

OF THE MISTAKES OF THE ARCHITECTS. BY TEOFILO GALLACCINI.

Together with some teachings of architecture for the benefit of scholars of this profession, and of all those,
WHAT THEY NEED TO MANUFACTURE

PART ONE

THE PREFACE

As in Medicine, science really healthy, precious, and the source of his, the divine, and more and more ancient d' all other, natural magic, marvelous, imitator of Nature, and his minister, found for joint health, not only of mankind, but even of brutes, of plants, of minerals; one of the things it proposed (though we dislike the name, not reaching the thought) it is the cognition of poisons: not for which she is to his purpose, that is the purchase, and the storage health, and consequently the length of life; nor for use, which is contrary to all the said things, and enemy of the nature of all the living; but therefore that from the knowledge of them we can learn to flee them for sure preservation of our lives; so in the Architecture, the minister the principal of the magnificence of the Princes, and Republics, imitator of the works of Nature, find the comfortable humans, ornaments, public and private, of the municipality, and especially the defense of all States, and in peace, and in war, and of the storage their: expertise, indeed, or art, which does not disdain the Principles, and if they glory in the noble people, not only, of course, proportionate to men, as usual imitators of the sovereign Architect of the marvelous, and the immense factory of the Universe (waves occurs, Let There Be No Man, if he is not without ingenuity, or without the use of intellect, and Reason, who does not delight in manufacturing) but still convenient to Kings, and emperors, to the Monarchs of the world, and to the pontiffs, being a very sufficient means, with which they can largely make remarkable show of the heroic virtue, and their magnificence. This, as a good, and a political ornament, nobly appears in the diversity of the factories of cities, and kingdoms. In this, I say, the knowledge of all those errors, which sometimes happen, is one of those things (though to his natural condition is guilty (intention to commit a crime), and harmful) to warning, to which we had thought to be of benefit, not meaning, that the proposal of them serve to teach everyone the way of committing errors in the Architecture; this, as the end d' of each science, the contemplative is the discovery of the truth of things, and not of lies; and of every moral science is to find the good, the just, the honest, and the agreeable: so the aim of every art is not to make a mistake in working, never departing from the right reason of his practice. Imperceptible among the human Arts there is none, which teaches to sin; but the only master is its ill use. But to introduce the knowledge of the errors of the badly used architecture, so that any scholar of this profession may learn to flee them, and become very excellent in it; for if you err, you learn, and if you learn, you acquire with perfection any habit of Science and art; for error, well observing, leads you to the news of the wrong thing, and this makes us know the good and perfect work, such being the nature of the opposites, that one is known for the other. Having therefore known, for the reasons understood, how useful it was to be the knowledge of the errors of architects, I proposed to restrict in a short treatise a part of them: not with the mind to form censorship against each, but with the will to teach by means of such knowledge the good, and regulated architecture. Which we will clearly demonstrate, by keeping the names of the particular architects silent, all we need is to examine the mistakes of each one indifferently, following our main Institute, which is to benefit by teaching, by escaping to blame everyone. And since, so that the intention of anyone who takes to write of any matter is better revealed, We must propose the subject, and the idea of the whole work: so that we, before writing about the mistakes of Architects, will propose the idea of this book, ordering it in the following way.

BOOK IDEA

The mistakes of Architects are made, either before manufacturing , or in manufacturing ;
Or they skin, then that it is manufactured.

BEFORE MANUFACTURING, AND ALL THIS IN THE FIRST PART.

In the election of sites.

In the poor choice of subjects.

In the guilty election of manufacturers.

In the bad election of! time.

In the design poorly arranged, and badly ordered, and poorly compartmentalized.

In manufacturing, and c10 ' in the second part.

No fundamentals. '

In the proportion of the parts.

In the arrangement of the composition.

In placing things sister of their convenient place

In the abuse of some ornaments.

In the decor.

In the bad Mass, and in the structure of the bricks, and the stones, and the bad composition of the walls.

In the superfluity, and in the defect.

In the mutation of the order of the parts, of their use, and of the mismatch between them.

BECAUSE HE MADE HIMSELF, AND THIS IN THE THIRD PART.

In the covers.

In the little diligent care used around factories.

In the little warning of the water ducts, of the cisterns, of the wells, of the fountains, and of the fishponds :
of the cloaks, and of other such things.

In the obtained subsoil near the foundations. In the cuttings of the walls.

In the new loads, which are placed above the old walls. In the restaurants.

CHAPTER I

Of the error compartment of Architects.

All the effects, and all the works of any working art, are distinguished fruitful three times; for every movement, and every exercise is measured with time. The first half is ahead, that the work is spring in effect. The fruitful, in the course itself, in which it is done, that is, in the act of working. The third, when the same thing is done. And because in these three times one sees perfection, and the defect, that is, in the pre-selection, or in the act of working, or in the final term of all practice, which is the work conducted to its end; therefore the errors of the architects, caused", either by the defect of electing, or by working, or by concluding the work, and in the care of it, will be proposed; distinguishing it in three times, that is, before manufacturing, in manufacturing, and then that it has been manufactured. But in principle, the second chapter will deal with the mistakes made before manufacturing.

CHAPTER II.

Mistakes, which are made ahead of fabrication.

The errors, which occur before manufacturing, are the greatest, and the most important, that can happen in any reason of the factory, because of the great dangers, which happen: yes because they come from lack of Providence, which is the first rule. to the end of every practical operation; and it is still for the many evil consequences, which result from such defects; therefore it is said, that a small error from the beginning, becomes greater in the end. And these such errors in the principle of fabrication are committed for several reasons. Or from the confusion of the drawings, or from the lack of good judge, or from the choice of the worst operators; or by affection, or by favor, or by false opinion; or by inclined by human imperfection more to the worst, than to the best; or by wanting to spend little, or by avarice, or by lack of faculty; or by the lack of the first architect, who, having; so much so, neither other architect, nor Master Builder Mason is worthy to carry out perfectly the intention of the first, as it is seen in large factories, to which the age of a homo is not enough to lead them to the end; so that passing under different hands, they move away from the intention of the inventor of the first design. But having made it is better to choose a mediocre composition, as long as it is honorable, than a too great one, although in appearance it shows more Majesty. Or an engineer with little knowledge, less known, and much less exercised in his profession: either by the avarice of the one who makes manufacture; or by the too much confidence, which is in the craftsmen: or by the belief, which the Masters of the factories have to understand themselves of the master of Architecture, and of manufacturing, confided too much in a vulgar proverb badly understood, that there is not the best architect of the Lord of the House: or not having knowledge of the evil practice of manipulators; or not having provided to those who attend all the operations that you require in the factories: or from establishing time-limited and short, in which space those, who do fabricate, they want the factory to run

out: therefore the walls, having not laid them in the same way, aggravated by the weight, being worked fresh, open, and sometimes threatening ruin, or, finally, by the bad choice of the season of manufacture, and especially in the winter. And for these, and for other reasons, there are several notable errors around manufacturing, of which we shall reason apart in the following chapters.

CHAPTER III.

Errors, which follow in the election of sites.

One of the most important things, which are required in all the spices of the factories, is the good choice of sites, which because it is the first of all, it is still the most necessary: this to any work of Architecture takes Place, and the Site, not general, but particular, where you have to place the factory. Which is why Vitruvius in the 4. Cap. of the first book he takes precedence over the whole teaching of architecture, while before he deals with the factory of the city, and with all the buildings, which are made within the circuit of it, he first teaches us the reasons, and the rules of making good choice of sites. As is still done by Leon Batista Alberti Noble Florentine architect, who after Vitruvius holds the first place, from the first book of his architecture to the ninth. Therefore, for this reason, by imitating these primary authors, we will deal first and foremost in this first part of the errors that occur in the election of the sites in which one has to manufacture.

The sites, therefore, are or of cities, or of places within cities, that is, are or public buildings, or of private, or of places, which concern the only comfort, or only the ornament, or the one, and the other together. In the sites of the City, the errors may be more ways, namely, or that under unhealthy air, such as in region d' air that is too serious, too annoying, or especially d' impure air, in which they gather in large and dense like darkness, and mists, stinking vapors, and harmful impressions, which is severe to view, and you can with any remedy heal as says of Venice, Niccolo Massa, in treating of the diseases caused by the air pestilential year MDLV. doing that. ·

And although those of the Histories of that time, and too many Doctors write you no, that the divine hypocrites send them away the plague from Athens by attending fires all over the City, and still never quite praised and Galen, the same as he did in Rome, to remove the pestilence of the air; yet in this so great City with the above-mentioned conditions, I don't know how you could do this, and maxims where we always have evils vapors, which rise from so great lakes, and swamps; and not only these, but even those, who are from the valleys of the continent, many times putrid, led, however, by the winds of the earth, that the night stand, and last for almost half a day, many times throughout the day, and night, and for several days continues: neither the amount of inhabitants is enough to get rid of it entirely; and even where the air is large, and that he receives tempering of cold, or warm, and I feel a long time; and where will not be agitated by the winds; because she, like water, is purified with the movement: or that hay sites in region exposed to unhealthy winds, as in' the winds in the extreme south, which, according to l' opinion d' Ipcrate, Theophrastus, and Pliny, are the most harmful d' each of the other wind; and the Western, according to the opinion of other Authors, are not very good for the health of the places; for the past repercussion of the rays of the Sun throughout the day, reduced the Sun in the fourth (d' the West, increases the heat, the waves, the Sites remain without refreshment of any; or hay sites, that have mountains against them, which close the pass to the winds healthy: that hay in the barren land, and in the wilderness, where for lack of food, you can support the inhabitants, which they cannot receive useful any from the cultivation of the ground, and wanting to then live in there are needed to conduct the food from distant countries, which costs them dear, or is denied, or prevented, or stolen in the way, and sometimes it behooves them to take it not very good, and altered, or is their led-infected contagion: or hay put in place, whether it is a nest of a great copy of beasts, or of poisonous and deadly animals, so that it cannot be inhabited, or because of the great salvation, it is difficult to domesticate; or to be solitary, it is not without some bad quality of air. Such was the part of Gaul, which he found across the Rhine, as Leon Batista Alberti reported in 4, as he retraced from Varro. Cap. of the First Book of Architecture, and of the same condition is England, as Caesar tells: or that the land is devoid of water, what was the site of the city, which was planned to be built by Democrat to Alexander The Great in Mount Ato: or that the chosen place to found the city has around the lean fields, the bare hills of good land, and the little one, which is, non-productive, and all filled with stones, and thorny plants, and useless: that the site by nature is not strong, so that for itself it cannot be defended from the offenses of the enemies; though by art it can be made strong; however, it is much better fortification, which is received from nature, that with little help of art, and with much less expense, it leads to perfection according to need: or that it is in a place too harsh, and too bad to practice, since it was

the site of that City, which Caligula had ordered, to be built over the Alps, places, where no city is to be placed, without being forced by any necessity. Although, when he had built a good fort, and well-equipped, being in the natural boundaries of Italy, would was a key, and a scone of it, in order to prevent the people barbarous, would not make multiple passes with it, and subdue it: which thing very well regarded by Francesco Petrarca, to whom such a prediction, it seems, who would have expected the very give, that she has received from the step of Oltramontani, which not only have been able to plunder it but master it, and putting it to fuck a hard, and perpetual yoke, which is still to our times; and yet he said figuratively, naming a part of the foreign peoples for all:

„ Well provided nature to our state,

„ When the Alps screen

„ Posed between us, and the German anger.

But perhaps God did not like it, that Italy was succeeded by such a fortune. This was then imitated by crossing the wall from the people of China to the borders of their states , to close the passage to foreign incursions. And since recounts the aforementioned Alberti in the X. Book of Architecture in the same chapter, Artaxerxes between himself, and the enemy made a pit sixty feet wide by the Euphrates, and ten thousand steps long. And the Caesars, among whom was Hadrian, made a wall for England eighty-four miles long, by which they divided the camps of the Barbarians from those of the Romans. Antoninus Pius built on the island itself a wall of of clods of earth. Severus often across the island from one end to the other to the sea made an embankment of one hundred and twenty-two thousand steps. After the Margian province of India, Antiochus Sotero, where he built Antioch, encircled the province with a wall of fifteen thousand stadiums: and when he had straddled Egypt to Arabia, he made a wall from Pelusius to the city of The Sun. Or finally the site is marshy, near ponds, lagoons, and still, putrid, and unclean waters, and mineral places. In public buildings and sometimes you can see the errors of great esteem, such as when making Ports is not very able, nor safe from the winds, not strong, the facts of the bad structure, ill-founded, easy to fill with sand, earth, or soil, as are the Ports of Naples, and Ancona, which, when you used due diligence in emptying it, and restore, they would do the best, and most capable; in one of them, that is, in that of Ancona, there is naturally the defect of the Mount of San Ciriaco, which stands as a knight, and acquiring greater place. But that of Naples would be better, if you changed the site. So again when a Bridge had just the bottom, or is unable convenient to the City, at which it was placed: or when you do not choosing convenient place, to the streets, and when the bed of the river, and the banks, do not have the strength any, so that you may defend from pothole made by the water currents, from the pothole caused by the weight, moving the soil to be moistened, which force the wall posed above, to accompany his motion, as they do the clay, in order to move the pillars, and piers, or falling to the bottom, or spend, you break the bows, and all the work goes to ruin: or if you do not have the hips started over the banks of the river, or the river, and in the more solid ground, that, widened the river bed, the bridge remains inside the earth, without pothole any one, and, finally, in the factories and other public places, as are the Courts, of the Studies, or of Academy of Customs, and others, that is when will not be very capable, poorly shared, and without many of the amenities you need, and ill-placed: or in the factories, of Churches, of Hospitals, or Monasteries, as when they are placed in far-away places, or founded, on the banks of the rivers, and of the cliffs, that of the continuous remove material from an embankment or wall., and ruin, and in ground not to continue strength, or cavernous, and which subjugate some other species of the earth, without resistance to the weight; or difficult to go there, or too low, or exceeded from the caves, from which you participate in any continuous moisture, or some ruin, or too narrow, so that the factory can not receive that ability, and that form, that if the requires: or when the place is close to the marshes, dredgers, to the sewers, in ditches, in places deep, in which to compete in all filthiness, and all the waters of the City. Or when it is exposed to Southern winds, neither could enjoy the benefit of the North, or West: and when it does not have the comfort of places for gardens, or stroll under the shade in summer time, from the Ancient sayings Crittaportici, and diets; or to the Sun in winter time: and when he has ground to make up, vegetables, and gardens, or have a copy of living waters. In the fountains, when they are not made in place, it is convenient to the competition of the city, and when the aqueducts, or underground, or above Earth, are not made to perfection, or of evil, and of unhealthy matter, as of wood, of lead, or of copper. But in buildings, which only pertain to the common utility, you can see sometimes some defect, namely, that some times are unable, unwilling, and badly divided, without the convenient utilities, and no debts, comfortable, without freedom

of rooms and apartments, steps, go, and lost; but obliged to damaging servitude, and sometimes are placed too far away from the homes. Those, which consist only of adornment, are at times defective in the situation, while they are not in a convenient place, and do not make a clear prospect; or am overwhelmed, and occupied by other factories, from rocks, from stones, or else visible, or are planted in the place is too narrow: or when you press more in the ornamentation, which in useful: o when the ornaments do not correspond to the useful, and the need, and have the barbarian, and from far away are not seen: and, finally, in those factories, which must be comfortable, and decorated, it was sometimes making ornaments, or superfluous, or not drinking, not serving the profit will accompany the ornate, and that the one is corresponding to another. And all of these can be the errors, that arise in the choice of the Site of any factory, that in the true being, the infinite details, and variables, still many more, and way more different may be the defects that are to happen in the choice of the Site of any building: and, but, not to linger by the brevity, there will content have shown a part, leaving the arbitration of any student observing all the others.

CHAPTER IV.

Mistakes, which happen in the poor choice of subjects.

After the errors, which they want to take place about the choice of sites, the most important are those, which for several reasons often happen in the choice of materials. Imperceptible, because of the good materials that work in the factory, goodness is produced, and the perpetuity of the walls; so on the contrary from the evil proceeds as all their ill condition, and their short duration. One of the main warnings of the architects, or of those who attend the factories, or of those who make walls, is to put great diligence in the materials, of which the structure is to be made; for the good, and the bad conditions of the materials are the cause of the good, and the bad conditions of any building. And because this is not enough to come to know the defects belonging to the subjects, so it is important to make a mature consideration of them, so that they become more known. Let us therefore say, proceeding with some order, that the materials of the walls, either are received only by nature, or by nature together, and by Art. Those, which you have only from nature, are either the sand, or the stones, or the water, or the wood. Those that you receive from art, and from nature, are the limestone, the bricks, the stones worked, the Timbers worked, and the hardware. The errors, which appear in the subjects of Nature, are, as when he uses the sand of the quarry, and especially that which is earthy, muddy, and thick, which will eat the mortar, and kneaded with it, does not know jack, nor the strong ligament of the wall, and it is as if it is walled up with the simple earth, as anciently they used to in Siena, where you can see many of the old walls and walled with earth, which so holds, and binds together the bricks, and stones, how long is the humidity its muddy, that seared, she will remove nerves, reduces dust, and is similar to the earth of the fields, or to the ground, as often happens in those parts of Tuscany, where the puzzolana is not found. But when you have to use the quarry sand, you do not take the white one, for it is the worst of all, as much as the big sand, though it is the most tenacious, for it cleaves easily, so still every sand, which handled with hands does not screech, and stains the cloth, and mixed with the water the cloudy, or makes it muddy. And finally that, which will have been long time in the air, in The Sun, in the Moon, and in the rains, for having nature of soil, will be mixed with rotten humor, and willing spontaneously to produce herbs, and young trees. Nor because we exclude the quarry sand, we must therefore understand absolutely; imperceptible among the kidneys, which are caving, the best of all is the puzzolana, of which Naples and Rome abound, and we instead of it have a kind of sand, which is caved by a tuff reason, which is endowed with all the good qualities: this is close to the pure stone of tuff, of a lighter color, and of less dark earth of Shadow, which approaches the dull yellow color. And this sand can be called Stony sand, very different from the earth sand, which is quarried from the tuff, which has more nature than Earth, being more humid, bigger, more frangible, and of color of soil to be cultivated. That is, when you work the stones, as the stones round, clean, equal, that is, the choices of the beds of rivers, and of the field, or if it will be too much to keep, and breakable: this the first in the structure of the walls do not make good ligament, nor believe strongly in the mortar, nor make good filling for partaking in with the other stones, or bricks, leaving thick emptiness, which badly, you can fill in, if not consumed large amount of mortar, or fe, there arises a large copy of the minutes pieces, which, though it ought to be well beaten, nevertheless they do not know how good the composition of the wall, being of cement work, condemned justly by the Architects; so that for every slight occasion, or skin fall of the wall, or to the pressure of the weight, or the shut down of the arches, or to the enthronement, open; it is soon that a part begins to ruin, easily, and with little force all ruin, and converts into macia, and in heap of stones, as it is often seen well in

the factories of villa: how are those structures, and those walls, that from Vitruvius in the cap. 3. of the second book they say of uncertain wall: or those, which appeal cement works, of which, as of the other species of structures is known mention by Martial in IX. Book, Epigram 77. which has by title = *De balneo Tuccae*:

*Non silice duro, structilive cemento,
Nec latere cocto, quo Semyramis longam
Babylona cinxit, Tucca balneum fecit;
Sed strage nemorum, pineaque compage,
Ut navigare Tucca balneo possit.
Idem beatas lautus extruit thermas
De Marmore omni, quod Charistos invenit,
et quod virenti fonte lavit Eurotas.
Sed ligna desunt, subijce balneum thermis.*

And how was the factory of Nicaea, which is described by Pliny the younger in the X. Book of his Epistlole, writing to Trajan in this way: = *Theatrum, Domine, Nicae maxima iam parte constructum, imperfectum tamensexterium, ut audio, neque enim ratio plus excussa est, amplius centies bausit, vereor, ne frustra; ingentibus enim rimis descendit, o biat, sive in caussa solum humidum, o molle, sive lapis ipse gracilis, o putris.* (And these he thought were the causes, for which the factory of the said theater had opened, and had descended, that is, the excessively damp, the tenderness of the Earth, the breakable stones, and rotten; so that easily penetrated the ground, or by the weight pressed the wall, and reduced in minutes pieces, and almost to dust the stones, all the factory had) *dignum est certe deliberatione, sitne faciendum, aut ssit relinquendum: nam fulturae, ae substructiones, quibus subinde suscipitur, non tam firmae mihi, quam sumtuosae videntur: huic Theatro ex privatorum pollicitationibus multa debentur, ut basilica circa, ut porticus supra caveam, quae nunc omnia differentur cessante eo, quod ante peragendum est. lidem nicense gymnasium incendio amissum, ante adventum meum restituere coeperant longe numerosius, laxiusque, quam fuerat; etiam aliquantum errogaverunt, periculum est, ne parum utiliter; incompositum enim, o sparsum est: prater Architectus sane oemulus ejus, a quo opus inchoatum est, adfirmat, parietes (quamquam vigniti, o duos pedes latos) imposita onera sustinere non posse quia sint cemento medii fasti, nec testaceo (brick) opere praecincti.* And if it be necessary for others to venture, to make use of these loose natural stones, be sure to take those, which are rough, rough, spongy, porous, and which have thick cantons; for those in this manner receive, and consider the mortar better, and they cling together with the other stones, and with the pieces of bricks, that they may know the best chain of the wall. And when the soft and frangible stones are used, like those of tuff, and especially of the most tender, and Renous, of which there is a great copy in Tuscany, and especially in Siena, and in its contours; although there is another species of tuff, of good strength, and very hard, so much that you can do each job, such as bases, columns, capitals, cornices, and other, as it is still the soft stone, and the stone fort, or when we do a reason of white tuff, and so tender that you can cut with the accept, which is that, which is the quarry in Naples by the great masses of those mountains, which is easy spongy, and yellowish, that goes to white, and tenaciously unites to the glue mortar; and yet the walls, that it is used to make (that there are on the other matter, well you often see split, and opened, not only for the bad binding, you know with them, but also for their tenderness, and because the walls aren't beaten, nor climbing well together, or because they are square; but cut to the case: o when you take a species of tuff, black abundant pumice (soil p.; that has the appearance of pumice), easily, and tender, as is the one, which is the quarry in Rome; which though good face alloy glue mortar, with this the walls made it always show a few hours: that is, when it tries brackish water, and unctuous to do the kneading of the mortar to glue the sand; because, if it is brackish, eats away at the mortar, bricks, and stones, while you convert into salt; whence the mortar is kneaded with water, it is not tough, and the factory remains as if it were a walled dry: imperceptible, because the sea sand is not good, because it soon dries up, and soon gets wet, and is disposed of because of the salt; so for the same reason the sea water is not good for walling. But if it is greasy, the composition is not joined to it, and when it is joined, it does not stick to the materials, so that the wall has no ligament, nor falseness, for the Calcine so composed does not fade, nor is it converted into tartar. And the waters of the baths should not be kept for good, for they may either be the cause of too much desiccation, or of manifest corrosion. Or finally the

mistakes of the architects are found in the use of the timbers, that is, when they take to make stages, attics, slabs, roofs, simple beams, and Armed, of breakable, folding Timbers, and that easily rot, as are the beams of opium, or of any other reason of white wood. And the Elm, though it is strong wood, nevertheless easily bends, if it has not been cut long, because it lingers much to dry them. It therefore makes a notable mistake by using these materials, without any consideration, as to not reject the wood badly kept, that is, in the open, to the waters, to the winds, to the ice, and to the sun, waves or rot, or cook, in a way that places in place, and aggravated by the weight they cut off. We err often in the lengths, and in the thicknesses, that is, when we take the arches, or the beams too long, or too thin; for they either bend, or break, not being able to support the weight; and when we use beams of wood too big, like oaks, holm oaks, or otherwise; because those, who are of that nature, aggravate the walls too much, so that by falling they open, and threaten ruin. And besides this, it considers error great serving timber cut in a bad season, for example while the Moon is full, and in the Spring, when the trees are full of mood, and when they are suck, and willing to sprout; as such timber will soon rot, and generate great copy of woodworm; the waves of the beams gouged by them, added to the weight, and the themselves they break. Which is not without much danger, and without the expense of the inhabitants. Finally, those materials, which are received from nature, and from art, are worked stones, bricks, mortar, and hardware. And in all these case often happens the error: imperceptible you err, making work too soft stones, as are some spices of tuff, and of Boulder, which in Rome is called Peprino, since, besides not resisting the weight, they can not defend themselves from the cold, and from the ice, as seen in Florence in the columns of the Uffizi. So still use for any reason, of porous travertine, which used for cross-section, such as for lintels, and thresholds of doors, not holding any weight, nor does it support the weight of the same, as you can see in the doors of some places, and particularly in Siena, in different factories, and individually in the door of the Chiefa of the Madonna of Provenzano, where you can see the Lintel. Hence its most convenient use is to make columns, which in this way resists any great weight. Or according to the Council of Architects, the travertine should not be put into operation, quickly removed from the quarry, and worked, but must be, that they be dug, and worked for some time ahead, so that they become harder, and more flap. You sometimes err using marble in the uncovered places, as in the facades of ' palaces, and Times. And this happens, when the factories are much towards the sea wind, as it is the facade of the Cathedral of Siena, which, being exposed to such wind, that wet shaves, and for every slight encounter receives great damage, being the marbles made frangible, and almost reduced to Salt. The architects still err, who do not work diligently to have bricks made of good clay, well worked, well cooked, made to uniform measure; for the bricks poorly made, and poorly cooked make the factory not durable: that for all moisture is rotted; and those, who are too cooked, which are called ferretti, for the similarity, which is in color, equal in hardness to the dross of iron; for, although they have the hardness of stone, nevertheless because I am too twisted, and connected together in the form of stones, because of the connection made from too much cooking, and fire excess, are not good to work out, as in the faces of the walls, why can't we put in the plan, and connect with other bricks; but I am good in the fills of the walls, and in the fundamentals, but when you make it big. And the bricks not made to uniform measure are not all equal in thickness, and in length, and yet they spoil the work, not being able to sort the rows flat. But the ancients, to make sure that they had good bricks for their walls, had commanded that every furnace should mark its bricks with its imprint, that it might be known who did good, and who did bad work, and who was better, that no one should be deceived, being able to choose always the best. Order really of great importance, which should be imitated by the modern, and maxims in Rome, where the bricks of bad condition are washed; such that it seems to me too great a lack to see in the leftovers of the ancient factories the bricks have been maintained many thousands of years, and still last (waves Pliny in Cap. 13. of the Lib. 35 he calls the walls of eternal bricks, saying: *Graeci, praeterquam ubi e silice fieri poterat structura, parietes lateritios praetulere. Sunt enim aeterni, si ad pendiculum fiant*). And never found herself a person of such ingenuity, who knew how to find, that the clay, of which such bricks were formed, and where the furnaces were already. why, when these places were found, Rome would not need pieces of soft Tuff, and stones in manufacturing for lack of bricks, and its walls would make more durable. And why not pairs, that what I purports to own imagination, and conjecture, I will show you below the example of some signs of old bricks portraits from the Notes of the Antiquities of Rome Celsus Citizens, a man managing Antiquity, especially of Rome, and that was the first to observe, and to publish the writings of these materials; from what signs they understood, of what quarry, and of what furnace they did.

The spices of which bricks among the ancients were different, as it can be portrayed by Pliny in the Lib. 35. cap. 13. and from Vitruvius in the second Lib. Cap. 31. = Pliny says =

Genera eorum, tria, Didoron, quo utimur, longum sexquipedem, latum pede: alteum Tetradoron, tertium Pentadoron. Graeci enim antiqui doron palmum vocabant, & ideo doras munera, quia manu darentur. Ergo quatuor, & quinque palmis, prout sunt, nominantur. Eadem est & latitudo: Minore in privatis operibus, Majore in publicis.

Vitruvius in the Lib. 2. cap. 3. =

Fiunt autem laterum genera tria, unum quod Graece, '...' appellatur, idest, quo nostri utuntur, longum pede, latum semipede, caeteris duobus Graecorum aedificia struuntur. Ex his unum Pentadoron, alterum Tetradoron dicitur. Doron aurem Graeci appellant palmum, quod munerum datio '...' appellatur. Id autem semper geritur per manus palmum, ita quod est quaquaversus quinque palmorum pentadoron, quod quatuor tetradoron dicitur, & quae sunt publica opera, pentadoro, quae privata tetradoro struuntur. Fiunt autem his lateribus semilateres, qui cum struuntur, una parte lateribus ordines, altera semilateres pontur.

Nor was it enough for the ancients to command, that they should mark the bricks for their own safety; but they did not place them in the factories, if they did not know, that they had been approved by the magistrate above this deputy, that the same Vitruvius in the above Place says: =

Igitur tectoria ab structura sejuncta propter tenuitatem per se stare non possunt, sed franguntur ipsique parietes fortuito, sidentes vitiantur, ideoque etiam Uticenses, latere, si sit aridus, & ante quinquennium ductus, cum arbitrio Magistratus fuerit ita probatus, tunc utuntur in parietum structuris.

And in Siena by the order of our Ancient are the measures, and the shapes of the bricks of all the reasons and where are the tiles made of iron at the Magistrate of the Biccherna, or public Treasury, from which the ceramics are bound to take the measures, and the forms of bricks, and everything, that work, that the quantities hay to the right, and uniforms for the sake of the goodness of the walls, and for not hay defrauded the buyers. They still err, when they take for the factories the whole old bricks, or the pieces, and every old fragment; imperceptible the old bricks are not equal, and with fragments it is not good chain of wall, so the factories are not perpetual, and so it is made great consumption of mortar, and more time is required in the wall. It is not a defect of less consideration to use not good concrete, as of that, which is made of stones not quarried, collected for the fields, and quarries, which do not moist hay, of black stone, and not hard: or of concrete reduced to powder, which is not fresh, and is without nerve. Finally in the use of hardware, taking it too raw, and frangible, and poorly pulled, and poorly folded, waves break, or bend easily. And all these are the mistakes, which happen in the choice of materials to manufacture.

Chapter V.

Any factory, in order to be with good reason set to its proper perfection, must not only be placed in a good place, and executed with excellent materials, but still need manufacturers, and ministers of excellent condition, and endowed with all the qualities convenient to their art. Therefore the architect, or anyone who intends to make Wall, they use much expediency in the choice of the builders, nor wavy from the will of spender Little, they lend faith to those, who offer to bring before the work with slight expense; for they do not observe that diligence, which is convenient; but they concern only to do the work with little care, and sooner, that they can, to pull the payment, and to be able to procure other work. So the factories made by such Masons in a short time now Skin their defects, dropping, opening, and ruining. And this is the reason, for which the ancient Romans had the Curators of the factories so public as private, which review, and approved of the factories attached to the processors by the Magistrate, and judged as stewards, or as they were reported by the Capimaestri of the Masons, and Architects, or other Experts to give the judgement to them. Waves the Budeo in the Notes to the Pandettes in the title *Ad Legem Juliam repetundarum*, in the paragraph = *Ne in accept. Jurat.* he says that way. *Probatum autem, & approbatum opus dicitur, quod magistri opisciorum evocati inspectum, retulerunt esse idoneum, & recte factum.* Dipoi forms a place of Cicero in VI. of the verrines, and especially there, where he introduces one of the Guardians of Junio pupil son of Fr. Junio. He says of the Temple of castor, being consuls L. Silla and Q. Metello, Cajo Verre Praetor wanted, that the said Pupil are obliged to make the perpendicular columns. = *ocatur opus id, quod ex mea pecunia resciciatur: ego me refecturum esse dico: probatio futura esst tua, qui locas: praedibus, & praediis populo cautum est: & si non putas cautum, scilicet, tu Praetor in mea bona, quos voles, immittes? & c.*

And a little further than the same Budeo adds = *Probare vero, & approbare Redemptoris est, non locatoris; est enim approbare, quod Cicero fere probare dicit....*

And pass a few lines = *Opus autem probare, est, ut vltugus loquitur, recte, & probe consummatum praebere.. e fegue = Paulus supra in Tractatu Locati. Si in lege locationis hoc comprehensum est, ut arbitrato domini opus approbetur, perinde habetur ac si viri boni arbitrato comprehensum esset = the curators of the factories took care to approve the works of the builders; that if they could good, the approved, and for the testimony of such approval made the memory in the Inscriptions carved in the stones. And yet in an ancient marble above the door to the north of the city of Rome it reads like this = ...*

But when the factories were not approved, the builders were obliged to make them at their own expense, having given for safety, according to the commandment of the law, their goods, as Cicero is seen below in the third of the verrines. But this caution in our countries could not be had, being, if not all, at least most, the Foreign Masons, and not settled; so you can leave at their will, as they often do, and do not possess any stable good. Which being so, they could force themselves to find someone who would promise for them. Besides that these such must be rejected, while they promise to bring forth labor with little expense, to incite, and inanimate others to fabricate; which then not very much, given the principle, show that the factory is in need of much more material, and much greater expenditure than that which was proposed: to any owner of the factory, is not fully pleasing to him of increase spending, it is forced to cease the work, and remain imperfect, and not likely to use it, and the expenditures made succeeds at all in vain: or need you have, that face to continue the factory, because the first expenditure will not be lost, and may, in part, achieve the end in view. But to give know now the mistakes made in the choice of the makers, we will put an end to these considerations, and we will begin to examine him particularly, saying, that at least there are six ways of Edificatorori, which is used in the factories are the cause d' - important, and very dangerous defects for each reason of factory. The builders, either too greedy for profit, or not fond of their art, or not caring for their own reputation, or not much practice nor ' important work, and not ordinary; or not capable of the designs, and of the models of the factories made by the architects; or that hay of its own, and of stubborn opinion, and not docile, nor obedient, and observers of what is said by the architects. When the makers are too fond of gain, then it is big mistake to use it, and it is very harmful; because not content with the payment, that their gives you, that always would like to major, the waves is a great torment to those who give their factories to these masons, is yet, because they do not have another end, that of self interest, and the usual advantage, and anything you care to give good account of themselves in the works they do, not using that care, that is appropriate, neither of the operand as required by the debt of their Art; but with all subtlety, and with each thin and unfair industry, force themselves to finish their work as soon as you can, can well made any way you like, provided it is soon to be carried out at the end, to make the payment, and the face co-star, dear, the ill-working, and sold with unfair price for the short time that we spent. When you are not loyal to their Art, everything they do, they do torn apart, and with contempt, because postponing the wades no the good reputation of the Art, and of themselves, the perfection of the work, and perpetuity, by studying only a certain appearance of goodness-of-work, which so much hard, just enough to have time to lead the work to that very end, that you are proposed, in order to reach the payment coveted. But after not long space of time the factory gives pledge of wickedness, and iniquity, and voluntary negligence; so the expense succeeds all in vain, and you have to go back to build again, and first spoil all the wrong done. Which is of great prejudice to those who manufacture. And if they do not make any estimate of his own reputation, and are pure, and despicable mercenaries, is not to trust it point, because a little of their import, the work of evil, and to the detriment of those works, as long as they earn as much as they wish; and why not miss them by manufacture, they help themselves by promising to work with little expense, and to settle for less payment than that which is required by the other. And if for adventure not will be very practice in the factories is important, and extraordinary, it is not a sure thing the use it, as it is due to fear, not hay, to learn at the expense of those who trust it; that the little practice, that have in their Art, not being accustomed to the other, that compensate old walls of the city, and produced the simple houses of private persons, and the poor, not just for use in factories, noble, public, and of much importance: for such a one not do what is necessary, in order to lead to its perfection in any factory of great account. Those, then, that does not mean the designs or the models in any way of the building because of the talented big, big, and more acts to carry the mortar and the bricks, than to adopt the wall, the hammer, and the perpendicular, should totally be excluded from any factory, being deprived of that knowledge,

which, properly understood, paves the way and facilitates the way to put into effect all the work, though difficult. But being around ignorant, or are not, determined, and confident in the work, and the operating depart from the purpose of the Architect, or counterfeit to the will of the masters, or confuse The order of the parts of the factory, and make it monstrous, or, finally, to wanting to show you have understood the template to the form badly known, and superb, obstinately pretend their good work, and do not need the drawings, nor the warnings of the Architects. This is the most damaging to the factories, and the most enemy of the good reasons of Architecture and the art of the wall. How, why, to it's' out of the straight, and right, according to which you rule every Art, mechanics, and minister; so why not following the Architects' drawings, formed in accordance with the good reason of the Architecture, and its rules, as it requires to the site, the comfort, and the needs of the building, do not obey the straight rule of the Architecture, which is the wind of good work. So the factory becomes useless, and the expense in all vain; and by necessity it is necessary to give to the ground all the work done to redo it again, and to make use of other craftsmen: or it is forced to leave the work so badly conducted in abandonment; at least to try to amend it, which is very difficult: or finally to reduce to use it with great regret, to show: in part of not having cast the money. Finally the masons d' obstinate opinion of themselves, who believe to know enough, and do not need of Architects, which they are above, and that claim d' to be able to teach them, that to continue the talks, the rules, and the drawings to them, and being so relevant in their pretension, I am not docile nor obedient, but always in contrast to the opinion of them, and they always do procession of follow the opposite of this, that by those with good reason, and with excellent rules has flatulence proved them, and to all, that their so-called own whim, which has no other foundation, but a certain unregulated practice, without any righteousness. Therefore, the builders and the architects, being disunited, cannot be done without many defects. And all these are the troubles, and the inconveniences, and the mistakes, that come from the architects, who have made bad election of the builders.