.*

1. *What.*] The Copeing of a Wall is the Top, or Cover of it, made sloping to carry off the Wet.

2. *Price.*] I have known Brick-walls (of 1  $\frac{1}{2}$  Brick thick) coped with Stone, for 4 *d.* per Foot, lineal, (or running) Measure; the Workman drawing the Stones into this Price.

3. *Drawing of Stones, for-*] I have known 1 *d.* per Foot given for drawing the Stones for Copeing of Walls.

*Corbel,*

A short piece of Timber laid into a Wall, with its end sticking out some 6, or 8 Inches, more or less, according as the Occasion requires: The under-side of the end so sticking out, is sometimes cut into the Form of a Boultin; sometimes of an O-G, sometimes of a Face, and sometimes of other Forms, according to the Fancy of the Workman; the upper-side is flat and plain. Corbels are commonly placed (for Strength-sake) immediately under the middle of the Semi-girders of a Platform, and sometimes under the ends of the Camber-beams; but then they are commonly placed a Foot or 2 below the Beam, and a piece of Timber stands upright (close by the Wall) from the Corbel to the Beam.

*Corbets,*

Holes left in the Walls of ancient Churches, &c. for Images to stand in.

## *Corinthian Order.*

V. Column. N. III.

### *Corner-tiles.*

V. Tiles. N. V.

### *Corner-stones.*

1. *What.*] Are 2 Stones, (commonly of Rigate, or Fire-stone) of which there stands one in each Jamb of a Chimney. Their Faces are hollow in the breadth, being a certain Sweep of a Circle. The breadth of each Stone is equal to the breadth of the Jamb; and their height reaches from the Hearth to the Mantle-tree.

2. *Price.*] I have bought of these Stones in London for 20 s. per pair.

### *Cornice-nish.*

1. *What.*] A Cornish in Architecture, is the uppermost of the 7 principal parts of a Column. V. Column, N. 2. Cornishes are also placed on the top of Wainscot, and under the Eaves of Houses, &c.

2. *Kinds.*] There are as many kinds of Cornishes, as there are Orders of Columns, viz. Tuscan, Dorick, Ionick, Corinthian, and Composite; to which may be added, Plain, Cantaliver, Modilion, and Coveing Cornishes: Of all which I shall treat in their Order.

3. *Tuscan.*] According to *Vitruvius*, the whole height of the Tuscan-cornish is  $\frac{1}{2}$  a Module; which height being divided into 4 grand Divisions, the uppermost of 'em goes to the *Boultin*, and *Fillet* under it; and this Division being sub-divided into 4 parts, 3 of 'em go to the *Boultin*, and 1 to the *Fillet*. The 2 next grand Divisions go to the *Corona*, or *Crown*, [which is flat and plain,] And the lowermost grand Division goes to the *Cimatum*; which being again divided into 3 parts, the uppermost of 'em goes to the *Fillet*, and the other 2 to the *Cima*, or *O-G*. The projecture of the whole Cornish, (as also of each Member thereof,) he makes to be equal to its height; and the under side of the *Corona* he divides into 11 parts, whereof he gives 2 to the *Fillet*, and 1 to the *Denticle*, and so Alternately; for 'tis fitting (says he) to have 3 as deep as they are large.

According to *Scamozzi*, the whole height of this Cornish is 39 Minutes, and the height of each Particular Member thereof (beginning at the top, and descending orderly.)

orderly,) is as follows; The upper *List*, or *Plint* of the *Cornish*, 3 m. the *Supercilium*, *List*, *Tinea*, or *Eye-brow*  $1\frac{1}{2}$  m. the upper *Scima*, or *O-G* 8 m. the *List* under it  $1\frac{1}{2}$  m. the *Corona*, or *Crown*  $9\frac{3}{4}$  m. the *List*,  $1\frac{1}{2}$  m. the *Scima*, or greater *O-G* 6 m. (here's  $1\frac{1}{2}$  m. left betwixt, for the depth of the *Dentils*) the *Supercilium*, or *List*,  $1\frac{3}{4}$  m. the *Scimatium*, or little *O-G* 5 m. the *List* 2 m.

*Palladio* makes the whole height of this *Cornish* 44 m. whereof the *List* at the top is  $3\frac{1}{2}$  m. the *Scima Recta* 10 m. the *List* under him  $2\frac{1}{2}$  m. the *Corona* 10 m. the *Boultin* 9 m. the *List*  $1\frac{1}{2}$  m. and the *Cavetto*, or *Hollow*  $7\frac{1}{2}$  m.

4. *Dorick*.] *Vitruvius* makes 2 different *Fashions* of *Dorick Cornishes*; the whole height of one of 'em is  $\frac{1}{2}$  a *Module*, which divided into 2 grand *Divisions*, one of 'em, (*viz.* the upper one) is again divided into 8 parts, of which 1 part goes to the *List* at the top, and the other 7 to the *O-G*. The other grand *Division* is subdivided into 4 parts, of which the uppermost, and lowermost parts go to the 2 *Cimatums*, and the 2 middle parts go to the *Corona*, the *List* of each of those *Cimatums* is  $\frac{1}{3}$  of the whole *Cimatium*. The whole height of the other fashion'd *Cornish* is 40 m. which divided into 9 parts, 2 shall go to the 2 *Facia's*, 1 to the *Thorus*, or *Boultin* above 'em, 2 to the *Modilions* above that, 2 to the *Crown*, and 2 to the *Cima*, or *O-G* at the top. The *Modilions*, as also the *Crown* being divided, each into 3 parts, one of 'em shall go to their respective *Cimatium's*, of which their *Lists* are each  $\frac{1}{3}$  of the whole.

According to *Scammozzi*, the whole height of this *Cornish* is 42 m. whereof the *List* at the top is 2 m. the great *O-G* 7 m. the *List* 1 m. the little *O-G* 3 m. the *Corona* 8 m. the *List* 1 m. the *Casement* 2 m. the *Boultin* 5 m. the *List* 1 m. the *Square* 7 m. the *List* 1 m. and the *Boultin* 4 m.

*Palladio*, in his *Verbal Description* of this *Cornish*, makes the whole height of him to be 35 m. but in his *Figure* 'tis but  $33\frac{1}{4}$  m. Of which the *List* at the top is  $2\frac{1}{4}$  m. the *Scima Recta*, or *O-G*  $6\frac{3}{4}$  m. the *List* 1 m. the *Scima Reversa*  $3\frac{1}{4}$  m. the *Corona* 8 m. the *Ovolo*, or *Boultin* 6 m. the *List* 1 m. and the *Casement* at the bottom 5 m.

5. *Ionick*.] The whole height of this *Cornish*, according to *Vitruvius*, is about  $52\frac{1}{2}$  m. He describes 2 fashion'd *Cornishes* in this *Order*; in one of them he divides the whole height into 11 parts, the 2 uppermost of which goes to the *Cimatium*, and the *Boultin* under it; and this space being sub divided into 6 parts, 2 of 'em goes to the *Fillet* of the *Cimatium*, 3 to the *O-G*, and 1 to the *Boultin*. The next 2 grand *Divisions* go to the *Corona*. The next 3 grand *Divisions* go to the *Cartoufes*, and the *Cimatium* over 'em; and this space being divided into 5 parts, 1 of 'em makes the *Cimatium*, of which the *Fillet* is  $\frac{1}{3}$  of the whole. Then  $1\frac{1}{2}$  of the next grand *Division* goes to the

*Boultin*, and *Fillet* over it, of which the *Fillet* is  $\frac{2}{3}$  part of the whole. Again, 1 of the next grand Divisions goes to the *Casement*, and *Fillet* over it, of which the *Fillet* is  $\frac{1}{4}$  of the whole. And the last grand Division goes to the *Cimatium*, of which the *Fillet* is  $\frac{1}{3}$  part of the whole. In the other fashion'd Cornish, he divides the whole height into 6 parts, the uppermost of which goes to the *O-G*, whereof its *Fillet* is  $\frac{1}{6}$  part, the next grand Division being sub-divided into 3 parts, the uppermost of 'em goes to the *Cimatium*, (of which its *Fillet* is  $\frac{2}{3}$  part,) and the other 2 to the *Corona*. The next 2 grand Divisions are sub divided into 5 parts, the uppermost of which goes to the *Cimatium*, (of which its *Fillet* is  $\frac{1}{5}$  part) and the other 4 to the *Cartouses*. The next grand Division being sub-divided into 4 parts, 3 of 'em go the *Boultin*, and 1 to the *Fillet* under it. And the last grand Division being sub-divided into 4 parts, 3 of 'em go to the *Casement*, and 1 to the *Cimatium*, of which its *Fillet* is  $\frac{1}{3}$  part.

*Scamozzi* makes the whole height of this Cornish 42 m. whereof the *List* at the top is 2 m. the *Scima Reſta* 5  $\frac{1}{2}$  m. the *List* 1 m. the *Scima Reversa* 2  $\frac{1}{2}$  m. the *Corona* 6  $\frac{1}{2}$  m. the *Scinta Reversa* 2  $\frac{1}{2}$  m. the *Cartouses* 7 m. the *Boultin* 4 m. the *List* 1 m. the *Square* 5 m. the *List* 1 m. and the *Boultin* 4 m.

*Palladio* makes the whole height of this Cornish 46  $\frac{1}{2}$  m. whereof the *List* at the top is 2  $\frac{1}{2}$  m. the *Scima Reſta* 7 m. the *List* 1  $\frac{1}{4}$  m. the *Scima Reversa* 3  $\frac{1}{2}$  m. the *Corona* 8 m. the *Scima Reſta* over the *Modillions* 3  $\frac{1}{4}$  m. the *Modillions* 7  $\frac{1}{2}$  m. the *List* 1 m. the *Ovolo*, or *Boultin* 6 m. the *List* 1  $\frac{1}{2}$  m. and the *Ca-vetto*, or *Hollow* 5 m.

6. *Corinthian*.] The whole height of this Cornish according to *Vitruvius* is about 1 Module. He describes 2 different fashion'd Cornishes in this order; in one of which he divides the whole height into 8 parts, the uppermost of which goes to the *O-G*, of which its *Fillet* is  $\frac{1}{8}$  part. Then 1  $\frac{1}{4}$  of the next grand Divisions goes to the *Corona* and *Cimatium* over it, of which space the *Cimatium* is  $\frac{1}{3}$  part, and its *Fillet*  $\frac{1}{3}$  of that. Then 1  $\frac{1}{2}$  of the next grand Divisions goes to the *Modillions*, and *Cimatium* over 'em, of which space the *Cimatium* is  $\frac{1}{7}$  part. And the last grand Division goes to the *Boultin*, and *Fillet*s over and under it; and this being divided into 3 parts, the lowermost goes to the *Fillet*, and the other 2 being again divided into 6 parts, 5 of 'em go to the *Boultin*, and the other to the *Fillet* over him. In the other fashion'd Cornish, he divides the whole height into 9 parts, of which the two uppermost being divided into 4 parts, 3 of 'em go to the *O-G*, (whose *Fillet* is  $\frac{1}{6}$  of the whole) and the other to the *Cimatium* over the *Corona*, (whose *Fillet* is  $\frac{1}{3}$  of the whole.) The next 2 grand Divisions go to the *Corona*. The next 2 grand Divisions go to the *Modillions*, and the *Cimatium* over 'em,  $\frac{1}{4}$  of this space goes to the *Cimatium*, (whose *Fillet* is  $\frac{1}{3}$  of the whole *Cimatium*) and the rest to the *Modillions*.

The

The next 2 grand Divisions go to the *Boultin*, and *Fillet* over and under it, which *Fillet*s are each  $\frac{1}{7}$  of the whole. And the last grand Division goes to the *Cima* at the foot of the *Cornish*.

According to *Scamozzi*, the whole height of this *Cornish* is  $46 \frac{1}{4}$  m. whereof the *List* of the *Scima Recta* is 2 m. the *Scima Recta*  $6 \frac{1}{2}$  m. the *List* of the *Scima Reversa* 1 m. the *Scima Reversa*  $3 \frac{1}{4}$  m. the *Half-round*  $1 \frac{1}{2}$  m. the *Corona*  $7 \frac{1}{2}$  m. the *Cimatum*  $3 \frac{1}{2}$  m. the *Modillions*  $8 \frac{1}{2}$  m. the *List* 1 m. the *Boultin* 5 m. the *List* 1 m. and the *Scima* 5 m.

The whole height of this *Cornish*, according to *Palladio*, is 50 m. whereof  $2 \frac{1}{3}$  m. goes to the *List* of the *Scima Recta*; the *Scima Recta* is  $8 \frac{1}{3}$  m. the *List*  $\frac{2}{3}$  m. the *Scima Reversa* 3 m. the *Corona*  $7 \frac{1}{3}$  m. the *List* of the *O-G* over the *Modillions*  $\frac{2}{3}$  m. the *O-G*  $2 \frac{2}{3}$  m. the *Modillions*  $8 \frac{1}{2}$  m. the *Boultin*  $4 \frac{1}{2}$  m. the *List* 1 m. the *Boultin*  $5 \frac{1}{2}$  m. the *List* 1 m. and the *O-G*.  $4 \frac{1}{2}$  m.

7. *Roman Composita, or Compound.*] The whole height of this *Cornish*, according to *Vitruvius* is equal to the Diameter of the Column above, which is about  $52 \frac{1}{2}$  m. He describes 2 different fashion'd *Cornishes* in this order; one of which he divides into 2 parts, the uppermost of which goes to the *O-G*, (whose *Fillet* is  $\frac{1}{7}$  of the whole,) and the undermost to the *Corona* and *Cimatum* over it; and this Space being divided into 4 parts, 3 of 'em go to the *Corona*, and one to the *Cimatum*, whose *Fillet* is  $\frac{1}{3}$  of the whole *Cimatum*.

*Scamozzi* makes the whole height of this *Cornish* 48 m. and *Palladio* 45 m. but for the height of each particular Member, they leave us very much in the dark; for according to neither of them the Sum of the Particulars will never make the whole height; and besides *Palladio* sets down no Dimensions to several of the Members of this *Cornish*. So that I think, a Man is but little the wiser for what any of these Authors say of this *Cornish*.

8. *Cantaliver.*] Workmen tell me, that those are call'd *Cantaliver-Cornishes*, that have *Cantalivers* under 'em. V. *Cantalivers*. N. 1.

9. *Modilion.*] Workmen tell me, That *Modilion-cornishes* are such as have *Modillions* under 'em. V. *Modillions*.

10. *Coving.*] Workmen tell me, That they call that a *Coving-cornish*, which has a great *Casement*, or *Hollow* in it, which is commonly Lathed and Plaister d upon *Compass*, *Sprockets*, or *Brackets*.

11. *Price.*] Some *Cornishes* (says Mr. *Leybourn*) are valued by the piece, dearer, or cheaper, according to their largeness, goodness of the Stuff, and curiosity of *Workmanship*: Others are measur'd, and rated by the *Foot Running-measure*, i. e. by the number of Feet in length only. Experienced *Carpenters* tell me, That for making of plain *Cornishes* (without any *Carving*) under the *Eaves* of a *House*, they commonly have 1 s. per *Foot*

Foot, running-measure. Mr. *Wing* tells us, That Cornishes are valu'd according to their Nature, and Bigness; a Modilion-cornish (of Free-stone) of 18, or 20 Inches thick, is worth, (says he,) 5 or 6 *s.* per Foot, running-measure. He also tells us, (in *Joyners Work*,) That a Modilion-cornish, with its carved Work, is worth 7 *s.* per Foot. And a plain Modilion-cornish of 12, or 14 Inches, (says he) will be worth 3 *s.* 6 *d.* or 4 *s.* per Yard, running-measure. A Brick-cornish, (as some Workmen tell me,) 2 *s.* 6 *d.* per Foot.

### *Corona.*

#### V. Cornish.

### *Coving.*

1. *What.* V. Cornish. N. 10. Also, Workmen tell me, That *Coving* is also used in this Sense; *viz.* When Houses are built projecting forth over the Ground-plot, and that is (as commonly 'tis) turn'd with a Quadrant of a Circle, (or Semi-arch) of Timber, which is Lathed and Plaister'd; (under which People may walk dry; as 'tis much us'd at *Tunbridge-wells*, on the upper Walks;) I say, such Work is commonly call'd *Coving*.

2. *Price.*] Mr. *Wing* (in his *Geodetes Practicus Rederius*) says That the Carpenter's Work of *Coving*, is worth 4 *s.* per Square

### *Crown,*

#### As Corona.

### *Crown-post,*

Is that Post, which (in some Buildings) stands upright in the middle, between 2 principal Rafter, from which there goes Struts, or Braces to the middle of each Rafter. It is also call'd a King-piece, or Joggle-piece.

### *Cross garnets.*

#### V. Hinges. N. 2.

### *Cross-grain'd.*

Timber is said to be cross-grain'd, where a Bough, or some Branch shoots out on that part of the Trunk of the Tree; for the Bough, or Branch shooting forwards, the Grain of that Branch shoots forward also, and so runs a-cross the Grain of  
the

the Trunk; and if it be well grown together, it will scarce be perceiv'd in some Stuff, but only in Working.

### *Cross-Multiplication.*

1. *What.*] Cross-Multiplication is the Multiplying of Feet and Inches by Feet and Inches; or Feet, Inches, and 12th. parts of Inches, by Feet, Inches, and (12th.) parts of Inches. 'Tis so call'd, because they Multiply a-cross, as I shall shew how in the following Number. This way of Multiplication is much us'd by Workmen, in measuring their Work: but, I think, none of 'em are so nice, as to take their Dimensions to parts of Inches, except Glaziers.

2. *How perform'd.*] Set the Multiplicand over the Multiplier, as is done in the following Examples, and then Multiply as the Lines Direct; observing to set down the particular Products under Feet, inches, or Parts respectively, according to these Rules.

1. Feet Multiply'd by Feet, produce Feet.
2. Feet by Inches, produce Inches.
3. Feet by (12th.) parts, produce parts.
4. Inches by Feet, produce Inches.
5. Inches by Inches, produce Primes, (or 12th.) Parts (of an Inch.)
6. Inches by (12th.) parts, produce seconds, or 12th. parts of the 12th. part of an Inch.
7. Parts by Feet, produce (12th.) parts.
8. Parts by Inches, produce Seconds.
9. Parts by Parts, produce Thirds, (or 12th. Parts of a Second.)

But Note, That in setting down the Products of each Denomination, (except the Feet) you must set down only the odd ones above 12, or 12's, carrying all the 12's as so many Unites to the next greater Denomination.

*Exam-*

### Example 1.

F. In.

Let it be required to Multiply 5—3 by

F. In. Pa.

2 F. 4 In. set down the Numbers thus—

5	3	00
1	+	1
2	—	4—0

Say 2 times 5 is 10 Feet. ————— 10—0—0

Then 2 times 3 is 6 Inches ————— 6—0

Then 4 times 5 is 20 Inches, or 1 F. 8 In. ————— 1—8—0

And lastly, 4 times 3 is 12 parts, or 1 Inch. ————— 0 1—0

The whole Sum is ————— 12—3—0

or 12 Feet and a quarter.

### Example 2d.

Let it be requir'd to Multiply 5 Foot 3 Inches, and 6 Parts,  
(or a half) by 2 Foot, 4 Inches, and 6 Parts.

F. In. P. S. T.

Set down the Numbers thus.

Then I say,

5	3	6		
1	—	1	—	—
2	—	4	—	6

2 times 5 Feet is ————— 10—0—0—0—0

2 times 3 Inches is ————— 6—0—0—0—0

2 times 6 Parts is ————— 1—0—0—0—0

4 times 5 Feet is ————— 1—8—0—0—0

4 times 3 Inches is ————— 1—0—0—0—0

4 times 6 Parts is ————— 2—0—0—0—0

6 times 5 Feet is ————— 2—6—0—0—0

6 times 3 Inches is ————— 1—6—0—0—0

6 times 6 Parts is ————— 3—0—0—0—0

The whole Sum is 12—6—9—9—0

that is 12 Feet 6 Inches and  $\frac{3}{4}$  of an Inch, and  $\frac{3}{4}$  of a Twelfth part of an Inch.

### Cubicle,

A Bed-chamber.

Culinary,



*Culinary,*

Of, or belonging to the Kitchin.

*Culvertail,*

As Dovetail.

*Cupulo,*

In Architecture, is a small Room (either Circular, or Polygonal) standing on the very top of a Building; some call it a Lanthorn.

*Cy-mace-macium,*

As Cimatum.

*Dado.*

V. Capital. N. 2.

*Deals.*

*Of Dressing.*] Dressing of Deals, [*i. e.* rough-plaining them over with a Fore-plain, that they may dry,] is worth (says Mr. Wing,) 1 s. per score: and so I know some Workmen have; tho' others tell me, they have known them done for 9 d. per score.

*Deal-floors.*

*Of Laying.*] The *laying* of ordinary Deal-floors, [*i. e.* plaining, and joyning 'em, &c.] is worth 5 s. per Square. But if they are laid with Dovetail, or Key joynts, without Pins or Nails, some Workmen tell me, they have 10 s. per Square. And if the Workman find Deals, and lay them the ordinary way, 'tis worth from 24 to 30 s. per Square, according to the goodness of the Deals. But if the Deals are very good, and laid either with

with Dovetail, or Key-joynts, (without Nails, or Pins) 'tis worth 35 s, or 40 s. the Square. V. Pl. Floors.

### *Deck-nails.*

V. Nails. N. 6.

### *Decor.*

This Word is perfect Latin, and signifies (properly) a *good Mein, Gracefulness, or Beauty*. *Vitruvius*, (*Lib. 1. Cap. 2.*) reckons it one of the 6 Considerations that accomplishes the whole Art of Architecture: And by this word he designs the keeping of a due Respect between the *Inhabitant* and the *Habitation*. Whence *Palladio* concludes, That the *Principal Entrance* must never be regulated by any certain Dimensions; but by the Dignity of the Person that is to live in it; yet to exceed, rather in the more, than in the less, is a Mark of Generosity, and may be excus'd with some noble Emblem, or Inscription, as that of the *Conte di Bevilacqua*, over his large Gate at *Verona*, (where had been committed a little Disproportion;) *Patet Janua, Cor magis.*

### *Den-tills-tellis-ticuli,*

A Member of the Cornish, in some of the Orders of Architecture. In the *Tuscan Order*, they are the *Spaces* left betwixt the *Niches*, cut out at certain Distances, on the under-side of the *Corona*, which makes it resemble a set of *Teeth*, from whence they have their Name. In the *Dorick, Ionick, and Corinthian Orders*, (without the *Pedestal*,) they stand under the *Corona*.

### *Diastyle,*

A sort of Edifice, where the Pillars are placed at the distance of 3 of their Diameters from one another.

### *Diamond-glass.*

V. Glass-quarry.

*Diamond-pavement.*

V. Paving. N. 10.

*Digging.*

*Of Measuring.*] The digging of the Ground for Cellars, and for the Foundations of Buildings, is commonly done by the Yard solid, containing 27 solid Feet; and that is usually counted a Load. Therefore the Dimensions being given in Feet, Multiply the length by the breadth, and the Product by the depth, dividing this last Product by 27, and the Quotient will give the Content in solid Yards.

*Diminishing.**Of Columns.*] V. Columns. N. 9:*Dogg-nails.*

V. Nails. N. 7:

*Dome,*

An *Italian*, and *French* Word, signifying a Town-house, or chief Meeting-place of a City. Also a Cupulo, a round piece of Architecture, (resembling the Bell of a great Watch,) set upon the top of a Building, particularly upon Cathedral Churches, where it serves for the Bell-tower.

*Dorick-order.*

V. Column. N. 3.

*Doors.*

1. *What.*] Doors are those parts of a Building, that are serviceable for the Passage *in* and *out* of Persons.

2. *Situation of.*] First, See that the Doors of a House be as few in number, and as moderate in Dimensions, as may possibly consist with other due Respects: for in a word, *all openings are weakenings*. Secondly, That they do not approach too near the Angles of the Walls; for 'twere a most essential Solecism to weaken

weaken that part, which must strengthen all the rest: A Precept well recorded, but ill practis'd by the *Italians* themselves, particularly at *Venice*. Thirdly, Let the Doors, if possible, be right over one another, that the void may be upon the void, and the full upon the full; which will be a great strengthening to the whole Fabrick. Fourthly, Let them (if possible) be plac'd opposite to one another, in such manner, that one may see from one end of the House to the other; which will not only be very graceful, but also most convenient, in respect 'twill cool the House in Summer, by letting the Air through the House, and in Winter to keep out the Wind, which way soever it fit. Fifthly, 'Tis not only Ornamental, but very secure to turn Arches over the Doors, which will discharge them in a great measure, from the Super-incumbent weight, which might otherwise press upon them too much.

3. *Dimensions of* } Inner-doors in large Buildings ought to be 3 Foot broad and upwards, and their height twice their breadth. And Inner-doors in lesser Buildings, ought never to be less than  $2\frac{1}{2}$  Foot broad, and  $5\frac{1}{2}$  Foot high.

4. *Price of-* } Doors made of plain whole Deal, and Rabited, are for Stuff, Nails, and Workmanship, valu'd at 3 *d.* or 4 *d.* the Superficial Foot; the Workmanship only, about 2 *s.* or 2 *s.* 6 *d.* per piece; as some Workmen tell me. But double-doors, Batt'on'd, and made Wainscot Fashion, may be worth (for Workmanship and Materials) 7 *d.* the Foot, and for the Workmanship alone, about 4 *s.* or 5 *s.* per piece. Folding-doors and Cases, (as some Workmen tell me) are worth about 20 or 30 *s.* per pair; and Balcony-doors and Cases, the same. Ordinary Doors without Plaining, are worth making and hanging up, about 1 *s.* per piece. In Stone and Brick-buildings, Architrave-doors Cases are worth, according to the breadth of the Mouldings, 1 *d.* an Inch, *i. e.* if the breadth of the Moulding, (from the outside to the inside of the Frame) be 9 Inches, 'tis worth 9 *d.* per Foot running-measure; if 10 Inches, 10 *d.* per Foot; and so proportionable, more or less. And Frontish-doors in great Buildings, with their Ornaments, as Pilasters, &c. are worth, (according to their Magnitude, and variety of Workmanship included,) some 3 *l.* some 5 *l.* some more, to 10 or 20 *l.* per piece; and perhaps more. V. *Batten-doors*. N. 2.

### *Dormant tree.*

In Architecture is a great Beam lying cross a House, otherwise call'd a Summer. V. *Summer*.

*Dor-man-mer,*

In Architecture is a Window made in the Roof of a House; it standing upon the Rafters. Dormers are commonly rated at so much per piece; according to their bigness, &c.

*Dorman tiles.*

V. Tiles. N. VIII.

*Dor-tor mitory.*

A Sleeping-place:

*Dovetails.*

A sort of Joyns, or Hinges, so call'd, because they resemble the Tail of a Dove or Pigeon.

*Dovetailing.*

In Architecture, is a manner of fastning Boards, (or any Timber) together, by letting one piece into another, in the Form of a Dove's Tail.

*Drag,*

In Architecture, a Door is said to drag, when in opening and shutting it hangs upon the Floor.

*Dragon beam.*

Dragon-beams are 2 strong Braces, or Struts, that stand under a Bressummer, meeting in an Angle upon the Shoulder of the King-piece.

*Drapery.*

A Term in Architecture, and Painting, it being a Work wherein Cloaths are represented. Also as Cillery.

*Drought, or Draft.*

1. *What.*] A Draught, or Draft, is the Picture of an intended Building described on Paper; whereon is laid down (by Scale, and Compass) the devised Divisions, and Partitions of every Room, in its due proportion to the whole Building.

2. *Its Usefulness.*] As 'tis usual, so 'tis (also) very convenient for any person before he begins to erect a Building, to have Designs, or Draughts drawn upon Paper, or Veilum; in which Draughts the Ground-plan, or Ichnography of each Floor, or Story, is delineated, and represented: As also the Form and Fashion of each Front, together with the Windows, Doors, and Ornaments, (if they design any) are to be shewn in the Orthographies, or Draughts of the Uprights.

Sometimes more Fronts than one are shewn perspectively in a Draught, and then 'tis call'd Scenography; but this is not easily understood, except by those that understand the Rules of Perspective And therefore 'twill be more intelligible to the several Workmen, to have a Draught of each Front, in a particular Paper by it self; and also to have a Draught of the Ground-plot, or Ichnography of every Floor, or Story, in a Paper by it self; because many times the Conveniencies, or Contrivances in one Story, differs from those in another, either in the bigness of the Chimneys, or Divisions of the Rooms, some being larger in one Story than in another, and sometimes having more Chimneys in one Story than in another, &c.

All which things being well consider'd, and drawn on Papers, before the Building is begun; these Draughts will be a great Guide to the Workmen, and save them a great deal of time in contriving their Work; and besides there will be no need of Alterations, or tearing, and pulling the Building to pieces after 'tis begun; which, besides the hindrance of the Procedure, makes the Building lame and deficient; nothing being so well done, when 'tis put up, and pull'd down, and set up again, as if it were well done at first. Besides, it makes the Workmen uneasy to see their Work, (in which they have taken a great deal of Pains, and us'd a great deal of Art) to be pull'd down again. V. Building, N. II. 2.

The drawing of Draughts is most commonly the Work of a Surveyor, tho' there be many Master-workmen that will contrive a Building, and draw a Draught, or Design thereof, as well as most (and better than some) Surveyors. But whoever makes a Draught of a Building, ought to be very well skill'd in the Theoretical Part of Architecture. I must at present omit the particular Directions for making a Draught, (the Bookseller requiring haste; and fearing least this first Edition should be too large;) but *this*, and several other Curiosities, not yet made publick, may find a place in a second Edition.

### *Drips,*

In Architecture, are certain kind of Steps (made on a flat Roof) to walk upon, a way of Building much us'd in *Italy*. The Roof is not quite flat, but a little rais'd in the middle; and those Steps, or Drips, lie each a little inclining to the Horizon.

### *Drops,*

In Architecture are an ornament in the Pillars of the Dorick Order, underneath the Triglyphs, representing Drops, or little Bells.

### *Dutch Bricks:*

V. Bricks. N. 5.

*Eaves*

*Eaves,*

**I**N Architecture, is the Margin of the Roof of a House; that part of the Roof that hangs over without the Walls.

*Eaves-lath.*

That thick feather-edg'd-board, generally nail'd round the Eaves of a House, for the lowermost Tiles, Slate, or Shingles to rest upon. Eaves-laths are commonly sold for 1 d.  $\frac{1}{2}$  or 2 d. a Foot, (running-measure) according as they are of goodness.

*Echinus.*

V. Capital. N. 2.

*Eggs.*

V. Anchors.

*Elaboratory.*

A Place to Work in; properly a Chymist's Work-house, or Shop.

*Embossing,*

In Architecture, is a kind of Sculpture, or Engraving, wherein the Figure sticks out from the Plain whereon it is Engraven, and according as it is more or less protuberant, is call'd by the *Italians* *Basso Mezzo*, or *Alto-relievo*, and by the *English*, *Bas-relief*, *Mean-relief*, or *High-relief*:

*Embrasure,*

In Architecture, is the Enlargement that is made in a Wall, on the in-side of a Window, or Gate, to give the more Light, or for the more Convenience of the Gate, or Window.

*Entallature,*

In Architecture, signifies the Architrave, Frieze, and Cornish. V. the Words Architrave, &c.

*Entry,*

In Architecture, is a Room design'd only (or chiefly) for Passage to and fro betwixt other Rooms, or from the outer Door into the House.

*Epistyle tylium.*

As Frieze.

*Eurithmia.*

A Term of Architecture, us'd by *Vitruvius*, by which he intends only. That agreeable Harmony, that ought to be between the length, breadth, and height of each Room in a Fabrick.

*Eye-brow.*

As Lint, or Fillet. V. Capital.

*Eye,*

In Architecture, is the middle of an Ionick Volute, or Scrol, cut in the Form of a Rose.

*Fabrick.*

1. **W**<sup>Hat.</sup>] A Church, a House, or any other Building.

2. *Of Censuring.*] I am desirous, (says Sir Henry Wotton) to shut up these Elements of Architecture with some Methodical Directions for Censuring of Fabricks already rais'd; for indeed, without some way to contract our Judgment, which among so many Particulars, would be lost by Diffusion; I should think it harder to be a good Censurer, than a good Architect; because the *working part* may be helped by *Deliberation*, but the *Judging* must flow from an *Extempory Habit*. Therefore, (not to leave this last piece of Architecture without some Light.) I could wish him that comes to examine any noble *Work*, first of all to examine himself, whether the sight of many brave things before, (which remain like impressed Forms in his Mind,) have not made him think nothing *good*, but that which is the best; for this Humour were too sowre. Next, before he settle any Opinion upon the *Work*, let him by all means seek to inform himself of the Age thereof. And if he find the apparent Decays to exceed the Proportion of Time; then let him conclude, That either the Materials were too slight, or that the Seat is nought.

Now, after these Premisses, if the Building be found to bear his Years well, then let him suddenly run backwards, (for the Method of *Censuring* is contrary to the Method of *Composing*) from the *Ornaments*, (which first allure the Eye) to the more *Essential Members*, till at last he be able to form this Conclusion; That the *Work* is Commodious, Firm, and Delightful; which are the 3 Capital Conditions requir'd in good Building, by



all Authors, both Ancient and Modern. And this is, (as I may term it,) the most scientific way of Censuring. There are 2 other ways which I must not forget. The first, which you may find in *Georgio Vassari*, before his laborious Work of the Lives of Architects,) is to pass a running Examination over the whole Edifice, according to the properties of a well shapen Man. As whether the *Walls* stand upright upon a clean Footing and *Foundation*; whether the *Fabrick* be of a beautiful Stature; whether for the *breadth* it appear well burnished; whether the *principal Entrance* be in the middle of the Front, or Face; whether the *Windows*, (as our Eyes) be set in equal number and distance on both sides; and whether the Offices (like the Veins in our Bodies) be usefully distributed, &c. The second way you may find in *Vitruvius* himself, *Lib. 1. Cap. 2.* Where he summarily determineth 6 Considerations, that accomplish this whole Art, *viz. Ordinatio, Dispositio, Eurythmia, Symmetria, Decor, & Distributio*, each of which see in their proper places.

### Face,

In Architecture, is any Member that has a great breadth, and but small Projecture, as the Architrave in the Front of a Building.

### Face of a Stone.

By the *Face of a Stone*, Workmen mean that Superfice or Plain of the Stone that is to lie in the Front of the Work; which is very easily known when the Stones are scap'd; for the *Face* is always opposite to the *Back*, and the *Back* goes rough as it comes from the Quarry. But in rough Stones, Workmen generally choose to make one of those sides the *Face*, which in the Quarry lay Perpendicular to the Horizon, and consequently the breaking (and not the cleaving) way of the Stone. For a Clearer understanding of this V. *Stone, N. 4.*

### Facing

*Of Timber Buildings with Brick.*] Some Workmen tell me, That they have sometimes faced Timber-buildings with Brick; which, say they, is thus done,—All betwixt the Timber, the Wall is a Brick's length thick; (or a 9 Inch Wall,) and against the Timber but  $\frac{1}{2}$  a Brick, or 4  $\frac{1}{2}$  Inch Wall. But Workmen do not approve of this way of Facing of Timber-buildings, by reason the Mortar doth so extremely burn the Timber.

### Fa,-cia,-cio,-sha,

In Architecture, is no more but a broad List, or Fillet, (V. Fillet.) They are commonly made in Architraves, (V. Architrave,) and in the Cornish of Pedestals, V. Pedestal. In Brick-buildings, *Facia's* are certain Juttings out of the Bricks, over

the Windows of each Story, except the upper one. And these are sometimes plain, like those of Columns; but sometimes they are Moulded; which shews very handsome: And this Moulding is commonly a *Scima-reversa* at the bottom, above which are 2 plain Courses of Bricks, then an Astragal, and lastly a Boul-tin, or as Workmen (by Corruption) call it a Boul-trel, or Bol-gel. In Stone-buildings 'tis the same as in Brick, and they are also sometimes Plain, and sometimes Moulded with a *Scima-reversa*, or O-G. The Price of *Facia's*, if the Workmen find Materials, is commonly about 10 *d.* per Foot running-measure, and the Workmanship only about 6 *d.* or 8 *d.* per Foot.

### *Feather-edg'd.*

Boards, or Planks, that are thicker on one edge, than on the other, are call'd Feather-edg'd-boards, &c.

### *Felling of Timber.*

V. Timber.

#### *Fencing.*

1. *With Pale.*] Some Workmen tell me, That for Paling with 3 Rails, Cleft-pails, Rails, and Posts, cleaving and setting up; they have 3 *s.* 6 *d.* per Rod, felling the Timber and all. But then their Materials are laid down to their hand.

2. *With single Rail and Posts.*] Some Workmen tell me, That Fencing with single Rail and Posts, Felling, Cleaving, and setting up, is commonly done for 8 *d.* or 10 *d.* per Rod; but then their Materials must be laid down to their hand, that they may have no carrying. Others tell me, That they have known it done for 4 *d.* 5 *d.* or 6 *d.* per Rod, Felling, Cleaving, and setting up; but then the Fence must be cross a Field, or the like, where it is easie digging the Post-holes, (and where there is a pretty many Rods together,) and the Materials must also be laid down to their hand, and not in Gaps, in Hedges, and the like, where 'tis difficult digging, and but a little at a place; for there 'tis worth 8 *d.* 10 *d.* or 1 *s.* per Rod.

#### *Fence-walks.*

Walls of Erick, or Stone, made round Gardens, &c. V. Walls, N. V.

#### *Fillet.*

V. Capital, Numb. 2.

#### *Fire-stone.*

1. *What.*] *Rigate-stone*, commonly call'd *Fire-stone*, is a sort of Stone very good, (and much us'd) for Chimney-fire-hearths, Ovens, Stoves, &c.

2. *Price.*]

2. *Price.*] Mr. Miller, Stone-cutter in *cold-harbour*, London, tells me, That they usually sell Fire-stone-hearths, at 1 s. per Foot. And Chimney-corner-stones of Fire-stones at 20 s. per pair. And Blocks to set up Coppers, each being about 3 f. long, 1½ f. broad, and 8 or 9 Inches thick, at 6 s. 8 d. per piece.

### *Flat-head-nails.*

V. Nails. N.

### *Flat-point-nails.*

V. Nails. N. 9.

### *Flemish-bricks.*

1. *What.*] They are a sort of Bricks brought out of *Flanders*, and used for Paving; being much nearer and stronger than common, or Clay-bricks. They are of a yellowish Colour, and each Brick is 6¼ Inches long, 2½ Inches broad, and 1¼ Inch thick. Now allowing ¼ of an Inch for the Joynt, 72 of 'em will Pave a Yard Square; but if they be set edge-ways, then to Pave a Yard Square will require 100 Bricks.

2. *Price.*] They are commonly sold for 2 s. the Hundred.

### *Flint-walls.*

V. Walls. N. VII.

### *Floors.*

1. *What.*] A Floor in Architecture is the under-side of a Room on which we walk. Floors are of several sorts; some are of Earth, some of Brick, some of Stone, and some of Wood. Carpenters, by the word *Floor*, understand as well the fram'd Work of Timber, as the Boarding over it.

2. *Earthen.*] Earthen-floors are commonly made of Lome, and sometimes (for Floors to make Malt on) of Lime, and Erock-sand, and Gundust, or Anvil-dust from the Forge; the particular Method of both which I must at present omit; but I cannot pass by that Receipt (given us by the Ingenious Sir *Hugh Plat*.) To make an Artificial Composition, wherewith to make smooth, glistening and hard Floors, and which may also serve to Plaster Walls with. Take, (says he) Ox-blood, and fine Clay, and tempering them well together, lay the same in any Floor, (or Wall,) and it will become a very strong and binding Substance; as I have been told by a Gentleman and Stranger, who affirm'd to me, that the same is of great use in *Italy*.

In the next Edition, I may give you particular Directions for making of several kinds of Earthen Floors.

3. *Brick and Stone.*] These I shall prefer to Paving. V. Paving. N. 1. to 9.

4. *Boarded.*] Concerning Boarded-floors, 'tis to be observ'd, that tho' Carpenters never Floor their Rooms with Boards till the Carcass is set up, and also enclos'd with Walls, least

the Weather should wrong the Flooring; yet they generally rough-plane their Boards for Flooring, before they begin any thing else about the Building, that they may set them by to *season*; which they do thus. They lean them one by one on end a slant with the edge of the Board against a *Balk*, (or as 'tis call'd in some parts of *Suffex* a *Perch*;) somewhat above the height of half the length of the Board, and set another Board in the same posture on the other side of the *Balk*, so that above the *Balk* they cross one another; then on the first side they set another Board in that posture, and on the second side another, and so alternately, till the whole number of Boards are set on end: Being set in this posture, there is left the thickness of a Board between every Board all the length, but just where they cross one another, for the Air to pass through to dry and shrink 'em, agzinst they have occasion to use 'em: But they set them under some cover'd Shed, that the Rain or Sun comes not at them: For if the Rain wet 'em, instead of shrinking 'em, it will swell 'em; or if the Sun shine fiercely upon 'em, it will dry 'em so fast, that they will *rear* or *shake* 'em, as they Phrase it, that is, in plain *Eng'lish*, split or crack. They have another way to dry and season their Boards for Floors, *viz.* By laying them flat upon 3 or 4 *Balks*, each Board about the breadth of a Board asunder, the whole length of the *Balks*. Then they lay another Lay of Boards athwart upon them, each Board also the breadth of a Board asunder; then another Lay athwart the last, and so till all are thus laid. So that in this Position also they lie hollow for the Air to play between them.

5. *Of Measuring.*] Floors Boarded are commonly measur'd by the Square (of 100 Superficial Feet, by Multiplying the length of the Room in Feet, by the breadth in Feet, and the Product is the Content in Feet; then measure the Chimney-ways, and Well-holes for Stairs by themselves, and deduct their Content in Feet from the whole Content in Feet, and from the Remainder cut off 2 Figures on the Right-hand, and what remains on the Left-hand is Squares, and what is cut off is odd Feet of the Content of Flooring in that Room.

6. *Price.*] The *Framing of Floors* in ordinary Buildings, (says Mr. *Wing*) is worth 7 or 8 *s.* per Square, in great Buildings, 10 or 11 *s.* But several Workmen in *Suffex* tell me, That they commonly have but 4 *s.* per Square, for Framing of Floors in ordinary Buildings. And some Workmen (in *Suffex*) tell me, That if they Frame the Joists the whole depth of the Girder, and pay for sawing the Timber, they have 9 or 10 *s.* per Square.

The Price of *Laying*, [*i. e.* Boarding] of Floors (says Mr. *Leyburn*;) is various, according to the goodness of the Stuff, from 12 *s.* to 20 *s.* the Square; but if the Boards be found by the Builder, then they commonly allow for *Planing*, *Joyning*,  
and

and laying of Boards, 4 or 5 s. per Square, besides Nails, of which 200 is a competent Allowance for one Square of Flooring. But some Workmen in *Suffex* tell me they will lay Deal-Floors Braded, and plain Joynts broken at every 4 or 5 Boards, for 3 s. per Square; and if they break Joynt at every Board, then 6 s. others say 6 s. 8 d. or 7 s. per Square.

Plaster-floors running, the Workman finding all, is worth, (says Mr. *Wing*,) 1 s. 4 d. per Yard, but the working part only is worth 4 d. 5 d. or 6 d. per Yard. V. Pl. Deal-floors.

### Flooring-brads.

V. Brads. N. 4.

*Fluted,*

Made with———

*Flutes,*

In Architecture, are the Hollows made in the Body of a Column. The Dorick, Ionick, Corinthian, and Composite Columns are commonly Fluted, or made with Flutes or Hollows, running along the Body of the Column, from the Base to the Capital. Each Column has 24 Flutes, and each Flute is hollow'd in, exactly a quarter of a Circle. The exact Method of drawing the Flutes shall be shewn (*Deo volente*) in the next Edition: In the meantime you are to know, That in the Dorick Column, the Flutes join together, without any Inter space; but in the Ionick, Corinthian, and Composite Columns, there runs a List betwixt every 2 Flutes.

### Flyers,

Are Stairs made of an Oblong-square Figure, whose fore and back sides stand parallel to each other; and so are their Ends; the second of these Flyers stands parallel behind the first, the third behind the second, and so of the rest. If one Flight carry them not to the intended height, then there is a broad half-pace, from whence they begin to fly again, as at the first.

### Foliage,

In Architecture and Sculpture, is Work wrought in Branches and Leaves.

### Foot-pace,

Or as some call it, *Half-pace*, is a part of a pair of Stairs, whereon, after 4, or 6 Steps, you arrive to a broad Place, where you may take 2 or 3 paces before you ascend another step, thereby to ease the Legs in ascending the rest of the steps.

## Fornication,

In Architecture, is an Arching, or Vaulting.

## Foundation.

1. *What.*] The lowest part of a Building, (generally laid under Ground) upon which the Walls of the Superstructure are rais'd. This word is also sometimes taken for a publick Building, erected for pious uses.

2. *Digging for, and laying of.*] Concerning Digging for, and laying of the Foundation of a Building, there are several things to be well consider'd and taken notice of; the most material of which I shall extract from the best Architects, Ancient and Modern.

(1.) *This*, (says that great Architect, Sir Henry Wotton,) requires the exactest Care; for if the Foundation happen to dance, 'twill marr all the Mirth in the House: Therefore, that we may Found our Habitation firmly, we must first examine the *Bed of Earth*, as I may call it,) upon which we Build; and then the *Substruction*, as the Ancients call'd it. For the former we have a general Precept in *Vitruvius*, twice repeated by him, as a Point indeed of main Consequence. First, *Lib. 1. Cap. 5.* And again, *Lib. 3. Cap. 3.* in these words, (as *Philander* does well correct the vulgar Copies,) *Substructiones, Fundatio sodiantur, (says he) si queant invenire ad solidum, & in solido.* By which words I understand him to commend to us, not only a diligent, but even a jealous Examination of the Soil, and to see that it be fit for our Purpose; in order to which, Architects ought to use their utmost Diligence; for of all Errors that may happen in Building, those are the most pernicious which are committed in the Foundation; because they bring with'em the Ruin of the whole Fabrick; nor can they without great difficulty be amended.

(2.) If the *Foundation* happen to be on a Rock, or hard Gravel; these (without digging, or other artificial Helps,) are of themselves excellent Foundations, and most fit to uphold the greatest Buildings.

(3.) If the Place where you Build, be firm solid Earth, you may dig for the Foundation, so far as a discreet Architect shall think requisite for the Quality of the Building, and soundness of the Earth; but how deep we should dig, *Vitruvius* has no where to my Remembrance determin'd, as perhaps depending more upon *Discretion* than *Regularity*, according to the weight of the Building; yet *Palladio* has fairly ventur'd to reduce it to Rule, allowing for the *Cavazione*, (as he calls it, i.e. the hollowing of the Earth for the Foundation) a sixth part of the heighth of the Fabrick; and if the Building be Cellar'd, he would have us. (as it should seem) to dig somewhat lower.

*Palla-*

*Palladio* lays down several Rules, to know if the Earth be firm enough for the Foundation (without Artificial Helps,) by Observations from the digging of Wells, Cisterns, and such like, (which he would have to be done in the first place,) and from Herbs growing there, if there be such as usually spring up only in firm Ground; also, if a great weight be thrown on the Ground, it neither sounds nor shakes, or if a Drum being set on the Ground, and lightly touched, it does not resound again, nor shake the Water in a Vessel set near it; these, (says he) are signs of firm Ground. But the best way to discover the Nature of the Soil, is to try it with an Iron Croe, or else with a Borer, such as Well-diggers use,

(4.) If you Build upon Mossie, and loose Earth, then you must dig till you find sound Ground. This sound Ground (fit to uphold a Building) is of divers kinds; for (as *Alberti* well observes) in some places 'tis so hard, as hardly to be cut with Iron, in other places very stiff, in others blackish, in others whitish, (which is accounted the weakest,) in others like Chalk, and in others Sandy; but of all these that is the best which is cut with most Labour, and when wet does not dissolve into Dirt.

(5.) If the Earth you build on be very soft, as in moorish Grounds; then you must get good pieces of Oak, whose length must be the breadth of the Trench, or about 2 Foot longer than the breadth of the Wall; these must be laid cross the Foundation about 2 Foot asunder; and being well ram'd down, lay long Planks upon them; which Planks need not lie so broad as the pieces are long, but only about 4 Inches of a side wider than the Basis or Foot of the Wall is to be, and pinn'd or spiked down to the pieces of Oak, on which they lie. But if the Ground be so very bad, that this will not doe, then you must provide good Piles of Oak, of such a length as will reach the good Ground, and whose Diameter must be about  $\frac{1}{2}$  part of their length; these Piles must be drove or forced down with a Commander, or an Engine for that purpose, and must be placed as close as one can stand by another; then lay long Planks upon them, and Spike, or Pin them down fast.

(6.) If the Earth be faulty but in here and there a place, and the rest be good Ground, you may turn Arches over those loose Places, which will discharge them of the Weight. You must observe to place your Piles, not only under the outer Walls, but also under the inner Walls that divide the Building; for if these should sink, 'twould be a means to make the outer Walls crack, and so ruine the whole Fabrick.

(7.) Thus much for the *Bed of Earth* on which we Build. We are next to consider the *Substruction*, as the Ancients call'd it; but modern Artists generally call it the *Foundation*. This is the Ground-work of the whole Edifice, which must sustain the Walls, and is a kind of *Artificial Foundation*, as the other

was *Natural*: About which these are the chief things to be remember'd. First, That the bottom be precisely level, where the Ancients us'd to lay a Platform of good Planks. Secondly, That the lowest Course or Row be meerly of Stone, (the broader the better) closely laid *without Mortar*; which is a general Caution for all parts of a Building that are contiguous to *Board* or *Timber*; because *Lime* and *Wood* are utter Enemies; and if any where unfit Confiners, then most especially in the Foundation. Thirdly, That the breadth of the *Substruction*, be at least double to the breadth of the Wall to be raised thereon. Yet here *Discretion* is freer than *Art*, and you may make it broader or narrower, according as the goodness of the Ground, and the weight of the Fabrick shall require. Fourthly, That the Foundation be made to diminish as it rises; yet so, as that there may be as much left on one side, as on the other; so as the middle of that above may be Perpendicularly over the middle of that below: Which ought to be also observ'd in diminishing the Walls above Ground; for so the Building becomes much stronger than it would be, by making the Diminution any other way. Fifthly, That you never build upon the Ruins of an old Foundation; unless you are very well assur'd of its depth, and that its strength is sufficient to bear the Building. Lastly, I find (in some ancient Architects) a curious Precept, *That the Stones in the Foundation should be laid as they lay naturally in the Quarry*: They supposing them to have most Strength in their natural Posture. But this Precept is generally observ'd by all good modern Artists, not only in the Foundation, but also in all parts of the Superstructure; and that for a better Reason than bare Conjecture, *viz.* Because they find the Stones to have a cleaving Grain, (or be subject to cleave) that way of the Stone that lay Horizontal in the Quarry: And therefore, if the Horizontal Position of the Stone in the Quarry should be placed Vertical in the Building, the Superincumbent weight should be apt to cleave them, and so render the Fabrick Ruinous. V. Stone, and Bed, and Face of a Stone.

3. *How to value.*] There are several ways, (says Mr. *Phillips*,) by which Men value the Foundations (or Ground-plots) of Houses. (1. Suppose he means, in Cities and great Towns.) As —

First, Some value them by their length or breadth toward the Street, reckoning every Foot in front to be worth 4, 5, 6, 8, or 10*s.* Yearly, according to the Street, or Place they stand in; and this Yearly Value they reckon at 20 Years' Purchase, and so every Foot in front is worth 4, 5, 6, 8, or 10 Pounds. But this is a very uncertain way, by reason of the great difference in the depth of Houses, &c.



Secondly, Others value Foundations by their length and breadth, measur'd by the Foot ; reckoning every Foot to be worth 3, or 4 s. But this way will deceive you as much, or more than the other, if you don't set a good Rate upon each Foot of Ground. For Ground being scant in a City, each Foot of it *there* may be worth 8 or 10 s. which in the Country is not worth  $\frac{1}{4}$  a Farthing ; tho' you reckon Land at 20 s. an Acre, and 20 Years Purchase ; for so 'tis worth but one Penny a Yard, and every Yard has 9 Feet.

Thirdly, But the way that I shall prescribe, (says my Author,) as more general and certain, to value these Foundations, is to get a true and indifferent Estimate of the Yearly Rent these Houses formerly went at, at a moderate rack Rent, without any Abatement or Diminution thereof by Fines, or any other Considerations : Which being known, you may reckon the true value of these Foundations to be 4, 5, or 6 Years Purchase, according to the said Yearly Rent, that is about the third part of the full worth or purchase of the Fee simple of the House. But if you will more exactly judge of, and determine the true worth of these Foundations ; it will be best to range them into 3 sorts, reckoning the first and lowest sort of Houses which yield least Rent, at 4 Years Purchase ; the 2<sup>d</sup>. sort which yield a moderate Rent, at 5 Years Purchase, and the 3<sup>d</sup>. sort which yield the biggest Rent, at 6 Years Purchase. My Author, (the afore-mentioned Mr. *Wing*.) demonstrates the *Meliority* of this way of Valuing Foundations, above any other ; but I have been already too long upon this Theam, and therefore I shall defer the rest of his Ingenious Discourse on this Subject to another Opportunity.

### Fountain.

An artificial Spring of, (or Well to contain) Water in a Garden ; whither the Water is brought in Pipes of Lead, &c. and commonly made to spout out of the Mouths, or other parts of Images.

### Framing.

1. *Of Houses.*] I know some Workmen in *Suffex* that do all the Framing in a House, *viz.* The Carcase, Flooring, Partitioning, Roofing, Ceiling-beams, Aftoring, &c. all together, and make the Windows, and Lanterns, and hew and saw the Timber for 12 s. per Square.

2. *Carcase of a House.*] Mr. *Leybourn* says, That Carpenters commonly work by the Square of 10 Foot, in erecting the Carcase, that is, (says he,) Framing and setting up with the Partitions, Floors, Rafters, and such like ; for which (says he,) they have (in running Buildings) from 15 to 20 s. the Square, and some may deserve 30 s. or more, (and to a Square of good Carcase, (says he,) 20 Foot of Ground rough Timber may be allow'd.) But I know not whether he means that the

Carpenter Fells, and hews and saws the Timber in to that Price; for some Workmen in *Suffex* tell me, That for Framing the Carcase of a House, and sawing the Timber, they have but 8 *s.* per Square, and without sawing the Timber, but 4 *s.* 6 *d.* others say but 4 *s.* per Square.

3. *Carcase of a Barn.*] Some Workmen tell me, That they have for Framing of Barns 3 *s.* 6 *d.* per Square. They also tell me, That the Charge of the Carcase of a Barn may be thus computed, *viz.* 4 *s.* per Square for sawing the Boards, considering the Slabbing, and the Boards lying one over another, 2 *s.* per Square for sawing the Timber, 3 *s.* 6 *d.* per Square for Framing, and 4 *s.* per Square for the Timber, reckoning at 12 *s.* per Tun, and 1 Tun to make 3 Square of Framing. So that the whole Charge of the Carcase will be at least 13 *s.* 6 *d.* per Square; for if the Timber be more than 12 *s.* per Tun, then will the whole Charge be more than we have computed.

4. *Partitions.*] Tho' some Workmen reckon Partitions into the Carcase, as was said, Num. 2. yet others reckon them by themselves, for which, and sawing the Timber, they tell me, they have 6 *s.* or 7 *s.* per Square; and for the Workmanship only, 2 *s.* 6 *d.* per Square.

5. *Roofs.*] Mr. *Leybourn* says, That Carpenters commonly reckon 4 or 5 *s.* in the Square more for Framing of Roofs, than for the rest of the Building. I know not how he means; for I am sure some ingenious Workmen in *Suffex* tell me, That for Framing of Roofs, and Sawing the Timber, they have but 8 or 9 *s.* the Square, and for the Workmanship only but 4 *s.* 6 *d.* per Square.

6. *Floors.*] V. Floors. N. 6.

7. *Thorough.*] Some Workmen tell me, That for Thorough-framing, (as they call it, that is Framing all, and making Doors and Windows,) they have 5 *s.* per Square, for the Workmanship only.

8. *By the great Square.*] Some Carpenters tell me, That in Brick Buildings they sometimes work by the *great Square*; and then besides framing the Floors, Partitions, Roof, &c. they also make Doors, Windows, Cornishes, Stair-cases, and (in general) all that is Carpenters Work, and sawing of Timber. Yet I think they told me, they were particularly paid for making the Modillions, or Cantalivers. And for this Work they have 6 Pound per Square. But 'tis to be noted, That in this way of working, they measure only the Ichnography, or Ground-plot, only to the Dimensions they add one of the Projectures in Front, and one in Flank, and so cast it up.

9. *Of Measuring.*] This kind of Work is measur'd by the Square, as Floors. V. Floors. N. 5.

## Fret-work.

## V. Plastick-Art.

*Free-Masons Work.*

## V. The Particulars in their proper places of the Alphabet.

*Freeze, or Frieze.*

1. *What.*] A Freeze in Architecture is the uppermost but one of the 7 principal parts of a Column. V. Column. N. 2.

2. *Kinds.*] There are as many kinds of Freezes, as there are Orders of Columns, viz. Tuscan, Dorick, Ionick, Corinthian, and Composite; of all which in their order.

3. *Tuscan.*] *Vitruvius* makes this Freeze flat and plain, and in height 30 Minutes. *Vignola* also makes it flat and plain, but in height 35 Minutes. *Palladio* makes it convex or swelling, and in height but 26 Minutes. *Scammozzi* makes it plain, and in height 42 Minutes.

4. *Dorick.*] *Vitruvius*, (and so also *Vignola*) makes this Freeze flat, only Carv'd with Triglyphs and Metops, and its height 30, or 45 Minutes. *Palladio* and *Scammozzi* also make it like *Vitruvius*, and in height 45 Minutes.

5. *Ionick.*] *Vitruvius* makes this Freeze flat, but commonly Carv'd with Acanthus Leaves, Lions, and Men, &c. And in height 30 Minutes. *Vignola* makes him flat also, and in height 45 Minutes. *Palladio* makes him Convex or Swelling, and in height but 27 Minutes. *Scammozzi* makes him flat, and in height 28 Minutes.

6. *Corinthian.*] *Vitruvius* makes this Freeze flat, but Carv'd with Acanthus Leaves, and Men, &c. and in height 37 <sup>2</sup>/<sub>3</sub> Minutes. *Vignola* makes it like *Vitruvius*, but in height 45 Minutes. *Palladio*, and *Scammozzi* also make it like *Vitruvius*, but *Palladio* makes it in height 28 Minutes, and *Scammozzi*, 31 <sup>3</sup>/<sub>4</sub> Minutes.

7. *Composite.*] *Vitruvius* makes this Freeze flat, but beset with Cartouses, and Carv'd betwixt each Cartouse, and in height 52 <sup>1</sup>/<sub>2</sub> Minutes. *Vignola* makes it like *Vitruvius*, but in height but 45 Minutes. *Palladio* makes it convex, or Swelling, and in height but 30 Minutes. *Scammozzi* makes it like *Vitruvius*, and in height but 32 Minutes.

*Fresco.*

1. *What.*] A way of Painting or Plaistering, (or rather both) upon Walls, to endure the Weather, and representing Birds, Beasts, Herbs, Fruits, &c. in relief.

2. *Of Painting in--*] Painting in *Fresco* is thus perform'd. Grind your Colours with Lime-water, or Milk, or Whey; and so temper and mix them together in Pots, as in Size-colouring.

Also,

Also, take the Powder of old rubbish Stones, mix it with well burnt Flints, (or Lime) and Water; but wash out the salt-ness of the Lime, by often pouring out the Water, and putting in fresh, the oftner the better; and this makes the Plaister or Compost. Avoid moist Weather, for that has great influence on the Walls: And to make the Work the more durable, strike into the Joints of the Brick or Stone Wall, stumps of Horse-nails, about 6 Inches asunder; for this will keep the Plaister from peeling off.

Then, with this Compost Plaister the Wall a good thickness, letting it dry; then (your Colours being ready prepar'd and mingl'd,) Plaister again over the former, the thickness of a Half-crown, so much as you intend presently to work upon; and whilst it is wet, work your Colours therein, which will mix and incorporate with the Plaister, so as never to wash out.

Work your Painting quick with a free Hand; for there can be no alteration after the first Painting; and therefore make your Colour high enough at the first; you may deepen, but not easily heighten.

Avoid Mineral Colours, Earthy Colours are the best, as all *Okers, Spanish-brown, Terra-vert, Spanish-white, &c.*

Your Brushses and Pencils must be long and soft; otherwise they will rake and rase the Painting; your Colours must be full, and flowing from the Brush; your Design perfect in the Image, or Paper Copy; for in this Work you cannot alter or add upon any Colour.

3. *History.*] This kind of Painting was the ancient Grecian way of Painting, and since much us'd by the Romans. *Plutarch* tells us, That *Aratus* the great Commander under *Ptolemy* King of *Egypt*, (in a Complement to the Emperours Affections that way,) spared the sacking of a wealthy City, meerly for the Excellency of the *Fresco* Painting upon the Walls of the Houses.

There have been several whole Towns of this Work in *Germany*, rarely done, but now ruin'd by War.

At *Rome* there are 2 Chambers (in the Pope's Pallace) of *Fresco*, done by *Raphael Urbin*, and *Julio Romano* (his Disciple) who finished his Master's Work, which is yet call'd *Raphael's* Designs. Other Places there are done by *Andrea del Sexto*, and *Michael Angelo*, and some other Artists.

At *Fountain-bleau* in *France* is most excellent *Fresco-work*. It is the continu'd Travels of *Olysses* in 60 pieces, done by *Bolameo*, *Martin Rouse* a *Florentine*, and others.

*French-glass.*

V. Glass. N. III.

*Frieze.*

*Frieze.*

As Freeze.

*Frigeratory.*

A Place to make or keep things cool in.

*Free-stone.*

V. Stone. N. 1.

*Front, or Frontispiece.*1. *What.*] The Face, or Foreside of a House.

2. *Of Setting.*] The *Setting*, [that is making] of the Fronts of great Buildings, *viz.* Ashlar, [or Stones,] Architrave, Windows and Doors, with the Ground-table, Fashia's, and other Members, is worth from 3 *l.* 10 *s.* to 5 *l.* per Rod, (says Mr. Wing,) according to the goodness of the Work.

*Frontish-doors.*

V. Doors. N. 4.

*Frowy.*

Timber is by some Workmen said to be *frowy*, when it is evenly temper'd all the way, and works freely without tearing.

*Funnels of Chimneys.*

1. *What.*] The Funnel of a Chimney is the Shaft, or smallest part of it, from the waft (where 'tis gather'd into its least Dimensions) upwards.

2. *Of making.*] *Palladio* tells us, That the Funnels of Chimnies must be carri'd through the Roof, 3, 4, or 5 Foot at least; that they may carry the Smoke into the Air. And here you must take care, (says he,) That they be made neither too wide; nor too narrow; for if they be too wide, the Wind will drive back the Smoke into the Room; and if they be too narrow, the Smoke (not having free passage) returns back also. Therefore 'tis that Chamber-chimneys are not made narrower than 10 or 11 Inches, nor broader than 15, which is the ordinary depth of the Funnels of great Kitchin-chimneys, whose breadth is 4 or 5 Foot within the Work, from the place where the Brest ends to the top of the Funnel. Now the said Brest reaches from the Mantle-tree, to the Ceiling, or pitch of the Arch, always diminishing within the Work, till you come to the Measures of Depth and Breadth, before mentioned; and from thence to the end of the Funnel, it must be carri'd up as even as you can possibly; for failing in this, it often happens the Smoke is offensive.

*Furrs.**Furrings.*

In Architecture, Furrings is the making good of the Rafter's Feet in the Cornish. That is, when Rafters are cut with a Knee, these Furrings are pieces that go straight along with the Rafter from the top of the Knee to the Cornish. Also when Rafters are rotten, or sunk hollow in the middle, and pieces (cut thickest in the middle, and to a point at each end) are nail'd upon them to make them straight again; the putting on of those pieces is call'd *Furring the Rafters*; and those pieces so put on are call'd *Furrs*.

*Gable-end.*

1. **What.]** In Architecture the Gable-end of a House is the upright Triangular end of the Roof.

2. **To Measure.]** To measure a Gable-end, Multiply the breadth at the bottom, by half the Perpendicular, or Line from the Angle at the top to the middle of the bottom; or Multiply half the former by the whole of the latter, and the Product will give the Content in such Measures as the Dimensions were taken in.

*Gain.*

The bevelling Shoulder of the Joyst, or other Stuff. 'Tis also us'd for the lapping of the end of the Joyst, &c. upon a Trimmer or Girder, and then the thickness of the Shoulder is cut into the Trimmer also bevelling upwards, that it may just receive the Gain, and so the Joyst and Trimmer lie even and level upon their Superficies. This way of working is us'd in a Floor or Hearth.

*Galleries,*

Are long narrow Rooms made on the Sides or Fronts of Houses; they serve for Walking, Eating, and other Divertisements. Their length (says *Palladio*) ought to be at least 5 times their breadth; they may be 6, 7, or 8 times their breadth, but must not exceed.

*Gardmanger.*

A Store-house, or Room to set Meat in.

## Gates.

1. *What.*] 'Tis a thing so well known, that it needs no Description, for all know it to be a Place for Passage of Persons, or Horses, Coaches or Wagons, &c.

2. *Of their Proportion.*] The principal Gates for Entrance, through which Coaches and Waggon are to pass, ought never to be less than 7 Foot in breadth, nor more than 12 Foot, which last Dimension is fit for large Buildings.

As to the height of Gates, it ought to be  $1\frac{1}{2}$  the breadth or something more.

But for common Gates in Inns, where Wagons loaded with Hay and Straw go under, their height may be twice the breadth.

3. *Of the Price of some sorts.*] As to the Price of Gates, it is various according to the sorts of Gates, which again will differ according to the Dimensions and Workmanship. Those which we shall mention at present will be only *Pallisado*, and *Pold Gates*.

And first of *Pallisado Gates*, Mr. Wing Smith, in *Rutland*, that if the Gates be 6 or 7 Foot high, and the Workman find Timber and Workmanship, they are worth about 9 or 10 s. per lineal Yard; but if he find only Workmanship, then 'tis worth 6 or 7 s. per Yard.

I have observed, that if they are *Semi-pallisado*, with Kneeling-rails at the top, handsomely Moulded on both sides, and square *Pallisades*, Raised Pannels, and Bisection Mouldings on both sides, the Gates about 8 Foot high, and the Posts a Foot Square, open'd in the Front, or revailed with a Moulding struck in it on both sides the Revail, a Base and Capital laid on the Posts, and the Heads cut into one of the Platonick Bodies; as suppose an Icolaedron, and the Posts were about 10 or 11 Foot above Ground, the Workmanship is worth 12 or 13 s. per Yard lineal; but if the Workmen find Timber, it will be worth more than 20 s. per lineal Yard, in such Gates, to find all Iron-work, Painting, &c. it would be worth above 30 s. per lineal Yard.

Secondly, Of *Pold Gates*, (which are such as are set in Fences for to shut up the Passages into Fields, and other Inclosures.) These are of 2 sorts, either of sawed, or cleft Timber; for to make a sawed one, and set him up, and his Posts, the Price in different Places is from 3 s. 6 d. to 5 s., but if the Carpenter pay for the sawing, then the Price is from 5 s. to 6 s. 6 d. Such a Gate, Timber and Work is worth from 7 to 10 s. according to their goodness; but with Posts from 12 to 15 s. But Gate and Iron-work from 10 to 13 s. But Gate, Iron-work, and Posts, from 15 s. to 18 s. but Cleft *Pold Gates*, cleaving, and making, and hanging from 4 to 5 s. and so proportionably for

all Timber, Iron, and Posts, &c. The Reason why the Prices are thus different, is, because 'tis according to the Customs of different Places where I had my Information. Perhaps the Reader may here expect that I should here say something concerning Gates, and their Imposts, and other Ornaments according to the 5 Orders of Architecture; but I finding that I shall make this 1<sup>st</sup>. Impression too large, I must therefore defer it till another Opportunity.

### Gavel,

A word used by some, by which they mean the same as *Gable*, which V.

### German glafs.

V. Glafs. Num.V.

### Girding-beams.

'Tis used by some Architects, to signify the same as

### Girders.

1. *What.*] Are some of the largest pieces of Timber in a Floor, the ends of them are for the most part Framed into the *Summers* or *Brest-summers*, and the *Joysts* are framed in at one end to the *Girders*.

2. *Of their Size or Proportion.*] The *Scantlings*, or Size of *Girders* and *Summers*, upon the Re-building of *London*, after a Consultation of experienced Workmen, were reduced to an Act by the Parliament, and are thus set down, as fit for all *Fabricks*, great and small, viz.

Girders and Summers, in length	From to		must be in	
	F. In.	F. In.	Breadth Inches	Depth, Inches.
	10. 0	15. 0	11	8
	15. 0	18. 0	13	9
	18. 0	21. 0	14	10
	21. 0	24. 0	16	12
	24. 0	26. 0	17	14

3. *How to be laid in the Brick-work.*] No *Girder*, or *Summer* ought to lie less than 10 Inches into the *Wall*, and their ends must be laid in *Lome*.

4. That *Girders* and *Summers* be of good hearty Oak, as free from knots as may be; because that will be least subject to break, and may with more safety be relied on in this cross and transverse Work.

*Girt.*



## Girt.

## V. Fillet.

## Glasfs.

I. *What.*] All know it to be a diaphanous, or transparent Body made by Art, of Sand and Nitre, saith *Pliny*: 'Tis also made of white gliftring Flints, mixt with Sal-Alkali, or the Salt of the Herb *Glasf-work*, or Salt of Fern-ashes for common *Glasfs*, some say. *Monsieur Blancourt* saith, that the *Venetians* also use white Flints, and also a rich Sand, and likewise a sort of white Marble; he also saith, that all white transparent Stones that will not burn to Lime, are fit to make *Glasfs*; and that all Stones that are fit to strike fire, are capable to be made into *Glasfs*.

I could here give you an account of the manner and method of making of divers sorts of *Glasfs*, and likewise the Historical Account of its Invention, &c. and many other Curiosities relating to *Glasfs*; which perhaps might be Satisfactory to the Reader; but I wanting both time, and room in this small Volumn, I must defer it till I have a better Opportunity.

II. *The sorts of Glasfs.* There are various sorts of *Glasfs* which are made use of in the World, but at present I shall confine my self to speak only of those sorts which *Glaziers* commonly work upon here in *England*, which are these following, viz. *Crown Glasf*, which is of 2 sorts, *Lambeth* and *Ratcliff*. 2. *French* or *Normandy Glasfs*. 3. *German Glasfs* of 2 sorts, *White* and *Green*. 4. *Dutch Glasfs*. 5. *Newcastle Glasfs*. 6. *Staffordshire Glasfs*. 7. *Bristol Glasfs*. 8. *Looking-glasfs*. 9. *Jealous Glasfs*; of which sorts I shall succinctly treat in their order.

III. *Of Crown-glasfs.*] Is of 2 sorts, *Ratcliff* and *Lambeth Crown-glasfs*, of both which sorts I will briefly treat. And

I. *Of Ratcliff Crown-glasfs.*] That sort of *Glasf* which goes by this Name, is the best and clearest sort of *Crown-glasfs*, which sort was at first made at the *Bear-garden* on the *Bank-side*. In the Year 1691, I had it Published in the *Gazette* for *June 15*, &c. where it is commended in this manner, and called *Crown-window-glasfs*, much exceeding *French Glasfs*, in all its Qualifications. But now at the *Bear-garden Looking-glasfs-plates* are made; the maker of this best sort of *Crown-glasfs*, being now removed to *Ratcliffe*, and upon that account it now bears the Name of *Ratcliff Crown-glasfs*, as it did at first of *Bear-garden Crown-glasfs*.

This sort of *Crown-glasfs* is of a light *Sky-blew-colour*, which may be very distinctly seen, if it be laid on a piece of white Paper.

I have been informed that an *English Glasf-maker* went over into *France*, on purpose to learn the *French way* of making

*Glass*, which when he had attained to, he came over again into *England*, and set up making of *Crown-glass*, and therein much out-doing the *French* his Teachers, as *Englishmen* usually do. I have been told by some *London Glaziers*, that there is 24 *Tables* of this *Crown-glass* to the *Case*, the *Tables* being of a *Circular Form*, of about 3 *Foot*, 6 or 8 *Inches Diameter*, and by consequence, each *Table* will be in *Area* about 9 or 10 *Foot*, and the *Case* betwixt 220, and 240 *Foot*. This *Glass* is brought from *Ratcliff* in such kind of *Frames* as *Newcastle-glass* is brought up into the *Town*, only the *Newcastle-glass* is brought on *Shipboard*, and this *Ratcliff-glass* upon a *Staff* betwixt 2 *Men*, according as they carry a small *Vessel* of *Beer*, or the like.

I have known this *Ratcliff-crown-glass* sold about 9 *d. per Foot* in *London*, ready cut into *Squares*. And when wrought in *Lead*, and set up, for about 18 *d. per Foot*.

2. *Of Lambeth-crown-glass.*] This second sort of *Crown-glass* takes its Name also from the Place where 'tis made; 'tis of a darker colour than *Ratcliff-crown-glass*, inclining something to a *Green*.

This sort is sold in *London* for about 8 *d. per Foot* cut into *Squares*, and being wrought and set up in *Windows* with *Lead*, its *Price* is about 16 *d. per Foot*.

IV. *Of French-glass.*] By some call'd *Normandy-glass*, because it was formerly made at *Chebourg* in *Normandy*. But I am informed that the *Work-houses* have within these few *Years* been removed, for certain *Reasons* of *State* to *Auxerre* in *Burgundy*. They also make *Glass* at *Nevers* in *Orleans*, and likewise at *St. Gobin* near *La Fere* in *Picardy*; but from which of these places our *French-glass* comes which we use in *England*, I cannot certainly tell. But 'tis a thinner and more transparent sort of *Glass*, than our *Newcastle glass*, and when 'tis laid on a piece of *white Paper*, it appears of a dirtyish *Green Colour*. It used to be of a middle *Price* betwixt *Crown* and *Newcastle-glass*, and I have known it sold for 12 *d. per Foot*, wrought in *Lead*, and set up; but some say 'tis now (we have *War* with *France*;) near as dear as *Crown-glass*.

Of this *Glass* there is but 25 *Tables* to the *Case*.

V. *Of German-glass.*] Of this sort of *Glass* there are 2 kinds, viz. *White* and *Green*.

1. *White German glass.*] This *Glass* is of a whitish colour, and free from those spots and blemishes which our *Newcastle-glass* is subject to, but it hath commonly some fine or small curved *Streaks*, or *Lines*. as the *Newcastle-glass* hath.

2. *Green German-glass.*] This you may well suppose to be of greenish Colour by its Name; it is subject to have those fine *Lines*, or *Streaks* as the white is; but both this and the white *German* is straighter, and not so crooked and warped as *Newcastle-glass* is: Both these sorts of *Glass* are brought over from

from *Germany*, and yet it is generally as cheap as *Newcastle-glass*.

VI. *Dutch-glass*.] It differs not much from *Newcastle-glass* in its Colour, and I have observed some of it that hath been very crooked; I am informed that the Tables of this sort of *Glass* are but small, 'tis not much used now in *England*. This *Glass* hath its Name also from those that make it, *viz.* The *Dutch*, for I am told 'tis brought out of *Holland*; 'tis also about the same Price with *Newcastle-glass*.

VII. *Newcastle-glass*.] This sort of *Glass* is of a kind of an Ash-colour, 'tis the *Glass* that is most in use here in *England*, but 'tis subject to have Specks, and Blemishes, and Streaks in it, and 'tis very often warped crooked. Of this *Glass*, Mr. *Leybourn* says there is 45 Tables to the Case; but if I did not mistake, a *London* Glazier told me they had but 35 Tables to the Case, and Mr. *Leybourn* also saith, that each Table contain'd 5 Superficial Feet, and by Consequence a Case of 45 Tables to the Case will contain 225 Foot, the Glazier before-mention'd said there was 6 Foot in a Table, and if but 35 Tables to the Case, that would amount to but 210 Foot. But I was informed by one that told me he had taken the Dimensions of some Tables of *Newcastle-glass*, and he found them to contain 7 Foot at least; for saith he, they are of this form; the upper edge as they stand in the Cases or Frames is Circular, about the 4<sup>th</sup>. or 5<sup>th</sup>. part of a Circle, the Cord of which saith he was about  $3\frac{1}{2}$  Foot, the lower side was strait, about 18 or 19 Inches, the Perpendicular from the bottom to the top about 3 Foot: From this Observation, a Case of 35 Tables would amount to 245 Foot. These Tables of *Glass* are brought in Cases, or slight Frames of Sticks fixed at some distance one from another, into 4 corner pieces which are stouter. The ends of these Frames are made tapering nearer one another at the bottom than they are at the top, according to the Form of the *Glass*; but the sides are parallel, the *Glass* is set in on some Straw, which is laid on the bottom of the Frame, and there is some Straw also put on the sides, and top of each Case, but none betwixt the Tables. These Cases are brought to *London* in the Coal-ships, they being set on end in the Coles more than half its depth, by which means they are kept steady from falling and being broke by the motion, and rowling of the Ship.

Mr. *Leybourn* saith, that a Case of 45 Tables, 5 Foot to a Table equal to 225 Foot, doth weigh about 200 lb. and by consequence 9 Foot will weigh about 8 lb.

He also saith, the Price of *Newcastle-glass* is uncertain, for when Coals are Plenty, then *Glass* is cheap, and when the Coals are dear at *London*, then *Newcastle-glass* is so likewise, not that they want Coals at *Newcastle*; but because they have

no other Conveyance for it to *London*. So that sometimes it is at 30 *s. per Case*, and other times 40 *s.*

But I was informed by a *London Glazier*, that the most constant Price was 34 *s. per Case*.

To cut a Case of this Glass into *Quarries* Diamond fashion (with halves, and quarters, and 3 quarters of *Quarries*, as the Glass falls out) some say it is worth 6 or 7 *s.* but I did hear a Glass-cutter say he would do it for 3 *s.* or 3 *s. 6 d.*

*Newcastle-glass* cut into large Squares are sold for 22 to 25 *s.* per 100 Foot, according to their Size.

And small Squares, from 19 to 22 *s. per 100 Foot*.

And *Quarries* of *Newcastle-glass* for about 16 *s. per 100 Foot*.

Glazing done with this *Newcastle-glass* with *Quarries*, banding, Soddering, pinning the Casements being included, the usual Price is 5 *d.* or 6 *d. per Foot* in *London*, and thereabouts, but in several parts of the Countrey they have 6 *d. per Foot*, and will be paid for pinning of the Casements besides.

VII. Glazing in some Places of *England*, as in *Rutland*, and other Northern Parts they Glaze with *Quarries* of *Newcastle-glass* for 4  $\frac{1}{2}$  *d.* or 5 *d. per Foot*. And Squares wrought into Lead, and set up for 6 *d. per Foot*.

But then again in *Suffex* and *Kent*, the South Parts of it they will not work so cheap, because their Glass is something dearer to them; in these Southern Parts; there they commonly reckon 7 *d. per Foot* for Glazing with Squares of *Newcastle-glass*, besides they will be paid for Pinning of the Casements.

VIII. *Staffordshire glass.*] This sort of Glass which is made in *Staffordshire*, I could never yet learn any certain Account of it; for 'tis a sort of Glass but seldom used in these parts of the Kingdom

IX. *Bristol glass.*] This is made at the City of *Bristol*; but by reason they have not the Conveniency to send it by Sea, (as they have from *Newcastle* by Coal-Ships,) 'tis very rare to have any of it in *London*, tho' it be as cheap, and better than *Newcastle-glass*.

X. *Looking-glass.*] As to *Looking-glass-plates*, they are made at the Bear-garden on the Bank-side, *London*, (where Crown-glass was 1<sup>st</sup> made.) I do not certainly know whether this sort of Glass be not made with the sort of Sand, mentioned by Dr. Grew in his *Museum Regalis Societatis*, 345 P. Fine Sand, saith he, from a Sand-pit near *Bromley* in *Kent*, of this is made the clearest and best *English-glass*; it consisteth of some Grains as clear as Crystal; with which others obscure being mixed, give a whitish Ash-colour to the whole Mass.

These *Looking-glass-plates* are ground smooth and flat, and Polished, they are sometimes used in *Sashes* or *Sash-windows*; but 'tis a dear sort of Glass; for they ask 4 *s. per Foot* for such Squares, and if they are large 'tis much more.

There is (a way) which some use to try, which is the whitest and clearest Glass, which is thus, viz. they take it up close by

by one edge, betwixt the edges of the middle and Fore-finger, and then looking against the cut, or broken edge, the Eyes being thus skreen'd by the edges of the 2 Fingers, they say 'tis easie by this Method to discern which is the whitest and clearest Glass.

Looking-glasses foil'd being in vogue for Ornaments over Chimneys in Parlours, &c. I shall briefly say something concerning them. Sir *William Petty* saith that the value of *Looking-glass-plates* consists in a duplicate proportion of their sides to their Squares. Because you shall not be left quite in the dark as to this matter, I will exhibit the Price which I have known set upon 2 Sizes of *Looking glasses*, viz. One of 5 Inches long, and 12 broad in a Frame to place over a Chimney 40 s. some of 10 and 8 Inches, in Walnut-tree-frames for about 4 s. per piece, if they have Diamond-cut; but if not, this size is about 6 d. per piece cheaper. I could here have shew'd the Method of Grinding, Polishing, and Foiling of these *Glasses*: But I fear I shall offend the Stationer in making this first Impression too large, and therefore I must at present pass this, and several other Curiosities; which I had thought to have inserted here, for the Satisfaction of the Ingenious and Inquisitive Reader.

XI. *Jealous Glass.*] This is a sort of wrinkled Glass of such a Quality, that one cannot distinctly see what is done on the other side of it; but yet it admits the Light to pass through it. 'tis made of the same sort of Materials, as *Looking-glass-plates* are. This *Jealous-glass* is cast on a Mold, and is composed all over its Surface with a multitude of Oblong Circular Figures, (which are Concave,) somewhat resembling Weavers Shuttles, this is on one side of it, but the other side consists of such Figure which are a little Convex, and this last side is the side they cut it on, when the Squares are too big for the present use, it being found to be very difficult to cut it on the Concave side. Some sorts of this *Jealous-glass*, hath a Convexity rising in the middle of the Concavity; so that one side, or Surface of it doth much resemble the Boats which Boys used to make by folding of Paper; oniy in this Glass the Concavities, and convexities are both more obtuse and blunt. But there are various sorts of this Glass, in respect either of the Form or Size of the Figures, of which this *Glass* is composed; for I have seen some of this *Glass* have the Shuttle-like Figures, much larger than other some, and some of it which the Points (as it were) of the Shuttles are very curved, and sometimes these Figures are in a Position Perpendicular to one edge of the Square, and other some are oblique to it.

I am informed that this Glass is about 18 d. per Square, each Square being about 12 or 14 Inches broad, and 15 or 16 Inches long. The reason why they are so dear, is, (as I am informed,) because the *Looking-glass-plate-makers*, do not care to make these

sort of Squares, but only when their Pots of Metal are almost out, and they are a little at leisure; for they say it wastes Glass too much for their Profit. I heard a *London* Glazier say, that he hath sometimes stayed a Month for some of it, before he could have it to use. This sort of Glass is commonly used, in and about *London*, to put into the lower Lights of Sash-windows, &c. Where the Windows are low against the Street, to prevent People's seeing what is done in the Room as they pass by: It is sometimes set in Lead in such Places, where they would not have their Actions seen by the Passers by.

Now it is very plain (to any reasonable Man, that knows any thing of Refractions,) that this sort of Glass must needs prevent People's seeing through it, into a Room, as they pass by; because the Rays, or Species of a visible Object, are by reason of such a variety of Refractions, (caused by the inequality of the Glasses Surface,) broken and confused when they arrive at the Retina, or Fund of the Eye.

XII *Woolwich*, or *Woolledge*.] This also was one kind of our *English* Glass, which did receive its Name from the Place of its make; but by reason they met with some discouragement in their Proceedings there, they have laid it down there for some time, and do not now make there.

### *Glazier's-work, or Glazing.*

1. *What*.] *Glazier's-work*, or *Glazing*, all know to be a manual Art, whereby pieces of Glass (by the assistance of Lead,) are so fitted and compacted together by *straight* or *curved* Lines, that it serves as well for the intended use, (almost) as if it were one entire piece; nay in some respects far better and cheaper, *viz.* in case of breaking, &c.

These 2 Heads of *Straight* or *Curved*, will admit of several Sub-divisions, and first of *Straight*, which contains 1 square Work whose Angles are right, as almost all *Window-lights* are in Timber Window-frames, and so likewise are the Squares, (if it is Glazed with such) of which the Lights are composed.

2. *Miter*, or making an Angle of 45 Deg. this but seldom happens in this Profession, unless it be in some places of *Fret-work*.

3. *Bevel*, this is the most common, especially in the Country, and ordinary Houses, (which all know to be most numerous,) for most such are Glazed with *Quarries*, which is *Bevel Work*, so likewise is a great deal of *Fret*, and all *Snip-work*.

*Curved Work*, consists either of *Circles*, *Ovals*, or some distorted Arches; *Circles* and *Ovals* are commonly used for Lights at some particular place in a Building, as in a *Pediment*,

or over a Door, or the like, in the middle of a Front, &c. I have also observed a Light over a Door in the Front of a Building that did consist of 2 Arches of a pretty large Circle like a Weavers Shuttle, lying along, and the whole Light was Glazed with one piece of Glass. Both Parts, Circles, and Ovals, and sometimes some distorted Arches are made use of in crocket Windows, &c. And also both whole and parts of Circles, and Ovals in their Fret, or Ornamental Works.

II. *Of Glazier's Draughts,*] the most ingenious sort of *Glaziers*, both in City and Countrey work by Design, (and not by Guess, like the common Blunderers in most Professions relating to Building;) for they make a *Draught* of all their Windows on Paper, in which they set down the Dimensions of each Light, both of heighth and breadth, and the number of Squares, both in breadth and heighth, in each Light; and also the number of Lights in each Window, after the following manner, *viz.*

1		2		3		4		5		6	
3. 6. 0	3. 6. 0	3. 6. 0	4. 0. 0	4. 0. 0	4. 0. 0	4. 0. 0	4. 0. 0	4. 0. 0	4. 0. 0	4. 0. 0	4. 0. 0
$\frac{6}{4}$	C	$\frac{6}{4}$	$\frac{7}{4}$	$\frac{7}{4}$	C	$\frac{7}{4}$	$\frac{7}{4}$	$\frac{7}{4}$	$\frac{7}{4}$	$\frac{7}{4}$	$\frac{7}{4}$
2. 1. 0	2. 1. 0	2. 1. 0	2. 1. 0	2. 1. 0	2. 1. 0	2. 1. 0	2. 1. 0	2. 1. 0	2. 1. 0	2. 1. 0	2. 1. 0

3		4		5		6	
4. 50	4. 50	4. 50	4. 50	4. 25	3. 75	3. 75	3. 75
$\frac{8}{3}$	C	$\frac{8}{3}$	C	$\frac{7}{3}$	C	$\frac{7}{3}$	$\frac{6}{3}$
1. 50	1. 50	1. 50	1. 50	12. 5	1. 75	1. 75	1. 25

N. B. Note, that here are 6 distinct Windows, *viz.* the 2 upper ones are 3 light Windows, and of the four lower ones there is 1, 3 Lights, 2 single Lights, and 1 double one.

N. B. That the number standing at the top (of the Oblong Figure in the Scheme above,) is the heighth of the Light; that at the bottom the breadth, and that number in the middle, the upper one for the number of Squares in heighth, and the lower one for the number in breadth.

N. B. Also that the 1 and 2 Windows, (which are 3 light Windows,) have their Dimensions set down in Feet, and Duodecimal Parts of Feet, E. G. in the 1<sup>st</sup>. Window you have this number, 3. 6. 0 at the top, which signifies the heighth of the Light to be 3 Foot, and 6 Duodecimal Parts of a Foot, in the middle there is  $\frac{6}{4}$ , which signifies 6 Squares in heighth, and 4 in breadth, (equal to 24 in the whole Light,) and below their stands 2. 1. 0 which signifies 1 Foot, and 1 Duodecimal

decimal Part of a Foot: In the second, or middle Light there is a C set to shew that there must be a *Casement* in that Light, and by consequence the upper Squares, and lower ones must be cut something shorter, because of the Frame of the Casement,) and the side Squares must be cut something narrower, and the 4 corner ones both shorter and narrower.

Now by such a Draught, the *London Glazier* when his Countrey Customer sends to him for such a certain parcel of *Glass*, he knows immediately how to cut it to fit his Work, and the Countrey *Glazier* knows how to work up his *Glass* by it, so that it shall fit each *Window*, tho' he be 40 Miles remote from it, as well as if he were by it.

The *London Glass cutters* commonly mark (with a Letter, or Figure over them,) all the *Windows* that are of one Size, and Write the same Mark on a piece of Paper, the which is put in among that parcel of Squares which belong to those Lights which are all of one Size, this piece of Paper is so put in, that the Character is visible above the edges of the Squares: By which distinguishing Character the Countrey *Glazier* readily knows which Squares to take for any *Window*.

I shall only add one thing more to this of *Draughts*, and so conclude with this Head: And that is, that such *Glaziers* as understand it, set down their Dimensions in Decimals; which fits as well or better for the *London Glass-cutters*, because they have their Rules Centesimally divided for the Purpose. I have here therefore, (for satisfaction to the curious,) set down the Dimensions of the 4 lower *Windows*, in Feet and Centesimal Parts. As for Example, in the 3d. *Window* at the top you have these numbers 4. 50, which signifies the height of the Light is 4 Foot and 50 Centesimal Parts, and at the bottom there is this Number, 1. 50, which is 1 Foot 50 Centesimal Parts, and so of the rest.

III. *Of Measuring Glaziers Work.*] In discoursing of this, I shall do these 2 things; 1st. Consider the *Customs* used amongst them, (for Custom is to be the greatest Guide in all manner of Measures.) And 2dly. of taking the *Dimensions*, and computing the Quantity.

1. Before we proceed to taking of *Dimensions*, which one would think should be the 1st. thing, in order to measure any Superficies or Solid. Yet before we can pretend to take these *Dimensions*, we must be inform'd of all *Customs* that are claimed, and have been tolerated by long standing, &c. in any Profession. And therefore,

Note, 1. That in Glazing when *Windows* have a *Semicircular* top, (or any other *Curved* Form) the Custom is to take the full height as if it were square.

2. That all *Windows* consisting of intire *Circles*, *Ovals*, or any other *Curved* Form, the *Dimensions* are taken the 2 longest ways,



ways at Right Angles one to another, (which we may call the Diameters, and from these Dimensions the Areas are found the same as if they were Square.

3. That all *Crochet-windows* in Stone-work are all measured by their full Dimensions in height and breadth, as if they were Square and not Curved.

4. That there is very good Reason for all these Customs, if we consider the trouble in taking Dimensions to make them by 2 the waste of Glass in working it to these Forms, and 3 the extraordinary time expended in setting it up, more than in square Lights. I say if these things be duly weigh'd and considered, they will be found of more value than the *Glass* which would cover a Square Superficies of that Dimension. Having thus dispatched the 1<sup>st</sup>. thing, *viz.* Of *Customs*, I shall now proceed to the

2. Of taking *Dimensions*, &c. In doing of which, in this Profession of *Glazing*, it is generally taken to parts of Inches, and so computed to the Nicety of a Fraction of an Inch, which may be done several ways, 4 of which being practis'd by some *Surveyors* and *Workmen*, I shall just mention here, *viz.* 1. By vulgar *Fractions*, 2. By *Cross-Multiplication* of Feet, Inches, and Parts, 3 By *Duodecimals*, and 4. By *Decimals*. There is another way by *Logarithms*, which is more expeditious than either of the former; but I cannot here stay to treat of these, which will require too much time and room for this present Undertaking, or Design.

But because in *Glaziers* Work, they usually take the *Dimensions* to the Parts of an Inch, the best and readiest way to compute the Area's, is to take the *Dimensions* with a Sliding-rule, such as the *Glaziers* generally use; which Rule is divided Centesimally, the *Dimensions* being thus taken, and set down, are Multiplied one into the other, as easily as Vulgar Arithmetick in whole Numbers is.

As to the Method of taking *Dimensions*, and setting them down in a Pocket-book, or the like, Vid. *Building*, Num. V. §. 2, 3, 4, 5. where also you will find a *Bill* of Measurement of *Glazier's* Work.

And for the manner of Computing the Quantity, *vide* *Cross Multiplication*.

IV. *Of the Price of divers sorts of Glazier's-work.*] The different sorts of *Glazier's* Work which we shall here mention, are these following, *viz.* *Glazing* with Squares, and with *Quarries*.

And 1. Of *Glazing* with Squares for the Price of *Crown*; *French*, *German*, *Dutch*, and *English* Glass wrought in Lead, and set up. V. Num. III. *&c.* of *Glass*.

As to the Price of Square-work, the Master finding *Glass*, and the *Glazier*, Lead, Sodder, and Workmanship, 'tis worth about 2  $\frac{1}{2}$  *d.* per Foot, But they will be (in the Countrey) paid

paid 3 *d.* per Casement for pinning of them, (which is putting of Lead-pins thro' the Iron-frame, and Soddering them, thereby to fix the Glass to the Frame,) viz. Casements of 4  $\frac{1}{2}$  Foot long, and so proportionably, if they find Lead or Sodder for it.

But to work up Squares and set it up, finding nothing but Workmanship, it's worth about 1 *d.* or 1  $\frac{1}{2}$  *d.* per Foot.

2. Of *Glazing* with *Quarries*, which is for the most part done with *Newcastle glass*, which see for the Price of new Work and *Materials*. Num. VII.

But if the *Glazier* find only Lead, Sodder, and Work, 'tis worth about 3 *d.* per Foot. But if they find nothing but Work, then 1  $\frac{1}{2}$  *d.* or 2 *d.* is a sufficient Price.

For taking down *Quarry-glass*, Scouring it, and Soddering it anew, and Banding, and setting up again, the usual Price is 1  $\frac{1}{2}$  *d.* per Foot.

But if it be in Churches where they say they have usually more Banding, &c. their Price is 2 *d.* per Foot. They have also 2 *d.* per Foot for taking down, Scouring, Soddering, Banding, and setting up again of the old fashion'd Work, which is compos'd of pieces of Glass of different Sizes and Figures.

As to the quantity of Lead used in any number of Feet of *Glass*. vid. Lead, Num. 10.

I find by Mr. *Leybourn*, that in *London* they generally use that Size of *Quarries*, call'd 12 *s.* the which he thus describes. *Quarries*, (saith he,) for the most part are 6 Inches in length from one Acute Angle to the other, and in breadth from Obtuse Angle to Obtuse Angle 4 Inches; so that each *Quarry*, saith he, contains 12 Superficial Inches; which sort is that which they call long *Quarries*. V. P. *Quarries*.

N. B. That there are several Appellations given to the various *Dimensions*, &c. of *Quarries*, viz. 1. The *Range*, which is a Perpendicular let fall from one of the Obtuse Angles to the opposite side. 2. And the *Length* is the longest Diagonal from one acute Angle to the other. 3. The *Breadth* is the shortest Diagonal, which is drawn between the 2 Obtuse Angles, as for the Sides and Area of a *Quarry*, I think all know that.

You will find in the word *Quarries*, that there have been, or still are 12 sorts of *Quarries*; from whence there arises divers Propositions, of great use to *Glazier's*. As 1. To find any of the 5 fore-cited *Dimensions*, as *Range*, *Side*, *Length*, *Breadth*, and *Area*, of any of the sorts of *Quarries*. 2. To find the *Area* of any sort of *Quarries*. 3. Having any of these *Dimensions* given, viz. *Range*, *Side*, *Breadth*, or *Length*, to find the Name, or Denomination of the Size, viz. Whether 8 *s.* 10 *s.* 12 *s.* &c. 4. Having the *Area* of a *Quarry* given, to find of what sort or size he is. 5. To find whether a *Window*

be Glazed with those they call square Quarries or long ones; for you must note there is 6 sorts of sizes or square Quarries, and 6 sizes of long Quarries, which makes 12 sorts in all, as I told you before. Altho' I am sensible that these 5 Propositions (but just now mentioned,) would be acceptable to *Glazier's*, and some other ingenious Persons, yet I must here evade them till a better opportunity, for Reasons oft mentioned, in this Book. *Glazier's Bill. V. Building. V. 7.*

### *Gradatory.*

'Tis derived from the Latin, and is used to signifie a Place to which we go up by Steps, particularly an Ascent from the Cloister to the Quire in some Churches.

### *Granary.*

A Place to lay up Corn in. Sir *H. W.* advises to make it toward the *North*, as much as may be; because that Quarter is most Cool and Temperate.

Mr. *Worlidge* saith, that the best *Granaries* are built of Brick with Quarters of Timber wrought in the in-side, where-to to nail the Boards, with which the in-side of the *Granary* must be lined so close to the Bricks, that there be no room for Vermine to shelter themselves. There may be many Stories one above another, and let them be near the one to the other, for the shallower the Corn lieth the better, and it is the easier turned, which it must be sometimes.

Some have had 2 *Granaries*, one above the other, and filled the upper with Wheat, or other Corn; this upper one had a small hole in the Floor, by which the Corn descended into the lower one like the Sand in an Hour-glass, and when it was all come down into the lower *Granary*, it was then carried up again into the upper one; and so it was kept continually in motion, which is a great Preservation to the Corn.

A large *Granary* full of square Wooden-pipes may keep Corn long from heating.

### *Grange,*

From the Latin word *Grana*, a *Building* which hath Barns, Stables, Stalls, and other necessary Places for Husbandry.

### *Grates.*

V. Iron. Num. 4.

### *Great Bricks.*

V. Bricks. Num. IV. §. 9.

*Grotes-*

*Grotesque, or Grottesca.*

V. Antick.

*Ground*

To Build on.] V. Foundation. Num. 2. §. I. 2. 3. 4. 5. and 6.

*Ground guts.*

V. Alder. Num. 3.

*Ground-plot, or Plot.*

1. *What.*] A piece of Ground a Building is to be erected upon.

2. *Of Valuing*] V. Foundations. Num. 3.

*Ground-plate.*

V. Sell.

*Grove,*

A Term used by *Joiners*, to signify the Channel that is made by their Plow in the edge of Molding, or Stile, or Rail &c. to put their Pannels in in Wainscotting.

*Gutta.*V. *Architrave*. Numb. 6.*Gutters.*

1. *What.*] Those which we shall here treat of, are *Vallies* in the Roofs of *Buildings*, and these are of 2 kinds in respect of their Position; for they are either something near a Parallelism with the Horizon, or inclining towards a Vertical Position to the Horizon.

Of the first kind of *Gutters*, which for distinction sake I will call Parallel,) there are 3 sorts which are cover'd with Lead; for 1<sup>st</sup>. either it is a *Gutter* betwixt 2 Roofs which stand Parallel to each other, being made upon the Feet of the Rafter of 2 Roofs which meet together. Or, Secondly, A *Gutter* where a *Building* hath a Cantaliver, or Modilion Cornish, which projects  $1\frac{1}{2}$  Foot, or 2 Foot, (according to the Design of the *Building*) beyond the Walls, then the Roof is set with the Feet of the Rafter, no farther out than the Walls, but rather within it; so that the Joists of the upper Floor lie out beyond the Walls, and also beyond the Feet of the Rafter which is yet cover'd with Lead. The 3<sup>d</sup>. sort of these Parallel *Gutters*, are in these Roofs that are flat, commonly called *Platforms*, where are also *Gutters* for the Water that runs from the Platform to descend to, which is from thence conveyed off from the *Building*, either by Spouts or Pipes.

Having described the *Parallel Gutters*, we are next to treat of the *Vertical Gutters*. By *Vertical Gutter*, I mean such a one as is made by two Roofs meeting at Right Angles, one to the other, or which is the same thing (but in other words) it is made by the end of one Roof joyning to the side of another: As for Example, if a Building be erected in the Form of a Roman L, 'tis then common to have 1 *Gutter* on the inside of the L. But if it resemble a T, it hath 2 *Gutters*, but if like an H, then 4. These *Gutters* also are of 2 sorts, viz. Either *Lead* or *Tile*. Of all which we shall speak in their Orders. Having given the definition of *Gutters*, I shall now proceed to treat

2. *Of laying Parallel Lead Gutters.*] In speaking to this Head, before I proceed to treat of laying the *Lead*, I must here give a necessary Caution, which is this, viz. To take care that the *Gutter Boards*, &c. lie not too near a Parallelism with the Horizon, but in such a Position that it may have a good *Current*, (as Workmen phrase it;) for if it be laid too near a Level, the Water is very subject to stand in splashes, if the *Gutter* chance to sink a little in the middle, which some *Gutters* are most apt to do; but this is something according as they are posited on the Building.

I have observed some *Gutters* to have a Lair of Sand for the *Lead* to lie upon, but this way I do not approve of for 2 Reasons, which are these, viz. 1. Because some sorts of Sand I have observed does corrode and decay the Timber that lies near it) very much. 2. When 'tis laid on Sand, a very little Squating, viz. by jumping upon it with the Heels of ones Shoes will dent it, and there the Water immediately stands, which is a means to decay the *Lead* the sooner.

In laying of *Lead* for *Gutters* upon *Boards*, if they are so long that one Sheet of *Lead* will not reach them, then 'tis common (for some Plumbers) to sodder them; for which purpose they cut a Channel cross the *Gutter-boards* at the end of the Sheet where the Soddering must be; and into this Channel they beat down the ends of both the Sheets (that are to meet there) into the Channel; which when they have done, there will remain a little Cavity, which the Sodder fills up level with the rest, when it is soddered.

The *Lead* which they commonly lay in *Gutters*, is that which weighs about 8 or 9 lb. to the Foot. Of these *Gutters*. V. P. *Lead*. Num. 6.

III. *Of Vertical Gutters.*] These *Gutters*, as I told you before, are of 2 sorts, viz. *Lead*, and *Tile*: As to the *Lead* ones I shall say nothing here, being almost the same in effect as the *Parallel* ones. Only unless the Builder will be at the charge, the *Lead* need not be altogether so thick for these *Vertical* ones; for if they are laid with *Lead* of but 5 or 7 lb.

to the Foot, these *Vertical Gutters* will last as long as the *Parallel* ones with Lead of 8, 9, or 10 lb. to the Foot.

*Gutters* laid with *Tiles*, are also made of 2 kinds of *Tiles*, viz. *Concave*, (or *Gutter*,) and plain *Tiles*; I shall here say little of the *Concave*, or *Gutters*, but refer you to the Description of *Gutter-tiles*.

*Plain Tile Gutters*, are also distinguished into 2 sorts, viz. 1. *Plain-tile-gutters*, (properly so call'd,) and 2dly, 3 Point *Gutters*, of both which I will treat in their order. And,

1. *Of Plain-tiles-gutters*, (properly so call'd) in these *Plain-tile-gutters*, there is a *Gutter-board* laid which raises them from *Pointing* to an *Angle*: And in laying on the *Tiles*, the *Workman* begins at one side of the *Gutter*, and so works cross it as if it were plain *Work*, and then brings the next row of *Tiles* back again; so that he works forth and back, or to and fro from right to left. So that *Gutters* laid after this Method are not *Angular*, but of a kind of distorted *Curve-linear* Form; by which means they are not so subject to be surred up with the *Mortar* which washes out of the adjacent *Tiles*.

2. *Of 3 Point-gutters.*] This is the second sort of *Gutters* which are laid with plain *Tiles*: In laying of which, they begin and lay one *Tile* on one part of the *Roof*, (it matters not which part 1st.) and lay one corner of the *Tile* just in the middle of the *Gutter*, and then they lay another on the other part of the *Roof*, with his corner just in the middle of the *Gutter* also; so that the corner of the second *Tile* is contingent with the 1st. And then lay another *Tile* in the *Gutter*, with his corner, (as it were) betwixt the other 2, and to them: Having so done, they persist in their *Work*, and lay a *Tile* on each part of the *Roof*, as before, and another betwixt them in the *Gutter*: After this manner they go on with their *Work*, till they have finished the *Gutter*: And this is what they call a 3 *Point Gutter*; for there always come 3 *Points*, (or *Angles*) of *Tiles* together, (viz. 1 *Angle* of 3 distinct *Rules*,) which makes it very uniform and handsome. You are here to note, that only 3 1/4 Inches square of the middle *Tile* is visible, (if the *Gage* be 7 Inches,) the rest of that *Tile* being cover'd with the next row of *Tiles* above it.

Two these *Gutters* are very handsome, and if well done very secure also; yet if they let the *Water* into the *House*, (by reason of some *Stoppage*, or broken *Tile* in the *Gutter*,) they are very troublesome to mend.

IV. *Of Measuring Gutters,*] or *Vallies*. In different parts of the *Kingdom* there are commonly diverse *Customs*, as to this matter of measuring *Vallies*, or *Gutters* in *Tiling*: For, 1st. At some *Places* they but seldom, or never allow any thing for the *Gutters*, but include it with the rest of the *Roof*, at *Flat* and half: I am informed, that at *London* they but seldom measure the *Gutters*; but only as they are part of the *Roof*,

so they are included in the Flat and  $\frac{1}{2}$  Measure. And I know some Workmen at *Tunbridge-wells* never demand any other; but only as it is included in the Plain Measure; which is an Area found by Multiplication of twice the length of the Rafter by the length of the Building. Or which is the same thing (when it is  $\frac{1}{2}$  Pitch,) the Flat and  $\frac{1}{2}$  Flat.

2. In laying of *Gutters* with Concave-tiles, the Workmen in some parts of *Suffex* and *Kent*, have gotten a Custom to be allowed so many Foot more than the plain Measure, as there *Gutter-tiles*, (and also including *Corner-tiles*, *Ridge-tiles*, *Dorman-tiles*) in the whole Roof.

2. At some other Places, I know they claim so many Feet more to be added to the Plain-measure, as the *Gutters*, (and also corners) are in length, including *Gutters* at the sides of *Dormans* and *Lutherns*, if there be any *Dorman-tiles* used.

4. In some Places the Workmen claim a custom of having double Measure for *Plain-tile*, (especially *3 Point*) *Gutters*, e. g. If there were but 1 *Gutter* in a Roof, and this *Gutter* is 5 Foot long, then their Custom is to have 30 Foot more than the Area of the Roof amounts to; and this Method some Workmen claim as a Custom in both sorts of *Gutters* with *Plain-tiles*. Either of these *Plain-tile-gutters* are cheaper to the Master Builder, than *Concave* ones; because *Plain-tiles* are cheaper than *Gutter-tiles*, being not above  $\frac{1}{2}$  part of the Price in many Places. And then again, in case the Workmen be allow'd so many Foot more (than the Area of the Roof,) as there are *Gutter-tiles*, that will be  $\frac{1}{2}$  as much more as the double Measure; for if it be gaged so slight as 8 Inches, than in a *Gutter* of 15 Foot long, there would be 45 Tiles, which will be reckon'd 45 Foot; whereas at double Measure it did amount to but 30 Foot.

5. I find there is yet another way of computing double Measure; for the account of which I will refer you to *Slating*, Num. 5.

I am informed, that at *London* *Plain-tiles* are used much for *Gutters*;

### *Guttering,*

In *Carpentry*, is commonly done by the *Lineal Foot*, which some *Londoners* value at 1 s. viz. Materials and Workmanship.

### *Gutter-tiles.*

1. *What.*] Are whilst they are flat and plain, (before they are bent fit for the Work for which they are design'd,) seemingly at a distance a kind of a Triangle with one Convex side. But tho' they seem so at a distance; they are not really so; for they are Quadrangular Figures, consisting of 2 straight sides of about 10 or 10  $\frac{1}{4}$  Inches long (they ought to be) and of 2

Circular sides, one Convex, the other Concave, the Convex side is about 14 Inches, and the Concave one about 2 Inches, this is their Form as to their edges or sides, and I will next describe the form of them in respect of the Plain; at the little end they are bent Circular, and so likewise at the Convex great end, at first like a *Corner-tile*, but then they bend the corners of the broad end back again; so that if one look against the broad ends edge, it consists of a Circular Line betwixt 2 straight ones, like the upper part of the Character for the Sign of *Libra*, thus  $\approx$ , this you must note is when you hold the Concave side of the Tile downwards. These Tiles are laid with their broad ends, and hollow sides upwards.

2. *Of their Weight.*] An Experiment was made to find the Gravity of some of these Tiles, and I found by Computation that 100 of these Tiles, whose Dimensions were as followeth, viz. 10 Inches on the straight edges, 14 Inches on the greater Convex edge, when pressed down flat, as when they were in the Mold, and 2 Inches at the Concave edge, and about  $\frac{5}{8}$  Inches thick: I say 100 of these weigh'd about 321, or 322 lb. and by consequence 1000 will weigh about 3210, or 3220 lb. which is near 29 C weight. So by consequence about 682 would be a Tun weight.

3. *Of their Price.*] Mr. *Leybourn* saith that at *London* they are sold at  $1\frac{1}{2}$  d. or 2 d. per Tile, or between 10 and 15 s. per 100. in some Places their constant Price is  $1\frac{1}{2}$  d. per piece, or 12 s. per Hundred.

### *Hack.*

**W**Hat. V. *Bricks.* Num. 12.

### *Hair.*

1. *What.*] The Hair here mentioned is *Bullocks*, &c. for to put in *white Mortar* of the quantity to a certain quantity of *Lime*, vide *Mortar.* Num. 4.

2. *The Price.*] As to the Price, 'tis various, according to the Plenty or Scarcity of it. At some Places in *Kent* I have known it sold for 7 d. per Bushel, and at other Places, viz. in *Sussex*, I have known it sold for 10 d. and 12 d. per Bushel; so that its Price by the Load (for a Horse,) which is 60 Bushels, is from 30 to 60 s.

### *Half-round.*

*What.*] V. *Capital.* Num. 2.



*Halls.*

*Of their Dimensions.]* According to a noted *French* Architect, ought to be in length twice and  $\frac{1}{4}$  its breadth, at least, and in great Buildings, he saith you may well allow the length to be 3 times the breadth: He further adds, that this last length will be the most beautiful and convenient.

As to the height of *Halls*, it may be  $\frac{2}{3}$  of the breadth, or about 16 or 18 Foot in noble *Buildings*.

In great *Buildings*, the *Hall*, and other Rooms of the 1<sup>st</sup>. Story may be Arched, by which means they will become much handsomer, and less subject to Fire: The height is found by dividing the breadth of the *Hall* into 6 parts, and 5 of those shall limit the height of the Room from the Floor to the under side of the Key of the Arch.

*Hangs over.*

*What.]* V. *Batter*.

*Hanse.*

*What.]* V. *Arches*. Num. 6.

*Heads.*

*What.]* A Term used by Bricklayers, by which they mean  $\frac{1}{2}$  a *Tile* in length, but to the full breadth of a *Tile*; these they use to lay at the Eaves of a Roof.

*Heading Architrave.*

V. *Architrave*. Num. 2.

*Healing.*

*What.]* By this word is understood the covering of the Roof of any Building, which is of various kinds, viz. 1. *Lead*, 2. *Tiles*. 3. *Slate*. 4. *Horsham Stone*. 5. *Shingles*. 6. *Reed*. 7. *Straw*. An account of all these sorts of *Healing*, you may find under these Heads, viz. *Lead*, under that Head. *Tiles*, under *Tiling*, *Slate*, under *Slating*, *Horsham-stone*, V. the same word; *Shingles*, and *Shinglings*, *Reed*, and *Straw*, V. *Thatching*.

*Hearth Stones.*

V. *Fire-stones*.

*Hewing of Timber.*

V. *Timber*. N. VII.

*Hinges.*

1. *What.*] Are those necessary Irons, by means of which, all Doors, whether of Houses, (or other Buildings,) or of Pews, Cupboards, &c. All Lids of Boxes, Chests, Trunks, &c. Folds of Tables, Beds, Buró's, Scrutores, &c. Make their Motion, whether of opening or shutting, or of Folding, &c.

2. *The sorts or kinds.*] The Species of Hinges are many, viz. *Bed, Box, Butts, Casement, Lancashire,* and smooth filed; *Casting, Chest black, Lancashire, smooth filed, Coach, Desk, Dovetails, Esses, Folding, Garnets, Dozen-ware-long, Dozen-ware-short, Weighty-long, Weighty-long, Weighty-short, Lamb-heads, Port, Side-Lancashire, Side-smooth-filed, Side* with rising joints, *Lancashire* and *Smooth filed, Side* with Squares, *Screw, Scuttle, Shutter, Lancashire,* and *Smooth-filed, Stall, Trunk* of sundry sorts. *Joints, Lancashire, Dozen-ware,* with *Hooks, Dozen-ware long, Dozen-ware short, weighty long,* weighty long, weighty short.

3. *The Price of some sorts of Hinges.*] As to the value of *Hinges,* I shall not now stay to insist upon the usual Price of all sorts, but shall give the Reader a brief account of some sorts that are pretty commonly used: And 1<sup>st</sup>. Of *Butts,* of which there are different sizes, and by consequence of various Prizes, viz. from 2 s. or 2 s. 6 d. to 5 s. per Doz.

2. *Bed-hinges,* from 5 to 7 s. per Doz.

3. *Box-hinges,* from 12 d. to 4 s. per Doz.

4. — Small Brass ones, from 2 s. to 2 s. 6 d. per Doz.

5. *Dovetails,* from 12 d. to 4 s. per Doz.

6. *Hooks and Hinges, &c.* per lb. from 3  $\frac{1}{4}$  d. to 4 d.

7. *Side-hinges,* from 3 s. to 16 s. per Doz.

8. — With a Square, from 20 s. to 36 s. per Doz.

9. *Screw-hinges,* from 30 s. to 48 s. per Doz.

V. Iron. N. 4.

## Hip.

1. *What.*] Are those pieces of Timber which are at the corners of a Roof, they are a great deal longer than the Rafter, by reason of their Oblique Position, and they are placed not with a Right or Square Angle, but a very Oblique one; and by consequence they are not, (or at least ought not to be) square at any Angle, (as Rafter are not at all,) but bevel at every one of them; and which is yet more, as Rafter have but 4 Plains, these commonly have 5. They are commonly by Countrey-workmen call'd *Corners,* and some call them *Principal Rafter,* and others *Sleepers,* The truth is *Hips* and *Sleepers,* are almost the same; only the *Sleepers* lie in the *Vallies,* (and join at the top with the *Hips* :) But those Surfaces, or Plains which make the back of the *Hip* are the under-sides of the *Sleeper.*

2. *Back or Back of a Hip, what.*] By the *Back* of a *Hip*; you are to understand, is meant those 2 Superficies, or Plains on the out-side of the *Hip,* which lie Parallel, (both in respect

of their length and breadth,) with the Superficies of the adjoining side and end of the *Roof*.

3. *Mould what.*] By the word *Hip-mould*, some mean the same as *the back of the Hip*. But some others understand it to mean, the *Prototype*, or *Pattern*, (which is commonly made of a piece of thin *Wainscot*;) by which the back and sides of the *Hip* are set out.

4. *Of finding the Lengths and Backs of Hips, &c in square Frames.*] I shall here, not only give you the Method of finding the length of *Hips*, or *Sleepers*; but also of the *Rafters*, *Diagonals*,  $\frac{1}{2}$  *Diagonal* and *Perpendicular*. And that in a brief *Analogical Table*. say,

	Foot	
As 20	}	:: Breadth of the House:
	{	
	15, 00	}
	18, 00	
	11, 18	
	28, 28	
	16, 63	
		{
		ten. of the Rafter.
		ten. of the Hip.
		Perpendicular.
		Diagonal.
		Nearest dist.

	Deg.	
Hip Angles	}	Rafter Angles at
	{	
	at foot—38—22	}
	at top—51—28	
	at back—116—12	
		{
		top 41—50
		foot 48—10

The Angles are always the same in all square Frames that are true Pitch.

The Reader may perhaps expect the Method of finding these things in Bevel Frames also, but I shall defer that till another Opportunity, and also to another Treatise which I design to Publish, (if it please God to lend me Life, and this present Treatise prove acceptable to the World :) Wherein I design to shew how to find the Lengths, and Angles of *Rafters*, *Hips*, *Collars*, *Purlins*, &c. In Square and Bevil Frames, 3 several ways. *viz.* Arithmetically, Geometrically, and Instrumentally: Which Treatise shall also contain 4 several Methods of drawing all the Members of the 5 Orders of Columns.

5. *Roof what.*] By a *Hip Roof*, you are to understand such a *Roof*, as hath neither *Gable-heads*, nor *Shread-head*, or *Jirkin-head*, (by which we mean such Heads as are both *Gable* and *Hip* at the same end; for 'tis a *Gable*, or upright as high as the *Collar-beam*, and then there is two short *Hips* which shuts up with their tops to the tops of a pair of *Rafters*, which Country Carpenters call *Singlars*.) For a *Hip Roof* hath *Rafters* as long, and with the Angles at the Foot, &c. at the ends of Building, as it hath at the sides, and the Feet of the *Rafters* on the ends of such Buildings as have *Hip-roofs*, stand on the same Plain, (*viz.* Parallel with the Horizon,) and at

the same height from the Foundation with the Rafter on the sides of the Roof. These *Hip-roofs*, some call *Italian Roofs*.

6. *Of Measuring Hip-roofs.*] As to measuring of *Hip-roofs*, if they are  $\frac{3}{4}$ , or true pitch as it is commonly call'd; then 'tis only to multiply the length of the Building by the breadth, and to the Area thus found, add half as much more, or else multiply the length by the breadth and  $\frac{1}{2}$ ; or the breadth by the length and  $\frac{1}{2}$ , either of these 3 ways will produce the flat and  $\frac{1}{2}$ , which is equal to the Content of the Roof in plain Measure, if there be nothing allowed for *Hips* and *Vallies*. But if the *Roof* have no Cornish, but the Rafter have Feet, then they must be added, and also the *Eaves Board* in a *Bill of Measurement*.

Or to measure such a Roof, you may Multiply the length of it by the length of the Rafter, and it shall give you half its Content; or else Multiply the length of the Building by twice the length of the Rafter; and then you will have the whole Content.

### *Hip-tiles.*

V. *Corner-tiles, or Tiles.* N. V.

### *Hollow.*

A Term in Architecture, by which is meant a Concave Molding, being about a Quadrant of a Circle; by some it is call'd a *Casement*, by others an *Abacus*.

### *Hooks*

Are a necessary Ingredient which are made use of for several Purposes in Buildings, &c. They are of various sorts; some of Iron, and others of Brass, I shall here mention the Names of some, which take as followeth, viz. 1. *Armour-hooks*, (these are generally of Brass, and are to lay up Arms upon; as Guns, Muskets, Halberts, Half-pikes, Pikes, Javelins, &c.) 2. *Casement-hooks*. 3. *Chimney-hooks*, which are made both of Brass and Iron, and of different Fashions: Brass ones I have known sold from 2 s. to 2 s. 6 d. per pair, the Iron ones from 12 d. to 1 s. 6 d. per pair, their use is to set the Tongs and Fire-shovel against. 4. *Curtain-hooks*. 5. *Hooks* for Doors, Gates, &c. These are from 3 d.  $\frac{1}{2}$  to 4 d. per lb. 6. *Double-line-hooks*, large and small. 7. *Single-line-hooks*, large and small. 8. *Tenter-hooks*, of various sorts, viz. 2 d. 3 d. 4 d. 6 d. 10 d. 20 d. and 40 d.

### *Horsham Stone.*

1. *What.*] Is a kind of thin broad Slate of a greyish Colour, much used in some parts of *Suffex* formerly, not only to heal,

or cover Churches and Chancels, but some great Houses also; it is call'd *Horsham-stone*, in that County, because it is for the most part brought from a Town there called *Horsham*; this sort of Stone, or Slate rather, is laid of different Sizes, *viz.* From 8 or 9 Inches, to 24 Inches, or more in length, or breadth, &c. It is commonly from  $\frac{1}{2}$  Inch, to 1 Inch thick.

2. *Of the Price of Horsham-stone.*] The value of them is according to the distance from the Quarry, *viz.* From 10 to 20 *s.* per Load, I have known a Load of them laid in for 17 or 18 *s.* at 18 or 20 Miles distance from the Quarry. A Load of these, (as I have been inform'd from those that have made some Observations on this Matter,) will cover about  $\frac{3}{4}$  of a Square.

3. *Of Laying.*] The Price of laying a Square, and Pointing, (which is striking Mortar under the lower ends) in new Work, 5 or 6 *s.* But to rip it from old, and new lay and point it, not less than 6 or 7 *s.* per Square, which is the lowest I ever knew it done for.

4. *Of the weight of this sort of Healing.*] I have been inform'd by an observing Mechanick, that a Square of this kind of covering will weigh about 33 or 34 C weight. Whereas, Tith he, a Square of Tiling doth not weigh above 16 or 17 C weight. Nay, he is confident not above 18 C weight, if it be gaged at 6 Inches, and the Tiles not exceeding 10 Inches long. (Nay, I know that in many Places they fall short of that.)

5. *Of the Properties of this sort of Covering.*] From what hath been said before, you may easily gather that this sort of Healing is dearer than Tiles; for the Charge of a Square of Tiling, is from about 23 *s.* to 30 *s.* or as some will have it from 24 to 28 *s.* per Square; whereas I find by Calculations from some Observations, a Square of Healing with *Horsham-stone*, will be worth from 32 *s.* to 38 *s.* And besides for this sort of Covering, the Timber for the Roof, ought to be considerably stouter and stronger, because a Square of this sort of Stone is almost as heavy again as a Square of Tiling. Now that which I suppose to be the cause why these Stones have been so much in use for Churches, &c. must be, because they are far more durable than Tiles; which makes some Recompence for the Charge; for some say these Stones are very durable, being for the most part very hard, so that no Weather will do them any hurt, as it will Tiles.

### House.

1. *What.*] 'Tis a thing so well known, that every one that knows any thing, is sensible of the Contrivance whereby Men preserve themselves and their Goods from the Injuries of the Weather, and other Inconveniencies.

In treating of this word, *House*, I shall here do these 4 things. 1<sup>st</sup>. Discourse concerning the Situation of a Countrey-house. 2<sup>dly</sup>, Of the Ground-work of Houses. 3<sup>dly</sup>, Concerning Building in *London*. 4<sup>thly</sup>, and lastly, Discourse of Party-walls.

The Reason why I shall add no more under this Title *House*, is this ; because I sufficiently treat of these 6 things, *viz.* *Situation, Contrivance, Receipt, Strength, Beauty, and Form, or Figure*, in the word *Building*.

2. *Of the Site of a Countrey-house.*] To what I have said, concerning the Situation of a Countrey-house, in the word *Building*, I shall here add, that Woods, as well as Water, ought to be near your Countrey Habitation ; they being the principal things that adorn a Rural Seat : But if you cannot conveniently Seat your *House* among the Trees, yet there are but few places, but you may speedily raise Trees about your House ; according to Mr. *Evelyn's*, or Mr. *Worlidge's* Directions.

It is far better to have *House*, defended by Trees than Hills, for Trees yield a Cooling, Refreshing, Sweet, and Healthy Air, and Shade , during the Heat of the Summer, and very much break the cold Winds and Tempests from every Coast in the Winter. The Hills, according as they are Situated, defend only from some certain Winds ; and if they are on the *North* side of your *House*, as they defend you from the cold Air in the Winter, so they also deprive you of the cool refreshing Breezes which are commonly blown from thence in the Summer. And if Hills are Situated on the *South* side, it then proves also very inconvenient. Besides, they yield not the Pleasures and Contentments, nor the Varieties of Oblectations to the ingenious Rustick, as the tall Plumps of Trees, and pleasant Groves do. Yet Hills which are cloathed with Coppices, or otherwise improved are pleasant Objects, if they stand not too near a *House*.

Let not your *House* be too low seated, lest you lose the Conveniency of Cellars ; but if you cannot avoid Building on low Grounds, set the 1<sup>st</sup>. Floor above the Ground, in your *House* the higher, to supply what you want to sink in your Cellular in the Ground ; for in such low and moist Grounds, it conduceth much to the driness, and healthiness of the Air to have Cellars under the *House*, so that the Floors be good and cield underneath.

Not to speak of the Building of Places, or Seats for the Nobility, or Gentry, but only of plain and ordinary *Farm-houses*. I have thus much observed, (saith Mr. *Worlidge*,) that Houses built too high in places obvious to the Winds, and not well defended by Hills, or Trees, require more Materials to build them, and more also of Reparations to maintain them, and are not so commodious to the Inhabitants as the lower built

*Houses*

*Houfes*, which may be made at a much eafier rate, and alfo as compleat and beautiful as the other.

3. *Of the Ground-work of Houfes.*] Buildings, or Houfes, that are not above 2 Stories with the Ground-room, and not exceeding 20 Foot to the Raifon-place, and upon a good Foundation, the length of 2 Bricks, or 18 Inches for the Heading-course, will be fufficient for the *Ground-work* of any common Structure, and 6 or 7 Courses above the Earth to a *Water-table*, where the thicknefs of the Walls are abated; (or taken in) on either fide the thicknefs of a Brick, namely,  $2\frac{1}{4}$  Inches.

But for large and high *Houfes*, or *Buildings*, of 3, 4 or 5 Stories with the Garrets: The *Walls* of fuch Edifices ought to be from the Foundation to the 1<sup>st</sup>. *Water-table*. 3. Heading course of Brick, or 28 Inches at the leaft, and at every Story a *Water-table*, or taken in on the infide for the Summers, Girders, and Joifts to reft upon, laid into the middle, or  $\frac{1}{4}$  of the Wall, at leaft for the better Bond. But as for the innermoft, or *Partition-wall*, one  $\frac{1}{2}$  Brick will be of a fufficient thicknefs: And for the upper Stories a 9 Inch (or Brick a length) Wall will very well fuffice.

4. *An Act concerning Building of Houfes in London.*] What here follows is fo much of the Act only as relates to the *Brick-layer's-work*, viz. The heights and number of Stories, and thicknefs of Walls of the 4 feveral Rates of *Houfes*, which is as follows.

And be it further Enacted, That the *Houfes* of the 1<sup>st</sup>. and leaft fort of Building, fronting by Streets or Lanes, as aforefaid, fhall be of 2 Stories high, befides Cellars and Garrets, that the Cellars thereof be 6 Foot high, if the Springs of Water hinder not; and the 1<sup>st</sup>. Story be 9 Foot high from the Floor to the Ceiling, and the fecond Story be 9 Foot high from the Floor to the Ceiling; that all the *Walls* in Front and Rear, as high as the 1<sup>st</sup>. Story, be of the full thicknefs of the length of 2 Bricks, and thence upwards to the Garrets of the thicknefs of one brick and half; and that the thicknefs of the *Garret Walls* on the back part be left to the Difcretion of the Builder, fo that the fame be not lefs than one Brick a length; and alfo that the thicknefs of the *Party-walls* between thefe *Houfes* of the 1<sup>st</sup>. and leffer fort of Buildings be 1 Brick and  $\frac{1}{2}$  as high as the faid Garrets, and that the thicknefs of the *Party-wall* in the Garret be of the thicknefs of the length of 1 Brick, at leaft.

And be it further Enacted, that the *Houfes* of the fecond fort of Building fronting Streets, and Lanes of Note, and the River of *Thames* fhall confift of 3 Stories high, befides Cellars and Garrets, as aforefaid; that the Cellars thereof be 6 Foot and  $\frac{1}{2}$  high, (if the Springs hinder not) that the 1<sup>st</sup>. Story contain

tain full 10 Foot in height from the Floor to the Ceiling: The second full 10 Foot: The third 9 Foot: That all the said Walls in Front and Rear, as high as the 1<sup>st</sup>. Story, be 2 Bricks and  $\frac{1}{2}$  thick, and from thence upward to the Garret-floor, of 1 Brick and  $\frac{1}{2}$  thick; and the thickness of the Garret Walls on the back part be left to the Discretion of the Builder; so that the same be not less than 1 Brick thick: And also that the thickness of the Party-walls between every House of this second, and larger sort of Building be 2 Bricks thick as high as the 1<sup>st</sup>. Story, and thence upwards to the Garrets, of the thickness of 1 Brick and a  $\frac{1}{2}$ .

Also, that the Houses of the 3<sup>d</sup>. sort of Buildings, fronting the high and principal Streets, shall consist of 4 Stories high, besides Cellars and Garrets, as aforesaid: That the 1<sup>st</sup>. Story contain full 10 Foot in height from the Floor to the Ceiling, the second 10 Foot and  $\frac{1}{2}$ , and the third 9 Foot, the fourth 8 Foot and  $\frac{1}{2}$ : That all the said Walls in Front and Rear, as high as the 1<sup>st</sup>. Story be 2 Bricks and  $\frac{1}{2}$  in thickness, and from thence upwards to the Garret-floor, of the thickness of 1 Brick and  $\frac{1}{2}$ : That the thickness of the Garret-walls on the back part be left to the Discretion of the Builder, so as the same be not less than 1 Brick: And also that the Party-walls between every House of this 3<sup>d</sup>. and larger sort of Building be 2 Bricks thick as high as the 1<sup>st</sup>. Floor, and thence upwards to the Garret-floor, the thickness of 1 Brick and  $\frac{1}{2}$ .

And, be it further Enacted, that all Houses of the 4<sup>th</sup>. sort of Building, being Mansion houses, and of the greatest bigness, not fronting upon any of the Streets, or Lanes, as aforesaid, the number of Stories, and the height thereof, shall be left to the Discretion of the Builder, so as he exceeds not 5 Stories.

Also, the same Act enjoyns, that no Timber be laid within 12 Inches of the fore-side of the Chimney-jamb, and that all Joists on the back of any Chimney be laid with a Trimmer, at 6 Inches distance from the Back: Also that no Timber be laid within the Tunnel of any Chimney, upon Penalty to the Workman, for every Default 10 s. and 10 Shillings every Week it continues uncorrected.

Thus far the Act.

Note further, when you lay any Timber on Brick-work, as Tassels, (or Toriels) for Mantle-trees to lie on, or Lintels over Windows, or Templets under Girders, or any other Timbers; lay them in Loam, which is a great preserver of Timber; for Mortar eats and corrodes the Timber: Likewise the Joist ends, and Girders which lie in the Walls, must be loamed all over to preserve them from the Corroding of the Mortar. Some Workmen pitch the ends of the Timber that lie in the Walls to preserve them from the Mortar.



5. Concerning *Party-walls*.] In discoursing of this Matter, I will present the Reader with two different Methods of valuing such *Walls* according to 2 different Surveyers, viz. Mr. *Leybourn*, and Mr. *Phillips*.

And 1<sup>st</sup>. according to Mr. *Leybourn*.

Now, (saith he,) forasmuch as the *Buildings* in *London* joyn one upon another, and almost every several House hath a distinct Proprietor, the Parliament hath decreed, that the *Wall* dividing Proprietors Ground, shall be built at the equal charge of both the Owners; it will not therefore be impertinent to show how these *Party-walls* are to be valued.

All Brick-work, whether it be 1, 2, 3, 4, or any other number of Bricks lengths in thickness, they are all to be reduced to the thickness of 1 Brick and  $\frac{1}{2}$ .

It hath been observed, (saith he,) that about 4500 of Bricks, 100 and a quarter of *Lime*, 2  $\frac{1}{2}$  Loads of *Sand* will compleatly raise one Rod of *Brick-work*, of a Brick and  $\frac{1}{2}$  thickness.

	l.	s.	d.
Now 4500 of Bricks at 16 s. per 1000, is	—	3	12—0
A Hundred and quarter of Lime at 10 s. per C.	—	0	12—6
Two Load and $\frac{1}{2}$ of Sand at 3 s. per Load.	—	0	7—6
		—	—
In all	—	4	12—0

And thus much will a Rod of *Party-wall*, (the Materials only) reduced to Brick and  $\frac{1}{2}$  thick, amount unto at the former supposed Rates, to which may be added for Workmanship.

	1	8	0
	—	—	—
The whole Sum is	6	0	0

So that for every Rod that is in a *Party-wall*, between Proprietor and Proprietor, they are to allow 3 l. a piece for every Rod of *Party-wall*. So that if a *Party-wall* measured, and the measure reduced to a Brick and  $\frac{1}{2}$ , should be found to contain 16 Rods, that 16 being multiplied by 3 l. giveth 48 l. and so much is the one Proprietor to allow the other.

But note by the way, that altho' this Rule here deliver'd be general, yet the Price of the *Party-wall* shall be more or less, according as Materials rise or fall. For sometimes a Rod or Wall of Brick and  $\frac{1}{2}$  thick, will cost but 5 l. 10 s. and then each Proprietor must pay but 5 s. per Rod. Thus saith Mr. *Leybourn*. I will now add Mr. *Phillip's* way.

Now, (saith he,) having the Dimensions, both in length and height of the Cellar, and all other Stories in the *House*, then the following Tables will shew (according to the thick-

ness

ness of the Wall,) how many Bricks your Neighbour is to pay for towards his *Party-wall*.

For which purpose the ensuing Tables will serve very well; for these *Walls*, according to the Act of Parliament, for this purpose are to be made part of them of 2 Bricks thick, part of them of 1 Brick and half thick, and part of them of 1 Brick thick.

Now knowing the number of Bricks which go to the making of the *Wall*, you may easily compute the Charge of the Mortar and Workmanship thereof, and from thence find the whole Charge, which you will find, (saith he) to be about 30 s. for every 1000 of Bricks, (I think Mr. *Phillips* his Price is too great; for I think 25 or 26 s. per 1000 is very well, but he acknowledges that Bricks then were something dear, viz. about 18 or 20 s. per 1000.)

He then proceeds to an Example; suppose a *House* of the third Rate, the *Party-wall* thereof being 30 Foot long, and you would know how many Bricks are to be paid for towards this *Party-wall*.

First, Measure the Cellar where the *Party-wall* is to be 2 Bricks thick, the length whereof is 30 Foot, and the depth 7 Foot, find this length in the side, and the depth in the top of the Table, and in the Square of meeting in the Table for one Brick thick, you will find 2314 Bricks are to be paid for.

Then proceed to the 1st. Story, which will be likewise 30 Foot long, and 10 Foot high, and also 2 Bricks thick, the same Table shews the allowance for this. 3306

The second Story also is 30 Foot long, and  $10\frac{1}{2}$  high, but the *Party-wall* is to be but a Brick and  $\frac{1}{2}$  thick, the  $\frac{1}{2}$  whereof is  $\frac{3}{4}$  of a Brick, and this in the Table of  $\frac{3}{4}$  of a Brick, yields for 30 Foot long, and 10 Foot high. 2479

And for the  $\frac{1}{2}$  Foot more in height. 124

The 3d. Story is 9 Foot high, and 30 Foot long, being likewise a Brick and  $\frac{1}{2}$  thick; and for this the Table shews the  $\frac{1}{2}$  to pay for is 2231

The 4th. Story is 8 Foot and  $\frac{1}{2}$  high, and 30 Foot in length, for the 8 Foot the Table shews.

and for the  $\frac{1}{2}$  Foot

1983

124

All which added together, make 12559  
which are to be paid for the half of the *Party-wall*, which at 26 s. per thousand, comes to 86 l.—6 s.—6 d.

Thus you may see what any *Party-wall* comes to, tho' your Neighbour's House joyns never so little, or much to yours, as readily as you can by measuring by the Rod.

And whereas the Floors of the several Stories add some-  
what

what to the heighth, you may add somewhat for them according as you find them in thickness.

Lastly, for the Garrets, the *Walls* thereof being but 1 Brick thick, you may take  $\frac{1}{2}$  the number in the Table of 1 Brick's thickness, and add to the rest of the Account.

All the difference that can be between Neighbours herein, will be about the Price of Bricks, and the Lime, and Workmanship; but if Neighbours Build together, they will easily determine it; but if they do not, yet the 1<sup>st</sup>. Builder is sufficiently provided by his Workmen to rectifie his Charge, and by Act of Parliament is allowed full Satisfaction, with Interest from the time of his Building.

In the ensuing Pages are those Tables which we have been treating of.

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*A Table for 1 Brick in thickness, or the half of  
2 Bricks.*

*The Walls height in Feet.*

	$\frac{1}{2}$	I.	II.	III.	IV.	V.
	Bricks	Bricks	Bricks	Bricks	Bricks	Bricks
I	5	11	22	33	44	55
2	11	22	44	66	88	110
3	16	33	66	99	132	165
4	22	44	88	132	176	220
5	27	55	110	165	220	275
6	33	66	132	199	264	331
7	39	77	154	231	309	386
8	44	88	176	264	353	441
9	50	99	198	298	397	496
10	55	110	220	331	441	551
11	61	121	244	364	485	606
12	66	132	264	397	529	661
13	72	143	286	431	573	716
14	77	154	309	462	617	771
15	83	165	331	496	661	826
16	88	176	355	529	705	882
17	94	187	375	562	749	937
18	99	198	397	595	793	992
19	105	209	419	628	837	1047
20	110	220	441	661	882	1102
21	116	231	463	694	926	1157
22	121	242	485	726	970	1212
23	127	253	507	760	1014	1267
24	132	264	529	793	1058	1322
25	138	275	551	826	1102	1377
26	143	286	573	860	1146	1432
28	154	309	617	926	1234	1543
30	165	331	661	992	1322	1653
40	220	441	881	1322	1763	2204
50	275	551	1102	1652	2204	2755

Foot long.

*A Table for 1 Brick in thickness, or the half of  
2 Bricks.*

*The Walls height in Feet:*

	VI.	VII.	VIII.	IX.	X.
	Bricks	Bricks	Bricks	Bricks	Bricks
1	60	77	85	99	110
2	132	154	176	198	220
3	198	231	264	298	331
4	264	309	353	397	441
5	331	386	441	496	551
6	397	463	529	595	661
7	463	540	617	694	771
8	529	617	705	793	882
9	595	694	793	893	992
10	661	771	882	992	1102
11	727	848	970	1091	1212
12	793	926	1058	1190	1322
13	859	1003	1146	1289	1433
14	926	1080	1234	1388	1543
15	992	1157	1322	1488	1653
16	1058	1234	1410	1587	1763
17	1124	1311	1499	1686	1873
18	1190	1388	1587	1787	1983
19	1256	1465	1675	1884	2094
20	1322	1543	1763	1983	2204
21	1388	1620	1851	2083	2314
22	1455	1697	1939	2182	2424
23	1520	1774	2028	2281	2534
24	1587	1851	2116	2380	2645
25	1653	1928	2204	2479	2755
26	1719	2006	2292	2578	2865
28	1857	2160	2468	2777	3085
30	1983	2314	2645	2975	3306
40	2645	3085	3526	3967	4408
50	3306	3857	4408	4959	5510

Foot long.

*A Table for 3 quarters of a Brick thick, being the half of a Brick and half.*

*The Walls height in Feet.*

	I.	II.	III.	IV.	V.	
	Brick	Brick	Bricks	Bricks	Bricks	
1	4	8	17	25	33	41
2	8	17	33	50	66	83
3	12	25	50	74	99	124
4	17	33	66	99	132	165
5	21	41	83	124	165	207
6	25	50	99	149	198	248
7	29	58	116	174	231	289
8	33	66	132	198	264	331
9	37	74	149	223	298	372
10	41	83	165	248	331	413
11	45	91	182	273	354	455
12	50	99	198	298	397	496
13	54	107	215	322	430	537
14	58	116	231	347	463	578
15	62	124	248	372	496	620
16	66	132	264	397	529	661
17	70	140	281	421	562	702
18	74	149	298	445	595	744
19	79	157	314	471	628	785
20	83	165	331	496	661	826
21	87	174	347	521	694	868
22	91	182	369	545	727	909
23	95	190	380	570	760	950
24	99	198	397	595	793	992
25	103	206	413	620	826	1033
26	107	215	430	645	860	1074
28	116	231	463	694	926	1157
30	124	248	496	744	992	1240
40	165	331	661	992	1322	1653
50	207	413	826	1240	1653	2066

Foot long.

*A Table for 3 quarters of a Brick thick, being the half of a Brick and half.*

*The height of the Walls in Feet.*

	VI.	VII.	VIII.	IX.	X.
	Bricks	Bricks	Bricks	Bricks	Bricks
1	50	58	65	74	83
2	99	116	132	149	165
3	149	174	198	223	248
4	198	231	264	298	331
5	248	289	331	372	413
6	298	347	397	446	496
7	347	405	463	521	579
8	394	463	529	595	661
9	446	521	595	660	744
10	496	579	661	744	826
11	545	636	727	818	900
12	595	691	793	893	992
13	645	752	860	976	1074
14	694	810	926	1041	1157
15	743	868	992	1117	1240
16	793	926	1058	1189	1322
17	843	983	1124	1264	1405
18	893	1041	1190	1339	1488
19	942	1099	1256	1413	1570
20	992	1157	1322	1488	1653
21	1041	1215	1388	1562	1736
22	1091	1273	1455	1636	1818
23	1140	1331	1521	1711	1901
24	1190	1388	1587	1785	1983
25	1240	1446		1860	2066
26	1290	1504	1709	1934	2149
28	1338	1560	1851	2083	2314
30	1488	1736	1983	2231	2479
40	1983	2324	2625	2975	3306
50	2479	2893	3306	3719	4132

6. I shall here add an Abstract of the Act.] Being a Table of Proportions for Brick-walls, number and height of Stories, &c. In the Building of 3 sorts of Houses, (viz. The 3 1st. Rates) in the City of London, according to the Act of Parliament.

The Rates, or sorts of Houses.	Several Stories.	Feet in height.	Brick length in thickness.	Brick length in thickness.
The 1st. or least sort of Houses, fronting by Streets and Lanes, are to have	Cellars,	6 $\frac{1}{2}$	2	1 $\frac{1}{2}$
	1 Story,	9	2	1 $\frac{1}{2}$
	2 Stories,	9	1 $\frac{1}{2}$	1 $\frac{1}{2}$
	Garrets.		1	1
The 2d. sort of Houses fronting lesser Streets, and Lanes of note, and the Thames side are to have	Cellars,	6 $\frac{1}{2}$	2 $\frac{1}{2}$	2
	1 Story,	10	2 $\frac{1}{2}$	2
	2 Stories,	10	1 $\frac{1}{2}$	1 $\frac{1}{2}$
	3 Stories,	9	1 $\frac{1}{2}$	1 $\frac{1}{2}$
The 3d. sort of Houses fronting high Streets are to have	Cellars,	6 $\frac{1}{2}$	2 $\frac{1}{2}$	2
	1 Story,	10 $\frac{1}{2}$	2 $\frac{1}{2}$	2
	2 Stories,	10	1 $\frac{1}{2}$	1 $\frac{1}{2}$
	3 Stories,	9	1 $\frac{1}{2}$	1 $\frac{1}{2}$
	4 Stories,	8 $\frac{1}{2}$	1 $\frac{1}{2}$	1 $\frac{1}{2}$
	Garrets.		1	1

More concerning Building of Houses you may find under the Head *Architect*; also a very ample account under the Head *Building*, where are these following Paragraphs and Sections, viz. 1. Considerations about Buildings; 2. Aphorisms, which is sub divided into the following 7 Sections.

1. *Situation*, in respect of the whole.
2. *Contrivance*, with some Precautions.
3. *Receipt*.
4. *Strength*, with Directions about it.
5. *Beauty*, in the whole and parts.
6. *Form, Figure, or Fashion*, and what Figure is strongest and most convenient.



III. The third Paragraph, contains a Comparison betwixt the Modern, and ancient way of Building in *England*.

IV. Contains some general Rules which ought to be observed in Building all *Houses*, both in the City, and the Countrey.

V. Contains a Method of Surveying of *Buildings*, or *Houses*, and also the Method of taking of Dimensions, and setting them down in a Pocket book, or the like; and also the Form of a *Bill of Measurement*.

VI. This 6th. Paragraph is of the Method of Measuring all Artificer's Works, relating to Building of *Houses*, &c.

VII. In the seventh Paragraph, there is shewed a Method how you may nearly value all sorts (almost) of Buildings, whether they are great or small.

VIII. You have in the eighth Paragraph a Method of *Censuring* Buildings, or *Houses*, viz. Directions how to pass ones Judgment on a *Fabrick* (that is already Built,) whether it be well and firmly compacted, and whether well contrived, as to the whole, and all its parts separately, for Use, or Convenience; and as to its Beauty, whether its Parts be placed in an uniform Order and whether the Designer, or Master Builder observed a due Symmetry, or Proportion of the Parts, in respect of one another, &c.

IX. And lastly, under the Head *Building*, you have some Directions concerning advising with Workmen about the Charge of Building any House: And how much a Builder, (or Gentleman that is going to Build) is the wiser for such Men's Advice commonly, I mean if he advise with such as are to do the Work: Tho' otherwise perhaps he may be well inform'd by some ingenious Workmen that understand the Speculative Part of Architecture, or Building: But of these knowing sort of Artificers there are but few, because but few Workmen look any further than the Mechanical, Practick, or Working Part of *Architelture*; not regarding the Mathematical, or Speculative Part of Building, thinking it to be of little or no use; this I know to be true, because I have heard some Workmen, (who thought themselves none of the Ignoro's, tho' at the same time I had the liberty to think as I pleas'd, which was in truth almost quite contrary; for as they thought themselves Men of Science [or Skill,] I thought so too almost, only I thought that the Particle *Ne* was wanting before the word Science; for if that had been prefix'd, then it might have been very well applied to have signified the acquired Intellectual Habits of such Men as affirm that the Theory, or Speculative part of Architecture was of no use, because, say they it is false: But 'tis the humour of some Men to slight and condemn such things as they are not Masters of, and do not know which way to attain them, as being beyond their reach. Like

the Fox in the Fable, who despised Grapes, because they grew too high for him to come at.

Thus I have shewed you, that what is wanting under this Head, you may find supplied in the word *Building*.

### *Houfing,*

A Term used by some Bricklayers, for when a *Tile*, or *Brick* is warped, or cast crooked or hollow in burning, they then say such a *Brick*, or *Tile* is *Houfing*; they are apt to be *Houfing*, or hollow on the struck side, (or that which was upmost in the Mold,) and *Bricks* on the contrary side.

Also some observe that *Tiles* are always smoothest, when burnt on the struck-side, by reason the Sand sticks to the under-side, which they strew on the Stock of the Mold, to prevent the Earth's adhering to it.

### *Hyperthyron,*

The Lintel, or Cap-piece of a Door-case, according to *Vitruvius*. 'Tis also used to signify a large Table in manner of a Frieze above Dorick Gates.

### *Hypotrachelium, or, Hypotrachelion.*

*What.*] V. Capital, N. 2. and 3.

### *Jack.*

V. Architrave, N. 2.

### *Fambs, or, Faums,*

Door-posts, also the upright Posts at the ends of Window-frames, are so call'd. Also, Bricklayers call the upright sides of Chimneys, (from the Hearth to the Mantle-tree,) by this Name.

### *Ichography,*

A Description, or Draught of the Plat-form, or Ground-work of a House, or other Building.

### *Impost,*

Is a Term in Architecture, which the Writers of this Science leave very much in the dark; especially as to any account of its use: But by what I can learn at present, I understand *Imposts* to be the Capitals of Pilasters that support Arches. There are as many kinds of *Imposts*, as there are Orders of Columns; the

the particular *Forms* and *Dimensions*, of each of which I shall defer till another Impression: For tho' I could at the present have done this; yet I thought it better to defer it till such time as I shall be *capable* to give a better account of their Situation and Use; which I hope shall be when the Bookfeller has furnished me with those other pieces of Architecture which he has promis'd me, but has not yet procur'd for me.

*Intercolumniation,*

In Architecture, signifies the space or distance betwixt the Columns, or Plaisters.

In the  $\left. \begin{array}{l} \text{Tuscan} \\ \text{Dorick} \\ \text{Ionick} \\ \text{Corinthian} \\ \text{Composite} \end{array} \right\} \text{Order.}$

The Inter-columniation must  $\left. \begin{array}{l} 4 \\ 3 \\ 2 \\ 2\frac{1}{2} \\ 1\frac{1}{2} \\ 1 \end{array} \right\} \text{Diameters of the Body of the Column below.}$

*Inter-ties, duces,*

In Architecture, are those smaller pieces of Timber that lie Horizontally betwixt the Summers, or betwixt them and the Sell, or Refson.

*Jobents.*

V. Nails. N. 10.

*Joggle-piece.*

As Crown-post.

*Joyners*  $\left\{ \begin{array}{l} \text{Brads,} \\ \text{Rivets.} \end{array} \right.$

V.  $\left\{ \begin{array}{l} \text{Brads. N.} \\ \text{Rivets. N.} \end{array} \right.$

*Joyners-work.*

V. The Particulars in their proper place of the Alphabet.

*Joysts.*

1. *What.*] Joysts, in Architecture; are those pieces of Timber (fram'd into the Girders and Summers,) on which the Boards of the Floors are laid.

2. *Scantlings.*] Joysts at full length (to bear in the Wall,) I say, their full length

being  $\left\{ \begin{array}{l} 12 \text{ Foot,} \\ 11 \text{ Foot, 6 Inches,} \\ 10 \text{ Foot, 6 Inches,} \end{array} \right\}$  they ought to be in their

Squares  $\left\{ \begin{array}{l} 8 \text{ Inches and 3 Inches.} \\ 7 \text{ Inches and 3 Inches.} \\ 6 \text{ Inches and 3 Inches.} \end{array} \right\}$

And Binding, or Trimming-joysts being

in length  $\left\{ \begin{array}{l} 7 \text{ Foot,} \\ 9 \text{ Foot,} \\ 11, \text{ or } 12 \text{ Foot,} \end{array} \right\}$  ought to be in their

Squares  $\left\{ \begin{array}{l} 6 \text{ Inches, and 5 Inches.} \\ 7 \text{ Inches, and 5 Inches.} \\ 8 \text{ Inches, and 5 Inches.} \end{array} \right\}$

3. *Distance and Position.*] (1.) No Joysts ought to lie at a greater distance from each other than 10, (or at most than 12) Inches. (2.) All Joysts on the back of a Chimney ought to be laid with a Trimmer, at 6 Inches distance from the back. (3.) No Joysts ought to bear at a longer length than 10 Foot. (4.) No Joysts ought to lie less than 8 Inches into the Brick-wall. (5.) Some Carpenters Furr the Joysts, (as they call it,) that is, they lay 2 rows of Joysts one over another; the undermost of which are fram'd level with the under-side of the Girder, and the uppermost (which lie cross the lower ones,) lie level with the upper side of the Girder.

### *Ionick Order.*

#### V. Column. N. 3.

#### *Iron.*

1. *What.*] Iron is a Metal so universally known, that I neither need to, nor shall spend time in its Description.

2. *Kinds.*] There are several kinds of Iron, as (1.) *English*, which is a coarse sort of Iron, hard and brittle, fit for Fire-bars, and other such coarse uses. (2.) *Swedish*, which is of all sorts the best we use in *England*. It is a fine tough sort of Iron, will best endure the Hammer, and is softest to file, and therefore most coveted by Workmen to work upon. (3.) *Spanish*, This would be as good as *Swedish* Iron, were it not subject to *Red sear*, (as Workmen phrase it,) that is to crack betwixt hot and cold. Therefore when it falls under your Hands, you must tend it more carefully at the Forge. But tho' it be a good, tough, soft Iron, yet, for many uses Workmen refuse it, because 'tis so ill and unevenly wrought in the Bars, that it costs them a great deal of labour to smooth it; but it is good for all great Works that require Welding; as the Bodies of Anvils, Sledges, large Bell-clappers, large Pestles for Mortars,

Mortars, and all thick strong Bars, &c. But 'tis particularly chosen by Anchor-smiths, because it abides the Heat better than other Iron, and when 'tis well wrought, is toughest. (4.) There is some Iron that comes from *Holland*, (tho' in no great quantity,) but is made in *Germany*. This sort of Iron is call'd *Dort-squares*, (only because it comes to us from thence, and is wrought into Bars of  $\frac{3}{4}$  of an Inch square. 'Tis a bad course Iron, and only fit for course uses, as Window-bars, Brewers-bars, Fire-bars, &c. (5.) There is another sort of Iron us'd for making of Wire, which of all sorts is the softest and toughest: But this sort is not peculiar to any Countrey, but is indifferently made where any Iron is made, tho' of the worst sort; for 'tis the first Iron that runs from the Mine-stone when 'tis melting, and is only preserv'd for the making of Wire.

3. *To know good.*] Generally the softest, and toughest Iron is the best. Therefore when you chuse Iron, chuse such as bows ofteneft before it breaks, which is an argument of toughness, and see it breaks sound within, be of a grey colour, like broken Lead, and free from such glittering specks as you seen in broken Antimony, and no Flaws or Divisions in it; for these are Arguments that 'tis sound, and was well wrought at the Mill.

4. *Price when wrought.*] Iron being wrought (by the Smith) into Dogs, Iron-bars, Staples, large Hooks, Thimbles, and Hinges or Hides, Grates, &c. The usual Price is three Pence Half-penny, or 4 *d.* per Pound. But for small and neat Hooks, Hinges, Bolts, Staples, &c. various, as from 4 *d.* to 8 *d.* per Pound.

5. *To make Blew.*] To beautifie Iron with a blew Colour, take a piece of a Grind-stone, or Whet-stone, and rub hard upon your Work to take off the black Scurff from it; then heat it in the Fire, and as it grows hot, you will see the colour change by degrees, coming first to a light Gold-colour, then to a darker Gold-colour; and lastly, to a Blew-colour. But Workmen sometimes grind Indico and Salad-oyl together, and rub that mixture upon it with a Woolen-rag, while it is heating, and let it cool of it self.

6. *Of twisting.*] Square and flat Bars of Iron are sometimes (by Smiths) twisted for Ornament; which is very easily done; for after the Bar is square or flat Forged, (and if the Curiosity of the Work require it truly Fil'd,) you must take a *Flame-heat*, or if your Work be small, but a *Blood-red-heat*, and then you may twist it about, as much, or as little as you please, either with the Tongs, Vice, or Hand-vice, &c.

### *Juffers,*

A Term us'd by some Carpenters, for Stuff about 4 or 5 Inches square, and of several Lengths.

*Kerf,*

*Kerf,*

**T**HE Saw-away Slit in a piece of Timber, or Board, the way made by the Saw, is call'd a Kerf.

*Key-stone.*

V. Arch. N. 6.

*King-piece,*

As Crown-post.

*Knee,*

A piece of Timber cut crooked with an Angle, is call'd a *Knee-piece*, or *Knee-rafter*.

*Keys*

For Doors are of various Prizes, according to their Size and Workmanship, Master-keys, per Price 2 or 3 s.

*Latches*

**F**OR Doors are of various Kinds and Prizes. Common Iron-latches, per piece, 6 d. if large, 8 d. or 10 d. long Varnish'd-Latches, about 10 d. per piece. Rim'd-Latches with a sliding Bolt, 2 s. per piece, Spring-Latches, per piece, 1 s. or 1 s. 6 d.

*Laths.*

1. *Whit.*] Laths are long, narrow, thin slips of Wood us'd in Tying and Walling; every one knows what they are, without any further Description.

2. *Kinds of.*] There are 3 kinds of Laths, viz. Heart of Oak, Sap laths, and Deal laths; the 2 last sorts are us'd for Ceiling and Partitioning, and the first for Tying only. Again, as to their length, they are each of them distinguish'd into 3 sorts, viz. 5 Foot, 4 Foot, and 3 Foot-laths. All these sorts of Laths are necessary, (especially in repairing of old Buildings,) because all Rafter are not spaced alike, nor yet the Proportion strictly observ'd in every one and the same Roof. V. P. [Tying. N 8.

3. *Bundle of.*] A bundle of Laths is so many as are bound up together, and is generally call'd a Hundred of Laths; tho' of the 3 Foot-laths there goes 7 Score, (or 140 to the Hundred, or Bundle, and of the 4 Foot-laths, 6 Score, but of 5 Foot Laths,) there goes but just 5 Score to the Hundred, or Bundle.

4. *Size of.*] The Statute allows of but 2 sorts of Laths, 1 of 5, the other of 4 Foot in length; of either sort, each Lath ought to be in breadth an Inch and half, and in thickness half an Inch; but they are commonly less, and are seldom exact, either in their Tale or Measures.

5. *Of Cleaving.*] (1.) Lath-cleavers, having cut their Timber into lengths, they cleave each piece (with Wedges) into 8, 12, or 16 pieces, (according to the bigness of their Timber,) which they call *Bolts*; then they cleave these Bolts (with their Dowl-Ax) by the *Felt-grain*, [which is that Grain which is seen to run round in Rings at the end of a Tree,] into Sizes for the breadth of their Laths, and this Work they call *Felt-ing*. Then, lastly, (with their Chit) they cleave their Laths, into their thicknesses, by the *Quarter-grain*, which is that Grain which is seen to run in straight Lines towards the Pitch. (2.) Some Men affirm, that a Foot of Timber will make a bundle, or Hundred of Laths; but this I know to be a Mistake, (unless the Laths are made very slight;) for by several Experiments, which I have caus'd to be made, I find that a Tun, or 40 Foot of Round-oaken-Timber, will not make above 30 Hundred, or Bundles of Laths. Of which number about one third part, (*viz.* 10 Hundred) will be Sap laths.

6. *Price of.*] (1.) The common Price for cleaving of Laths, is 5 *d.* or 6 *d.* the Bundle. But I know a Carpenter (in *Suffex*) that buys a great deal of Timber, and has it cleft into Laths, and he tells me, that he uses to give but 11 *s.* per Load for the Cleaving of 'em, (reckoning a Load to be 30 Bundles, (which is not full 4  $\frac{1}{2}$  *d.* per Bundle.

(2.) The Price of Laths must needs be various, there being so great Disparity in the the Commodity, as to its Goodness, Plenty, or Scarcity, &c. But the Prizes are generally between a Shilling and half a Crown the Bundle: And the common rate for Heart-laths is about 20 *d.* per Bundle, and Sap-laths are commonly about  $\frac{2}{3}$  of the Price of Heart-laths; The Carpenter mention'd above, (in this number,) tells me, that he uses to sell his Laths for 4 *l.* 10 *s.* the Carriage: He reckons a Carriage 60 Bundles, whereof 40 are Heart, and 20 Sap-laths; at which rate, (reckoning Sap-laths to be  $\frac{2}{3}$  of the Price of Heart, (he sold his Heart-laths at 20  $\frac{1}{4}$  *d.* per Bundle, and his Sap-laths at 13  $\frac{1}{2}$  *d.* per Bundle.

7. *Nails allow'd to a Bundie of.*] The common allowance is 5 Hundred, (at 6 Score to the Hundred, that is 600) Nails to a Bundle of Laths.

8. *How many to a Square.*] Workmen commonly allow a Bundle of Laths to a Square of Tying, which (if the Distances of the Rasters fit the lengths of the Laths, without any wast,) is a sufficient allowance; for (then) about 90 *five Foot*, and 112 *four Foot-Laths*, will compleat a Square of Tying, (Com-

ter-laths and all,) at 7 Inches Gage, and at 8 Inches Gage, a Square will require fewer.

### *Lathing.*

The Price of Lathing, Plaistering, Rendring, and Washing with Size, is about 10 *d.* 12 *d.* or 14 *d.* per Yard, Materials and Work.

### *Lead.*

1. *What. And its Use.*] Lead is a Material (us'd in Buildings, and) well known, and needs no Description. Its chief Uses are for Covering for Gutters, for Pipes, and for Glass, Covering with Lead is the most magnificent, and is generally most us'd for the covering of Churches, Princes Palaces, Castles, and great Men's Houses. It is generally laid almost flat to walk upon, allowing the Water a little fall to the Battlements, thence privately to descend in Pipes. But in ordinary Tyled Buildings 'tis chiefly us'd for Gutters to convey the Water from the House into some convenient Place.

2. *Sorts of.*] There are 3 sorts of Lead, White, Black, and Ash-colour; the White is more perfect and precious than the Black, and the Ash-colour between both.

3. *Of Casting Sheet.*] I shall here exhibit some of my Observations on the Method of Casting Lead into Sheets; as I have often seen it done, and have (for Curiosity) cast some Sheets my self. For this Purpose there is a Mold provided, which is made something longer than the intended length of the Sheets, that the end where the Metal runs off from the Mold may be cut off; because 'tis commonly thin, and uneven, or ragged at the end.

This Mold, (which is just as broad as the Sheet is to be,) must stand very even, or level in breadth, and something falling from the end where the Metal is pour'd in, *viz.* About an Inch, or an Inch and half in 16 or 17 Foot.

This Mold (commonly) consists of several Treffels, upon which Boards are laid, and nail'd down fast, and upon these, at a due distance, (according to the intended breadth of the Sheets,) the Sharps are fixed. These are 2 pieces of well season'd Timber, of about 4 Inches Square, and 16, 17, or 18 Foot long, according to the Size of the Sheets. But this Method of fixing down the Sharps, Workmen have found to be inconvenient; and therefore some do only fix one of the Sharps firmly, nailing the other but slightly, and then they fix several pieces firmly to the Boards, without the slightly fixed Sharps betwixt which and the Sharp, they drive Wedges, to make the Sharps come nearer together, as they see occasion: For they find by Experience, that the moistn'd Sand, (when it has lain a while on the Boards,) makes the Boards swell so much



much, that in spight of the Nails the Sharps will be too far a sunder.

At the upper end of the Mold stands the *Pan*, which is a Concave Triangular Prism, compos'd of 2 Planks nail'd together at Right Angles to each other, and 2 Triangular Pieces fitted in betwixt them at the ends. The length of this Pan is the whole breadth of the Mold wherein they cast their Sheets, and the breadth of the Planks whereof 'tis compos'd, may be 12 or 14 Inches, or more, according to the quantity of Lead they have occasion to put into it, to make a Sheet of, and the thickness of the Planks an Inch and a half. This Pan stands with its bottom, (which is a sharp edge) on a Form at the end of the Mould, leaning with one side against it, and on the opposite side is a handle to lift it up by, to pour out the melted Lead; and on that side of the Pan next the Mold are 2 Hooks of Iron to take hold of the end of the Mould, and prevent the pan's slipping, when they pour the melted Lead out of it into the Mold.

This Pan is lined on the inside with moistn'd Sand, to prevent his being fired with the hot Metal. The Mold is also fill'd up (from the upper end towards the lower end, about  $\frac{2}{3}$  parts of the way) with Sand sifted and moistn'd, and then a Man gets upon it, and treads it all over with his Shooes on, to make it settle close to the Mould. This being done, they begin to strike it level with the *Strike*, which is a piece of Board about 5 Inches broad, in the middle of which, and towards the upper edge is a wooden Pin (about 5 or 6 Inches long, and 1, or 1  $\frac{1}{4}$  Inch Diameter,) to hold it by when they use it. The length of this Strike is something more than the breadth of the Mold on the in-side, and at each end is cut a notch (on the under-edge,) about 2 Inches deep; so that when the Strike is us'd, he rides upon the Sharps with those Notches, and the lower edge of the Strike rides about 2 Inches below the upper side of the Sharps.

Then, in leveling the Sand with this Strike, they begin towards the lower end of that part of the Mold that was Fill'd, and taking the handle of the Strike in their Right hand, and laying their Left-hand upon one end of it, they draw the Sand back into that part of the Mold that was empty. Then they begin again a little nearer to the upper end, and draw the Sand back, (as before.) but not so far as the empty part of the Mold; for it is thus level'd at 5 or 6 places in the length of the Mold; (if he be 18 Foot long, as that was I made my Observations from, so that when it is thus level'd the whole length of the Mold, there are as many places that seem to be unlevel'd, as there are level'd, by reason of the Sand which is a little drawn back. Then the next Operation is to draw all the loose and hover Sand, (rais'd in the last Operation of leveling it) into the empty part of the Mold; which is done by be-

ginning

ginning at the upper end of the Mold, and still as the Sand is drawn back, the level'd part must be examin'd, to see if there be no Cavities in it; for if there be, a little Sand must be put into 'em, and that must be settl'd close and fast in the Cavities, by lifting up one end of the Strike, (letting the other rest upon the other Sharp,) and rapping upon the loose Sand, which was put in those Cavities, and so it will be settl'd close and fast.

This being perform'd all over the upper  $\frac{2}{3}$  parts of the Mold, and all the loose Sand drawn back into the lower  $\frac{1}{3}$  part of the Mold, that is also trod on, and settl'd all over, and level'd in all respects as the other  $\frac{2}{3}$  were; and its loose Sand is drawn off the Mold, down into a place 2 or 3 Inches below the lower end of the Mold, where the Sand is made into 2 Concavities to receive the overplus of the Lead.

The Sand being thus level'd, it is next to be smoothed all over with the *Smoothing-plane*, (as they call it,) which is a thick Plate of Polish'd-brass, about 9 Inches square, a little turn'd up, on all the 4 edges; so that the under-side looks something like the Diamond-cut-looking-glasses, on the upper side, (which is a little Concave like a Latten-pan,) is a Brass Handle folder'd on, upon which is a wooden one also, like a Case-smoothing-iron. With this Instrument the Sand is smoothed all over; and where there are any small Cavities, there must be a little Sand put in 'em, (with the 2 Fore-fingers and Thumb,) and then smoothed down.

The Sand being thus smoothed, the Strike must be made ready, by tacking (that is slightly nailing) on the Notches, 2 pieces of an old Felt-hat, (or else by slipping a Case of Leather on each end,) thereby to raise the under side of the Strike about  $\frac{1}{8}$  of an Inch above the Sand, or something more, (according as the Sheets are to be in thickness, (which will make a middle siz'd Sheet of about 9 or 10 Pound per Foot; as I have observ'd in the Casting of Lead for a Plat-form. (But for Hips, and Window-foils, and such Places where it does not lie flat, the Lead need not be above  $\frac{1}{10}$  of an Inch thick; but sometimes Plat-form-lead is near  $\frac{1}{4}$  of an Inch thick.)

Then they Tallow the under-edge of the Strike, and lay him cross the Mold close by the Pan, to prevent drops of Lead from spattering into the Mold, before it be ready to pour. Then the Lead being melted, (and the Pan made ready by being lined with moistn'd Sand, as was said above,) it is laved into the Pan, and when he is full, (or a sufficient quantity for the present Purpose, then with the end of a piece of Board (2 or 3 Inches broad,) draw off the floating part, or Scum of the Metal round about to the edge of the Pan, and there let it settle upon the Sand, which will thereby prevent the Sand from falling out of the Pan into the Mold, when the Metal is pour'd out.

The Metal being thus prepar'd, and cool enough, (which it will be when it begins to stand with a Shell, or Wall round about on the Sand,) then 2 Men must take the Pan by the Handle, and pour it into the Mold, and a third Man stands ready with the Strike, (facing of them, and his Right-side to the Mold,) and as soon as they have done pouring in the Metal, he immediately puts the Strike on the Mold, and runs back the whole length of the Mold, and so draws off the over-plus of the Lead, into the Cavities made to receive it; and then immediately, (with a Knife) the ragged end is cut off before it is cold.

When the Sheet is a little cool'd, 'tis begun to be rowl'd up, from the upper end downwards, ('tis handl'd with pieces of old Felt-hats,) and as they rowl it up, they rub off the Sand from it.

When the Sheet is taken off from the Mold, the Sand is immediately rak'd over with the Rake to let it cool, and then if it be too dry, 'tis sprinkl'd with a little Water; but care must be taken that none of the Mold be too wet; for if it be, the melted Lead will fly like Shot when it comes upon it. After the Sand is raked, 'tis all turn'd up-side-down with a Spade, and when it has lain a while, 'tis again thrown into  $\frac{2}{3}$  parts of the Mold, and settl'd down by treading, as at first, &c. To make it ready for the next Casting, which is commonly in an Hour and a half, or 2 Hours, if the Furnace heat well.

Thus much I have observ'd of the Method of Casting Lead into Sheets. I have insist'd the longer upon it, because I know of none that has Written of this so useful a Subject.

4. *Weight of a Foot of Sheet.*] Every Square Foot of Sheet-lead, (if it be design'd for Gutter, which is commonly run thinner than for Plat-forms,) is reckon'd to weigh 6 or 7 Pound, if old, 8 or 9 Pound, if new. And every square Foot of Sheet-lead for Plat-forms, is reckon'd to weigh 8, 9, or 10 Pound, if old, and 11 or 12 Pound, if new, and very good.

5. *How much one C. weight will cover.*] One hundred weight of Sheet-lead (at 12 lb. per Foot,) will cover a Square-yard, or 9 Square-foot. And is a lighter covering than Tiles, tho' dearer.

6. *Sheet for Gutters.*] Sheet-lead design'd for Gutters, is commonly run thinner than for Plat-forms. And Some Plumbers in London tell me, That 'tis the best way in laying long Gutters, to make a Drip, (Fall, or Step) about the middle, (of 1, 2, or 3 Inches deep;) for by this Means, say they, the Lead (being cut into 2 pieces which are shorter,) is not so subject to crack, (by being dilated and contracted with Heat and Cold,) as otherwise it is.

7. *Sheet, of laying on in Plat-forms.*] I have observ'd the Method of Plumbers in laying down the Lead in Plat-forms,

to be this: Having roll'd open 2 Sheets, they beat them flat with their *Dresser*, [which is an Instrument of Wood, of 16, 18, or 20 Inches long, (according as they are of Stoutness,) and about 3 or 4 Inches broad at the bottom, and in height something more, in the Form (almost, of a Parallelopipedon, only the upper-side is rounded off, and at one end the under-side is cut away, so as to leave a handle running out straight with the top.] Then (with a Line and Chalk, or with a straight Ruler, and a pair of Compasses,) they strike a Line about  $2\frac{1}{2}$  Inches distant from one edge of one of the Sheets, this is for the *Stander*. In the same manner they strike a Line about  $3\frac{1}{2}$  Inches distant from the edge next to it of the other Sheet; this is for the *Orlop*. [The *Stander* is about  $2\frac{1}{2}$  Inches of a Sheet of Lead, which is set up at Right Angles to the Sheet, all along one edge of it. The *Orlop* is about  $3\frac{1}{2}$  Inches of the edge, (next to the *Stander*) of the other Sheet, rais'd up in the same manner as the *Stander*.] Then with their *Pincers*, (which are something different from common Pincers; for these have a small Cylinder of Iron, (of about  $\frac{1}{2}$  an Inch Diameter, and 3 or 4 Inches long) fixed to one of the Chaps in such a Position, that when the Pincers are shut, they seem to hold it betwixt their Chaps;) they raise up the *Stander*, and *Orlop*, by putting the sharp Chap under the Sheet, and the Cylindrical one on the top, near the Line, and so they bend up the edge of the Sheet, both for the *Stander* and *Orlop*. Then they proceed to set it in better order with the *Dresser*, with which they make the *Stander* and *Orlop*, as upright and straight as they can, by placing one edge of the *Dresser* upon the Line which they struck, and striking hard blows on the top of him with a Smith's Hand-hammer.

Having thus made the *Stander* and *Orlop* as straight as they can, and set them up at Right Angles to the Sheet; they bring them together, and proceed to make a Seam of them, by first turning the *Orlop*, (which is an Inch broader than the *Stander*) over the *Stander*, by the help of the *Dresser*, and *Seaming-mallet*, [which is an Instrument of Holly, or some other hard Wood: It is made of a piece first tri'd, to about -Inches square, and about--Inches long, and then wrought away from the middle to one end, almost to a sharp edge, and so it is likewise at the other end, only those edges stand at Right Angles to each other, like a Cross-mattock. And into the middle of it is put a Handle like a Mallet.] And then they continue to beat the *Orlop*, and constantly work upon him with the *Dresser*, till they have reduced him and the *Stander* into as little room as they can, by wrapping them one in another, till at last it seems to be a kind of Semicircle, and this is what they call a Seam.

Some Plumbers tell me, That they sometimes lay Plat-forms of Lead, without Seams; but then the Joyst are wrought in

hollow, about 3 Inches broad, and near as deep, in the Form of a Semi-concave-cylinder, and when they lay the Sheets down, the edge of the first Sheet lies so far on the Joyst, that it comes over beyond the Concavity, and so much of the Sheet as lies over the Cavity is set down into it with the Seaming-mallet, and the next Sheet is laid over that, and set down into the Chanal also; and so the Water that comes into those Chanals, runs down into the Gutter.

8. *Mill'd.*] One Mr. Roberts, (then Master of the Company of Plumbers in London,) tells me, That *Mill'd-lead* is of but little use; not only because 'tis so very thin; but also because by the way of Milling it, 'tis stretched to that degree, that when it comes to lie in the hot Sun it shrinks, and cracks, and (consequently) will not keep out the Water. For 'tis, (says he,) like Cloath stretched on the Clothiers Tenters, which when taken off, naturally inclines to return to its former State. He farther added, That there was sufficient Proof for what he said; and if any one desir'd to be satisf'd about it, he might repair to *Greenwich hospital*, which is cover'd with *Mill'd-lead*, and has not been done above 4 or 5 Years, and yet it rains in, almost all over the Hospital; upon which account the Master and Wardens of the Company of Plumbers were sent for to the Parliament, who order'd them to go and view this *Mill'd-lead-work* at *Greenwich-hospital*, which they did; and when they returned to the Parliament, they all unanimously declar'd, That *Mill'd-lead* was not fit to be us'd: Whereupon the Parliament had thoughts of putting down the Milling of Lead: But whether they have actually done it, I have not yet heard.

9. *Pipes of.*] I understand by discoursing with some Plumbers in London, that they give distinct Names to their Leaden pipes, according to their weight at a Yard long, e. g. they have 6 lb. 8 lb. 10 lb. 12 lb. 14 lb. 20 lb. and 28 lb. Pipes and if I miss remember not, one size larger; so that a Pipe of 6 lb. to the Yard, they call a 6 lb. Pipe, and so of the rest. I cannot at present tell the particular sizes of all these sorts of Pipes; but if I miss remember not, the 10 lb. Pipe was about  $1\frac{1}{4}$  Inch Diameter, from out-side to out-side.

10. *For Glafs.*] Some Glaziers tell me, that they usually allow 50 lb. of Turn'd-lead to 100 Foot of Quarry-glass. They call it *Turn'd-lead*, when the *Came* has pass'd through the Vice, and is thereby made with a Groove on each side to go on upon the Glass. See *Came*. Their Turn'd-lead for Quarries is commonly about  $\frac{3}{10}$ , (which is almost  $\frac{5}{16}$ ) of an Inch broad; and for large Square-glass, their Turn'd-lead is  $\frac{8}{16}$ , or  $\frac{1}{2}$  an Inch broad. So that I find (by Discourse with Glaziers,) they have it of different sizes, as  $\frac{4}{16}$ ,  $\frac{5}{16}$ ,  $\frac{6}{16}$ ,  $\frac{7}{16}$ , and  $\frac{8}{16}$  of an Inch broad:

I have also observed, that some Glaziers in London have 3 sizes

sizes of Turn'd-lead for Glass-windows, *viz.* Of  $\frac{7}{16}$ ,  $\frac{5}{16}$ , and  $\frac{4}{16}$  of an Inch broad: The largest size, (they tell me) is for large Squares, that of  $\frac{5}{16}$  for Quarries, and the  $\frac{4}{16}$  for Crock-et-work, (or Fret-work, as some Glaziers call it,) it being more pliable for that use than broader Lead.

Some Glaziers tell me, they can turn Lead of different sizes in the same Vice, by changing their Checks for each size, and with another pair of Spindles, whose Nuts almost meet or touch, they turn Lead for Tyers, which when it comes out of the Vice, is almost cut asunder in 2 thickneses, which they can easily rend asunder. These Tyers are very tough, but they are commonly made too slight, and therefore some use to cast Tyers, which are stouter, but not so tough, being more apt to break in winding.

11. *Nails for.*] V. Nails. N. 11.

12. *Of Soddering.*] An ingenious Plumber, (who esteem'd me as his peculiar Friend,) told me the Method of *Paleing*, (as they call it,) or Soddering on of Imboss Figures on Leaden Work; as, suppose a Face, or Head in Bass-relief, were to be Pal'd on a Pump cistern for an Ornament to it. To do which, (said he,) the Plate where it is to be pal'd on must be scrap'd very clean, and so must also the back-side of the Figure, that it may fit close with a good Joynt. Then, (said he,) place that part of the Cistern (where the Figure is to be fix'd) Horizontal, and strew some pulveriz'd Rozin on the place where you made your Joynt. Then into the Cistern, (just under the place where your Figure is to stand,) set a Chaffing-dish of Coals, (till you see the Rozin is changed Redish, and begins to rise in Pimples, or Bladders) then take a piece of soft Sodder, (made of a longish Figure,) and rubbing the end of it round about your Figure, (and at the same time keeping your Figure steady in its place,) so that it may work into the Joynt. And when this is done, your Figure will be well pal'd on, and will be as firm, as if it had been cast on there.

But if your Cistern, (or the like) be so thin, as that you have reason to fear that it will be too hot, and be apt to run, or bend, and yield before your Figure (which is on the outside of it) will be hot enough; you may then lay your Figure on the hot Coals, till it and the place to receive it are both in a good temper for paleing, and then set the Figure on its place, and proceed with your Sodder, as before.

By this Method I saw *him* Sodder on bottoms to Leaden-stands, or Ink-holders.

I also saw and observ'd *him*, in Soddering the Leads of a Church, thus to manage it, *viz.* When he Sodder'd the Sheets of Lead that are fix'd into the Wall on one edge, and with the other edge lap over the ends of those which are seam'd in the Platform, at every other Sheet, in the middle be-

twist the seams, he Soddereth the Lapping-sheet down to the other, thus——with one corner of the Scraper, [which is an Instrument made of a Plate of Steel, in the form of an Equilateral Triangle, in the middle of which is fixed an Iron Strig, on the end of which is fixed a Wooden-knob, or Handle: The Plate is flat on the side next the Handle, but on the other side the edges are ground off with a Bezel like a Chizel, only very obtuse.] He first marked out, (partly on the edge of the Lapping-sheet, and partly on the other) an Oblong Rectangular Figure, of about 5 or 6 Inches long, and 3 or 4 broad: Then he scraped the Metal bright, having first, (because it was new Lead,) green'd it, (as they phrase it,) all round about, to prevent the Sodder's taking any where but where they scrape it. (This *Greening* is only rubbing it with some green Vegetable, it matters not what, he did it with Poor-man's-pepper, that being at hand: He told me, that in the Winter they us'd Cabbage-leaves, or any green thing they could get. It being thus scrap'd, he rub'd it with Tallow; then having an Iron ready hot, (which are much like the Irons us'd by Glaziers,) he took him with a piece of Felt in his Right-hand, and a piece of Sodder in his left, and holding it against the Iron, till it drop'd on the cleansed place, and when there was enough of it melted, he took a Linnen-clout in his Left-hand, and therewith kept the Sodder continually shov'd up on the cleansed place, and at the same time work'd it about with the Iron in his Right hand, thus he did, till he thought it was pretty well Incorporated with the Lead, and then he made it up into a kind of swelling form in breadth, and then cross the breadth of it, he made it into a kind of Seams with the point of his Iron. This being done, he took their Knife and a Dresser to knock him with, and so cut it straight on the sides and ends, and what he thus cut off, by reason of the Greening easily peel'd off.

After the same manner he sodder'd Holes, or Leaks in old Lead, only then he made the Sodder flat, and not swelling, (but he made it also in little Seams,) neither did he green it before he scrap'd it.

13. Price.] (1.) *The Price of Lead in Pigs*, (says Mr. *Leyburn*) is uncertain, as from 10 to 20 s. the hundred weight. I know a Plumber (at *Lewis* in *Suffex*;) who tells me he gives 12 s. 6 d. per hundred for Lead in Pigs at *London*: Some Glaziers tell me they give but 12 s. per Hundred, if they buy but  $\frac{1}{2}$  a Hundred. Mr. *Wing* tells us, that a Fodder of Lead is 22  $\frac{1}{2}$  Hundred Weight, (I know not how he reckons; for I am sure, most Authors reckon a Fodder of Lead but 19  $\frac{1}{2}$  Hundred.) and is worth from 9 l. to 12 l. which will cast 3 15 Foot of Sheet, at 2 Pound per Foot.

(2.) *The Price of Sheet-lead,*] Mr. *Leybourn* says, That in exchange of old Lead for Sheets new run, there is commonly allow'd 3 s. in every hundred weight, for Waste and Workmanship. I saw Sheet-lead (in 1701.) sold at *Lewis* for 16 s. per hundred weight, (they sometimes sell it for 17 s.) The Tinker who bought it to skirt a Furnace with, said it was good thick Lead. I computed it to weigh about  $11 \frac{1}{4}$  lb. per Foot; for there was 4 pieces of it, each about 3 Foot long, and  $15 \frac{1}{2}$  Inches broad, all which weigh'd 174 lb.

(3.) *The Price of Casting Sheet-lead.*] The Tinker above mention'd tells me, that Plumbers commonly reckon 4 s. per hundred, for casting old Lead into Sheets; but I apprehend that the Plumber (for this price) makes good so many hundred weight of Sheet-lead, as he receiv'd of old Lead. For Mr. *Leybourn* tells us, That Sheet-lead is cast out of old Lead, for 3 s. per hundred, allowing for Waste and Workmanship: And Mr. *Wing* says, that there is about 2 s. 6 d. (in every hundred) loss, in casting old Lead into Sheets: He also says, that Casting old Lead into Sheets, is worth 1 s. 6 d. per hundred. Yet I know a Plumber that had 3 s. per hundred for Casting of Sheet-lead; but then it was weigh'd after it was Cast, and he made very great Wages.

(4.) *The Price of laying on of Sheet-lead in Roofing,*] &c. This, (says Mr. *Wing*) is worth 15 or 16 s. per hundred weight, Lead and Workmanship. And Mr. *Leybourn* tells us, that covering with Lead is usually valu'd at 13, 14, or 15 s. per Yard Square, (according to the goodness of the Lead,) or between 7 and 8 Pound the Square of 10 Foot, besides Sodder.

(5.) *The Price of Sodder,* (says Mr. *Leybourn*) is 9 d. or 10 d. per Pound, as it is allay'd with Lead, and Scal'd: For Tin is 10, 11, or 12 d. per Pound neat.

(6.) *The Price of Leaden pipes* is various, according to their different bigness. An ingenious Countrey-plumber of my Acquaintance, tells me, that for Pipes of  $\frac{1}{2}$  Inch Diameter in the Bore, they have 1 s. 4 d. per Yard, for  $\frac{3}{4}$  Inch Pipe, 1 s. 10 d. for Inch Pipe, and  $1 \frac{1}{2}$  Inch Pipe, 2 s. or 2 s. 6 d. (for, says he, they are cast both in a Mould, only the Inch Pipe has a less Bore; and I think he said they were both of a Price; tho' I think, for this Reason the Inch Pipe ought to be the dearest, since it contains most Lead, and the Work is the same in each.) For Pipes of  $1 \frac{1}{2}$  Inch Bore they have 3 s. 6 d. per Yard, and for 3 Inch Pipe, 5 s. or 5 s. 6 d. The London Plumbers, (I find) rate their Pipes according to the weight of a Yard in length. Their 10 lb. Pipes are 2 s. 2 d. per Yard.

(7.) *The Price of Turn'd-lead for Glass-windows,* is various according to its breadth. I know some Glaziers in London sell Turn'd lead of  $\frac{7}{8}$  Inch broad, for 18 s. per hundred, that of  $\frac{5}{8}$  Inch broad for 17 s. per hundred.



14. *White-- for Painting.*] White-lead is a Colour (well known,) much us'd in Painting of Gates, &c. In *London*, 'tis commonly sold for 2  $\frac{1}{2}$  *d.* or 3 *d.* per Pound un-ground. I have also known it bought (in *London*) for 5 *d.* per Pound ready ground with Oyl.

### Ledgers.

V. Putlogs.

### Lime.

1. *What.*] A Material us'd in Building, (and well known,) made of burnt Stones, commonly of Chalk.

2. *Whereof, and how made.*] Mr. *Leybourn* tells us, out of *Paladio*, that Stones whereof Lime is made, are either digged out of Hills, or taken out of Rivers: That Lime is the best which is made of the hardest, sound, and white Stones, and being burnt, remains a third part lighter than the Stones whereof it is made. All digged Stones are better to make Lime of than gather'd Stones, and from a shady and moist Pit, than from a dry. All Stones are sooner or latter burnt, according to the Fire which is given them; but ordinarily they are burnt in 60 Hours.

The ingenious Sir *Henry Wotton*, tells us, That to make Lime (without any Choice) of refuse Stuff, as we commonly do, is an *English Error*, of no small Moment in our Buildings. Whereas the *Italians* at this day, and much more the *Ancients* did burn their firmest Stone, and even Fragments of *Marble* where it was plenty, which in time became almost *Marble* again for its hardness, as appears in their standing Theaters.

There are 2 kinds of Lime commonly made in *England*, one made of Stone, which is the strongest, and the other of Chalk, both being burnt in a Kiln.

The Lime that is made of soft Stone, or Chalk, is useful for Plaistering of Ceilings and Walls within Doors, or on the insides of Houses and that made of hard Stone is fit for Structures, or Buildings, and Plaistering without Doors. or on the out-side of Buildings that lie in the Weather: And that which is made of greasie clammy Stone, is stronger than that made of poor lean Stone, and that which is made of spongy Stone, is lighter than that made of firm and close Stone; that is again more commodious for Plaistering, this for Building.

Also very good Lime may be made of Mill-stone, not course and sandy, but fine and greasie. Likewise of all kind of Flints, (but they are hard to burn, except in a Reverberatory Kiln,) except those that are rolled in Water, because a great part of its Increase goes away by a kind of Glass. Also the Shells of

Fish, as of Cockles, Oysters, &c. are good to burn for Lime.

About us in *Suffex*, Lime is made of hard Chalk, dig'd out of the Hills, and is burnt in Kilns like Brick-kilns; but with this difference, that they have no Arches in them, but only a kind of Bench, or Bank on each side, upon which they lay the largest Stones, and so truss them over, and make an Arch, after the manner of Clamps for Bricks. (V. *Clamp*.) And when they have thus made an Arch with the largest Stones, they fill up the Kilo with the smaller ones.

A Mason of my Acquaintance tells me, That the *Kentish* Lime is far better than that commonly made in *Suffex*: For, (says he,) a Gallon of Water will make as much more *Kentish* Lime run, as it will of *Suffex* Lime: So that it should seem (by the Consequence of his Discourse,) that *that* is the best Lime which will run with the least Moisture.

The ingenious Gentleman, Mr. *Walter Burrel*, Esq; of *Cuckfield* in *Suffex*, was the first that introduced the use of Fern for burning of Lime, which serves that purpose as well as Wood, (the Flame thereof being very vehement,) and is far cheaper.

3. *Hundred of-- how much.*] In (and about) *London*, Lime is commonly sold by the hundred, which is 25 Bushels, or 100 Pecks, whence it had its Name.

4. *Load of-- how much.*] In the Countrey, Lime is commonly sold by the Load, which is 32 Bushels. A Load of Lime, (say some) will make Mortar enough for 250 solid Foot of Stone-work. And 8 Bushels of Lime, (heaped measure) is the common allowance to every thousand of Bricks.

5. *Price of--*] The Price of Lime is various in different Places, as from 8 to 12 s. the hundred, says Mr. *Leybourn*. I know that before these late Wars, (which have made Fuel dear and scarce,) Lime (in some parts of *Suffex*) was sold for 20, or 21 s. per Load, 32 Bushels to the Load; but now in some parts of *Suffex* 'tis sold for 24. or 25 s. per Load. in others for 32 s. Yet in some parts of *Suffex*, 'tis still (to my knowledge) sold for 12 s. per Load at the Kiln, and for about 15 s. 9 d. laid in 3 or 4 Miles.

### Lintels.

1. *What.*] Lintels (in Stone and Brick Buildings,) are the pieces of Timber that lie Horizontally over the tops of Doors and Windows.

2. *Price.*] The Carpenter commonly puts in these by the Foot running measure, at 6 d. per Foot, if Oak; 4 d. if Fir, Timber, and Workmanship. Some Carpenters in the Countrey, (that do not find Timber,) tell me, they have 1 s. per piece for sawing the Timber, and putting them in.

*List, and Listella.*

V. Capital. N. 2. 3.

*Lobby,*

As Anti-chamber.

*Locks*

For Doors are of various kinds; as for outer-doors, call'd Stock-locks; for Chamber-doors, call'd Spring-locks, &c. Also the several Inventions in Locks, (I mean in the making and contriving their Wards and Guards,) are almost innumerable. And as their kinds are various, so are their Prizes; I shall at present mention only some of the chief. As Stock-locks plain, from 10 *d.* to 14 *d.* per piece, or more, S-bitted Stock-locks with a long Pipe, 1 *s.* 6 *d.* S-bitted and warded Stock-locks very strong, 7 *s.* Brass-locks from 5 *s.* 6 *d.* to 9 *s.* Brass-knobbed-locks in Iron cases, 3 *s.* double Spring'd-locks 1 *s.* Cloffet-door locks 1 *s.* 4 *d.* Pad, (or secret) Locks with Slits instead of Pipes, 1 *s.* Plate-stock-locks, 3 *s.* 8 *d.* some ditto for half that Price. Plate-stock-locks in Shute, 4 *s.* 6 *d.* Brass-knob'd-locks in Shute, 6 *s.* 6 *d.* Iron-rim'd-locks very large, 10 *s.* 6 *d.* The Prizes of Locks are so various, according to their different kinds, sizes, and variety of Workmanship, that 'twere endless to mention them all; therefore I shall say no more of 'em at present, only, that there are some Locks made of Iron and Brass of 50, nay 100 *l.* per Lock, as Mr. Chamberlain tells us in his *Present State of England.*

*Lome,*

A sort of redish Earth, (well known) us'd in Buildings, (when temper'd with Mud, Gelly, Straw and Water,) for Plastering of Walls in ordinary Houses.

I know one Place in *Suffex*, (where being well temper'd with new Horse-dung,) it is us'd instead of Mortar to lay Tiles with, and they tell me it does very well.

Lome, (as 'tis dig'd out of the Earth,) is commonly sold (in some parts of *Suffex*) for 1 *s.* per Court-load, containing about 12 Bushels.

*Lutherns*

As Dormers. Also, see Window. N. — Their Price of making and setting up, (and sawing the Timber) is various, (according to their bigness,) from 9 to 20 *s.* per Window.

## Marble.

1. **W**hat.] A hard Stone, beautiful when polish'd, but hard to cut; much us'd in adorning of Palaces, and great Men's Houses, &c.

2. *Kinds of.*] The kinds of Marble are (almost) innumerable, some *white*, some *black*, some *grey*, some *green*, some variegated with Veins, and Spots, &c. It were endless to give the particular Names and Descriptions of all the kinds of Marble; however, I may hereafter give you a much larger account of 'em, but at present I must pretermit it.

3. *Use of.*] The principal use of Marble in Architecture, is for Chimney-pieces, Chimney-foot-pieces, Window-stools, Pavements, &c.

The Ancients, (as *Pliny* and other Authors tell us,) us'd to face their Houses all over with thin Plates of Marble.

4. *Of Polishing.*] An old experienced Mason tells me, that he has observ'd Stone-cutters polish Marbles for Hearths in this manner, *viz.* By laying 3 or 4 of 'em in a row, as even as they could, and then with another of these Stones fix'd to a broad Beetle, with a handle put in at Oblique Angles, (and with Sand and Water,) by moving this upper Stone too and fro on the lower ones, they wrought off the Strokes of the Ax, and afterwards with *Emmery* and *Putty* they polish 'em.

I have (also) my self, (at *Lewis* in *Suffex*) seen and observ'd them polishing of Marble for tops of Tomb-stones, which (as I find in my *Advertisia*.) they did in this manner. They block'd up their Stones to be polished, so as they lay Horizontal about 2  $\frac{1}{2}$  Foot high above the Ground; (I say they observ'd to lay them very level,) and then they wrought the upper Surface smooth and even, with a Tool for that purpose: This Tool was a piece of whole Deal about 18 or 20 Inches long, and 12 Inches broad, and cross the Grain of the Wood, on the upper side were nail'd 2 Ledges, one at each end, and on these Ledges was nail'd a Staff or Handle about 8 or 9 Foot long, (*viz.* Long enough to reach the length of the Tomb-stone,) also at each end on the under-side was nail'd a Ledge, and between these Ledges there was wedged in (with Wooden-wedges) a Hearth-stone of Marble that was also rough and unpolish'd. Then flinging Water and Sand upon the Tomb-stone, they wrought upon it, (by drawing the Hearth-stone too and fro,) till the Hearth-stone became pretty smooth, and then they put in another rough Hearth-stone, and so they continue to do, till they have wrought the Tomb-stone pretty even and smooth. But you are to note, That while the Tomb-stone and Hearth-stones are rough, they lay a considerable

rable weight, (as a Stone, or the like,) upon the upper side of the Tool, to keep it down hard on the Tomb-stone, but when the Tomb-stone is pretty smooth, they make him yet smoother, by putting into the Tool (one after another,) several of those Hearth-stones already begun polish'd, and this they continue to do, till they have brought both them and the Tomb-stone to a more polite Surface; upon these they use no weight on the back of the Tool, but they use Water and Sand, as before. And if they have no Marble-hearth-stone to polish, then the Workman tells me, they put a Purbeck-stone into the Tool.

5. *Price of--*] *Chimney-pieces* of *Egyptian*, or black fleak'd Marble, or of Rance, or Liver-colour'd marble is worth (of an ordinary size) 12 or 14 Pound a piece.

*Window-stools*, of white or black Fleak'd-marble, are worth 2 s. 6 d. per Foot.

*Pavement* of black, or white Marble, is worth about 2 s. per Foot. Thus Mr. *Wing*.

A Stone-cutter in *London* tells me, he sells *English* white Marble vein'd with red, &c. for 2 s. 6 d. per Foot in Squares for *Pavements*, and Slabs of the same sort of Marble, (long enough for a *Chimney-foot-pace*) for 5 s. per Foot.

*Egyptian* Marble, vein'd with variety of Greens, in Slabs, he sells for 8 s. per Foot.

*Italian* white Marble vein'd for *Chimney-foot-paces*, he sells in {Squares} for about {2 s. 6 d.} per Foot.  
{Slabs} {5 s.}

Black-marble he sells somewhat cheaper.

### *Marble-colour.*

The Price of Painting ordinary Marble-colour, on new Stuff, is about 1 s. per Yard. And an old Colour, about 9 d. per Yard, Colour and Work.

### *Masons.*

1. *Work.*] The several kinds of Work done by Masons, (in relation to Building,) with their Prizes, and Methods of Measuring them, &c. are too many to be comprehended under this so general word of *Mason's-work*, (especially as the word *Mason* is accepted in the Countrey,) and therefore I shall refer them to their Particulars, (as *Walling*, *setting of Fronts*, *Healing*, *Paving*, &c.) where they will much more readily be found.

2. *Bill to make.*] V. Bricklayer's Bill.

*Measuring*

*Of Artificers Work.*] See the particular kinds of Work, in their proper places of the Alphabet; where they will much more readily be found, than under this general word *Measuring*.

*Membretto,*

A Pilaster that bears up an Arch.

*Metops,*

In Architecture, are the square Spaces left betwixt the Trigllyphs in the Frieze of the Dorick Order. These Metops are sometimes plain, and sometimes Carved with the Heads of Beasts, and Plates, or Dishes, *viz.* In one a Bull's-head, in another a Plate, or Dish, and so alternately.

*Mitchels,*

Purbeck-stones for Paving, pick'd all of a Size, from 15 Inches square to 2 Foot. Being squar'd, and hew'd ready for Paving, a Stone-cutter in London tells me, they commonly sell them at about 2 s. 10 d. per Foot.

*Minutes. vid. Module.*

*Model,*

An Original Pattern which any Man'proposes to imitate, properly (in Architecture) a small Pattern of a House, or the like, (made of Wood, or any other Materials) made by a small Scale, wherein an Inch, or half an Inch represents a Foot, for the more exactly carrying on a great Design. Sometimes the word is us'd, (tho' improperly) in the same Sense with—

*Module,*

A Measure made use of to regulate the Proportions of the several Members of a Co'umn. In the Dorick Order, a Module is half the Diameter of the Body of the Column below: In other Orders 'tis the whole Diameter. A Module is commonly suppos'd to be divided into 60 equal Parts, call'd *Minutes*.

*Modillions.*

V. Cantalivers. N. 1.

*Modilion-cornish.*

V. Cornish. N. 9.

*Mouldings.*

The several Wrought-works made with Planes, &c. upon Wood, &c. are call'd Mouldings. The particular Rules for drawing all kinds of Mouldings, I must, (for Reasons already often mention'd,) at present omit. But God continuing my Life and Health, and this Book finding Acceptance in the World, and I any Encouragement, the next Edition shall contain this, and many other Curiosities, not commonly known.

*Moresk-work,*

A kind of Antick-work in Painting and Carving, after the manner of the Moors, (whence it has its Name,) consisting of several Grotosco's, wherein there is no perfect Figure, either of Men, or other Animals, and wherein there is a wild resemblance of Birds, Beasts, Trees, &c. intermingl'd.

*Mortise,*

From the *French Mortaise*, the hole made in one piece of Wood, to receive the Tenon of another piece. V. Tenon.

*Mortar.*

1. *What.*] From the *French Mortier*, a sort of Plaster, commonly made of Lime, and Sand, and Water, used by Masons and Bricklayers, in Building of Walls of Stone and Brick. For Plastering of Walls, they make their Mortar of Lime, and Ox, or Cow-hair, tempered well together with Water, and this is commonly call'd *white Mortar*.

2. *Of making common.*—]As for making of common Mortar, and for the Proportions of Lime and Sand to be us'd about it, many Men are of many Minds, I shall give you their several Sentiments about this Matter.

*Vitruvius* says, you may put 3 parts of digged, (or Pit-) Sand to one part of Lime, to make Mortar, but (says he) if the Sand be taken out of a River, or out of the Sea, then 2 parts thereof, and 1 of Lime. (He also says, That if to River, or Sea-sand, you put a third part of Powder of Tiles, or Bricks, it works the better.) But *Vitruvius's* Proportion of Sand seems too much, tho' he should mean of Lime before 'tis slack'd; for one Bushel of Lime before 'tis slack'd will be 5 Pecks after 'tis slack'd.

About *London*, (where for the most part Lime is made of Chalk,) they put about 35 Bushels of Pit-sand to 25 Bushels of Quick-lime, that is about a Bushel and a half of Sand, to a Bushel of Lime.

Some Workmen in *Suffex* tell me, that they commonly put 2 of their Court-loads (that is about 24 Bushels) of Sand to 1 Load,

Load, (that is 32 Bushels) of Lime, which is but 3 Pecks of Sand to 1 Bushel of Lime.

Other Workmen in *Suffex* tell me, that their usual Proportion of Lime and Sand, in making of Mortar, is 4 Court-load, (that is about 48 Bushels of Sand to 1 Load, (or 32 Bushels) of Lime, which is exactly a Bushel and half of Sand to one Bushel of Lime, near the *London* Proportion. But they tell me, 'tis of Stone-lime; for they allow but 3 Load, (or 36 Bushels) of Sand to one Load, (or 32 Bushels) of run Lime; (for say, they, a Load of run Lime is nothing near so much as a Load of Stone, [or quick-] Lime,) which is but 9 Gallons of Sand to a Bushel of Lime.

Other Workmen in other parts of *Suffex*, tell me, that they allow 4 Load (at 18 Bushels to the Load) of Sand, to one Load (or 32 Bushels) of Lime, which is  $2\frac{1}{4}$  Bushels of Sand to one of Lime.

Another Workman (in *Suffex*) tells me, that (to his knowledge) some *London* Bricklayers put as much Lime as Sand in their Mortar; especially for Front-work.

A Gentleman in *Suffex*, tells me, that the *London* Bricklayers make their Mortar much more durable than our Countrey ones; for he told me that at his Brother's House, and at another Gentleman's House (which he nam'd to me,) the Mortar was not scal'd at all; but at his own House (which was done by Countrey-workmen,) it scal'd very much, and fell out of the joynts. But (said he,) the *Londoners* make their *Mortar* by proportioning their Lime and Sand, viz. By measuring it all; but the Countrey-workmen, (for the most part) make it by guess. Now (said he), our Countrey-workmen do not make their *Mortar* fat enough; for they put in too little Lime to their Sand. Nevertheless, his Workman told me, that he did put in, as near as he could guess (by the Shovels full,) at least twice as much Lime as Sand in his *Mortar*, and took care to sift all his Lime and Sand; and yet, (to my knowledge) some of his Walls scal'd pretty much, especially those that were done towards the latter end of the Year; tho' (said he) I never made *Mortar* so fat in my life before. But indeed, none of his Walls were coped, they were only cover'd with Straw on the top, and Boards or Slabs laid on it to keep it on, which sometimes were blown off in the Winter, and so let in the wet; which, (said he,) was the cause of the Scaling of the Mortar; but his Master deny'd this, and said, it did so where it was never uncover'd all the Winter.

From all these various Proportions (of Lime and Sand) above mention'd, all asserted by able Workmen, I think it reasonable to inter, that the *Proportion* of Lime to Sand in making of *Mortar*, ought to be various, according to the goodness or badness of these Materials; and therefore is rather to be



be regulated by the Judgment of experienced and skilful Workmen in each particular Countrey, than by any stated Proportions. So let this suffice (at the present) for the Proportions of the Materials I shall next say something of—

*The Method of making of Mortar.*] Some Workmen tell me, that 'tis the best way not to use *Mortar* as soon as 'tis made; nor (in making it) to make the Lime run before it is mixt with the Sand, (as some will do,) but rather to take the Sand and throw it on the Lime whilst it is in Stones, before it is run, and so to mix it together, and then wet it; by which means, (say they) it will be the stronger, and when it has lain a while made before it is us'd, will not be so subject to blow and blister.

Others advise to let *Mortar*, (when made) lie in a heap 2 or 3 Years before 'tis us'd; for so (say they) 'twill be the stronger and better; for the Reason of so many insufficient Buildings, (say they,) is the using of the *Mortar* as soon as 'tis made.

Others tell us, (1.) That when you slack the Lime, you must take care to wet it every where a little, (but not over-wet it,) and cover with Sand every Laying, or Bed of Lime (being about a Bushel) as you slack it; that so the Steam, or Spirit of the Lime may be kept in, and not fly away, but mix it self with the Sand, which will make the Mortar much stronger, than if you slack all your Lime at first, and throw on your Sand altogether at last, as some use to do. (2.) That you ought to beat all your Mortar with a Beater, 3 or 4 times over before you use it; for thereby you break all the Knots of Lime that go through the Sieve, and incorporate the Sand and Lime well together, and the Air which the Beater forces into the Mortar at every stroak, conduces very much to the strength thereof. (3.) That when you design to Build well, or use strong Mortar for Repairs, you should beat the Mortar well, and let it lie 2 or 3 Days, and then beat it well again when 'tis to be us'd. (4.) That in *Summer-time* you should use your Mortar as soft as you can, but in *Winter* pretty stiff, or hard.

Mr. Worlidge says, that if you intend your *Mortar* to be strong, where you cannot have your choice of Lime, you may chuse your Sand and Water; for all Sand that is dusty makes the *Mortar* the weaker, and the rounder the Sand, the stronger the *Mortar*, as is usually observ'd in Water-drift-sand, that makes better Mortar than Sand out of the Pit.

Therefore, (says he,) if you have occasion for extraordinary *Mortar*, wash your Sand in a Tub, till the Water, after much stirring, come off clear, and mix that with new Lime, and your *Mortar* will be very strong and durable. And if your Water be foul, dirty, or muddy, your *Mortar* will be the weaker.

He also tells us, that 'tis a great Error in Masons, Bricklayers, &c. to let the Lime slacken and cool before they make up their *Mortar*, and also to let their *Mortar* cool and die before they use it: Therefore, (says he,) if you expect your Work to be well done, and long to continue, work up your Lime quick, and but a little at a time, that the *Mortar* may not lie long before it be used. So that you see, that in this Point also, Men differ in their Sentiments; some affirming it best to use their *Mortar* new, others, after it has lain made some time.

An old experienced Mason of my Acquaintance, tells me, that being at work at *Eridge-place*, (at my Lord *Abergaveny's*) at *Fant* in *Suffex*, they would have him make use of some *Mortar* that had been made 4 Years. But he, (when he came to try it,) told them it was good for nothing, by reason it was so very hard that there was no tempering of it. Whereupon a Jesuite (residing in the House, and that had been a great Traveller,) told him, that to his knowledge, at several Places beyond Sea, they always kept their *Mortar* 20 Years before they use it; but then (he saith) they keep it in Cisterns for the purpose, and always keep it moist. Now the old Mason, (above-mention'd,) tells me, he believes this Method may make the *Mortar* good and tough.

As for the Scaling, (or Crimbling) of Mortar out of the Joynts of Stone and Brick-walls, some Masons tells me, it proceeds from the badness of the Sand, or Lime, or both, as well as from the Season of the Year when the Work is done.

3. *Of making other kinds of-*] Besides the common *Mortar*, (us'd in laying of Stones, Bricks, and Tiles) above-mention'd, there are several other kinds, as——

4. *White Mortar.*] This is used in Plaistering of Walls and Ceilings, that are first Plaister'd with Lome, and is made of Ox, or Cow-hair well mixed and temper'd with Lime and Water, (without any Sand :) The common Allowance in making this kind of Mortar, is one Bushel of Hair to 6 Bushels of Lime. The Hair serves to keep the Mortar from cracking, binding it, and holding it fast together.

5. *Mortar us'd in making of Water-courses, Cisterns, &c.*] This kind of Mortar is very hard and durable, as may be seen at *Rome* at this day. It is used, not only in Building of Walls, but also in making of Cisterns to hold Water, and all manner of Water-works, and also in finishing, or Plaistering of Fronts to represent Stone-work.

And I find 2 kinds of this Mortar us'd by the Ancients; both of which are compounded of Lime and Hog's-grease; but to one is added the Juice of Figs, and to the other Liquid Pitch, and is first wet, or slack'd with Wine, then pounded, or beat with Hog's-grease, and Juice of Figs, or with

with the same and Pitch; that which has Pitch in it is blacker and easily distinguish'd from the other by its Colour, and that which is Plaist er'd with this kind of Mortar is done over with Linseed-oyl.

6. *For Furnaces, &c.*] Some Chymists in Building their Furnaces, make use of a kind of *Mortar* made with red Clay, not too fat, least it be subject to Chinks; nor too lean, or Sandy, least it bind not enough. This Clay is wrought in Water, wherein store of Horse-dung and Chimney-foot has been steep'd and well mingl'd, by which a Salt is communicated to the Water, binding the Clay, and making it fit to abide the Fire.

Some Metalists use a kind of *Mortar* to Plaster over the in-sides of their Vessels, (for refining of Metals) to keep the Metal from running out: And this kind of *Mortar* is compounded, and made of Quick-lime, and Ox-blood, the Lime being beat to Powder and sifted, and then mix'd with the Blood, and beat with a Beater.

The Glafs-makers in *France* use a sort of Mortar (for Plastering over the in-sides of their Furnaces,) made of a sort of Fuller's-earth, which is gotten from *Beliere* near *Forges*, which is the only Earth in *France* that has the property of not melting in this excessive Heat. And 'tis of this same Earth that the Pots are also made which will hold the melted Metal for a long time.

7. *For Sun-dials.*] An exceeding strong and lasting Mortar to make a Dial-plain on a Wall, may be thus made: Take Lime and Sand, which temper with a sufficient quantity of Linseed-oyl: this spread upon the Wall, will harden to the hardness of a Stone, and not decay in many Years. Note, If you cannot get Oyl, you may temper your Lime and Sand with feum'd Milk, (but Oyl is better,) and this will last 6 times as long as the ordinary Plaster made of Lime and Hair with Water.

I have known a very strong and tough Mortar (for a Sun-dial plain,) made in this manner. To about 5 or 6 Gallons of Brook-sand, (which was dry'd on an Oast, and sifted through a fine Splinted-sieve,) there was put as much, or rather more Sifted-lime, and a Gallon of Boreing (or Gun) Dust sifted also; all which was wet and temper'd well with 6 or 7 Gallons of Scum'd-milk, and about a Pottle of Linseed-oyl. This was laid on the Wall first, well wet with Milk; but the Workman found much trouble to set it smooth, by reason it dry'd so very fast; but by keeping it often sprinkl'd with Milk, and smoothing it with the Trowel, it at last set with a very smooth and shining Surface. But notwithstanding all his Care, it (as it dry'd) crack'd pretty much; which I fancie might proceed from the want of Hair in it: It did also blow in Efflers, tho' the Lime were sifted; and therefore I fancie, that

that if the Lime had been prepar'd as it is in *Fresco Painting*, it might have been prevented.

8. *Extraordinary good for Floors, Walls, and Ceilings.*] If you temper Ox-blood, and fine Clay together, and lay the same in any Floor, or Plaster any Wall, or Ceiling with it, it will become a very strong and binding Substance, as I have been told, (says my Author) by a Gentleman Stranger, who affirm'd to me, that the same is of great use in *Italy*.

9. *A profitable and cheap kind of-*] A Wife, Wealthy, and ancient Soap-boiler, dwelling without *Aldgate*, has (for the better Encouragement of others,) long since erected a fair and stately Edifice of Brick for his own Habitation; upon the good success whereof he has since built another House of some Charge and good Receipt; the *Mortar* whereof did consist of 2 Load of wast Soap-ashes, one Load of Lime, one Load of Lome, and one Load of *Woolwich Sand*.

So likewise, another Gentleman of the same Faculty, (being likewise of good Credit, and great Experience,) has us'd only Lome and Soap-ashes temper'd and wrought together for *Mortar*; whereby he has laid both the Foundations, Chimneys, and their Tunnels in his Dwelling-house in *Southwark*, and they have endur'd those Storms already past, which have overturn'd many other Tunnels, both new and old that were built with the ordinary *Mortar*.

It may be, that many Lime-men, (and some of those Bricklayers that are in Fee with 'em,) may speak against this Practice, and labour (by all possible means) to discredit it; but there is no Reason can hold against Experience, nor no Malice so great, but Truth in her Time will be able to vanquish. And if these 3 *Tryals* be not thought a competent number {to give Credit to a new Invention; I can, (says my Author,) back and confirm them with 3 score more at the least, which have been already made within the City of *London*, and Suburbs thereof.

True, indeed, this kind of *Mortar* is somewhat rough in the laying, and more sharp and fretting to the Fingers than ordinary *Mortar*, which makes it so much neglected and decry'd by some Workmen: But (says my Author,) I could soon remedy these 2 slender Faults; the first whereof is rather an excellent Quality in Mortar, than a Fault. Yet for the Good-will I bear to all the excellent uniform Buildings of our time, I will set down the best Advice that I can in this Case, and such as I dare warrant upon my Credit. And first, concerning the Roughness of this kind of Mortar, who is so blind, as not to see how to remedy it? (For 'tis rather a Work of Labour than of Skill;) for the Soap-ashes (which are in hard Cakes,) being either ground, or stamp'd into a fine Powder, before they be mixt with the Sand, will soon be brought to a

smooth

smooth Temper. And here we have no need to fear the Charge that will arise thereby; for I dare undertake, that the Profit of one Days Labour will answer the Charge of three Men's Wages, in the difference of Price that will be found betwixt one Load of these Ashes, and one hundred of Lime.

Then, 2dly, The Sharpness wherewith they offend the Bricklayer's Fingers, may in some sort be avoided by wearing of Gloves, (without which they seldom lay any Brick at all) to avoid the like Effects, which they find in Lime.

But for an assured help in this case, (if the Sharpness be such as cannot be endur'd of Workmen,) let these Ashes be re-imbibed in Water for some reasonable time, till more of their Salt be extracted from them, and then, (without question) they will find them gentle enough, and much of their fretting Nature taken away from them.

10. *For laying of Tiles.*] I know several Places in *Suffex*, where for laying of Tiles upon Houses, &c. They make a kind of *Mortar* of Lome, and new Horse-dung, well temper'd and mixt together. This some Workmen commend for a good, strong, and cheap *Mortar*; and others tell me, that 'tis more agreeable to the Tiles, than the common *Mortar* made of Lime and Sand; which, say they, corrodes and frets the Tiles, causing them to scale and fly to pieces, which this does not.

I have taken particular notice of one House, where the Tiles were laid in this kind of *Mortar*, and had been laid about 4 or 5 Years, and yet the *Mortar* did slick very well under the Corner-tiles, where it generally lies thickest.

11. *For Plastering of Fronts of Houses in imitation of Brick-work.*] Some Workmen tell me, that they make *Mortar*, (for this kind of Work) of Powder of Bricks, sharp Sand, and Lime, and some Red-oker. I know a House that is Plaster'd with this kind of *Mortar*; it has been done above 20 Years, and yet looks very well, and passes (with common Passengers) for a Brick House; tho' it be only Timber Plaster'd over. They have commonly 1 s. per Yard for doing such Work, only Workmanship.

12. *How much allow'd to a Rod of Brick work, or a Square of Tiling.*] Workmen commonly allow a hundred and half, (or 37  $\frac{1}{2}$  Bushels) of Lime, and 2 Load, (or 72 Bushels) of Sand to make *Mortar* enough for a Rod of Brick-work.

And for Tiling, 4 Bushels of Lime, and 6 or 8 Bushels of Sand will make *Mortar* sufficient to lay 1000 of Tiles, which is about a Square and half. So that a Square of Tiling will take up (for *Mortar*) about 2  $\frac{1}{2}$  Bushels of Lime, and about 5 Bushels of Sand.

13. *A Caution about.*] 'Tis a general Caution in all parts of a Building that where Stones, or Bricks are contiguous

to Timber, they ought to be laid dry, or without *Mortar*; because Lime and Wood are infociable, the former very much corrodeing and decaying the latter.

14. *Rough Mortar*, which see in R.

### *Mosa-ick, ique-ical Work.*

A curious kind of Work in Architecture, consisting of small inlaid pieces of Stone, Glass, Shells, or other Materials, of various Colours, Figur'd at Pleasure. 'Tis an Ornament of much Beauty, and long Life, but of most use in Pavements and Floorings.

### *Mofs,*

*Us'd in Tiling.*] In some parts of *Suffex* they lay Tiles in Mofs instead of *Mortar*; and when the Workmen get the Mofs themselves, they are allow'd 2 *d.* in a Square the more for their Work. But some Workmen contemn this way of Tiling with Mofs; because, (say they) in Windy wet Weather, when the Wet, Rain, Snow, or Sleet is driven under the Tiles in the Mofs; if there follow a Frost whilst the Tiles are wet, it then Freezes the Mofs, and so raises the Tiles out of their Place.

### *Multiplication*

*Of Feet and Inches, by Feet and Inches.*] V. Cross-multiplication.

### *Munions,*

In Architecture, are the short upright Posts that divide the several Lights in a Window-frame.

### *Muring,*

And old Term in Architecture, signifying the Raising of Walls.

### *Nails.*

1. *W<sup>H</sup>at.*] These are a Material so well known, that (in the general) they need no Description. But the particular Kinds of 'em (which are very numerous,) shall be described in the following Numbers.

2. *Back—and Bottom.—*] These kinds of Nails are made with flat Shanks, and so as to hold fast, and not open the Grain of the Wood; being proper for Nailing of Boards together

gether for Coolers, for Guts to save Water under the Eves of a House, or for any Liquid Vessels made of Planks, or Boards.

3. *Clamp.*] These are proper to fasten Clamps in Building, and repairing of Ships.

4. *Clasp.*] These are of 2 sorts, viz. (1.) *Long*, proper for any fine Building with Firr, or other soft Wood: the clasping of the Head brings them into little compass, and admits of their sinking into the Wood, makes the Work smooth, and will admit a Smoothing-plane to go over them when drove. The sizes are 7, 7½, 8, 10, 12, 14, 15, 18, 21, 22, 23, 28, 32, 36, and 40 lb. per Thousand.

(2.) *Strong*, these are fit for Oak, and other hard Woods. The sizes are 15, 18, 28, 32, and 40 lb. per Thousand.

5. *Clench.*] These are commonly us'd by Boat, Barge, and Lighter Builders, with Roves, and oft without: They are proper Nails for any Building with Boards, that must be taken down again, because they will drive without splitting the Wood, and draw, (or admit of punching) out, (if right made) without breaking. The sorts are too many to be here enumerated, for fine Work they are made with Clasp-heads.

6. *Clout.*] These are commonly us'd for nailing on of Clouts to Axle-trees, but are proper to fasten any Iron to Wood; and (if right made,) the Heads will hold driving home without flying. The sizes are 4, 7, 8, 9, 12, and 15 lb. per Thousand.

7. *Deck.*] These are proper for fastning of Decks in Ships, doubling of Shipping, and Floors laid with Planks. They are of 2 sorts, Dye-headed, and Clasp-headed. The Sizes are 4, 4½, 5, 5½, 6, 6½, 7, 8, and 9 Inches long.

8. *Dog.*] These are proper for fastning of Hinges to Doors, for (if made right) they will hold the Hinge close without the Heads flying off, or without the help of botching, by putting Leather between the Head and the Hinge. The sizes are 9, 12, 20, 25, 30, 40, 60, 80, and 120 lb. per Thousand.

9. *Flat Point.*] These are of 2 sorts, viz. (1.) *Long*, which are much us'd in Shipping, and are very proper where there is occasion to draw and hold fast where there is no Conveniency to Clench. The Sizes are 7½, 8, 9, 10, 11, 12, 13, 14, 16, 18, 21, 22, 23, 26, 40, 55, 75, and 110 lb. per Thousand. (2.) *Short*, these are fortify'd with Points to drive into Oak, or other hard Wood; and are often us'd to draw the Sheathing boards to, very proper where Oak or other hard Wood is us'd. The Sizes are 5, 9, 18, 26, 32, 40, 55, 75, and 110 lb. per Thousand.

10. *Jobent.*] These are commonly us'd to nail thin Plates of Iron to Wood, and to nail on small Hinges for Cab-board-doors, &c. The sizes are 2 and 3 lb. a Thousand.

11. *Lead.*] These are commonly us'd to Nail Lead, Leather,

Leather, and Canvas to hard Wood. The sizes are  $4\frac{1}{4}$ , 7, and 8 lb. per Thousand.

12. *Port.*] These are commonly us'd to nail Hinges to the Ports of Ships. They must be made strong, because they will not admit of being clenched, without being prejudicial to the Lining; and therefore care must be taken that they be demanded of such a length, as that they may come near through, (so as to take sufficient hold,) and yet not so long as to come quite through. The sizes are  $2\frac{1}{2}$ , 3, 4, and 5 Inches long.

13. *Pound.*] These are four square in the Shank, and are much us'd in *Esssex*, *Suffolk*; and *Norfolk*; but in few other Countreys, except for Paleing. The sizes are 6 d. 8 d. 10 d. 20 d. and 40 d.

14. *Ribbing.*] These are commonly us'd to fasten the Ribbing, to keep the Ribs of Ships in their place in Building; if these Nails are made right, they will hold fast, and draw easie, without injuring the Ribbing, or Timbers. They are also very usefull to fasten Timber's to be used for a while, and taken down again for further Service. The sizes are 5,  $5\frac{1}{2}$ , 6,  $6\frac{1}{2}$ , 7,  $7\frac{1}{2}$ , 8,  $8\frac{1}{2}$ , and 9 Inches long.

15. *Rose.*] These Nails are drawn four square in the Shank, and commonly in a round Tool, as all common 2 d. Nails are, and most commonly 3 d. and 4th. In some Countreys they make all their larger sort of Nails in this shape, but their being square drowneth the Iron, and the Nails do not shew so fair to the Eye, as those laid upon the flat; but if made of tough Iron, they are very serviceable. The Sizes are  $1\frac{3}{4}$ , 2,  $2\frac{1}{2}$ ,  $2\frac{3}{4}$ , 3,  $3\frac{1}{2}$ ,  $3\frac{3}{4}$ , 4,  $4\frac{1}{4}$ ,  $4\frac{3}{4}$ , 5, 9, 10, 13, 14, 16, 17, 18, 24, 26, 28, 30, 32, 36, and 40 lb. per Thousand.

16. *Rother.*] These are principally to fasten Rother Irons to Ships, and require a full Head, and to be made so as to hold fast in the Wood to the greatest degree, without Clenching.

17. *Round-head.*] These are very proper to fasten on Hinges, or for any other use where a neat Head is requir'd; and if made of the best tough Iron, as they ought to be, are very useful. The sorts are Tacks, 2 d. 3 d. 4 d. 5 d. 6 d. and 8 d. The same Tinn'd for Coffin-handles, and fine Hinges.

18. *Scupper.*] These are principally to fasten Leather, and Canvas to Wood, and therefore require a broad Head, that neither may work loose. The sizes are  $4\frac{1}{4}$ , 7, and 8 lb. a Thousand.

19. *Sharp.*] These are much us'd in all Countreys, especially in the *West-indies*, being made with sharp Points, the Shank flat, and is a very proper Nail for ordinary Uses, where soft Wood is us'd. The sizes are  $2\frac{1}{2}$ ,  $2\frac{3}{4}$ , 3,  $3\frac{1}{2}$ , 4,  $4\frac{1}{2}$ , 5,  $5\frac{1}{2}$ , 6,  $6\frac{1}{2}$ ,  $7\frac{1}{2}$ , 8, 9, 10, 11, 12, 13, 14, 15, 18, 19, 20, 21, 22, 23, 28, 32, 36, 40, 55, and 75 lb. per Thousand.

20. *Sheathing.*] These are commonly us'd to fasten Sheathing-



thing-boards to Ships. The Rule for using them, is to have the Nail full 3 times as long as the Sheathing-board is thick, provided the Plank be of a sufficient thickness, which ought to be enquir'd into; for the Sheathing-nail ought not to go through the Plank by half an Inch, least it should make the Ship leaky. The Shank must not be so strong as to cleave the Board, and the Head must be well clasped, or died, so as it may sink into the Wood, and the Ships side left smooth. They are also a useful Nail in doubling of small Ships. The sizes are  $1\frac{1}{4}$ ,  $1\frac{1}{2}$ ,  $1\frac{3}{4}$ , 2,  $2\frac{1}{4}$ ,  $2\frac{1}{2}$ ,  $2\frac{3}{4}$ , 3,  $3\frac{1}{4}$ , and  $3\frac{1}{2}$  Inches long.

21. *Square.*] These are of the same shape as sharp Nails, and is a most useful Nail for Oak, and other hard Wood, as also for nailing up Wall-fruit, the Points being made something stronger than the Points of sharp Nails, which fortifies them to go forward, and not turn back upon a small Opposition, as Weaker-points will do. The sizes are  $2\frac{1}{2}$ ,  $2\frac{3}{4}$ , 3, 4,  $4\frac{1}{2}$ , 5,  $5\frac{1}{2}$ , 6,  $6\frac{1}{2}$ , 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 18, 19, 20, 22, 23, 24, 28, 30, 32, 36, 40, 55, and 75 lb<sup>s</sup> per Thousand.

22. *Tacks.*] The smallest of these are to fasten Paper to Wood, midling for Wool-cards, and Oars, and the larger for Upholsterers, and Pumps. The sizes are  $2\frac{1}{4}$ , 5, 6, 8, 9, 14, and 15 Ounces a Thousand.

There are many more sorts of Nails, which for brevity, (and because they are not so proper for our present Business,) I shall omit.

23. *Allowance of in Lathing.*] In Lathing, the common Allowance of Nails is 500 to a Bundle of 5 Foot-laths, and 600 to a Bundle of 4 Foot-laths, at 6 Score Nails to the Hundred.

24. *Allowance of in Flooring.*] In laying of Floors 200, (that is 240) Nails is a compleat Allowance for a Square of Flooring.

25. *To Toughen.*] A Neighbour of mine, a Mason, tells me, that—the Ironmonger at Rotherbridge taught a Kinsman of his, (who is also a Mason) to toughen his Nails that were brittle, by heating them hot in the Fire, (in a Fire-shovel, or the like,) and putting some Tallow, or Grease to 'em, the first he says is best. This Ironmonger keeps a Nail-er at Work.

26. *Of driving.*] There is requir'd a pretty Skill in driving a Nail; for if, (when you set the point of a Nail,) you be not curious in observing to strike the flat Face of the Hammer Perpendicularly down upon the Perpendicular of the Shank; the Nail, (unless it have good entrance) will start aside, or bow, or break, and then you will be forced to draw it out again with the Claw of the Hammer. Therefore you may see a Reason when you buy a Hammer, to chuse one with a true flat Face.

Perhaps it may not be unacceptable to some Readers, if I here mention a little *Trick* that is sometimes used among some (that would be thought cunning Carpenters,) privately to touch the Head of the Nail with a little Ear-wax, and then lay a Wager with a Stranger to the Trick, that he shall not drive that Nail up to the head with so many blows. The Stranger thinks he shall assuredly win, but does assuredly lose; for the Hammer no sooner touches the Head of the Nail, but instead of entering the Wood it flies away, or starts aside, notwithstanding his utmost care in striking it down-right.

#### Nave,

In Architecture is commonly us'd to signify the main part, or Body of a Church; which by the nearness of the word may seem to be deriv'd from the Latin, *Navis* a Ship; but it may more significantly be deriv'd from the Greek *ναός*, (that is *Nios*) a Temple.

#### Newel,

The upright Post that a pair of Winding-stairs are turn'd about.

#### Niches, or Nices,

The hollow places in a Wall, wherein Statues or Images, are set. If these Images be of white Stone, or Marble let not the Niches be colour'd too black; for tho' *contraria juxta se posita magis illucescunt*, be an old Rule, yet 'tis observ'd, that our sight is not well pleas'd with suddain changes, from one Extream to another; therefore let them have rather a duskyish Tincture, than an absolute black.

#### Oak.

1. **W**hat.] This is a sort of Timber well known, and needs no Description. 'Tis one of the principal Materials in Building, being strong in all Positions, and may well be trusted in cross and tranverse Work; as for Summers, and Girding, or Binding-beams, &c.

2. *Of Sawing.*] Oak is worth sawing 2 s. 8 d. per hundred, some 3 s. and upwards to 3 s. 6 d. per hundred. That is the hundred Superficial Feet.

#### O G. Ogee, or Ogive,

A sort of Moulding in Architecture, consisting of a round and a hollow; *Vitruvius* makes it 2 Quarter-circles, *Scamozzi*, and some other Authors make the Arch's flatter, by striking them from 2 Equilateral Triangles. V. Capital. N. 3.

#### Orders,

In Architecture are the different Forms and Proportions of Columns, &c. There are 5 Orders (commonly reckon'd) in Architecture, *viz.* The Tuscan, Dorick, Ionick, Corinthian, and Composite.

*Orlo.*

The Plinth or Square under the Base of a Column, or under the Base of its Pedestal.

*Orthography,*

Is a Word deriv'd from the *Greek*, *Orthos*, true or right, and *grapho*, to write or describe. In Architecture, it signifies the Front or ( any other ) upright Side of a House; or the Draught on Paper of those Parts of a House.

*Ovolo,*

As *Echinus*.

*Over-span.*

V. Clamp. N. 2.

*Painting.*

1. **O**F *Out-door-work in general*] Doors, Shop-windows, Window-frames, Pediments, Architraves, Friezes, and Cornishes, and all other Timber-works that are expos'd to the Weather, ought at first setting up to be Prim'd with *Spanish-brown*, *Spanish-white*, and *Red-lead*, (about a fifth part) to make the other 2 Colours dry; these well ground with *Linseed-oil*, will make excellent Primer; then afterwards with the same Colour, (but much whiter) for a second Primer, and lastly, with fair *White*, made of *White-lead*, and about a fifth part in quantity, (not in weight) of *Spanish-white*.

*Out-door-work* thus colour'd, may be afforded for 3 *d.* or 3 *d.* half-penny, or 4 *d.* the *Yard Square*, for each time laid over.

2. *Of measuring.*] Painters measure their Work by the *Yard Superficial*, and in taking the Dimensions of their Work, they run a String all over where the Brush goes; for they say, (and 'tis but Reason) we ought to be paid for all where the Brush goes. But sometimes in *Rails*, and *Banisters*, they will measure it as if it were flat Measure. I have seen the Experiment tri'd, and the difference would not countervail the trouble of girting. So that Painters-work is measur'd the same as *Joyners*, only Painters never reckon Work and half, but work once, twice, or three times, &c. done over; or at so much *per Yard*, according to the Work. They always reckon double Work for Painting of *Window-shutters*, if both sides are Painted alike; otherwise, according to the value of the Painting. But they reckon *Sash-frames* by themselves, (at so much *per piece*, and likewise *Mantle-pieces*) when there is no Painting about them; but if they stand in the *Wainscot*, they measure them as plain Work, deducting nothing for the Vacancy.

3. *Of Wainscot-colour.*] If on new Stuff, is worth about 8 *d.* *per Yard*, on old Colour about 7 *d.*

4. *Of Walnut-tree-colour.*] It is worth 10 *d.* say some, others say 16 or 18 *d.* *per Yard*.

5. *Of ordinary branch'd Painting.*] Is worth 12, 14, or 16 *d.* per Yard.

6. *Of ordinary Marble-colour.*] If on new Stuff, is worth 1 *s.* per Yard, on old Colour, 9 *d.*

7. *Of white Colour.* Is worth 10 *d.* or 1 *s.* per Yard.

8. *Of plain Japan, either black or white,*] Is worth 3 *s.* 6 *d.* or 4 *s.* per Yard.

9. *Of Gates, and Outward-doors,*] Is worth 3 *d.* or 3 *d.* half-penny, or 4 *d.* per Yard.

10. *Of Shop-windows.*] The same as Gates, and Outward-doors.

11. *Of Window-frames,*] Is worth from 3 *d.* or 4 *d.* to 6 *d.* or 8 *d.* each Light, according to their Size.

12. *Of Sash-lights,*] Is worth about 1 *d.* per Light.

13. *Of Sash-frames,*] Is worth about 1 *s.* per Frame.

14. *Of Iron-casements,*] Is worth three half-pence, 2 *d.* or 3 *d.* per Casement, according as they are of bigness.

15. *Of Iron-bars of Windows,*] Is worth 1 *d.* per Bar, or more, if very large.

16. *Of Chimney-pieces,*] Is worth about 2 *s.* per Chimney-piece.

17. *Of Pales,*] Is worth about 10 *d.* or 12 *d.* per Yard.

18. *Colours.*] The Colours us'd in Painting, are of several kinds; as White, and Red-lead, Spanish-white, and brown, Verdigrease, Smalt, &c. Of which see in their proper places of the Alphabet.

### *Paleing.*

1. *With Cleft-pales, Rails, and Posts.*] Some Workmen tell me, that for Paleing with 3 Rails, Cleft-pales, Rails, and Posts, cleaving, making, and setting up, they have 3 *s.* 6 *d.* or 4 *s.* per Rod, Felling the Timber and all. But then their Materials are all laid down to their Hand, so that they have no carrying.

Others tell me they have 2 *s.* 6 *d.* per Rod, for (only) making and setting up of Cleft-posts, Rails, and Pales.

2. *With Saw'd Pales, Rails, and Posts.*] Some Workmen tell me they have 1 *s.* 6 *d.* per Rod for making and setting up of Saw'd-posts, Rails, and Pales.

### *Pales.*

1. *Price of Cleaving.*] Some Workmen tell me that they have 2 *s.* per Hundred for Cleaving of Pales; but others that cleave in Brooks, say they have but 1 *s.* 8 *d.* per Hundred. Note, A Hundred of Pales is various, according to their length; for of 5 Foot Pales, 5 Score Pales is a Hundred, but of 4 Foot there goes 6 Score, and of 3 Foot, 7 Score to the Hundred.

2. *Of the Number a Tun will make.*] This is very uncertain, by reason of the difference in Timber's Cleaving, some Cleaving much better, (and less to wast) than other some; yet by comparing several Observations, which I receiv'd from an ingenious Workman, I gather, that a Tun of good Cleaving Timber may make 3 Hundred, (or perhaps something more) of 4 Foot Pales, and a Tun of the like Timber may make 4 Hundred of 3 Foot Pales; the Reason of which is, because Timber generally cleaves better, (and less to wast,) in short lengths than in longer.

But the Number of *Sawn-pales* (that may be made of a Tun of Timber,) is more certain, than of *Cleft-pales*; for I have found (by the Draught of a Tree, and Calculations,) that a Tun of Timber will make about 400 Foot of Inch-boards; which (if the Timber fit for length,) being cut out

into  $\left. \begin{array}{l} 5\text{—Foot} \\ 4\text{—Foot} \\ 3\text{—Foot} \end{array} \right\}$  Pales, will make

$\left. \begin{array}{l} 80 \\ 100 \\ 133 \end{array} \right\}$  Pales, each a Foot broad; which in Paleing

will reach about 3 times as far as the like number of Cleft Pales will do.

### *Palisade, or Palisado.*

1. *What.*] A sort of slight open Pale, or Fence, set to Beautifie a Place, or Walk.

2. *Pales.*] Some Workmen tell me, that making and setting up of Palisado-pales, (if the Heads are handsomely cut, the Palisades Mortis'd through, the Posts at the corners higher than the rest, and the Rails, Kneeling-rails,) is worth 14 s. per Rod, Carpenter's Work, and Sawing.

An ancient and experienced Carpenter informs me, that the Carpenter had 25 s. per Rod, (for Timber and Workmanship) for the Palisado-pales at the Bowling-green at *Mount-Ephraim* at *Tunbridge-wells*; and likewise for the Palisades at the High-house behind the Bowling-green. This old Carpenter told me, he guess'd the Carpenter's Work of these Palisades to be worth about 10 s. per Rod.

I am also inform'd, that the Carpenter had 30 s. per Rod for the Palisades at the Walks at *Tunbridge-wells*. I mention these about the Wells, because I suppose them to be well known to most Gentlemen. For there is such variety in the Workmanship of Palisado-pales, that there can be no certain Price for it by the Rod.

3. *Gates.*] These are as various in the Forms and Fashions as Palisado-pales, and consequently their Prizes are also as various,  
viz.

*viz.* From 6, or 7, to 10, or 12 *s.* per Yard running Measure, at about 6 or 7 Foot high.

4. *Of Iron.*] Palisado-work of Iron in Gates, or otherways, is from 4 *d.* per Pound, to 8 *d.* according to the Work.

### *Pallification,*

A Term in Architecture, signifying the Piling of the Ground-work, or strengthening of the Ground-work with Piles of Timber driven into the Ground, when they Build upon a Moist and Marshy Soil.

### *Pantry,*

A Room to set Victuals in, a Store-room.

### *Pan-tiles.*

V. Tiles, N. 7.

### *Pargeting.*

1. *What.*] In Architecture, signifies the Plastering of Walls; sometimes 'tis us'd to signify the Plaster it self.

2. *Price*] Pargeting, or Plastering is of divers kinds. As (1.) White Lime, and Hair-mortar laid upon bare Walls, at 3 *d.* or 4 *d.* the Yard. (2.) Upon bare Laths, as in Partitioning, and plain Ceilings, from 8 *d.* to 14 *d.* per Yard. (3.) Rending the insides of Walls, or doubling Partition-walls, at 2 *d.* or 3 *d.* the Yard. (4.) Rough-cast upon Heart-laths, from 1 *s.* to 3 *s.* the Yard Square, Workmanship and all Materials. (5.) Plastering upon Brick-work with finishing Mortar, in imitation of Stone-work, from 1 *s.* to 18 *d.* or 2 *s.* the Yard Square. (6.) And the like upon Heart-laths, from 18 *d.* to 2 or 3 *s.* the Yard, V. more in *Plastering.*

### *Parlour,*

A fair lower Room, design'd principally for the Reception, and Entertainment of Company.

### *Partitions.*

1. *Of Framing.*] V. Framing, N. 4.

2. *Of Measuring.*] Partitions are commonly measur'd by the Square; but they commonly make deduct ion for Doors and other Vacancies.

### *Passage,*

An Entry, or narrow Room, serving only for a Thorough-fair, or Entrance into other Rooms.

### *Paving.*

## Paving.

1. *What.*] Is the laying a Floor with Bricks, Tiles, or Stones.

2. *With Statute-bricks.*] Paving with Statute-bricks, is done at London for about 4 *d.* per Yard. But I know some Workmen in *Suffex* that have 5 *d.* or 6 *d.* per Yard, into which Price they make ready the Floor for the Work, by clearing out the Earth, and levelling the Floor with a convenient quantity of Sand. (if they lay the Bricks dry, as sometimes they do,) which they spread evenly with the Rake; then laying the Bricks level by a Line, they (with a Trowel) put a sufficient quantity of Sand under each Brick, to raise him full as high as (or a little higher than) the Line, and so knock him down (level with the Line) with the Handle of their Hammer; which being done, they ram in the Sand (on the side of, and) against the bottom of the Brick with the handle of their Hammer, to make him lie fast. Having thus laid the whole Floor, they strew Sand all over the Bricks, to the thickness of an Inch, more, or less, with a Command to the People of the House, that they let it lie for the space of 5 or 6 Weeks; now and then sweeping, it too and fro, that thereby, and by their treading on it, it may fill up all the Joynts betwixt the Bricks.

If they lay the Bricks in Mortar, the Price (they say) is the same as if they were laid dry.

There are some Mafons, that having laid the Floor dry, will make a very thin Mortar, which they spread all over the Floor, sweeping it too and fro with a Broom, to fill up the Joynts of the Bricks.

This kind of Paving (with common or Statute-bricks) is usual for Cellars, Wash-houses, Sinks, Fire-hearths, and for Halls and Kitchens in common Houses.

Of these kind of Bricks, 32 will Pave a Yard Square, if laid flat-ways, and 64, if edge-ways.

3. *With Square Tiles, or (as some call them) Paving-bricks.*] The Paving with Square-tiles is commonly valu'd by the Square, and the dearer the smaller the Tiles are; for these kind of Tiles are of several sizes. *viz.* 6, 8, 10, and 12 Inches Square, their Price from 6 to 20 *s.* the hundred. In *Suffex* these kind of Tiles, (or as they call them) Paving-bricks, are 9 Inches Square, and commonly sold at 1 *d.* per piece, or 8 *s.* per hundred.

If you would know how many of either of these sort of Tiles will Pave any Floor, then

Note, that  $\left. \begin{array}{l} 36 \\ 21 \\ 16 \\ 13 \\ 9 \end{array} \right\} \text{ Tiles of } \left\{ \begin{array}{l} 6 \\ 8 \\ 9 \\ 10 \\ 12 \end{array} \right\} \text{ Inches Square will Pave a Square Yard.}$

4. *With*

4. *With Flemish-bricks.*] The Paving with these Bricks is far neater and stronger than common Bricks: They are of a yellowish Colour, and must be laid in Sand. Earth-brick is 6 Inches and a quarter long, 2 Inches and a half broad, and 1 Inch and a quarter thick.

Now, allowing a quarter of an Inch for the Joynt, then 72 of 'em will Pave a Yard square, but if they be set edge-ways, then to Pave a Yard square will require 100 Bricks. These Bricks are usually sold at 2 s. the Hundred, and the Price of laying them is 4 d. 5 d. or 6 d. the square Yard.

5. *With Rough, or Rag-stone.*] This is the cheapest of all Pavements, and is valu'd from 12 d. to 15 d. the Yard.

6. *With Free-stone.*] Paving with broad Stone taken out of the Quarries, (commonly call'd Free-stone,) and cut into Lengths and Breadths promiscuously, (as they will hold) and in thickness about 2 or 3 Inches, is usually rated at 6 d. 7 d. or 8 d. the Foot Square, or 4 s. 6 d. 5 s. 3 d. or 6 s. the Yard Square for Stone and Workmanship. This kind of Paving is laid in common Yards, and Passages before Shop-doors, and Stalls, &c.

But if the Stones be squared all to a size, (as sometimes these Stones are cut perfectly square, as Paving-tiles are, but much bigger, as 18, 20, and 24 Inches square, and upwards;) then, as they are neater, so they are dearer, as 12 d. or 14 d. per Foot, or 9 s. or 10 s. 6 d. per Yard. But if the Stones, thus squared and sized,) be good and well Polished, (as they ought to be for Kitchens, Daries, and neat private Places) then they may be worth 15 or 16 d. per Foot, or 11 s. 3 d. or 12 s. per Yard square.

7. *With Rigate, or Fire-stone.*] This kind of Pavement is good for Chimney-fire-hearths, Ovens, Stoves, &c. and is somewhat dearer than common Purbeck pavement. For the Price of these Stones, V. Fire-stone, N. 2.

8. *With Pebble-stones, or Bolders.*] Paving with Pebble-stones laid in Gravel, for Materials and Workmanship, may be worth 15, or 18 d. the Yard square.

9. *With Marble.*] Paving with Marble is of all other the most beautiful, of which there are several sorts; as White, Black, and Gray: Some Pavements; (as in Foot-paces before Chimneys) are laid all of one sort, or Colour, and in one intire Stone; others of 2 Colours laid Square, or Chequer-ways, the side of one by the side of the other; others are laid Arrace-wise, of 2 Colours, laid Angle to Angle, and this last is the neatest way; but there may be divers Forms contr'v'd to lay them in; as you may see in several Chancels, in the Quire of St. Paul's, and in the Royal Exchange in London, and divers other Places. This kind of Pavement is valu'd from 2 to 3 s. the Foot Square, and upwards, according as 'tis well laid and polish'd. For the Price of Marble, V. Marble, N. 5.



10. *Diamond.*] Diamond-pavement, (says Mr. *Wing*;) is worth 3 *d.* or 4 *d.* per Foot.

11. *Random.*] Random-pavement, (says Mr. *Wing*) at the Quarry, is worth 2 *d.* half-penny, or 3 *d.* per Foot.

12. *Of Measuring.*] Paving is commonly measur'd by the Yard Square. And therefore the length of any Pavement in Feet and Inches, being Multiplied by the Breadth in Feet and Inches, (which how it is done, V. Cross-multiplication, N. 2.) will produce the Content in Feet; which being divided by 9, (because 9 Square Feet make a Square Yard,) will give the Content in Yards requir'd.

### *Pavement.*

#### V. Paving.

### *Pediments,*

Pediments over Doors are commonly valu'd at so much per piece, dearer, or cheaper, according to their largeness, goodness of the Materials, and Curiosity in Workmanship.

### *Pedestal.*

1. *What.*] In Architecture is the Basis, or Foot of a Pillar; that part which supports the Pillar.

2. *Kinds.*] There are as many kinds of Pedestals, as there are Orders of Columns, viz. 5. The Tuscan, Dorick, Ionick, Corinthian, and Composite. The height of the Pedestal in each Order ought to be a third part of the whole Column, (comprehending the Base and Capital, and their upper Adjuncts, as Architrave, Frieze, and Cornish.) This Rule of singular Use and Facility, I find settled by *Jacobi Baroccio*, and I hold him a more credible Author, (as a Man that most intended this piece of Architecture,) than any that vary from him in those Dimensions, says our famous *English* Architect, Sir *Henry Wotton*.

Nevertheless other Architects differ from him in the Right of the Pedestal. I shall at present (for brevity sake) only give the Description of the several Orders of Pedestals from *Vitruvius*.

3. *Tuscan.*] According to *Vitruvius*, the whole height of the Tuscan Column, comprehending the Architrave, Frieze, and Cornish, is divided into 9 parts, whereof 2 goes to the height of the Pedestal.

This Pedestal he describes in 2 different Forms, one of which is plain, having only a Plinth for the Base, and another for the Capital; the height of each of those Plinths is  $\frac{1}{2}$  of the whole height of the Pedestal; and the Projection of each of these Plinths is  $\frac{1}{2}$  of their height.

In the other fashion'd Pedestal which he describes, he also divides

divides the whole height of the Pedestal into 6 parts, one of which goes to the Base, and one to the Capital.

Again, he divides the Base into 2 parts, one of which goes to the Plinth below; and the other to the rest of the Base; and this being sub-divided into 4 parts, 3 of 'em goes to the *Scima-verſa*, and the List below it, which is  $\frac{1}{2}$  a part; and the other to the List above it.

4. *Doric.*] The whole of this Column, (comprehending the Architrave, Frieſe, and Corniſh,) is by *Vitruvius* divided into 8 parts, whereof 2 goes to the height of the Pedestal, which agrees with *Jacobo Baroccio's* Rule mention'd above; N. 2.

This Pedestal is (by *Vitruvius*) also described in 2 different Forms; in both of which the Base and Capital are each  $\frac{2}{7}$  of the whole height of the Pedestal.

In one of the fashion'd Pedestals, the Base is divided into 2 parts, whereof one goes to the Plinth below, and the other to the rest of the Base; and this part being sub-divided into 2 parts, one of 'em makes the lower *Thorus*; and the other being again sub-divided into 3 parts, 2 of 'em go to the upper *Thorus*, and the other to the List above it.

The Capital of this fashion'd Pedestal is divided into 4 parts, whereof the lowermost makes the *Aſtragal*, (whose List is  $\frac{1}{3}$  of the whole *Aſtragal*,) and the other 3 parts go to the *Cimatium*; whereof the List at the top is one of those parts.

In the other fashion'd Pedestal; the height of the Base is also divided into 2 parts, whereof the lowermost goes to the *Plinth*, and the other part being sub-divided into 3 parts, 2 of 'em make the *Thorus*, and the other part the List above it.

The whole height of the Capital of this fashion'd Pedestal is divided into 5 parts, whereof the lowermost goes to the *Aſtragal*, (whose List is  $\frac{1}{4}$  of the whole,) the next 2 parts go to the *O-G*; the 2 parts remaining, being sub-divided into 3 parts, the 2 lowermost of 'em go to the *Square*, and the other to the *Cimatium*, whose List is  $\frac{1}{3}$  of the whole.

5. *Ionick.*] The whole height of this Column being divided into 14 parts, the height of its Pedestal, (according to *Vitruvius*) is 3 of those parts.

This Pedestal he also describes of 2 different Forms, in each of which, the Base and the Capital are each  $\frac{1}{2}$  of the whole height of the Pedestal.

In one of these fashion'd Pedestals, he divides the height of the Base into 3 parts, whereof the lowermost goes to the *Plinth*, the next part goes to the *Scima-verſa*, with its List at top and bottom, which are each  $\frac{1}{6}$  of the whole; the uppermost grand Division being sub-divided into 2, the lowermost of 'em goes to the *Casement*, or *Hollow*, with its List at the top, which is one  $\frac{1}{3}$  of the whole; the other part goes to

the Thorus, and its List above it, which List is  $\frac{1}{3}$  of the whole.

The Capital of this fashion'd Pedestal, is divided into 2 parts, the lowermost of which goes to the Scima-reversa with its List above and below it; whereof the lower List is  $\frac{1}{4}$  of the whole, and the upper List  $\frac{1}{2}$  of the remainder. The other grand Division being sub-divided into 3 parts, the 2 lowermost of 'em go to the Square, and the other to the Cimatum, whereof its List is  $\frac{1}{3}$  part of the whole Cimatum.

In the other fashion'd Pedestal, the Base is also divided into 3 parts, whereof the lowermost goes to the Plinth, the other 2 grand Divisions being sub-divided into 5, the 3 lowermost of 'em go to the Scima-reversa, and the List under it, which List is  $\frac{1}{2}$  of the whole; the other 2 Divisions being again sub-divided into 3 parts, the 2 lowermost of 'em goes to the Thorus, and the remaining part to the List above it.

The Capital of this fashion'd Pedestal is divided into 2 parts, the lowermost of which being sub-divided into 4 parts, the lowermost of 'em goes to the Astragal; (whereof its List is  $\frac{1}{4}$  part,) the other 3 of those sub-divisions go to the Scima-reversa, and its List above it, which List is  $\frac{1}{2}$  of the whole; the other grand Division being sub-divided into 3 parts, the 2 lowermost of 'em go to the Square, and the other part to the Astragal, whose List is  $\frac{1}{4}$  of the whole.

6. *Corinthian.*] The whole height of this Column being divided into 9 parts, the height of its Pedestal, (according to *Vitruvius*) is 2 of those parts.

The whole height of this Pedestal being divided into 9 parts, the Base and Capital are (each of 'em) in height  $\frac{1}{3}$  of those parts.

The whole height of the Base being divided into 5 parts, the 2 lowermost of 'em goes to the Plinth; the remainder being sub-divided into 4 parts, the lowermost of 'em goes to the Thorus; the 2 next parts make the Scima-reversa, and the List below it, which List is  $\frac{1}{3}$  of the whole; the remaining part goes to the Astragal, whereof its List is  $\frac{1}{4}$  part.

The height of the Capital is divided into 2 parts, the lowermost of which being sub-divided into 4 parts, the lowermost of those go to the O-G, the other 3 sub-divisions being again sub-divided into 2 parts, the lowermost of those goes to the Scotia, or Hollow, and the List above it, (which List is  $\frac{2}{3}$  part of the whole;) the remaining part goes to the Boultin. The other grand Division being sub-divided into 3 parts, the 2 lowermost of 'em go to the Corona, and the remaining part to the Cimatum, whose List is  $\frac{1}{3}$  of the whole.

7. *Composite.*] The whole height of this Column being divided into 13 parts, the height of its Pedestal, (according to *Vitruvius*) is 3 of those parts.

The Base being divided into 7 parts, 2 of 'em go to the Plinth, 1 to the Thorus, 2 to the Scima-reversa, one to the Scotia, and one to the Astragal;  $\frac{1}{3}$  of the Astragal makes the Fillet above the Scotia.

The Capital being divided into 7 parts, one of 'em goes to the Astragal, 2 to the Frieze, one to the Boultin and List under it, 2 to the Corona, and one to the Cimatum.

### Peers.

1. *What.*] In Architecture a kind of Pilasters, or Buttresses for Support and Ornament.

2. *Scantlings, or Size.*] I find the Scantlings of *Stone-peers*, set down in an Act of Parliament for the Re-building of the City of London, after the late dreadful Fire, (which Scantlings were well consider'd by able Workmen before they were reduced into an Act,) to be as follows, *viz.* In the first sort of Houses, *Corner-peers*, 18 Inches square; *middle*, or *single Peers*, 14 and 12 Inches, *double-peers* between House and House, 14 and 18 Inches. In the 2<sup>d</sup>. and 3<sup>d</sup>. sort of Houses, *Corner-peers* 2 Foot 6 Inches square, *middle*, or *single Peers* 18 Inches square, *double Peers* between House and House, 14 and 18 Inches.

3. *Price.*] Peers are sometimes measur'd and rated by the Foot running Measure; but they are more commonly rated at so much *per* piece, dearer or cheaper, according to their size, goodness of the Stuff, and Curiosity in Workmanship.

A pair of Stone-peers with Seat-arches, 4 or 5 Foot wide, and 14 or 16 Foot high, may be worth 40 or 50 Pounds.

A pair of Rustick-peers of Stone, may be worth 10, 12, or 14 Pounds, according to their height and substance; Plain-peers, 8 or 10 Pounds; Reailed and Pilaster-peers, from 10 to 14 Pounds a pair.

### Pentadoron,

A kind of Bricks so call'd, V. Bricks, N. III. §. II.

### Piazza's.

V. Architrave, N. 2.

### Piedroit.

In Architecture is a square Pillar that is partly within the Wall.

### Pillars,

What they are every one knows; they are also call'd *Columns*; (for the word amongst Artificers is almost naturaliz'd,) I could-distinguish them into Simple and Compound; But

(to tread in the beaten Path,) there are commonly reckon'd 5 Orders of Pillars, or Columns, according to their Dignity and Perfection, thus marshall'd, *viz.* The Tuscan, Dorick, Ionick, Corinthian, and Compound Order, V. Column.

### *Pilasters.*

1. *What.*] In Architecture are a kind of half Pillars (standing against a Wall) with Base and Capital, as Pillars have; but differing from Pillars in this, that those are square, but those are (commonly) round.

2. *Of their size, and Situation.*] Pilasters must not, (says Sir Henry Wotton) be too tall and slender, lest they resemble Pillars; nor too dwarfish and gross, lest they imitate Piles, or Peers of Bridges: Smoothness does not so naturally become them as a Rustick Superficies; for they aim more at State and Strength, than Elegancy.

In private Buildings they ought not to be narrower than one third, nor broader than two thirds of the Vacuity, or Inter-space between Pilaster and Pilaster: But to those that stand at the Corners, may be allow'd a little more Latitude by Discretion for strength of the Angles.

In Theatres, and Amphi-theatres, and such weighty Works, Palladio observes them to have been as broad as the half, and now and then as the whole Vacuity, or Inter-space. He noteth likewise, (and others consent with him.) That their true Proportion should be an exact Square; but (for lessening of Expençe, and enlarging of Room,) they are commonly made narrower in Flank than in Front.

Their principal Grace consists in half, or whole Pillars apply'd to 'em; in which Case it is well noted by Authors, that the Columns may be allow'd somewhat above their ordinary length, because they lean to so good Supporters. And thus much shall suffice at the present, touching (the size and Situation of) Pilasters, which is a cheap, a strong, and a noble kind of Structure.

3. *Price.*] These are sometimes measur'd and rated by the Foot running Measure; but they are more commonly valu'd at so much *per* piece, according to their size, goodness of the Materials, and Curiosity in Workmanship.

### *Pitch.*

By this Term Architects understand the Angle a Gable-end (and consequently the whole Roof of a Building) is set to. If the length of each Rafter be  $\frac{3}{4}$  of the breadth of the Building, then that Roof is said to be *true Pitch*; if the Rafters are longer, 'tis said to be a *high*, or *sharp pitch'd* Roof; if shorter, (which

(which it seldom is,) then 'tis said to be a *low*, or *fat pitch'd* Roof.

### *Pitching,*

The same as *Paving*, V. *Paving*.

### *Pins for Tiles,*

What they are every one knows; they ought to be made of Heart-oak, and to every 1000 of Tiles is usually allow'd 2 Gallons of Tile-pins, from 3 *d.* to 6 *d.* the Gallon, says Mr. *Leyburn*, I know not how he reckons, but I am sure 1000 of Tiles requires but 1000 of Pins, which some Workmen in *Suffex* tell me they reckon but 2 *d.* or 3 *d.* for they tell me they sell their Pins for 6 *d.* per Gallon; and that they use about a Gallon of Pins to a Square and a half of Healing.

### *Pinning*

*Of Tiles.*] Some Workmen in *Suffex* tell me, that they commonly reckon 8 *d.* per Thousand, for pinning of Tiles, and finding Pins. But for the Workmanship only 6 *d.* per Thousand.

### *Pilaster-bricks.*

V. Bricks, N. 111. §. 13.

### *Pipes of Lead.*

V. Lead, N. 9.

### *Place-bricks.*

V. Bricks, N. 111. §. 12.

### *Plain cornish.*

V. Cornish.

### *Plain-tiles.*

V. Tiles, N. 111.

### *Planchier.*

The Ornament to which the Cornish is fasten'd.

### *Plastering.*

*Of Walls.*] Some Masons in *Suffex* tell me, that for Lathing and Plastering of Walls with Lome on both sides, they have 3 *d.* per Yard; but if it be done with white Lime, and Hair-mortar on both sides, then they have 4 *d.* per Yard.

I am inform'd, that at *Tunbridge-wells* the Masons will do Plastering of Walls (where they Plaster over all the Timber) and Ceilings for 2 *s.* 10 *d.* per Square. I know a Gentleman

man that told me, he had such Work done for 2 s. 6 d. per Square.

2. *Of Ceilings.*] For Ceilings, our Masons in *Suffex*, have (for Lathing, Plastering, and finishing) 4 d. per Yard. In some Countreys they make their Ceilings with Reed, Lime, and Hair; for which the Workmanship is worth 3 d. per Yard: But if the Workman find all Materials, 'tis worth 5 d. or 6 d. per Yard.

3. *With rough Mortar, or Rough-cast.*] In some parts of *Kent* they commonly *Rough-cast*, (as they call it) upon old Lome-walls, that is, they give them one Coat (upon the Lome) of *Rough-mortar*, or *Rough-cast*, as they call it, tho' it be commonly struck smooth like Lime and Hair. For this Work they have three half-pence per Yard, only Workmanship: But if the Wall be new, and Lathed, and Plaster'd with Lome on both sides, and a Coat of *Rough-mortar* on the outside, then they have 4 d. per Yard, only Workmanship: But if the *Rough-casting* be wrought in Flourishes, then they have 8 d. per Yard, only Workmanship. But if the Workman find all Materials, 'tis worth from 1 s. to 3 s. per Yard, according to the variety and goodness of the Work.

4. *On Laths in imitation of Brick.*] I know a House that is Plaster'd in imitation of Brick-work, the Mortar was made of Powder of Bricks, sharp Sand, Lime, and some Red-oker: This House has been done this 20 Years, and yet looks very well, and passes for a Brick-house with common Passengers; tho' it be only Timber Plaster'd over.

Some Workmen tell me, that they have 1 s. per Yard for such Work, only Workmanship.

5. *Of Floors.*] Plaster Floors running, (says Mr. Wing,) the Workman finding all, is worth 1 s. 4 d. per Yard, but the Working part only is worth 4 d. 5 d. or 6 d. per Yard: Plaster at the Pits may be had for 4 s. or 4 s. 6 d. per Load; viz. 40 C. weight, which will do about 40 Yards of Flooring.

6. *Of White-washing.*] White-washing with Size upon Plaster'd Walls, is commonly reckon'd at 2 d. per Yard.

7. *Of Measuring.*] This kind of Work is commonly done by the Yard Square, as *Paving*, which see, N. 12. But Note, that in Measuring of Partitions, if the Workman find Materials, the Doors and Windows are measur'd by themselves, and deducted from the whole; as is also  $\frac{1}{2}$  part (of the rest) for the Quarters in rendring Work: But if the Workman do not find Materials, there is commonly no Allowance made for them, the trouble in cutting and fitting the Laths, being equivalent to the void space left for the Doors and Windows. Neither (in case of Workmanship only) is there to be any allowance made (in rendring) for the Quarters, Braces, or Inter-ties, the Work being as much as (if not more

than) if it were all plain. V. more of Plastering, in the word *Pargetting*.

### *Platebands,*

The Lifts, or Fillets between the Fluteings of the Ionick, Corinthian, and Composite Columns. They are (each) in breadth a quarter of the Flute.

### *Platform.*

1. *What.*] This word in Architecture is sometimes us'd, to signifie the Ichnography, or Draught of the Ground-plot of a House; but more commonly for a broad, smooth, and open Walk upon the top of any Building.

2. *Of Covering with Lead.*] V. Lead, N. 7.

### *Plastique-art, or Plastick art.*

The Plastique art, is a Branch of Architecture that is not only comprehended under Sculpture, but is indeed very Sculpture itself; but with this difference; that the *Plasterer* (by his Plastique-art,) makes his Figures by *Addition*, but the *Carver* by *Substraction*; whereupon *Michael Angelo* was wont to say, (somewhat pleasantly,) that *Sculpture* was nothing but a Purgation of Superfluities: For take away from a piece of Wood, or Stone all that is superfluous, and the remainder is the intended Figure.

Of this *Plastique-art*, the chief use with us is in the graceful *fretting* of Roofs, (commonly known amongst us by the Name of Fret-work;) but the *Italians* apply it to the Mantling of Chimneys with great Figures. A cheap piece of Magnificence, and as durable almost within Doors, as harder Forms in the Weather.

### *Plint, or Plinth,*

The lower part of the Foot of a Column, being in the form of a Square Brick, or Tile.

### *Plumbery,*

An Art belonging to Architecture, it being the Art of Working in Lead.

### *Porphyry,*

A fine reddish Marble, streaked with divers Colours. *Pliny*, (in *Hist. Nat. Lib. 36. Cap. 7.*) says, this kind of Marble comes out of *Egypt*, where there are large Quarries of it.

### *Portico.*



*Portico.*

V. Architrave, N. 2.

*Portland-stone.*

A Stone-cutter in London tells me, that they usually sell Slabs of *Portland Stone*, (ready Polished for Chimney-foot-paces,) for 1 s. 8 d. per Foot Superficial. 'Tis a Stone much us'd in Building, and much softer and whiter than *Purbeck*.

*Port-nails.*

V. Nails, N. 12.

*Portal,*

An ancient Term in Architecture, I say an ancient Term, for the thing signifi'd by it is grown out of fashion; it was us'd to signify a little square corner of a Room, shifted off from the rest of the Room by the *Wainscot*. The word seems to come from the *French*, *Portail*, a Gate, or Entrance; because through it they enter into the Room.

*Posts.*

1. *What.*] Pretty big pieces of Timber, standing upright in a House, &c.

2. *Principal.*] In Architecture, are the Corner-posts of a House, &c.

3. *Prick.*] The Posts that are Fram'd into Bressummers, between principal Posts, for the strengthening the Carcass of the House.

4. *Of Preserving.*] An ingenious Gentleman, one Mr. *Walter Burrel*, Esq; of *Cuckfield* in *Suffex*, deceased, used to burn (to a Coal on the out-side) the ends of all the Posts which he set in the Ground; whereby they will continue a long time without rotting, which otherwise would suddenly decay.

*Post and Rail.*

V. Fencing, N. 2. and Paleing, N. 1, 2.

*Pound-nails.*

V. Nails, N. 13.

*Prick-posts.*

V. Posts, N. 3.

*Priming.*

V. Painting, N. 1.

*Principal.*

1. Posts.] V. Posts, N. 2.
2. Rafters,] V. Rafters.

*Prizes*

Of Work and Materials, V. the Particulars, that you would know the Price of, in their proper places of the Alphabet.

*Profile,*

A Term in Architecture, deriv'd from the *Italian*, and signifies the same as *Ichnography* from the Greek, viz. The Flat, or Horizon Figure of any Building. 'Tis sometimes us'd for the Figure of any part of a Building, shew'd in any other Position; wherein are set down the Breadths, Lengths, and Heights of the whole.

*Projecture,*

In Architecture, is the jutting out of any part of a Building, (or of a Column) beyond the rest. Thus Balconies Project into the Street, and thus the Base and Capital of a Column project forth beyond the Body of the Column.

*Pudlays,*

Pieces of Stuff to do the Office of Leavers, or Hand-pikes.

*Pulvoinata,*

A Frieze swelling like a Pillow.

*Punchins.*

1. *What.*] Short pieces of Timber placed under some considerable weight to support it. They commonly stand (upright) between the Posts; they are shorter (and slighter) than either Principal-posts, or Prick-posts. Those that stand on each side of a Door, are call'd *Door-punchins*.

2. *Price.*] Carpenters commonly reckon 1 *d.* or three half-pence per Foot for putting in of new Punchins.

*Purlins.*

1. *What.*] Those pieces of Timber that lie a-cross the Rafters, on the in-side, to keep them from sinking in in the middle of their length.

2. *Size.*] By the Act for Re-building the City of London all Purlins in length from 15 Foot 6 Inches, to 18 Foot 6 Inches, ought to be in their Square 9 Inches, and 8 Inches. And all

all in length from 18 Foot 6 Inches, to 21 Foot 6 Inches, ought to be in their Square 12 Inches, and 9 Inches.

### *Purbeck-stone.*

1. *What.*] 'Tis a hard greyish Stone, almost like *Suffex Petties*. They are much us'd for Pavements.

2. *Price.*] A Stone-cutter in *London* tells me, that they commonly sell *Purbeck-slabs*, (ready Polished for Chimney-foot-paces,) for 2 s. per Foot. And *Purbeck-paving* of Promiscuous Sizes, only Hew'd and Squar'd, they sell for 7 d. per Foot. Also *Mitchels* they value at about 1 s. 10 d. per Foot, V. *Mitchels*,

### *Putlogs,*

Pieces of Timber, or short Poles, (about 7 Foot long,) us'd by Masons in Building of Scaffolds to work on. The Putlogs are those pieces which lie Perpendicular to the Building, one end lying into it, and the other end resting on the *Ledgers*; which are those pieces that lie Parallel to the side of the Building.

### *Pyling.*

The Ground for Foundations, V. Foundations, N. 2. §. 5.

### *Quarry.*

1. *Of Stone.*] A Place whence Stones are digg'd out.

2. *Of Glass.*] A piece of Glass cut in a Diamond-form. Quarries of Glass are of 2 kinds, *viz.* Square, and long; and these again are of different sizes, as 8's, 10's, 12's, 15's, 18's, and 20's, [that is, 8 Quarries of 8's make a Foot of Glass, and so does 10 Quarries of 10's, 12 of 12's, &c.] But all Quarries, (of what size soever) are cut to one sort of Angle for the Square Quarries, and another for the long Quarries: The Acute Angle of the Square Quarries being 77 Degrees, and 19 Minutes; and the Acute Angle of the long Quarries 67 Degrees, and 22 Minutes. See more, *Glazing*, N.

### *Quarters,*

In Architecture, all those slight upright pieces between the Punchins and Posts, (which serve to Lath upon,) are call'd *Quarters*. They are of 2 kinds, *single* and *double*: Single Quarters are sawn Stuff, 2 Inches thick, and 4 Inches broad. The double Quarters are sawn to 4 Inches square.

'Tis a Rule in Architecture, that no Quarters be placed at greater distance than 14 Inches.

### Quartering,

In Architecture, signifies the putting in of Quarters. Sometimes 'tis us'd to signify the Quarters themselves.

### Quarter-head.

V. Brads, N. 6 7.

### Quirk,

In Architecture, signifies a piece taken out of any regular Ground-plot, or Floor. As if the Ground-plot were a Square, or an Oblong, and a piece be taken out of one corner of it, for a Court, or Yard, that piece so taken out is call'd a *Quirk*.

### Quins, or Quoins,

The corners of Brick, or Stone-walls. Also the Stones in the corners of Brick Buildings. If these Stones stick without the Brick-work, (their edges being cypher'd off,) they are call'd Rustick-quoins. The Rustick-quoins, at 2 Foot, one Face, and one Foot the other, are valu'd from 1 s. to 1 s. 4 d. per Quoin, Stone and Workmanship.

### Quadrels,<sup>1</sup>

A sort of artificial Stones, (so call'd from their Form, they being square,) made of a chalky, whitish and pliable Earth, and dry'd in the Shade. They were 2 Years in drying, and were much us'd by ancient *Italian* Architects.

### Rafters.

1. **What.]** Rafters are those pieces of Timber, which (standing by pairs on the Resson.) meet in an Angle at the top, and compose the Roof of a Building.

2. **Scantlings, or Size.]** In an Act of Parliament for Rebuilding the City of *London*, the following *Scantlings*, (which were well consulted by able Workmen, before they were reduced to an Act,) are set down, as fitted for all Edifices, great or small, viz.

Principal Rafters, in length	from	to	must be broad at the		and thick.
			Foot.	Top.	
	F. In.	F. In.	Inches.	Inches.	Inches.
	12. 6	14. 6	8	5	6
	14. 6	18. 6	9	7	7
	18. 6	21. 6	10	8	8
	21. 6	24. 6	12	9	8½
	24. 6	26. 6	13	9	9

Single Rafters in length { 6 Foot 6 Inches,  
8 Foot,  
9 Foot 6 Inches, } must

have in their Square { 4, and 3  
4½, and 3¾, } Inches.  
5, and 4

3. *Distance.*] 'Tis a Rule in Architecture, that no Rafters be laid at greater distance from each other than 12 Inches.

### Rag-stone.

V. Paving, N. 5.

### Rails,

In Architecture, are us'd in various Senses ; as for those pieces that lie Horizontally *between* the *Pannels* of Wainscot, and *over*, and *under* them. Also for those pieces that lie *over*, and *under* Ballisters, in Balconies, Stair-cases, &c. Also for those pieces of Timber that lie Horizontally from Post to Post, in Fencing with Pales, or without.

### Rails and Ballisters.

1. *Price of making.*] Mr. Wing tells us, That Rails and Ballisters on Balconies, or about the Platform of great Houses, are worth (only Workmanship) 4 s. per Yard, running Measure.

2. *Painted, of Measuring.*] V. Painting, N. 2.

Raiser,

*Raiser,*

A Board set on edge under the fore-side of a Step.

*Raising-pieces,*

Are pieces that lie under the Beams, upon Brick or Timber by the side of the House.

*Random-pavement.*

V. Paving, N. 11.

*Range,*

The side of any Work that runs straight, without breaking into Angles, is said to *Range*, or *Run-range*: Thus the Rails and Pannels of one straight side of Wainscoting, is said to *Run-range*. See more in the Note in Glazing, N. 3. §. 2.

*Redsear.*

V. Iron, N. 2.

*Regula,*

As Orlo.

*Rendering.*

V. Pargeting, N. 2.

*Repository,*

A Store-house, or Place to keep things in; more peculiarly by Architects 'tis us'd to signify such Places as are built for the laying up of Rarities, either in Painting, or other Arts.

*Return,*

The *Side* that falls away from the fore-side of any straight Work, is call'd the *Return*.

*Ribbing-nails.*

V. Nails, N. 14.

*Rides,*

Or Hinges for Doors, &c. are commonly sold for 4 d. per Pound, V. Iron. N. 4.

*Ridge,*

The meeting of the Rafter on the top of the House, is call'd the *Ridge*.

*Ridge tiles,*

V. Tiles, N. 4.

*Rigate-stones.*

V. Fire-stone.

*Rondel.*

V. Capital, N. 2.

*Roofing.*

1. *Price.*] Roofing in ordinary Buildings is worth 7 or 8 s. per Square, but in great Buildings, 10 or 11 s. per Square. V. Pl. Framing, N. 5.

2. *Of Measuring.*] Roofing is commonly measured by the Square, as Flooring, V. Flooring, N. 5.

*Roof,*

The Covering of a House; but the word is us'd in Carpentry, for the Timber-work of the Covering.

*Rose-nails.*

V. Nails, N. 15.

*Rother-nails.*

V. Nails, N. 16.

*Rough Stone.*

As Rag-stone.

*Rough-casting.*

V. Plastering, N. 3.

*Rough mortar.*

In many places of *Kent*, where they Rough-cast their Houses, they make their Mortar, (which they call *Rough-mortar*) of a sort of *Sand*, when when 'tis mixt with the *Lime*, makes it look as red as Blood; but to these they put Powder of *Cinders* which changes it to a kind of blewish Colour, V. Pl. *Mortar*, N. 11.

*Round-heads.*

V. Nails, N. 17.

*Rustick-peers.*

V. Peers, N. 3.

*Rustick-quoins.*

V. Quoins.

*Samel, or Sandel-bricks.*

V. Bricks, N. III. §. 14.

*Sand.*

1. *Kinds.*] What it is every one knows. Its use (in Architecture) is. in making of Mortar. There are 3 sorts of Sand, *viz.* Pit-sand, River-sand, and Sea-sand: Pit-sand is of all the best, and of all Pit-sand, that which is whitest, is (by long Experience found to be) the worst. Of all River-sand, that which is found in the falls of Water is the best, because it is most purged. The Sea-sand is the worst of all.

The Pit-sand, because it is fat and tough, is therefore us'd in Walls and Vaults. The River-sand is very good for Rough-casting of Walls.

All Sand is good in its kind, if being squeez'd and hand'd it crackles; and if being put upon a white Cloath, it neither stains nor makes it foul.

That Sand is bad, which mingl'd with Water, makes it dirty and muddy, and which has been a long time in the Air; because it will retain much Earth and rotten Humour; And therefore some Masons will wash their Sand before they use it.

2. *Price.*] Sand, at London is commonly sold for 3 s. per Load. 36 Bushels to the Load. In some parts of *Suffex* 'tis sold for 1 s. 6 d. per Load, at 12 Bushels to the Load. In other parts of *Suffex* 'tis sold at 2 s. 6 d. per Load, at 18 Bushels to the Load.

*Sapheta's,*

The Boards over the tops of Windows, opposite to the Window-boards at the bottom.

*Sash lights.*

V. Painting, N. 12.

*Sash frames.*

V. Painting, N. 13.

*Sawyers-work,*

V. ———

*Sawing.*

1. *By the Hundred.*] Sawyers do most commonly work by the Hundred, that is by the Hundred Superficial Feet, (how measur'd, V. N. 12.) For which they have various Prizes, not



not only in different Places, but also for different kinds of Timber; as may be seen in the following Numbers.

2. *Of Oak.*] The Sawing of Oak, is in some Places 2 s. 8 d. in others 3 s. in others 3 s. 6 d. the Hundred.

3. *Of Elm.*] The Sawing of Elm, is in some Places 3 s. the Hundred, commonly about the Price of Oak.

4. *Of Ash, and Beech.*] The Sawing of Ash, and Beech, is generally worth 6 d. in the Hundred more than Oak, or Elm. In some Places 'tis 3 s. in others 3 s. 6 d. in others 4 s. per Hundred.

5. *By the Load.*] Sawyers do sometimes work by the Load, viz. So much for cutting out a Load, (or 50 Foot) of Timber; the Price various, according as what the Timber is cut to. But the common Price is for Ship-planks of 2 Inches thick, 10 s. the Load. And for Building

Timber	}	large size, 6 s. or 6 s. 6 d.	}	the Load.
		middle size 7 s.		
		small size, 7 s. 6 d. or 8 s.		

An old experienced Sawyer tells me, that *Sawing by the Load* is commonly thus agreed for, viz. They have all their sizes set down which they are to cut; and they will cut none smaller, neither will they Slab any, unless they are paid for it by Measure, over and above what they are to have by the Load. They never cut any thing less than Rafters, which are about 4 and 5 Inches, and which is generally the finest Timber in a Frame, except Quarters, and Window stuff, which they generally cut by the hundred. If the Carpenter will have any pieces clear'd by Slabbing, after they have cut them off to their size, they will (also) be paid by Measure for it.

They generally prick off their sizes from the outer edges, and what is left in the middle they lay by till they can fit it to some other size, when it is wanted.

This Sawyer tells me, that the Carpenter has a great deal of hewing of out-side pieces, when 'tis saw'd by the Load: He also says, that sawing by the Load is commonly good Work for the Sawyer. The truth is, (as he confesses) it wasteth a great deal of Timber, it being hew'd away to Chucks.

The lowest rate that any (about us in *Suffex*) is cut for by the Load is 6 s. and then it must be very large Scantlings, or else they will have 7 s. which indeed is the common price for sawing a good large siz'd Timber-frame. But if the Timber-frame be small and slight, as they commonly build at *Tunbridge wells,*) they will have 7 s. 6 d. or 8 s. per Load.

6. *Of Ship-planks.*] An old experienced Sawyer tells me, that they sometimes cut Ship-planks by the Load for 10 s. per Load:

Load: But then the size of their Planks are (if I much miss remember not) 2 Inches in thickness.

Sometimes (he says) they saw them by the hundred, and then they have 3 *s.* per hundred, and 2 *d.* for petting of every Log. But if there be nothing allow'd for petting the Logs, then they reckon so many Carves as there are Pieces, which is one Carf more than there really is.

He also says, that they commonly cut Planks from 1  $\frac{1}{2}$  Inch, to 3 Inches thick; but they are never paid for breaking Work, till it comes to a 2 Foot Carf.

7. *Of Compass-work.*] For sawing of Compass-work, (as Mill-wheels, Furnace-wheels, Forge-wheels, Rafter for Compass-roofs, &c.) Some Sawyers tell me they have 2 *d.* per Foot.

8. *Of Bevil-work.*] Some Sawyers tell me, that in sawing of Bevil-work, (as Hips, and Sleepers, &c. Posts, &c. in Bevil-frames; as also Posts or Punchins in Polygonal Turrets, &c. Also Cant-rails, &c.) they work by the hundred, but they always reckon a Carf and half; that is, they reckon  $\frac{1}{2}$  as many more Feet of Sawing as there is.

9. *Of Furnace-bellows.*] These they cut by the Foot, Lineal Measure, at 1 *s.* per Foot.

10. *Forge-bellows.*] These they also cut by the Foot, Lineal Measure, at 4 *d.* or 6 *d.* per Foot.

11. *Of Ground-guts.*] These they also cut by the Foot, Lineal Measure; if small, for 1 *d.* per Foot, but if 15 Inches deep, then 1  $\frac{1}{2}$  *d.* if 18 Inches, 2 *d.* per Foot.

12. *Of Measuring.*] Sawyers, (when they work by Measure,) generally Measure their Work by the Foot Superficial. There is no difficulty in taking the Dimensions; for they reckon the depth of the Carf for the breadth; and the length for the length. The breadth, (or depth,) and length of a Carf being taken, and Multiply'd together, (as is taught in *Cross-Multiplication*, N. 2.) gives the Area, or Superficial Content of that Carf.

Having thus found the number of Feet in one Carf; Multiply it by the Number of Carves of the same depth and length; and so you have the Area of them all.

Note. (1.) That having thus cast up their whole Work in Feet; they are paid for it by the *hundred*, [that is 100 Feet] at various Rates, of which see above, N. 1. 2. 3. and 4.

(2.) That if the Carf be but 6 Inches, (or be less than 6 Inches) in depth, they have a Custom to be paid for Carf and half; as they phrase it,) that is. for half so much more as it comes to by Measure. The reason they urge for this Custom is, their Trouble in often linding, and removing their Timbers.

3. That for *Breaking-work*, [that is cutting a Log through the middle,] and *Slabbing*, [that is cutting off the out-side pieces,] if the Carf be more than 12, or 13 Inches deep, they are paid by the Foot, Lineal Measure, at various Prizes, according to the different depth of the Carf, viz. at

15	Inches deep.	1 d.	} per Foot.
18		$1 \frac{1}{2}$	
20		2.	
22		$2 \frac{1}{2}$	
24		3	
26		$3 \frac{1}{2}$	
28		4	
30		$4 \frac{1}{2}$	
32		5.	
34		$5 \frac{1}{2}$	
36		6	

(4.) That in some places 'tis the Custom to allow the Sawyer but one *Breaking-carf* in a Log, tho' there be never so many deep Carves in the Log: But some Sawyers claim it as a Custom, to have half *Breaking-work*, and the other half *Hundred-work*; as if they have 4 deep Carves, then they will have 2 *Breaking-works*, and the other 2 *Hundred-work*.

### *Scantling,*

The size that any Timber is design'd to be cut to.

### *Scenography,*

(From the Greek *Skenè*, a Tent, or Tabernacle, and *Grapho*, to write or describe,) is a Model, or Description of the Front and Sides of a House; or the Art of rightly contriving Draughts in Architecture.

### *Scheam.*

V. Arches, N. 6.

### *Scima,*

As *Cima*.

### *Scima-tum, -tium,*

As *Cimatum*.

### *Scima recta.*

V. Capital, N. 3.

### *Scima reversa,*

An O-G. with the hollow downwards, V. O G.

*Scotia,*

*Scotia,*

A Member of Architecture. 'Tis a hollow like a Semicircle. It is particularly plac'd in the Bases of Columns between the Thorus and the Astragal, and sometimes 'tis put under the Drip, in the Cornice of the Dorick Order.

*Scribe,*

A Term us'd by Joyners, when they are to fit one side of a piece of Stuff against the side of some other piece of Stuff, and the side of the piece they are to fit it to is not regular: To make these 2 pieces of Stuff joyn close together all the way, they *Scribe* it, (as they phrase it) thus; they lay the piece of Stuff (they intend to scribe) close against the other piece of Stuff they intend to scribe to, and open their Compasses to the widest distance, these 2 pieces of Stuff bear off each other: Then (the Compasses moving stiff in their Joynt,) they bear the Point of one of their Shanks against the side they intend to scribe to, and with the Point of the other Shank they draw a Line upon the Stuff to be scribed: thus the Points of the Compasses remaining unmoved, and your Hand carried evenly along by the side of the piece to be scribed to, that Line scribed upon the piece intended to be scribed, shall be parallel to the irregular side intended to be scribed to: And if you Work away your Stuff exactly to that Line, when those pieces are put together, they shall seem a Joynt.

*Sculpture,*

The Art of Carving in Wood, or Stone: V. Plastick-art.

*Scupper-nails.*

V. Nails, N. 18.

*Seasoning of Timber.*

V. Timber, N. IV.

*Sewers,*

In Architecture, are Conduits or Conveyances for the Soilage and Filth of a House; which how base soever they are in use, yet for the Health of the Inhabitants, they are as necessary and considerable, as (perhaps) any thing about a House.

Concerning these, I find in our Authors, this Counsel, That Art should imitate Nature in those ignoble Conveyances, and separate them from sight, (where there wants a running Water) into the most remote, and lowest, and thickest part  
of

of the Foundation, with secret Vents passing up through the Walls (like a Tunnel) to the wide Air; which all *Italian* Artizans commend for the discharge of noisome Vapours, tho' elsewhere, (to my knowledge) little practis'd.

### *Sells.*

1. *What.*] Sells in Architecture are of 2 kinds, *viz.* *Ground-fells*, [which are the lowest pieces of Timber in a Timber-building, on which the whole Superstructure is erected;] and *Window-fells*, (sometimes call'd *Window foils*;) which are the bottom pieces in a Window-frame.

2. *Price of putting in.*] The putting in of *Ground-fells* in a House, is commonly rated at 3 *d.* or 4 *d.* per Foot, only Workmanship.

### *Setting.*

V. Pitching.

### *Setting of Fronts.*

V. Fronts, N. 2.

### *Shaky, or Shaken.*

Such Stuff as is crack'd, either with the Heat of the Sun, or the Drought of the Wind, is call'd *shaky*, or *shaken* Stuff.

### *Sharp nails.*

V. Nails, N. 19.

### *Sheathing-nails.*

V. Nails, N. 20.

### *Sheet-lead.*

V. Lead, N. 3. 4. 5. 6. 7.

### *Shides.*

The same as ———

### *Shingles.*

1. *What.*] These are small pieces of Wood, or quarter'd Oaken-boards, *saw'd* to a certain Scantling; but they are more usually *cleft* to about an Inch thick at one end, and made like Wedges about 4 or 5 Inches broad, and 8 or 9, (and in some places 12) Inches long. They are us'd to cover Houses with, (but more commonly Churches and Steeples,) instead of Tiles, or Slates.

This kind of Covering is very charginable, and seldom us'd, but in covering the Roofs of Churches, and Pyramidal Steeples. Nevertheless, where Tiles are scarce, and you would have your House but lightly cover'd; Shingles are to be prefer'd before Thatch; and if they are made of good Oak and cleft out, (not saw'd,) and then well season'd in the Water

and Sun, they become a sure light, and durable Covering.

2. *Price of.*] Some Workmen tell me, that Shingles are sometimes sold for 20 *s.* per Thousand but then they are very bad Ware; for if they are good they are worth 30 *s.* per Thousand; nay, they tell me, they have known 40 *s.* per Thousand given for Shingles to lay upon Steeples; for those that lie so high, and hang so perpendicular, ought to be of the best sort.

3. *Price of Cleaving and Making.*] Several Workmen tell me, that the common price of cleaving and making of Shingles, is 10 *s.* per Thousand.

4. *How many made of a Tun of Timber.*] Some Workmen tell me, that a Tun of Timber will make 3000 of Shingles.

5. *Of laying on.*] For covering with these, the Building must be first well cover'd all over with Boards; which being done, the Shingles are fasten'd to those Boards with 4 *d.* 5 *d.* or 6 *d.* Nails, in every Course, at a certain Gage, *viz.* At 3  $\frac{1}{2}$  Inches, or 4 Inches, from under one another; for they commonly make 3 *Waters.* (as they phrase it,) that is, they commonly hang 3 Shingles in heighth, in the length of one; so that if the Shingles are 12 Inches long, they are laid at 4 Inches Gage.

In breaking of Joynt, they do not observe to make one Joynt over the middle of the Shingle below; but they sometimes break Joynt an Inch, an Inch and a half, or 2 Inches, according to the breadth of the Shingles; for they, (especially if they are cleft) are not all exactly of a size.

6. *Price of laying on.*] For laying them on upon Spire-steeples, where the Work is high and troublesome, they have (commonly) 20 *s.* per Thousand; but on low Work, (as upon Houses and the like,) they will cleave, and make, and lay them on for that Money: Or if they only lay them on upon Houses, they will do it for 10 *s.* per Thousand. Some Workmen tell me, that for dressing and laying on of Shingles upon Churches and Steeples, they have (commonly) 18 *s.* per Thousand.

7. *Price of dressing old ones.*] For *dressing* of old Shingles, [that is new hewing them, and cutting of the ragged lower ends,] Workmen tell me they have, (I think) 6 *s.* per Thousand.

8. *How many will cover a Square.*] If the Shingles are 4 Inches broad, and laid at 4 Inches Gage, 81 Shingles will cover a Square Yard; and consequently 900 will cover a Square, (or 100 Superficial Feet) of Healing: But, because Shingles seldom hold to be all 4 Inches broad; therefore they commonly allow 1000 to the Square, and of Nails as many.

*Shingling,*

*Shingling,*

The laying on of Shingles, V. Shingles.

*Shinlog.*

V. Bricks, N. 5.

*Shop windows,*

These may be afforded at the same rate as plain or bat-  
ton'd doors, besides the Iron-work, as Bolts, Staples, Hinges,  
Locks, Keys, Latches, Chains, &c. V. Doors, N. 4.

*Shreadings,*

The same as *Furrings*.

*Silery,*

As Cilery.

*Skew back.*

V. Arches, N. 7.

*Skirting boards,*

The narrow Boards fitted round the under-side of Wain-  
scot against the Floor.

*Slabs,*

The out-side sappy Planks, or Boards sawn off from the  
sides of Timber.

*Slating.*

1. *What.*] Slating is the Covering of Houses with Slate:

This kind of Covering is very neat, especially the *Blue-  
slate*; as for the other kind of Slate, (known in some places  
by the name of *Horsbam-stone*.) V. *Horsbam-stone*.

This *Blue-slate*, cut into long Squares, or Escallops, shews  
very handsome, and is commonly us'd in covering of Summer,  
and Banqueting-houses in Gardens; it being a very light and  
lasting Covering.

But as this kind of Covering is very handsome, so also 'tis  
very charginable; for Roofs cover'd with Slate, must be (first)  
boarded over, the Slates hang'd on Tacks, and laid with finer  
Mortar than Tiles.

But if these Slates be rudely cut, and carelessly laid, (in re-  
spect of Form,) it is then accounted a cheaper Covering than  
with plain Tiles; especially in those Countreys where the  
Earth affords plenty of them.

2. *Price of.*] This kind of covering is valu'd by some  
from 3 s. to 6 s. the Yard square, or by the Square of 10  
Foot,

Foot, (that is 100 Feet,) from 30 s. to 3 Pounds, or more in some places.

3. *Price of Pointing of Slates.*] The Pointing of Slates, ([that is hewing them, and making them fit for the Work,] is worth, (says Mr. Wing,) about 12, or 13 d. per Square.

4. *Price of Slates.*] Slates at the Pits are worth, (says Mr. Wing,) 12 or 14 s. per Thousand, which will nearly do 36 square Yards.

5. *Of Measuring.*] Slating is in some places measur'd by the Rod of 18 Foot Square, which contains 324 Superficial Feet, or 36 square Yards.

In measuring this sort of Work, where there are Gutters or Valleys, there is commonly an Allowance, which is to take the length of the Roof all along upon the Ridge; which makes the Gutters double Measure, viz. as much more as really it is; which in some places is allow'd, and in others not; which depends upon the Custom of the Place.

### *Slates.*

V. Slating, N. 3. 4.

### *Sleeper,*

In Architecture is the Oblique Rafter that lies in a Gutter;  
V. Hip, N. 1.

### *Slipper,*

The same as Plinth.

### *Sluces,*

Vents, or Drains for Water, V. Alder, N. 3.

### *Smiths.*

1. *Work.*] Smith's Work in relation to Architecture, are of divers kinds, as *making of Casements*; (for which see Casements, N. 2.) *Palisado-work* in Gates, or other ways, (V. Palisado, N. 4.) For making Dogs, Bars, large Hooks, Thimbles, Hinges, Staples, Grates, &c. they have in some places 3 ½ d. in others 4 d. per Pound. But for small and neat Hooks, Hinges, Staples, &c. they have from 4 d. to 8 d. per Pound. For Iron Balconies, 5 d. the Pound.

2. *Bill to make.*] A Smith's Bill should be made after this manner.



Mr. Zachariah Zinthos of London, his Bill of  
Materials had of, and Work done by Sam.  
Smith. 1702.

	l.	s.	d.
June 24. For 8 large Casements, weighing 80 lb. at 6 d. per Pound.	2	0	0
July 2. For 10 small Casements, weighing 60 lb. at 6 d. per Pound.	1	10	0
12. For 10 pair of Hooks and Rides for Doors, weighing 60 lb. at 4 d. per Pound.	1	0	0
Sept. 10. For 2 great Bars for the Chimney, weighing 40 lb. at 4 d. per Pound.	0	13	4
Octo. 13. For 3 Bars for Doors, weighing 30 lb. at 4 d. per Pound.	0	10	0
30. For 4 Dogs, weighing 25 lb. at 4 d. per Pound.	0	5	0
Nov. 3. For 3 great Bolts for Doors, weighing 4 $\frac{1}{2}$ lb. at 4 d. per Pound.	0	1	6
Sum	5	19	10

### Soils.

V. Sells.

### Solder, or Sodder.

1. *What.*] There are several kinds of Solder; but that which more immediately relates to our present business is Solder for Lead, which is made of Lead, and  $\frac{1}{2}$  as much Block-tin. This for Plumbers use; for Glaziers use it may be somewhat finer.

2. *Price of.*] This is sold from 8 d. to 10 d. per Pound, according to its fineness.

3. *To know if fine enough for the Glazier's use.*] Some Glaziers tell me, that to know whether their Solder be fine enough for their use; they take a piece of it, and bend it too and fro near their Ear; for if it be of a fit temper it will crackle like Nits.

### Sommering.

V. Arches, N. 7.

### Spira,

As List.

*Splaying*

Of Windows and Doors, V. Bricklayers, N. 2.

*Springs*

*For Casements.*] Some Smiths tell me, they have 6 *d.* per piece for Springs for Casements, of the common or ordinary Fashion. But I have seen some Springs for Casements that were something extraordinary in their Workmanship; they being a kind of double Springs, which seem'd as if a right and left-hand Spring had been joyn'd together; for about 3 or 4 Inches from the Shoulder, where they were driven into the Timber; but at the end where the Scrolls were at least 2 Inches asunder, they had a Scroll turn'd both upwards and downwards in each Spring; so that each Spring seem'd like 2 Springs turn'd back to back. The Smith that made these Springs, told me, that he had 1 *s.* per piece for 'em.

*Square,*

A certain Measure, (made use of in Measuring several Artificers Works,) consisting of 100 Superficial Feet.

*Square-nails.*

V. Nails, N. 21.

*Stairs.*

1. *What.*] Stairs are the Steps whereby we ascend and descend from one Story of a House to another.

2. *Dimensions of.*] Several Writers of Architecture, have laid down several, and different Rules, for the height, breadth, and length of Stairs, or Steps, and that according to the several Capacities of the Stair-cases. But (in general) they forbid more than 6, and less than 4 Inches for the height of each Stair; and more than 18, and less than 12 Inches for the breadth, and more than 16, and less than 6 Foot for the length of each Stair.

But here we must understand, that they mean these Measures should be observ'd only in large and sumptuous Buildings: For in common and ordinary Houses, they may be something higher, and narrower, and much shorter; yet in these they ought not to exceed 7, or (at most) 8 Inches in height; for if they do, they will be difficult to ascend; for our Legs do labour much more in *Elevation*, than in bare Horizontal Progression. Neither ought they to be less than 9 or 10 Inches in breadth; nor ought their length to be less than 3 Feet.

To reduce this Doctrine (of the Dimensions of Stairs) to

some Natural, or at least Mathematical Ground, *Vitruvius*, (as we see, *Lib. 9. Cap. 2.*) Borrows, those Proportions that make the Sides of a Rectangular Triangle, which the Ancient School did express (in its lowest Terms,) by the Numbers 3, 4, and 5. That is 3 for the Perpendicular height of the Stair, 4 for the Horizontal breadth of it, and 5 for the whole Inclination, or Slope in the Ascent. But this Rule is so far from being follow'd in our modern Buildings, that the contrary is rather practis'd; for by this Rule, the lower the Stairs are, the narrower they ought to be; and if a Stair be but 6 Inches high, he must (according to this Rule) be but 8 Inches broad; whereas in this case we seldom make 'em less than a Foot broad. And if we should make Stairs so low as 4 Inches, (for such the Ancient Architects make mention of,) they must (by this Rule) be but 5; Inches broad; which certainly is too narrow for any Stair.

3. *Of making.*] Tho' we have laid down Rules (in the foregoing Number) for the height and breadth of Stairs; yet Workmen are not to be so strictly ty'd to those Rules, as not to vary in the least from 'em: For they must still observe to make all the Stairs of the same Stair-case of an equal height and breadth: To do which, they must first consider the height of the Room, as also the Width, or Compass they have to carry up the Stairs in.

Then to find the height of each particular Stair, they ought first to propose the height of each Stair, and by that proposed height divide the whole height of the Room; which done, the Quotient will shew the number of Stairs: But if the Division fall not out exact, but that there be a Remainder; then (in this case) take the Quotient, (not regarding the Remainder) for the number of Stairs, and by that number divide the whole height of the Room; so the Quotient shall give you the exact height of each Stair.

*Example.* Suppose the whole height of the Room be 9 Foot 3 Inches, and suppose you design'd to make each Stair 6 Inches high, turn the whole height of the Room into Inches, 'twill be 111 Inches, which divide by 6, the Quotient will be 18, and 3 remaining; therefore take 18 for the number of Stairs, and by it divide 111, the Quotient will be  $6\frac{3}{18}$  Inches, or  $6\frac{1}{6}$  Inches, which must be the exact height of each Stair.

Then, to find the breadth of each Stair, divide the width, or compass (that you have to carry them up in,) by the number of Stairs, and the Quotient will shew you the exact breadth of each Stair.

There is another thing to be observ'd in making of Stairs, viz. That they be laid (where they joyn) *con un tantino d'*

*Carpa*, (as the *Italians* speak :) we may Translate it *somewhat* (tho' but *little*) sloping, (*viz.* a little highest behind,) that so the Foot may in a sort both ascend and descend together; which tho' observ'd by few, is a secret and delicate Deception of the Pains in Mounting.

### Stair-case.

1. *What.*] A *Stair-case* is sometimes taken to signify the Inclosure of a pair of Stairs; whether it be with Walls, or with Walls, and Rails, and Balusters, &c. And sometimes 'tis taken for the whole Frame of a pair of Stairs.

2. *Of making.*] To make a compleat *Stair-case*, is a curious piece of Architecture: The vulgar Cautions about it are these.

(1.) That it have a liberal *Light*, against all Casualties of Slips and Falls.

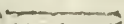
(2.) That the space over-head be large and Airy, which the *Italians* use to call *Un bel Sfogolo*, as it were, good Ventilation, because a Man spends much breath in mounting.

3. That the half-paces, (if there be any) be well distributed at competent distances, for reposing on the way.

(4.) That to avoid Encounters, and besides to gratifie the Beholder, the whole *Stair-case* have no niggard Latitude. But this ought to be regulated in proportion to the Quality of the Building: For a great *Stair-case* in a little House would be as improper, as a little *Stair-case* in a great House; both of them equally Ridiculous.

(5.) That there be great care taken in the well placing the *Stair case*; for there is not a little difficulty to find a place convenient, so as the Stairs may be distributed without Prejudice, or hindrance to the rest of the Building.

III. *Kinds.*] There are many kinds of *Stair-cases*; for in some the Stairs are made *straight*, in others, *Winding*, in others, mixt of both. Of *straight-stairs*, some fly directly forward, others are Square, others Triangular; others are call'd *French Flights*. Of *Winding-stairs*, (which in general are call'd *Spiral*, or *Cockle-stairs*;) some are *Square*, some *Circular*, or *round*, and some *Elliptical*, or *Oval*; and these again are various; for some wind about a *Solid*, others about an *open Newel*. Stairs mixt of *straight* and *winding*, are also of various kinds; some are call'd *Dog-leg d*, others there are that both wind about a *Solid-Newel*, and fly about a *Square Open-Newel*. I shall particularly, (tho' briefly) describe all these several kinds, in the following Numbers.

IV. *Straight Stairs.*] These are such as always fly, and never Wind, and therefore are by some call'd *Flyers*. Of these there are several kinds, as 

1. *Direct-flyers, or plain-flyers.* These fly directly from one Floor to another, without turning to the right or left, and are seldom us'd, unless it be for Garret, or Cellar-stairs in ordinary Houses.

2. *Square-flyers.*] These fly round the sides of a Square-Newel, either solid, or open, (so that there are 2 kinds of 'em,) and at every corner of the Newel, there is a Square Half-pace, that takes up  $\frac{1}{4}$  of a Circle. So they fly from one Half-pace to another; and the length of the Stairs is Perpendicular to the side of the Newel.

3. *Triangular-flyers.*] These fly round by the sides of a Triangular Newel, either solid or open, (so that there are also 2 kinds of these,) and at each corner of the Newel there is a trapezial Half-pace, that takes up 120 Degrees, (or  $\frac{2}{3}$ ) of a Circle. So they fly from one Half-pace to another; and the length of the Stars is Perpendicular to the side of the Newel.

*Palladio* tells us, that *Triangular-stairs* are to be seen in some ancient Edifices; and of this sort, (says he,) are those of the Cupolo of *St. Maria Rotunda*, which are open in the middle, and receive Light from above. Those also at *Sancto Apostolo* in the same City, are of the same kind.

4. *French-flyers.*] These kind of Stairs, first fly directly forward, till they come within the length of a Stair of the Wall, and then they have a square Half-pace; from which you immediately, (without any Stairs between) ascend to another Half-pace; and from this second Half-pace the Stairs fly directly back again, parallel to the first flight.

V. *Winding-stairs.*] These are such as always wind, and never fly: There are many kinds of these Stairs; for some wind round a Circle, others round an Ellipsis, or Oval, others round a square, and others round an Equilateral Triangle: and of each of these, some wind round a solid Newel, and others round an open, or hollow Newel. Again, some are set upon Columns, and some Stairs are double, and some are Quadruple. I shall describe each of these in the following Numbers.

1. *Circular-winding-stairs.*] These are of 4 kinds. First, Such as wind about a solid Newel, and the fore-edge of each Stair is a right-line pointing to the Centre of the Newel. These are common in Church-steeple, and great old Stone-Houses. Secondly, Such as wind round an open Newel, and the fore side of each Stair is a right Line pointing to the Centre of the Newel. Of this kind are those in the Monument of *London*. Thirdly, Such as wind round a Solid Newel, but the fore-side of each Stair is an Arch (of a large) Circle, that points quite by the Centre, (and near to the Circumference) of the Newel. In these, the Stairs are much longer than in the common Winding stairs. Of these there  
may

may be 2 kinds: For their Ichnography being drawn, the Stairs may be contriv'd to be either Concave, or Convex on the fore-side. Fourthly, there are other Stairs, in all respects like those last describ'd, only they have an open Newel. These kind of Stairs are said to be invented by *Mark Anthony Barbaro*, a Gentleman of *Venice*.

Any of these kinds of Winding-stairs, take up less room than any other kind of Stairs whatsoever.

In Stairs that wind round a Solid Newel, Architects make

the Diameter of the Newel  $\left\{ \begin{array}{l} \frac{1}{4}, \text{ or} \\ \frac{1}{3}, \text{ or} \\ \frac{2}{3}, \text{ or} \\ \frac{3}{7} \end{array} \right\}$  of the Diameter of the

whole Stair-case; according as the Stair-case is in bigness; for if the Stair-case be very small, they make the Newel but  $\frac{1}{6}$  of its whole Diameter; and if very large, then  $\frac{2}{7}$ ; and so proportionably of the rest.

In stairs that wind round an open Newel, *Palladio* tells us, the Newel must be  $\frac{1}{2}$  the Diameter of the whole Stair-case. But I see no reason, why these open Newels ought not to be proportion'd to the size of the Stair-case, as well as the solid ones.

Then, as to the number of Stairs in one Revolution, *Palladio* tells us,

That if the Stair-case be  $\left\{ \begin{array}{l} 6, \text{ or } 7, \\ 8, \\ 9, \text{ or } 10, \\ 18, \end{array} \right\}$  Foot Diameter, then

there may be  $\left\{ \begin{array}{l} 12 \\ 16 \\ 20 \\ 24 \end{array} \right\}$  Stairs in one Revolution about the Newel.

2. *Elliptical-winding-stairs.*] Of these there are 2 kinds; one winding round a Solid, and one round an open Newel. They are much of the nature of Circular Stairs, only in those, the Newel is a Circle, but in these an Ellipsis, or Oval. These kind of Stairs are very handsome and pleasant, (*says Palladio*;) because all the Windows and Doors are commodiously placed in the middle and head of the Oval. I have made one of these, (*says he*;) with an open Newel at the Monastery of *Charity* at *Venice*.

3. *Square-winding-stairs*] These wind round a Square-Newel, either solid, or open; (and therefore are of 2 kinds,) and

and the fore-side of each Stair is a right Line pointing to the Centre of the Newel.

4. *Triangular-winding-stairs.*] These wind round a Triangular-Newel, and the fore-side of each Stair is a right Line, pointing to the Centre of the Newel. And because the Newel may be either solid or open; therefore there are 2 kinds of 'em.

5. *Columnated-window-stairs.*] *Palladio* mentions a pair of Stairs belonging to the *Porticos* of *Pompey* at *Rome*, that were set upon Columns, that the light (which they receiv'd from above,) might distribute it self to all parts alike. Such another pair were made by *Bramante*, (an excellent Architect in his time) at *Belvedere*, the *Pope's* Palace.

6. *Double-winding-stairs.*] *Scamozzi* mentions a Stair-case of this Form, made by *Pietro del Bergo*, and *Jehan Coffin* at *Sciamburg* in *France* in the *King's* Palace. They are so contriv'd, that 2 Persons, one ascending, and the other descending, shall not come at one another. *Mr. Grew* (in his *Museum Regalis Societatis*,) gives us the Description of a Model of this kind of Stair-case, (which Model is kept by the Royal Society, in *Gresham-college*,) thus; The foot of one of these Stair-cases (says he,) is opposite to that of the other; and both make a Parallel Ascent, and within the same Cylinder. The Newel in the middle is hollow, and built with long Apertures to convey Light from Candles placed at the bottom, and on the sides of the Newel into both the Cases.

7. *Quadruple-winding-stairs.*] *Palladio* mentions a Stair-case of this Form, which *King Francis* the first caus'd to be made in the Castle of *Chambor* near *Bloyse*: It consists of 4 Stair-cases (carri'd up together,) which have 4 Entrances, viz. one to each; and go up one over another in such manner, that being made in the middle of the Building, the 4 may serve for 4 Apartments; so that the Inhabitants of one need not go up and down the Stairs of the other; and because 'tis open in the middle, they all see each other go up and down without any hindrance to one another.

VI. *Mixt Stairs.*] These are such as do both fly and wind; and therefore are by some call'd by the general Name of *Flyers* and *Winders*. There are several kinds of 'em  
As ———

1. *Dog-legg'd-stairs.*] These first fly directly forward then wind a Semicircle, and then fly directly back again, parallel to the first flight.

2. *Square Flyers, and Winders.*] These have a Square Newel, either solid or open; (and therefore are of 2 kinds,) they fly by the sides of the Newel, and wind (a quarter of a Circle) at each corner.

3. *Solid, and open Newel'd-flyers, and Winders.*] These are of 2 kinds. For some do first wind (a quarter of a Circle,) about

about a Solid Newel, then fly by the side of a square open Newel, then wind by a solid Newel again, then fly again, as before, and so alternately. Others fly first, and then wind, and then fly again, and so alternately.

Let this suffice at present for the various kinds of Stair-cases. I might here shew a Method of making all these kind of Stairs: But the Bookseller desiring this first Edition should not be too big, and I having been already very large upon some of the foregoing Letters; I must be forc'd (at present) to omit it: But if this first Edition find Acceptance in the World, and I any Encouragement thereby, *This*, and several other Curiosities, (not publickly known to the World,) may find a place in another Edition.

However, in the mean time, the bare Description of these several kinds of Stairs, together with what has been said above, N. V. §. 1. and in *Stairs*, N. 3. may be a pretty good Guide to the ingenious that have a mind to make any of these kind of Stairs.

VII. *Price of Stair-cases.*] The Price of Stair-cases is various, according to their various kinds, Sizes, and Curiosity of Workmanship. They are sometimes rated at so much *per piece*; and sometimes at so much *per Stair*.

An ordinary pair of Stairs with Flyers and Winders, of about 6 Foot, and 4 Foot, made of Elm Boards, are accounted to be worth 2 s. 6 d. or 2 s. 8 d. *per Stair*, the Workman finding all Materials, as Boards, Nails, &c. But if the Materials are found by the Owner, then 9 d. or 10 d. *per Stair*, is a good Allowance for the Workmanship.

But for Stair-cases that have an open Newel, with a Landing place at every 6th. or 8th. Stair, being about 3 Foot all the way: These Stairs, with Rails, Ballasters, String-boards, Posts, Balls, Pendants, and such other Ornaments may very well be worth 4 s. 6 d. 5 s. or 6 s. *per Stair*.

### *Stanchions,*

The same as Punchins.

### *Staples,*

What they are every one knows. For their Price, V. Iron, N. 4. and Smith's Work, N. 1.

### *Steening of Wells.*

V. Bricks, N. III. §. 1.

### *Steps,*

The same as Stairs.



*Stiles,*

In Joynery, the upright pieces that go from the bottom to the top in any Wainscot, or the like, are call'd Stiles.

*Stillatory,*

The Room that a Still, or Limbeck is set up in, for Distilling Strong-waters, &c.

*Stilobatum,*

The Body of the Pedestal of any Column.

*Stock-bricks.*

V. Bricks, N. III. §. 15.

*Stones.*

1. *Their Kinds.*] There are several kinds of Stone; as *Marble, Fire-stone, Purbeck-stone, Rag-stone, Alabaster, Free-stone,* and *Common-stone*; of all which, except the 2 last, I have already treated in their proper places of the Alphabet. As for *Free-stone*; there is a sort of Stone commonly digg'd in the peninsula of *Portland* in *Dorset-shire*, (and commonly known by the Name of *Portland-stone*;) that is much us'd in Building; it being much softer and whiter than *Purbeck-stone*, and is commonly rais'd out of the Quarries in bigger Blocks than *Purbeck-stone*. This *Portland-stone* is by some Authors call'd *Free-stone*, tho' there is a sort of Stone found in *Oxfordshire*, that is call'd *Free-stone*: And some call *Rigate*, or *Fire-stone, Free-stone*.

*Common Stone* needs no Description; it being that which is commonly us'd, and found almost every where; and is that of which I shall principally speak in the following Numbers of this Word.

2. *Of their Nature.*] If I had leisure (says the Honorable Esq; Boyle,) I could easily shew you, that ways (hitherto unus'd,) may be found out, (as I have partly try'd) to examine the *Nature and Goodness* of *Marble, Alabaster,* and other Stones. A competent Knowledge of the Sap that is to be found in Stones imploy'd for Building, is of so much Importance, that the experienced Master Workmen have confest to me, that the same sort of Stone, and taken out of the same Quarry, if digg'd at one Season, will moulder away in a very few Winters; whereas digg'd at another Season, it will brave the Weather for very many Years, not to say Ages.

Again, says the same ingenious Author in another place,) Experienc'd Masons tell us, that as there are some sorts of Stone that will decay in few Years; so there are others that will not attain their full hardness in 30, or 40, or a much longer time.

Again,

Again, (says the same Author,) There are in some places Quarries of solid and useful Stone, which is employ'd about some stately Buildings I have seen, and which yet is of such a Nature, (wherein divers other sorts of Stone are said to resemble it,) that tho' being digg'd at a certain Season of the Year, it proves good and durable, as in those Structures newly mention'd; yet employ'd at a wrong time, it makes but ruinous Buildings; as even the chief of those Persons, whose Profession makes him more conversant with it, has himself acknowledged (to me) to have found by sad Experience.

3. *Of drawing.*] An ancient and experienced Mason of my Acquaintance, tells me, that common Stones have a cleaving Grain, (as they lie in the Quarry,) and a breaking one; the first, (he says) runs parallel with the Horizon; the other is perpendicular to it. The Method which he uses in *drawing of Stones*, [that is, getting them out of the Quarry,] is thus. Having uncoped it, [that is, taken off the Earth from the Stone,] they observe (by the Grain) where the Stone will cleave, and there they drive in a good many Wedges, till they have cleft him off from the rest of the Rock; and having thus loosen'd him, they next proceed to *break him*, which they thus perform; they applying their Rule to him at both ends, mark out the breadth they would have him, (e. g. suppose 10 or 12 Inches, or more, according to the use they design the Stones for;) and by these Marks they strike a Line with the corner of their Stone-axe; and by this Line they cut a little Channel with their Stone-axe, and in this Channel they set 6 or 8 Iron-wedges, (supposing the Stone to be but 3 or 4 Foot long;) which they drive very carefully with soft and gentle Strokes, keeping them all forward together, and not one before another, lest it break the Stone a-cross, and not by the length of the Channel. Yet, he says, that this Method of driving the Wedges, is not always to be observ'd, for sometimes a Stone is not through the whole length of an equal Solidity, but is in some places softer, and in others harder; this they find, (and observe) in cutting their Channel; and those Wedges that stick in those softer places, they venter to drive a little faster than the others. And this, he says, he has found by long Experience, to be the best way of breaking Stones.

Having thus broken them in length, which by this Method they can do to any size within less than an Inch; (which is near enough for rough Stones; they next apply a Square to the straight side, and striking a Line, they proceed to break them in breadth, in the same manner, as before in length; so now they size them for the length, as before for the breadth.

By this Method of drawing of Stones, he says one Load of Stones, which will do as much Walling as a Load and half of such Stones, as in drawing are broken at random; for in  
this

this last case, one Stone has commonly a very acute Angle, another a very obtuse one; whence it comes to pass, that they require abundantly more scapting, and wast much more of the Stones, than when drawn by the Method above mention'd.

The same ingenious old Man tells us, that some *London* Stone cutters have told him, that hard Stones have not a Cleaving grain, as the soft ones (in our Country) have: And therefore when they are minded to break up a Stone in such Quarries, they have great heavy Stone-axes, with which they work down a deep Channel in the Stone, into which Channel (at the top,) then lay 2 Iron bars, (such as Smiths have from the Forge to work out,) and between these Bars they drive their Iron-wedges to break off the Stone; for their Wedges will not go where there is not a Channel made for them, as they will in soft Stones.

Some in drawing of Stone make use of Gun-powder; concerning which, take the following Account (in his own words) from the Honourable Esq; *Boyle*. It has long been, and still is in many places, (says he.) a Matter of much Trouble and Expence, as well of Time as Money, to cut out of Rocks of Alabaster and Marble, great pieces to be afterwards squar'd, or cut into other shapes; but what by help of divers Tools and Instruments, cannot in some Quarries be effected without much Time and Toil, is in other places easily and readily perform'd, by making with a fit Instrument a small Perforation into the Rock, which may reach a pretty way into the Body of it, and have such a thickness of the Rock over it, as is thought convenient to be blown up at one time; for at the further end of this Perforation, there is plac'd a convenient quantity of Gun-powder, and then all the rest of the Cavity being fill'd with Stones, and Rubbish strongly ram'd in, (except a little place that is left for a Train,) the Powder, (by the help of that Train) being fir'd, (and the impetuous Flame being hindred from expanding it self downwards, by reason of the newly mention'd Obstacle, concurring with its own tending another way, displays its Force against the upper parts of the Rock which in making it self a Passage, it cracks the Rock into several pieces, most of them not too unweild to be manag'd by the Workmen. And by this way of blowing up of Rocks a little vari'd and improv'd, some ingenious Acquaintance of ours, employ'd by the Publick, to make vast Piles, have lately, (as I receiv'd the account of themselves,) blown up, or scatter'd with a few Barrels of Powder, many hundred, not to say thousand, Tuns of common Rock.

4. *Load of Stone, how much.*] Some Masons tell me, that 25 Foot of Stone make a Load. But (*notandum est*;) they do not mean 25 solid Feet, but Superficial measur'd on the *Face* of the Stones, and not on any of the Beds.

For a clearer understanding of this, it must be noted, that every squared Stone has 6 Plains, or Sides, *viz.* The upper, and under Bed, the Face, and the Back, and the 2 Heads, or Ends. Of these 6 Plains, those 2 opposite ones that are the cleaving way of the Stone, (and which in the Quarry lay parallel to the Horizon,) are call'd the *Beds*; and of the best of the 4 Plains that are perpendicular to these, (and consequently are the breaking way of the Stone,) they make the *Face*, and the Plain opposite to the *Face*, (and which commonly goes rough as it comes from the Quarry,) they call the *back* of a Stone; and the other 2 perpendicular Plains are call'd the Heads, or Ends.

5. *Cord of Stone, how much.*] In some parts of *Kent*, Stones are sold by the Cord, consisting of 27 solid Feet, *viz.* 3 Feet long, 3 broad, and 3 high.

6. *How much Walling a Load of Stones will do.*] An old and experienced Mason, tells me, that a Load of Stones will build about 20 Foot of 18 Inch Wall; this he reckons a Medium, the Extrems he reckons 15 and 25.

7. *Soft Stones, how wrought smooth.*] An old experienced Mason, tells me, that some Stones are too soft to bear a good edge; for when they are scapt'd, and wrought smooth, their edges crumble off; and therefore (in this Case) to make them smooth, they proceed thus: After they are scapt'd, they take an old Card, (such as Wool is Carded with,) and with it they work out the Strokes of the Axe, then they bring it to a better likeing, by rubbing it with a piece of the same Stone. And thus our Countrey-masons manage all soft Stones.

8. *Price of drawing and carrying of Stones.*] The old Mason mention'd above, Number 3*d.* tells me that he has 3 *s.* the Load for drawing of Stones, after the Method mention'd, Number the 3 *d.* and for the carriage of a Load, (tho' it be not above  $\frac{1}{2}$  a Mile) he has 2 *s.* the Load.

Another Mason tells me, that he has drawn Stones for 9 *d.* the Load; but then they lay almost level with the Ground, and requir'd but very little uncopeing. He also told me, that another Mason, which he nam'd to me, (and whom I also knew,) used to draw Stones for 1 *d.* per Foot.

Also a *Suffex* Gentleman of my Acquaintance, tells me, that he can have very good Stones drawn for 2 *s.* 6 *d.* per Cord, and have them carry'd almost a Mile for 3 *s.* 6 *d.* per Cord.

But as the Price of drawing Stones is various in different places, according to the different manners of drawing them, and according to the different Circumstances of *Difficulty*, or *Facility* of drawing them, &c. So also is the Price of carrying them very various in different Places, according to the Custom

Custom of those Places. See more concerning this Matter, in the word *Ashlar*.

9. *Price of Scapling Stones.*] Several Masons tell me, that they commonly give 5 s. for Scapling 100 Foot of Stones; this is Journey-man's Wages, out of which (they say) the Master has but small profit. They also tell me, that they reckon 50 Foot a Days Work, tho' some Workmen will do 50 Foot in a Day: But (*notandum est,*) the Measure is Superficial, and they measure only the *Face* of the Stone, tho' they scaple 5 sides to each Stone, *viz.* A *Face*, 2 *Beds*, and 2 *Ends*; so the *back* goes rough as it came out of the *Quarry*; But in Scapling, they always, (if they can conveniently,) choose *that* for the *Face* of the Stone which will be most for their Advantage.

### *Stone-work.*

*Of Measuring.*] In some parts of *Suffex*, Masons have a Custom to measure their Stone-work thus; they apply one end of a Line to the top of the Copeing, and so carry it along the slant of the Copeing, and press it under the Tothing; (if any be,) and from thence they carry it to the Water, or Ground-table, (if any such be in the Wall) where they press it in likewise, and then carry it over the Table to the bottom of the Foundation; and this Dimension, thus taken, they account for the height; which multiply'd into the length, gives the Content.

But (I think,) in most places they are not so nice, as to take the height by a Line, but are contented with the perpendicular height.

### *Stove.*

A Hot-house, or Room. *Palladio* observes, that the Ancients us'd to warm their Rooms, with certain secret Pipes that came through the Walls, conveying Heat, (as I conceive it, says Sir *Henry Wotton*,) to several parts of the House from one common Furnace. Whether this were a Custom, or a Delicacy, (says Sir *Henry Wotton*,) it was certainly, both for Profit, and Use, far beyond the *German Stoves*.

### *Strait,*

A Term us'd by Bricklayers, it is half, (or more, or less than half) a Tile in breadth, and the whole length. They are commonly us'd at the Gable-ends, where they are laid at every other Course, to cause the Tiles to *break Joyn*t, as they phrase it; that is, that the Joyns of one (Course) may not answer exactly to the Joyns of the next Course, either above; or below it.

*Straight-arch.*

V. Arch. N. 7.

*Structure.*

V. Building.

*Struts.*

V. Dragon-beams.

*Stuff,*

The Wood that Joyners work upon they call in general *stuff*.

*Stretchers.*

V. Arch. N. 7.

*Substruction.*

V. Foundation, N. 2. §. 7.

*Summers.*

V. Brefs-summers. Also V. Girders, N. 2.

*Supercilium.*

As Lift.

*Symmetry.*

Is the Conveniency that runs between the *parts* (of a Building) and the *whole*.

*Table, or Glass.*

V. Case of Glafs.

*Tabern,*

A Cellar.

*Tacks.*

V. Nails. N. 22.

*Taper,*

All sorts of Stuff, or Work that are smaller at one end than the other, and diminishing gradually from the biggest end, is said to be *taper*.

*Tarrace, or Tarras.*

An open Walk, or Gallery. Also a flat Roof on a House. Also a kind of course Plaster, durable in the Weather.

*Tassels,*

*Tassels,*

Pieces of Board that lie under the ends of the Mantle-tree.

*Teeth.*

As Dentils.

*Templets.*

V. House, N. 4.

*Tenia.*

As List.

*Tennon.*

A square end of a piece of Timber fitted into a Mortels, V. Mortels.

*Terrafs.*

As Tarrace.

*Tetradoron,*

A kind of Brick so call'd, V. Brick, N. III. §. 18:

*Thack-tiles.*

As plain Tiles, V. Tiles, N. III.

*Thatching.*

1. *What.*] Thatching is the covering the Roof of a House or Barn, with Straw, or Reed.

2. *With Straw.*] Thatch, (says Mr. Worlidge,) is a common Covering in many places, yet is some to be prefer'd before other some; the best which I have seen, (says he,) is that which is call'd *Helm*, that is long and stiff Wheat-straw, (with the Ears cut off,) bound up in bundles unbruis'd; which well laid; lies thin, lasts long, and is much neater than the common way.

Thatchers commonly allow about 2 good Load of Straw for 5 square of Thatching, or one Load to 2  $\frac{1}{2}$  square.

A Thatcher of my Acquaintance, tells me, that one *Rubble* a Mason of *Rotham* in *Kent*, proffer'd (for a small matter) to teach him how to Thatch a Roof so, that no Mouse nor Rat should come into it: But he was not so thoughtful then, as to get the Receipt of him, tho' it would have been of no small use to him; for the *Rotham* Mason said, he knew a Thatcher that had 4*d.* per square more for doing it so. It is a thing worth inquiring after.

In some parts of *Kent* they use no Withs to bind on their Thatching-rods, but (instead thereof) they use *Rope-yarn*, (as

they call it,) which is a single Strand-line, a bout the size of a Penny Cord ; it is Pitched with Pitch, according as some do their Well-ropes. A *Kentish* Thatcher told me, that one Pound of it (which costs 2 *d.*) will do about a square of Thatching. He had about 18 pound of it for 18 square and 90 Foot of Thatching on a Barn ; and I think he had but 40 pound for 48 square and 88 Foot : He tells me, 'tis more durable than Withs ; for *they* when they are grown sear, will fly and break ; but this will not, V. P. *Withs*.

3. *With Reed.*] In some parts of *Suffex* and *Kent*, they Thatch with Reed instead of Straw. Some Workmen tell me, that this kind of Thatching will indure 40, 50, or 60 Years. They also tell me, that Reed is sold by the Thousand, viz. A Thousand handfuls, each handful being about 8, 9, or 10 Inches in Circumference, bound up in a little Band ; a Thousand of which will cost 15 or 16 *s.* and will cover about 3 square of Roofing. For laying of which they have 4 *s.* per square.

4. *Price of.*] Common Thatching is done in some places for 2 *s.* 6 *d.* per square ; but in other Places they have 2 *s.* 8 *d.* and in others 3 *s.* per square. And for Thatching with Reed they have 4 *s.* per square.

5. *Of Measuring.*] Thatching Is measur'd by the square as Tiling : And in some places they are allow'd so many Feet more as Corners and Cables are Feet in length. In other places they are allow'd (only) so many half Feet more to the whole, as the Gable heads are Feet in length ; and the Reason they urge for this Custom, is, because they have more trouble in turning the Straw (at the Gables) that it may be cut, as it is at the Eaves. If one side of a Roof (only) be Thatched, and not the other ; they (then) take their Dimensions over the Ridging, as far as the new Straw goes.

### *Thimbles.*

V, Iron, N. 4.

### *Thorough framing.*

V. Framing, N. 7.

### *Through-lighted.*

Rooms are said to be Through-lighted when they have Windows on both ends.

### *Tiles.*

V. Tyles:

### *Timber*



## Timber.

1. *What.*] All those kinds of Trees, which being cut down and season'd, are useful for the Carpenter, Joyner, or other wooden Tradesman to work upon, are call'd *Timber* when they are cut down, and *Timber Trees* when they are growing.

2. *Kinds.*] There are many kinds of Timber; it were tedious to mention 'em all. I shall content my self at present, briefly to shew the most common uses, and of the most common kinds of Timber; as I find it set down in Mr. *Evelin's Sylva*, and Mr. *Worlidge's Systema Agriculturae*. As follows.

1. *Oak.*] The several uses of Oaken-timber for Buildings, and other Mechanick Uses, is so universally known, that 'twere needless to enumerate them. To endure all Seasons of the Weather, there is no Wood comparable to it; as for Pales, Shingles, Posts, Rails, Boards, &c. For Waterworks also 'tis second to none; especially where it lies obvious to the Air as well as the Water, there is no Wood like it.

2. *Elm.*] If the Elm be fell'd between *November* and *February*, it will be all Spine, or Heart, or very little Sap, and is of most singular use (in the Water,) where it lies always wet, and also where it may be always dry. It is also of great use for its toughness, and therefore us'd by Wheelwrights, Mill-wrights, &c. It is also good to make Dressers, and Planks to chopon, because it will not break away in Chips like other Timber.

3. *Beech.*] Its use is principally for the Turner, Joyner, Upholsterer, and such like Mechanick Operations, the Wood being of a clean, white, and fine Grain, and not apt to rend, or slit: Yet it is sometimes us'd, (especially of late Years) for Building-timber. And if it lie always wet, (as for Ground-guts, and the like,) 'tis thought to endure longer than Oak will in that Case.

4. *Ash.*] The use of Ash is almost universal, good for Building, or any other use where it may lie dry; serves the Occasions of the Carpenter, Plough-wright, Wheel-right, Cart-wright, Cooper, Turner, &c. For Garden uses also, no Wood exceeds it; as for Ladders, Hop-poles, Palisade-hedges, &c. It serves also at Sea, for Oars, Hand-spikes, &c.

5. *Fir.*] This kind of Timber is commonly known by the name of *Deal*, and is of late much us'd in Building, especially within Doors, for Stairs, Floors, Wainscot, and most ornamental Works.

6. *Walnut-tree.*] This Timber is of universal use, (unless for outward Edifices,) none better for the Joyner's use, it being of a more curious brown colour than Beech, and not so subject to the Worms.

7. *Chestnut-tree.*] This Timber is (next to Oak) one of the most sought after by the Joyner and Carpenter, and of very long lasting, as appears by many ancient Houses and Barus built of it about *Graves-end* in *Kent*.

8. *Service-tree.*] This Timber is useful for the Joyner, it being of a very delicate Grain, and is fit for divers Curiosities: It also yields Beams of a considerable bigness for Buildings.

9. *Poplar, Abel, and Aspen.*] These kinds of Timber differ but little from one another; and of late they are often us'd instead of *Fir*; they look as well, and are tougher and stronger.

10. *Alder.*] This is useful for Ladder and Scaffold-poles, as also for Sewers, or Pipes to convey Water; for if it lie always wet, it will harden like a very Stone; but where it is sometimes wet, and sometimes dry, it rots immediately.

11. *Lime tree.*] I have known, (says my Author,) excellent Ladders made of Lime-tree-poles, and of a very great length.

III. *Time of Felling.*] The Time of the Year for this Work is not usually till about the end of *April*, (at which Season the Bark does commonly rise freely, and if there be any quantity of Timber fell'd, the Statute obliges us to fell it *then*, the Bark being necessary for the *Tanner*.) But the Opinions and Practice of Men have been very different concerning the best time to fell Timber: *Vitruvius* is for an Autumnal Fall; others advise *December* and *January*: *Cato* was of Opinion, that Trees should have first born their Fruit, or at least it should not be Fell'd till the Fruit was full ripe, which agrees with that of the Architect: And tho' Timber unbarked be indeed most obnoxious to the Worm, yet we find the wild Oak, and many other sorts Fell'd over late, (and when the Sap begins to be proud,) to be very subject to the Worm; whereas being cut about Mid-winter, it neither casts, rifts nor twines; because the Cold of the Winter does both dry and consolidate: Happy therefore were it for our Timber, if some real *Invention* of *Tanning* without so much Bark, (as the Honourable Mr. *Charles Howard*, has most ingeniously offer'd,) were become universal; that Trees being more early Fell'd, the Timber might be the better season'd, and condition'd for its various uses.

Then for the Age of the Moon, it has been religiously observ'd; and that *Diana's* Precedency in *Sylvis* was not so much celebrated to credit the *Fallions* of the *Pests*, as for the Dominion of that moist Planet, and her

her Influence over Timber: For my part, I am not so much inclin'd to these *Criticisms*, as to Fell Timber altogether at the Pleasure of this mutable Lady; however there is doubtless some regard to be had, *Nec frustra signorum obitus speculamur & ortus.*

The old Rules are these: Fell Timber in the *Decrease*, or 4 Days after the New Moon; some say in the *last Quarter*, *Pliny* says, (if possible,) in the very Article of the Change; which hapning, (says he, in the last Day of the Winter Solstice, *that Timber* will prove immortal: *Columella* says, from the 20th. to the 30th. Day: *Cato*, 4 Days after the Full: *Vegetius*, from the 15th. to the 25th. for Ship-timber, but never in the Increase, Trees then most abounding with Moisture, which is the only Source of Putrefaction.

Then for the Temper and Time of the Day; the *Wind* low, neither *East* nor *West*; neither in *Frosty*, *Wet*, or *Dewy* Weather; and therefore never in a Forenoon.

Lastly, Touching the Species; Fell *Fir* when it begins to spring; not only because it will then best quit its Coat and Strip; but for that they hold it will never decay in Water; which howsoever *Theophrastus* deduces from the old Bridge made (of this Material, cut at this Season,) over a certain River in *Arcadia*, is hardly sufficient to satisfy our Curiosity. *Elm* (says *Mr. Worlidge*.) is to be Fell'd between *November* and *January*; for then, (says he,) it will be all *Heart*, or at least will have but very little Sap. And this he also says is the only Season for Felling of *Ash*.

Some Authors advise in Felling of Timber, to cut it but into the Pith, and so let it stand till it be dry, because, (say they) by drops there will pass away that Moisture which would cause Putrefaction,

IV. *Of Seasoning.*] Timber being Fell'd, and Sawn, is next to be season'd; for doing of which, some advise, that it be laid up very dry in an airy place, yet out of the Wind, or Sun; at least, (say others,) it ought to be free from the Extremities of the Sun, Wind, and Rain; and that it may not cleave, but dry equally, you may daub it over with Cow-dung. Let it not stand upright, but lay it along one piece upon another, interposing some short Blocks between them, to preserve them from a certain Mouldiness, which they usually contract while they sweat, and which frequently produces a kind of Fungus, especially if there be any sappy parts remaining.

Others advise to lay Boards, Planks, &c. In some Pool, or Running-stream for a few Days, to extract the Sap from 'em, and afterwards to dry 'em in the Sun, or Air; for by so doing, (say they,) they will neither chap, cast, nor cleave;

(Mr. *Evelin* particularly commends this way of Seasoning of Fir,) against *shrinking* there is no Remedy.

Some again commend *Buryings* in the *Earth*, others in *Wheat*; and there be Seasonings of the *Fire*, as for the scorching and hardning of *Piles*, which are to stand either in the *Water*, or the *Earth*. Thus do all the Elements contribute to the Art of *Seasoning of Timber*.

Sir *Hugh Plat* informs us, that the *Venetians* use to burn and scorch their Timber in the flaming *Fire*, continually turning it round with an Engine, till they have gotten upon it a hard, black, coally Crust; and the secret carries with it great probability; for that the Wood is brought by it to such a hardness and dryness. *ut cum omnis putrefactio incipiat ab humidis*, nor Earth nor Water can penetrate it. I my self, (says Esq; *Evelin*.) remember to have seen Charcoals dug out of the Ground, amongst the Ruins of ancient Buildings, which have in all Probability lain cover'd with Earth above 1500 Years.

V. *Of Preserving.*] When Timber, or Boards are well season'd, or dry'd in the Sun, or Air, and fix'd in their places, and what Labour you intend is bestow'd upon 'em. The use of Linseed-oyl, Tar, or such like Oleaginous Matter, tends much to their preservation and duration. *Hesiod* prescribes to hang your Instruments in the Smoak, to make them strong and lasting; *temonem in fumo poneres*: Surely then the Oyl of Smoak, (or the vegetable Oyl, by some other means obtain'd,) must needs be effectual in the Preservation of Timber. Also *Virgil* advises the same, *Et suspensa focis exploret Robora fumus*, says he.

The Practice of the *Hollanders* is worth our notice, who, for the Preservation of their Gates, Port-cullis's, Draw-bridges, Sluces, and other Timbers expos'd to the perpetual Injuries of the Weather, Coat them over with a mixture of Pitch and Tar; upon which they strew small pieces of *Cockle*, and other *Shells*, beaten almost to Powder, and mingl'd with *Sea-sand*; which incrusts, and arms it after an incredible manner, against all the Assaults of Wind and Weather.

When Timber is feld before the Sap is perfectly at rest, (says Esq; *Evelin*.) it is very subject to the Worm; but to prevent, or cure this in Timber, I recommend the following Secret, as most approved.

Let common yellow Sulphur be put into a Cucurbit-glass, upon which pour so much of the strongest *Aqua fortis*, as may cover it 3 Fingers deep; distil this to driness, which is done by 2 or 3 Rectifications: Let the Sulphur remaining at the bottom, (being of a blackish, or sad Red-colour,) be laid on a Marble, or put into a Glass, where it will easily dissolve into Oyl: With this against what Timber, is either infected with Worms, or to be preserv'd from 'em. It is a great

great and excellent *Arcanum* for tinging the Wood of no unpleasant Colour, by no Art to be wash'd out; and such a Preservative of all manner of Woods, nay, of many other things also, as *Ropes, Cables, Fishing-nets, Masts, or Ships, &c.* That it defends them from Putrefaction, either in *Waters*, under, or above the *Earth*, in *Snow, Ice, Air, Winter, or Summer, &c.*

'Twere superfluous to describe the process of making the *Aquafortis*; it shall suffice to let you know, that our common *Coperas* makes this *Aquafortis* well enough for our purpose, being drawn over by a *Retort*: And for *Sulphur*, the *Island of St. Christophers* yields enough, (which hardly needs any refining) to furnish the whole World. This *Secret* (for the curious,) I thought fit not to omit, tho' a more compendious way may serve the turn, three or four Anointings with *Linseed-oyl*, has prov'd very effectual: It was experimented in a *Walnut-tree-table*, where it destroy'd Millions of Worms immediately, and is to be practis'd for *Tables, Tubes, Mathematical Instruments, Boxes, Bed-steeds, Chairs, &c.* *Oyl of Walnuts* will doubtless do the same, is sweeter and better *Varnish*; but above all is commended *Oyl of Cedar*, or that of *Juniper*.

For *Posts*, and the like, that stand in the Ground, the burning the out-sides (of those ends that are to stand in the Ground) to a *Coal*, is a great Preservative of 'em. I have already, (in the fore-going number,) mention'd the Practice of the *Venetians* in a like case, mention'd by Sir *Hugh Plat*; to which he adds, that a *Kentish* Knight of his Acquaintance, did use to burn (in this manner) the ends of the *Posts*, for *Railing, or Paling*: And this was likewise practis'd with good Success by a *Suffex* Gentleman, *Walter Burrel of Cuckfield, Esq;* And this Practice was probably deduced, from the *Observations* made by several that digged in the Earth they have found *Charcoal*, which they conjectur'd might have lain there about 100 Years, (nay, *Esq;* *Evelin* says 1500 Years, V. above in the fore-going Number, and yet was not in the least inclin'd to Putrefaction, but was very firm and solid; which plainly demonstrates, that *Timber* thus calcin'd, will resist Putrefaction much longer than it can do without it.

This of burning the ends of *Posts*, is also practis'd in *Germany*, as appears by the Abstract of a Letter, written by *David Von-der-beck* a *German Philosopher*, and *Physician* at *Min-den*, to *Dr. Langelot*, registred in the *Philosophical Transactions*, Num. 92. Page 1585, in these words, hence also, they slightly burn the ends of *Timber* to be set in the Ground, that so by the Fusion made by Fire, the *Volatile Salts*, (which by accession of the Moisture of the Earth, would easily be consum'd,

sum'd, to the Corruption of the Timber,) may catch, and fix one another.

VI. *Of closing the Chops, or Clefts in green Timber.*] Green-timber is very apt to Split and cleave after 'tis wrought into Form, which in fine Buildings is a great Eye-sore. But to close the *Chops*, and *Clefts* in *Green Timber*, I find this Expedient, to anoint, and supple it with the *Fat* of *Powder'd-beef-broth*, with which it must be well soak'd, the Chasms fill'd with Spunges dip'd into it: this to be done twice over. Some Carpenters make use of *Grease*, and *Saw-dust* mingl'd; but the first is so good a way, (says my Author,) that I have seen *Windslock-timber* so exquisitely clos'd, as not to be discern'd where the Defects were. This must be us'd when the Timber is green.

VII. *Of Measuring.*] Timber is commonly measur'd and sold by the *Tun*, or *Load*, which is a solid Measure, containing 40 or 50 solid Feet, viz. 40 Feet of round Timber, and 50 Feet of hewn Timber is call'd a *Tun*, or *Load*; which Denomination, (I conceive) it receives from the Supposition, that 40 Feet of round Timber, or 50 Feet of hewn Timber weighs about a *Tun Weight*, (i. e. 20 Hundred,) which is commonly accounted a Cart-load. Now ———

For *Measuring of round Timber*, the Custom is, to gird the Tree about in the middle of the length, and folding the Line twice (to take a quarter of it,) they account that for the true *side of the square*; then for the *length*, 'tis counted from the But-end of the Tree, so far up as the Tree will hold *half a Foot Girt*, (as they phrase it,) i. e. The Line half a Foot, when twice folded.

The Dimensions thus taken, the Timber may be measur'd; either by multiplying the side of the square in it self, and that Product by the length, by the Method of *Cross multiplication*, (V. *Cross multiplication*,) or more easily and speedily. By *Gunter's Line*, by extending the Compasses from 12 to the side of the Square in Inches; for that Extent turn'd twice (the same way) from the length in Feet, will reach to the Content in Feet.

If the Tree have any great Boughs which are Timber, (as they phrase it,) i. e. which will hold half a foot Girt; they commonly measure them, and add them to the whole: The Solidity of the whole being thus found, they divide it by 40, which brings it into Tuns.

But (*notandum est*.) If round Timber be measur'd in Order for Sale; they commonly (for *Oak*) cast away an Inch out of the Square for the Bark; [i. e. if a Tree be 10 Inches Square, they measure him as if he were but 9,] but for *Ash*, *Elm*, and *Beech*, an Inch is too much to be allow'd for the Bark. (2.) That this way of taking  $\frac{1}{4}$  of the Circumference

for the true Square, is erroneous, and always gives the Solidity less than the truth, by about a fifth part.

For measuring hewn or squar'd Timber, their Custom is to find the middle of the length of the Tree, and there to measure the breadth of him, by claping 2 Rules, or other straight things) to the sides of the Tree, and measuring the distance between them, and in the same manner they measure the breadth the other way; which if they are unequal, they add them together, and take half their Sum, which they account the true side of the Square.

The Dimensions thus taken, it is measur'd in the same manner as round Timber. So the Content being found in Feet, they divide it by 50 to bring it into Tuns.

But *notandum est*, [tis to be noted.] (1.) That if the Timber be unequal sided, this Method of taking the Dimensions, always gives the Content more than the Truth, and the greater is the difference of the sides, the greater is the Error. (2.) That tho' the Method of taking the Dimensions, both of square, and round Timber, are both erroneous yet Custom has made them currant.

VIII. *Price of Felling and Hewing.*] Carpenters about us in *Suffex*, and *Kent*, have about 1 s. or 1 s. 2 d. per Load for *Felling* of Timber, and about 3 s. per Load for *Hewing*.

IX. *How much to a Square of Framing.*] Mr. *Leybourn* tells us, that 20 Foot of solid Timber, (cut into convenient Scantlings,) will compleat a *Square*, (i. e. 100 Superficial Feet) of Framing in any Building, great or small. I mean, (says he,) of the Carcass, viz. the out-side Frame, Partitions, Roof, and Floors.

X.—*Buildings of facing with Brick.*] V. Facing, also V. Brick, N. 9.

*Tinca,*

As Lift.

*Tondino,*

As Astragal.

*Top-beam,*

As Coller-beam.

*Torcus,*

*Torus,*

*Totus, or Thorus,*

A Member in the Base of a Column, in the Form of a Semicircle.

*Torsels,*

As Taffels.

*Torsels,*

*Trammel,*

An Iron moving Instrument in Chimneys, whereon they hang the Pot over the Fire.

*Transom.*

1. *What.*] The piece that is fram'd across a double *Light-window*.

2. *Windows.*] Transom-windows in great Buildings, are worth making, (says Mr. *Wing.*) 1 s. 9 d. per Light, or 7 s. per Window.

*Traverse,*

A Term in Joynery, signifying to plain a Board, (or the like) across the Grain.

*Traverse-tile.*

V. *Tile*, N. 10.

*Triglyph,*

A Term of Architecture. The Word is Originally Greek, and signifies a *hollow Graving like 3 Furrows, or Gutters*. In Architecture, Triglyphs are those kind of stops, (in the Dorick Freeze) between the Metops, V. Metops.

*Trim,*

When Workmen fit a piece into other Work, they say they *trim* in a piece.

*Trimmers,*

In Architecture are those pieces of Timber fram'd at right Angles to the Joysts against the Ways for Chimneys, and Well-holes for Stairs.

*Trochilus.*

V. *Capital*, N. 4.

*Turn'd lead.*

V. *Lead*, N. 10.

*Tuscan order.*

V. *Column*, N. 2.

*Tusk,*

A Bevel Shoulder, made to strengthen the Tenon of the Joyst which is let into the Girder.

*Tiles.*



## Tyles.

I. *Wh.it.*] What they are every one knows: Yet Bp. *Wilkins* defines them to be a sort of Artificial Stones, (of a laminated Figure,) us'd about the Roofs and Pavements of Buildings.

They are made of Clay, kneaded together, then squeez'd flat in a Mould, and then bak'd in a Kiln.

II. *Kind's of.*] There are many kinds of Tiles, and those known by several Names; as *Plain, Thack, Ridge, Roof, Crease, Gutter, Pan, Crooked, Flemish, Corner, Hip, Dorman, Dormar, Scallop, Astragal, Traverse, Paving, and Dutch Tiles*: Of which I shall treat in the following Numbers.

III. { *Plain—* }  
 or { *Thack—* } Of which I shall give

1. *Their Description.*] They are the common or ordinary Tiles (of an Oblong Figure,) us'd about covering of Houses, &c.

2. *Their Dimensions.*] By the Statue of the 17<sup>th</sup>. of *Edw. Cap. 4<sup>th</sup>*. Plain Tiles ought to be in length  $10\frac{1}{2}$  Inches, in breadth  $6\frac{1}{4}$  Inches, and in thickness half an Inch and half a quarter at the least. But by observation, I find our *Suffex* Tiles to be of different Dimensions; for some I find to be 10 Inches long,  $6\frac{3}{4}$  broad, and  $\frac{5}{8}$  of an Inch thick. Others I find to be but  $9\frac{1}{2}$  Inches long,  $5\frac{3}{4}$  broad, and about  $\frac{1}{2}$  an Inch thick.

3. *Their Weight.*] Mr. *Leybourn* says, that one plain Tile weighs about  $2\frac{1}{2}$  Pounds; whence 100 of 'em will weigh 250 Pounds, and 1000 of 'em will weigh 2500 Pound. But by my Observations one of the largest size of tho'e I measur'd, (*viz.* those of 10 Inches long,) will weigh but about 2 Pound 3 Ounces, so that 100 of 'em will weigh about 220 Pounds, and 1000 of 'em about 2200 Pounds. And one of the other size that I measur'd, weigh'd about 2 Pounds; so that 100 of 'em will weigh about 200, and 1000 of 'em about 2000 Pounds.

4. *Their Price.*] They are in some places dearer, and in others cheaper, according to the Scarcity, or Plenty of the Earth whereof they are made, and of the Wood wherewith they are burnt. Mr. *Wing* says, they are from 25 to 30 s. the Thousand in *Rutland-shire*; Mr. *Leybourn* says 25 s. the Thousand in *London*; but about us in *Suffex* they are sold from 15 to 17 s. the Thousand.

IV.  $\left. \begin{array}{l} \text{Ridge—} \\ \text{Roof —} \\ \text{or} \\ \text{Crease—} \end{array} \right\}$  Of these I shall also give

1. *Their Description.*] These are such Tiles as are us'd to cover the Ridge of a House; they being made Circular breadth-wise, like a half Cylinder.

2. *Their Dimensions.*] These, by the fore-mention'd Statute, should be in length 13 Inches, and in thickness the same with plain Tiles. I have measur'd some of these, and found one of 'em to be 13 Inches long, about 16 broad by the Compass on the out-side, and in breadth (from side to side) on the in-side about 11 Inches, some not above 9 or 10 Inches.

3. *Their Weight.*] I weigh'd of these kind of Tiles, and found him to weigh about  $8\frac{1}{2}$  Pounds. Whence 100 of 'em will weigh about 875 Pounds, and 1000 about 8750 Pounds.

4. *Their Price.*] In some places, say Mr. *Leybourn*, 5, 6, or 7 of these Tiles are allow'd into every Thousand of plain Tiles; but if bought by themselves, they are sold from 20 to 25 s. per Hundred. About us in *Suffex*; they are sold at 2 d. per piece, or 16 s. the Hundred.

V.  $\left. \begin{array}{l} \text{Hip--} \\ \text{Corner--} \end{array} \right\}$  Of these I shall also give

1. *Their Description.*] These are to lie on the Hips, or Corners of Roofs. As to their Form, they are at first made flat like plain Tiles, but of a Quadrangular Figure, whose 2 sides are right Lines, and 2 ends Arches of a Circle, one end being a little Concave, and the other Convex, which Convex End is about 7 times as broad as the Concave End; so that they would be of a Triangular Figure, were not one corner taken off. Then before they are burnt, they are bent (upon a Mould) in their breadth, after the manner of *Ridge Tiles*: They have a hole at their narrow end to nail them on by, and are laid with their narrow ends upwards.

2. *Their Dimensions.*] By the Statute above mention'd, (Num. 111. §. 2.) The Tiles ought to be 10 $\frac{1}{2}$  Inches long, with convenient thickness and breadth. I have measur'd some of 'em, and find them to be in length 10 Inches, in breadth (according to their Compass) at the narrow end 2 Inches, and at the broad end 14 Inches; and the Right-lined breadth at the broad end, about 11 Inches.

3. *Their*

3. *Their Weight.*] I found the weight of one of these Tiles to be about 3 Pounds, and 3 or 4 Ounces, V. P. Num. 6. §. 3.

4. *Their Price.*] They are usually sold, (says Mr. *Leybourn*) at Three-half-pence, or 2 *d.* per Tyle, or from 10 to 15 *s.* per hundred. About us in *Suffex*, they are usually sold for Three-half-pence a piece, or 12 *s.* the hundred.

VI. *Gutters.*] Of these I shall also give,

1. *Their Description.*] These are to lie in Gutters, or Valleys in cross Buildings. They are made like corner Tiles, only the corners of the broad end are turn'd back again with 2 Wings; so that the broad end resembles the upper part of the Character from the *Sign Libra*. These have no holes in 'em, but are laid (with their broad ends upwards, and) without nailing at all.

2. *Their Dimensions.*] I suppose these are made in the same Mould as *corner Tiles*, for they have the same Dimensions on the out (or Convex) side. Their Wings, (mention'd in the foregoing §.) are each about 4 Inches broad, and 8 Inches long, pointing out short of the narrow end, about 2 Inches.

3. *Their Weight.*] These, (for the Reason mention'd in the foregoing §.) are of the same weight with *corner Tiles*. So that 100 of either of these kinds of Tiles will weigh about 321, or 322 Pounds, and 1000 of 'em will weigh about 3210, or 3220 Pounds.

4. *Their Price.*] They are of the same Price as corner Tiles, V. above, N. 5. §. 4.

VII.  $\left. \begin{array}{l} \text{Pan-} \\ \text{Crooked-} \\ \text{or} \\ \text{Flemish-} \end{array} \right\}$  Of these I shall give

1. *Their Description.*] They are used in covering of Sheds, Lean-too's, and all kind of flat Roof'd Buildings. They are in the Form of an Oblong Parallelogram, as plain Tiles; but they are bent (breadth-wise,) forward and backward in the Form of an S, only one of the Arches is at least 3 times as big as the other; which biggest Arch, or Hollow of the Tile is always laid uppermost, and the lesser Arch, or Hollow of another Tile, lies over the edge of the great Hollow of the former Tile. They have no holes for Pins, but hang (on the Laths) by a knot of their own Earth.

2. *Their Dimensions.*] They are usually in length 14  $\frac{1}{2}$  Inches, and in breadth 10  $\frac{1}{2}$  Inches.

3. *Their Price.*] The Price of these Tiles in most places is about 7 or 8 *s.* the hundred.

VIII. { *Dormar*—  
or  
*Dorman*— } Of these I shall give

1. *Their Description.*] These Tyles consist of a plain Tyle, and a Triangular piece of a plain Tile standing up at right Angles to one side of the plain Tyle, and this Triangular Piece at the broad end is about the breadth of the plain Tyle; and swept with an Arch of a Circle from the other end, which other end terminates in a point, or has no breadth; and of these kind of Tyles there are 2 sorts, for in some the Triangular piece stands on the right, in others on the left side of the plain Tyle; and of each of these there are again 2 sorts, for some have a whole plain Tyle, iothers but half a plain Tyle; but of all these sorts, the plain Tyle has 2 holes (for the Pins) at that end where the broad end of the Triangular piece stands.

2. *Their Use.*] They are used to be laid in the Gutters betwixt the Roof and the Cheeks, or sides of the Dormars, the plain Tyle part lying upon the Roof, and the Triangular Part standing Perpendicularly by the Cheek of the Dormar. They are excellent to keep out the wet in those places, which 'tis very difficult to do without either *them*, or some Sheet-lead. These Tiles are much us'd in some parts of *Suffex*, the Bricklayers not caring to do any Healing (where there are Dormers) without 'em; tho' to my knowledge, in some parts of *Kent*, they know not what they are; and I believe they are ignorant of 'em also in most other parts of *England*; For I never saw any Author that so much as mention'd 'em.

3. *Their Dimensions.*] As to their Dimensions, the plain Tile part is of the same Dimensions as a plain Tyle, both as to its length and breadth; the Triangular part is of the same length, and its breadth at one end 7 Inches, and the other nothing.

4. *Their Weight.*] I have weigh'd one of these Tyles, and found him to weigh about  $4\frac{1}{2}$  Pounds; whence 100 of 'em will weigh about 450, and 1000 about 4500 Pounds: This was a whole one, a  $\frac{1}{2}$  one weigh'd 3 lb. 2  $\frac{3}{4}$ .

5. *Their Price.*] They are commonly sold at Three-half-pence, or 2 *d.* per piece, or 12 or 16 *s.* the hundred.

IX. { *Scallop*—  
or  
*Astragal*— } Of these I shall give

*Their Description.*] These are in all respects like plain Tyles, only their lower ends are in the form of a *Astragal*, viz. a Semicircle with a Square on each side. They are in some places us'd for Weather Tying, and look very handsome.

I have not yet learn'd their *Price, Weight, or Dimensions*; but I think the latter is the same as plain Tyles.

X. *Travers.*] These Tyles are (by our common Bricklayers) call'd *Travis*, or *Travas Tyles*; but I suppose it should rather be *Travers Tyles*; for the word *Traversis* perfect *French*, signifying *Irregularity*; and these Tyles which they call *Travers Tyles*, are only irregular plain Tyles, viz. Such as have the Pin-holes broken out, or one of the lower Corners broken off. These they lay (with the broken ends upwards) upon Rafters, where pin'd Tyles cannot hang.

XI. *Paving.*] These are by some call'd *Paving Bricks*, V. Bricks, N. 3. §. 10.

XII. *Dutch.*] Of these I shall give

1. *Their Description.*] Of these there are 2 kinds, which I shall distinguish by the Appellations of *Ancient* and *Modern*; The *Ancient Dutch Tyles* were us'd for *Chimney-foot-pieces*: They were Painted with some Antick Figures, and sometimes with the Postures of Soldiers, &c. And sometimes with Compartments, and in them some irregular Flourishes; but in general they are nothing so well done, (nor with so lively Colours) as the *Modern* ones. The *Modern Dutch Tyles* are commonly us'd instead of *Chimney-corner-stones*, (being Plaster'd up in the Jamb, (V. Corner-stones.) These Tyles seem to be better glazed, and those that are Painted, (for some are only white,) are done with more curious Figures, and more lively Colours than the ancient ones: But both these sorts seem to be made of the same whitish Clay as our white glazed Earthen Ware. The *Modern* ones are commonly Painted with *Birds, Flowers, &c.* and sometimes with *Histories* out of the *New Testament*.

2. *Their Dimensions.*] Those which I call *Ancient Dutch Tyles* are  $5\frac{1}{4}$  Inches square, and about  $\frac{3}{4}$  of an Inch thick. The *Modern Dutch Tyles* are  $6\frac{1}{2}$  Inches square, and  $\frac{3}{4}$  of an Inch thick.

3. *Their Weight.*] I have weigh'd some of both these sorts of Tyles, and I found one of

the {Ancient} sort to weigh { $1\frac{1}{4}$  Pound, } whence 100  
 {Modern} {1 lb. 3 Ounces, }

of them will weigh {125 lb, and 1000, 1250} Pounds.  
 {169 lb, and 1000, 1690}

XIII. *Method of Making and Burning.*] Tyles, (says Mr. *Leybourn*) are made of better Earth than Brick Earth, and something near the Potters Earth. According to the Statute of 17 *Edw.* 4. *Cap.* 4. Earth for Tyles should be cast up before the first of *November*, shired and turned before the first of *February*, and not made into Tyle before the first of *March*, and should likewise be tried and sever'd from Stones, Marle, and Chalk.

In *Suffex* and *Kent*, Tyles are commonly made of a kind of Clay: But as to the particular Method of making 'em, I must at present omit, for Reasons often already mention'd. But for the Method of burning them, *V. Bricks*, N. 5. where you will find it at large.

XIV. *Price of Making and Burning.*] For making 1000 of plain Tyles, (says Mr. *Leybourn*) 2 s. or 2 s. 6 d. is the usual Price: But I know not how, or where he means; for an experienced Workman tells me, that for casting the Clay, and shiring it, and making it into Tyles, and burning them, they have 6 s per 1000.

XV. *How many will cover a Square.*] This is various, according to the width they Gage for the Laths: At 6 *Inches Gage*, about 800 will cover a Square 6  $\frac{1}{2}$ ; at *Inch Gage*, 740 Tyles will cover a Square; at 7 *Inch Gage*, 690; at 7  $\frac{1}{2}$  *Inch Gage* 640, and at 8 *Inch Gage* 600 Tyles will cover a Square, or 100 Superficial Feet. These Numbers suppose the breadth of the Tyles to be 6 Inches; for (if they are Statute Tyles) they will be thereabouts when they are burnt, allowing  $\frac{1}{4}$  of an Inch for their shrinking with burning. If your Tyles are broader than 6 Inches, then fewer will cover a Square, if they are narrower there must be more.

### Tyling.

1. *What.*] By *Tyling*, is meant the covering the Roof of a Building with Tyles.

2. *Of Measuring.*] Tyling is measur'd by the Square of 10 Foot, *i. e.* 100 Superficial Feet. And in taking their Dimensions, they measure to the middle of the *Gutters*, *Corners*, and *Ridge-tyles*; and having cast up the Area, they have a Custom to make an *Addition* for all *hollow Ware*, (as they call *Ridge-tyles*, *Corner*, *Gutter*, and *Dormar-tyles*.) and this *Addition* (I think) is in *London* one Superficial Foot for every Lineal Foot of such hollow Ware. But I am sure, in some parts of *Suffex*, 'tis the Custom to reckon one Superficial Foot for every such Tyle; 100 of which they reckon one Square of Work, and add it to the Area before found.

3. *Price of—*] Tyling is commonly done by the Square, which in *new Work*, (says Mr. *Leybourn*,) and the Workman finding all Materials, as Tyles, Mortar, Laths, and Nails, is usually

usually valu'd at 30, or 32 *s.* per Square. (Mr. *Hatton* reckon but 28 *s.* per Square.) And for ripping of old Work, and new Covering, and making good the old, they reckon 12 or 14 *s.* the Square, according as they find the old Tyling.

But for Workmanship only, they reckon for *new Work* 5 *s.* per Square at *London*, in the Countrey various. Mr. *Wing* says 3 *s.* in *Rutland*, in some places, says he, 2 *s.* 6 *d.* In several parts of *Suffex*, I know 'tis commonly done for 3 *s.* per Square, and I am inform'd (at second hand,) that in some parts of *Kent* they do it for 2 *s.* 6 *d.* per Square; but then their Tyles are large; and they lath wide, at 8 Inches Gage, and pin but half their Tyles, the other half they lay Travers Tyles.

And for Ripping, and Healing again, (only Workmanship,) our *Suffex* Bricklayers reckon 3 *s.* 6 *d.* per Square, and if they Counter-lath it, then 3 *s.* 9 *d.* or 4 *s.* But in some parts of *Kent*, they Rip, and Heal, and Counter-lath, for 3 *s.* per Square, which is very cheap; but then 'tis suppos'd their Work is done accordingly.

4. *Laths and Nails to a Square of—*] For the number of Laths and Nails, commonly allow'd to a Square of Tyling, V. Laths, N. 8. and Nails, N. 23.

5. *Mortar to a Square of—*] Mr. *Leybourn* says, that about a quarter as much Mortar as is allow'd to a Rod of Brick-work; will do for a Square of Tyling, V. Mortar, N. 12.

6. *Pins to a Square of—*] Mr. *Leybourn* says, they usually allow a peck of *Tyle-pins* (from 2 *s.* to 4 *s.* the Bushel) to every Thousand of Tyles; but surely this must be a mistake, for an *Experienced Workman* tells me, he uses but about a peck of Pins to 3 Square of Healing, which at 7 Inch Gage; (the size he commonly Gages) is more than enough for 2000 Tyles. And I think this Workman told me, he reckon'd *Tyle-pins* at 6 *d.* the Gallon.

7. *Without Mortar—*] Some lay Tyles without Mortar; or any thing else, laying them dry as they come from the Kiln. Others lay them in a kind of Mortar made with Lime and Horse-dung, (V. Mortar, N. 20.) In some parts of *Kent* they have a way of laying Tyles in *Moss*; when the Workmen get the *Moss* themselves, they are allow'd 2 *d.* in Square the more for their Work. But an old Workman of theirs condemns this way of Tyling with *Moss*; for he tells me, that in windy wet weather, when the Rain, Snow, or Sleet is driven under the Tyles (in the *Moss*) if there follow a Frost while the *Moss* is wet, it then freezes and raises the Tyles out of their places.

8. *With Pan-tyles.*] These Tyles are for the most part laid dry without any Mortar; yet sometimes pointed within side.

The Laths whereon they hang, are 10 or 12 Foot long, an Inch and a half broad, and an Inch thick. They are usually sold at 2 *d.* or 3 *d.* the Lath, or at 10 or 13 *s.* the Hundred.

The Gage for nailing on these Laths (with 4 *d.* Nails) is ten Inches and a half, and the breadth of a Tyle when laid 8 Inches; whence about 170 Tyles will cover a Square, (or 100 Foot of this kind of Tyling.

A great Covering with these spends but little Mortar (if pointed) and but little time in laying. Mr. *Wing* reckons it worth about 1 *s.* 8 *d.* per Square; Workmanship.

9. *Of its Weight.*] V. *Horsham-stone*, N. 4.

### *Valleys.*

**T**HE Gutters over the Sleepers in the Roof of a Building,  
V. Gutters.

### *Vault.*

A Cellar Arched over.

### *Under-pinning.*

1. *What.*] By this *Term* is meant, the bringing it up with Stones under the Ground-fells of a Building. Sometimes it signifies the Work it self, when done.

2. *Price of.*] In several parts of *Suffex*, I know the usual Price (for the Workmanship only) is 1 *d.* per Foot Superficial. In some parts of *Kent* they have three Half-pence per Foot. In some places 'tis the Custom (in Measuring it) to take in half the Sell into their Measure.

### *Volute,*

The Spiral Wreath, or Scroll in the Capital of the Ionick Column, V. *Capital*, N. 4.

### *Wainscot,*

**T**HE Pannel'd Work round (against the Walls of) a Room.

### *Wainscoting.*

1. *What.*] The making, and setting up of Wainscot is call'd *Wainscoting*.



2. A Note in—] Some Joyners, (as I am inform'd,) put Charcoal behind the Pannels of their Wainscot, to prevent the Sweating of Stone, and Brick-walls from Ungluing the Joynts of the Pannels, which otherwise, (especially in some places) 'tis very apt to do; and others make use of Wool in the same manner, and for the same purpose; yet neither of these ways will prevent their ungluing in some Houses: But the most effectual way to prevent it, is by priming over the Back-sides of the Joynts well with *White-lead*, *Spanish-brown*, and *Linseed-oyl*.

3. Of Measuring.] Wainscot is generally measur'd by the Yard square, *i. e.* 9 Superficial Feet. Their Custom is to take the Dimensions with a String, pressing it into the Mouldings; for they say, (and 'tis but Reason,) we ought to be paid for all where the Plain goes.

Therefore when Joyners would take the Dimensions of a Room they have Wainscotted; they take up a Line on the top of the corner of the Room, and as they carry it down to the bottom, they press it (with their Fingers) into all the Mouldings; this they account the *breadth*, and (they measure) the Circumference of the Room from the *length*: Some Joyners will measure this also with a String, but others do not. The Dimensions being thus taken in Feet, they multiply the length by the breadth, and the Product is the Content in Feet; which being divided by 9, the Quotient is the Content in Yards. But—

Note, (1.) That you must make Deduction for all *Window Lights*, and measure the *Window-boards*, *Cheeks*, and *Sapheads* by themselves.

(2.) That for *Window-shutters*, *Doors*, and such things as are wrought on both sides, they reckon *Work and half*; for indeed the Work is half more.

(3.) That *Cornishes*, *Bases*, and *Sub-bases* are sometimes measur'd by the Foot Lineal Measure; so also are *Freezes*, *Architraves*, and *Chimney-pieces* measur'd; unless agreed for by the Great.

4. Price of—] The Price of *Wainscotting* is various, according to the variety of *Stuff* and *Workmanship*.

Wainscotting with *Norway Oak*, the Workman finding Stuff, is worth 6 or 7 *s.* per Yard. The Workmanship only is about 2 *s.* in *London*, in *Rutland* 3 *s.* 6 *d.* or 4 *s.* per Yard; and if the Mouldings are large, 5 *s.* says Mr. *Wing*.

Plain-square Wainscotting, (the Workman finding Deal) is worth 3 *s.* or 3 *s.* 6 *d.* per Yard. For only Workmanship about 1 *s.* per Yard.

Ordinary Bisection Wainscotting, (the Workman finding Deal) is worth in *London* 3 *s.* 6 *d.* in the *Countrey*, 4 *s.* 6 *d.*

per Yard. The Workmanship only about 1 s. 6 d. per Yard.

Large Elevation-work is worth 6 or 7 s. per Yard of Dantzick Stuff.

5. Of Painting of Waincoat,] V. Painting.

### Walls.

I. *What.*] By this Term in Architecture is meant the Inclosures of whole Houses, or particular Rooms; as also of Gardens, Orchards, &c. if made of Brick or Stone.

II. *Kinds of*—] There are several kinds of Walls, distinguishable by different Names, according to the substance whereof they are made, as *Plaster'd* or *Mud-walls*, *Brick-walls*, *Stone-walls*, *Flint*, or *Boulder-walls*, and *Boarded walls*; of all which I shall discourse in the following Numbers.

III. *Plaster'd, or Mud*—] These kind of Walls are common in Timber Buildings, especially of ordinary Buildings; for sometimes the Walls are made of Brick betwixt the Timber: But this is accounted no good way; because the Mortar corrodes and decays the Timber.

These Mud walls. (as they are call'd in some places) are thus made. The Walls being quarter'd and Lathed between the Timber, (or sometimes Lathed over all) are Plaster'd with *Lime*, (V. *Lime*, also, V. *Mortar*, N. 8. and 11.) which being almost dry is Plaster'd over again with *white Mortar*, (V. *Mortar*, N. 4.)

This kind of Work is commonly measur'd by the Yard. For the Price of it, V. *Pargeting*, N. 2. and *Plastering*, N. 1.

IV. *Brick*—] Here I shall say something

I. *Of Building them,*] And here are several things to be consider'd and taken notice of; as first, That all *Walls* ought to be most exactly Perpendicular to the Ground-work; for the right Angle (thereon depending) is the true cause of all *Stability*, both in Artificial and natural Positions, a Man likewise standing firmest when he stands uprightest.

*Secondly*, That the massiest and heaviest Materials be the lowest, as fitter to bear than to be born.

*Thirdly*, That the *Walls* as they rise, diminish (proportionally) in thickness, for ease both of Weight and Expence.

*Fourthly*, That certain Courses, or Ledges (or Quoins) of more strength than the rest, be interlay'd like Bones to strengthen the whole Fabrick.

*Fifthly*, That (all along) care be taken in *laying* the Bricks, concerning which, V. *Bricks*, N. 8.

*Sixthly*, That the *Angles* be firmly bound, which are the Nerves of the whole Edifice. And therefore in working up the *Walls* of a Building, do not work any Wall above 3 Foot high

high before you work up the next adjoining Wall, that so you may joyn them together, and make good Bond in the Work: For 'tis an ill Custom among some Bricklayers, to carry, or work up a whole Story of the Party-walls, before they work up the fronts, or other Work adjoining, that should be bonded, or work'd up together with 'em, which occasions cracks and settlements in the Walls.

*Seventhly*, That if you build (a House) in the City of London, you must make all your Walls of such thickneses, as the Act of Parliament for Re-building of the said City enjoyns; (which Act you may see in *House*, N. 4.) but in other places you may use your Discretion; yet for some Directions in this Matter, V. *House*, N. 3.

*Eighthly*, It may be worth your Notice, that a Wall of a Brick and half thick, with the Joynt, will be in thickness 14 Inches, or very near; whence 150, or 160 Bricks will lay a Yard Square, measur'd upon the Face of the Building, and to the Square of 10 Foot (which is 100 square Feet) are usually allow'd 1700, or 1800 Bricks, and 4600, or 5000 Bricks will compleatly lay, crest, or build one Rod, Pole, or Perch square; which Rod, Pole, or Perch, (for by all these Names 'tis call'd) contains in length, (according to the Statute)  $16\frac{1}{2}$  Feet; whose Square is  $272\frac{1}{4}$  Feet, superficial Measure, which is 30 Yards and a quarter.

But tho' I have here laid down the number of Bricks for each of these Squares, yet these Numbers are not to be rely'd on as absolutely exact; for no exactness can be discover'd as to this Particular, and that for several Reasons: For tho' the Bricks were all made in the same Mould, and burnt in the same Eiln, or Clamp; yet the Nature, or Quality of the Earth whereof they are made, (whereby some shrink more than other some,) and the Ericklayers Hand and Mortar, may cause a considerable variation, and besides some Bricks are warp'd in burning, (whereby they will not lie so close in the Work,) some miscarry, (or are broken,) in every Load, or 500 Bricks, and the Tally, or Tale is (for the most part, if not look'd after) too little: And besides all these Uncertainties, when Bricks are dear, and Lime cheap, the Workman (by the Great) will use more Mortar, and make the ampler Joyns, which is much worse for the Building.

*Ninthly*, It may be also noted, that (when all Materials are ready) a Workman with his Labourer will lay in one day 1000 Bricks, and some 12 or 1500.

*Tenthly*, All Brick-work, according to these Rules, is suppos'd to be one Brick and half thick, which is the Standard Thickness. If they are thicker, or thinner, they must be reduc'd to that thickness, as shall be shewn how in the next Section of this Number.

1. *Of Measuring them.*] Ericklayers most commonly Measure their Walls by the Rod Square, each Rod, Pole, or Perch, (for by all these Names 'tis call'd) being (by the Statute) 16 Foot long; so that a square Rod contains  $272 \frac{1}{4}$  Superficial Feet.

Therefore, having taken the Dimensions, (*viz.* the length, and height) of a Wall in Feet, they multiply the length by the height, (*V. Cross-multiplication, N. 2.*) and divide the Product by  $272 \frac{1}{4}$ , and the Quotient shews the number of square Rods in the Superficies of that Wall. But it being something troublesome to divide by  $272 \frac{1}{4}$ , Workmen commonly have a Custom to divide by 272 only, which gives the Content something more than the Truth, which notwithstanding they take for it.

Having thus found the Area, or Content of the whole Superficies of a Wall, they next consider his Thickness; for they have a certain Standard Thickness, to which they reduce all their Walls, and this Standard is *one Brick and a half thick*, as they phrase it, (*i. e.* the length of one Brick, and the breadth of another,) so that a Wall of 3 Bricks (length) thick of the same height and length with another of 1 Brick thick, the former will contain twice as many square Rods as the latter.

Now, to reduce any Wall to this Standard Thickness, take this plain and easie Rule: Say, as 3 is to the thickness of the Wall in half Bricks, [that is in the breadth of Bricks, the breadth of a Brick being always  $\frac{1}{2}$  his length,] so is the Area before found, to the Area at their Standard Thickness of  $1 \frac{1}{2}$  Brick.

Thus, if the Wall be all of one thickness from the Foundation to the top, it is easily reduc'd to the Standard Thickness of  $1 \frac{1}{2}$  Brick. But if the Wall be of different thicknesses, (as in Brick Houses they commonly are, being made thickest below, and thinner at every Story;) then the best way is to measure every different thickness by it self, and reduce it to the Standard Thickness; then add all these several Area's into one Sum, out of which deduct the Doors and Windows (measur'd by themselves,) and so the Remainder will be the true Area, or Content of the whole Wall.

See more (concerning measuring of Brick Walls,) *N. V.* of this word, *viz.* in Fence-walls. Also, see *Brick-work*.

Note, In some Places 'tis the Custom to measure by the Rod of 13 Foot long, in others by the Rod of 16 Foot: In the former case, you must divide the Area in Feet by 324, in the latter by 356.

3. *Of their Price*] The Price of Building of Walls is various in different Places, according to the various Prices of Materials. Mr. *Leyburn* says, (and with him agrees Mr. *Hatton*),

son,) that the usual Price in *London*, for Building a Brick and half Wall, (the Workman finding all Materials,) is five Pound, or five Pound ten Shillings per Rod square. And for the Workmanship only 30 s. per Rod square, which is about 1 s. per Yard square.

Mr. *Wing* says, that the usual Price in *Rutland*, (the Workman finding all Materials,) is for a Brick and half Wall 3 s. per Yard square, [which is but about 4 l. 10 s. per Rod,] for a 2 Brick-wall 4 s. for a 2  $\frac{1}{2}$  Brick-wall 5 s. per Yard Square. And for the Workmanship only (of a Brick and half Wall) 8 d. per Yard square, which is but about 20 s. per Rod, Statute Measure. So that you see Mr. *Wing's* Prices are much cheaper than those about *London*; the Reason of which, I conceive proceeds from the Viciory of Commodities in his Country.

About us in *Suffex*, a Rod of Brick and half Wall, Workmanship and Materials, will cost at least eight Pounds. For the Workmanship only, the usual Price (about us) is 24, or 25 s. per Rod square in a Brick and half Wall.

It should seem, that in or about *London*. Workmen do sometimes find only Mortar and Workmanship in building of Walls; for says Mr. *Leybourn*,) if the Bricks are laid in at the Builder's Charge, then 2 l. 10 s. per Rod is the usual Price. But, (says he,) to erect new Structures, by taking down old Walls, it may be worth 3 Pounds, or 2 Pounds 10 Shillings per Rod; because in taking down the Walls, and clearing the Bricks, there is much Time spent, and also more Mortar used in laying them again, than in new Work.

V. *Fence*.-] Walls built round Courts, Gardens, Orchards, &c. are commonly call'd *Fence-walls*. Of these, some are made of Stone, some of Flints, or Boulders, and some of Brick: Of the two former, I shall speak in the two following Numbers, viz. Num. 6 and 7. Of the latter I shall speak here, and therein I shall say something,

1. *Of their making*.] These are commonly made (of Statute Bricks) a Brick and half thick.

But in some parts of *Suffex* they are commonly made of a sort of great Bricks which are 12 Inches long, 6 Inches broad, and 3 Inches thick. I have very often discours'd with the old Man who first introduced, not only those sort of *Great Bricks*, but also their necessary Concomitants, *Pilaster* and *Coping Bricks*, and the Method of making *Fence-walls* of 'em, V. P. Bricks, N 3. §. 4. 9. and 13.

These Walls are but the breadth of a Brick, (or 6 Inches) in thickness, only at the *Pilasters*, where they are the length of a Brick, (or 12 Inches thick.) They usually set a *Pilaster* at every 10 Foot. I know a Wall of these sort of Bricks, (of about 9 Foot high, that has been built near 30 Years, and stands very well.

2. *Of Measuring them.*] Fence-walls built of Statute Bricks, are commonly measur'd, as is taught above, N. 4. §. 2. But I shall here add, that some Workmen which I know, measure 'em by the Rod in length, and 1 Foot in height, which they account a Rod of Measure. And in taking their Dimensions, they do it with a Line, going over the Pilasters; this for the length; so likewise for the height, they measure it (also) by a Line, going over all the Mouldings, (after the manner of Joiners Measuring their Work,) even to the top, or middle of the Copeing.

I shall further add, that some Workmen (in Fence-walls of Statute Bricks) will, (if they can persuade their Master to it,) measure all that is above 1  $\frac{1}{2}$  Brick thick, (*viz.* The Projecting of the Pilasters, or Buttresses, and all below the Water-table) by the solid Foot, which afterwards they reduce to Rods. But this way is a considerable advantage to the Workman, and a loss to the Master Builder; for it makes  $\frac{1}{2}$  part of Measure more than the Truth; because a Brick and half Wall is 14 Inches thick.

Fence-walls built of great Bricks, are generally measur'd by the Rod in length, and a Foot in height, (which they account a Rod of Measure,) the Dimensions being taken by a Line, as was said above.

3. *Of their Price.*] For the Price of Brick-walls, V. (above,) N. 4. §. 3. But some Workmen in *Suffex* reckon for Building of Fence-walls, (the Workmanship only) of Statute Bricks (a Brick and half thick) 1 s. 6 d. per Rod, at a Rod long, and a Foot high, taking their Dimensions by the Line, as was shewn how in the preceding §. of this Number. Sometimes they build these kind of Walls by the Square of 100 Foot, at 8 s. per Square, which is but about 1 d. per (Superficial) Foot.

For Building of Fence-walls with great Bricks the common Price (for the Workmanship only) is 1 s. per Rod, at one Rod long, and one Foot high, the Dimensions taken by the Line, as above.

4. *Of Coping them.*] Fence-walls built of Statute Bricks, are sometimes coped with Stone, sometimes with Brick: If the former, the Copeing is left out in the Measure, and rated by it self, for the Price of which, V. Copeing, N. 2. If the latter, it is measur'd into the rest of the Work. And this kind of Copeing is done thus; on one side the Wall is carry'd upright to the top, and on the other side there is 2 Courses of Bricks standing on end in an Oblique Reclining, or Slant Position, and a stretching Course on the top finishes the Wall.

But Fence-walls built of great Bricks, are coped with *Coping Bricks*, of which, V. Bricks, N. 111. §. 3. And this *Coping* is also measur'd and rated with the rest of the Wall.

VI. *Stone*—] Stone-walls serve not only for Walls of Houses, &c. but also for Fence-walls round Gardens, &c. Of these I shall say something. —

1. *Of Measuring them.*] These are in some places measur'd by the Rod of 18 Foot Square: But in most places (I think they are measur'd by the Foot Superficial. Concerning Measuring of Walls, there are these three things to be further taken notice of, *viz.* That if the length of the Walls at the *ends* (of a Garden, or House) be taken on the out-side (of the Garden, or House,) then the length of the Walls on the *sides* (of the Garden, or House,) ought to be taken on the in-side. (2.) That when the Walls of a House are measur'd, the Doors and Windows are likewise to be measur'd, and deducted from the whole. (3.) That in Measuring Fence-walls, they commonly measure the height by a Line, (press'd into all the Mouldings) from the top of the *Coping*, to the bottom of the Foundation.

2. *Of their Price.* Mr. *Wing* tells us, that Fence-walls, and Walls of ordinary Buildings, are each (only the *Workmanship*) from 16 *s.* to 3 *l.* 10 *s.* per Rod of 18 Foot Square, which (says he) depends upon the goodness of the Work. He also tells us, that the setting of Fronts in great Buildings, *viz.* Ashlar, Architrave, Windows, and Doors, with the Ground-table, Fashia's, and other Members, is worth from 3 *l.* 10 *s.* to 5 *l.* per Rod, which (says he) depends upon the height, and well performing of the Building. The Truth is, I don't well understand what he means by all this Tattle; for he never tells us any thing of the thickness of the Walls; and besides 3 *l.* 10 *s.* per Rod, is but little above 2  $\frac{1}{2}$  *d.* per Foot; and 5 *l.* per Rod, is but little above 3  $\frac{1}{2}$  *d.* per Foot; either of which is certainly too little for such Ornamental Work, as setting of Fronts in great Buildings. And then, for his Fence-walls, or Walls in ordinary Buildings; I can't see how the goodness, or badness of such plain Work can vary the Price from 16 *s.* to 3 *l.* 10 *s.* per Rod; but surely it must be very ordinary Work that is worth but 16 *s.* per Rod, which is but little above a Half-penny a Foot.

Mr. *Hatton* talks much after the same manner; for, says he, one Foot of plain Work, (as Walls, &c.) is worth about 8 *d.* working and setting. He mentions nothing of the thickness neither.

But I shall leave these Authors in the dark, as they have left us, and proceed to tell you, what some experienced Workmen in *Suffex* tell me; namely, That for building a 12 Inch Wall, they have 2 *d.* per Foot, for an 18 Inch Wall 3 *d.* and

and for a Wall of 2 Foot thick, they have 4 *d.* per Foot. These Prizes are to be understood of Walls that have 2 fair sides; for if they have but one fair side, (the other standing against a Bank,) they have a less Price; for in this case, I have known some Workmen build a Wall 2 Foot thick, for 2  $\frac{1}{2}$  *d.* per Foot.

VII. *Flint, or Boulder*—] Walls of Flints, or Boulders, are much us'd in some parts of *Suffex* and *Kent*, where I have seen, not only Fence-walls round Courts, Gardens, &c. but also Walls of Stables, and other Out-houses built of them, which shew'd very handsome.

To build Walls of *Flint*, (says Sir *Henry Wotton*,) is, (as I conceive, says he,) a thing utterly unknown to the *Ancients*; who observing in that Material a kind of Metallick Nature, (or at least a Fusibility) seem to have resolv'd it to nobler uses; an Art now utterly lost, unless perhaps kept up by Chymists.

Some Workmen tell me, that for building of *Flint*, or *Boulder* Walls, they use to have 12 *s.* per Hundred, (for so they phrase it,) by which they mean 100 Superficial Feet; but I forgot to ask them at what thickness, or whether they have but one thickness for all their Walls. They also tell me, that a right and left handed Man fit well together for this sort of Work; for they have a Hod of Mortar pour'd down upon the Work which they part betwixt them, each spreading it towards him self; and so they lay in their *Flints*. They also tell me, that their *Mortar* (for this Work) must be very stiff, and that 'tis best to have a good length of Work before 'em; for they work but one Course in height at a time; for if they should do more, it would be apt to swell out at the sides, and run down. They also say, that in misty Weather 'tis very difficult to make the Work stand.

VIII. *Boarded*—] Sometimes Walls are boarded, particularly the Walls of some Ears, Stables, and other Out-houses. But of this kind of Work, V. Weather-boarding.

### Walling,

The making of Walls (of what kind soever) is call'd *Walling*. Therefore, for the Price, &c. of *Walling*, V. Walls.

### Walnut-tree-painting.

V. Part N. 4.



*Wash house,*

A Room to Wash in.

*Water-table,*

In Stone, or Brick-walls, is a sort of Ledge left in the Wall, some 18 or 20 Inches, (more or less) above the Ground, at which place the thickness of the Wall is abated, (or taken in) on each side the thickness of a Brick, (in Brick-walls,) namely, 2 Inches and a quarter; thereby leaving that Ledge, or Jutty, that is call'd a Water-table. These Water-tables are sometimes left plain, and sometimes they are wrought with Mouldings; if the latter, (besides the plain Measure of the Wall,) they are rated at so much per Foot, running Measure.

*Water-courses,*

These are commonly rated by the Foot running Measure, *viz.* If the Workman find Materials at about 10 *d.* per Foot, if he find no Materials, at about 8 *d.*

*Weather-boarding.*

1. *What.]* A Term of Architecture, signifying the nailing up of Boards against a Wall, (V. Walls, N. 8.) Sometimes 'tis us'd to signify the Boards themselves, when nail'd up. This Work is commonly done with Feather-edg'd-boards, (V. Feather-edg'd.) In plain Work they nail the thick edge of one Board, an Inch, or an Inch and half over the thin edge of another: But if the Work is to be a little extraordinary, they set an O-G on the thick edge of every Board.

2. *Price.]* The Price of plain Weather-boarding, (*viz.* fitting and nailing up the Boards,) is from 8 *d.* to 12 *d.* the Square, according to the length and breadth of the Boards, and Conveniency of the Place. But if the lower, (*viz.* the thicker) edge of the Boards be wrought with an O-G, it may be worth 18 *d.* per Square. This for the Workmanship only. But —

If the Workman find the Materials, (*viz.* Boards and Nails,) it may be worth 12, or 13 *s.* per Square, or about three Halfpence per Foot.

### Weather-tyling.

1. *What.*] Is the Tying, (or Covering with Tyles) the upright sides of Houses.

2. *Price.*] In some places Weather-tyling is done at the same Price as other plain Tying. V. Tying, N. 3. But in other places they have more, in consideration of Scaffolding; for some Workmen tell me they have 4 s. per Square for Workmanship only.

### Well-hole,

The Hole left in a Floor for the Stairs to come up through.

### White Painting.

V. Painting, N. 7.

### Wind-beam;

The same as Collar-beam.

### Windows.

1. *What.*] Every one knows that Windows are those parts of a Building that are made to let in the Light.

2. *Situation of—*] Concerning the Situation of Windows, observe, first, that they be as few in number, and as moderate in Dimensions, as may possibly consist with other due Respects: For in a word, *all openings are weakenings*. Secondly, Let 'em be placed at convenient distance from the Angles, or corners of the Building; because that part ought not to be open and infeebl'd, whose Office is to support and fasten all the rest of the Building. Thirdly, Besure take great care that all the Windows be equal one with another in their Rank and Order; so that those on the right Hand may answer to those on the left, and that those above may be right over those below; for this Situation of Windows, will not only be handsome and uniform, but also (the *void* being upon the *void*, and the *full* upon the *full*;) it will be a great strengthening to the whole Fabrick.

3. *Dimensions of—*] In making of Windows, you must be careful, not to give them *more*, or *less* Light than is needful, that is, make them no *bigger*, nor *less* than is convenient; where-

wherefore you ought to have regard to the bigness of the Rooms that are to receive the Light; it being evident, that a *great Room* has need of a *greater Light*, and consequently of a *greater Window*, than a *little Room*, & *à contra*.

The Apertures of Windows in middle siz'd Houses, may be 4', or 5 Foot between the Jambs, and in greater Buildings they may be 6', or 7 Foot, and their height may be double the length at the least. But in high-Rooms, or larger Buildings, their height may be a third, a fourth, or half their breadth more than double their length.

These are the Proportions for Windows of the first Story; and according to these must all the rest of the Windows in the upper Stories be for their breadth; but for their height they must diminish: For the second Story may be one third part lower than the first, and the third Story one fourth part lower than the second.

4. *Price of making.*] Window-frames are usually agreed for by the Light, (says Mr. *Leybourn*.) so that if a Window have 4 Lights, and it be double rabbited, (as the Workmen call it,) it may be worth 12 s. that is 3 s. a Light for Materials and Workmanship. But if the Builder find Timber and Sawing, then 1 s. a Light is fair.

Transom-windows, (says Mr. *Wing*) are worth making (for great Buildings) 1 s. 9 d. per Light, or 7 s. per Window. Some Workmen tell me, they make 'em for 12 d. 14 d. 16 d. or 18 d. per Light, according to their bigness.

Luthern Windows, (says Mr. *Wing*.) the making and setting up, is valu'd from 9 to 14 s. per Window, according to their bigness. Some Workmen tell me, that (if they saw the Timber) they commonly have 20 s. per Window.

Shop windows, (says Mr. *Leybourn*) will be afforded at the same rate as plain or batton'd Doors, V. Doors.

5. *Price of Painting.*] The Painting of Window-frames, (says Mr. *Leybourn*) is not usually measur'd, but valu'd at 3 d. 4 d. or 6 d. per Light, according to their bigness, and Casements at three Half-pence, or 2 d. per piece, and Iron-bars at 1 d. or more, if very large, V. Painting.

### *Withs,*

These are us'd by Thatchers to bind their Thatching-rods to the Rafters. They are commonly sold at 6 d. the Hundred, and a hundred of 'em will go about 3 Square of Thatching; for some Workmen tell me, that they use about 33, or 34 Withs, and as many Thatching-rods, (which are of the same Price with the Withs) in a Square; for they bind down their Straw at every Foot, or thereabouts, *viz.* at every other Lath;

Lath; (for they Lath but 2 Laths in a Foot,) and each Course of Thatching (bound down with one length of Rods,) is about 3 Foot in breadth.

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*Zacco,*

**T**HE lower part of the Foot of a Column, (or of the Pedestal of a Column,) in the form of a square Brick, or Tyle.

*Zoporus,*

The same as Freeze.

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**F I N I S . .**

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